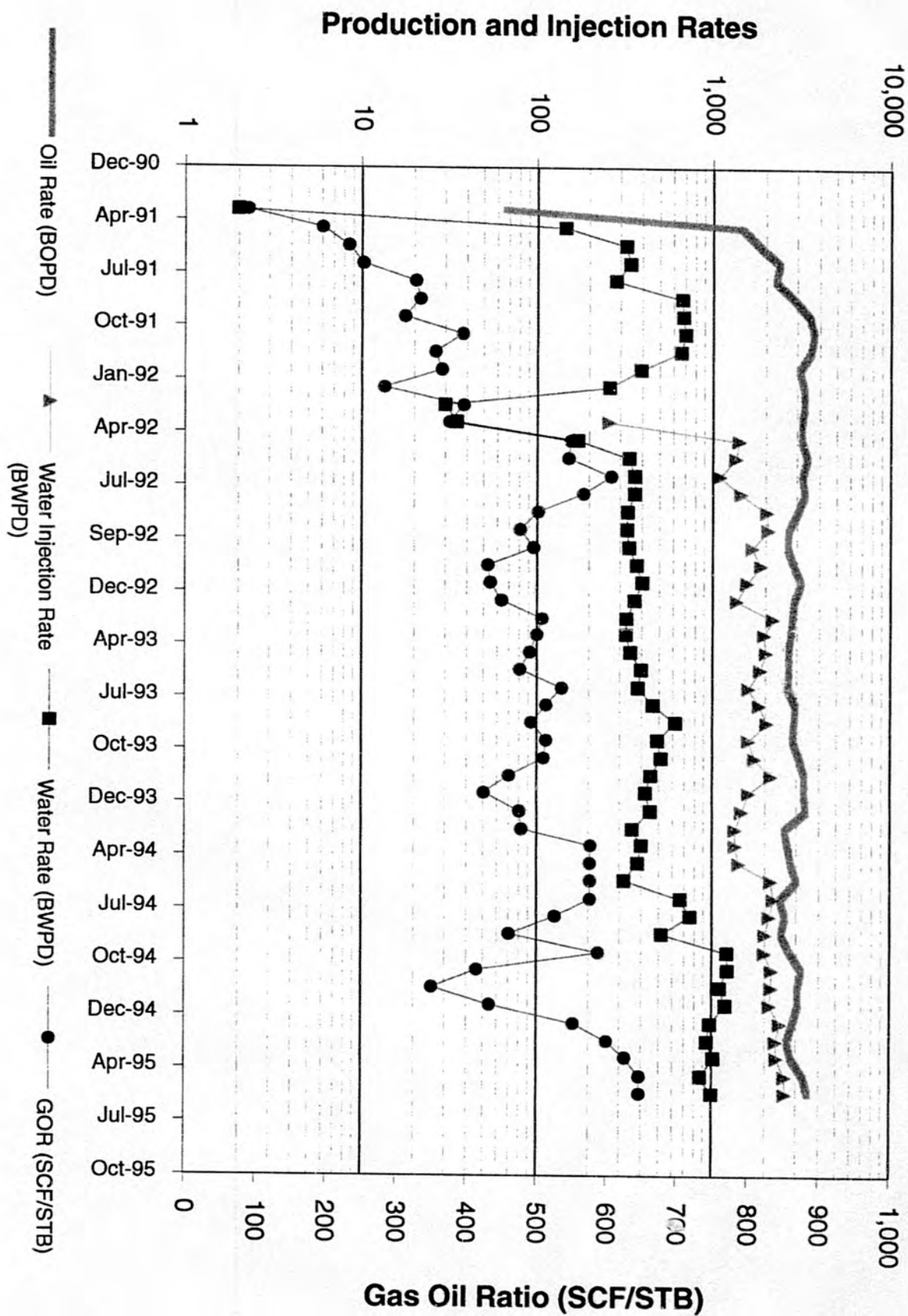


ALASKA LEGISLATURE SPECIAL COMMITTEE/SUBJECT FILES 8672

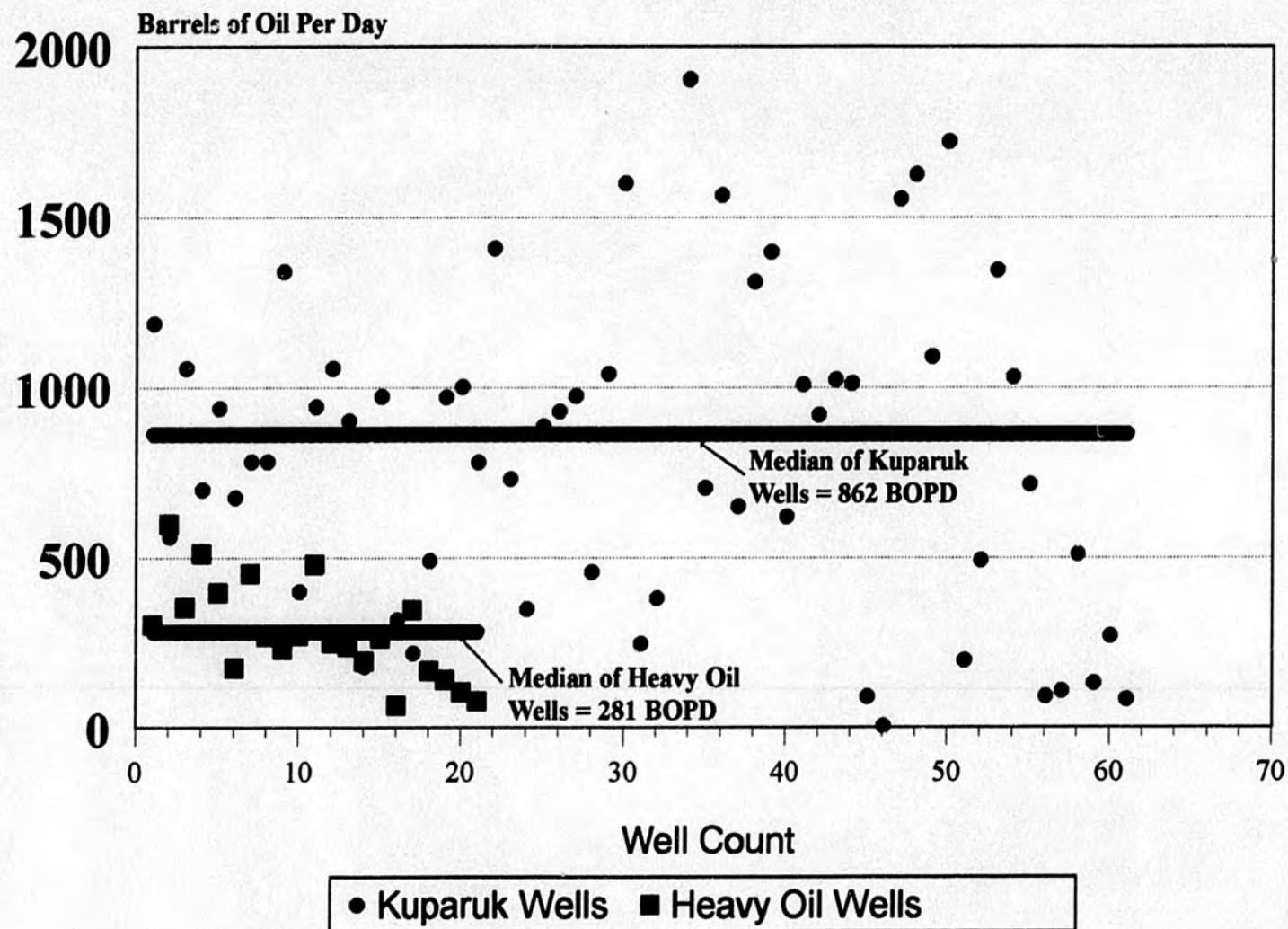
2332 SCOMM 96: HOUSE SPEC. COMM. ON OIL & GAS, 1995-1996

Schrader Bluff Tract 14 Monthly Average Production and Injection History



Heavy Oil Wells Have Much Lower Initial Flowrates

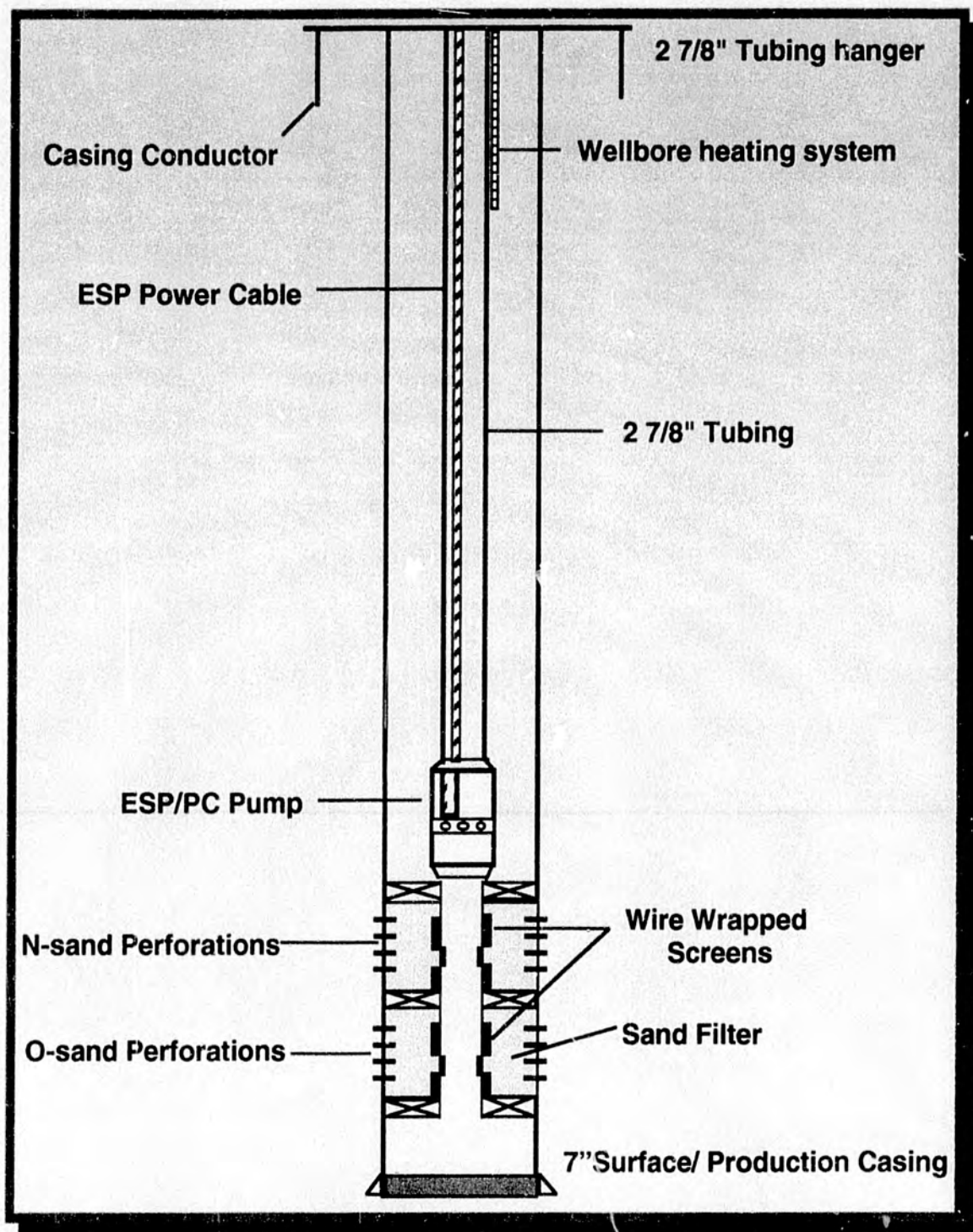
Milne Point Unit



Note: "H" on chart denotes horizontal well

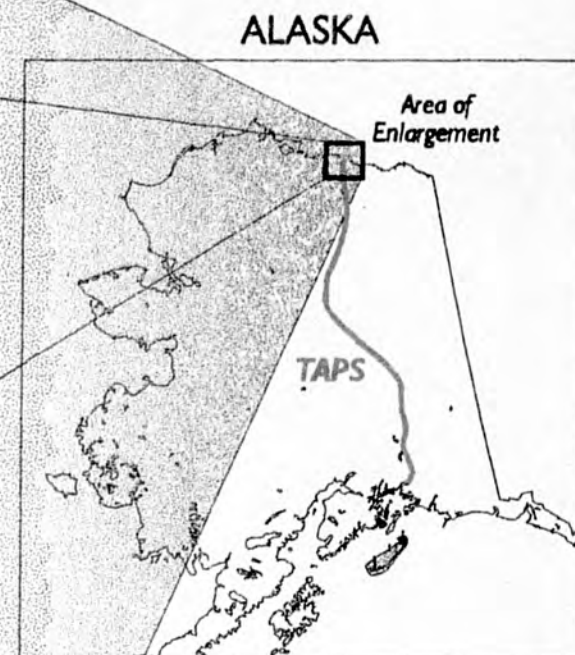
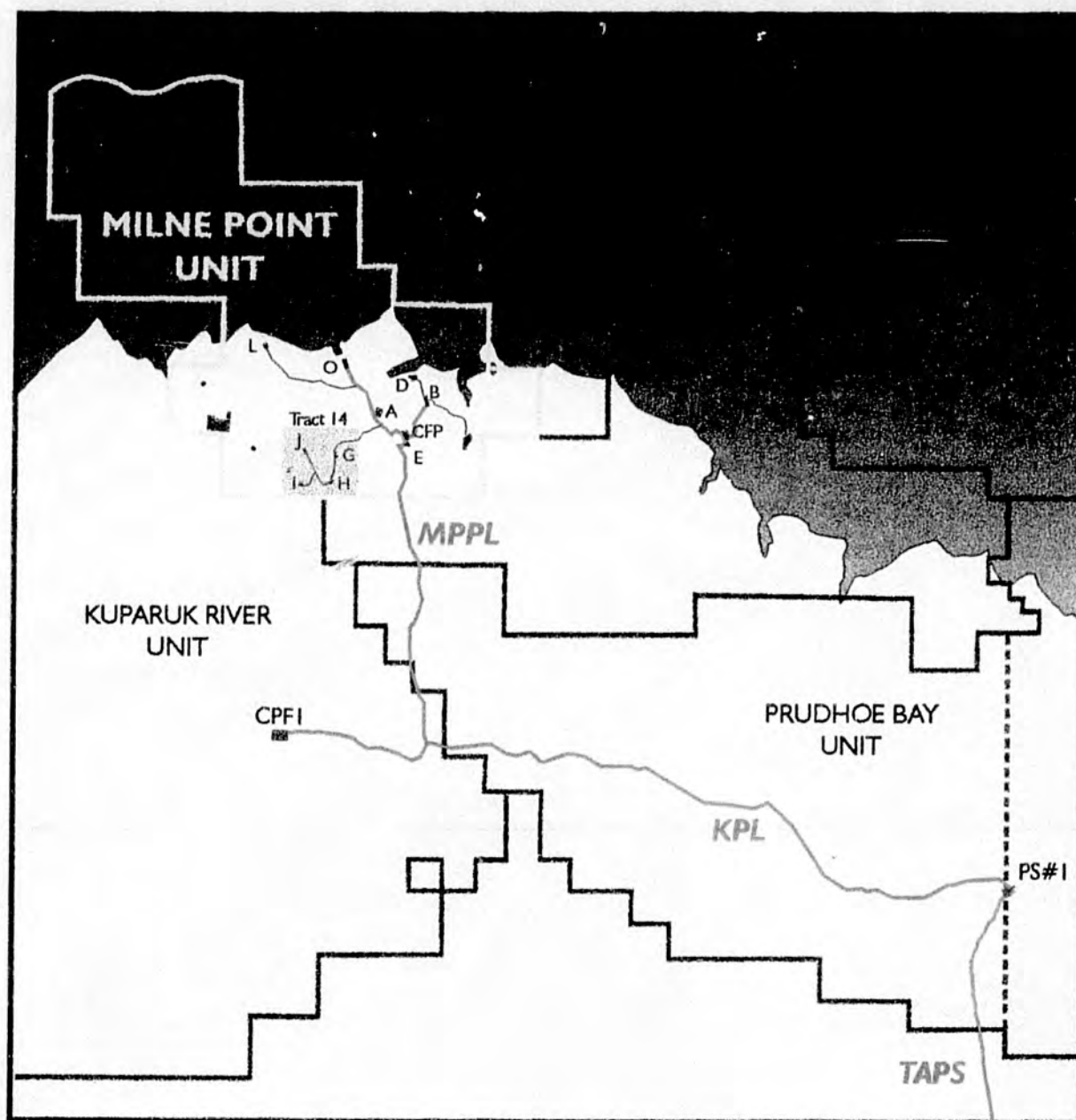
Problems With Producing Heavy Oil at Milne Point

- Produces sand that:
 - is tough on equipment
 - requires gravel packs and screens
- Produces water that is hard to separate
- Wells must be stimulated
- Wellbore heating system required
- Unusually high transportation cost



Future Schrader Bluff Completion

Getting Heavy Oil to Market is Expensive



Per Barrel Charges

MPPL	\$0.48
KPL	\$0.30
TAPS	\$4.06
TANKER	<u>\$1.30</u>

TOTAL **\$6.14**

Previous Heavy Oil Experience

Conoco/Tract 14

- *Spent a minimum of \$126 Million on 22 wells, pads, etc.*
- *Average producing rate = 275 BOPD per well*
- *Expected Recovery = 13.5 Million Barrels*
- *Total Investment = \$9.30/BBL*
- *Uneconomical*

Source: SPE 30289, "Milne Point Schrader Bluff: Finding the Keys to Two Billion Barrels", 6/95. Reserves determined from decline curve analysis.

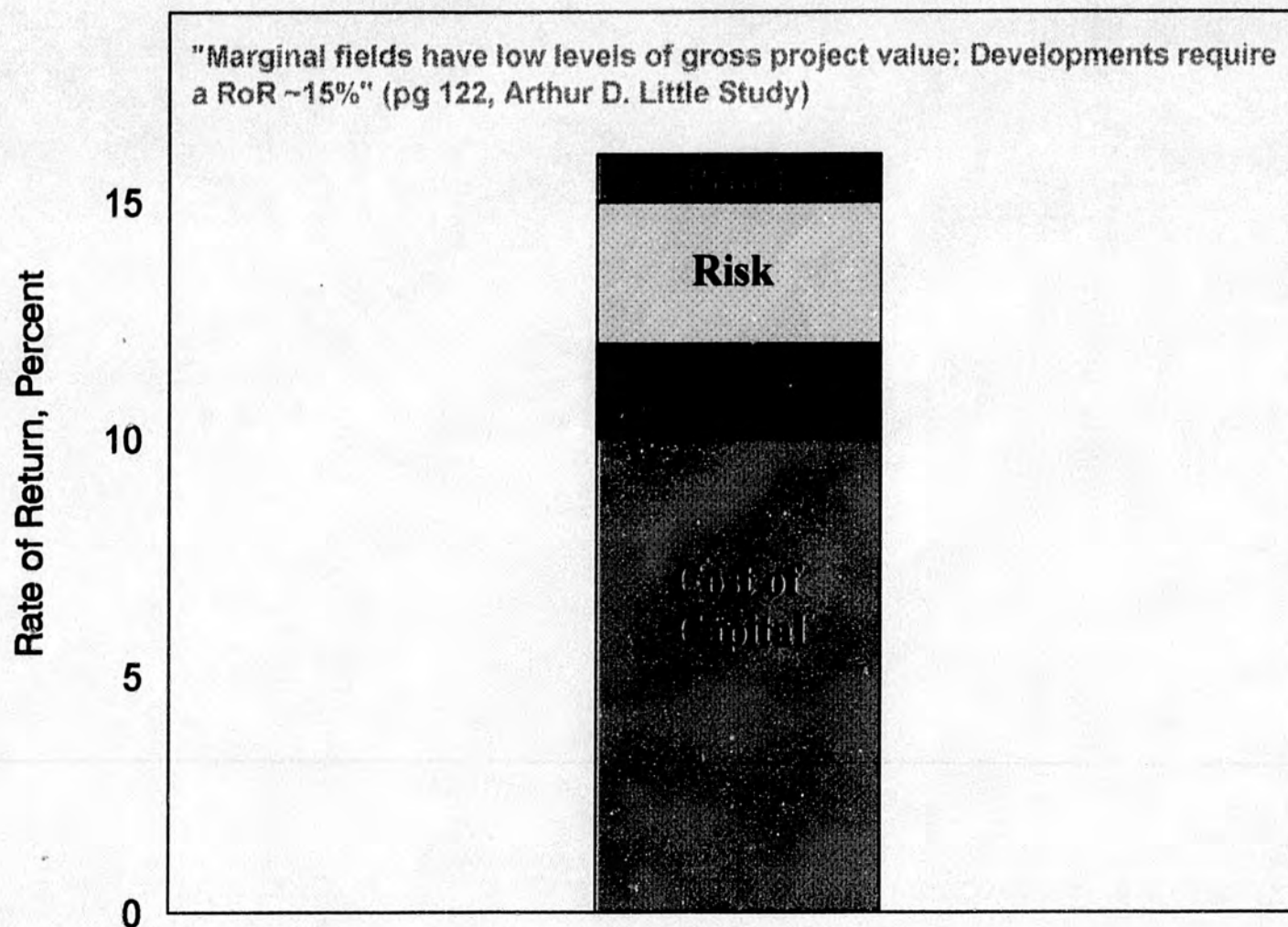
Can Technology Alone Save this Project?

Our experience so far....

