

AK LEGISLATURE SPECIAL COMMITTEE FILES SCOMM 155 3299₇₃



Point Thomson: Fact or Fiction

#2: "The lessees are warehousing Point Thomson."

Fact:

- At no time has there ever been a way to get the gas to market; it is disingenuous to say it has been warehoused.
- Until the recent ramp up in prices, the condensate resource was clearly uneconomic; it remains challenged.
- The oil resource is problematic due to its depth, range in quality, and potential range of recoverable volumes. It is currently viewed as economically challenged. The proposed POD is designed to resolve these uncertainties.



Point Thomson: Fact or Fiction

#3: "DNR rejected the plan of development on its merits."

Fact:

- The prior plan and amended plan were rejected because they did not "commit to put the unit into production." The current plan commits to put the unit into production as well as delineate all reservoirs.
- In its April 2008 decision, the DNR stated that the current plan is "a technically reasonable first step for developing these lands."
- But instead of considering the plan on its merits, the Commissioner of the DNR has:
 - Taken the unprecedented step of decertifying wells for the purpose of terminating a unit through administrative action.
 - Has ruled that the proposed PODs do not coincide with his preferred development all the while refusing to specifically lay out his preferred development.
 - Moved to expropriate the asset despite acknowledging the plan's merits by claiming a lack of "trust" of the lessees.*
 - Refused to meet with the lessees to outline his expectations.

* For over 27 years, the Commissioners of DNR and the lessees agreed the PODs set out the appropriate course of action for the development of Point Thomson as evidenced by the ongoing DNR approval of the PODs up to August of 2005.



Point Thomson: Fact or Fiction

#4: "The owners are not developing Point Thomson."

Fact:

- Over the last 30 years, the owners have spent over \$800 million on the exploration and development of Point Thomson.
- Despite the State's move to expropriate the leases, the lessees have dedicated significant resources to continue technical work:
 - Reservoir simulation and flow stream modeling;
 - Planning for development;
 - Initiating engineering design for facilities;
 - Making financial commitments for drilling rig and long-lead items; and
 - Progressing permitting applications.



Point Thomson: Fact or Fiction

#5: "Point Thomson is wildly economic."

Fact:

- The complexity and unique nature of this reservoir makes it a very challenging and expensive field to develop.
- While the upstream has been described as delivering a greater than 50% rate of return (ROR), specific to PTU it appears that the Black & Veatch base case depicts the value at a modest 13% ROR
 - Aggressive assumptions on gas price and cost trends
 - Base case of an initial gas blow down (i.e., no gas cycling)



The Future of Point Thomson

The Commissioner's **new view** of PTU ("validated" by the PetroTel report): PTU needs to cycle gas for as many as 20 years before major gas sales.

Chevron Comments on PetroTel report:

- PetroTel's work is theoretical; they clearly indicate they did not consider physical, environmental, safety, and economic factors; as a result of this and other optimistic assumptions, it significantly overstates resources in place and the amount that is recoverable.
- PetroTel claims that the field has "as much as 500MMSTB" of incremental recoverable liquids if cycled for 20 years. Even assuming cycling is possible and economic, the incremental liquid volumes are likely to be less than 150MMSTB and would likely result in an acceleration of PBU blow down **resulting in less oil produced on the North Slope not more.**

The Future of Point Thomson

Chevron's View



- There is great uncertainty and therefore great risk in a gas cycling condensate project; it may or may not work.
 - Point Thomson has unique, challenging reservoir issues – it is like no other field, anywhere in the world.
 - Cutting edge technology is required for facilities and drilling.
 - Wide range of potential outcomes; most likely is failure
- Successful "oil rim" development is not certain.
 - Characteristics of the oil rim; oil quality, oil distribution across the field, oil reservoir quality, aquifer impact, etc. increase risk
 - Economics will be particularly challenged given potential recoveries and costs per well.
- One point of agreement by all: a phased approach is required (consistent, again, with the proposed POD).
 - In its April 2008 decision, the DNR stated that the plan is "a technically reasonable first step for developing these lands"



Developing Point Thomson Correctly

The right progression for PTU will be:

