

ALASKA LEGISLATURE SPECIAL COMMITTEE/SUBJECT FILES 8672

2319 SCOMM 96: HOUSE SPEC. COMM. ON OIL & GAS, 1995-1996



# RECORDS CERTIFICATION



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A handwritten signature in cursive script, appearing to read "Patricia R. [unclear]", written over a horizontal line.

Signature of Camera Operator

10/20/98

Date

SCOMM 96: HOUSE SPECIAL COMMITTEE ON OIL & GAS, 1995-96

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MEMBERS:

REPRESENTATIVE NORMAN ROKEBERG  
REPRESENTATIVE TOM BRICE  
REPRESENTATIVE BETTYE DAVIS  
REPRESENTATIVE GARY DAVIS  
REPRESENTATIVE DAVID FINKELSTEIN  
REPRESENTATIVE SCOTT OGAN  
REPRESENTATIVE BILL WILLIAMS

Established by House Resolve No. 5, 1995 (HR 6).

Contents: 23 files. 38 tapes are also available of hearings held  
1/24/95 - 04/16/96.

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**SCOMM**

**96:1**

COMMITTEE: HOUSE O&GDATE: 2/14TIME: 10:08SUBJECT: ONR overview by O&G DivisionMEMBERS: Rep. Rokeberg, Ogan, Cr. Davis, B. Williams, B. DavisT. Brice, D. Finkelstein.

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| SPEAKER              | TAPE# | SIGNIFICANT INFORMATION                                                            |
|----------------------|-------|------------------------------------------------------------------------------------|
| Rokeberg             | 000   | Called the Committee to order at 10:08                                             |
|                      |       | Members Present: Rep. Rokeberg, Ogan, Williams, Finkelstein. Aquorum is Present.   |
| Ken Boyd.            | 017   | Acting Dir. for Div. of Oil & Gas. (Began Slides)                                  |
|                      | 028   | Referred to packet. Recent activity & Discoveries Printed brochure/Lobby for ANWR. |
|                      | 047   | Walk the Committee through the business of the Oil & Gas division.                 |
|                      | 070   | Started w/ Petroleum Revenues. 4 Categories Bonuses, Rents, Royalties, Taxes.      |
|                      |       | every lease in Alaska has a rent.                                                  |
| Rokeberg             | 109   | Is that all taxes                                                                  |
| Boyd                 | 110   | Yes.                                                                               |
|                      | 115   | Most oil comes off of State land.                                                  |
| Roke                 | 128   | Sub-surface Rights?                                                                |
| Boyd                 | 133   | We do share the sub-surface w/ some groups. They continued the dialogue.           |
|                      | 150   | Where does the \$ go.                                                              |
|                      |       | 50% to perm fund Since 1979.                                                       |
|                      | 165   | Slide on Oil field production. The trend of production is down.                    |
|                      | 181   | Geological-Maps. 50 little Pieces.                                                 |
|                      | 195   | Cabin at Honolulu Creek.                                                           |
|                      | 215   | There are many areas that are well known, but poorly explored.                     |
| <del>Ken Boyd.</del> |       |                                                                                    |
| Rokeberg             | 230   | 17. Billion Barrels of oil.                                                        |
| Boyd.                | 235   | those numbers are very speculative.                                                |
|                      |       | We must explore them.                                                              |

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| SPEAKER | TAPE# | SIGNIFICANT INFORMATION                                                                                                           |
|---------|-------|-----------------------------------------------------------------------------------------------------------------------------------|
| Boyd    | 245   | The interior of Alaska is Gas Prone.                                                                                              |
|         | 259   | Slide. Economic Basement. There are 10 more oil & Gas Rocks.                                                                      |
|         | 277   | Geomagnetic Data are used in the preliminary stages of Exploration.                                                               |
|         | 291   | 4 types of Trapping Methods. Simplest is the Antecline. Saudi Arabia is an Antecline                                              |
|         | 308   | The next type is a fault line - the Oil & Gas is trapped there. These two are most common in AK.                                  |
|         | 325   | Stratigraphic Traps may be most prevalent in AK. They are very hard to find. Sunfish - Sourdough.                                 |
|         | 340   | An example of a Marine Seismic Survey. (Oil at Sea). - 3 mile Cable. in the cable are hydrophones. This measures the sub-surface. |
|         | 365   | Much like the info from an Earthquake Seismograph. The hydrophones will show you a picture of the sub-surface                     |
|         | 375   | The numbers on the slide indicate the time it takes the sound wave to move.                                                       |
|         | 395   | Scientists use this info to interpret the Geology of the sub-surface. (on slide)                                                  |
|         | 420   | The interpreter will use several of these to make a map of the sub-surface                                                        |
|         | 433   | Take all the Data & make a map.                                                                                                   |

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| SPEAKER  | TAPE# | SIGNIFICANT INFORMATION                                                               |
|----------|-------|---------------------------------------------------------------------------------------|
| Ken Boyd | 443   | Industry will be given all seismic Data.                                              |
|          | 452   | (slide) 2 dimensional seismic Data.                                                   |
|          |       | 3-D Data is much more sophisticated & expensive.                                      |
|          | 470   | AK. is now beginning to get involved in 3-D Data.                                     |
|          | 477   | It provides a method to trap stratigraphic traps.                                     |
| Rakeberg | 480   | Was the \$ appropriated & how much.                                                   |
| Boyd     | 485   | We went to a trade show & recieved a "Capital Appropriation".                         |
|          | 499   | 90% of Data in AK is 3-D.                                                             |
| Rake     | 503   | Have you purchased the hardware. Who did you buy it from                              |
| Boyd.    | 510   | Can't Remember name                                                                   |
| Rake     | 515   | Not on-line yet?                                                                      |
| Boyd     | 517   | (New slide) stated the new stratigraphic Data can find new oil near existing fields.  |
|          | 532   | Primary Producing fields in AK. (slide.) Production numbers.                          |
|          |       | Size of Prudhoe Bay compared w/others.                                                |
|          | 544   | Some smaller fields are all on line now.                                              |
|          |       | BP Projects 95% of oil w/directional drilling                                         |
|          | 556   | Discussed fields that are not on line.                                                |
|          |       | Estimated recoverable = 147 million Barrels of Perhaps 20 billion Barrels (West Sak). |
|          | 572   | Hamerhead field.                                                                      |
|          | 578   | Prospect but not Commercial as a stand alone Project.                                 |

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| SPEAKER    | TAPE# | SIGNIFICANT INFORMATION                                                                               |
|------------|-------|-------------------------------------------------------------------------------------------------------|
| Boyd       | 585   | Soursberg on ANWR Roster                                                                              |
| Williams   | 587   | Explain a "Cold oil field".                                                                           |
| Boyd.      | 589   | It relates to the Temp of the earth.                                                                  |
| Roke       | 591   |                                                                                                       |
| Boyd.      | 596   | 100 million Barrels - 150 million Barrels.                                                            |
| Roke.      | 600   | of Recoverable oil                                                                                    |
| Boyd.      | 601   | Yes                                                                                                   |
| Roke.      | 607   | Test wells                                                                                            |
| Boyd.      | 610   | The # of Barrels per day.                                                                             |
|            |       | The important #                                                                                       |
|            |       | The "String of Pearls"                                                                                |
|            | 624   | Units.                                                                                                |
|            |       | Unitization: All oil from AK comes out of units: A unit is a combination of leases.                   |
|            | 638   | Unitization: Uses fewer facilities & for that reason is environmentally sound.                        |
|            |       | -Discussion w/Chairman Rokeberg.                                                                      |
| Boyd.      | 650   | Price of oil: This is a difficult subject. mentioned Chuck Logsdon's Overview.                        |
|            |       | How is oil Priced.                                                                                    |
|            | 667   | West Coast (Royalty Settlement Price).                                                                |
|            | 675   | Base Value - 7 Crudes                                                                                 |
|            |       | From the Price you subtract Transportation costs, Tax tariffs, Field costs of Cleaning & Dehydrating. |
| Boyd       | 695   | What's Happening.                                                                                     |
| Chair Roke | 697   | Smin Break, Reconvene at 11:00.                                                                       |
| Roke       | 7017  | Called a recess at 10:55                                                                              |
| Rokeberg   | 7000  | Reconvened the committee at                                                                           |

(Next side of tape.

**COMMITTEE TAPE LOG**

**COMMITTEE:** \_\_\_\_\_ **DATE:** \_\_\_\_\_ **TIME:** \_\_\_\_\_

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| SPEAKER  | TAPE#  | SIGNIFICANT INFORMATION                                                                                                                                                                                                                                                                |
|----------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          | side B |                                                                                                                                                                                                                                                                                        |
| Boyd     | 707    | Some recent activity on North Slope. Also there is a handout.<br>The slide is recent.<br>Two Oylors on Kuvlum are announced discoveries                                                                                                                                                |
|          | 760    | 2 wells in? Pedani? Capable of Production.<br>BP Cascade well south of Milvi Pt.                                                                                                                                                                                                       |
|          | 770    | Culville Delta - lots of Drilling                                                                                                                                                                                                                                                      |
| Roke     | 801    | Southerly Wells not successful                                                                                                                                                                                                                                                         |
| Boyd.    | 803    | Correct<br>Thrust fault. - Brooks Range. (Gas Prone)                                                                                                                                                                                                                                   |
|          | 823    | Cook Inlet: Sunfish ARCO thought they found a new field.<br>The 3-D survey did not look promising                                                                                                                                                                                      |
| Rokeberg | 850    | Gas well?                                                                                                                                                                                                                                                                              |
| Boyd.    | 851    | Don't know<br>- 2 sessions ago we came to get it to drill for "Coalbed Methane"<br>Ak has 1/2 the coal in the U.S.A.<br>877 Drilled the well & found that the coal has a high potential for coalbed <del>meth</del> methane.<br>900 C&A Coalbed Methane may be used in Rural villages. |
| Ogan     | 910    | His district: How extensive is the prospect of coal in the area?                                                                                                                                                                                                                       |
| Boyd.    | 919    | Very extensive. I will send you copies of the report.                                                                                                                                                                                                                                  |
| Ogan     | 934    | Make some new info on Coalbed Methane as well.                                                                                                                                                                                                                                         |

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SUBJECT: \_\_\_\_\_

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| SPEAKER  | TAPE#               | SIGNIFICANT INFORMATION                                                                                       |
|----------|---------------------|---------------------------------------------------------------------------------------------------------------|
| Roke     |                     |                                                                                                               |
| Boyd     | 945                 | Excellent Ques:                                                                                               |
|          |                     | The main question is who owns the gas. I don't know the answer to that.                                       |
|          | 958                 | What kind of well is a Coalbed Methane well.                                                                  |
|          | 970                 | This is not covered in statute.                                                                               |
|          | 980                 | Can't answer.                                                                                                 |
| Rokeberg | 982                 | The Coal Estates - Existing Leases                                                                            |
| Boyd.    | 985                 | I'm not familiar with that.                                                                                   |
|          | 996                 | The Big Lake Test.                                                                                            |
| Boyd.    | canter slip.<br>004 | The new oil & Gas leasing schedule, which shows the lease & sales that are planned.                           |
|          | 025                 | Cook Inlet Brokering sale in <del>late</del> October.                                                         |
|          |                     | These are basically "leftovers"                                                                               |
|          | 040                 | North Slope Sale. (Shaviovik)                                                                                 |
|          |                     | The sales are few, but large.                                                                                 |
|          | 060                 | Lease Sale Program has been very successful. We have offered sales in the interior, but no one is interested. |
|          | 078                 | License: Oil & Gas Exploration Licensing. North Slope & Cook Inlet are off limits to this.                    |
|          | 084                 | 10,000 acres to 500,000 acres for exploration.                                                                |
|          | 097                 | They are obligated to spend a certain dollar amount on exploration.                                           |
|          | 113                 | We are writing the regs. for this law.                                                                        |
|          | 120                 | Exploration incentive Credits: The commissioner is given a briefing on the Area.                              |

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| SPEAKER  | TAPE# | SIGNIFICANT INFORMATION                                              |
|----------|-------|----------------------------------------------------------------------|
| Boyd     | 132   | This is discretionary by the Commissioner.<br>Ex. \$100 per. foot.   |
|          | 144   | This is an extension of that Program.                                |
|          | 160   | The Program has a \$30 million dollar<br>Cap.                        |
| Rokeberg | 165   | <del>the</del> This was put in place.                                |
| Boyd.    | 170   | There are two programs. we are almost<br>done w/ the regs.           |
|          | 180   | Dialogue between Chairman Rokeberg.                                  |
| Ogaw     | 185   | The incentive Credit & Licence, are these<br>in house Regs. or Laws. |
| Boyd.    | 192   | These are laws. & we                                                 |
| Ogaw     | 197   | How long ago were they introduced.                                   |
| Boyd.    | 200   | The concept was set 3 yrs ago.<br>& Passed last session              |
| Roke     | 206   | Names of bills.                                                      |
| Boyd.    | 209   | <del>169</del> Gave bill #5                                          |
|          | 212   | ANWR                                                                 |
|          |       | Reduced impacts & Enhanced Environ protection.                       |
|          | 224   | Directional Drilling - Drill sights have gotten<br>smaller.          |
|          | 237   | Service areas & Gravel pads have disappeared.                        |
|          | 249   | The debris is ground & shot back into the<br>well.                   |
| Roke     | 250   | is that done at the well                                             |
| Boyd     | 251   | It depends / sometimes.                                              |
| Rokeberg | 263   | well in ANWR.                                                        |
| Boyd.    | 265   | The well is sealed. Very tight hole.<br>the well is in Katavuk.      |



### Producing Fields of Northern Alaska

| Status                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Years in Production | No. | Field Name            | Year of Discovery | Projected Ave. 1994 Daily Prod. (x1000 bbls/day) | Estimated Original Recov. Reserves | Cumulative Production Thru 1993 | Remaining Reserves As of 1/94 | Est. Ultimate Recovery As of 1/94 | Est. Percent Depleted As of 1/94 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----|-----------------------|-------------------|--------------------------------------------------|------------------------------------|---------------------------------|-------------------------------|-----------------------------------|----------------------------------|
| <b>Oil Production</b> (Millions of Barrels)                                                                                                                                                                                                                                                                                                                                                                                                                      |                     |     |                       |                   |                                                  |                                    |                                 |                               |                                   |                                  |
| P                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1969-present        | 1   | Prudhoe Bay           | 1967              | 1,078                                            | 9,590                              | 8,307                           | 3,618                         | 11,925                            | 69.7%                            |
| P                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1981-present        | 2   | Lisburne              | 1967              | 24                                               | 400                                | 98                              | 83                            | 181                               | 54.2%                            |
| P                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1981-present        | 3   | Kuparuk River         | 1969              | 315                                              | 1,200                              | 1,070                           | 1,142                         | 2,212                             | 48.4%                            |
| P                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1985-present (1)    | 4   | Milne Point (2)       | 1969              | 20                                               | 60                                 | 34                              | 81                            | 115                               | 29.5%                            |
| P                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1993-present        | 5   | Prudhoe Bay Other (3) | 1970, 1976        | 6                                                | 25                                 | 1                               | 25                            | 26                                | 3.2%                             |
| P                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1986-present        | 6   | Endicott (4)          | 1978              | 100                                              | 375                                | 243                             | 262                           | 505                               | 48.1%                            |
| P 4/94                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1994                | 7   | Niakuk (5)            | 1985              | 10                                               | 55                                 | 0                               | 55                            | 55                                | 0.0%                             |
| P                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1993-present        | 8   | Point McIntyre        | 1988              | 90                                               | 300                                | 2                               | 356                           | 358                               | 0.5%                             |
| <b>TOTALS:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                     |     |                       |                   |                                                  | <b>12,005</b>                      | <b>9,755</b>                    | <b>5,622</b>                  | <b>15,377</b>                     |                                  |
| <b>Gas Production</b> (Billions of Cubic Feet)                                                                                                                                                                                                                                                                                                                                                                                                                   |                     |     |                       |                   |                                                  |                                    |                                 |                               |                                   |                                  |
| P                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1958-present        | 1   | South Barrow          | 1949              | not available                                    | 25                                 | 21                              | 4                             | 25                                | 84.0%                            |
| P                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1969-present        | 2   | Prudhoe Bay           | 1967              | not available                                    | 28,500                             | 1,631                           | 21,551                        | 23,182                            | 7.0%                             |
| P                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1981-present        | 3   | Lisburne              | 1967              | not available                                    | 635                                | 70                              | 277                           | 347                               | 20.2%                            |
| P                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1981-present        | 4   | Kuparuk River         | 1969              | not available                                    | 640                                | 261                             | 709                           | 970                               | 26.9%                            |
| P                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1985-present (1)    | 5   | Milne Point (2), (6)  | 1969              | not available                                    | n/a                                | 9                               | n/a                           | n/a                               | n/a                              |
| P                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1981-present        | 6   | East Barrow           | 1974              | not available                                    | 12                                 | 7                               | 6                             | 13                                | 53.8%                            |
| P                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1993-present        | 7   | Prudhoe Bay Other (3) | 1976              | not available                                    | n/a                                | 1                               | n/a                           | n/a                               | n/a                              |
| P                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1986-present        | 8   | Endicott (4)          | 1978              | not available                                    | 731                                | 71                              | 908                           | 979                               | 7.3%                             |
| P                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1992-present        | 9   | Walakpa               | 1980              | not available                                    | n/a                                | 1                               | n/a                           | n/a                               | n/a                              |
| <b>TOTALS:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                     |     |                       |                   |                                                  | <b>30,543</b>                      | <b>2,072</b>                    | <b>23,455</b>                 | <b>25,516</b>                     |                                  |
| (1) Milne Point was shut in for 1988 and part of 1987<br>(2) Milne Point includes Schrader Bluff; Schrader Bluff production commenced in 1991<br>(3) includes West Beach and N. Prudhoe Bay State (discovered in 1970) together<br>(4) includes Sag Delta North; Sag Delta production commenced in 1989<br>(5) includes Alapah (Lisburne)<br>(6) Milne Pt. is assigned no gas reserves because most of its gas will be used for production fuel<br>P = producing |                     |     |                       |                   |                                                  |                                    |                                 |                               |                                   |                                  |
| Sources: "Historical and Projected Oil and Gas Consumption", DNR, Feb. 1994; "Estimates of Oil Reserves in Alaska" and "Estimates of Gas Reserves in Alaska", AOGCC, Jan. 1994                                                                                                                                                                                                                                                                                   |                     |     |                       |                   |                                                  |                                    |                                 |                               |                                   |                                  |

**Table 5. Producing fields of Northern Alaska, as of January 1994**

### Significant Undeveloped Northern Alaska Accumulations

| Status                                                                                                                                                                         | Years in Production | No. | Field Name            | Year of Discovery | Projected Ave. 1994 Daily Prod. (x1000 bbls/day) | Estimated Original Recov. Reserves | Cumulative Production Thru 1993 | Remaining Reserves As of 1/94 | Est. Ultimate Recovery As of 1/94 | Est. Percent Depleted As of 1/94 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----|-----------------------|-------------------|--------------------------------------------------|------------------------------------|---------------------------------|-------------------------------|-----------------------------------|----------------------------------|
| <b>Oil Accumulations</b>                                                                                                                                                       |                     |     |                       |                   | (Millions of Barrels)                            |                                    |                                 |                               |                                   |                                  |
| UD                                                                                                                                                                             | 1983-1986 (1)       | 1   | West Sak              | 1969              | 0                                                | 147                                | 0.755                           | 149                           | 150                               | 0.5%                             |
| UD                                                                                                                                                                             | none                | 2   | Point Thomson/Flaxman | 1977 (2)          | 0                                                | 200                                | 0                               | 200                           | 200                               | 0.0%                             |
| UD                                                                                                                                                                             | none                | 3   | Northstar/Seal Island | 1984              | 0                                                | 180                                | 0                               | 180                           | 180                               | 0.0%                             |
| <b>Gas Accumulations</b>                                                                                                                                                       |                     |     |                       |                   | (Billions of Cubic Feet)                         |                                    |                                 |                               |                                   |                                  |
| UD                                                                                                                                                                             | none                | 1   | Point Thomson/Flaxman | 1977              | 0                                                | 3,500                              | 0                               | 3,000                         | 3,000                             | 0.0%                             |
| <div>(1) West Sak Pilot Project</div> <div>(2) Flaxman Island accumulation discovered in 1975</div> <div>UD = undeveloped</div>                                                |                     |     |                       |                   |                                                  |                                    |                                 |                               |                                   |                                  |
| Sources: "Historical and Projected Oil and Gas Consumption", DNR, Feb. 1994; "Estimates of Oil Reserves in Alaska" and "Estimates of Gas Reserves in Alaska", AOGCC, Jan. 1994 |                     |     |                       |                   |                                                  |                                    |                                 |                               |                                   |                                  |

**Table 6.** Significant undeveloped Northern Alaska accumulations, as of January 1994

### Other Undeveloped Northern Alaska Discoveries

| No.                                                 | Field Name               | Year of Discovery | Estimated Original Recov. Reserves |
|-----------------------------------------------------|--------------------------|-------------------|------------------------------------|
| <b><i>Oil Discoveries (Millions of Barrels)</i></b> |                          |                   |                                    |
| 1                                                   | Umiat                    | 1946              | 50                                 |
| 2                                                   | Fish Creek               | 1949              | n/a                                |
| 3                                                   | Simpson                  | 1950              | 12                                 |
| 4                                                   | Mikkelson                | 1978              | n/a                                |
| 5                                                   | Gwydyr Bay               | 1981              | n/a                                |
| 6                                                   | Tern Island              | 1983              | n/a                                |
| 7                                                   | Hemi Springs             | 1984              | n/a                                |
| 8                                                   | Colville Delta           | 1985              | n/a                                |
| 9                                                   | Hammerhead               | 1986              | n/a                                |
| 10                                                  | Sandpiper Island         | 1986              | n/a                                |
| 11                                                  | Badami                   | 1990              | n/a                                |
| 12                                                  | Kuvlum                   | 1992              | n/a                                |
| 13                                                  | Fiord (Colville Delta)   | 1992              | n/a                                |
| 14                                                  | Kalubik (Colville Delta) | 1992              | n/a                                |
| 15                                                  | Cascade                  | 1993              | n/a                                |
| 16                                                  | Sourdough                | 1994              | n/a                                |

| No.                                                    | Field Name  | Year of Discovery | Estimated Original Recov. Reserves |
|--------------------------------------------------------|-------------|-------------------|------------------------------------|
| <b><i>Gas Discoveries (Billions of Cubic Feet)</i></b> |             |                   |                                    |
| 1                                                      | Meade       | 1950              | 20                                 |
| 2                                                      | Wolf Creek  | 1951              | n/a                                |
| 3                                                      | Gubik       | 1951              | 600                                |
| 4                                                      | Square Lake | 1952              | 58                                 |
| 5                                                      | East Umiat  | 1963              | n/a                                |
| 6                                                      | Kavik       | 1969              | n/a                                |
| 7                                                      | Kemik       | 1972              | n/a                                |