- *Horizontal Drilling - 2 wells drilled, good initial flowrates but expensive to drill. At this time, the higher costs do not justify large scale application.*
- *Steamflooding - Typical for Lower 48 heavy oil production, not applicable on North Slope.*
- *Waterflooding - Heavy Oil in loose, unconsolidated formations is difficult to displace because of mobility differences. After three years of waterflooding Tract 14, we are not sure we see any benefit.*

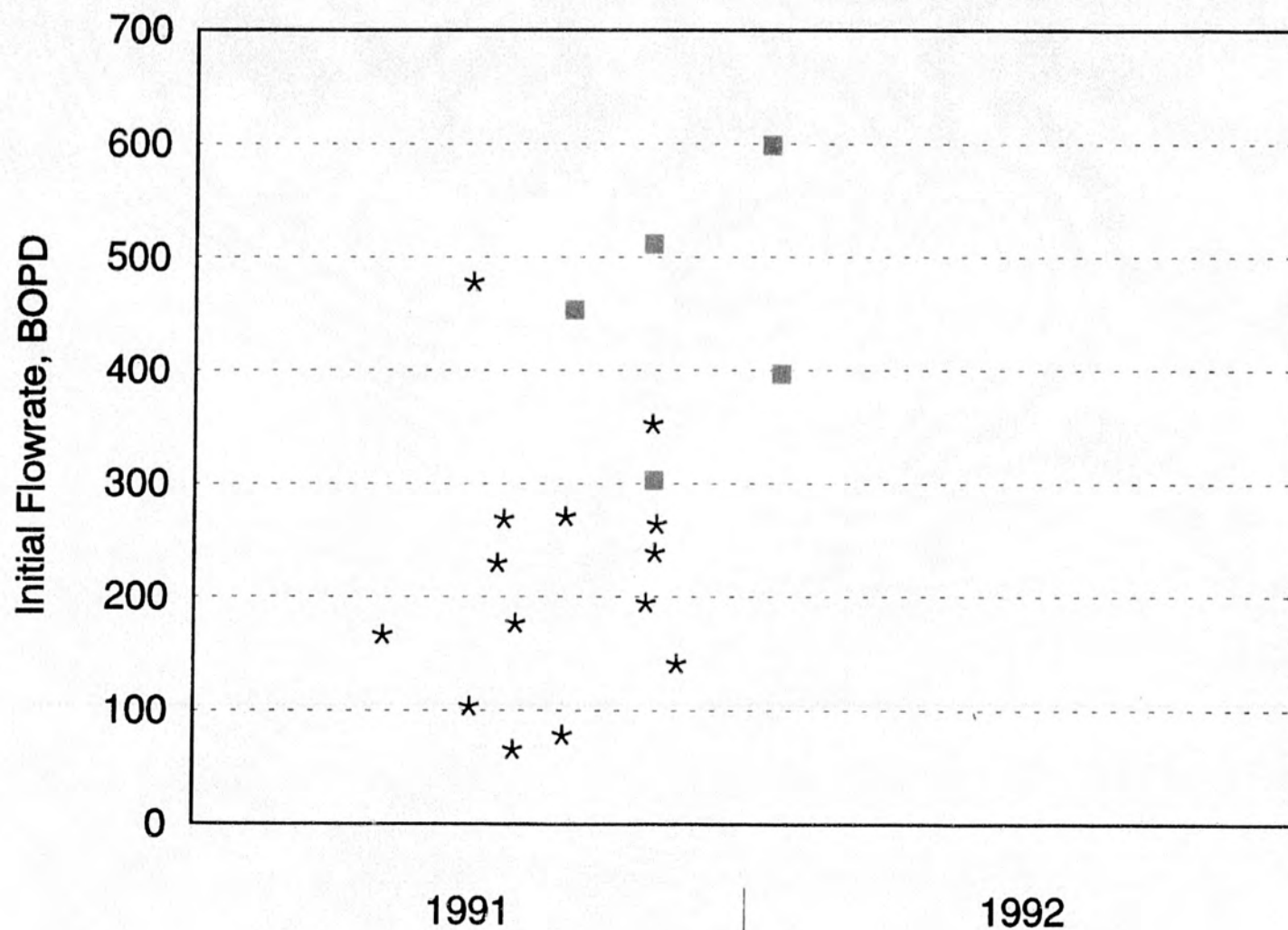
**The Current Economic
Outlook for Future
Capital Investment in
Heavy Oil
Development**

"Hurdle Rate" -- The Minimum Rate of Return Necessary to Justify Capital Investment



Initial Flowrates of Previous Tract 14 Wells

Best five shown in green



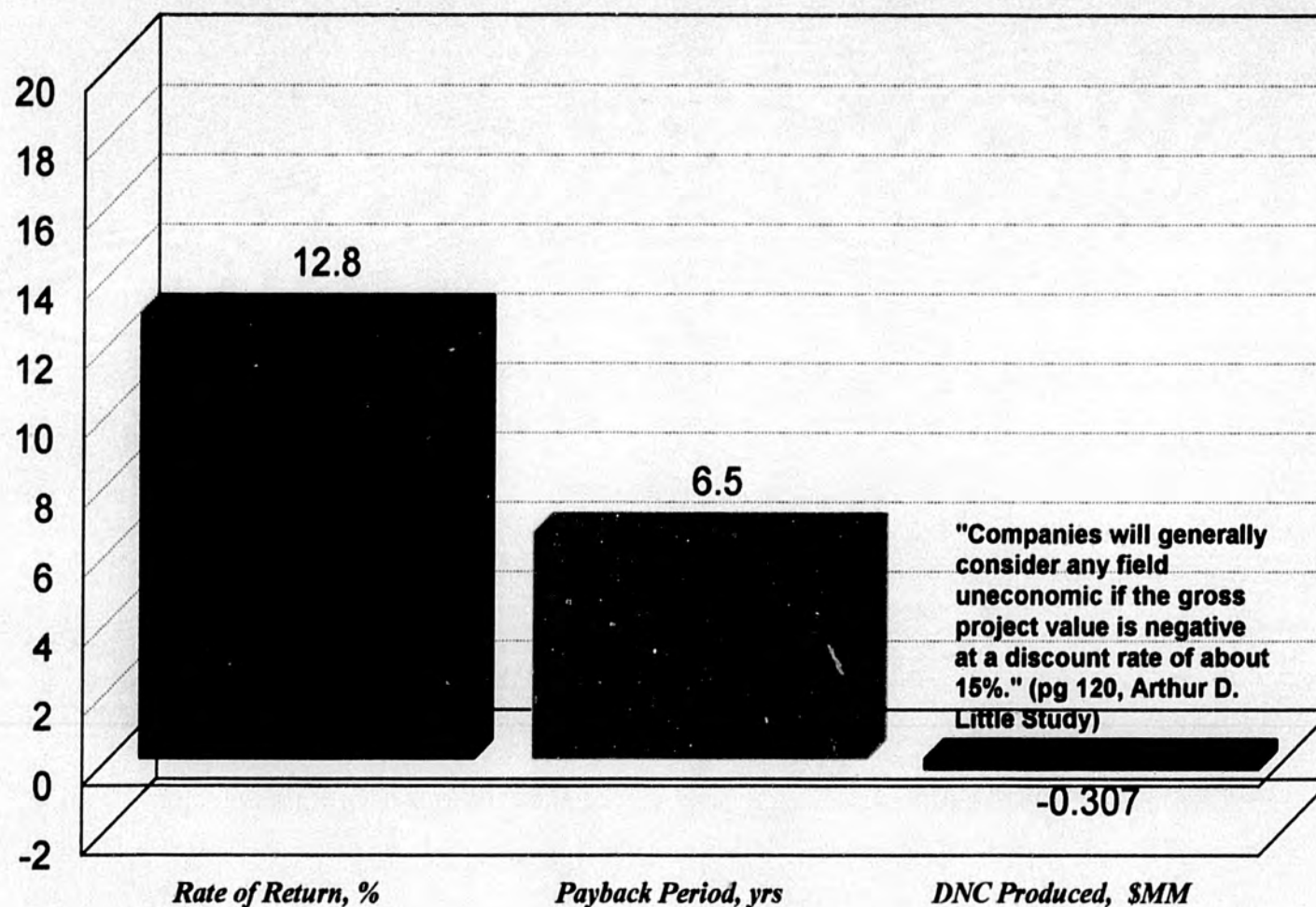
"Best five" based on expected ultimate recovery

Assumptions Used in the Economic Calculations

Assumption	Basis
Future Oil Prices	DOR's Spring 1995 Revenue Sources Book
Well Performance	Best 5 wells in Tract 14
Well Costs	Average of 21 wells in Tract 14
Facilities Costs	Operator's Estimates in 1995-1997 Business Plan
Operating Expenses	Current unit estimates for 1995
Property Taxes	Based on last three years history for the Unit

Typical Heavy Oil Well Economics

Based on the 5 best wells to date in Tract 14



Little, A.D. and Gault, L.: "Review of International Competitiveness of Alaska's Fiscal System," Report to the Oil & Gas Policy Council 8/11/95

**HB 325: A Proposed
Incentive for Heavy Oil
Development**

INFLUENCING ANS HEAVY OIL INVESTMENT DECISIONS

Criteria for an Effective Incentives Policy

- **SPECIFICITY:** *Aimed directly at the challenge of ANS heavy oil production.* "Alaska's current regime is not fiscally efficient. In a fiscally inefficient system...[s]maller and higher cost fields will not be developed... Thus, uniform fixed rate fiscal systems produce non-uniform results which are economically discriminatory" (pp. 10, 61).
- **RELEVANCY:** *Calculated to influence capital investment decisions.* "Because royalty is paid 'off the top' and is not related to field profitability, it often has the effect of reducing the gross project value of a field to levels below the investment target of the companies...Royalty holidays will encourage field development" (pp.188, 192).
- **CERTAINTY:** *Major investment decisions can be made in reliance on the incentive's availability.*
- **IMMEDIACY:** *The incentive must seize the current window of opportunity.* Of the problems with a "wait and see" policy, Arthur D. Little said that: "[While] oil price increases could result in activity increases, this may not occur for 5+ years which may be too late for the North Slope if TAPS line does not continue" (p. 186)
- **CREDIBILITY:** *The incentive has been successfully employed in other jurisdictions.*
- **SUFFICIENCY:** *The incentive is large enough to materially alter project economics.*
- **NECESSITY:** *Alaska should not leave money on the table.*

What are we proposing?

HB 325 by Representative Green

- Applicable to heavy oil production as defined by 26 U.S.C. 613A(c)(6)(F)
- Applicable only to the Alaska North Slope
- Suspension of royalty payments for each new well for the:
 - first five years
 - first 500 barrels of oil per day
- A simple, automatic process

Suspension Incentives in Other Jurisdictions

- Texas
 - high-cost gas (10 year exemption)
- Utah
 - wildcat wells (first 12 months)
 - development wells (first 6 months)
- Oklahoma
 - horizontal wells (until payout)
 - enhanced oil recovery projects (until payout)
- Montana
 - horizontal wells (first 18 months)
- Mississippi
 - discovery wells (first 5 years)
 - re-activated wells (first 3 years)
- Kansas
 - tertiary projects (for life of project)
 - shallow wells (for life of project)
 - discovery wells (first 12 years)
- Arkansas
 - discovery wells (first 5 years)

Texas "High - Cost Gas" Incentive

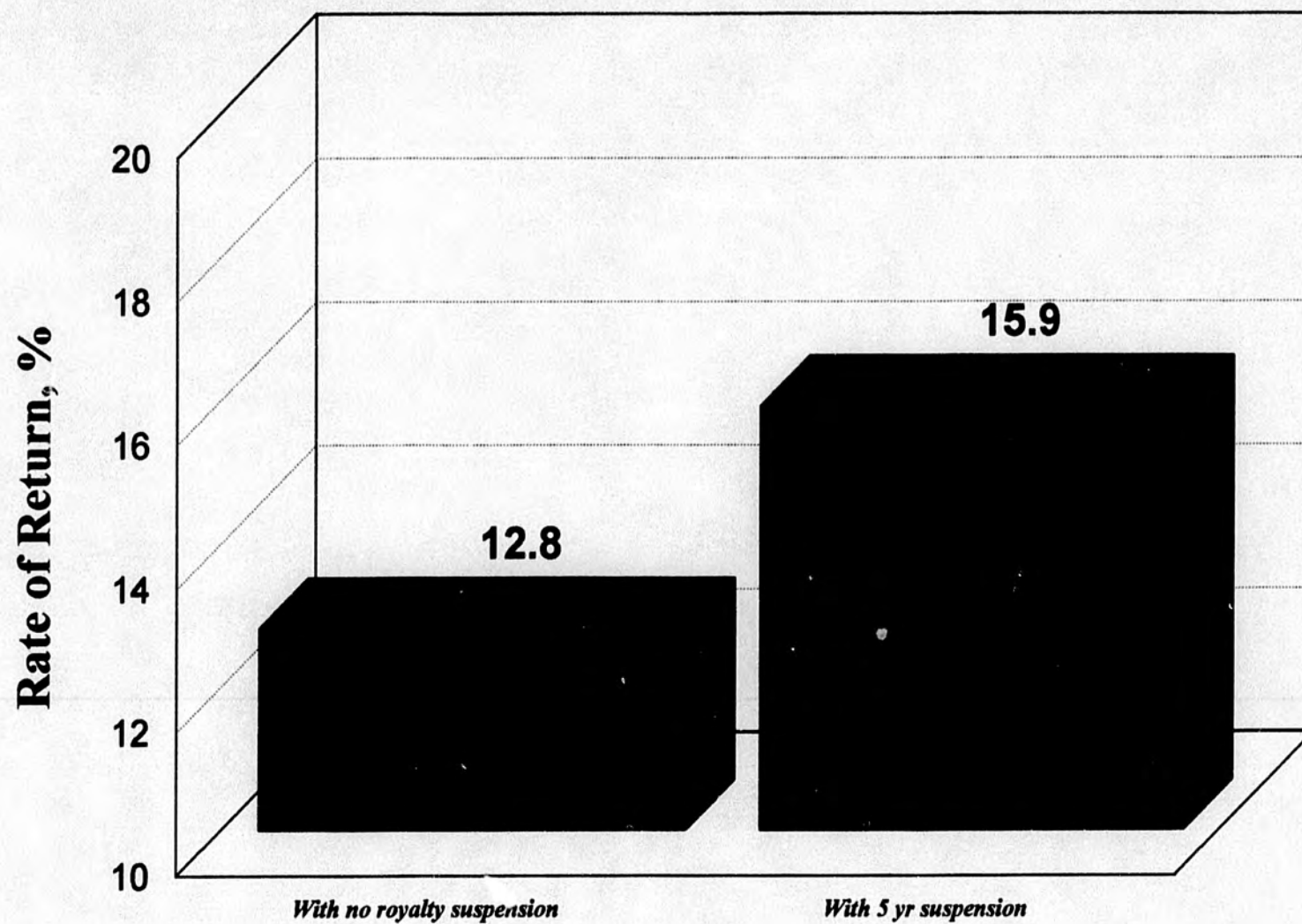
Benefits Identified

- 400% increase in the number of wells
- \$4.122 Billion more in gas produced
- \$240 Million in sales tax revenues generated
- 104,000 employment years created
- \$12 Billion in additional economic value generated for Texas

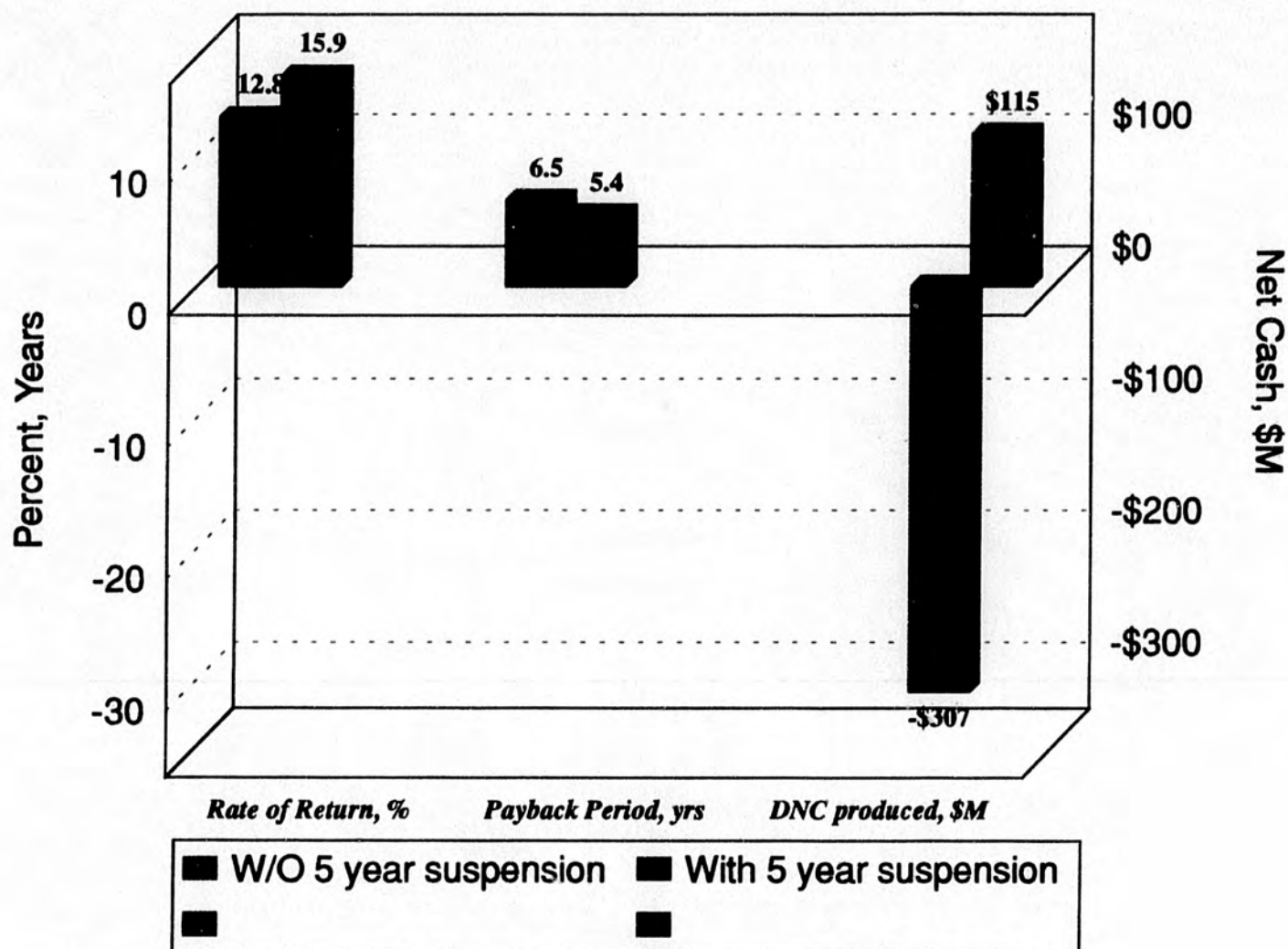
Source: Texas Railroad Commission

**Economic Impact of
HB 325**

The Effect of Royalty Suspension on Schrader Bluff Development Decisions

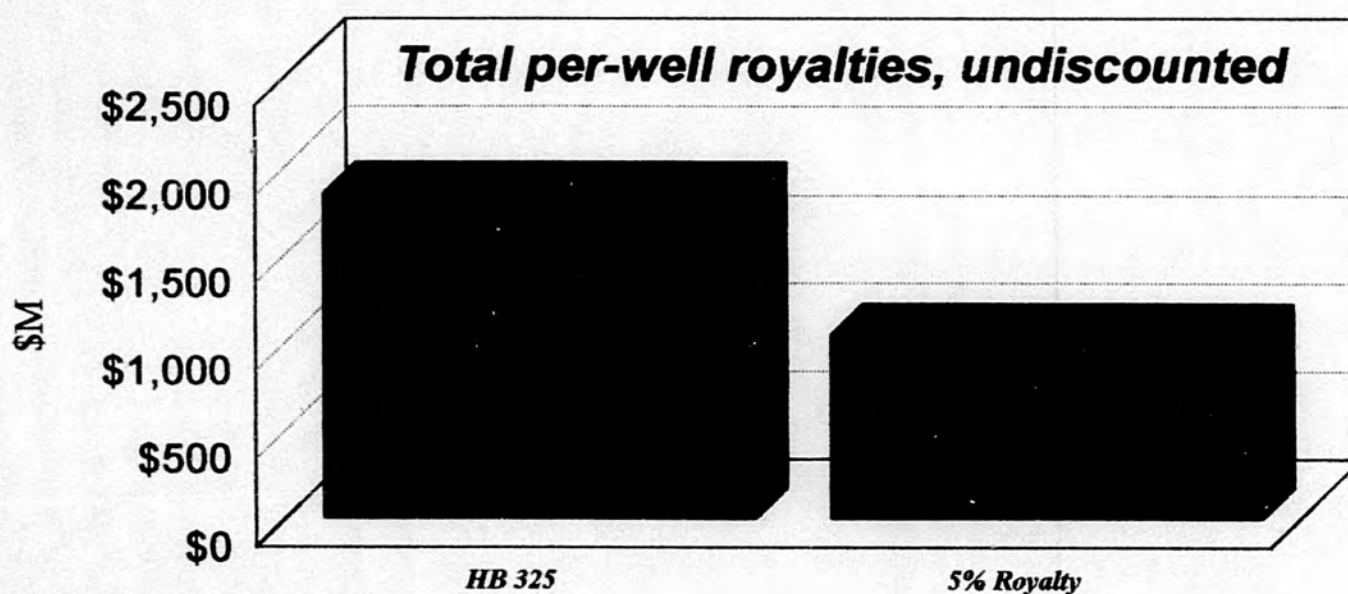
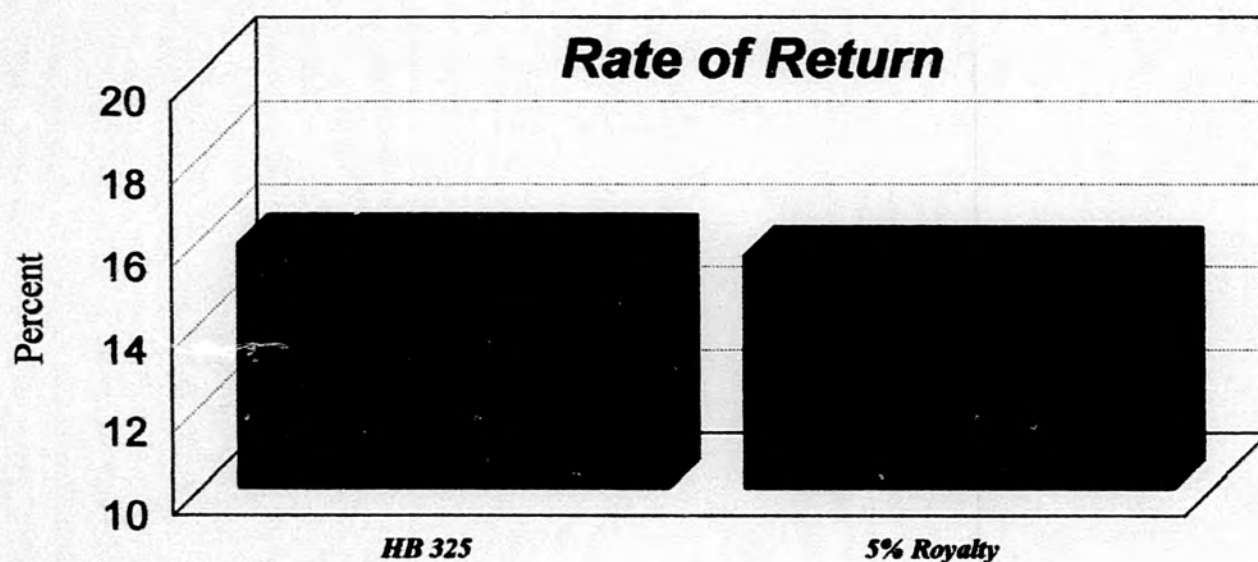


The Effect of Royalty Suspension on Schrader Bluff Economics



HB 325 Meets the Necessary and Sufficiency Criteria....