- Proceed with the proposed POD to bring PTU into production:
 - With timely approval, delineation drilling to begin this winter further testing extent and quality of reservoir
 - Gas cycling project progressed to test viability
 - Prepare for Major Gas sales in parallel with development work
 - Results from production in 2015 – 2018 timeframe
- If cycling doesn't work, adjust to PTU gas blowdown and preserve gas at Prudhoe Bay, and therefore, maximize overall oil production on the North Slope

Consequence of delay in proposal to produce PTU

- Under sizing of the initial pipeline 4 – 4.5 bcf/d to 3.5 bcf/d, thereby crippling economics and slashing over all revenues
- Premature termination of cycling at PBU and loss of oil (\$120 wellhead/boe for oil vs \$24 wellhead/boe for gas)
- Lower value of entire gas project to State and Producers



Chevron desires to market North Slope gas

- Chevron is currently not a participant in any of the proposed gas lines
- Chevron will participate in future North Slope gas sales:
 - We will commit FT for our known gas reserves to a pipeline that we are confident provides reasonable upstream economics and terms
- Our drivers are predictable economics and risk sharing:
 - | <u>Key Variable</u> | <u>Controllable?</u> |
|----------------------------|----------------------|
| ▶ Point Thomson resolution | Yes |
| ▶ Future Gas prices | No |
| ▶ Construction cost | Partially |
| ▶ Cost risk allocation | Yes |
| ▶ Certainty of state taxes | Yes |
 - Many of these elements are aligned with the State
 - ▶ Encouraging the development of infrastructure to realize the value of gas assets on the North Slope
 - ▶ Doing projects in the most economic way; especially true given the nature of the ACES tax approach



Summary

- PTU is critical to any major gas pipeline.
- PTU development should begin as soon as possible; the proposed POD is the right plan.
- The DNR should have approved the proposed PTU plan on its merits. Why didn't it . . . ?
- The current lessees can and will (if allowed) develop Point Thomson better and faster than anyone else.
- Chevron is being forced to litigate to protect its rights.
- Chevron wants to sell its North Slope oil and gas.



So . . . Where are we?

- Protracted litigation; No settlement discussions
- Point Thomson is out of the gas pipeline
- Everyone agrees on the substance of the proposed POD
- Chevron stands ready to perform the proposed plan
- Owners remain ready to drill in 2008-09

And . . . What can be done?

- An independent, objective review of the pipeline analysis should be undertaken
- In an open and honest government, the parties to the Point Thomson litigation would sit down and talk through their differences

hand out 6-17-08
SENR/HRLS mtg Anch AK
AGIA License Hearmap



John Zager
General Manager, Alaska
Mid-Continent/Alaska

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Exploration and Production**
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Email jzager@chevron.com

To Distinguished Members of the Alaska State Legislature:

As you debate the pros and cons of the various gas line proposals in the days ahead, we respectfully encourage you to keep Point Thomson as part of the discussion. After all, Point Thomson is a critical component to any gas pipeline. Without Point Thomson gas, a gas line may be unnecessarily delayed, stalled or downsized – and fail to deliver Alaska's full potential to a state and nation eager for Alaska energy.

Without Point Thomson gas, Alaska will lose valuable oil revenues if gas from Prudhoe Bay is prematurely diverted into a pipeline instead of being used – as it is today – to recover millions of barrels of oil.

Chevron believes that the proposed plan of development for Point Thomson delivers everything the Department of Natural Resources needs to fulfill its constitutional duty to ensure the development of Alaska's resources "for the maximum benefit of its people." The DNR has acknowledged that the proposed development plan is a "technically reasonable first step for developing these lands."

More importantly, if allowed, this plan could begin immediately and secures vital information that will be critical to making the correct development decisions for Point Thomson; thus maximizing the value of North Slope oil and gas resources. It provides:

- ☐ Immediate development backed by firm produce-it-or-lose-it milestones
- ☐ A stage 1 commitment of \$1.3 billion to:
 - Determine if gas cycling will even work
 - Delineate the thin oil rim and shallower oil reservoirs
 - Prepare for major gas sales
 - Set the stage for multi-billion dollar full-field development
- ☐ Drilling commencing this winter - jobs for hundreds of Alaskans
- ☐ Production to help keep the pipeline flowing
- ☐ Elimination of the delays and risks associated with a protracted legal battle

Chevron is committed to developing Point Thomson and believes that no one can make this happen better or faster than the current leaseholders. The need is great, the risks are high and the timing is critical. Point Thomson gas is a key element in any responsible gas pipeline formula.