Table 7. Other undeveloped Northern Alaska discoveries, as of January 1994

### Producing Fields of Cook Inlet

| Status                                                                                                                                                                                                    | Years in Production | No. | Field Name              | Year of Discovery | Projected Ave. 1994 Daily Prod. (x1000 bbls/day) | Estimated Original Recov. Reserves | Cumulative Production Thru 1993 | Remaining Reserves As of 1/94 | Est. Ultimate Recovery As of 1/94 | Est. Percent Depleted As of 1/94 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----|-------------------------|-------------------|--------------------------------------------------|------------------------------------|---------------------------------|-------------------------------|-----------------------------------|----------------------------------|
| <b>Oil Production</b>                                                                                                                                                                                     |                     |     |                         |                   | <b>(Millions of Barrels)</b>                     |                                    |                                 |                               |                                   |                                  |
| P                                                                                                                                                                                                         | 1958-present        | 1   | Swanson River (federal) | 1957              | n/a                                              | 217                                | 219                             | 11                            | 230                               | 95.2%                            |
| P                                                                                                                                                                                                         | 1968-present        | 2   | Middle Ground Shoal     | 1962              | 6.1                                              | 162                                | 169                             | 16                            | 185                               | 91.3%                            |
| P                                                                                                                                                                                                         | 1967-present        | 3   | Granite Point           | 1965              | 6.2                                              | 126                                | 120                             | 14                            | 134                               | 89.6%                            |
| P                                                                                                                                                                                                         | 1967-present        | 4   | Trading Bay             | 1965              | 2.2                                              | 90                                 | 95                              | 6                             | 101                               | 94.0%                            |
| P                                                                                                                                                                                                         | 1965-present        | 5   | McArthur River          | 1965              | 17.9                                             | 574                                | 561                             | 42                            | 603                               | 93.0%                            |
| P                                                                                                                                                                                                         | 1972-present        | 6   | Beaver Creek (federal)  | 1965              | n/a                                              | 4                                  | 5                               | 1                             | 6                                 | 82.2%                            |
| P                                                                                                                                                                                                         | 1993-present        | 7   | West McArthur River     | 1991              | 2                                                | n/a                                | 0                               | 5                             | 5                                 | 2.0%                             |
| <b>TOTALS:</b>                                                                                                                                                                                            |                     |     |                         |                   |                                                  | <b>1,173</b>                       | <b>1,168</b>                    | <b>95</b>                     | <b>1,263</b>                      |                                  |
| <b>Net Gas Production</b>                                                                                                                                                                                 |                     |     |                         |                   | <b>(Billions of Cubic Feet)</b>                  |                                    |                                 |                               |                                   |                                  |
| P                                                                                                                                                                                                         | 1958-present        | 1   | Swanson River (federal) | 1957              | not available                                    | 259.000                            | 0.000                           | 165.000                       | 165.000                           | 0.0%                             |
| P                                                                                                                                                                                                         | 1960-present        | 2   | Kenai                   | 1959              | not available                                    | 2,496.000                          | 2,081.189                       | 204.000                       | 2,285.189                         | 91.1%                            |
| P                                                                                                                                                                                                         | 1978-present (a)    | 3   | West Fork               | 1960              | not available                                    | n/a                                | 4.049                           | 4.000                         | 8.049                             | 50.3%                            |
| P                                                                                                                                                                                                         | 1965-present        | 4   | Middle Ground Shoal     | 1962              | not available                                    | 86.000                             | 91.983                          | 11.000                        | 102.983                           | 89.3%                            |
| P                                                                                                                                                                                                         | 1969-present        | 5   | North Cook Inlet        | 1962              | not available                                    | 1,594.000                          | 1,089.657                       | 410.000                       | 1,499.657                         | 72.7%                            |
| P                                                                                                                                                                                                         | 1963-present (b)    | 6   | Beluga River            | 1962              | not available                                    | 1,003.000                          | 455.358                         | 375.000                       | 830.358                           | 54.8%                            |
| P                                                                                                                                                                                                         | 1967-present        | 7   | Granite Point           | 1965              | not available                                    | 105.000                            | 104.804                         | 33.000                        | 137.804                           | 76.1%                            |
| P                                                                                                                                                                                                         | 1965-present        | 8   | Trading Bay             | 1965              | not available                                    | 63.000                             | 69.564                          | 29.000                        | 98.564                            | 70.6%                            |
| P                                                                                                                                                                                                         | 1967-present        | 9   | McArthur River          | 1965              | not available                                    | 965.000                            | 617.615                         | 349.000                       | 966.615                           | 63.9%                            |
| P                                                                                                                                                                                                         | 1973-present        | 10  | Beaver Creek (federal)  | 1965              | not available                                    | 241.500                            | 127.176                         | 115.000                       | 242.176                           | 52.5%                            |
| P                                                                                                                                                                                                         | 1990-present        | 11  | Ivan River              | 1966              | not available                                    | n/a                                | 11.112                          | n/a                           | n/a                               | n/a                              |
| P                                                                                                                                                                                                         | 1984-present        | 12  | Lewis River             | 1975              | not available                                    | n/a                                | 8.157                           | n/a                           | n/a                               | n/a                              |
| P                                                                                                                                                                                                         | 1990-present        | 13  | Stump Lake              | 1978              | not available                                    | n/a                                | 4.464                           | 185 (c)                       | 194.302 (c)                       | 2.1% (c)                         |
| P                                                                                                                                                                                                         | 1986-present        | 14  | Pretty Creek            | 1979              | not available                                    | n/a                                | 4.838                           | (c)                           | (c)                               | (c)                              |
| P                                                                                                                                                                                                         | 1988-present        | 15  | Cannery Loop            | 1979              | not available                                    | 300.000                            | 65.726                          | 226.000                       | 291.726                           | 22.5%                            |
| P                                                                                                                                                                                                         | 1993-present        | 16  | West McArthur River     | 1991              | not available                                    | n/a                                | 0.031                           | n/a                           | n/a                               | n/a                              |
| <b>TOTALS:</b>                                                                                                                                                                                            |                     |     |                         |                   |                                                  | <b>7,112.500</b>                   | <b>4,735.723</b>                | <b>1,921.000</b>              | <b>6,628.121</b>                  |                                  |
| (a) West Fork was shut in from 1986 through 1990<br>(b) Beluga did not produce in 1965 and 1966<br>(c) Pretty Creek and Stump Lake remaining reserves and ultimate recovery are combined<br>P = producing |                     |     |                         |                   |                                                  |                                    |                                 |                               |                                   |                                  |

Sources: "Historical and Projected Oil and Gas Consumption", DNR, Feb. 1994; "Estimates of Oil Reserves in Alaska" and "Estimates of Gas Reserves in Alaska", AOGCC, Jan. 1994

**Table 8.** Producing fields of Cook Inlet, as of January 1994

### Other Known Cook Inlet (1) Accumulations

| Status                                                                                                                                                                         | Years in Production | No. | Field Name               | Year of Discovery | Projected Ave. 1994 Daily Prod. (x1000 bbls/day) | Estimated Original Recov. Reserves | Cumulative Production Thru 1993 | Remaining Reserves As of 1/94 | Est. Ultimate Recovery As of 1/94 | Est. Percent Depleted As of 1/94 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----|--------------------------|-------------------|--------------------------------------------------|------------------------------------|---------------------------------|-------------------------------|-----------------------------------|----------------------------------|
| <b>Oil Accumulations</b>                                                                                                                                                       |                     |     |                          |                   | (Millions of Barrels)                            |                                    |                                 |                               |                                   |                                  |
| ABND                                                                                                                                                                           | 1904-1933           | 1   | Katalla (Gulf of Alaska) | 1902              | 0                                                | n/a                                | 0.154                           | n/a                           | n/a                               | n/a                              |
| UD                                                                                                                                                                             | none                | 2   | Redoubt Shoal            | 1968              | 0                                                | n/a                                | 0.000                           | n/a                           | n/a                               | 0.0%                             |
| UD                                                                                                                                                                             | none                | 3   | Sunfish                  | 1991              | 0                                                | n/a                                | 0.000                           | 77.000                        | 77.000                            | 0.0%                             |
| <b>Gas Accumulations</b>                                                                                                                                                       |                     |     |                          |                   | (Billions of Cubic Feet)                         |                                    |                                 |                               |                                   |                                  |
| SI                                                                                                                                                                             | 1962-1986           | 1   | Sterling (2)             | 1961              | not available                                    | 25.100                             | 2.088                           | 23.000                        | 25.088                            | 8.3%                             |
| UD                                                                                                                                                                             | none                | 2   | Falls Creek              | 1961              | not available                                    | n/a                                | 0.019                           | 13.000                        | 13.019                            | 0.1%                             |
| UD                                                                                                                                                                             | none                | 3   | West Foreland            | 1962              | not available                                    | n/a                                | 0.000                           | 20.000                        | 20.000                            | 0.0%                             |
| UD                                                                                                                                                                             | none                | 4   | North Fork               | 1965              | not available                                    | n/a                                | 0.105                           | 12.000                        | 12.105                            | 0.9%                             |
| SI                                                                                                                                                                             | 1968-1977           | 5   | Nicolai Creek            | 1966              | not available                                    | n/a                                | 1.062                           | 2.000                         | 3.062                             | 34.7%                            |
| UD                                                                                                                                                                             | none                | 6   | Birch Hill               | 1967              | not available                                    | 11.000                             | 0.065                           | 11.000                        | 11.065                            | 0.6%                             |
| SI                                                                                                                                                                             | 1967-1970           | 7   | Moquawkie                | 1965              | not available                                    | n/a                                | 0.985                           | n/a                           | n/a                               | n/a                              |
| UD                                                                                                                                                                             | none                | 8   | Albert Kaloa             | 1968              | not available                                    | n/a                                | 0.119                           | n/a                           | n/a                               | n/a                              |
| <p>(1) Includes Katalla, onshore in the Gulf of Alaska<br/> (2) Sterling Field has been shut in since 1987<br/> ABND = abandoned<br/> UD = undeveloped<br/> SI = shut-in</p>   |                     |     |                          |                   |                                                  |                                    |                                 |                               |                                   |                                  |
| Sources: "Historical and Projected Oil and Gas Consumption", DNR, Feb. 1994; "Estimates of Oil Reserves in Alaska" and "Estimates of Gas Reserves in Alaska", AOGCC, Jan. 1994 |                     |     |                          |                   |                                                  |                                    |                                 |                               |                                   |                                  |

**Table 9.** Other known Cook Inlet accumulations, as of January 1994

**COMPLETE LISTING OF ALL ALASKA DISCOVERIES**

| No.                    | Field/Accumulation       | Discovery Date | Fluid Type(s) | Status | No.                                                                                                                                                                                                                                                                                            | Field/Accumulation       | Discovery Date | Fluid Type(s) | Status |
|------------------------|--------------------------|----------------|---------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|----------------|---------------|--------|
| <b>Northern Alaska</b> |                          |                |               |        | <b>Cook Inlet</b>                                                                                                                                                                                                                                                                              |                          |                |               |        |
| 1                      | Prudhoe Bay              | 1967           | Oil, Gas      | P      | 40                                                                                                                                                                                                                                                                                             | Swanson River            | 1957           | Oil, Gas      | P      |
| 2                      | Lisburne                 | 1967           | Oil, Gas      | P      | 41                                                                                                                                                                                                                                                                                             | Middle Ground Shoal      | 1962           | Oil, Gas      | P      |
| 3                      | Kuparuk River            | 1969           | Oil, Gas      | P      | 42                                                                                                                                                                                                                                                                                             | Granite Point            | 1965           | Oil, Gas      | P      |
| 4                      | Milne Point              | 1969           | Oil, Gas      | P      | 43                                                                                                                                                                                                                                                                                             | Trading Bay              | 1965           | Oil, Gas      | P      |
| 5                      | Prud. Bay - West Beach   | 1976           | Oil, Gas      | P      | 44                                                                                                                                                                                                                                                                                             | McArthur River           | 1965           | Oil, Gas      | P      |
| 6                      | Prud. Bay - N. PB St.    | 1970           | Oil, Gas      | P      | 45                                                                                                                                                                                                                                                                                             | Beaver Creek             | 1965           | Oil, Gas      | P      |
| 7                      | Endicott                 | 1978           | Oil, Gas      | P      | 46                                                                                                                                                                                                                                                                                             | West McArthur River      | 1991           | Oil, Gas      | P      |
| 8                      | Niakuk                   | 1985           | Oil           | P      | 47                                                                                                                                                                                                                                                                                             | Kenai                    | 1959           | Gas           | P      |
| 9                      | Point McIntyre           | 1988           | Oil, Gas      | P      | 48                                                                                                                                                                                                                                                                                             | West Fork                | 1960           | Gas           | P      |
| 10                     | South Barrow             | 1949           | Gas           | P      | 49                                                                                                                                                                                                                                                                                             | North Cook Inlet         | 1962           | Gas           | P      |
| 11                     | East Barrow              | 1974           | Gas           | P      | 50                                                                                                                                                                                                                                                                                             | Beluga River             | 1962           | Gas           | P      |
| 12                     | Walakpa                  | 1980           | Gas           | P      | 51                                                                                                                                                                                                                                                                                             | Ivan River               | 1966           | Gas           | P      |
| 13                     | West Sak                 | 1969           | Oil           | UD     | 52                                                                                                                                                                                                                                                                                             | Lewis River              | 1975           | Gas           | P      |
| 14                     | Point Thomson            | 1977           | Oil, Gas      | UD     | 53                                                                                                                                                                                                                                                                                             | Stump Lake               | 1978           | Gas           | P      |
| 15                     | Northstar/Seal Island    | 1984           | Oil           | UD     | 54                                                                                                                                                                                                                                                                                             | Pretty Creek             | 1979           | Gas           | P      |
| 16                     | Flaxman Island           | 1975           | Oil           | UD     | 55                                                                                                                                                                                                                                                                                             | Cannery Loop             | 1979           | Gas           | P      |
| 17                     | Umiat                    | 1946           | Oil           | UD     | 56                                                                                                                                                                                                                                                                                             | Katalla (Gulf of Alaska) | 1902           | Oil           | ABND   |
| 18                     | Fish Creek               | 1949           | Oil           | UD     | 57                                                                                                                                                                                                                                                                                             | Redoubt Shoal            | 1968           | Oil           | UD     |
| 19                     | Simpson                  | 1950           | Oil           | UD     | 58                                                                                                                                                                                                                                                                                             | Sunfish                  | 1991           | Oil           | UD     |
| 20                     | Mikkelson                | 1978           | Oil           | UD     | 59                                                                                                                                                                                                                                                                                             | Sterling                 | 1961           | Gas           | SI     |
| 21                     | Gwydyr Bay               | 1981           | Oil           | UD     | 60                                                                                                                                                                                                                                                                                             | Falls Creek              | 1961           | Gas           | UD     |
| 22                     | Tern Island              | 1983           | Oil           | UD     | 61                                                                                                                                                                                                                                                                                             | West Foreland            | 1962           | Gas           | UD     |
| 23                     | Hemi Springs             | 1984           | Oil           | UD     | 62                                                                                                                                                                                                                                                                                             | North Fork               | 1965           | Gas           | UD     |
| 24                     | Colville Delta           | 1985           | Oil           | UD     | 63                                                                                                                                                                                                                                                                                             | Nicolai Creek            | 1966           | Gas           | SI     |
| 25                     | Hammerhead               | 1986           | Oil           | UD     | 64                                                                                                                                                                                                                                                                                             | Birch Hill               | 1967           | Gas           | UD     |
| 26                     | Sandpiper Island         | 1986           | Oil           | UD     | 65                                                                                                                                                                                                                                                                                             | Moquawkie                | 1965           | Gas           | SI     |
| 27                     | Badami                   | 1990           | Oil           | UD     | 66                                                                                                                                                                                                                                                                                             | Albert Kaloa             | 1968           | Gas           | UD     |
| 28                     | Kuvlum                   | 1992           | Oil           | UD     | <p align="center"><b>Abbreviations</b></p> <div> <p>P = producing</p> <p>UD = undeveloped</p> <p>SI = shut-in</p> <p>ABND = abandoned</p> <p> = discovered prior to competitive leasing, 12/59</p> </div> |                          |                |               |        |
| 29                     | Fiord (Colville Delta)   | 1992           | Oil           | UD     |                                                                                                                                                                                                                                                                                                |                          |                |               |        |
| 30                     | Kalubik (Colville Delta) | 1992           | Oil           | UD     |                                                                                                                                                                                                                                                                                                |                          |                |               |        |
| 31                     | Cascade                  | 1993           | Oil           | UD     |                                                                                                                                                                                                                                                                                                |                          |                |               |        |
| 32                     | Sourdough                | 1994           | n/a           | UD     |                                                                                                                                                                                                                                                                                                |                          |                |               |        |
| 33                     | Meade                    | 1950           | Gas           | UD     |                                                                                                                                                                                                                                                                                                |                          |                |               |        |
| 34                     | Wolf Creek               | 1951           | Gas           | UD     |                                                                                                                                                                                                                                                                                                |                          |                |               |        |
| 35                     | Gubik                    | 1951           | Gas           | UD     |                                                                                                                                                                                                                                                                                                |                          |                |               |        |
| 36                     | Square Lake              | 1952           | Gas           | UD     |                                                                                                                                                                                                                                                                                                |                          |                |               |        |
| 37                     | East Umiat               | 1963           | Gas           | UD     |                                                                                                                                                                                                                                                                                                |                          |                |               |        |
| 38                     | Kavik                    | 1969           | Gas           | UD     |                                                                                                                                                                                                                                                                                                |                          |                |               |        |
| 39                     | Kemik                    | 1972           | Gas           | UD     |                                                                                                                                                                                                                                                                                                |                          |                |               |        |

**Table 10.** Complete listing of all Alaska discoveries

# **Evolution of Petroleum Development Technology on Alaska's North Slope...**

## ***Reduced Impacts and Enhanced Environmental Protection***

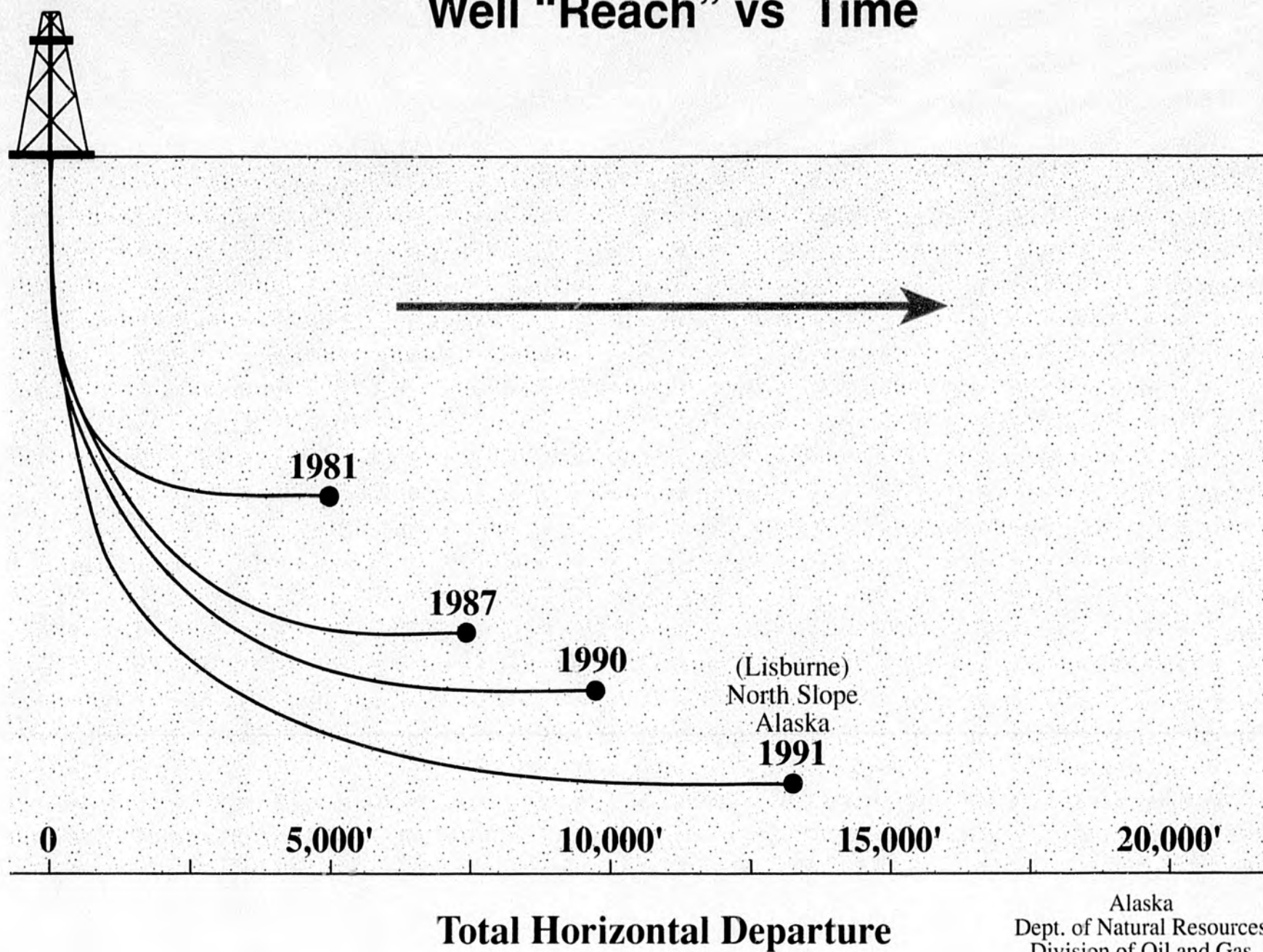


Alaska Department of  
**NATURAL  
RESOURCES**  
Division of Oil and Gas  
July 1993

## **FOLLOWING 20 YEARS OF DEVELOPMENT EXPERIENCE ON THE NORTH SLOPE:**

- **SPACING BETWEEN WELLHEADS—REDUCED 91%**
- **SURFACE AREA OF GRAVEL DEVELOPMENT PADS— REDUCED 76%**
- **SURFACE AREA FOR CONTRACTOR SERVICE AREA— REDUCED 95%**
- **GRAVEL ROADS FOR PIPELINE CONSTRUCTION— ELIMINATED**
- **ICE PADS USED IN LIEU OF GRAVEL PADS FOR EXPLORATORY WELLS**
- **UNDERGROUND INJECTION FOR DISPOSAL OF DRILLING FLUIDS**
- **DESIGN AND PERMITTING OF CENTRALIZED WASTE MANAGEMENT FACILITIES — 95% RECYCLING OF ALL ASSOCIATED WASTES**
- **FEWER DRILL SITES NEEDED DUE TO ADVANCES IN DIRECTIONAL DRILLING**
- **RESERVE PITS ELIMINATED OR NEEDED ONLY ON A TEMPORARY BASIS**