5 Year Royalty Suspension (HB 325) vs. 5% Royalty for the Well's Life



CORRECTION

THE FOLLOWING DOCUMENT(S)
HAVE BEEN REFILMED TO
ASSURE LEGIBILITY OR PAGINATION

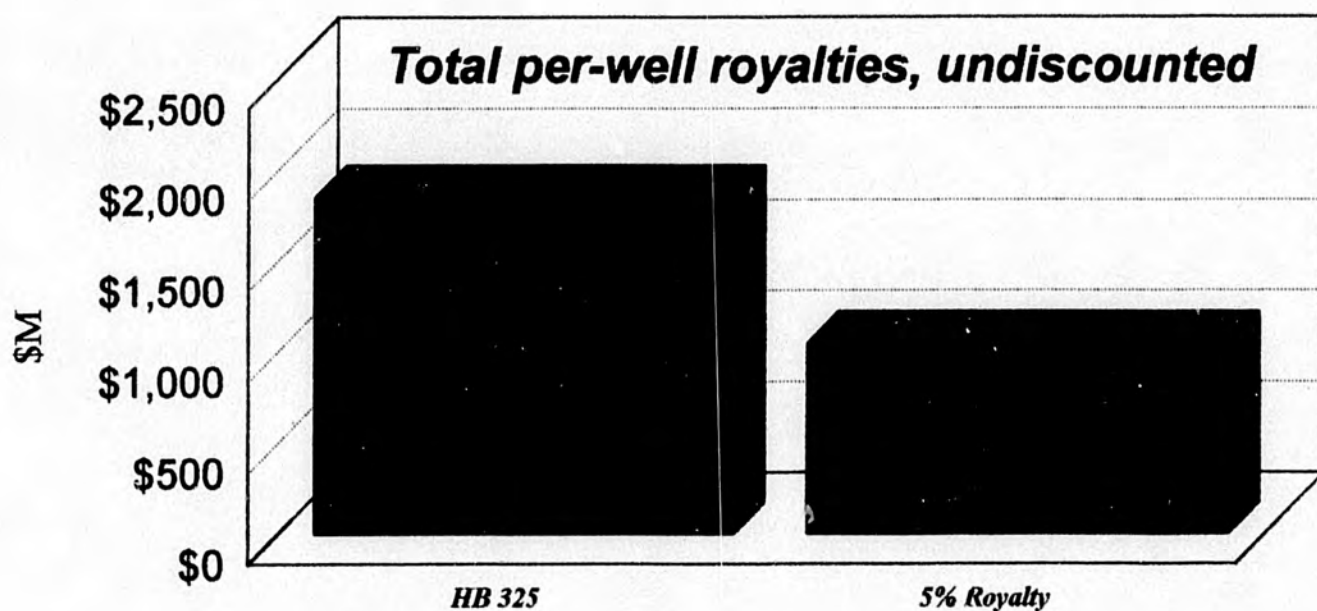
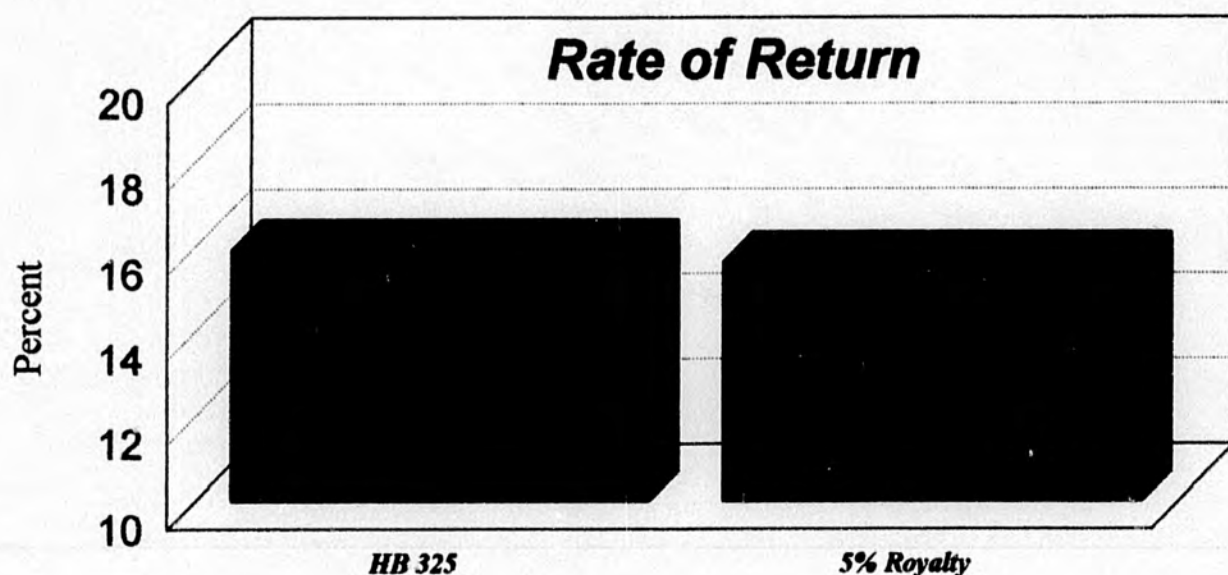


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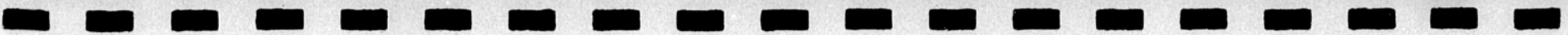
HB 325 Meets the Necessary and Sufficiency Criteria....

5 Year Royalty Suspension (HB 325) vs. 5% Royalty for the Well's Life



Full Development of Heavy Oil at Milne Point Unit

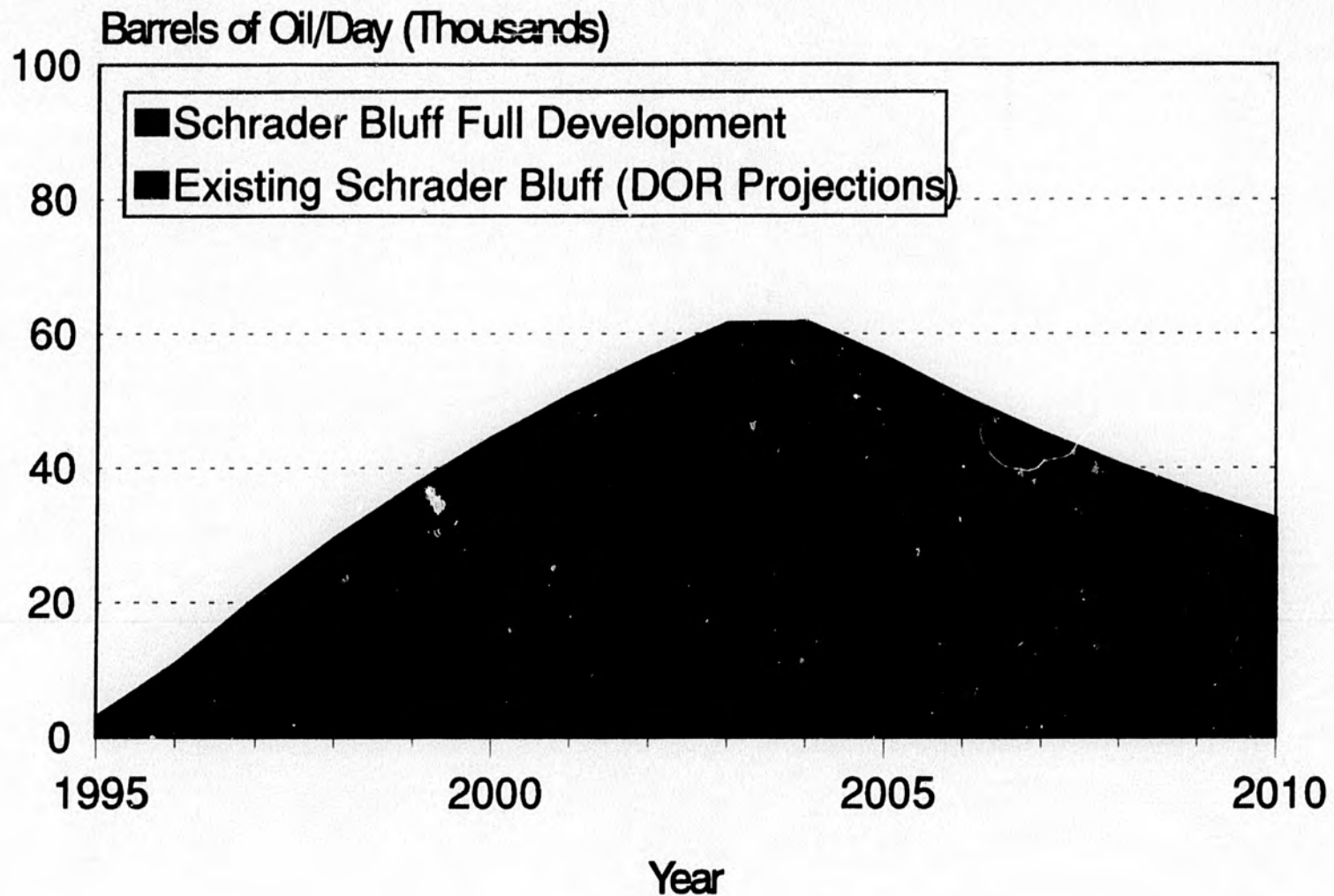
What does it mean?



Full Development Of HO at Milne Point Above & Beyond Existing Schrader Bluff

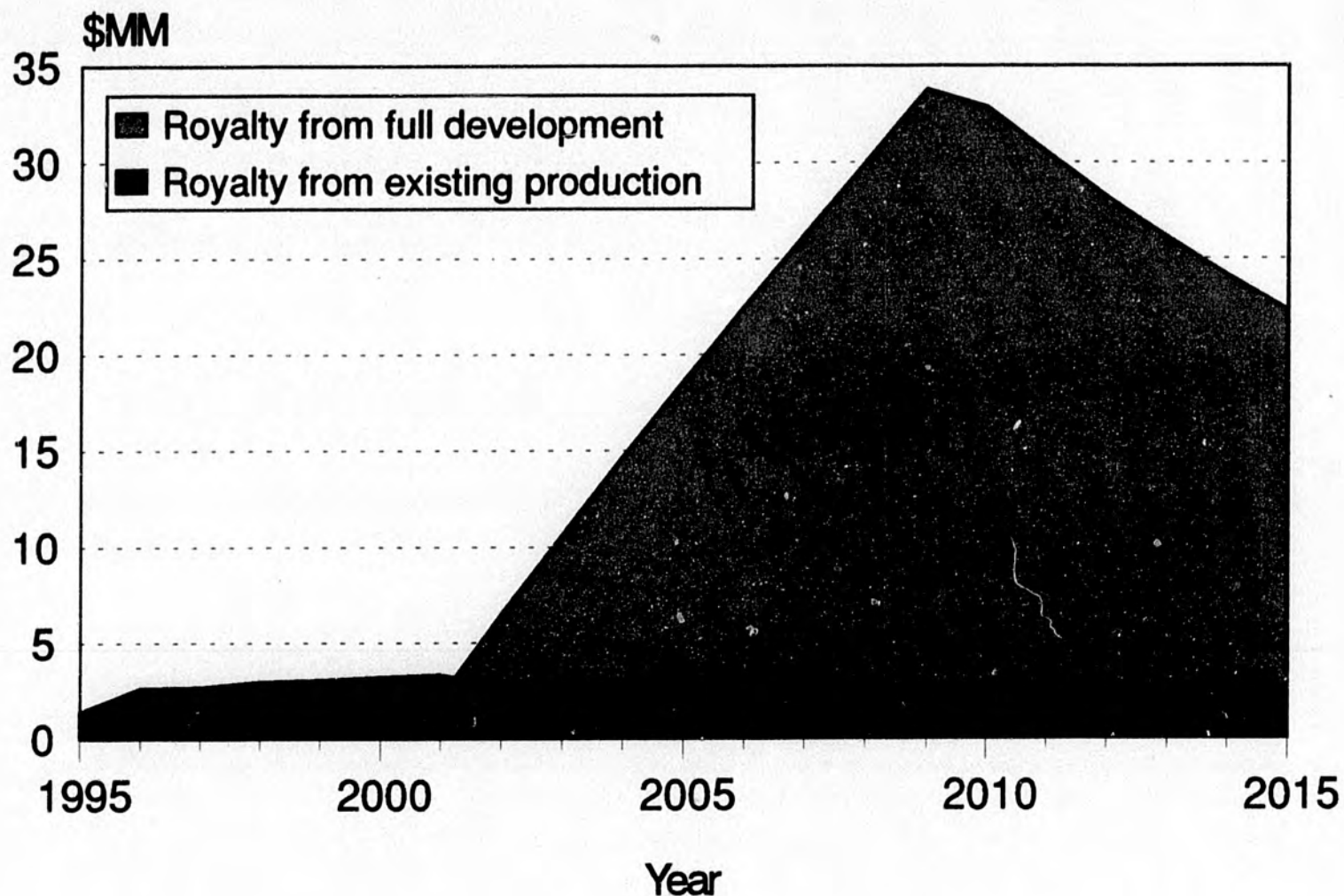
- *350 wells over a ten year period*
- *\$1.2 Billion in Capital Expenditures*
- *300 million barrels of additional oil produced*
- *60,000 BOPD production rate at peak*

Additional Production from Heavy Oil Development

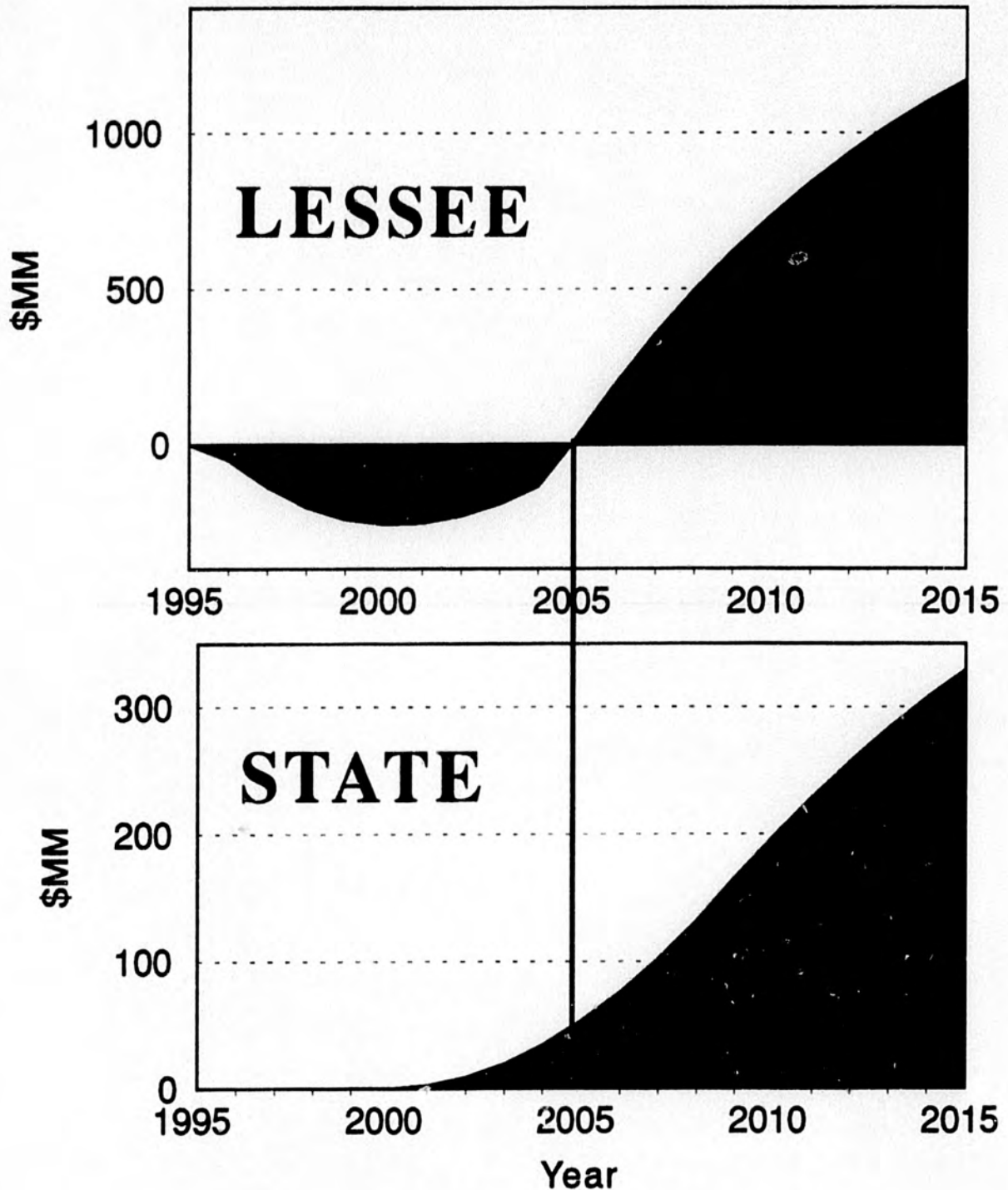


How Does Alaska Benefit?

Royalty payments from full development compared to existing production



Cumulative Cash Flows From Full Development



Oxy Presentation Page 2

MINUTES

OIL AND GAS POLICY COUNCIL

JUNE 28 and 29, 1995

The meeting was called to order at 2:15 p.m. the fifth floor conference room of the LIO Fourth Avenue, Anchorage.

Present: Esther Wunnicke, Mary Marshburn f Kevin Banks for John Shively, Margie Brown Condon, Dave Cline, Pete Leathard, John Mo Absent: George Ahmaogak, Sr., Gregory Carr Navarre, Drue Pearce, Ken Thompson.

1. AWARD OF RFP NO. 0176, Outside Consu:

The Chair introduced Roger Marks, petroleum economist with the Department of Revenue and the chair of the proposal evaluation team. Marks asked that the Council recess into closed session in order to discuss details of the two proposals. The Council recessed at 2:20 p.m. and reconvened to public session at 2:35 p.m.

Condon moved, seconded by Marshburn and it was passed without objection,

to adopt the recommendation of the evaluation team and select A.D. Little/John Gault to fulfill the obligations of the contract

The management team will consist of Roger Marks, Kevin Banks, Ray Jacobczak, Stefan Zuckut, Mike Hurley, Chuck Logsdon, Mike Greening and members of the Council. A draft document is due on August 15, 1995 and the Council is driving for a presentation by the principals at its meeting of September 7, 1995.

The meeting was recessed at 2:45 p.m. and reconvened at 9:00 a.m. on June 29, 1995.

Present: Esther Wunnicke, John Morgan, Dave Cline, Wilson Condon, John Shively, Margie Brown, Ken Thompson, Mary Marshburn for William Hensley.

Absent: George Ahmaogak, Sr., Gregory Carr, Mike Navarre Arriving during the meeting: Jim Branch, Mano Frey, William Hensley, Pete Leathard, Drue Pearce

1. APPROVAL OF COUNCIL MINUTES OF May 25, 1995
2. APPROVAL OF COUNCIL MINUTES OF June 12, 1995

Shively moved, seconded by Condon and it was passed without objection,

to approve the minutes of May 25 and June 12, 1995

3. HEAVY OIL DEVELOPMENT ON THE NORTH SLOPE - OXY USA, Inc.,

Shively

358-2916

See bottom of p. 1

Don Romine, Rick Foppiano and Ed Behm

* [John Tillinghast, attorney for OXY, introduced Romine, Behm and Foppiano.]

Behm, introducing OXY, noted that they have no interest in TAPS nor do they sell petroleum products. They have an interest in Milne Point. Heavy oil is thick, takes longer to produce, and is lower priced than light oil. ARCO attempted to produce heavy oil in its West Sak sands project but determined it to be uneconomical and stopped work in 1986. Conoco did better with the Milne Point Tract 14, improving production rates about 10% over West Sak and lowering the per barrel cost, but it was still too expensive to be economical. Behm covered the problems in producing heavy oil and potential alternatives/solutions which have been attempted. Primary production methods still appear to work best. Getting heavy oil to market is very expensive, costing \$6.14 per barrel to transport and the cash margin on Milne Point is only \$.93

OXY is spending approximately 10% of its domestic budget in Alaska and needs a 15% minimum rate of return on projects in order to justify capital investment.

The question remains as to whether the Milne Point sands will be fully developed. In exploring this, Foppiano covered the assumptions used in the company's economic calculations which result in a 12.8% ROR which is insufficient for full development. He continued that a final decision not to proceed has yet to be made but some significant decisions must be made soon. They believe that the answer to this difficulty is for the State to have an effective incentive policy. The criteria they have developed for an effective incentive policy which would positively influence ANS heavy oil investment decisions includes specificity at heavy oil production, relevance, reliability on the incentive's availability, immediacy to the current window of opportunity, credibility of the incentive as having been used successfully elsewhere, sufficiency to alter project economics and the necessity for Alaska not to leave money on the table.

HB 325, introduced by Representative Joe Green towards the end of the last legislative session, fits the bill. It is applicable to heavy oil production, only on the North Slope and provides for a suspension of royalty payments for each new well for the first 500 barrels of oil per day for the first five years of production.

Listing suspension incentives in other jurisdictions, Foppiano stated that HB 325 is analogous to the Texas high cost gas incentive. Texas has had 5 years of experience with this incentive and it was one of the only incentives renewed last year. He listed the benefits which included an increase in the number of wells, gas produced, sales tax revenue generated and employment. The effect of royalty suspension on Schrader Bluff

development would increase the ROR to 15.9% and decrease the payback period to 5.4 years.

Ken Thompson stated familiarity with the Texas incentive. Texas did a complete macroeconomic study of this with respect to jobs, corporate sales tax, property tax, etc. before instituting it. Pete Leathard asked about the status of HB 325 and was told that it had been introduced at the end of the session. Thompson said that heavy oil could be a key resource for Alaska and development would mean massive partnership. It deserves examination and he suggested that the Resource Assessment team look at how much heavy oil exists. The IC team should have the consultants look at worldwide incentives, particularly in Venezuela, and the macroeconomic picture must be fully assessed.

Asked about the effect of HB207 on Milne Point, Tillinghast said that it does not apply. Asked by Cline whether there was anything to be learned from Alberta's development of tar sands, Behm replied that was even more difficult.

4. MARATHON OIL, ALASKA EXPERIENCE - Ralph Dartez, Production Manager

Dartez said Marathon's Alaska operations are primarily focused in Cook Inlet and that they produce about 25% of the gas sold in Alaska. They operate an LNG plant and tankers, have been in Alaska since the 1950s and were participants in the Swanson River field discovery. He covered internal changes made within the past year to improve the company's economic viability and to extend field life in the Inlet's mature fields. Marathon would like to continue to grow in Alaska. They do not expect to find any new large, prolific fields but rather extensions of existing fields or small to moderate sized prospects. Hurdles to stimulating or encouraging investment in Alaska are land access, tax certainty and fairness and regulatory pressure.

There should be annual lease sales with an areawide best interest finding and acreage which is expired, relinquished or terminated should be reoffered to industry within a year of the lease termination. Regarding tax matters, tax rules and application need to be consistent and fair and tax incentives should be examined. State and federal regulations need to be reasonable and should meet but not exceed federal standards unless the costs are justified by environmental benefits.

Condon said the Legislature sets tax policy and the Administration is charged with administering that. If industry is seeing this done differently, then it needs to be addressed. Revenue recognizes that industry is its customer and must be treated fairly. Continuing, Condon said that Revenue must also collect the correct amount of tax and suggested that there are people in Marathon who can help clear confusion and bad feelings

that have existed. Dartez appreciated Condon's comments and noted a long history with the State. Perceptions are important, he said, and he has related many in his comments. For his company to do business in Alaska, the geological prospects are actually secondary to the perception of whether the company can do business with the State.

Asked by Hensley what the gas reserves are, whether they will bid on any future lease sales and if there were plans for expansion, Dartez replied that the Council should examine the DNR report with respect to reserves, although there looked to be a few errors in it. Marathon would like to expand their business in Alaska and will participate in future lease sales as they fit into the niche which they see for themselves in Cook Inlet, particularly those that are close to the infrastructure.

Thompson said that with respect to regulatory pressure, his company feels that burden more in duplication of effort and paperwork rather than extreme environmental regulations.

A meeting of the Council on the Peninsula was discussed and the Chair asked members to consider alternate methods of dispute resolution over lunch.

The Council recessed at noon for lunch and reconvened at 1:30 pm.

6. REPORT ON MMS WORKSHOP ON GENERAL LEASING POLICIES IN GULF OF MEXICO - Kevin Banks, DNR

Kevin Banks noted that the Gulf is a very different place for exploration and production than Alaska. MMS goals have been to slow the decline in production in the Gulf, promote deep water and other high cost area exploration and assure that the public gets its fair return. Production, however, is preeminent. MMS intends to improve the amount of unexplored acreage by decreasing bid rejections, reducing the minimum bid and increasing rent. Also in consideration are longer lease terms, larger tract size and new tracts with lower royalty rates. To increase production, MMS is looking at reducing the minimum royalty rate on new leases and reducing the royalty rate on existing leases in bilateral negotiation. Additionally, MMS intends to streamline the application and approval process for royalty relief, anticipating that there may be many situations meeting the royalty relief criteria. Jim Branch asked if any discussion of shallow water efforts to get more independents involved had been discussed and Kevin said not that he was aware of.

5. UPDATE: ARCTIC NATIONAL WILDLIFE REFUGE - Debbie Reinwand, Arctic Power

Debbie Reinwand briefed the Council on the various programs in progress by Arctic Power to encourage passage of legislation to

open the Refuge. These include informational meetings in Washington, D.C. with various legislators, tours for both media and policy makers of the Refuge, and monitoring of ad campaigns which are anti-opening. Mano Frey, Co-Chair of Arctic Power, said that one year ago he thought the opening of ANWR was simply a maintenance project but progress has been so significant that optimism is now very high.

7. RESOURCE ASSESSMENT SUBCOMMITTEE REPORT: Shively

John Shively distributed minutes from his subcommittee's meeting of June 16. The major presentations included Ryan Lance of ARCO on Alaska oil and gas reserves and resources, coal bed methane and gas hydrates. Should Alaska ever have a gas line, the gas hydrates offer a large source of supply. John Morgan asked what distinction had been made by the subcommittee between known resources and potential and John said that identification of potential resources has not been attempted. The subcommittee has examined what the odds are that something might be found but has not attempted to quantify that. Morgan said that he felt this was something which should be pursued.

8. INTERNATIONAL COMPETITION SUBCOMMITTEE REPORT: Condon

Condon distributed minutes of his subcommittee's meeting of June 6 and said that they have been focused on the A.D. Little proposal. A signed contract is now in hand. This was no small effort, Condon said. Roger Marks, chair of the proposal team, had told Condon that if he was successful in accomplishing the work, that Condon would owe him a holiday turkey. Noting the coming Fourth of July, Tamar diFranco presented Roger with a frozen turkey.

Condon and Shively reviewed their very recent trip to London and Norway with respect to oil and gas matters. The two countries are substantially different than Alaska in their level of government take but similar in that each has taken a look at a fixed royalty based on revenue and decided it was not a good idea and abolished the fixed royalty. Both governmental agencies operate with considerable authority and self confidence. The royal reduction question has been dealt with and they believe that it is a necessary for an area with mature fields. They recognize that as the development of oil and gas fields mature, policy adjustments ought to be made. They do not do bonus bidding, they license and it is not an economically driven decision but involves a number of other factors. The United Kingdom is driven to be energy independent and Norway, whose electricity is provided by hydro power, is interested in export. What struck Shively most was the small role oil and gas play in the countries tax revenues. He feels this is one of the major reasons they can be so flexible. It is about 2% of the United Kingdom's tax base and about 9% of Norway's. Condon said that

Norway was curious about Alaska's permanent fund as it wants to set up an oil fund.

9. EVALUATION OF SOCIAL/ECONOMIC/ENVIRONMENTAL IMPACTS
SUBCOMMITTEE REPORT: Wunnicke

Esther Wunnicke said their last meeting had been postponed because of the potential conflict with proposal interviews.

10. COUNCIL WORKPLAN

Discussion ensued with respect to the Council's workplan and timetable. It was agreed that not all of the Council's work could be completed by fall but that the remaining subject matter would be prioritized with those items considered most urgent undertaken for completion by the end of September. This would leave October for discussion and recommendation of policy changes or actions. In this manner the Administration would have time to develop legislation for introduction at the new session in January.

Other items to be considered in the Council's workplan are a meeting with the Long Range Fiscal Planning Commission to allow sharing of perspectives and a more formalized presentation/report by the Resource Assessment subcommittee as to the size of resource which the State will most likely be dealing with in the future. The assumption, from all that has been heard, is that it will be smaller, more marginal fields, but that is just a perception at this point.

The meeting schedule agreed to by the Council will be as follows:

July 21: Social/Economic/Environmental Impacts subcommittee
meeting, 9 a.m. - noon
Full Council worksession from one until 4 p.m. on
remaining areas of work

The management team is to prepare a timetable and a list of work for consideration at this worksession.

August 22: Council meeting.
September 7: Council meeting.
September 28: Tax and Royalty summit - DATE CHANGE FROM 9/27/95.
October 12: Council meeting, policy discussion.
November 2: Council meeting, policy.
November 30: Council meeting, policy.

Projected agenda material will be prioritized and shifted with those items placed aside which are of less immediate concern.

The Chair said that if the Council finished the first portion of its work by November 30, she would buy Ken Thompson a holiday

turkey.

Ray Jacubczak said that the A. D. Little video conference would be held at BP on July 6 and Council members were invited to attend. The Chair thanked John Morgan for use of their videoconferencing facilities.

There being no further business to come before the Council, the meeting was adjourned at 4:00 p.m.

Mmarshburn
6/30/95



TIM BRADNER

A little heavy lifting could do Alaska good

Some of the largest untapped oil and gas resources in North America are the West Sak and Ugnu heavy-oil deposits on the North Slope.

The estimated oil resource is 26 billion barrels locked in the underground reservoir rock. That exceeds even Prudhoe Bay's 23 billion barrels of oil-in-place.

Let's be clear: This is no Prudhoe Bay. West Sak, the best of the two reserves, might eventually produce 200,000 barrels a day. Still, that's a lot of oil, and it's important for the state's oil-services industry, because heavy oil is very capital-intensive development.

The problem is that this oil is thick and difficult to produce, and the reservoir conditions are very poor compared to the nearby Prudhoe Bay and Kuparuk River oil fields. With present technology and oil prices, this oil is not economic.

Still, even a small recovery of such a large resource is a lot of oil, and it's a big target for Arco Alaska Inc., BP Exploration (Alaska) Inc. and Oxy USA, three North Slope producers, who are now focusing attention on technical and economic problems of producing heavy oil.

By definition, heavy oil has an API gravity of 20 degrees or below, compared with 29 degrees in other North Slope fields. The oil is thick and more difficult to move than conventional crude oil.

It is more shallow than the other fields and is nearer the 2,000-foot layer of permafrost. That lowers its temperature, making it thicker and even harder to produce. Also, heavy-oil wells usually produce at lower rates than conventional wells.

Please see Page C-2, **BRADNER**

□ This weekly summary of news items on information technology is provided by Educom, a Washington, D.C.-based consortium of leading colleges and universities. It is edited by John Gehl and Suzanne Douglas.

Parts today for Kodiak.
Alamar's Gus W. Darnell arrives today from Ozol, Calif., and departs Tuesday

parts the same day for Thursday; cargo is fuel.
Tacoma.
Petro Star's Energizer arrives Thursday and departs Friday; cargo is fuel.
Sea Land's Tacoma arrives Tuesday with general

BRADNER: Heavy oil is difficult to move

Continued from Page C-1

North Slope operators would feel fortunate to get 500 barrels a day from a heavy oil well.

On the North Slope, the West Sak and Ugnu overlay large parts of the Kuparuk and Milne Point fields, as well as part of Prudhoe Bay. West Sak is considered a more likely candidate for near-term production.

Oil companies think that with luck, 800 million to 1 billion barrels of oil might be produced from the West Sak. Oil recovery rates are expected, under the best of circumstances, to range from 10 to 16 percent of the oil-in-place. This compares with 40 percent in Kuparuk and 50 percent in Prudhoe Bay. The Ugnu resource is shallower and colder than West Sak and will likely require some radical new technology.

The companies have already spent a lot of money on the West Sak. Arco spent over \$200 million in the 1980s on research and a pilot production project. Cobco, then the producer at Milne Point, spent an-

other \$126 million on West Sak test wells. The projects were uneconomic.

Now Arco and BP are taking a fresh look. Oxy, partner with BP in Milne Point, has a lot of experience with heavy oil in California and is intrigued with West Sak's potential.

What's changed since the late 1980s is that a lot of infrastructure is available on the North Slope, particularly enhanced oil recovery facilities, that may lower the cost of heavy-oil development. Spare capacity also will be available in existing oil processing facilities, as production declines in the other fields.

New, low-cost drilling techniques, particularly the new coiled-tubing systems, offer the promise of drilling wells at lower costs.

Development of the North Slope heavy oil could be important to the state's oil-services industry, because a large number of new wells and very specialized production enhancements, such as "fracturing" of underground rock with high-pressure fluid injection, would be

necessary.

Because the economics are marginal, West Sak might be a candidate for the incentives being discussed within Gov. Tony Knowles' Alaska Oil and Gas Policy Council, an industry-state advisory group. Oxy USA, for example, recently told the council that a five-year royalty suspension might speed capital recovery enough so that West Sak wells meet the company's minimum "hurdle rate" for profitability. Although it isn't another Prudhoe Bay, or an alternate to the Arctic National Wildlife Refuge in terms of new oil prospects, North Slope heavy oil could boost the North Slope's reserves and help keep the trans-Alaska pipeline operating until production from major new discoveries, such as are possible from ANWR, would be available.

□ Tim Bradner writes for an Alaska economic reporting service. His private clients include petroleum companies. His opinion column appears every fourth Sunday.

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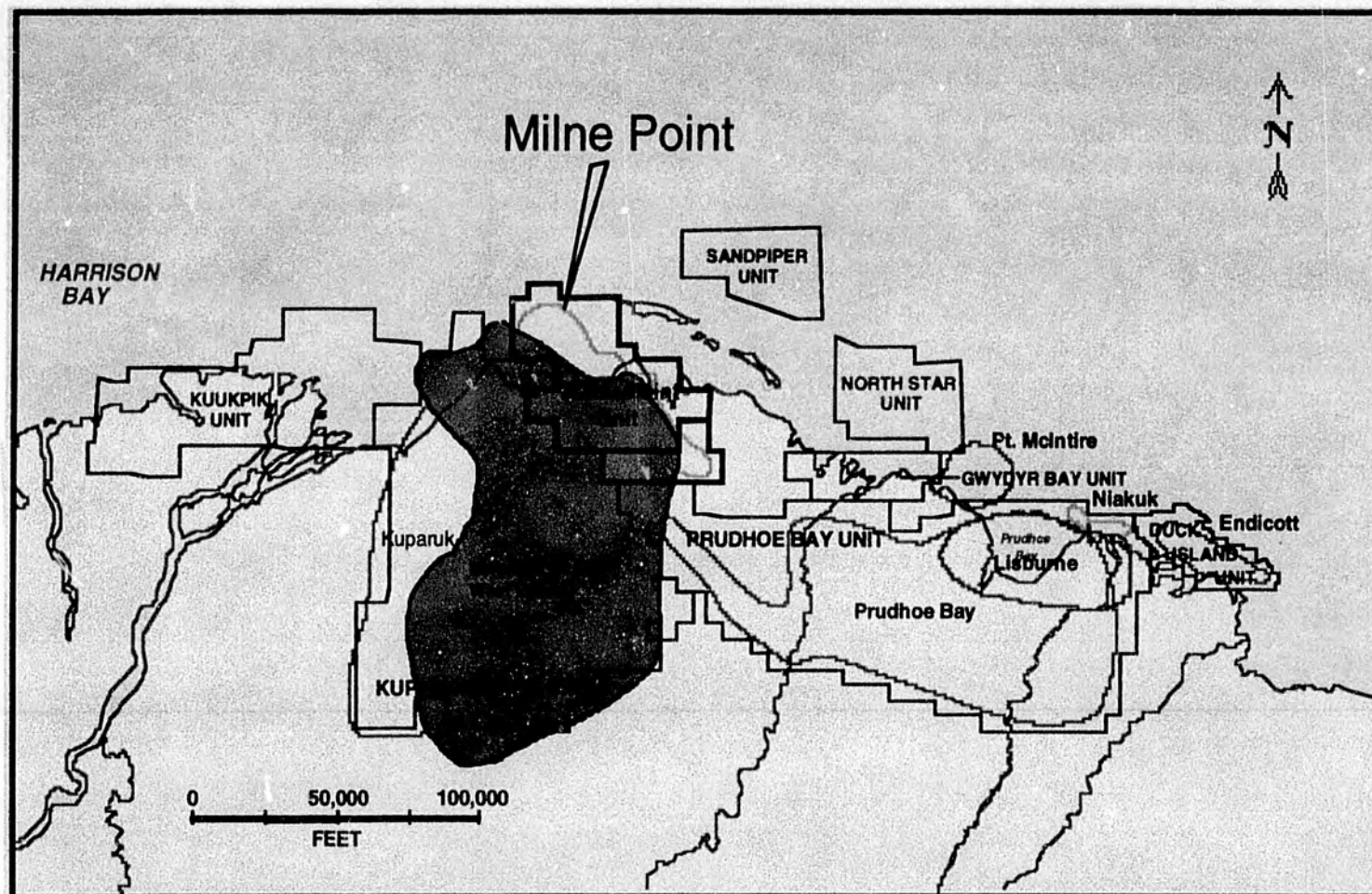
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BP Exploration (Alaska) Inc.
Presentation by BP Exploration (Alaska) Inc.
before the House Oil and Gas Committee

January 23, 1996

North Slope Fields



Schrader Bluff Heavy Oil Development

-
- The map illustrates the Schrader Bluff Heavy Oil Development. It features a large, irregularly shaped area outlined in black, representing the development boundary. This area is divided into several sub-regions. A large, dark grey area at the top is labeled 'Schrader Bluff Heavy Oil Development'. Below this, a light grey area is labeled 'KRU'. To the right of the 'KRU' area, a small, dark grey area is labeled 'CFP'. Below the 'KRU' area, a light grey area is labeled 'PBU'. The map also shows several small, dark grey areas representing 'Development at Acquisition' and 'Development in Progress'. A legend in the bottom left corner defines the symbols used: a dark grey square for 'Development at Acquisition', a black square for 'Development in Progress', a light grey square for 'Future Development', a small black square for 'Existing Pad', and a small dark grey square for 'Future Pads'.
- Development at Acquisition
 - Development in Progress
 - Future Development
 - Existing Pad
 - Future Pads

Schrader Bluff Development History

- First production from pilot project in 1991.
- 16 producers and 5 injectors drilled.
- Low average initial well rate ~ 350bpd.
- Completion technology advanced.
- Not commercially competitive.
- Development stopped '91.

Significant technical and commercial hurdles remain to be overcome

MPU Schrader Bluff - Potential Program

1994

Drill Test Well

1995

Drill six "Test Wells"

?? - 1998 - ??

Potential Development

230 Wells

45,000 bpd Production

Key
Decisions

Determine viability and
scope for '95 wells.

Demonstrate increased
rate and reduce costs.

Establish viability of
larger scale initial
development.