## Well "Reach" vs Time

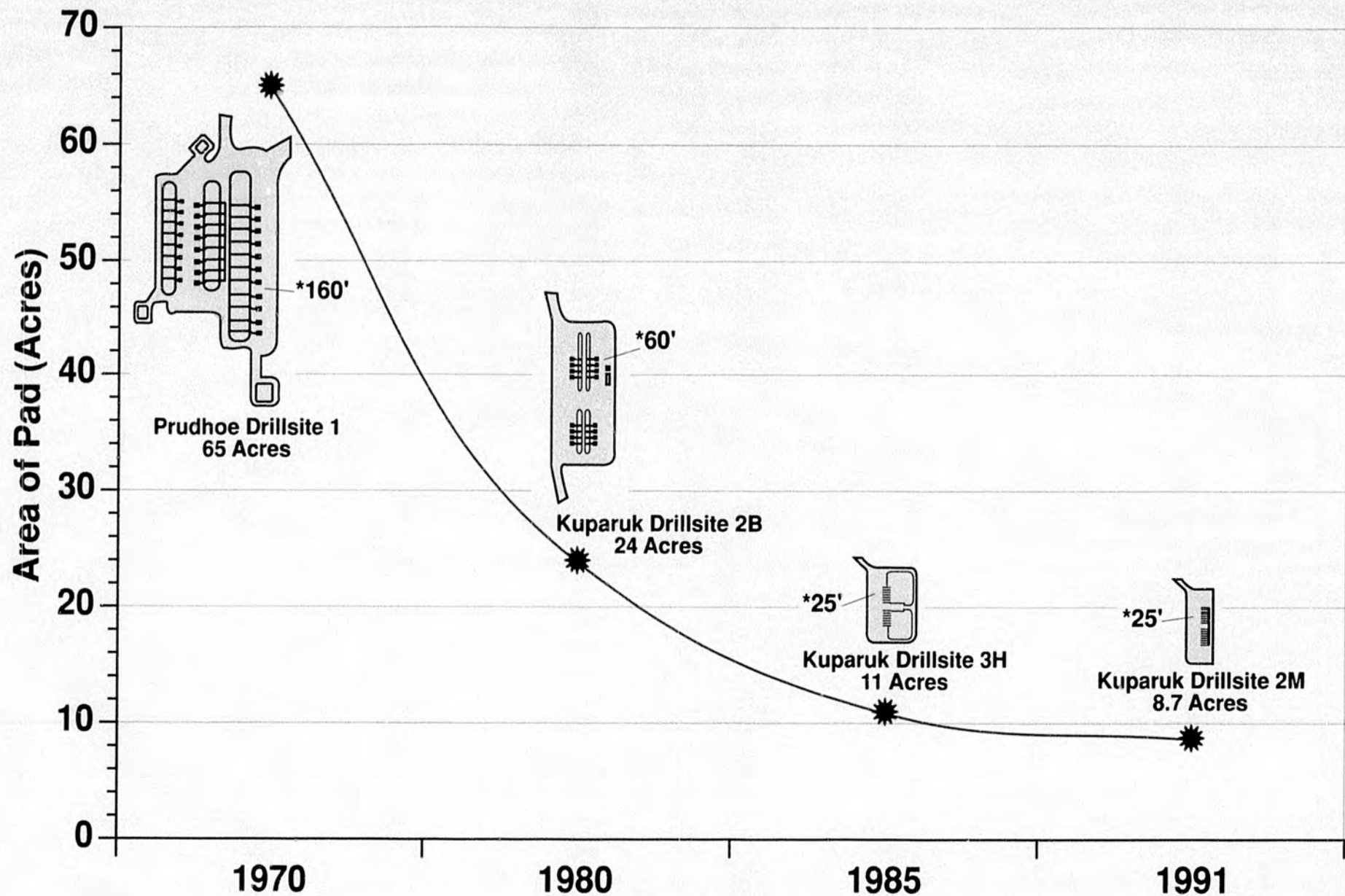


(Lisburne)  
North Slope  
Alaska

Total Horizontal Departure

Alaska  
Dept. of Natural Resources  
Division of Oil and Gas  
8-29-91

# Evolving Consolidation of North Slope Production Pad Size



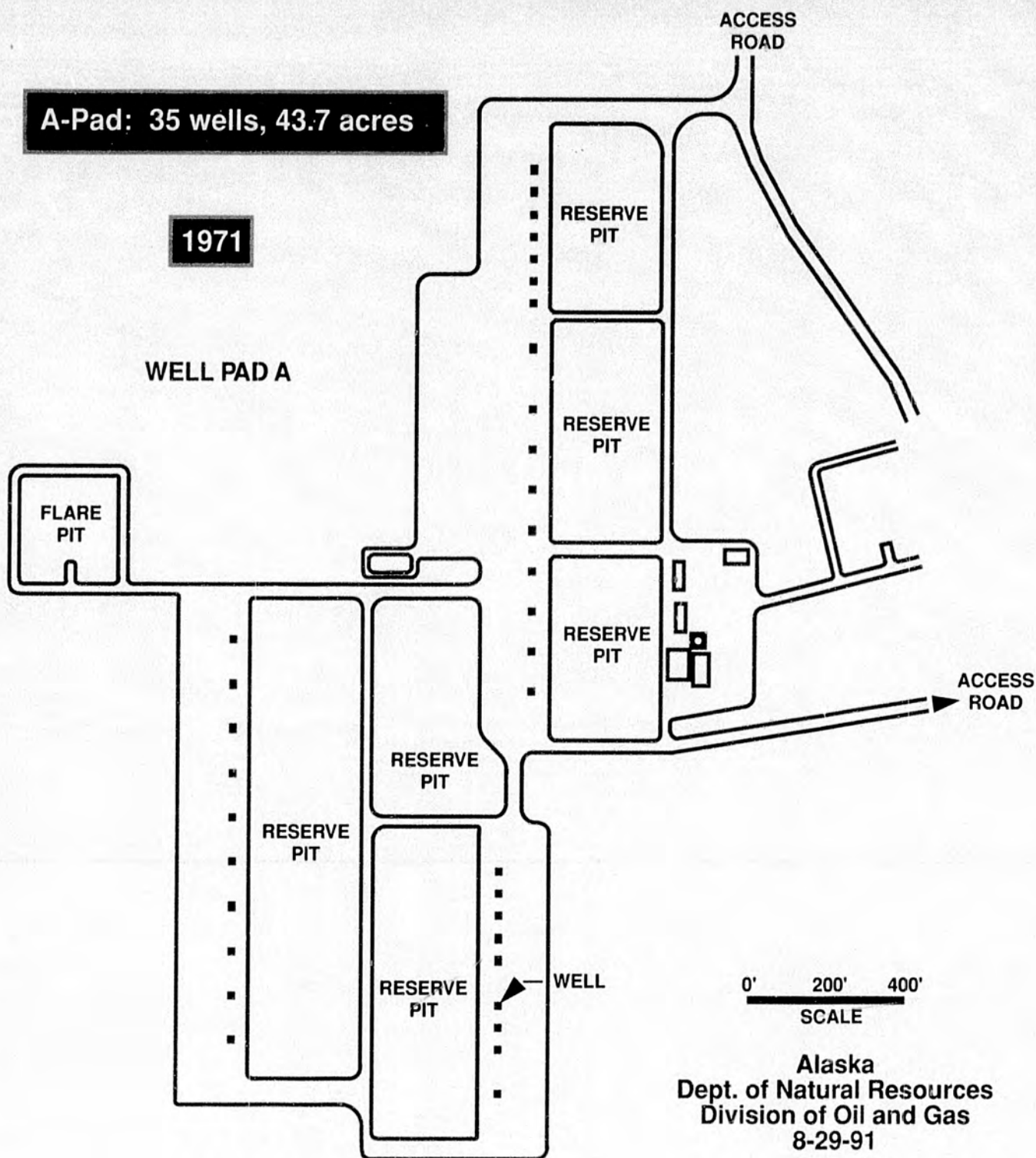
\*Well Spacing

Alaska  
Dept. of Natural Resources  
Division of Oil and Gas  
8-27-91

**A-Pad: 35 wells, 43.7 acres**

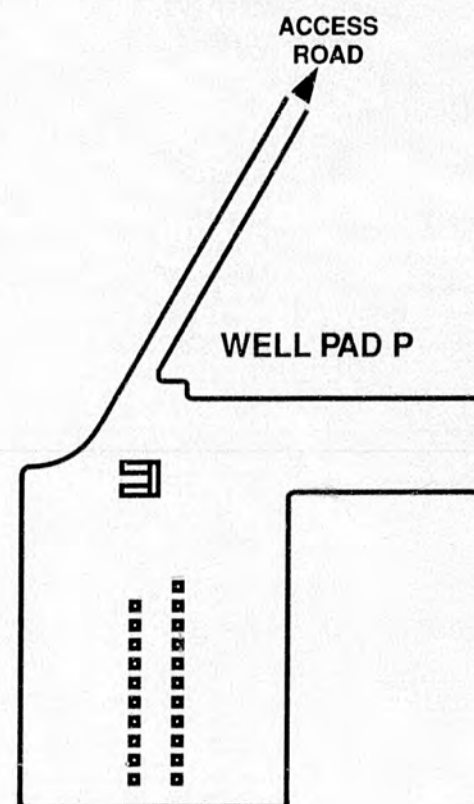
**1971**

WELL PAD A



**P-Pad: 21 wells, 10.5 acres**

**1989**

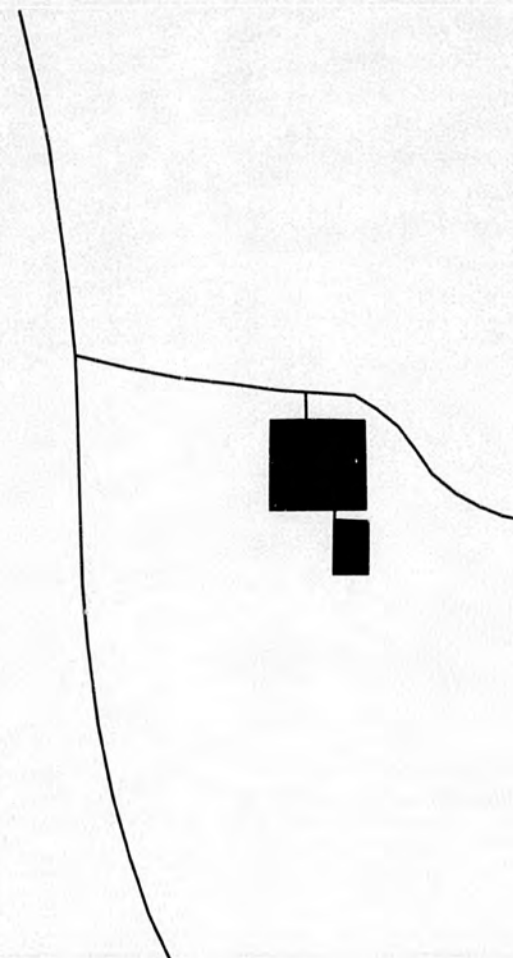
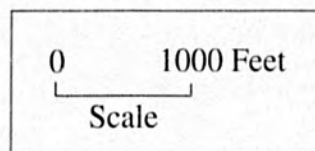
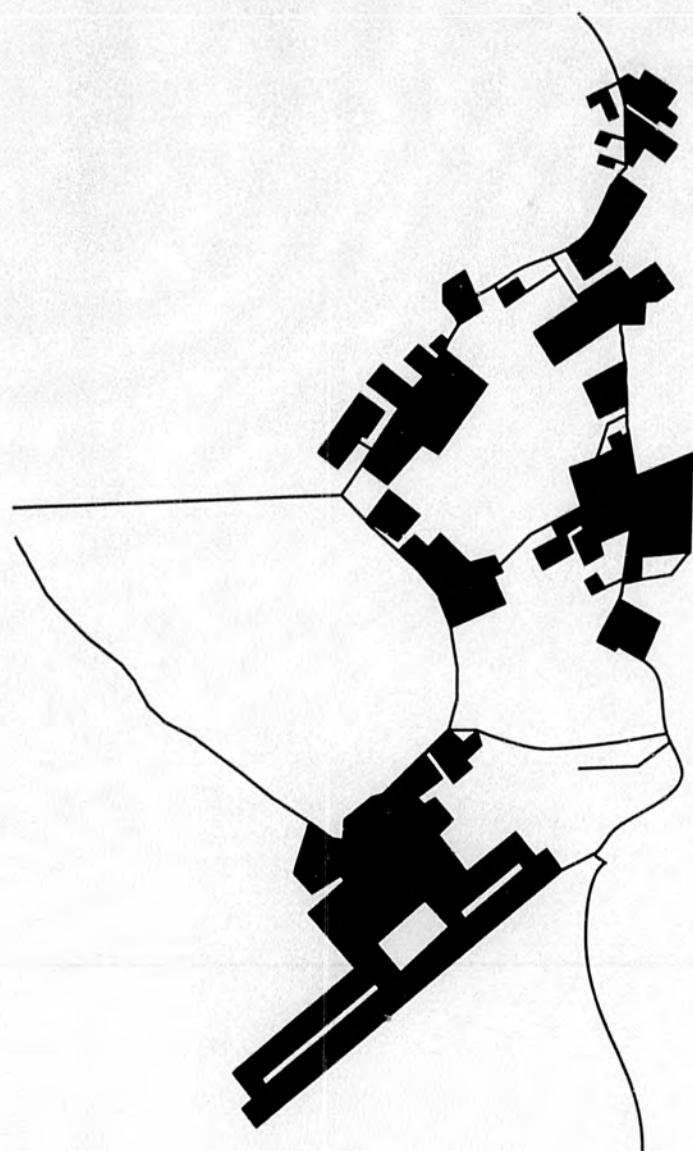


0' 200' 400'  
SCALE

Alaska  
Dept. of Natural Resources  
Division of Oil and Gas  
8-29-91

## Deadhorse Service Area

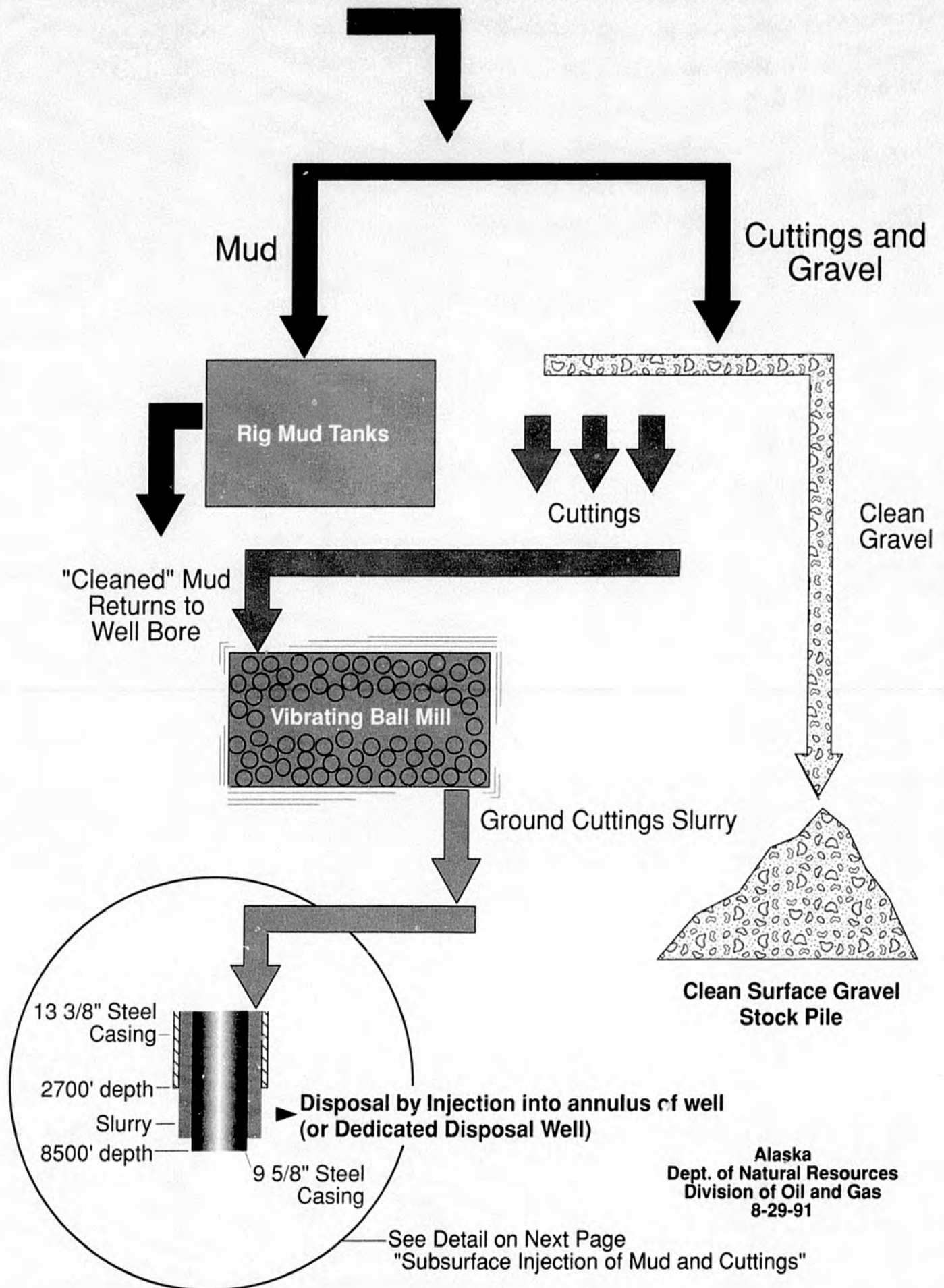
## Conceptual ANWR Service Center



*Service facilities for the Prudhoe Bay oil fields are located at Deadhorse. These buildings are situated on 1,050 acres. Satellite service facilities at ANWR could be located on only 55 acres, as was done for the Kuparuk oil field.*

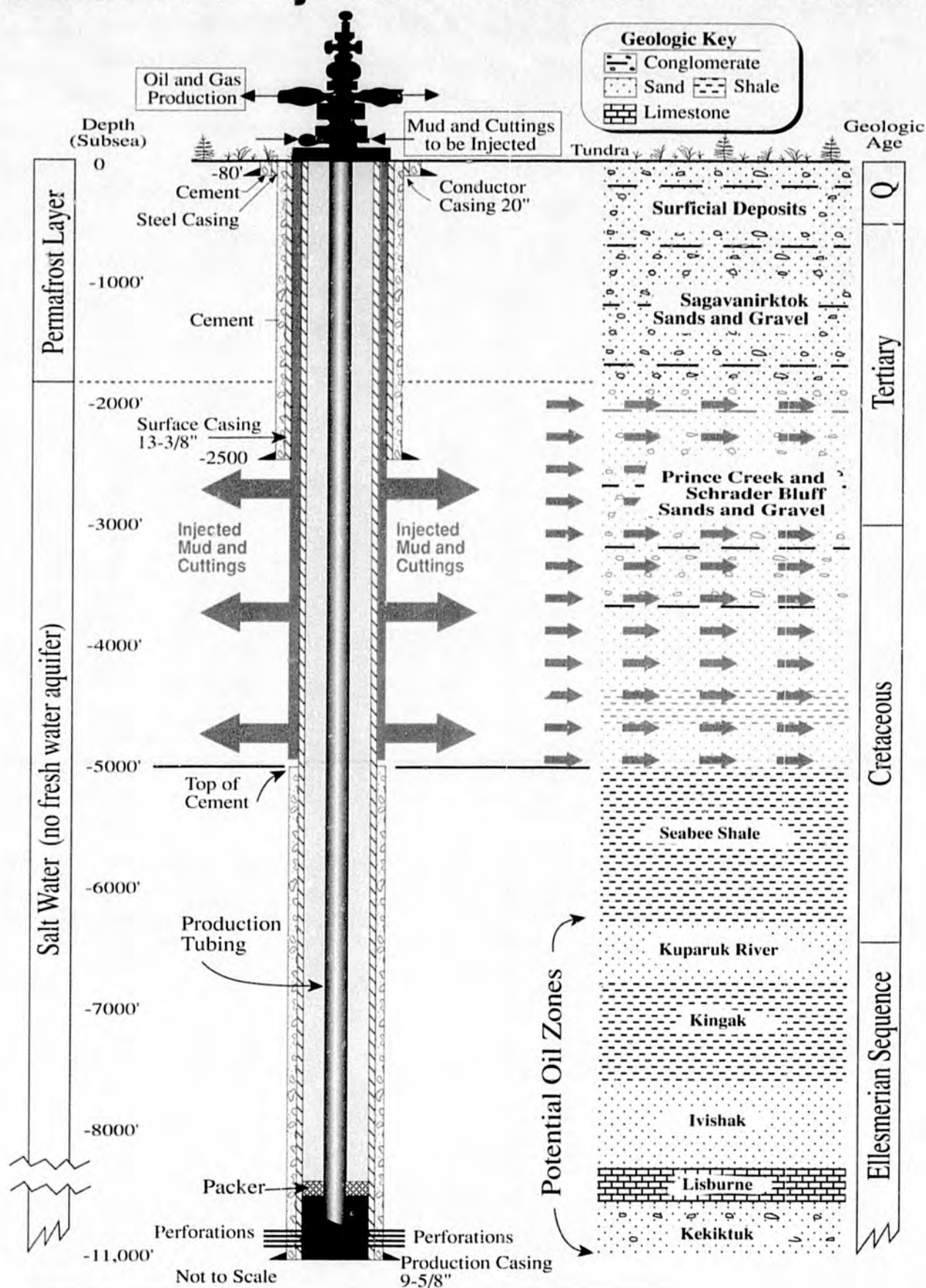
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7-5-93

# Mud, Cuttings and Gravel from Well



Alaska  
Dept. of Natural Resources  
Division of Oil and Gas  
8-29-91

# Subsurface Injection of Mud and Cuttings

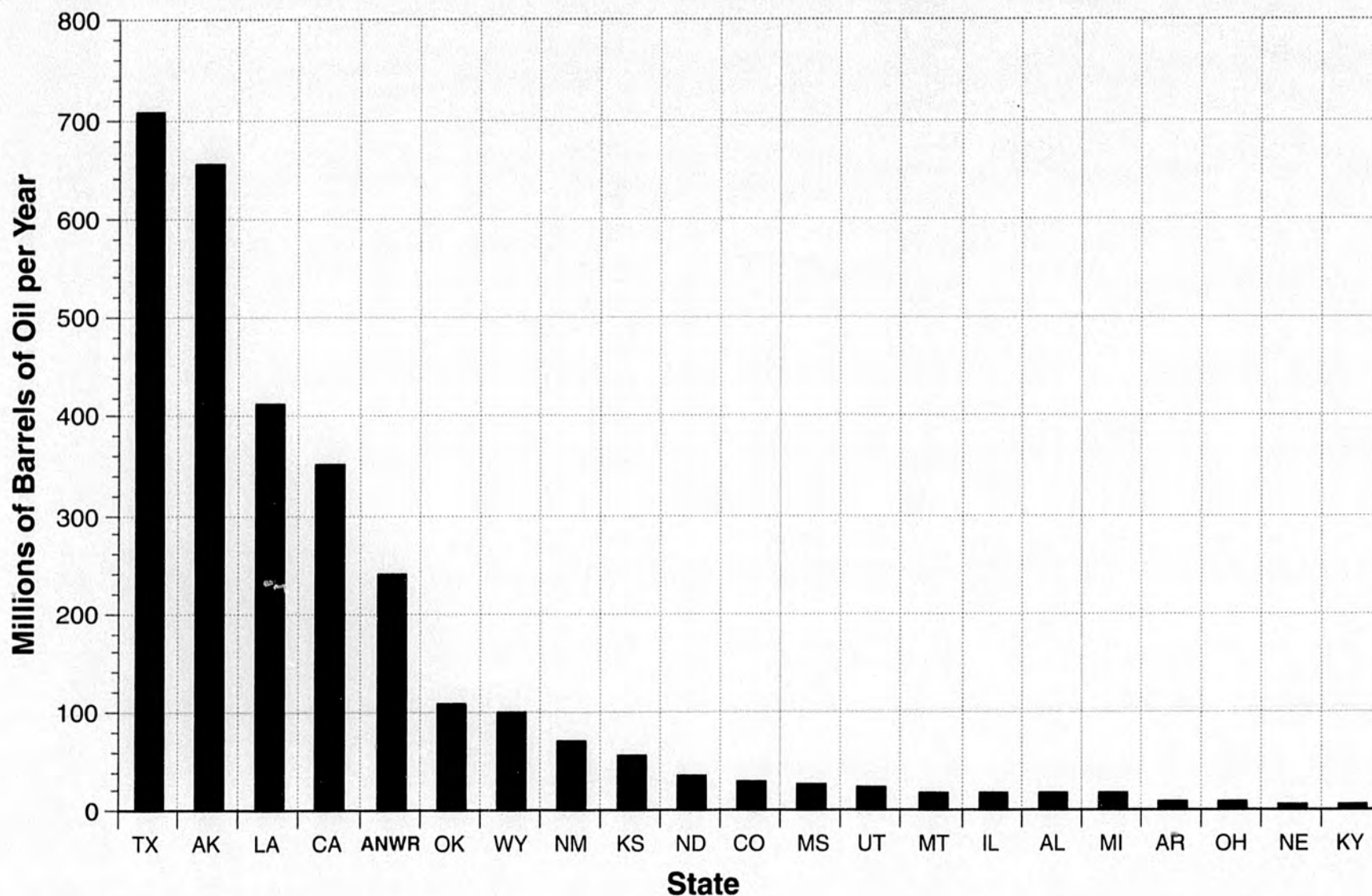


## Please Note:

1. When injection phase is completed, the 9-5/8" X 13-3/8" annular space is pumped full of cement and permanently sealed.
2. In the Kuparuk River Unit the surface casing is set through the West Sak interval (to approximately -4000 ss).

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8-29-91

## Top Twenty Oil Producing States and ANWR



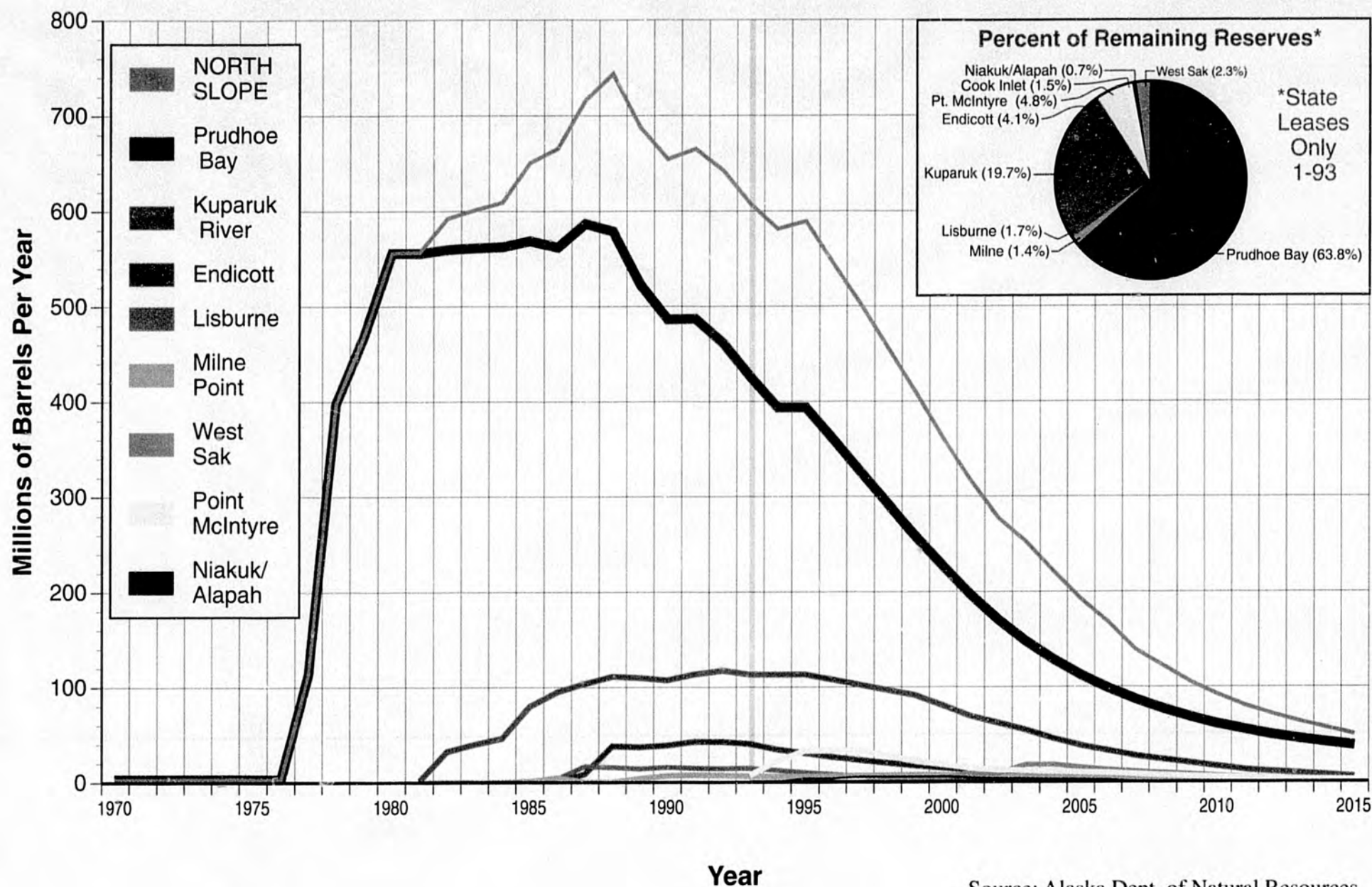
State figures reflect 1991 production.