1995 Schrader Bluff Development

- **Objectives**

- **Reduce capital requirements and operating costs**
- **Increased production rates from new wells**
- **Reduce development uncertainty**

- **Progress - 1995 spend \$15,000,000**

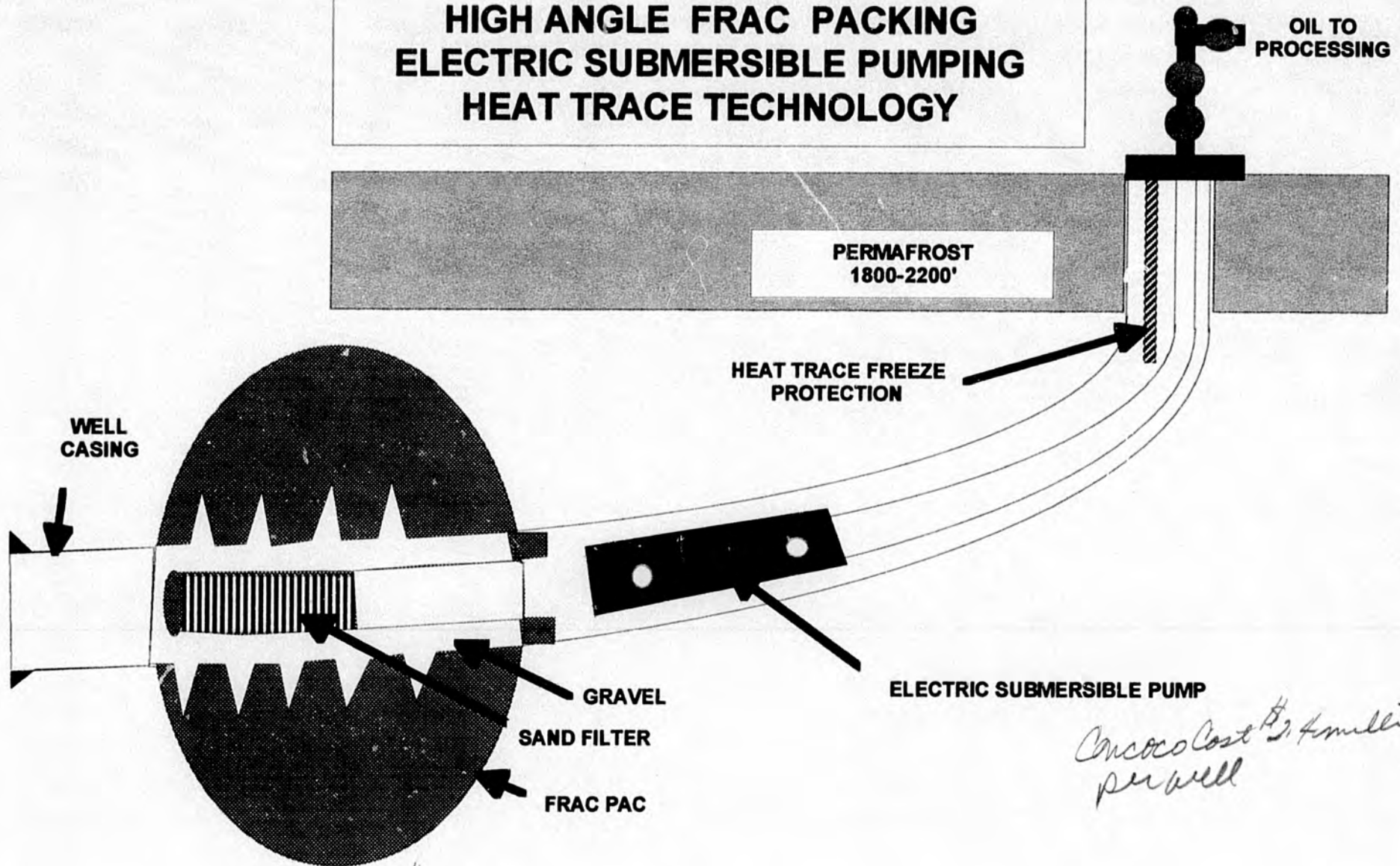
- **Six wells drilled; completions in progress; not on production**
- **Three wells recompleted and on production**
- **Reservoir and facility technical studies initiated**

- **Results**

- **Drilling cost reduction demonstrated**
- **Completion cost remains problematic**
- **Improved submersible pump life realized**
- **Well performance and technical study results not yet available**

SCHRADER BLUFF TECHNOLOGY:

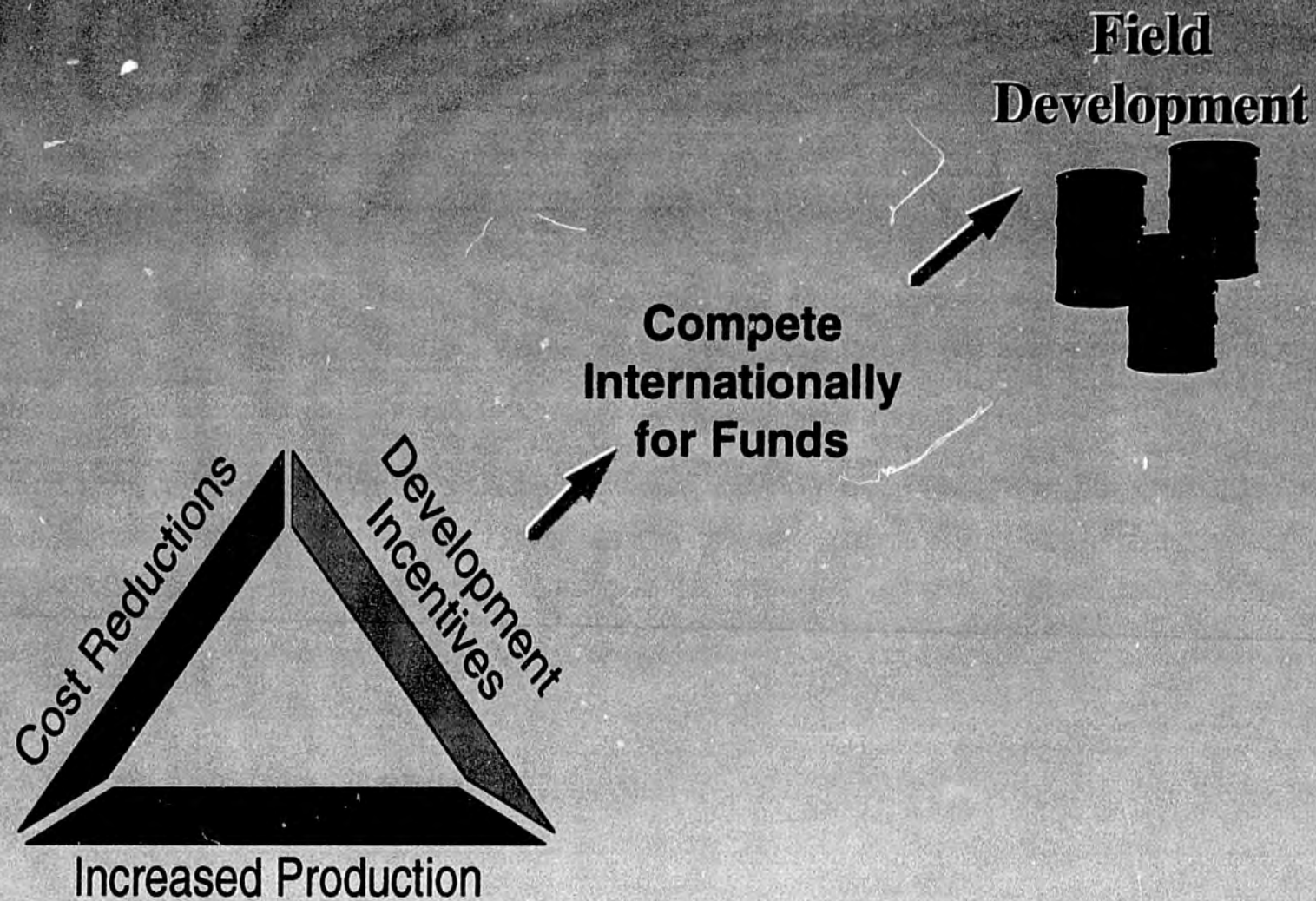
HEAVY OIL TEST BED
HIGH ANGLE FRAC PACKING
ELECTRIC SUBMERSIBLE PUMPING
HEAT TRACE TECHNOLOGY



*\$400,000 - \$700,000
per pump unit in million \$ range*

*Onco Cost \$2.4 million
per well*

Schrader Bluff Challenges



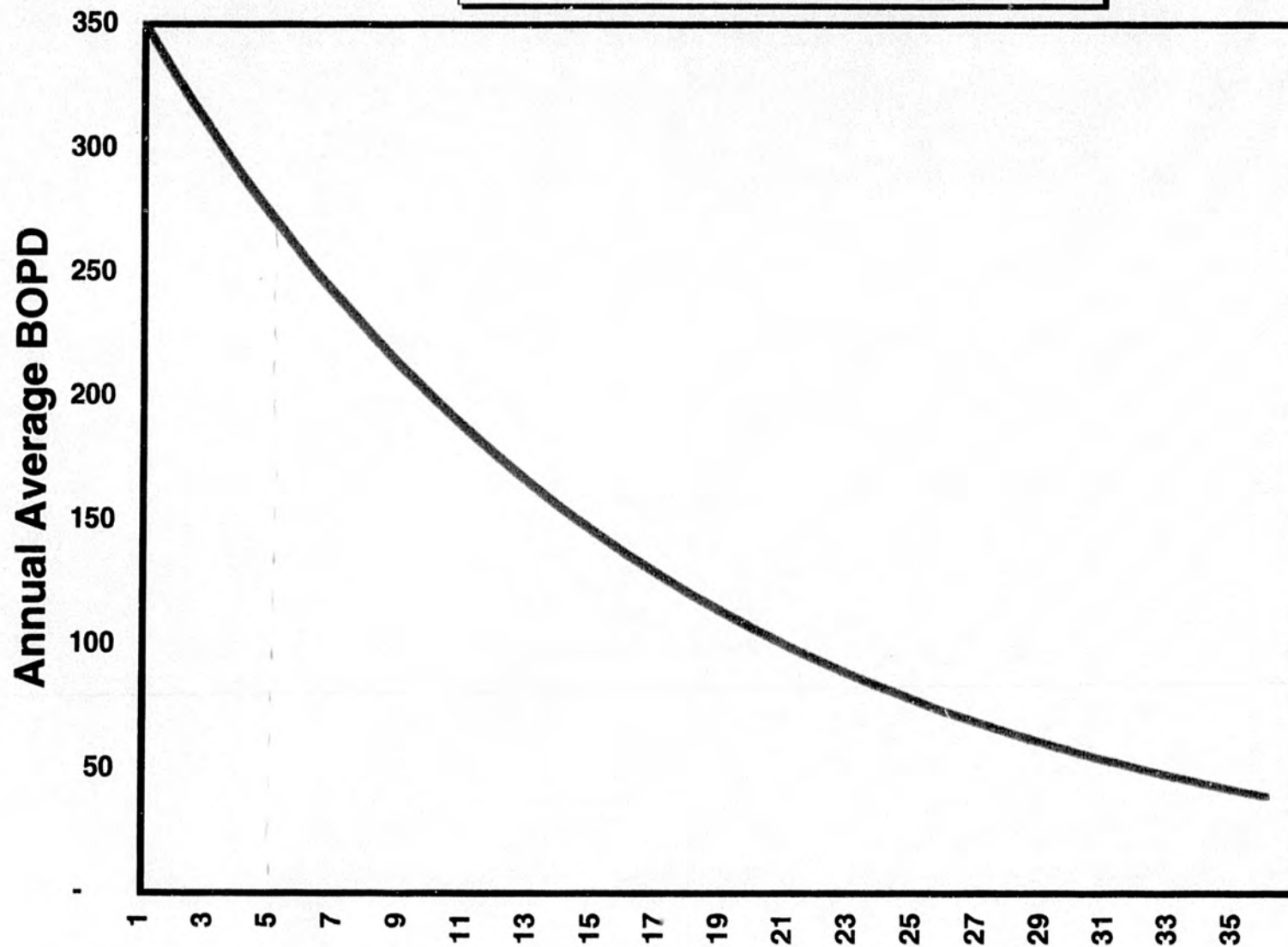
The “Prize” at Schrader Bluff

- **2+ Billion barrels of oil in place**
- **Potential ultimate recovery - 200 to 800 million barrels**
- **Expansion to adjacent fields**

Heavy Oil Royalty Holiday (HB-325) Impact on Schrader Bluff Project

- **Royalty holiday will:**
 - **Reduce uncertainty**
 - **Encourage investment**
 - **Send positive signal**
 - **Accelerate pace and increase development scope**
- **Time lag from incentive to start of investment is short**
- **Ultimate project scope remains uncertain**

**Schrader Bluff Typical Well
Production Rate vs Time (years)**



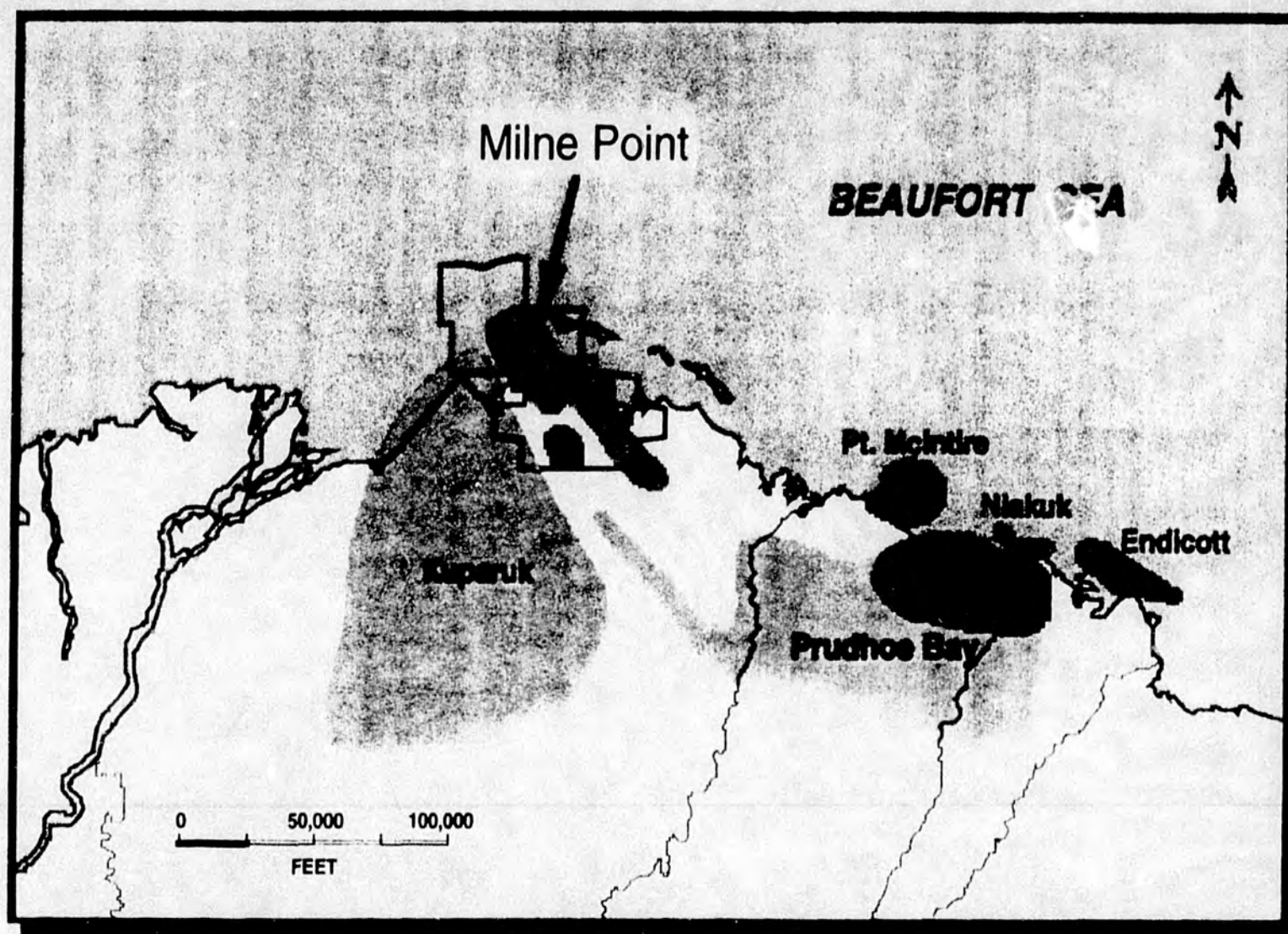
See 20% Kupar decline Rates
See 18% Erdene decline rates
See 6%-8% decline at Schrader Bluff

The “Risk” of Project Development Delay

- **Current development momentum is lost**
- **Economic benefits deferred / value lost**
- **Ultimate recovery placed at risk**
- **Project economics placed at risk**

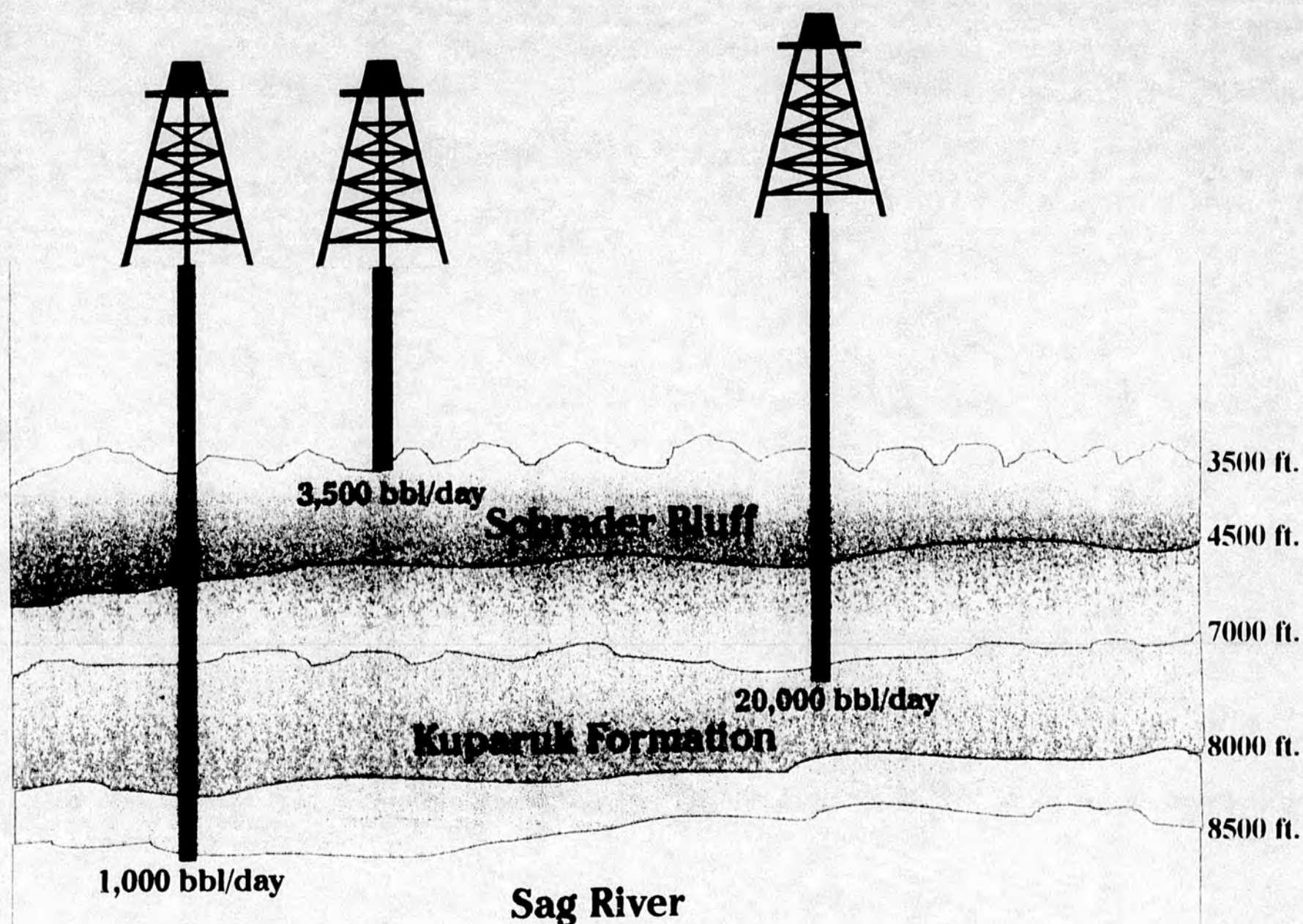
WHO IS OCCIDENTAL OIL AND GAS CORPORATION?