ANWR figure assumes peak production from mean value economic field.

(Source: Department of Interior)

Alaska Department of Natural Resources  
Division of Oil & Gas July 5, 1993

# North Slope Historical & Projected Oil Production



Source: Alaska Dept. of Natural Resources  
Div. of Oil & Gas January 29, 1993

**Summary of Recent Discoveries**  
**and Proposed New Exploration Drilling**

An Informational Update for the Alaska State Legislature  
Prepared by the Division of Oil and Gas

James E. Eason, Director  
February 6, 1995

This brief report summarizes significant, recent (1993 and 1994) oil and gas activity in Alaska. It includes data on recent discoveries, specifics on the start-up of production from new pools, and information about proposed, new exploration/delineation drilling ventures. It should be noted that exploration activity is a "moving target"; new developments can occur quickly, conditions can change, and what is proposed today may be different tomorrow. In that regard, not all permitted exploration wells are discussed here, but rather just those that appear -- at this writing -- to have the greatest likelihood of going forward in 1995. Further, much of the information surrounding these ventures is highly sensitive and confidential, and as such, the Division cannot provide any specifics on such topics as the size of new accumulations, the potential commerciality, or others. **No confidential information is included in this report.**

**Executive Summary**

Two new oil discoveries were announced in Alaska in 1993 and 1994. Both of these discoveries were made by BP on North Slope state leases. These discoveries are the BP Sourdough #2, located within the Point Thomson Unit close to ANWR, and the Cascade #1 and 1A located 6.5 miles southeast of the Milne Point Field. Delineation wells drilled during 1993 on ARCO's eastern Beaufort Sea Kuvlum discovery and ARCO/Phillips 1991 Sunfish produced disappointing results. Based on delineation drilling and new 3-D seismic data, ARCO now believes that neither discovery is commercial on a stand alone basis. Following the 1992 Kalubik #1 and Fiord #1 discoveries, five new exploration/delineation wells were drilled in the Colville Delta area by ARCO during the 1993 and 1994 drilling seasons. The results of these wells have not been made public. ARCO has permitted five additional well locations in the western Colville River area and will probably drill two or three of these locations in 1995. BP plans up to two delineation wells on the 1991 Badami discovery, located along the Beaufort Sea coast west of the Point Thomson Unit. At this time, the first of these delineation wells, Badami #5, is just underway.

During 1993-94 production was initiated on four new North Slope oil fields near or within the Prudhoe Bay unit. The West Beach and Point McIntyre fields began initial production in 1993, followed by Niakuk and North Prudhoe Bay in 1994. Recent and

planned facilities modification and delineation/development drilling in the Milne Point field are expected to more than double the rate of production (currently about 20,000 bbl. of oil per day) at the field by 1997.

### **New Discoveries**

#### **Cascade Discovery**

BP Cascade #1 discovery well was completed as an oil well on March 14, 1993 and immediately followed by a successful delineation side-track (the Cascade #1A). The Cascade discovery is located approximately 6.5 miles southeast of the Milne Point Field. Cascade #1 tested oil at a sustained rate of 1,720 barrels of oil per day from the Kuparuk Formation. Other oil bearing zones were encountered but not tested. The #1A side-track confirmed the discovery. BP has indicated that the discovery is an accumulation similar in size to BP's Niakuk field, which contains about 50 million barrels of recoverable oil. BP plans to produce the Cascade discovery through its production facilities at the Milne Point Field.

#### **Sourdough #2 Discovery**

BP Sourdough #2 (the #1 location has not yet been drilled) was completed on April 27, 1994 to a total measured depth of 12,600 feet (12,562 tvd). It is located within the southeastern segment of the Point Thomson Unit. In June, the state certified Sourdough No. 2 capable of producing in paying quantities, but no other details have been announced by either the state or BP.

### **Results of Delineation Drilling on Recent Discoveries**

#### **Sunfish Reserve Estimates Decreased**

ARCO currently believes that the Sunfish discovery is too small to support stand-alone development. The #1 Sunfish discovery well was drilled on state acreage in northern Cook Inlet and was reported by ARCO in October 1991 to have flowed 41 degree API gravity oil at the rate of 1,100 barrels of oil per day with one million cu ft of gas per day from the "Sunfish sand" of the Tyonek Formation. ARCO completed the first delineation well, the North Foreland State No. 1, about 1.5 miles south and slightly west of the discovery well on November 20, 1992. It confirmed the Tyonek pay zone at the discovery well and also tested two new producing zones, one in the "North Foreland sands" and the other in deeper Hemlock Conglomerate, producing at a combined flow rate of 3,610 bbls of oil and three million cu ft of gas daily.

In January 1993, ARCO and Phillips acquired about 128,000 acres around the discovery in State Oil and Gas Lease Sale 76 for bids totaling about \$66 million. Prior to the sale the two companies held about 63,000 acres in the area. In October of 1993 Phillips completed the third test (# 2 Sunfish) of the prospect from the North Cook Inlet "A"

production platform. This well was drilled 2 miles to the northwest of the discovery well and failed to encounter oil. Two additional ARCO wells completed in December of 1993 to the south of the discovery well ( #2 & #3 SCI State) failed to find commercial hydrocarbons. The last Sunfish evaluation well (#3 Sunfish) was drilled to the north of the discovery well. The well was completed on April 2, 1994 and tested 412 bbl of oil per day from the Sunfish sand but failed to encounter the North Foreland sand objective. In September 1994, ARCO announced that it would not develop the Sunfish discovery, stating that the wells and 3-D seismic data indicated that Sunfish was not commercial for the company on a stand-alone basis. ARCO reported that it would not conduct any more exploration or delineation activities on the prospect.

### **Kuvlum Discovery Determined to be Non-Commercial**

ARCO currently believes that its Kuvlum discovery is too small to be commercial as a stand-alone development. The Kuvlum #1 discovery well was completed in the eastern Beaufort Sea in October 1992. The well flowed 3,400 barrels of oil per day of 34 API gravity oil and 2.04 million cubic feet of gas per day from an undisclosed interval above 8,500 feet, and ARCO indicated it could produce oil at rates in excess of 10,000 barrels per day. The discovery is located on the 35,000 acre Kuvlum prospect joint participation area and is about 16 miles offshore and about 64 miles east of Pump Station 1 (PS-1) (total distance to PS-1 is about 80 miles). In 1993 ARCO drilled two delineation wells and a step-out exploration well in the vicinity of the Kuvlum discovery. Kuvlum #2 was completed in September 1993 at a location about 3.5 miles west of the discovery and confirmed the producing reservoir tested in the discovery well. Kuvlum #3 was completed in October 1993 at a location one mile north of the discovery and encountered hydrocarbons, but not a commercial quality reservoir. #1 OCS Y-1597 (Wild Weasel) was completed as a dry hole on November 9, 1993 at a location approximately 7 miles to the south south-west of Kuvlum #1. The well was plugged based on log analysis.

### **Western Colville Delta Area Evaluation Still Ongoing**

Following the 1992 Fiord and Kalubik discoveries, ARCO and Union Texas Petroleum are continuing their evaluation of the Colville Delta area of the North Slope. Fiord #1 tested an average flow rate of 1,065 barrels of oil per day of 32 degree API gravity from one interval and had an average flow rate of 180 barrels of oil per day of 26 degree API gravity oil after hydraulic fracturing from a second interval. Kalubik #1 flowed at an average rate of 1,200 barrels of oil per day of 26 degree API gravity oil. A second interval, after hydraulic fracturing, had an average flow rate of 410 barrels of oil per day of 21 degree API gravity. During 1993 ARCO drilled three exploration wells in the area, Till #1, Colville River #1, and Kuukpik #3. During 1994 ARCO drilled two additional wells, Bergshrund #1 and Fiord #2. No details have been released on the results of these five wells. ARCO has announced five additional Colville Delta area prospects and plans to drill two of these locations in 1995. The Alpine #1 is just underway at the time of this writing.

### **Further Evaluation of the Badami Discovery Planned for 1995**

BP has announced plans to drill up to two delineation wells on the 1990 Badami discovery. The Conoco Badami #1 discovery well was drilled from an onshore surface location to an offshore bottom-hole location in Mikkelsen Bay, about 25 miles east of Prudhoe Bay field. The discovery well flowed oil at a sustained rate of 4,250 bbls per day, and 1.2 million cubic feet per day of gas through a 24/64-inch choke, apparently from the Seabee Formation. A second well, the Conoco Badami #2, drilled in 1992 at a location four miles to the northwest of the discovery, also tested oil. BP acquired Conoco's interest in the Badami property in an exchange of assets in 1993.

BP has stated that the Badami prospect could contain up to 100 million bbls of recoverable oil and 100 billion cubic ft of gas and plans to drill up to two delineation wells in 1995. Badami is located about 36 miles from Pump Station No. 1 and approximately 20 miles southeast of production in the BP operated Endicott field. At the time of this writing, the first of two planned 1995 delineation wells, Badami #5, is just underway.

### **Other 1993-1994 Exploration Wells**

Seven other exploration wells were drilled on the North Slope in 1993-1994. In 1993, the ARCO Jones Island #1, ARCO Tulaga #1, and the Exxon Thetis Island #1, were drilled on state leases, and the ARCO Big Bend #1 was drilled on Arctic Slope Regional Corporation land. In 1994, the BP Yukon Gold #1, UNOCAL Amethyst State #1 and Amerada Hess Northstar #3 were completed on state leases. No details have been released on the results of these seven wells.

### **State Funded Coalbed Methane Evaluation Corehole Drilled in the Northern Cook Inlet Basin**

In 1994, the State of Alaska funded a 1,245 ft deep core hole to sample Tyonek Formation coals from northern Cook Inlet Basin. This analysis program was designed and run by the Division of Oil and Gas for the purpose of the acquiring key baseline information on the prospectivity of Alaska's abundant subsurface coal resources for coalbed methane production. The core hole (AK-94CBM-1) was drilled between the towns of Palmer and Houston and near roads and gas pipelines. Due to cost constraints, the drilling program was designed solely to acquire coal samples for analysis from relatively shallow depths. Results from analysis of the sampled coal indicate that the tested Tyonek coals have good potential for coalbed methane production and are similar in character and quality to those which are currently being produced for gas in the western US.

## **New Production and Field Expansion**

### **Point McIntyre Field Production Start-Up**

Production was initiated from the Point McIntyre Field on October 13, 1993. The Point McIntyre field was discovered in 1989 and is located at the northern edge of the Prudhoe Bay Unit. The field currently contains 41 wells and ultimately an additional 19-39 development wells are planned. As of November 1994 the field had produced approximately 41 million barrels of oil, and is currently producing at a rate of 119,000 bbl. of oil per day. It is anticipated that the field will produce at an average production rate of 110,000-115,000 barrels of oil per day through 1995. Point McIntyre oil is processed through the Lisburne Production Center. The field had an initial estimated 307 million barrels of recoverable oil in the Kuparuk River Formation and is owned by ARCO, Exxon, and BP.

### **Milne Point Field Expansion**

Milne Point field was discovered by Conoco in 1969 and produces at an average daily rate of about 20,000 barrels from the shallow Schrader Bluff sand and deeper Kuparuk sand intervals. In 1993 BP acquired all of Conoco's Alaskan assets, including a 64-percent interest in Milne Point and its related facilities. In a separate deal BP acquired Chevron's 27-percent interest in the field for a total interest of 91-percent. Occidental holds the remaining 9-percent.

The field covers about 71,000 acres and contains about 41 producers and 21 injection wells. BP has begun a major development project at Milne involving a \$30 million facilities upgrade designed to increase production capacity from 30,000 to 50,000 barrels per day. BP anticipates that a 10-well development drilling program will be completed in the Milne Point Unit by year end. The goal is to raise the daily production to about 50,000 barrels by 1997. The development and expansion project will involve bringing accumulations at Cascade and NW Milne Point on line, as well as additional production from the Schrader Bluff.

### **Niakuk Field Begins Initial Production**

Production began from BP's (100%) Niakuk field on April 12, 1994. The field was discovered in 1985 and contains about 54 million barrels of recoverable oil. The field is being directionally drilled from a development pad at Heald Point, northeast of Prudhoe Bay. Published production figures (November, 1994) indicate that production is averaging 8700 barrels of oil per day. BP expects to ramp up production to about 25,000 barrels per day at peak production from about 14 wells in mid-1995. ARCO plans to drill a 1995 delineation well to the west of the Niakuk Participating Area in an effort to determine if the pool extends onto ARCO owned acreage.

### **North Prudhoe Bay #3 and West Beach #4 Production**

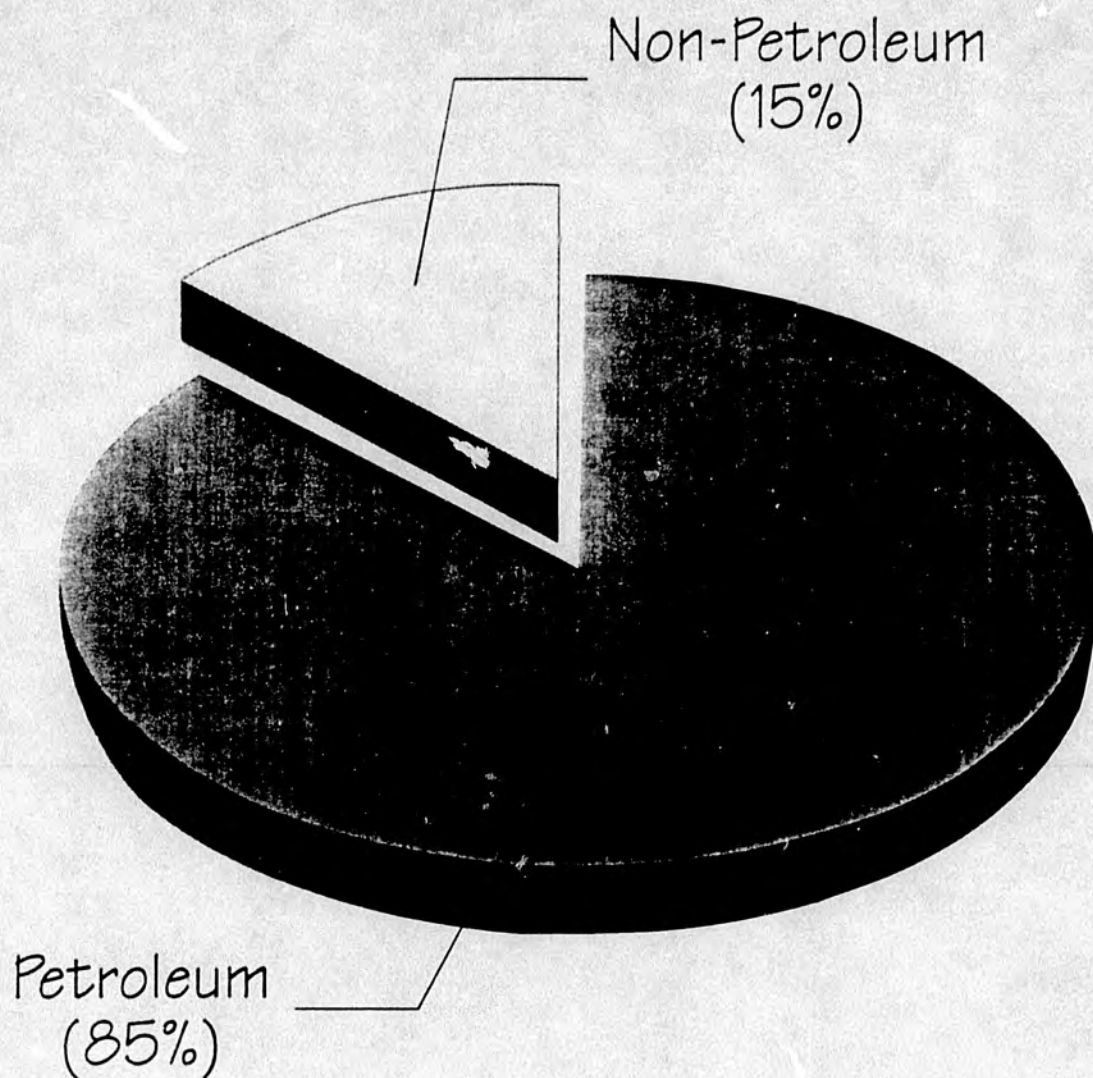
Two, single well production, oil accumulations began producing oil in 1993-1994. Both wells, North Prudhoe Bay #3 and West Beach #4 are located within the Prudhoe Bay Unit. ARCO North Prudhoe Bay State No. 3 was completed on April 15, 1993 and as of November 1994 the well was producing approximately 3,300 bbl of oil per day from the Ivishak Formation. The surface location of the well is on the West Beach drilling pad, from which ARCO also drilled West Beach #4. West Beach #4 began production from the Kuparuk Formation in April 1993 and, as of October 1994, was producing approximately 1,500 bbl of oil per day. ARCO and Exxon each hold a 50-percent interest in North Prudhoe and West Beach.

ARCO estimates the North Prudhoe Ivishak accumulation to be comparable in size to the West Beach Kuparuk accumulation, which contains about 10-65 million barrels of recoverable oil and 10-56 billion cubic feet of gas. Production is being commingled with oil from Point McIntyre, Niakuk and West Beach, and processed through the Lisburne Production Facility.

### **BP Purchases Majority Interest in the Northstar Unit**

In early 1995 BP acquired an 81% interest in the North Slope's Northstar Unit from Amerada Hess. The purchase price was not disclosed. The company is currently negotiating with Shell Western E&P Inc. and Murphy Exploration to obtain the remaining 19% outstanding interest. The Northstar Unit is located approximately 10 miles east of the Milne Point Field. BP estimates that the Northstar Unit contains 100-200 million barrels of recoverable oil. The unit contains six wells, four of which are considered by BP to be commercially viable. Within the unit, oil is present both within the Kuparuk and Sadlerochit formations.

# Where Our Money Comes From



## Major Sources of Income (FY94):

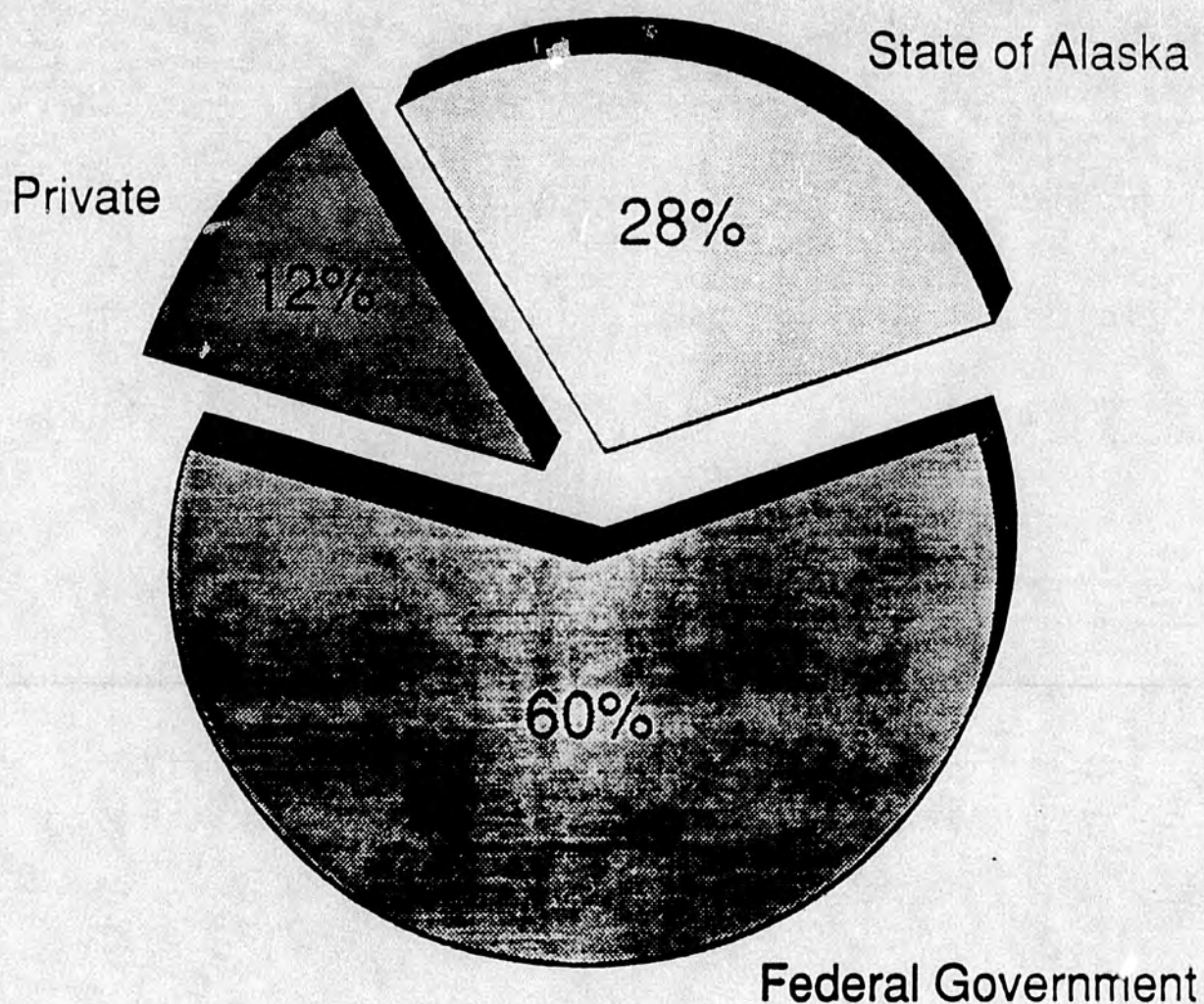
|            |               |
|------------|---------------|
| BONUS:     | \$1.2 Million |
| RENTS:     | \$7.8 Million |
| ROYALTIES: | \$696 Million |
| TAXES:     | \$727 Million |

# ALASKA:

586,000 square miles

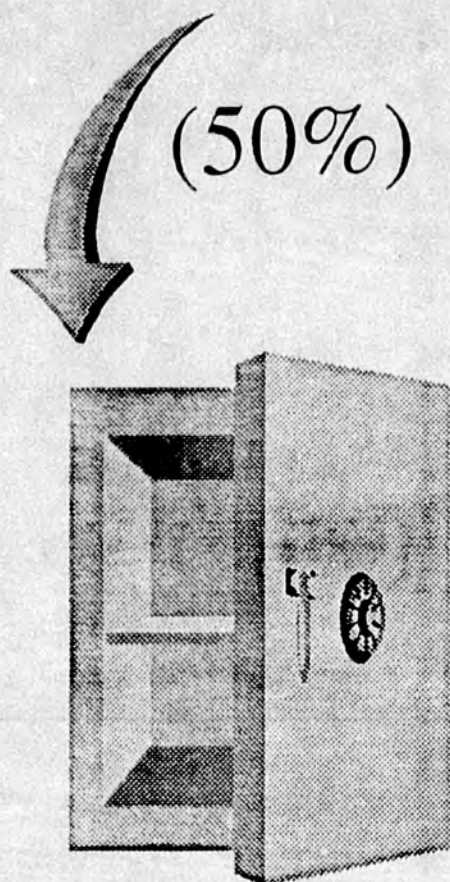
1.52 million square kilometers

375 million acres



Majority of known petroleum reserves are on state-owned lands  
About 25% of proven U.S. oil reserves are located in Alaska

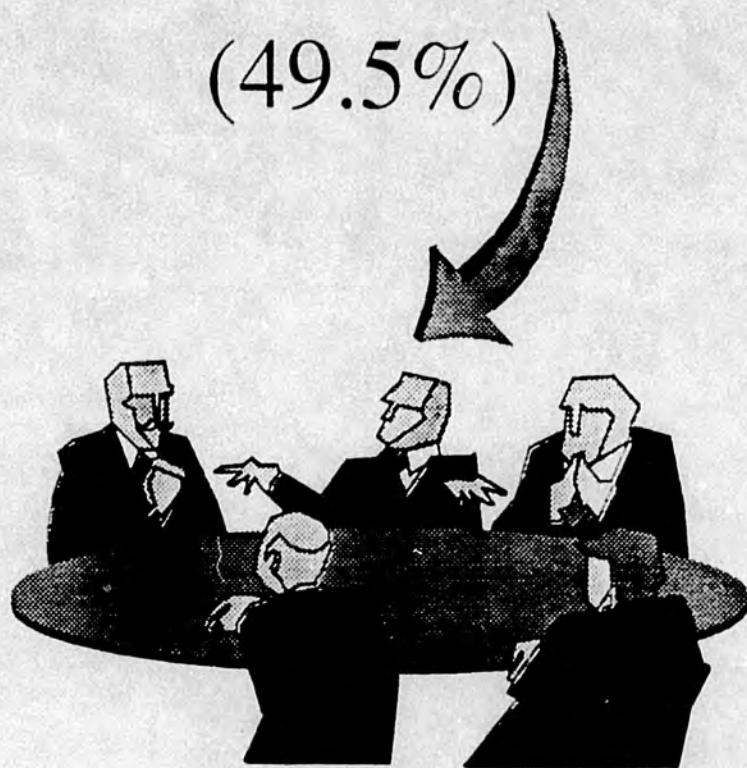
# Where Our Money Goes



(50%)

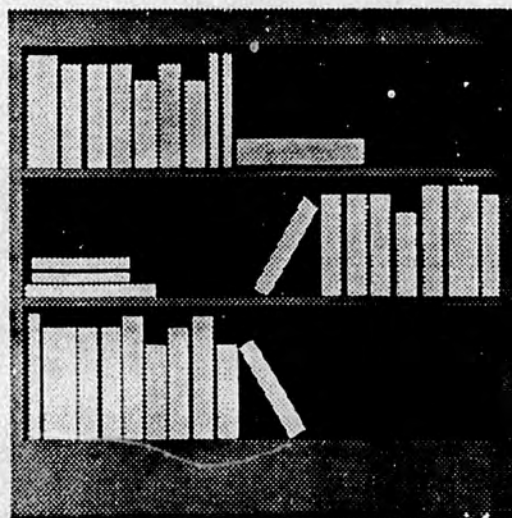
Permanent Fund  
(Savings)

Schools



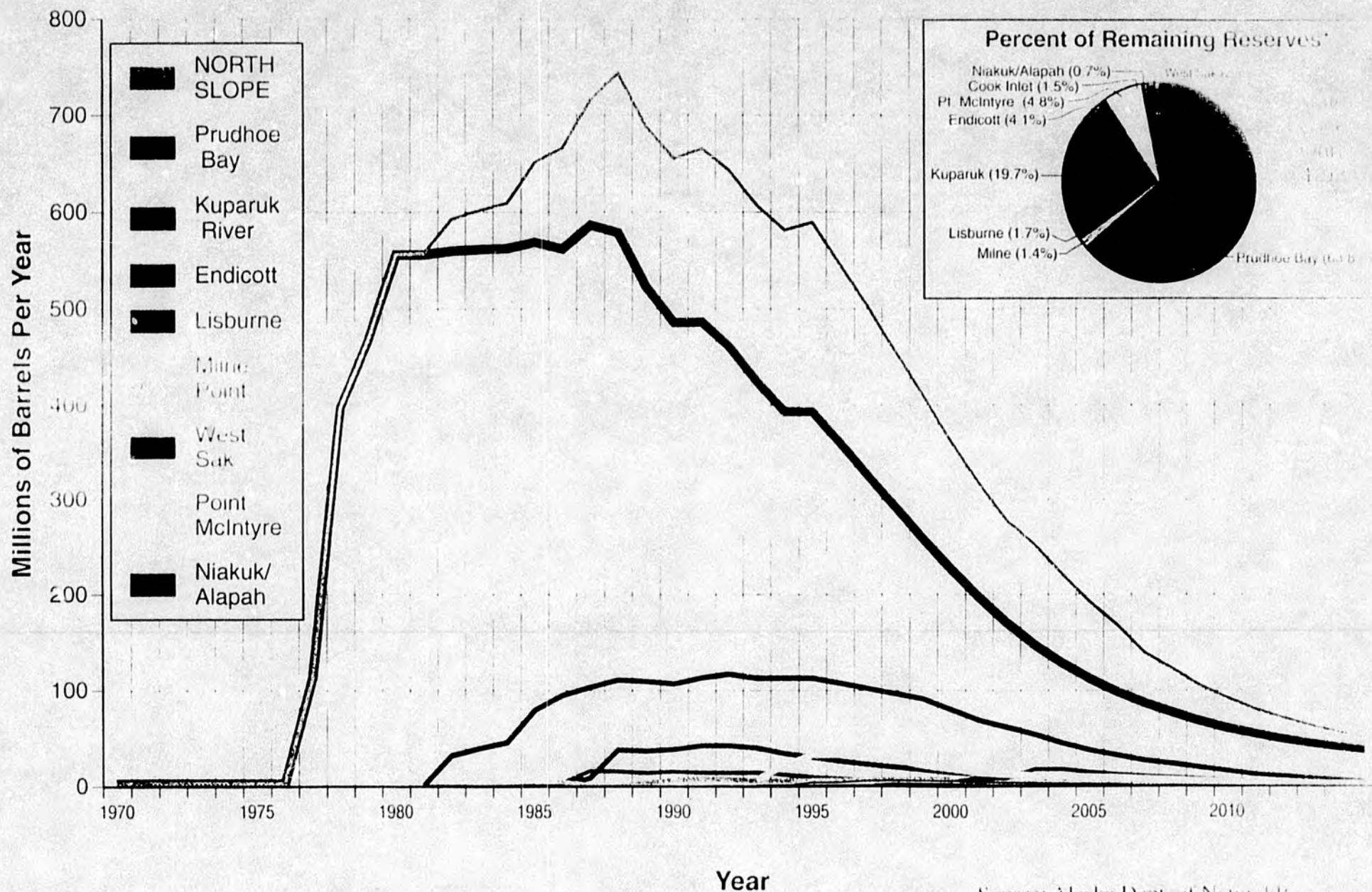
(49.5%)

General Fund  
(Spending)

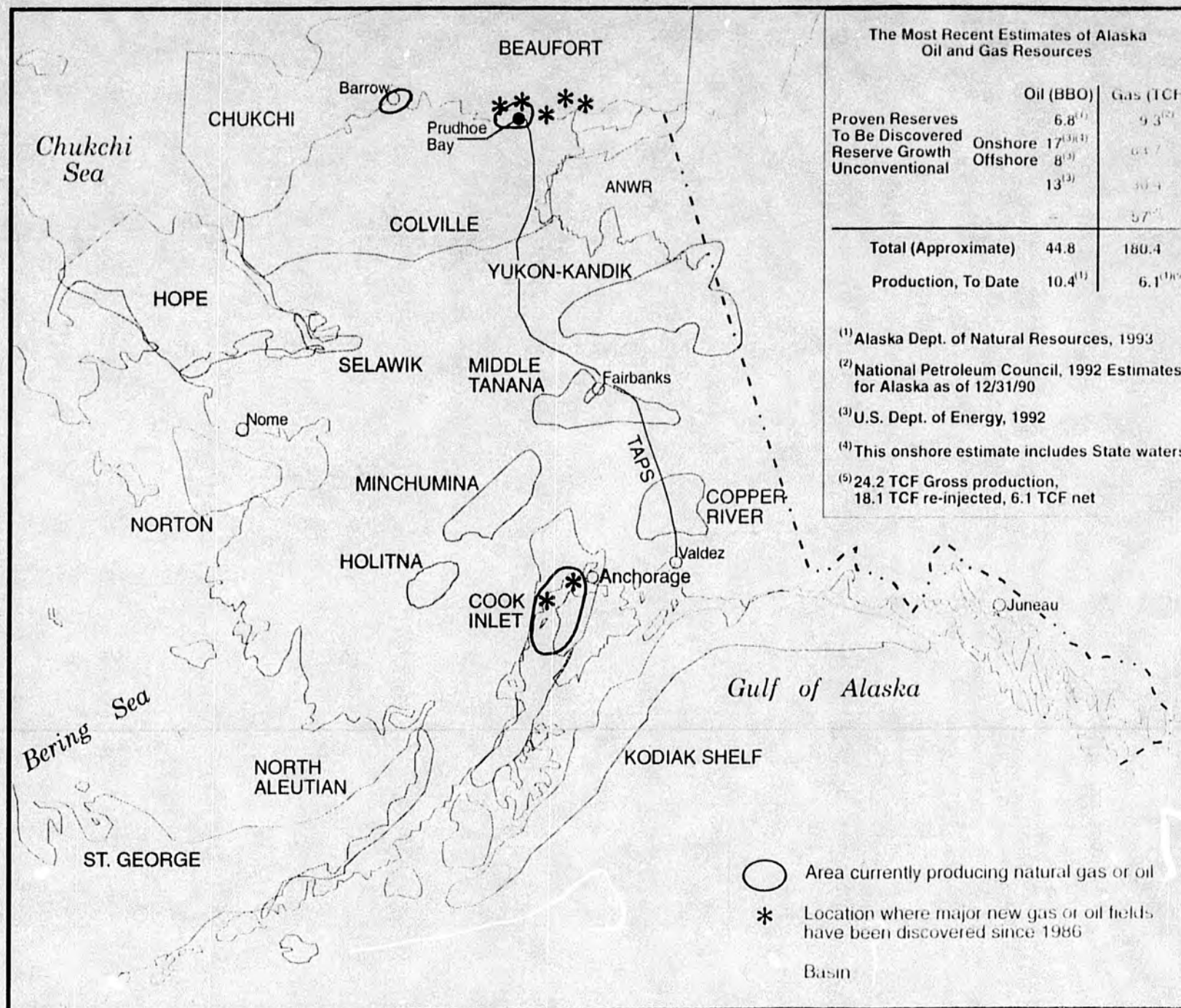


(.5%)

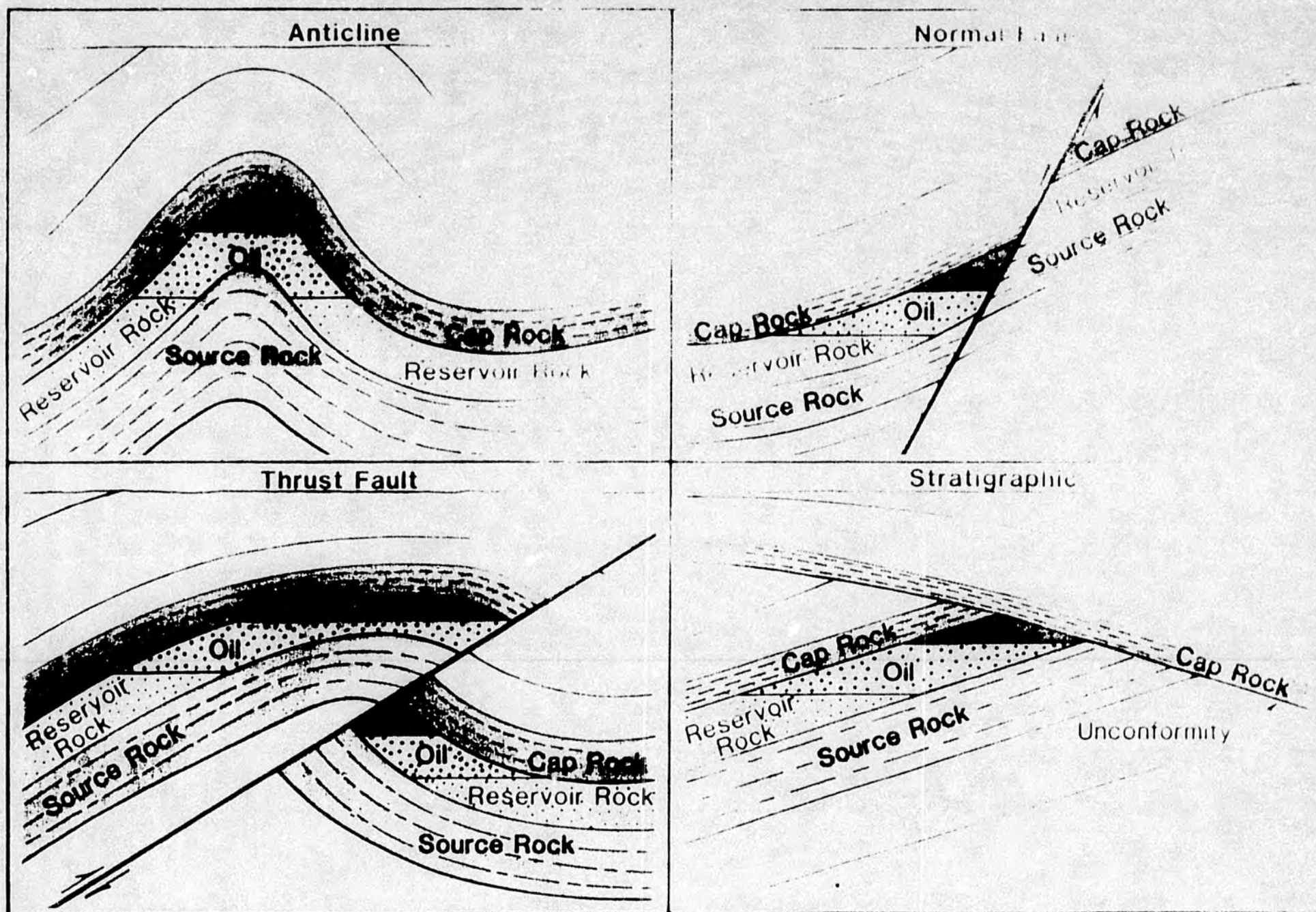
# North Slope Historical & Projected Oil Production



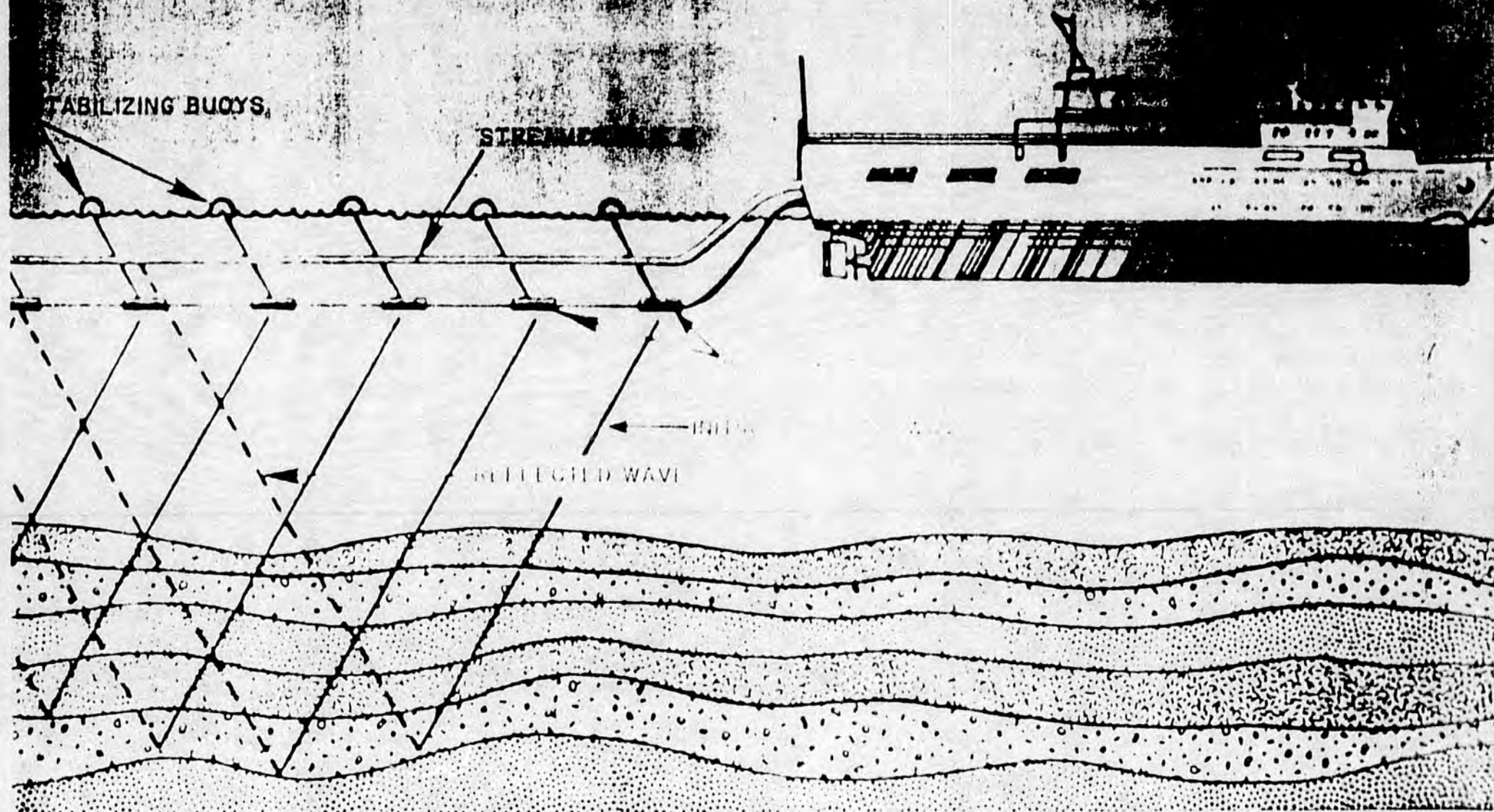
Source: Alaska Dept. of Natural Resources  
Div. of Oil & Gas January 20, 1997