- *Oil & gas part of Occidental Petroleum Corporation*
- *Large independent in the US, no refining or marketing operations*
- *No financial interest in TAPS*
- *Operator of Heavy Oil properties in California*
- *The last original owner in Milne Point Unit with around 9% WI*



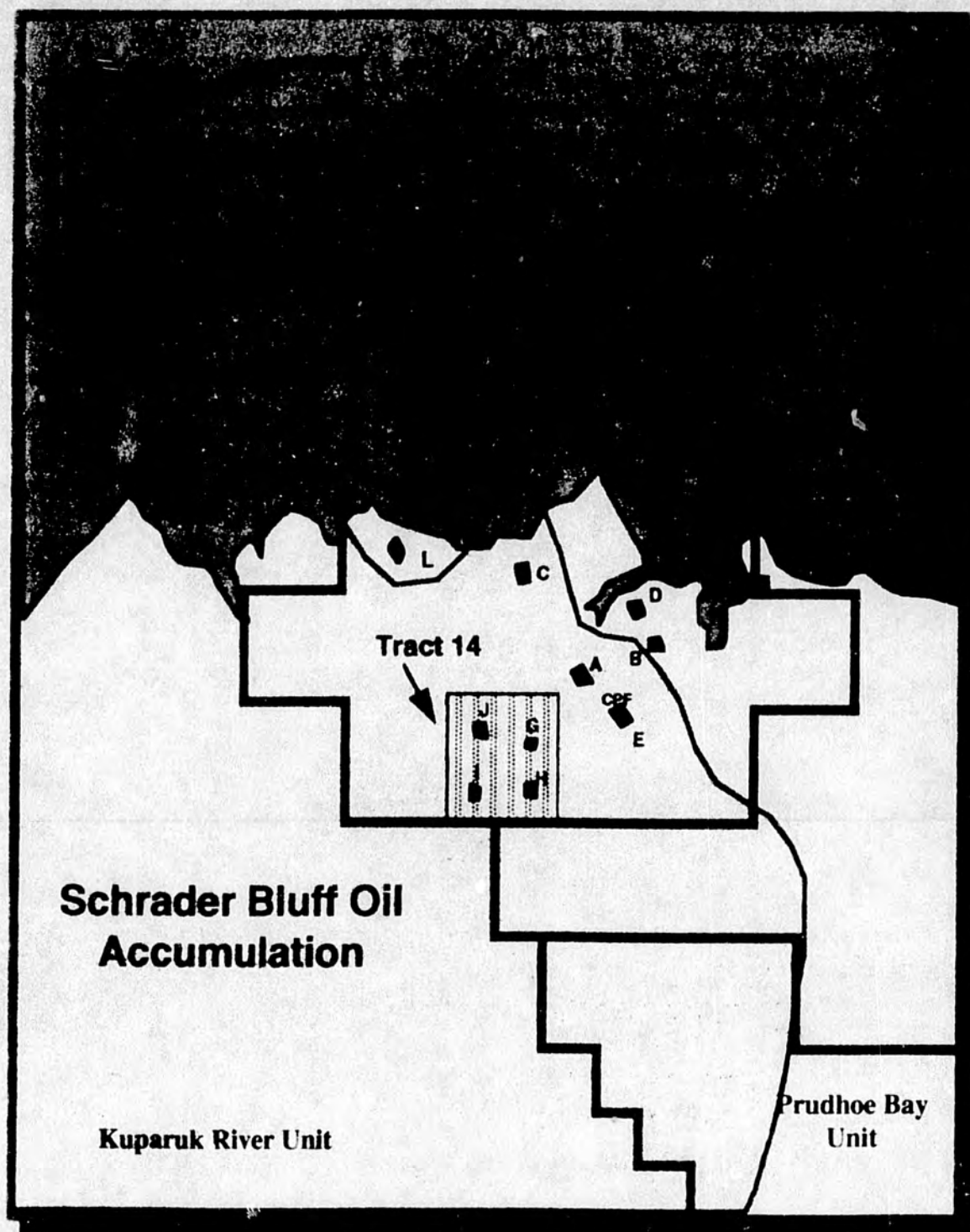
North Slope Fields and Milne Unit Outline

Occidental and BP produce oil from three formations at MPU



What is "heavy oil"?

- Low gravity
- Thick
- Produces slowly over a long period of time
- Disadvantaged in market place
- Capital intensive
- A focus of current debate on oil and gas incentives



Schrader Bluff Oil Accumulation

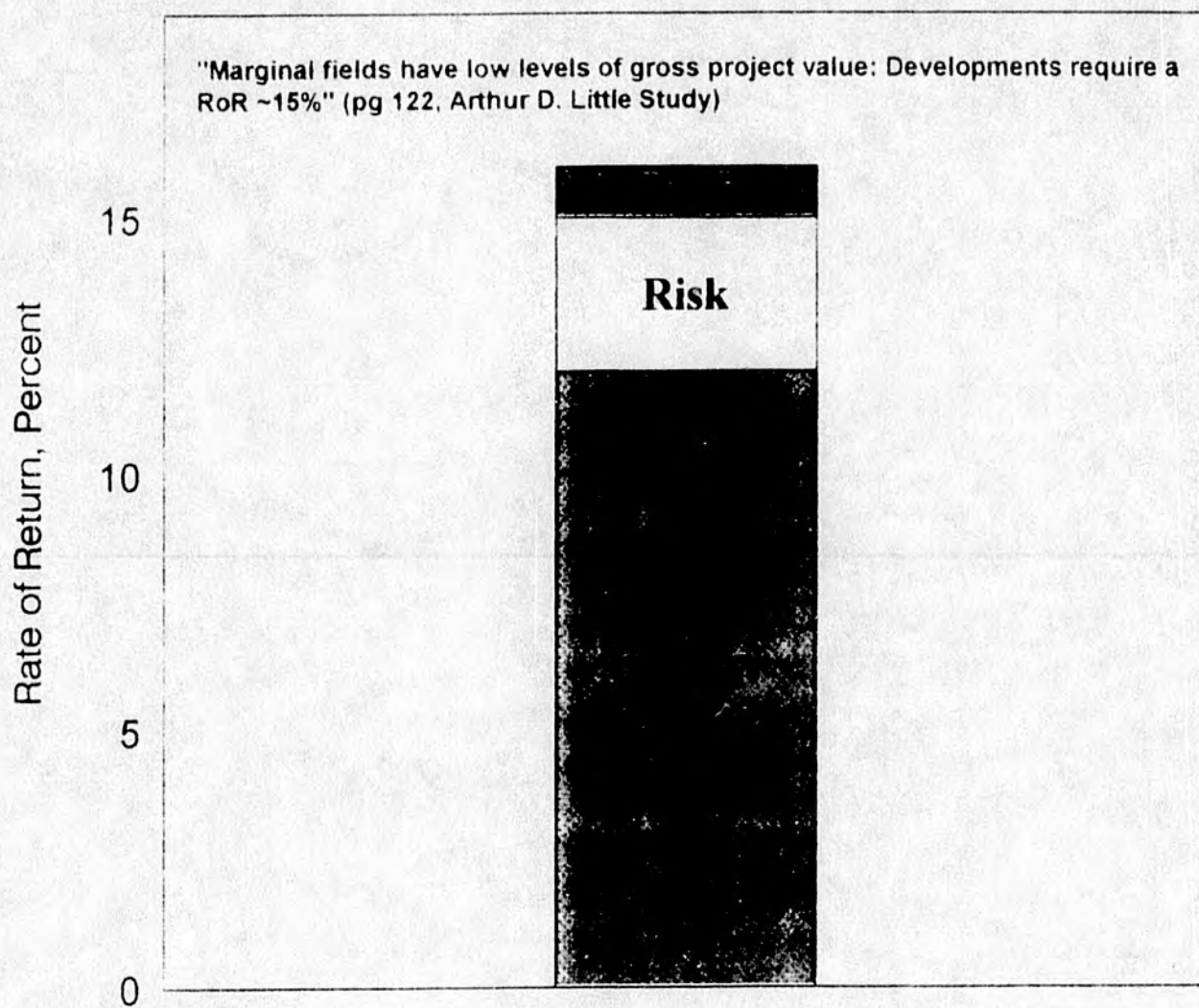
Previous Heavy Oil Experience

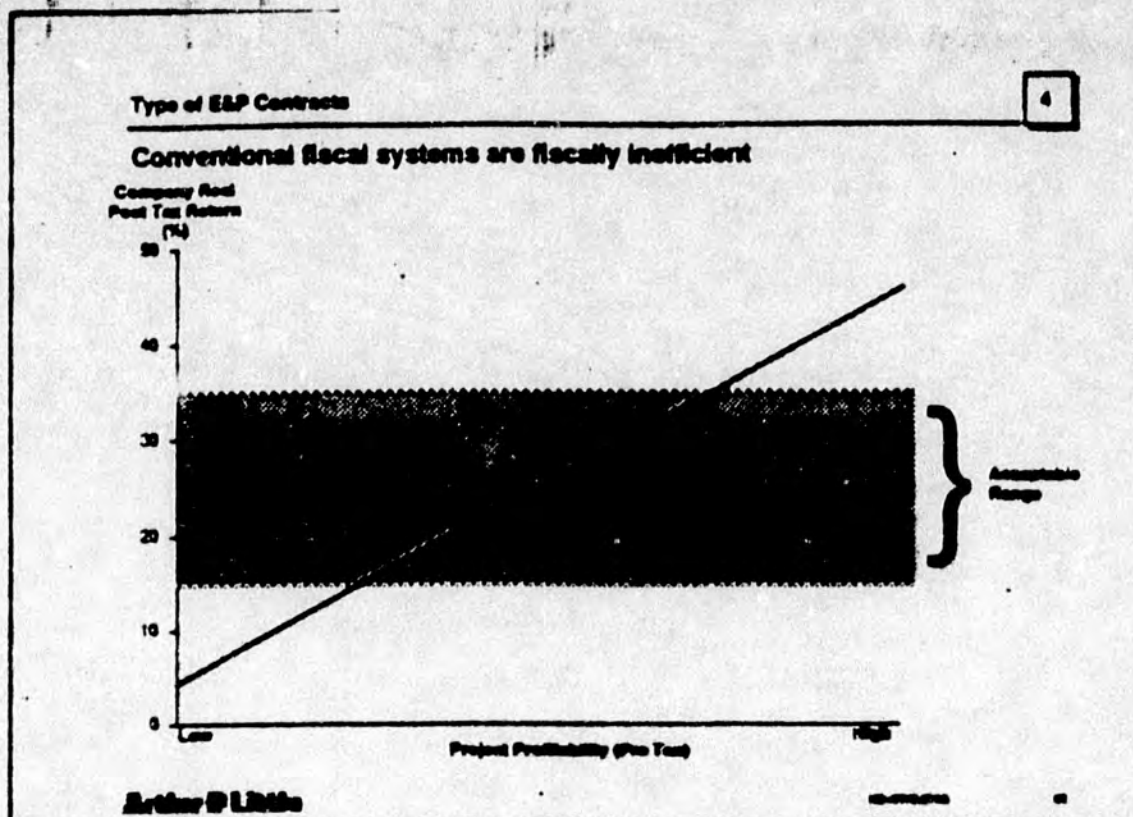
Conoco/Tract 14

- *Spent a minimum of \$126 Million on 22 wells, pads, etc.*
- *Average producing rate = 275 BOPD per well*
- *Expected Recovery = 13.5 Million Barrels*
- *Total Investment = \$9.30/BBL*
- *Uneconomical*

Source: SPE 30289, "Milne Point Schrader Bluff: Finding the Keys to Two Billion Barrels", 6/95. Reserves determined from decline curve analysis.

"Hurdle Rate" -- The Minimum Rate of Return Necessary to Justify Capital Investment



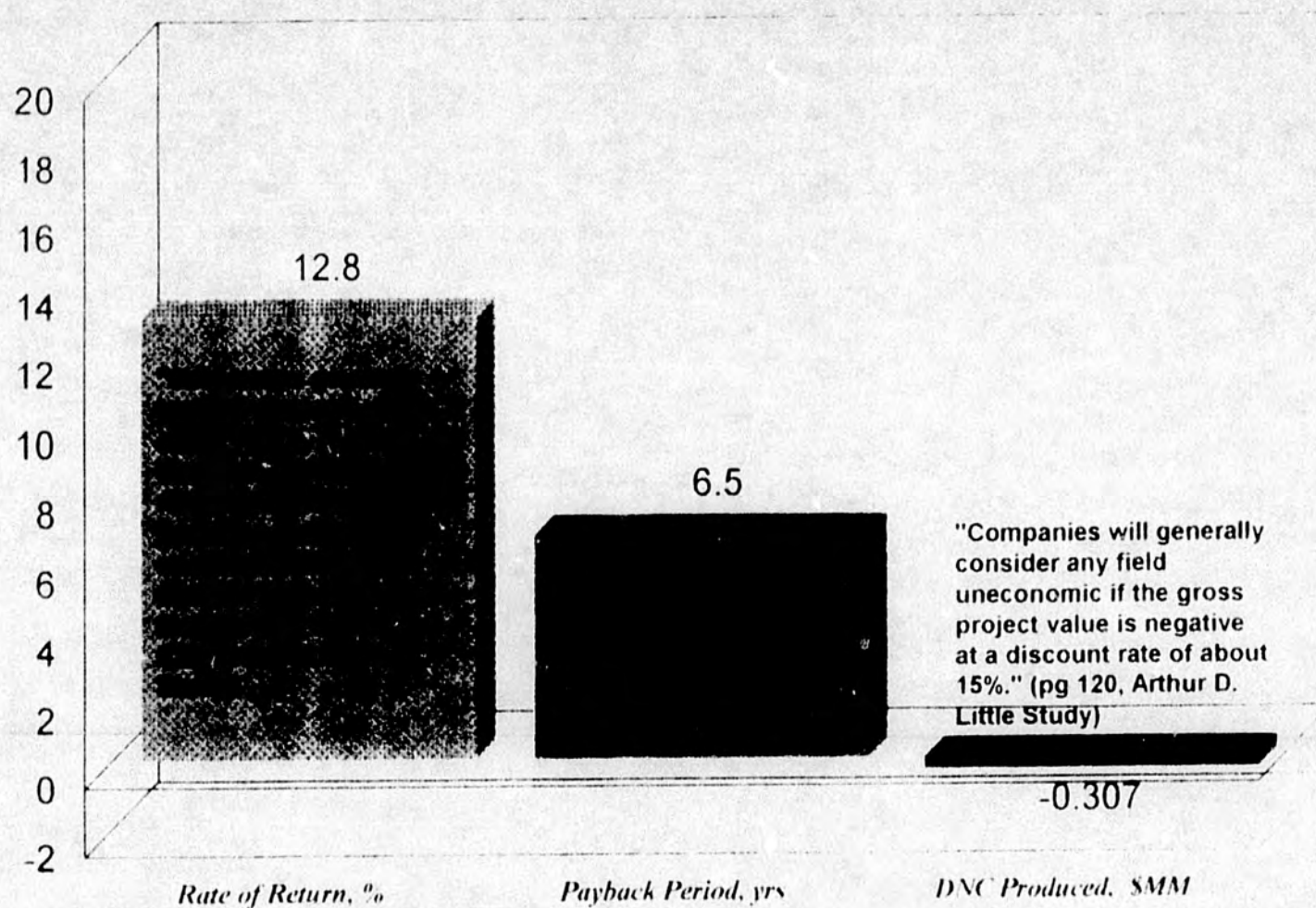


Conventional fiscal systems are fiscally inefficient:

- Under a traditional petroleum agreement (with fixed royalty and income tax rates under a licence agreement or fixed cost and profit sharing under a production sharing contract) the total government take and the oil company profitability change considerably with the characteristics of the discovery (size and development cost) and with oil prices.
- This type of system is "fiscally inefficient" and has fallen into disfavour following the oil price fall in 1986 and a worldwide trend towards smaller field discovery sizes.
- In a fiscally inefficient system:
 - Smaller and higher cost fields will not be developed as the profitability is too low to attract oil companies.
 - Larger and least expensive fields will generate excessive profits for the companies; the government take will be lower than it has the potential to be.
 - Similar effects will be experienced if oil prices are unexpectedly high or low.
- Thus, uniform fixed rate fiscal systems produce non-uniform results which are economically discriminatory:
 - It is important to "tailor" the contractual terms so that the conditions offered are attractive both for significant and for small discoveries and so that the long term interests of host country and the investors are protected, for example, in the case of wide variations in crude oil prices.

Typical Heavy Oil Well Economics

Based on the 5 best wells to date in Tract 14



What are we proposing?

HB 325 by Representative Green

- Applicable to heavy oil production as defined by 26 U.S.C. 613A(c)(6)(F)
- Applicable only to the Alaska North Slope
- Suspension of royalty payments for each new well for the:
 - first five years
 - first 500 barrels of oil per day
- A simple, automatic process

Suspension Incentives in Other Jurisdictions

Texas

- high-cost gas (10 year exemption)

Utah

- wildcat wells (first 12 months)
- development wells (first 6 months)

Oklahoma

- horizontal wells (until payout)
- enhanced oil recovery projects (until payout)

Montana

- horizontal wells (first 18 months)

Mississippi

- discovery wells (first 5 years)
- re-activated wells (first 3 years)

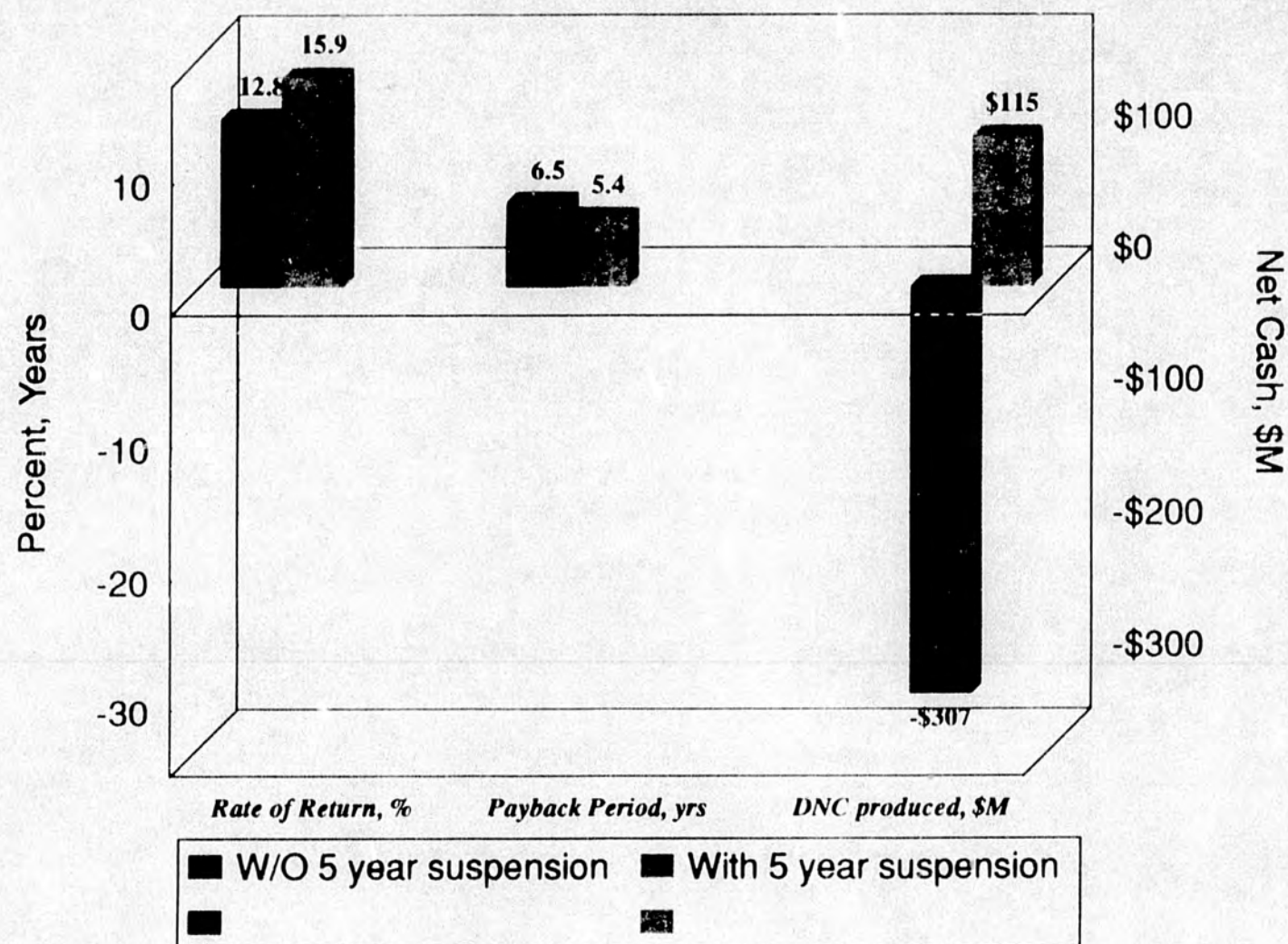
Kansas

- tertiary projects (for life of project)
- shallow wells (for life of project)
- discovery wells (first 12 years)

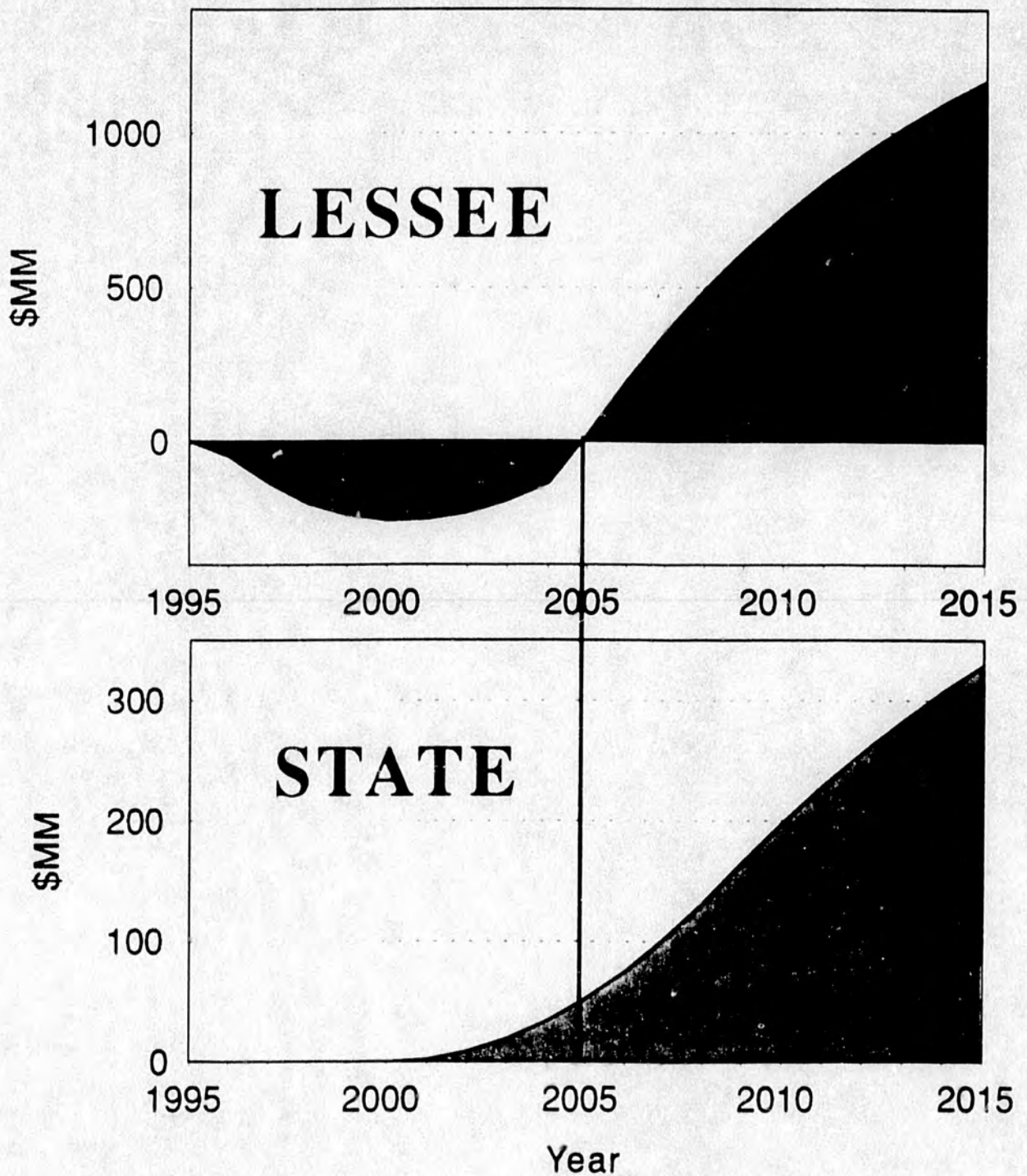
Arkansas

- discovery wells (first 5 years)