## TRAPPING MECHANISMS

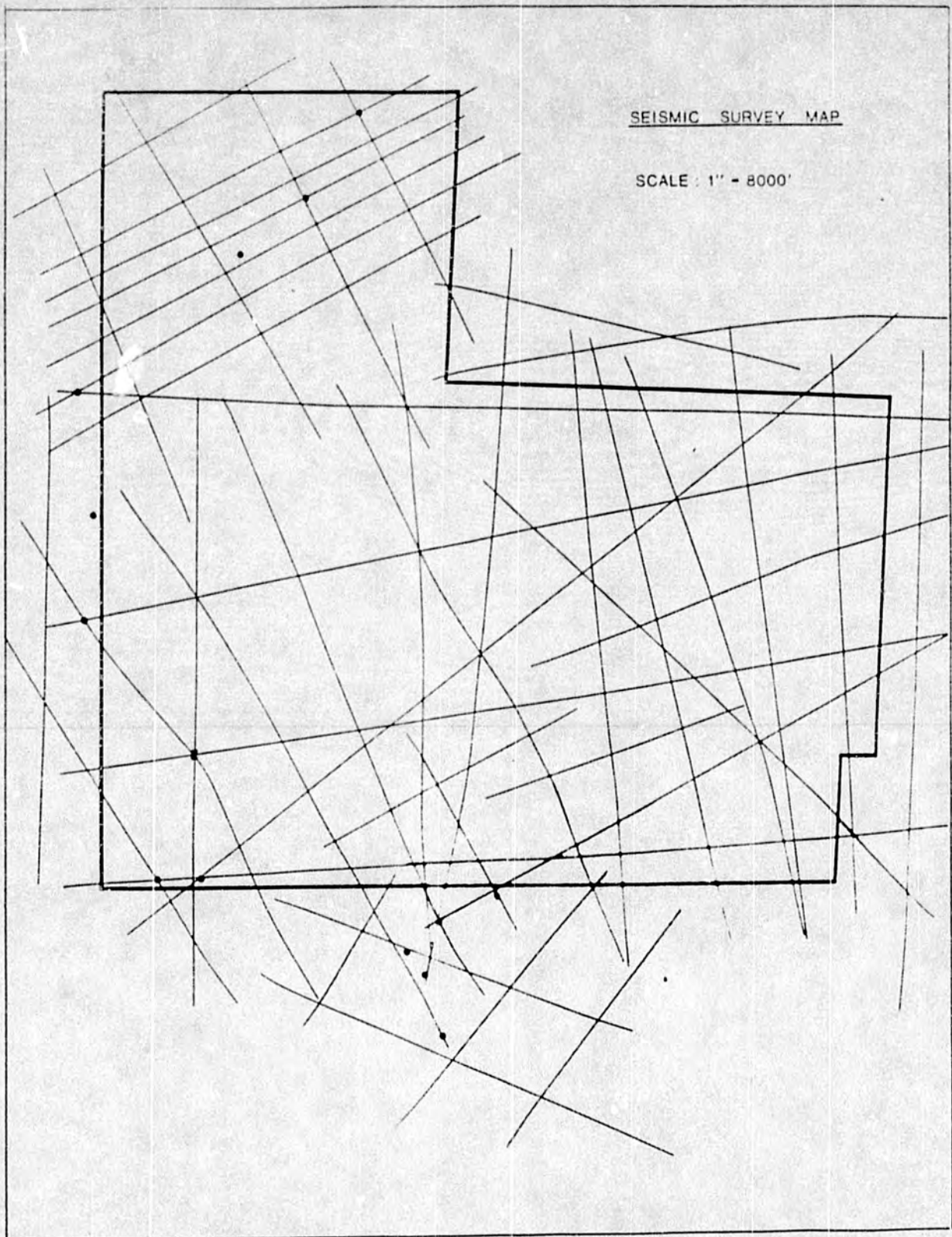


# MARINE SURVEY

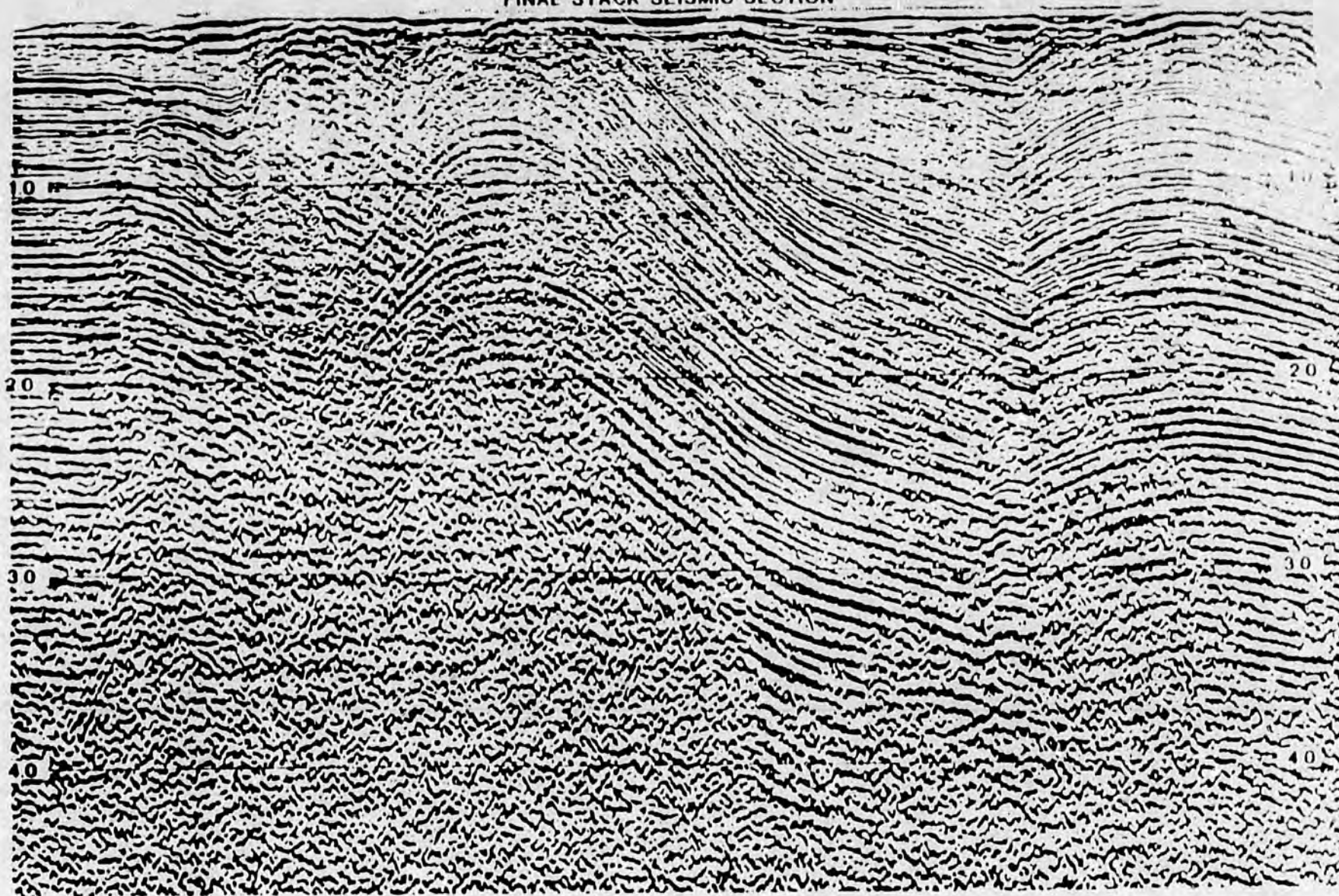


SEISMIC SURVEY MAP

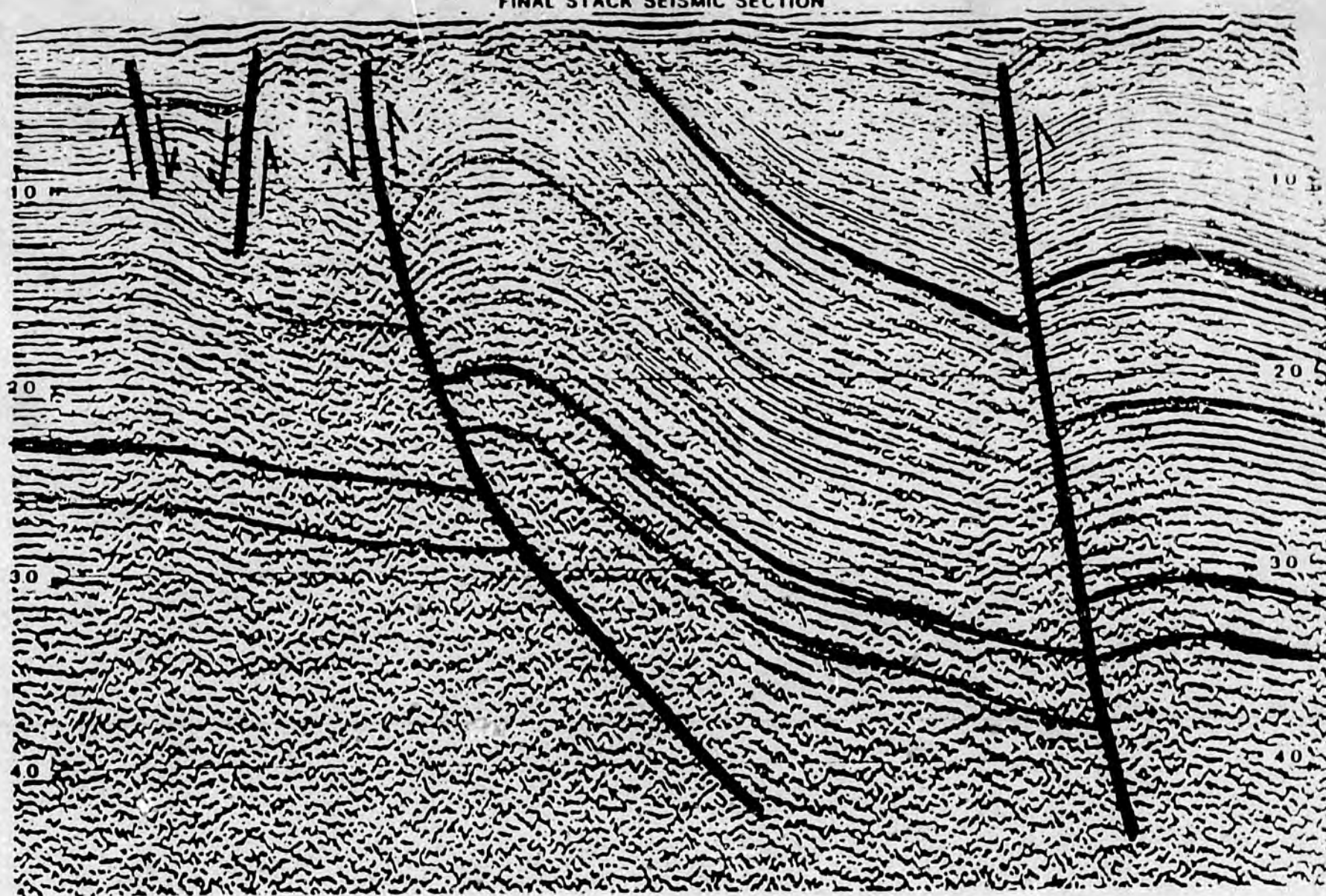
SCALE : 1" = 8000'



FINAL STACK SEISMIC SECTION



FINAL STACK SEISMIC SECTION

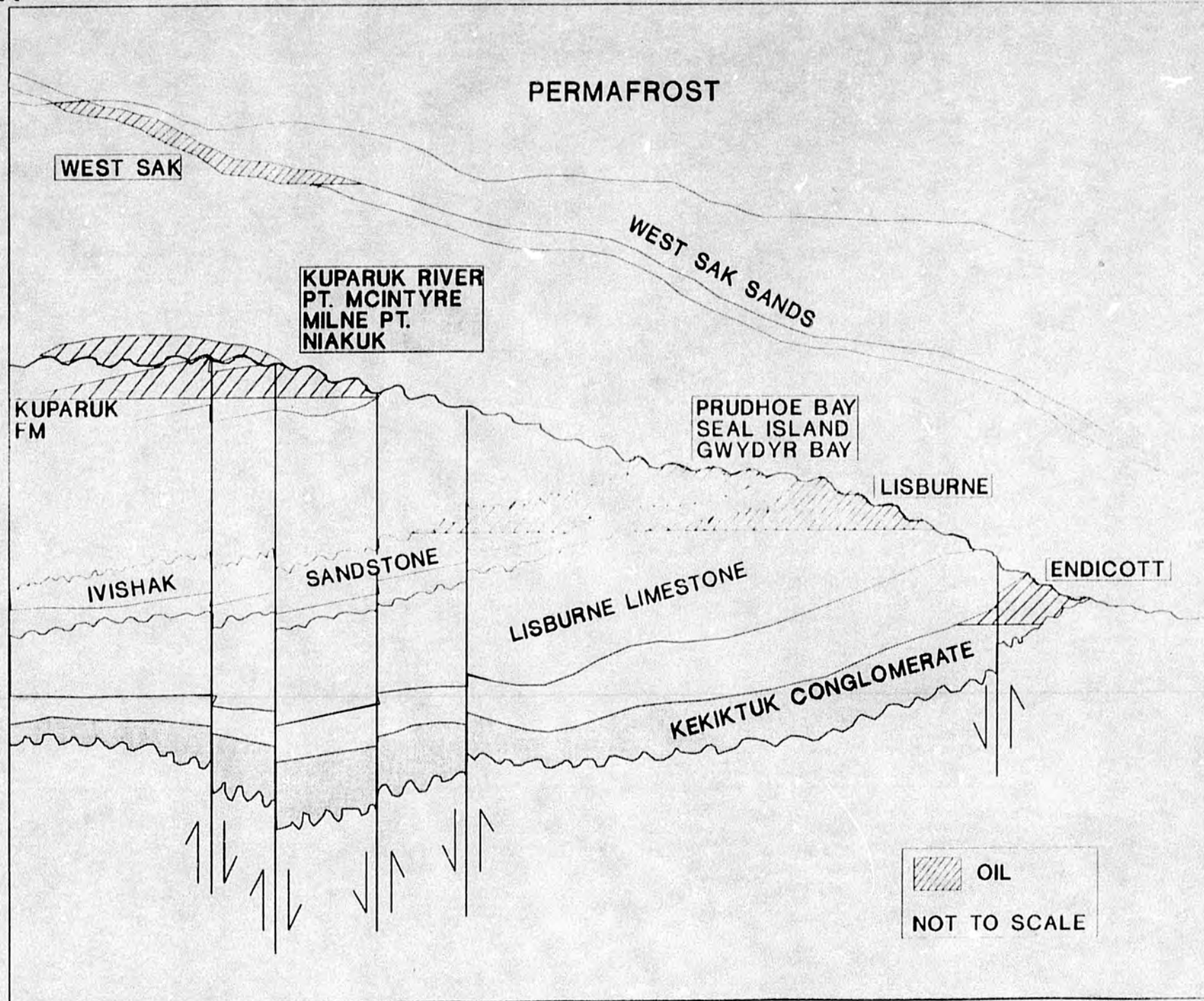


SEISMIC DEPTH MAP  
TOP HORIZON 'B'  
CONTOUR INTERVAL — 1000 FEET  
SCALE : 1" = 8000'

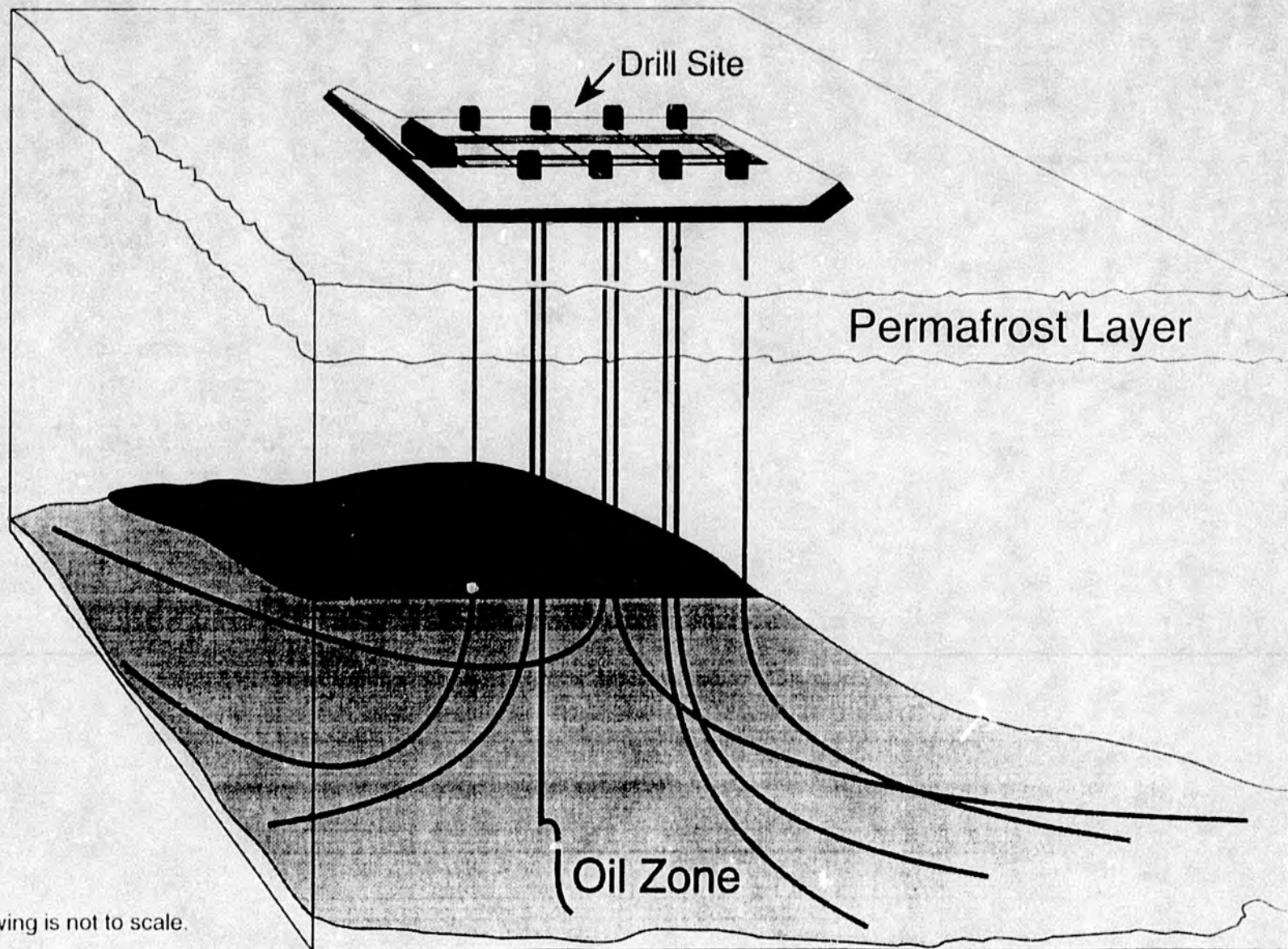
W

## NORTH SLOPE OIL FIELDS

E



# Drill Site Block Diagram



Drawing is not to scale.

**PRIMARY PRODUCING OIL FIELDS**  
**NORTHERN ALASKA (Feb. 1994)**

| NAME<br>DISC. DATE             | PROJECTED<br>AVE. DLY. PROD.<br>1994<br>Mbbls/d | CUMULATIVE<br>PRODUCTION<br>Thru '93<br>MMbbls | +<br>REMAINING<br>RESERVES<br>As of 1/94<br>MMbbls | =<br>EST. ULTIMATE<br>RECOVERY<br>As of 1/94<br>MMbbls | EST. %<br>DEPLETED<br>As of 1/94 |
|--------------------------------|-------------------------------------------------|------------------------------------------------|----------------------------------------------------|--------------------------------------------------------|----------------------------------|
| <b>Prudhoe Bay<br/>1967</b>    | <b>1,078</b>                                    | <b>8,307</b>                                   | <b>3,618</b>                                       | <b>11,925</b>                                          | <b>70 %</b>                      |
| <b>Kuparuk River<br/>1969</b>  | <b>315</b>                                      | <b>1,070</b>                                   | <b>1,142</b>                                       | <b>2,212</b>                                           | <b>48 %</b>                      |
| <b>Endicott<br/>1978</b>       | <b>100</b>                                      | <b>237</b>                                     | <b>262</b>                                         | <b>499</b>                                             | <b>47 %</b>                      |
| <b>Point McIntyre<br/>1988</b> | <b>90</b>                                       | <b>2</b>                                       | <b>356</b>                                         | <b>358</b>                                             | <b>0 %</b>                       |

Note: Primary means greater than 50 Mbbls/d projected  
Numbers reflect oil + NGLs - injectant

## OTHER PRODUCING OIL FIELDS

*NORTHERN ALASKA (Feb. 1994)*

| NAME<br>DISC. DATE       | PROJECTED<br>AVE. DLY. PROD.<br>1994<br>Mbbbls/d | CUMULATIVE<br>PRODUCTION<br>Thru '93<br>MMbbls | +<br>REMAINING<br>RESERVES<br>As of 1/94<br>MMbbls | =<br>EST. ULTIMATE<br>RECOVERY<br>As of 1/94<br>MMbbls | EST. %<br>DEPLETED<br>As of 1/94 |
|--------------------------|--------------------------------------------------|------------------------------------------------|----------------------------------------------------|--------------------------------------------------------|----------------------------------|
| Lisburne<br>1967         | 24                                               | 98                                             | 83                                                 | 181                                                    | 54 %                             |
| Milne Point *<br>1969    | 20                                               | 34                                             | 81                                                 | 115                                                    | 30 %                             |
| Niakuk/Alapah<br>1985    | 10                                               | 0                                              | 55                                                 | 55                                                     | 0 %                              |
| Other Prudhoe **<br>1976 | 6                                                | 1                                              | 25                                                 | 26                                                     | 4 %                              |

Note: Fields with less than 50 Mbbbls/d proj. prod. (oil + NGLs - Inj.)

\* Includes Schrader Bluff

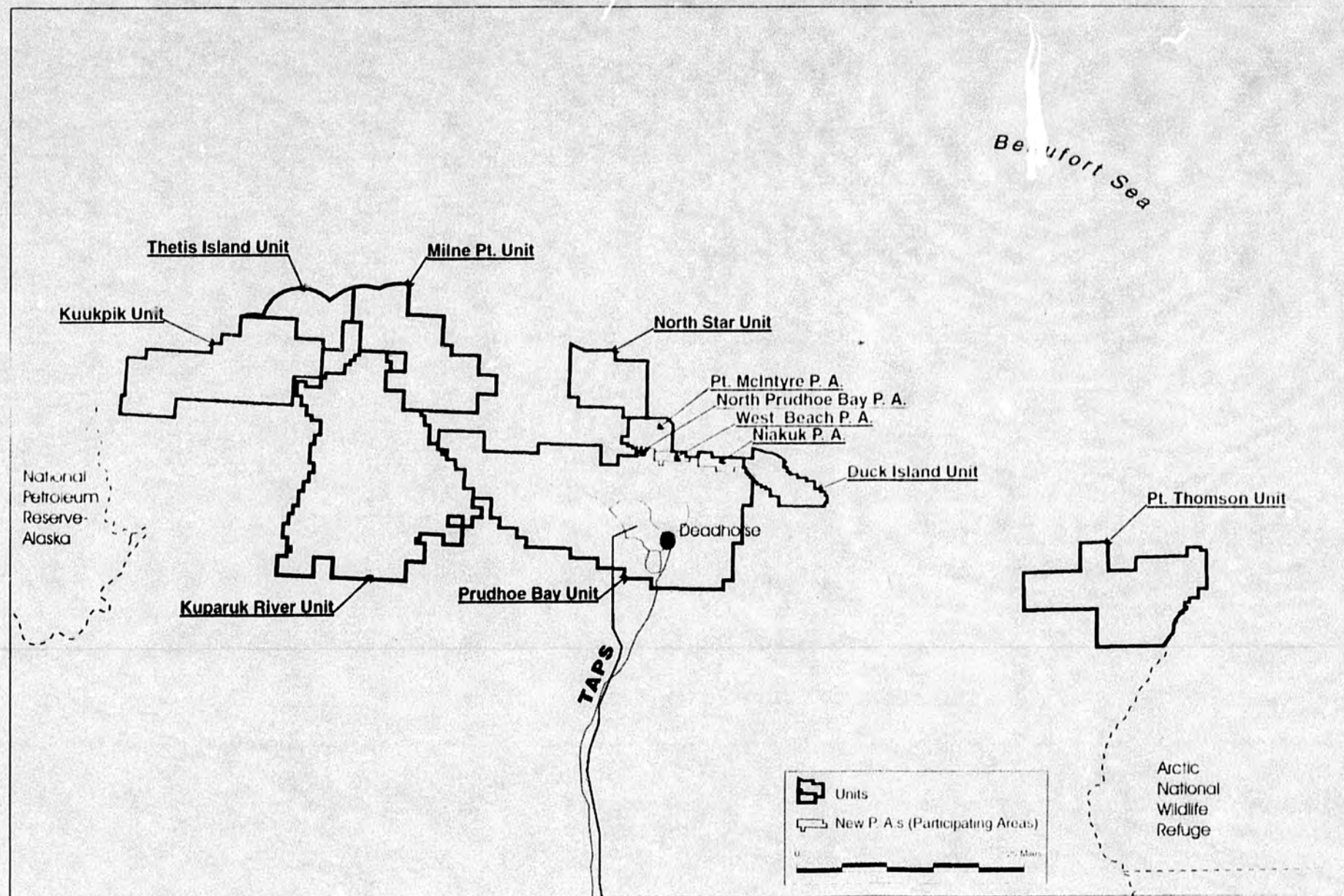
\*\* West Beach & North Prudhoe

# UNDEVELOPED OIL ACCUMULATIONS

NORTHERN ALASKA (Feb. 1995)

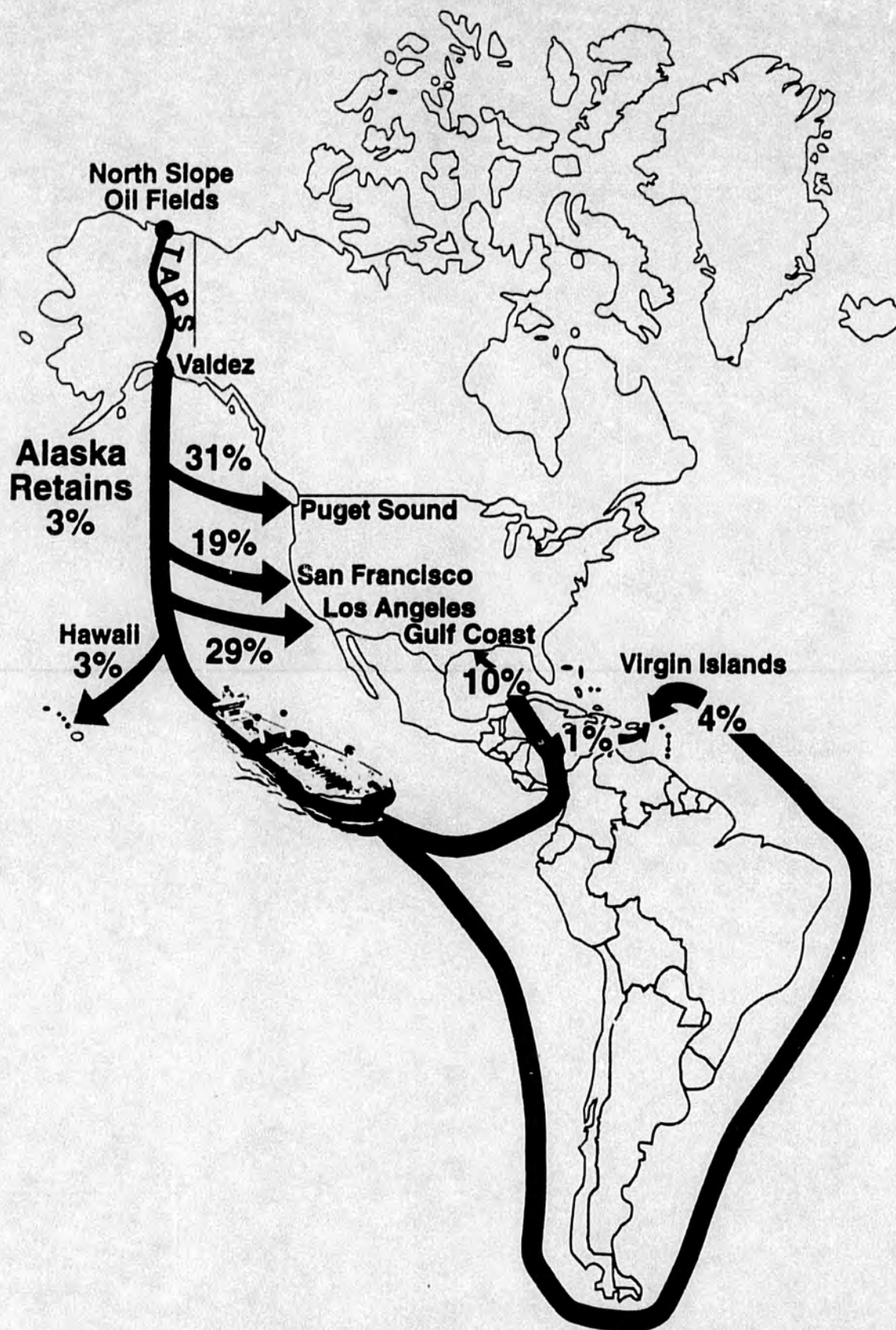
| NAME<br>DISC. DATE     | EST. RECOVERABLE<br>RESERVES | COMMENTS                      |
|------------------------|------------------------------|-------------------------------|
| West Sak<br>1969       | 147 MMBO                     | Heavy oil                     |
| Flaxman Island<br>1975 | ? OIL                        | Tertiary<br>Turbidites        |
| Point Thomson<br>1977  | 200 MMBO<br>3.5 TCFG         | Gas/Condensate                |
| Northstar<br>1984      | 180 MMBO                     | Beaufort Sea<br>Incl Seal Is. |
| Colville Delta<br>1985 | ? OIL                        | West of Kuparuk               |
| Fiord<br>1992          | ? OIL                        | 1245 bopd                     |
| Kalubik<br>1992        | ? OIL                        | 1610 bopd                     |
| Hammerhead<br>1986     | ? OIL                        | OCS waters<br>No. of Pt Thom  |
| Badami<br>1990         | ? OIL                        | 4250 bopd                     |
| Kuvlum<br>1992         | ? OIL                        | E. Beaufort OCS<br>3400 bopd  |
| Cascade<br>1993        | ? OIL                        | Near Milne Pt<br>1720 bopd    |
| Sourdough<br>1994      | ? ?                          | Cert. Paying<br>Quantities    |

## Oil and Gas Units in Northern Alaska



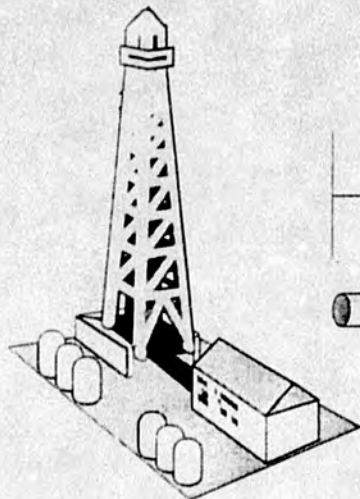
# Alaska North Slope Crude Oil Destinations (August 1992)

Average Volume  $\approx$  1.7 Million Barrels/Day

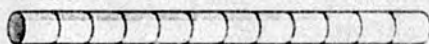


# OIL PRICE DEDUCTIONS

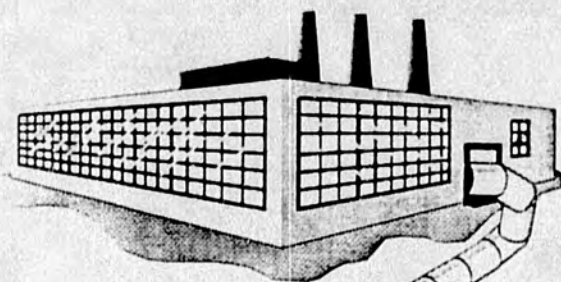
Wellhead



83¢ / BBL  
Field Cost

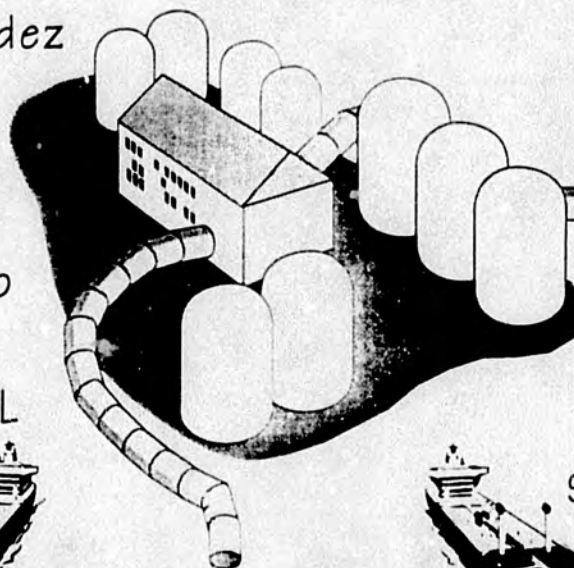


Pump Station #1



TAPS Tariff =  
\$3.61 / BBL

Valdez



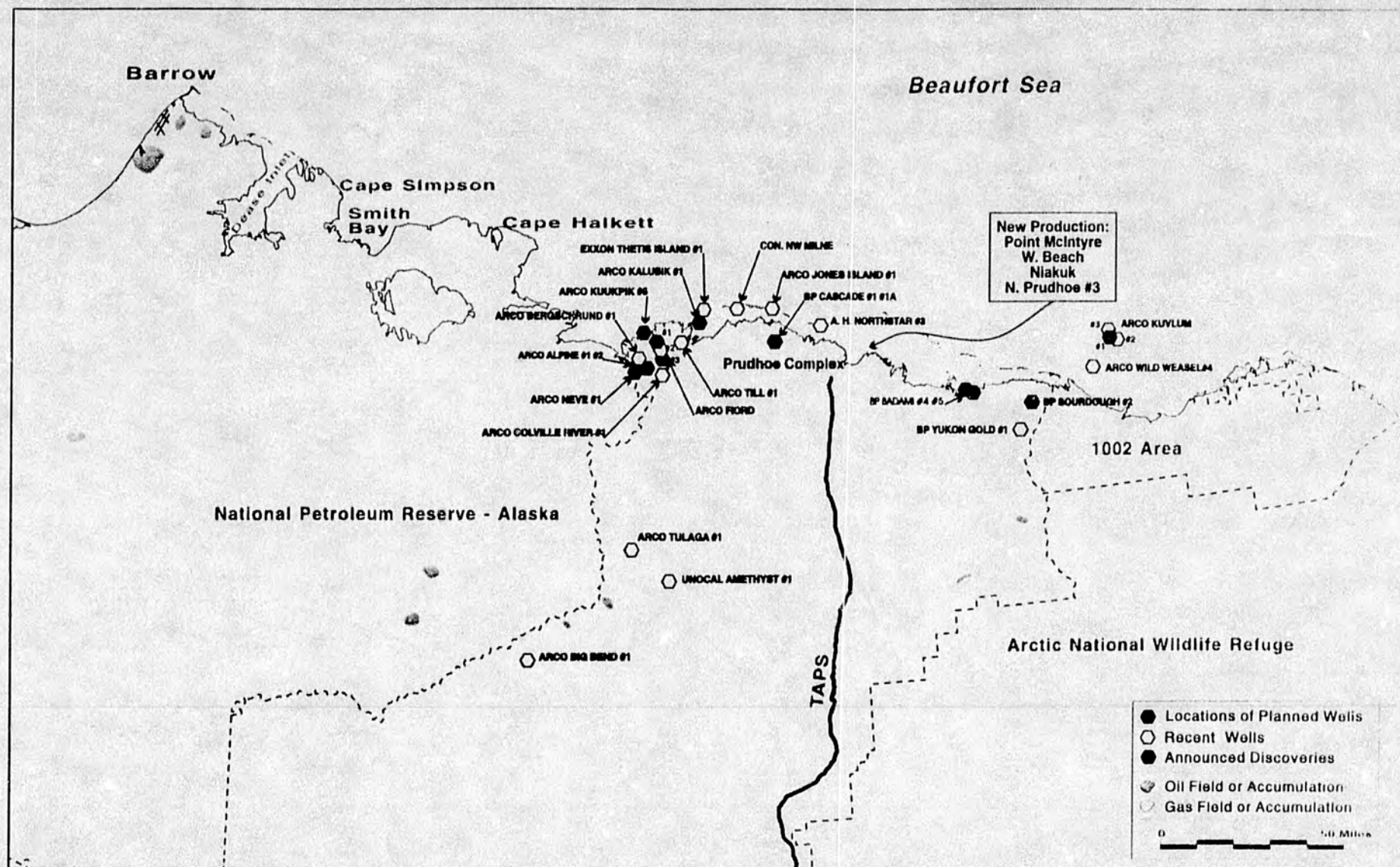
Transportation to  
West Coast =  
\$1.00 - \$1.50 / BBL



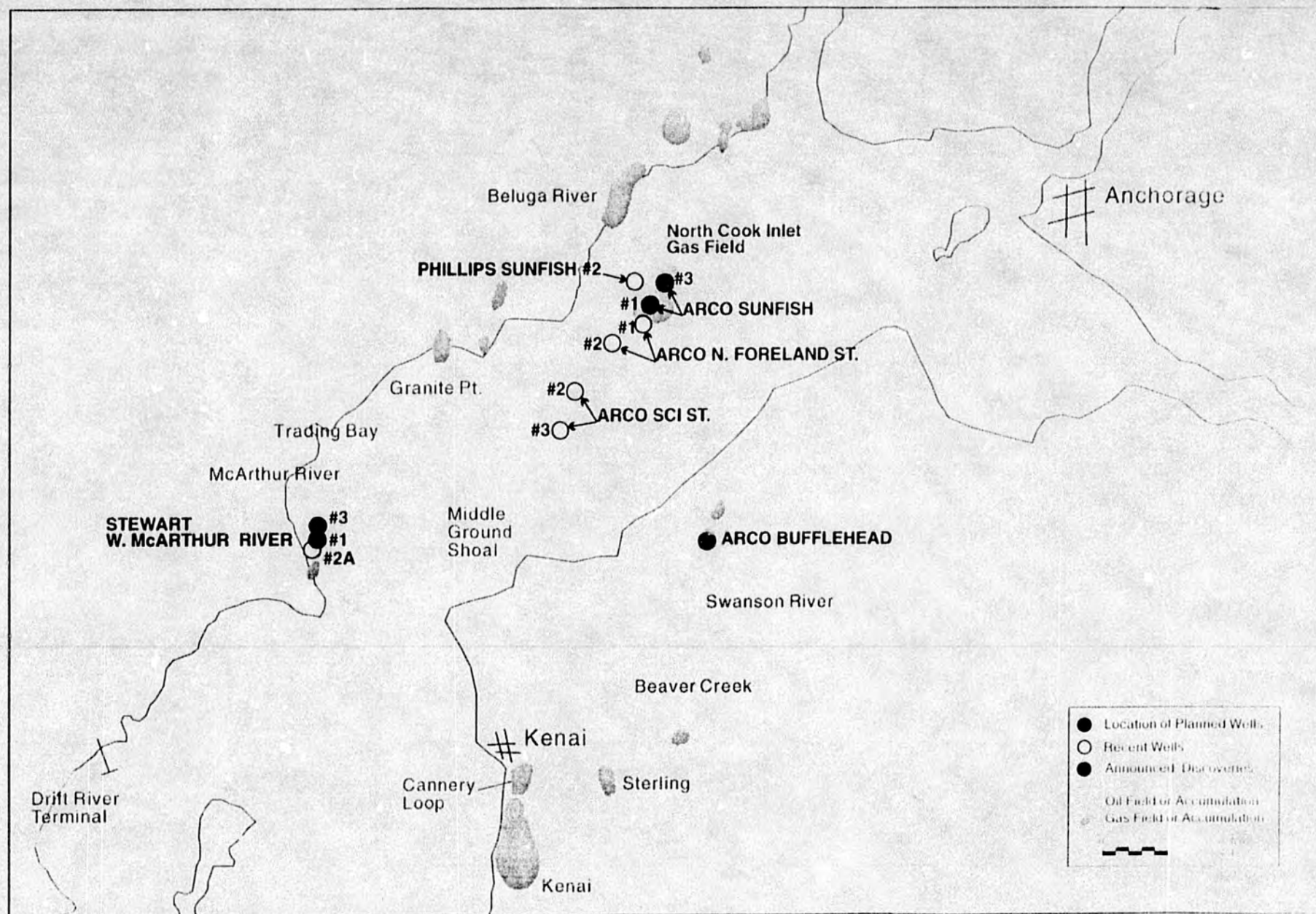
Transportation to  
Gulf Coast =  
\$4.25 - \$5.50 / BBL



## Recent Oil and Gas Activity in Northern Alaska



## Recent Oil and Gas Activity in Cook Inlet



|     |                   |      |
|-----|-------------------|------|
| 79  | Cape Yakutat      | 20.9 |
| CTR | Cook Inlet Region | 10.9 |
| 80  | Shaviovik         | 11.9 |

|     |                                |    |
|-----|--------------------------------|----|
| 85A | 1996 SALT<br>Cook Inlet Exempt | 9% |
|-----|--------------------------------|----|

|    |                                    |    |
|----|------------------------------------|----|
| 86 | 1997 SALES<br>Central Beaufort Sea | 49 |
|----|------------------------------------|----|

|    |                           |      |
|----|---------------------------|------|
|    | <b>1998 SALES</b>         |      |
| 87 | North Slope               | 3.9% |
| 85 | Cook Inlet / Kamishak Bay | 8.9% |

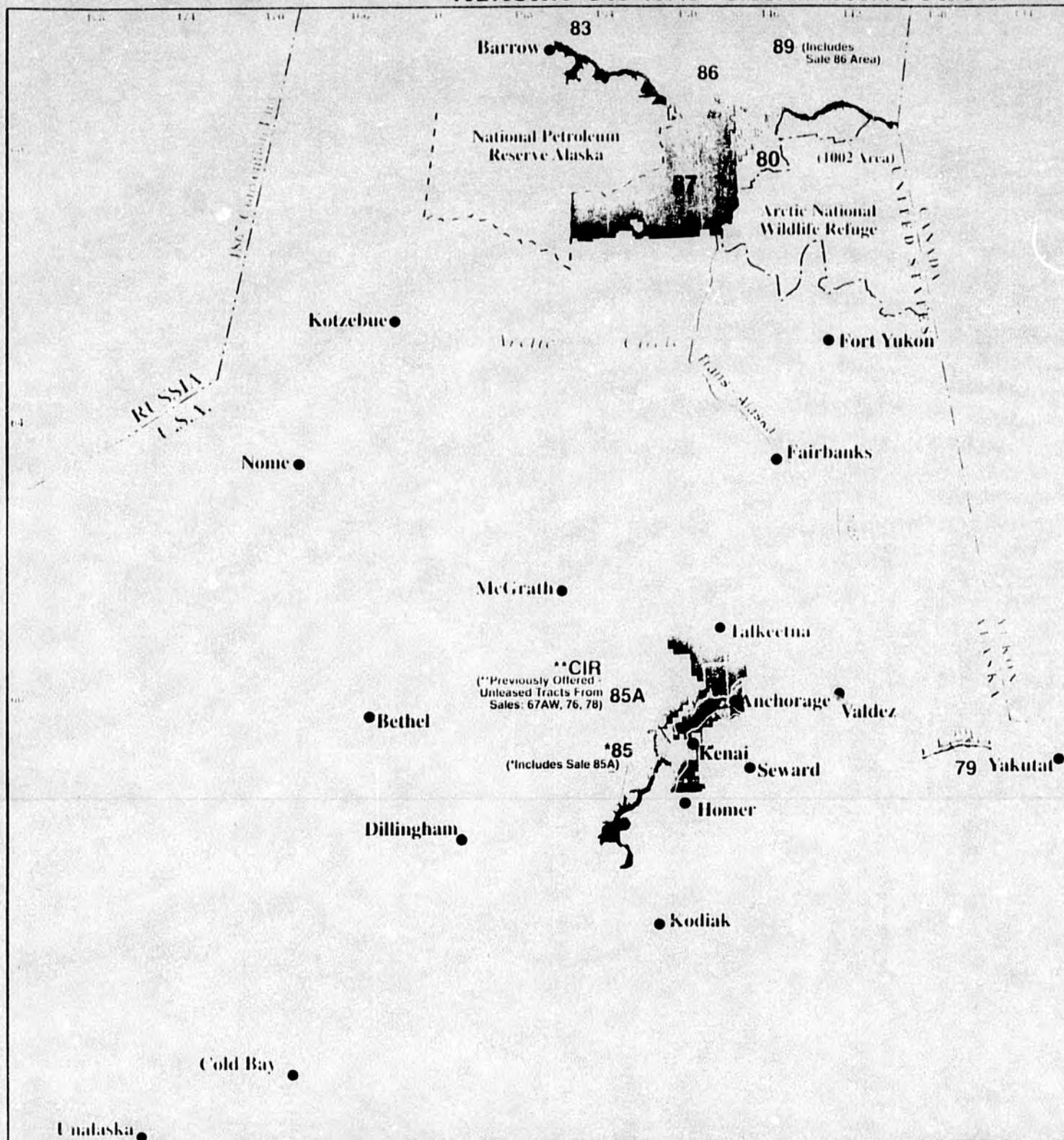
|    |                                |       |
|----|--------------------------------|-------|
|    | <b>1999 SALES</b>              |       |
| 83 | Western Beaufort Sea           | 3.99  |
| 89 | Central & Eastern Beaufort Sea | 12.99 |

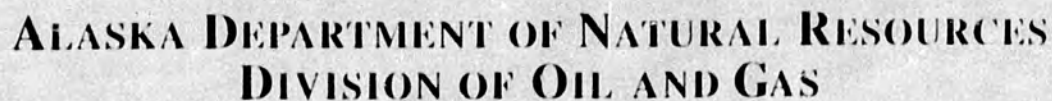
[illegible]

**Juncos** ★

Sitka ● Petersburg

**ketchikan●**



[Public Meetings may be held at any time]

# **Oil and Gas Exploration License**

## **I. PURPOSE**

- To supplement conventional oil and gas lease sales.
- Encourage competitive exploration for oil and gas on certain state lands.

## **II. 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.

## **III. THE LICENSEE ACCEPTS**

- An obligation to perform exploration work by bidding "direct exploration expenditures" which are subject to audit.
- The requirement to post a substantial performance bond.
- Relinquishment and termination provisions such that:
  - Must complete 25 percent of work commitment within 4 years or license is forfeited;
  - Must complete 50 percent of work commitment within 4 years or relinquishment provisions apply.

# **Exploration Incentive Credit**

## **I. PURPOSE**

- To supplement the existing exploration incentive credit program;
- Encourage exploration for oil and gas on all lands in the state.

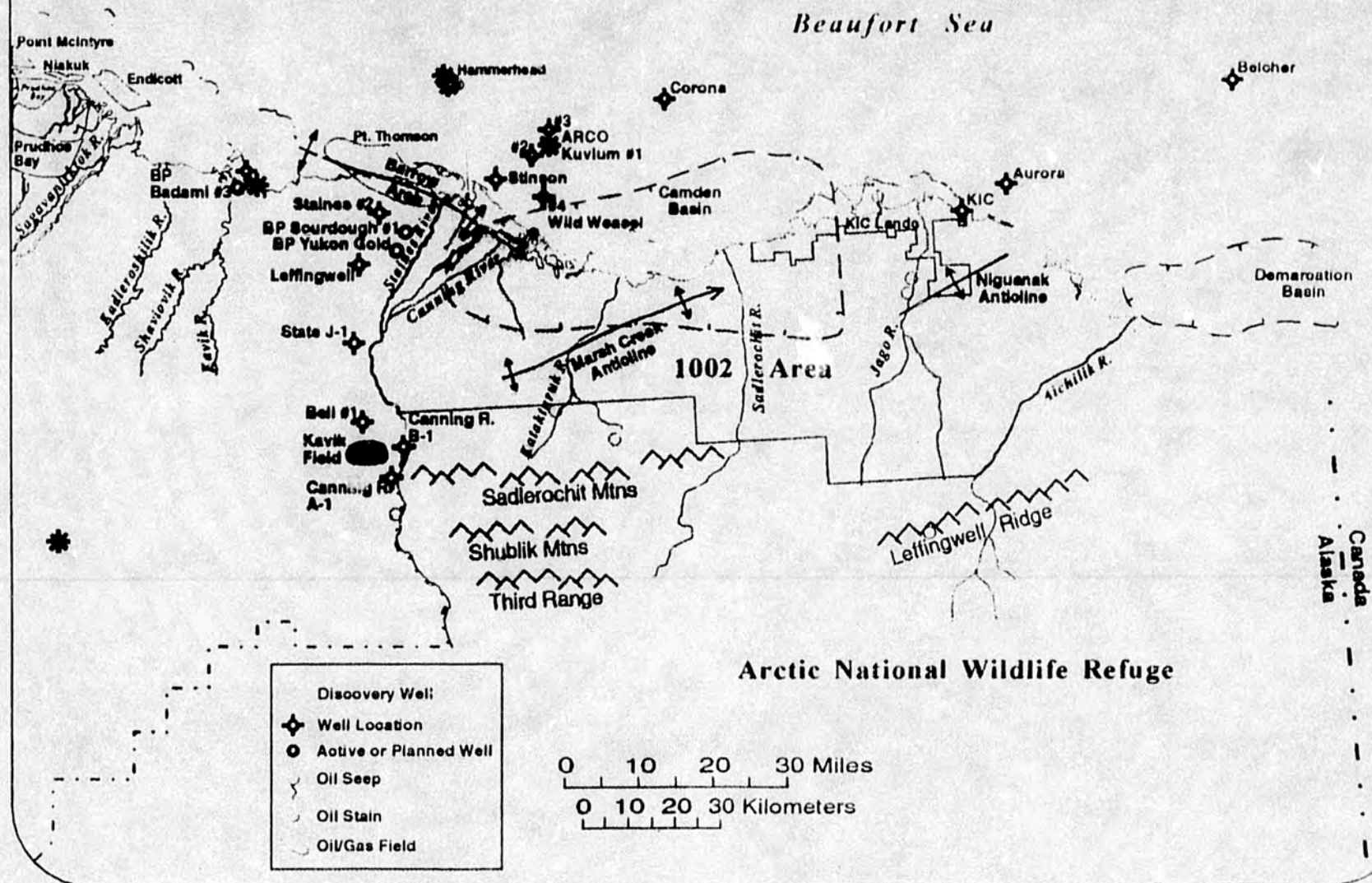
## **II. THE STATE FOR 10 YEARS MAY GRANT**

- Credits, up to \$5 million per project, that can be applied against royalties, taxes, and oil and gas bonus payments.
- Credits may be earned up to 50 percent of pre-approved eligible costs relating to activities on state-owned land and 25 percent of pre-approved eligible costs on other lands.
- The program continues until the 10 year term expires, or \$30 million in total has been expended.
- Amounts due the permanent fund are calculated before application of any credit.
- An applicant may not have any liquidated debt.

## **III. THE LICENSEE**

- Conducts pre-approved geophysical work and/or exploration drilling.
- Provides all raw and processed data to the State.
- Must use the credit, which is assignable, within 5 years.