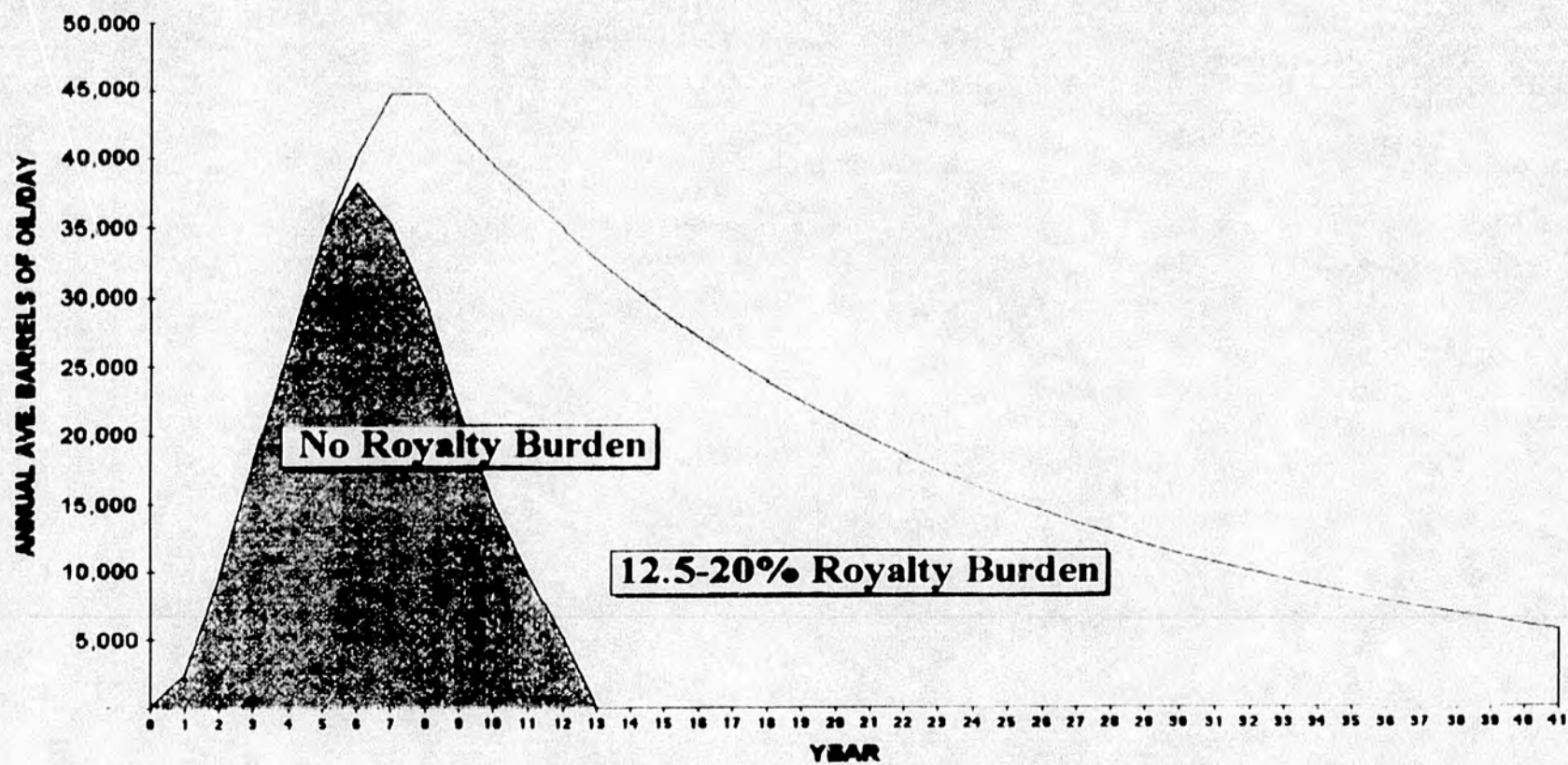
The Effect of Royalty Suspension on Schrader Bluff Economics



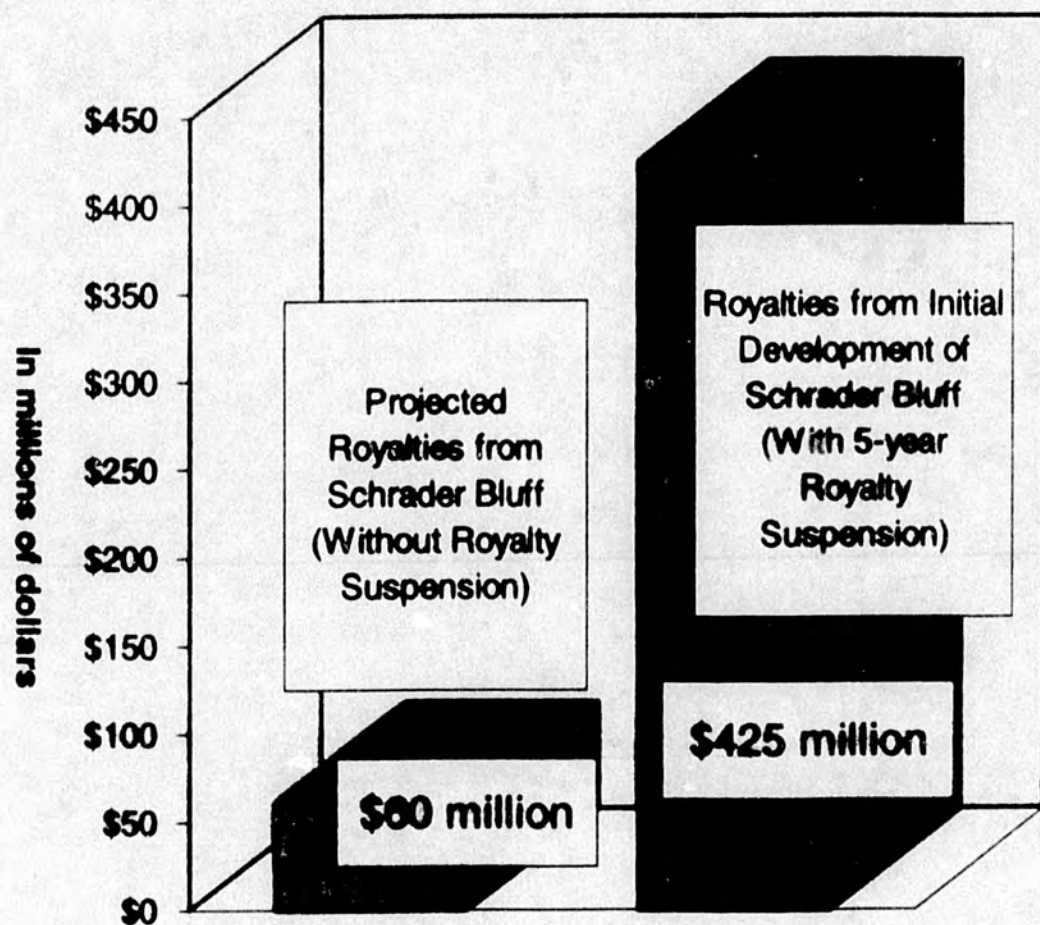
Cumulative Cash Flows From Full Development



ADDITIONAL PRODUCTION FROM HEAVY OIL
BY
DEVELOPMENT YEAR



Two Paths for Schrader Bluff





BP EXPLORATION

James A. Palmer

Director
External Affairs
Alaska

November 10, 1995

Representative Norman Rokeberg
Alaska State Legislature
716 W. Fourth Avenue, Suite 640
Anchorage, Alaska 99501-1123

BP Exploration (Alaska) Inc.
900 East Benson Boulevard
P.O. Box 196612
Anchorage, Alaska 99519-6612
(907) 564-5435

Dear Representative Rokeberg:

Earlier this year, BP Exploration (Alaska) commissioned a study on the economic impacts of marginal oil field development in Alaska. Conducted by the Institute of Social and Economic Research, the results of the study were presented to the State of Alaska Oil and Gas Policy on June 5, 1995.

Although specific marginal fields would have differing degrees of economic and public sector impacts, the general conclusion about the significance of developing marginal oil fields is important to note.

"Marginal oil field development in Alaska can generate jobs and income for Alaska workers, sales for Alaska businesses, and an increase in the state tax base more than sufficient to offset any additional costs to government from resource management and public service requirements from population increase."

Additionally, when compared to the state's natural resource revenues and management expenditures of fishing, lands, wildlife, mining and timber, the marginal oil field is the only case where resource management costs are covered by the revenues generated, and the substantial revenues are available to contribute to the general costs of the government (see Figure 5B in attached summary).

As you know, the oil industry faces a variety of competitive challenges it must overcome in order to attract the funds it needs to survive and grow in Alaska. Together with the state, we've begun to take our first tangible steps toward overcoming our competitive disadvantages by working together. This includes efforts such as last year's legislation that encourages development of new, economically marginal oil fields.

This study is another step in the cooperative process. I thought you would appreciate receiving a copy of the executive summary for your initial examination. If you would like a copy of the entire report, please feel free to give me a call at 564-5435.

Sincerely,

James A. Palmer
Director, External Affairs
Alaska

encl:

MARGINAL OIL FIELD DEVELOPMENT: THE ECONOMIC IMPACT

EXECUTIVE SUMMARY

Marginal oil field development in Alaska can generate jobs and income for Alaska workers, sales for Alaska businesses, and an increase in the state tax base more than sufficient to offset any additional costs to government from resource management and public service requirements from population increase.

This conclusion is based on an analysis using existing information about the economy and public sector combined with a description of a hypothetical marginal oil field. In reality, each marginal field would have different characteristics, and the actual economic and public sector effects would differ from the description in this study. However, given the economics of field development, this study demonstrates that the general conclusions are consistent with a broad range of assumptions about both field characteristics and the economy.

The purpose of this study is to provide a framework for analysis of the economic effects of new, small marginal oil fields which may be typical of new petroleum industry activity in Alaska. The analysis is generic and hopefully will lead to more detailed and specific studies where appropriate. Some of the information used to develop the parameters for the analysis come from the ongoing study of the Badami oil field on the North Slope. Since that project is only in the earliest stages of its evolution, it would be inappropriate to interpret this analysis as a study of the Badami prospect.

The study examines a hypothetical marginal oil field on the North Slope with anticipated recoverable reserves of 100 million barrels of oil. We assume a total development budget of \$320 million, most of which would be spent in a two-year period during which the initial wells would be drilled, the pipeline constructed, the modules fabricated and put into place, and the operating facility built. Production would subsequently continue over a 20-year period at a cost of \$320 million. In the early production years, the drilling of wells would continue and after year 5, the drilling activity would switch to workovers of the existing wells. The purpose of these development and production cost figures is to calculate economic effects, and they should not be interpreted as reflecting the actual costs associated with any particular field.

Although some expenditures, in particular module fabrication and equipment for the modules and pipeline, would be purchased outside the state, much of the work would be carried out onsite during both field development and production. These tasks include site preparation, pipeline and module installation, and well drilling; and all have a large labor component. During production the operation of the field and drilling would continue around the clock so the number of workers employed would be 4

times the number of jobs to be done onsite. The development and production jobs would require highly trained and skilled workers so wages would be high and some specialized jobs would, of necessity, be filled by workers from Outside. Based on current experience, the share of jobs going to residents would be high, but some workers would choose to live outside the state.

Other costs associated with field development and production would generate sales, employment, and payrolls for Alaska vendors providing supplies, equipment, and services to the owner company, the oil service companies doing the contract drilling and other work, the construction contractors, etc. A large portion of the economic effect of marginal field development would come from the recirculation within the economy of the high payrolls paid the North Slope workers. These payrolls would generate sales, jobs, and tax base in the communities where the Slope workers live.

Figure 1 shows the size and composition of Alaska employment and payroll which the development and production of the field would generate after subtracting onsite jobs likely to be filled by nonresidents. Field development would be spread over several years, so the number of annual average jobs produced in the peak year would be about 500 with a payroll of \$25 million. As the figure shows, the majority of those jobs would be offsite in vendor businesses, in the communities where the workers reside, and in the public sector. During production the number of jobs would fall to under 250 for an average year, and the pattern again is that most of the jobs would be offsite. However, in both the development and production phases, the payrolls are concentrated onsite.

The actual economic impact in a real situation would depend on the development and production plan as well as the resident share of employment and purchase of other inputs. But once the field size has been estimated, the budget and with it the economic effect would be constrained within a narrowly defined range. Basically the budget must be economically feasible, and the economic effect would flow from that budget. While the economic effects are clearly defined once the development strategy has been identified, the revenues that the field would generate are much less so since they are sensitive to actual, rather than anticipated, production, wellhead price, and the tax and royalty rates in place.

The range of variation of state revenues from production, primarily royalties but also the state share of the property tax and the corporate income tax, in response to variation in these parameters is shown in Figure 2. For example, if over its life the field were to produce 150 million barrels, the wellhead averages \$8.31 (1995 \$) and the royalty rate is 6%, production revenues would be \$84 million. For the range from low to high price, production, and royalty, the range of production revenues is \$29 to \$328 million.

Two other sources of revenue, from the "full pipeline effect" and the payrolls generated by the new jobs, are less volatile and significant. Adding production from a marginal field to the existing throughput of the Alyeska pipeline marginally reduces

the tariff on existing throughput and increases its wellhead value. This "full pipeline effect" would increase severance tax and royalty revenues from production from all North Slope fields. The payroll generated by the marginal field activity represents a tax base which could be tapped to pay some of the state government costs imposed by the new workers and their families. Although the state currently has no vehicle to allow these workers to pay for some of the public services they receive, the tax capacity represented by their payroll should be included as a potential revenue source.

The costs to state government from marginal field development consist of management costs such as environmental monitoring, tax auditing, etc., and more importantly the costs of providing services for the families of the new workers both onsite and in Alaska's urban centers. These costs can be divided into those which support oil industry families, vendor families, and other private and public workers in the urban centers. The public management costs are about \$7 million, and the population-related costs are about \$4.4 million, totaling about \$51 million.

These public sector costs are contrasted with the range of revenues which the field could produce over its life in Figure 3. Subtracting the costs from the revenues yields a range for the state revenue "dividend" (Figure 4), which is the tax base generated by the marginal field over and above the amount necessary to pay for the costs of state government imposed by the field. The "dividend" ranges from \$1 to \$300 million depending upon production, price, and royalty rate.

Figure 5A shows the range of production revenues introduced as Figure 2, converted to an annual equivalent. It contrasts the potential range of revenues for the marginal field with the total annual revenues to the state generated by other natural resources based on a recent analysis of the sources of state revenues prepared by Legislative Research in 1993. The range for the marginal oil field is clearly consistent with the total revenues to the state from most other natural resources.

Finally, Figure 5B compares the state's natural resource revenues from various resources with the state's resource management expenditures for those same natural resources. The marginal oil field is the only case where resource management costs are covered by the revenues generated, and the substantial revenues are available to contribute to the general costs of government.

FIGURE 1A. MARGINAL FIELD ECONOMIC EFFECT
RESIDENT EMPLOYMENT

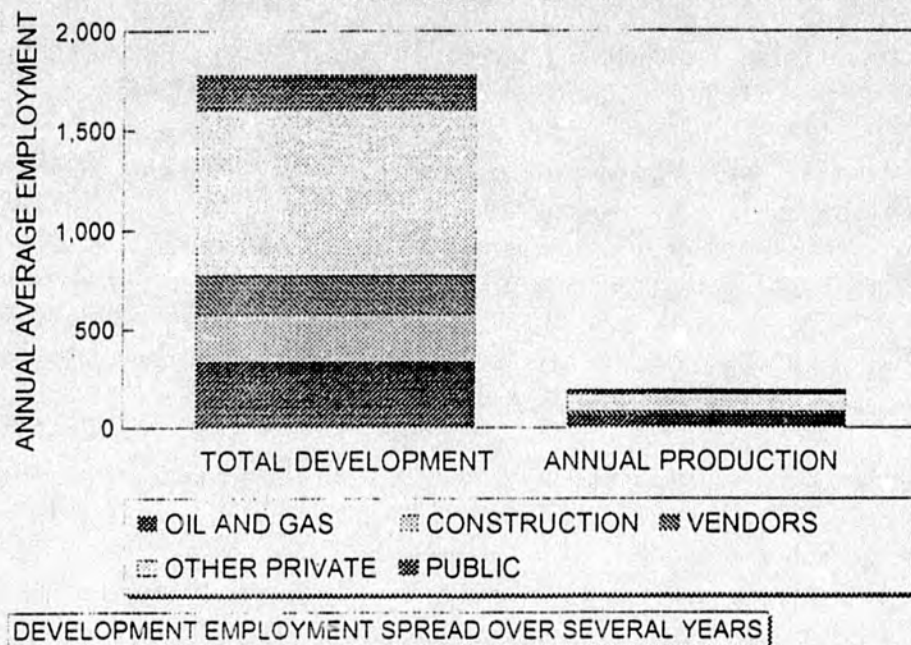


FIGURE 1B. MARGINAL FIELD ECONOMIC EFFECT:
RESIDENT PAYROLL

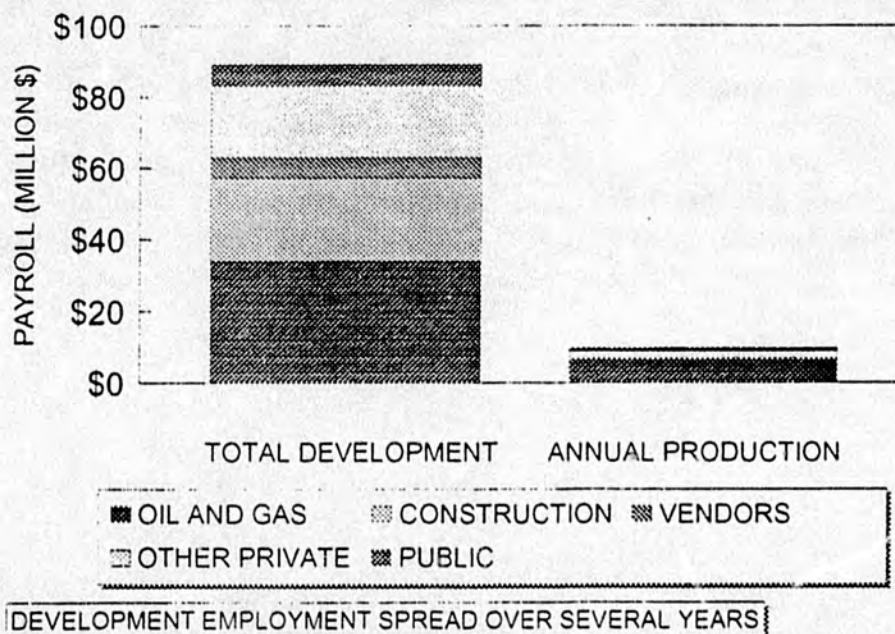
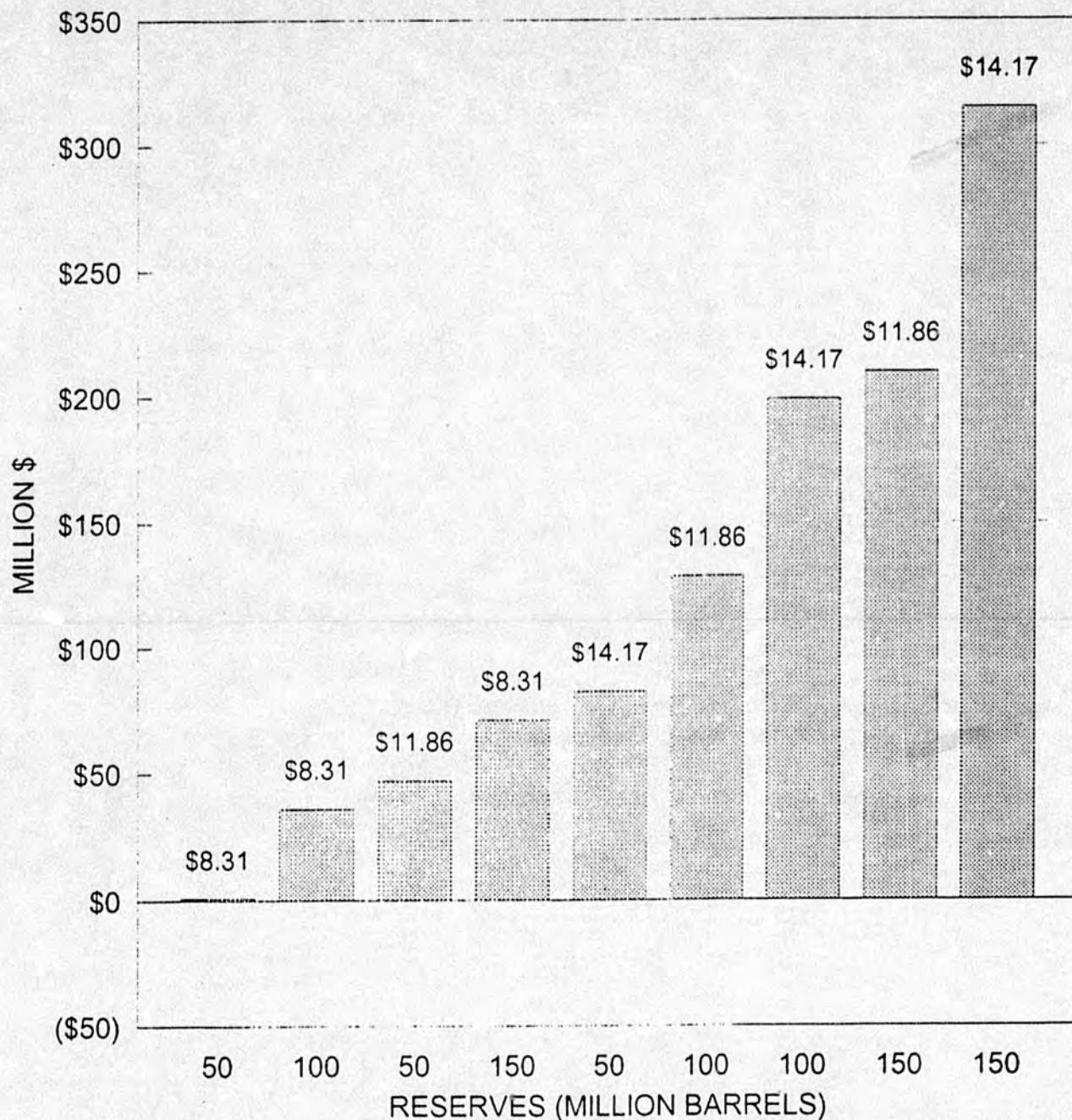