# Eastern North Slope, Alaska



**SCOMM**

**96:2**

COMMITTEE: House Oil & Gas DATE: 2-7-95 TIME: \_\_\_\_\_

SUBJECT: Dept. of Revenue Oil & Gas Audit Division

MEMBERS: Rep. Rokeberg, Ogan, B. Davis, Cr. Davis, Finklshtein  
Brice, Williams. 1

| SPEAKER      | TAPE# | SIGNIFICANT INFORMATION                                                                                                        |
|--------------|-------|--------------------------------------------------------------------------------------------------------------------------------|
| Rokeberg     | 000   | Called Committee to order. 10:04/<br>Members Present.                                                                          |
|              | 0114  | Quorum present & Presentation by Dr. Longsdon.                                                                                 |
| Dr. Longsdon | 039   | Petroleum Economist w/ Dept. of Revenue.<br>Oil & Gas Taxation systems Presentation.                                           |
|              | 062   | Executive Update fax - All committee members receive one.                                                                      |
| Rokeberg     | 075   | when will they be published.                                                                                                   |
| Longsdon     | 090   | Property Tax: all oil & gas production & hardware<br>is subject to a 20mill tax. (All capital is subject<br>to a property tax. |
|              | 120   | 20 mills is about 2% of appraised value.                                                                                       |
|              | 128   | Borough property taxes.                                                                                                        |
|              | 138   | Take the appraised value & assess the tax.                                                                                     |
|              | 160   | Brought in \$61.5 million - total tax assessed<br>\$350 million.                                                               |
| Rokeberg     | 180   | Will you provide that info?                                                                                                    |
| Cr. Davis.   | 200   | What is the history of the tax as far<br>as fluctuations.                                                                      |
| Longsdon     | 210   | The investment on the North slope has<br>increased.                                                                            |
|              | 228   | The trend is down, \$150 million in 93' it<br>went down to \$66 million.                                                       |
|              | 245   | The Municipalities rely on the Property tax                                                                                    |
| Rokeberg     | 250   | Appreciation Scales                                                                                                            |
| Longsdon     | 252   | The Pipeline is assessed at a depreciated cost.                                                                                |
| Roke         | 280   | The Target is just the Petroleum industry                                                                                      |
| Longsdon     | 290   | This is a very specific tax.                                                                                                   |
| Roke         | 295   | The borough has taken over much<br>of the responsibility for Auditing                                                          |

COMMITTEE: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

SUBJECT: \_\_\_\_\_

MEMBERS: \_\_\_\_\_

2

| SPEAKER   | TAPE# | SIGNIFICANT INFORMATION                                                                                                               |
|-----------|-------|---------------------------------------------------------------------------------------------------------------------------------------|
| Longsdon  | 312   | Localities in Texas have...                                                                                                           |
|           | 327   | They get a big chunk of the dough - they do not do the appraisals.                                                                    |
| Rokeberg. | 337   | Income streams                                                                                                                        |
| Longsdon. | 346   | The <del>borough</del> state retains the responsibility of Assessing the property.                                                    |
| Longsdon  | 368   | Severance tax - Levied on all capital dealing with oil and Gas production in Alaska.                                                  |
|           | 375   | The rates will vary.                                                                                                                  |
|           | 378   | ELF - Try to make the severance tax rate - 2 factors: What's the size of the field & the <del>effici</del> productivity of the wells. |
|           | 405   | Our <del>tax</del> rate earlier is lower....                                                                                          |
|           |       | Kaparak - Endikot = 12 1/4 nominal rate.                                                                                              |
|           | 410   | \$80 per barrel .... If the \$ per barrel floor is ....                                                                               |
|           | 425   | The last page of the handbook has tax rate comparisons.                                                                               |
|           | 435   | 1994 Prudhough production statistics.                                                                                                 |
|           | 460   | The key factor in the ELF is production at the economic limit.                                                                        |
|           |       | 300 barrels a day or less = no tax. (tax free)                                                                                        |
|           | 475   | 2 factors how big is the field, how productive are the wells.                                                                         |
|           | 490   | The ELF has been around for awhile.                                                                                                   |
|           |       | History of Severance Tax rate sched: Typically property taxes went to schools. The severance tax however is                           |
|           | 512   | it started as a 1% tax.                                                                                                               |

COMMITTEE: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

SUBJECT: \_\_\_\_\_

MEMBERS: \_\_\_\_\_

3

| SPEAKER  | TAPE#              | SIGNIFICANT INFORMATION                                                                        |
|----------|--------------------|------------------------------------------------------------------------------------------------|
| Longsdon | 520                | Development on Cook inlet & Fledgling oil industry.                                            |
|          | 530                | The flat tax could act as a disincentive to several of the oil companies.                      |
|          | 543                | Stepwise tax, <del>Every</del> Graduated step schedule of taxation. The tax was on Production. |
|          | 558                | At one time the ELF had no exponents on it at all.                                             |
|          |                    | When they inserted the first on 1-533-                                                         |
|          | 570                | After 10 yrs. the tax rate @ Prudhoe Bay was supposed to drop.                                 |
|          |                    | The tax Rate at Prudhoe should stay at the 15% rate.                                           |
|          | 585                | That is a very brief rundown.                                                                  |
| Roheberg | 595                | It may be beneficial to pursue the ELF.                                                        |
|          |                    | Could you comment on size & # of Wells & how it relates to the ELF.                            |
| Longsdon | 606                | Typical geology states that if you have a field that produces >30,000 barrels a day...         |
|          | 620                | We found some very productive small pockets of oil &.                                          |
|          | 625                | below 30,000 barrels a day (per field)                                                         |
|          | 640                | Fields that produce 100,000 barrels, the tax rate is going to be very high. & have a high ELF. |
|          | 650                | Once you get above 1 billion barrels in the ground, the field size can effect the tax rate.    |
| Roheberg | 655                |                                                                                                |
| Longsdon | <del>655</del> 660 | Yes, that is an issue.                                                                         |

COMMITTEE TALK LOG

COMMITTEE: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

SUBJECT: \_\_\_\_\_

MEMBERS: \_\_\_\_\_

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| SPEAKER   | TAPE# | SIGNIFICANT INFORMATION                                                                                                      |
|-----------|-------|------------------------------------------------------------------------------------------------------------------------------|
| Longsdon  | 665   |                                                                                                                              |
| Rokeberg  | 670   | Is it a negative to not drill wells, or fewer wells from an existing <del>wet</del> field.                                   |
| Longsdon  | 680   | There is a debate as to what a well is.                                                                                      |
|           | 700   | The price of oil is what really makes the difference. It isn't clear cut.                                                    |
|           | 707   | is the revenue side where the problem is?                                                                                    |
| G. Davis. | 710   | Dispute over, overlapping fields.                                                                                            |
| Longsdon. | 719.  | They (DOR) try to prepare the correct tax.                                                                                   |
|           | 734   | This hasn't been a very big problem.                                                                                         |
|           | 757   | It is difficult to determine what oil came from what field.                                                                  |
|           | 770   | Westac.                                                                                                                      |
|           | 773   | The ELF is used to tax production not revenue.                                                                               |
| Ogan      | 783   | A brief analogy as to the source of the oil disputes.                                                                        |
| Longsdon. | 800   | The value side, the tax base is a very important                                                                             |
|           |       | The Price side : is at the wellhead.                                                                                         |
|           | 820   | On the North Slope the oil comes out, Put on Pipe line, then Boats, so what is the "Process" to determine value for the oil. |
|           | 847   | Is it appropriate to use the wetback.                                                                                        |
|           |       | The dispute occurred in 1979 & oil prices went way up. so there was no way to establish value.                               |
|           | 880   | Wetback approach "                                                                                                           |
|           | 900   | for years there was no agreed upon tariff for the Pipeline.                                                                  |

COMMITTEE: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

SUBJECT: \_\_\_\_\_

MEMBERS: \_\_\_\_\_

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| SPEAKER     | TAPE#          | SIGNIFICANT INFORMATION                                                                       |
|-------------|----------------|-----------------------------------------------------------------------------------------------|
| Longsdon    | 915            | How rapidly should the investors be compensated & what rate of return do we allow.            |
|             | 945            | There is dispute over just what the law meant.                                                |
| Ogaw        | 960            | Is it a fair assessment that everyone is now doing the same thing                             |
| Longsdon    | 970            | Big chunks of dispute have been taken off of the table.                                       |
|             | 978            | The "Market Paradigm"!                                                                        |
|             | 995            | These disputes are much more manageable.                                                      |
| ✓ Roke      | 000            | Your group put out the new regs.                                                              |
| Longsdon    | 012            | We want to get rid of the massive paperwork.                                                  |
|             | 027            | 6 months & we will find the bugs                                                              |
| Roke        | 032            | Do you need a statutory change.                                                               |
| G. Davis.   | 036            | Tax Returns.                                                                                  |
| Rep. Green. | 045            | Is there a process of resolving smaller problems. A procedure to get problems solved quickly. |
| Longsdon.   | 061            | There are provisions                                                                          |
|             | <del>078</del> | We'd like to stop short of it.                                                                |
|             | 085            | You may want to talk to the Commissioner, it is fascinating.                                  |
| Rokeberg.   | 094            | Stipulation as to valuation.                                                                  |
| Longsdon    | 100            | We use the SPOT & it depends on the region. The key # is the Spot Price.                      |
|             | 118            | We would like to know what we can do to standardize valuation.                                |
|             | 132            | We do put a lot of weight on spot prices.                                                     |

COMMITTEE: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

SUBJECT: \_\_\_\_\_

MEMBERS: \_\_\_\_\_

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| SPEAKER   | TAPE# | SIGNIFICANT INFORMATION                                                 |
|-----------|-------|-------------------------------------------------------------------------|
| Longsdon  | 140   | Spot prices are being assessed by journalists.                          |
| Greon     | 152   | How do you handle the Company & giving oil to their own refinery.       |
| Longsdon  | 154   | The export ban lift will cause some major problems.                     |
| Roheberg. | 171   |                                                                         |
| Longsdon  | 174   | We get other wire services.<br>On the Royalty side ...                  |
| Rohe      | 190   | state sale of inkind oil.                                               |
| Longsdon  | 194   | the Royalty value.                                                      |
|           | 200   | spot price is used as Severance tax.                                    |
|           | 202   | The Royalties, our royalty provision is similar to a standard lease.    |
|           | 215   | some rates on the slope are as high as 20%                              |
|           | 221   | Price share leases. like Enclikot.                                      |
|           | 336   | If you want to think of Royalties at 12 1/2%                            |
|           | 340   | The companies will pay a spot tax every month.                          |
|           | 250   | Couple of different deals, 6 different crude oils w/4 different weight. |
| Rohe      | 258   | were these negotiated.                                                  |
| Longsdon. | 274   | The boiler plate<br>—Graph on chalkboard—<br>Line 63 is a pipeline      |
|           | 293   | Assess weight on the quality.<br>The Gulf coast is similar.             |
|           | 303   | It's a market basket approach<br>using a schematic.                     |

# COMMITTEE TAPE LOG

COMMITTEE: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

SUBJECT: \_\_\_\_\_

MEMBERS: \_\_\_\_\_

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| SPEAKER              | TAPE#          | SIGNIFICANT INFORMATION                                                    |
|----------------------|----------------|----------------------------------------------------------------------------|
| Longsdon.            | 316            | On the Royalty side w/BP.                                                  |
|                      |                | Exxon \$1.25 per barrel to ship to west coast.                             |
|                      | 320            | ARCO is more straight forward.                                             |
|                      | 332            | There are specific Accounting Costs.                                       |
| Rokeberg             | 338            | Wellhead price - transportation.                                           |
| Longsdon.            | 341.           | FY1991 The Tax tariff now is approx \$3.60, Transport charge about \$1.20. |
|                      |                | The AVG was \$1.47                                                         |
|                      | 356            | The AVG = \$6.25 for both indets.                                          |
|                      | 372            | There is a cost that must be recovered.                                    |
|                      | 381            | Pumpability Charge.                                                        |
|                      | 384            | Tariffs take oil quality into acct.                                        |
|                      | 392            | in regulatory revision we looked----                                       |
|                      | 400            | on the Royalty side however, for BP.                                       |
|                      | 411            | The Formula Market basket----                                              |
|                      | 421            | Basket price for-----                                                      |
|                      | 431            | • Tape ended                                                               |
|                      |                | New tape start 000                                                         |
| Longsdon             | 010            | Arco Value Formula.                                                        |
|                      | 020            | They use the same Royalty & Severance tax.                                 |
| Rokeberg.            | 031            | Royalty & Severance....                                                    |
| Longsdon.            | 040            | That's how they negotiated the dispute....                                 |
|                      | 057            | The agreement is subject to reopen every 2 yrs.                            |
| Rokeberg             | 071            | Exxon has a formula on the Royalty side.                                   |
| <del>Longsdon.</del> | <del>085</del> | there may be other factors.                                                |
| Longsdon.            | 093.           | The splitting factor on the West Coast.                                    |

# COMMITTEE TAPE LOG

COMMITTEE: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

SUBJECT: \_\_\_\_\_

MEMBERS: \_\_\_\_\_

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| SPEAKER  | TAPE# | SIGNIFICANT INFORMATION                                               |
|----------|-------|-----------------------------------------------------------------------|
| Longsdon | 111   | Exxon is the same as BP. Except....                                   |
|          | 132   | The Nature of the agreement on the Royalty side.                      |
|          | 150   | Couple other taxes                                                    |
|          |       | <u>Conservation Tax</u> : this tax isn't levied on Public Royalties   |
|          | 177   | Corporate income tax: Not directly sensitive to other influences.     |
|          | 190   | The Percentage of Corporate Sales & Tariffs etc....                   |
|          | 203   | Production Tax Surcharge: \$4 Per Barrel                              |
|          | 212   | We have hit the cap.                                                  |
|          | 224   | Comparative Systems, how do we stack up to the rest of the U.S.       |
|          | 240   | The Companies marginal take                                           |
|          | 248   | At the margin, our system isn't that unfair.                          |
|          | 260   | Showed Pie Charts.                                                    |
|          | 280   | 1994 Corporate income taxes were very small, less than \$100 million. |
|          | 288   | how much do we produce & how much can we sell it for.                 |
| Ogaw     | 300   | Is there on the Corporate tax, an investment Credit.                  |
| Longsdon | 307   | Exploration Incentive Credit.                                         |
| Pokeberg | 320   | it is at the request of Commissioner.                                 |
| Longsdon | 328   | I don't know the \$ amount.                                           |
|          | 341   | discretionary issue.                                                  |
| Poke     | 352   | Ques: Look at existing statutes.                                      |
| Longsdon | 365   | There are a number of things that could be addressed.                 |

# COMMITTEE TAPE LOG

**COMMITTEE:** \_\_\_\_\_ **DATE:** \_\_\_\_\_ **TIME:** \_\_\_\_\_

**SUBJECT:** \_\_\_\_\_

**MEMBERS:** \_\_\_\_\_

9

| SPEAKER   | TAPE# | SIGNIFICANT INFORMATION                                                                |
|-----------|-------|----------------------------------------------------------------------------------------|
| Longsdon  | 379   | All the decisions, though difficult, in general the process results in good decisions. |
|           | 397   | Working w/industry: I think were in a declining production mode.                       |
|           |       | Do we rely on oil companies to fund the states expenses.                               |
|           | 412   | Keep the pipeline integrity up.                                                        |
|           | 419   | Copper River Railroad                                                                  |
| Rokeberg  | 427   | Ogan at 10:10                                                                          |
|           |       | Green at 11:00                                                                         |
|           |       | Finkelstein 11:00 left 11:15.                                                          |
| Rokeberg. |       | Declared adjournment at 12:00                                                          |
|           |       | 11:15                                                                                  |

# STATE OF ALASKA

## DEPARTMENT OF REVENUE

### OIL AND GAS AUDIT DIVISION

MAR 10 1995

TONY KNOWLES, GOVERNOR

550 WEST 7TH AVENUE, SUITE 570  
ANCHORAGE, ALASKA 99501  
PHONE: (907) 276-1363  
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FAX #: (907) 278-5026

March 6, 1995

The Honorable Norman Rokeberg  
Alaska State Legislature  
State Capitol  
Juneau, Alaska 99801-1182

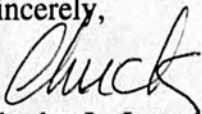
Dear Representative Rokeberg:

The letter I sent to you last week as follow-up to my testimony on the state's oil and gas tax and royalty system misstates the royalty formula for ARCO. The factor used to determine the Valdez netback value of ARCO's royalty production is the factor used in the original royalty settlement and has subsequently been amended as part of the provision in the original settlement allowing periodic renegotiation of the pricing formula. The tanker transportation allowance for ARCO's royalty production is now determined by multiplying \$.91/bbl times the market basket divided by 17.62/bbl. For example, if the market basket in a month were \$15.00/bbl then the tanker transportation allowance in that month would be calculated as follows:

$$$.91/\text{bbl} * \$15.00 / \$17.62 = \$.77469/\text{bbl}$$

I apologize for any inconvenience this may have caused.

Sincerely,



Charles L. Logsdon

95-020



Official Business

# Alaska State Legislature

## HOUSE OF REPRESENTATIVES

### House Special Committee on Oil & GaS

State Capitol  
Juneau, AK 99801-1182

#### MEMORANDUM

TO: Members of Committee

FROM: Representative Norman Rokeberg, Chairman   
House Special Committee on Oil and Gas

DATE: February 6, 1995

SUBJECT: Overview - Dept of Revenue - Oil & Gas Audit Division

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The overview will be presented by:

Dr. Charles Logsdon, Chief Petroleum Economist  
Dept of Revenue - Oil & Gas Audit Division

The attached information has been provided by the department for the committee.

## ALASKA'S OIL and GAS TAXATION SYSTEM--JANUARY 1995

The State of Alaska levies the following specific taxes on the petroleum industry.

**1. Property tax (ad valorem).** Assessed at the rate of 20 mills (2%) on the appraised value of all oil and gas production and transportation hardware (tangible property).

**2. Severance tax.** Levied on all production except for public (government) royalty production. The rate varies depending on the vintage of the field and is further subject to the economic limit factor (ELF). The ELF varies depending on field size and well productivity.

The severance tax rate on oil is 12.25% of production value for the first 5 years of production and 15% thereafter for fields coming into production after June 1981, and 15% for fields in production prior to June 1981. There is a minimum tax of \$0.80/bbl. The severance tax rate on gas is 10%. There is a minimum tax of \$.064/mcf.

Both the percent of value and the cents per barrel tax rates are subject to the ELF. The appropriate tax rate is multiplied by the ELF to determine the effective tax rate.

The ELF formula for oil production is as follows:

$$ELF = (1 - (300/PPW))^{((150,000/TP)^{1.5333})}$$

Where PPW = Average oil production per well per day in the field

TP = Average daily production from the field

^ = Exponential

Note: If a field produces 300 bbl/day per well or less the ELF is zero i.e. no severance taxes are assessed.

The two exponents in the formula result in a tax schedule with extremely low tax rates for smaller low productive fields and higher tax rates for larger highly productive fields. The formula is difficult to characterize in a simple way because it is not only non-linear but is three dimensional since there is a unique ELF for every combination of field size and well productivity.

The ELF was originally designed in 1977 to differentiate the tax rate on the new supergiant Prudhoe Bay oilfield and the old declining fields in the Cook Inlet. Subsequent changes in 1981 and 1989 focused on keeping taxes higher on Prudhoe Bay while lowering taxes on the new and undeveloped smaller fields on the North Slope.

The ELF formula for gas production is as follows:

$$ELF = 1 - (3000/PPW)$$

Where PPW = Average gas production per well per day in the field

**3. Conservation Tax.** Assessed at the rate of 4 mills (\$.004) per barrel of oil production or per 50,000 cubic ft of natural gas. Public (government) royalty production is not subject to this tax.

**4. Corporate Income Tax.** The income tax base is derived from the corporation worldwide net income apportioned to Alaska under a 3 factor formula comprised of 1. percentage of corporate sales and tariffs from Alaskan operations 2. percentage of production from Alaska and 3. percentage of property represented by Alaska holdings. The maximum marginal rate is 9.4%.

**5. Royalties.** The State of Alaska receives royalties from the production of oil and gas on State owned lands. Most currently producing leases pay a fixed 12.5% royalty. Some production is subject to a net profit share in addition to a fixed royalty. Some royalty rates are as high as 20%. There is no general differentiation for royalty purposes between onshore and offshore developments.

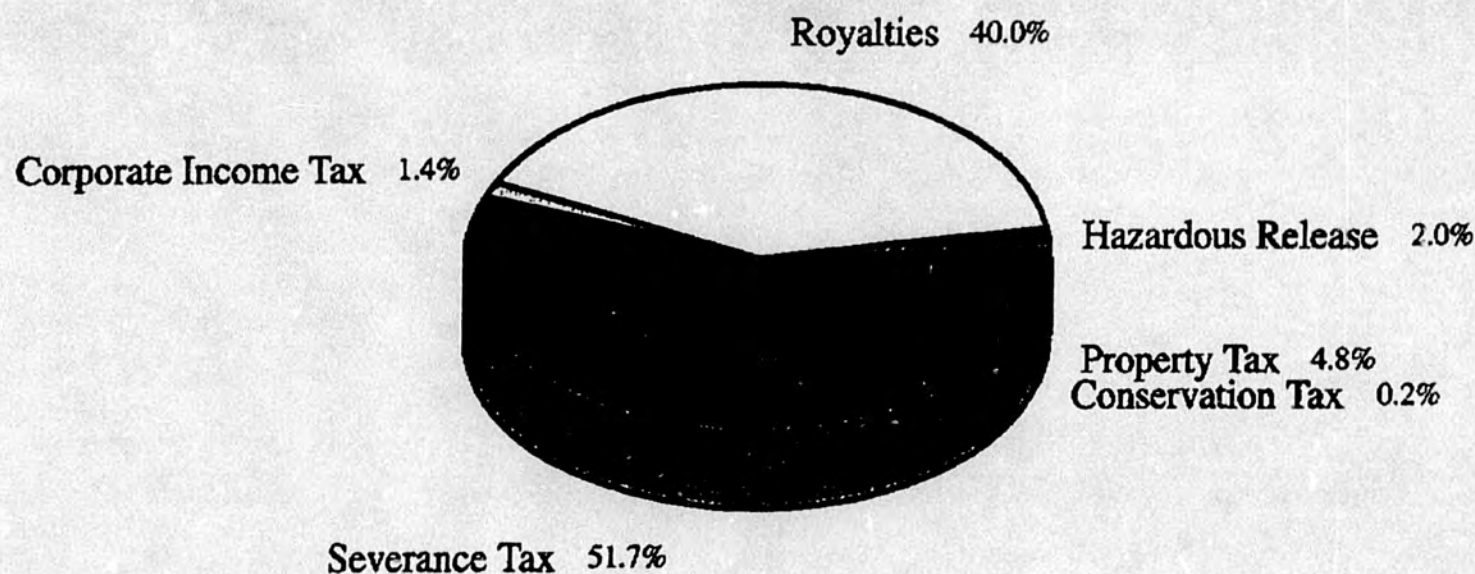
**6. Production Tax Surcharge for Hazardous Spill.** Five cents per barrel is charged to each taxable barrel as long as there is less than \$50 million in the Hazardous Release Fund. When the \$50 million cap is reached the surcharge falls to three cents per barrel.

All State taxes and royalties are deductible for Federal Income Tax purposes. The U.S. Federal Corporate Income Tax is assessed at a maximum marginal rate of 35 percent.

# State of Alaska Petroleum Taxes & Royalties

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**FY 1994: Preliminary ACTUAL**



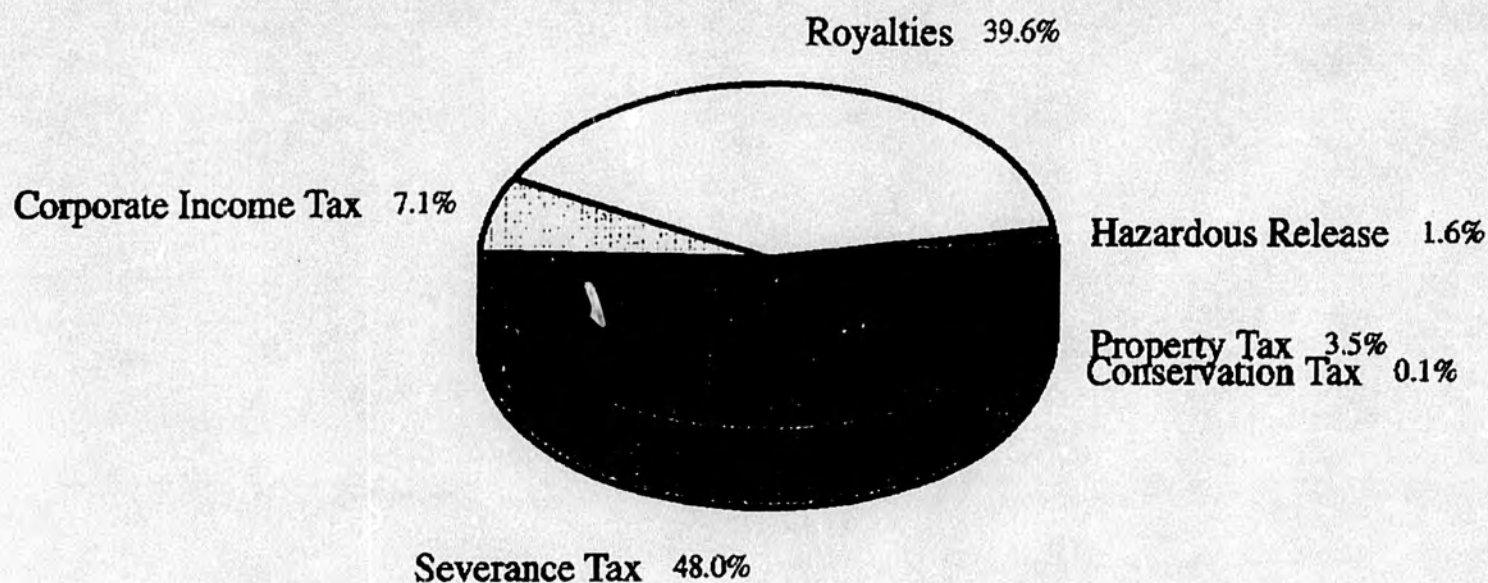
FY94 Production: 1.639 million bbl/day

Petroleum Revenues: \$1.290 billion

Total GF Unrestricted Revenues: \$1.632 billion

# State of Alaska Petroleum Taxes & Royalties

## FY 1995 Base Case: Projections



FY95 Production: 1.690 million bbl/day

Petroleum Revenues: \$1.655 billion

Total GF Unrestricted Revenues: \$1.953 billion

Alaska Department of Revenue, Oil & Gas Audit Division

# Comparison of Tax Rates: Nominal vs. Effective

CY 1994

| <u>Lease</u>      | <u>(bbls)</u><br><u>Taxable Volume</u> | <u>Tax Rate (%)</u> |                  |
|-------------------|----------------------------------------|---------------------|------------------|
|                   |                                        | <u>Nominal</u>      | <u>Effective</u> |
| Endicott          | 28,864,275                             | 15.00               | 11.26            |
| Kuparuk           | 97,542,482                             | 15.00               | 12.96            |
| Lisburne          | 6,142,197                              | 15.00               | 0.00             |
| Milne-Kuparuk     | 3,904,876                              | 15.00               | 0.08             |
| Milne-Schrader    | 915,914                                | 15.00               | 0.00             |
| Niakuk            | 2,877,581                              | 15.00               | 0.53             |
| North Prudhoe Bay | 737,838                                | 12.25               | 0.00             |
| Prudhoe           | 310,397,090                            | 15.00               | 14.79            |
| Point McIntyre    | 32,117,146                             | 12.25               | 11.11            |
| Sag Delta         | 299,595                                | 12.25               | 0.00             |
| West Beach        | 476,195                                | 12.25               | 0.00             |
|                   |                                        |                     |                  |
| Cook Inlet        | 18,843,975                             | 15.00               | 0.00             |
|                   |                                        |                     |                  |
| TOTAL Alaska      | 503,119,164                            | 14.25               | 13.00            |