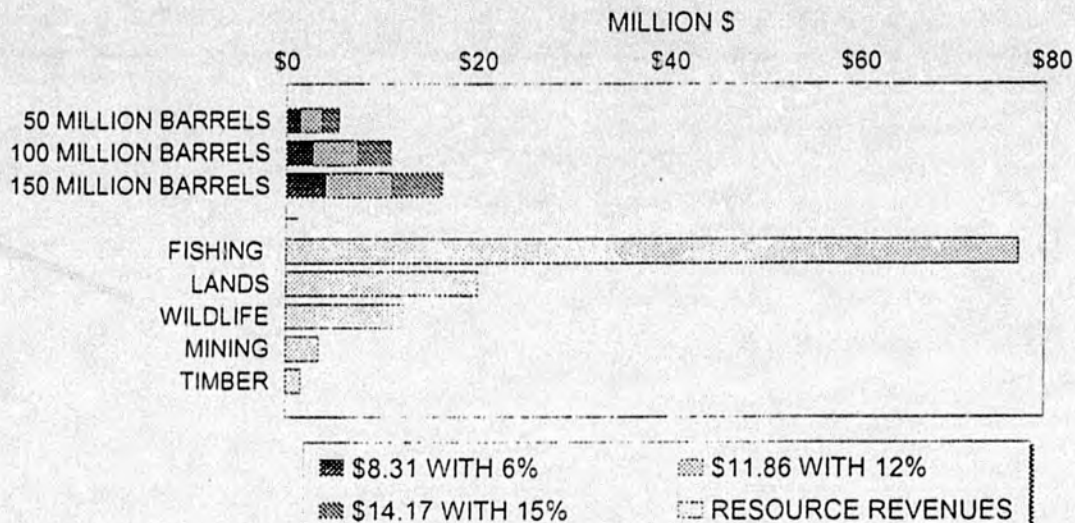
FIGURE 4. STATE REVENUE "DIVIDEND"

VARIATION IN RESERVES, PRICE, AND ROYALTY RATE



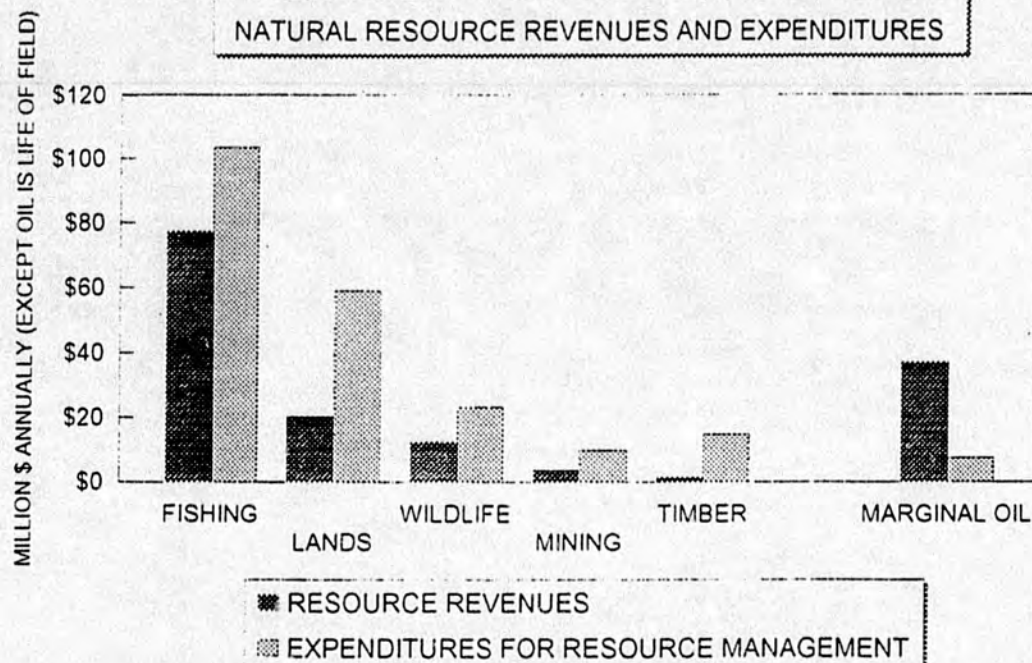
REVENUES IN EXCESS OF AMOUNT NEEDED
TO PROVIDE NEW PUBLIC SERVICES

**FIGURE 5A. ANNUAL MARGINAL FIELD PRODUCTION REVENUES
COMPARISON TO TOTAL REVENUES FROM OTHER RESOURCES**



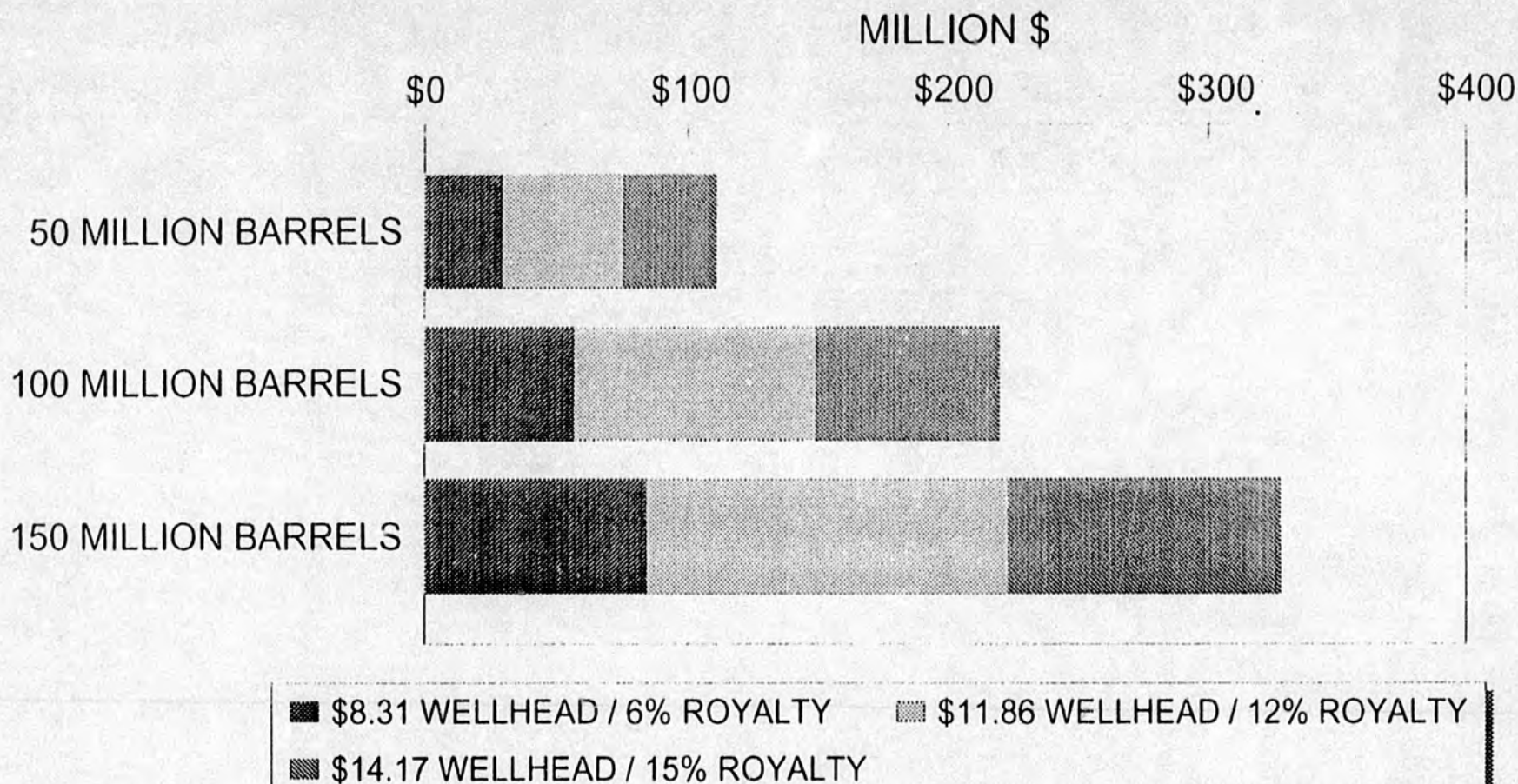
SOURCE FOR OTHER RESOURCES: LEGISLATIVE RESEARCH 1993.

**FIGURE 5B. STATE OF ALASKA
NATURAL RESOURCE REVENUES AND EXPENDITURES**



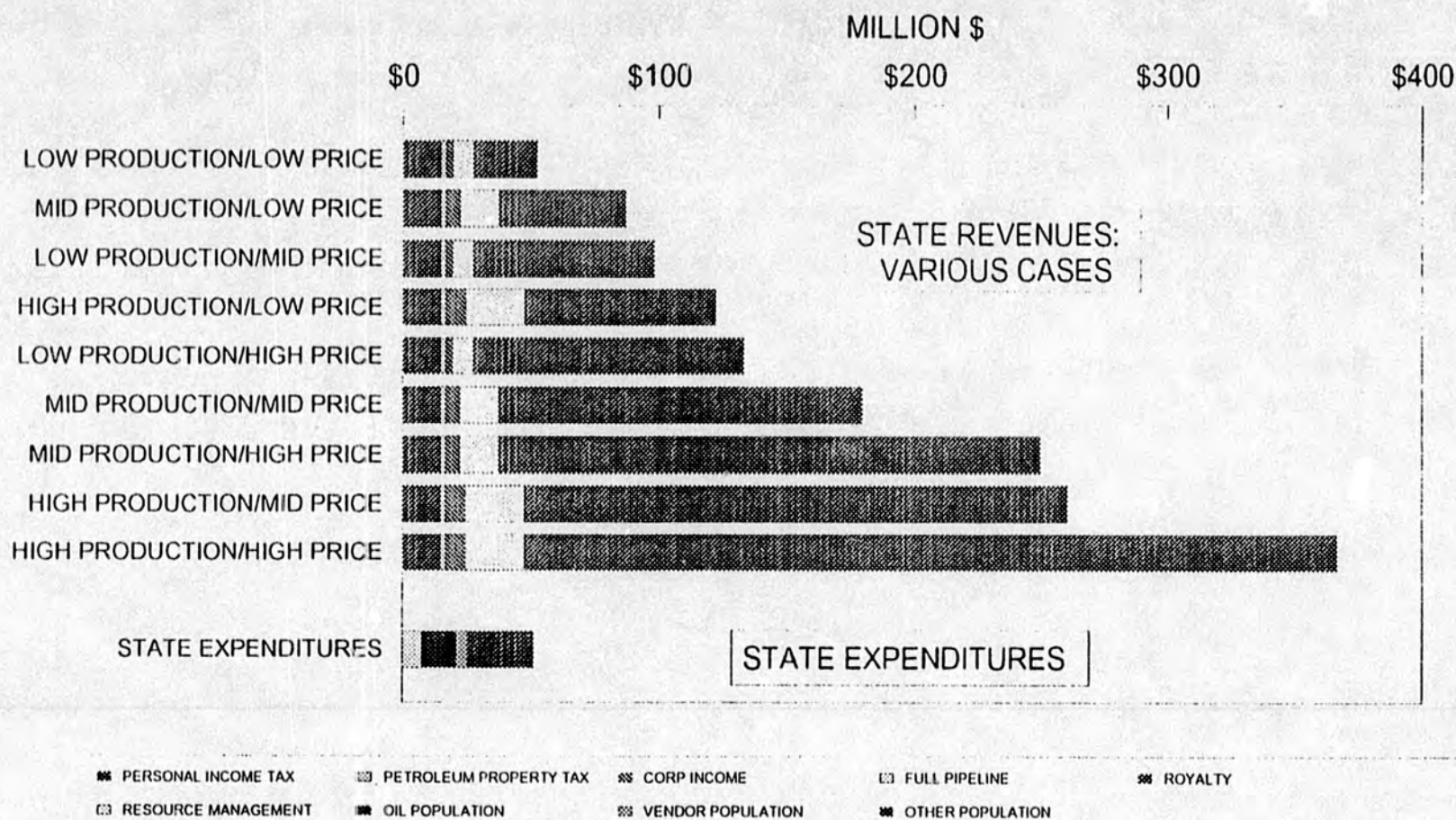
SOURCE: LEGISLATIVE RESEARCH, 1993.
EXCEPT MARGINAL OIL IS LOWEST REVENUE CASE FROM TEXT NET OF INCOME AND SALES TAX RE

FIGURE 2. MARGINAL FIELD PRODUCTION REVENUES
 SENSITIVITY TO PRODUCTION, WELLHEAD PRICE, AND ROYALTY RATE



REVENUES OVER THE LIFE OF THE FIELD

FIGURE 3. STATE REVENUES AND EXPENDITURES:
LIFE OF THE FIELD



Alaska State Legislature

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CO-CHAIR, RESOURCES COMMITTEE
VICE CHAIR, JUDICIARY COMMITTEE
MEMBER, STATE AFFAIRS COMMITTEE

FINANCE SUBCOMMITTEES:
DEPT. OF NATURAL RESOURCES
DEPT. OF COMMERCE & ECONOMIC DEVELOPMENT
DEPT. OF ENVIRONMENTAL CONSERVATION

Representative Joe Green

District 10

TO: Representative Norman Rokeberg, Chairman
House Special Committee on Oil & Gas

FR: Representative Joe Green

RE: HB 381

DATE: January 22, 1996

.....

I have introduced HB 381 - "An Act relating to oil & gas conservation and recovery" to provide some clarity and definition to the relationship between the Alaska Oil & Gas Conservation Commission and the Department of Natural Resources.

I would appreciate it if you could schedule this bill for a hearing in your committee at your earliest opportunity.

Thank you.

Alaska State Legislature

JAN 11 1996

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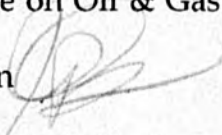
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VICE CHAIR, JUDICIARY COMMITTEE
MEMBER, STATE AFFAIRS COMMITTEE

FINANCE SUBCOMMITTEES:
DEPT. OF NATURAL RESOURCES
DEPT. OF COMMERCE & ECONOMIC DEVELOPMENT
DEPT. OF ENVIRONMENTAL CONSERVATION

Representative Joe Green

District 10

TO: Representative Norman Rokeberg, Chairman
House Special Committee on Oil & Gas

FR: Representative Joe Green 

RE: HB 325 - Heavy Oil Royalty Reduction

This is to request a hearing on CSHB 325 (O&G), currently in the Oil & Gas Committee.

As I'm sure you recall, the committee met last November and adopted a committee substitute to HB 325. At that time a question was raised about the legality of the committee taking such action during the legislative interim. My staff contacted the Legal Affairs Division and learned that, indeed, under rule 21 (C), the committee's action was appropriate.

Thank you for your help with HB 325.

Alaska State Legislature

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MEMBER, STATE AFFAIRS COMMITTEE

FINANCE SUBCOMMITTEES:
DEPT. OF NATURAL RESOURCES
DEPT. OF COMMERCE & ECONOMIC DEVELOPMENT
DEPT. OF ENVIRONMENTAL CONSERVATION

Representative Joe Green
District 10

Sponsor Statement

HB 325 - Heavy Oil Royalty Holiday

HB 325 allows the producers of heavy oil to forgo the payment of royalty to the state on the first 500 barrels of heavy oil produced each day, for a period of five years. The heavy oil considered in this bill is a thick, tar-like hydrocarbon that is more difficult to produce than the lighter, more conventional oil and gas. The purpose of suspending the royalty is to encourage the lessees of heavy oil deposits to do field research and hopefully develop the maximum amount of recoverable oil in a timely manner.

HB 325 requires no application, the suspension is automatic. In order to receive the suspension the producer must simply submit documentation to DNR certifying that the oil produced meets the definition of "heavy oil" and monitor the production rate to satisfy the requirements in the bill.

HB 325 sends a message to potential investors world-wide that the 19th Alaska Legislature supports the development of heavy oil.

NOV 9 1995

ATTORNEYS AT LAW
SIMPSON, TILLINGHAST, SORESENSEN & LORESENSEN
A PROFESSIONAL CORPORATION

LESLIE LONGENBAUGH
RONALD W. LORESENSEN
L. MERRILL LOWDEN
E. BUDD SIMPSON
STEPHEN F. SORESENSEN
JON K. TILLINGHAST

ONE SEALASKA PLAZA, SUITE 300
JUNEAU, ALASKA 99801
PHONE (907) 586-1400
FAX (907) 586-3065

November 7, 1995

Hon. Norman Rokeburg
Alaska House of Representatives
716 W. 4th Avenue
Anchorage, Alaska 99501

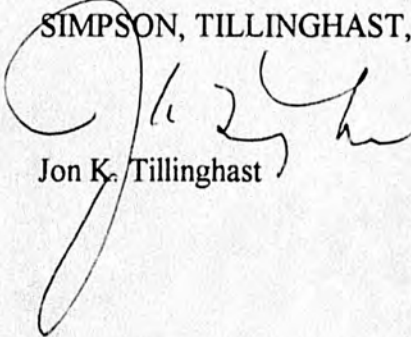
Re: HB 325
Our File No.: 840.1

Dear Representative Rokeburg:

Representative Green asked us yesterday for additional information on certain language in HB 325 and OXY's settlement agreement with DNR arising from OXY's prior royalty proceeding. Our response is enclosed. If you or Shirley have any questions regarding the matter, please feel free to give me a call.

Sincerely,

SIMPSON, TILLINGHAST, SORESENSEN & LORESENSEN


Jon K. Tillinghast

ATTORNEYS AT LAW
SIMPSON, TILLINGHAST, SORESENSEN & LORENSEN
A PROFESSIONAL CORPORATION

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November 6, 1995

The Hon. Joe Green
Alaska House of Representatives
716 4th Avenue, Suite 350
Anchorage, Alaska 99501-2133

Re: HB 325
Our File No.: 840.1

Dear Representative Green:

The original version of HB 325, and OXY's proposed substitute, would provide that new heavy oil development would receive a five-year royalty suspension "notwithstanding" the terms of any lease, unit agreement or "any other agreement." The latter phrase would include: (1) with respect to OXY, its July, 1994 settlement agreement with DNR; and (2) with respect to other ANS producers, their various *Amerada Hess* settlement agreements, to the extent that those other agreements would otherwise require payment of royalty on heavy oil production.

OXY does not believe that either category of agreement would, absent the language quoted above, preclude a company from obtaining the royalty suspension provided by HB 325 (*see below*). The "notwithstanding" language was intended to forestall any argument to the contrary, irrespective of its merit. In this regard, remember that one purpose of HB 325 is to establish a process free of administrative complications and the threat of litigation. Leases, unit agreements and royalty settlement agreements all set out royalty terms. We don't think it's reasonable for anyone to maintain that these agreements limit the legislature's ability to establish royalty policy. But neither do we believe that implementation of HB 325 should be frustrated by contentions to the contrary. Hence the precautionary language.

As you know, the OXY settlement agreement with DNR ended two years of litigation arising from a unique royalty surcharge imposed by DNR at the time of