Point Thomson is essential to turn Alaska's dream of a successful gas pipeline into a reality.

Sincerely,

John Zager
General Manager, Alaska
Chevron North America Exploration and Production

Handout 6-17-2008 Tues 4PM Anch AK
AGIA License Hearings



John Zager
General Manager, Alaska
Mid-Continent/Alaska

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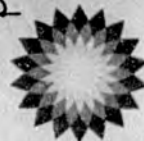
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General Manager, Alaska
Chevron North America Exploration and Production

bp

passed out @ SENR/HRLS Mtng 6-17-08
Tuesday Anch AK



Doug Suttles
President

BP Exploration (Alaska) Inc.
P.O. Box 196612
900 E. Benson Boulevard
Anchorage, Alaska 99519-6612

June 16, 2008

HAND DELIVERED

The Honorable John Coghill, Chair of House Rules Committee, Alaska Legislature
&

The Honorable Charles Huggins, Chair of the Senate Special Committee on
Energy, Alaska Legislature

Re: Point Thomson Plan of Development, 2008

Mr. Chairman,

I would like to take this opportunity to confirm BP's position with regards to
bringing Point Thomson into production.

BP is fully supportive of the proposed plan to delineate, develop and produce
Point Thomson liquids (condensate and oil) and gas. BP has a significant stake in
the leases holding a 32% working interest. BP demonstrated its commitment to
the \$1.3 billion Plan of Development by:

- (i) providing a letter of commitment from our Chief Executive of Exploration
and Production, Andy Inglis (attached),
- (ii) agreeing to unit termination if the parties fail to meet specific milestones,
and
- (iii) changing the unit vote to a simple majority in order that no one party can
block development decisions.

We believe that time is of the essence and that the delineation and development of
Point Thomson as proposed, will provide vital information for finalizing the design
of any gas pipeline project and the optimum development of Pt Thomson liquids.

We are very concerned that the study conducted by PetroTel Inc. for the
Department of Natural Resources (DNR) only became public after the recent
Point Thomson hearings before the DNR. The Pt Thomson owners have not been
provided the opportunity to review the data on which the study is based or to
respond to it on the record. The conclusions reached in the study have neither
been audited nor critically examined by those who know the realities of the Point
Thomson field best.

Direct 907 564 5422
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doug.suttles@bp.com

June 16, 2008

Page 2 of 2

Point Thomson is very important to BP. We wish to move forward with delineation and full field development of both liquids and gas. The availability of Point Thomson gas is critical for the success of any major gas pipeline project.

BP stands ready to work with the State of Alaska to settle the current dispute over Pt Thomson. We are confident that we can find a solution that works for all parties.

Thank you for the opportunity to confirm BP's position regarding this important issue for BP, Alaska and the gas pipeline project.

Sincerely,

Sincerely,

A handwritten signature in black ink, appearing to read "Doug Suttles", with a stylized, overlapping flourish at the end.

Doug Suttles

cc: Alaska Legislature

Andrew Inglis FREng CEng FIMechE
Group Managing Director and
Chief Executive of Exploration and Production

BP p.l.c.
1 St James's Square
London
SW1Y 4PD
United Kingdom

12 March 2008

Our Ref: AGI/DS/CB

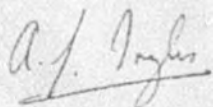
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a.inglis@bp.com

Mr Thomas E Irwin
Commissioner
Department of Natural Resources
550 W. 7th Avenue, Suite 1400
Anchorage
Alaska 99501-3650

Dear Commissioner

As Chief Executive of Exploration & Production, I write to assure you of BP's commitment to the Plan of Development recently proposed by the owners of the Pt. Thomson Unit. BP is fully committed to carrying out the Plan of Development and, on approval of the Plan of Development, will proceed to fully fund its share of the commitments contained therein.

Yours sincerely



A G Inglis
Group Managing Director and
Chief Executive of Exploration and Production

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Registered Office: 1 St James's Square
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United Kingdom

bp

6-17-2008 hand out
SENR/HRLS AGIA LICENSE Hearings



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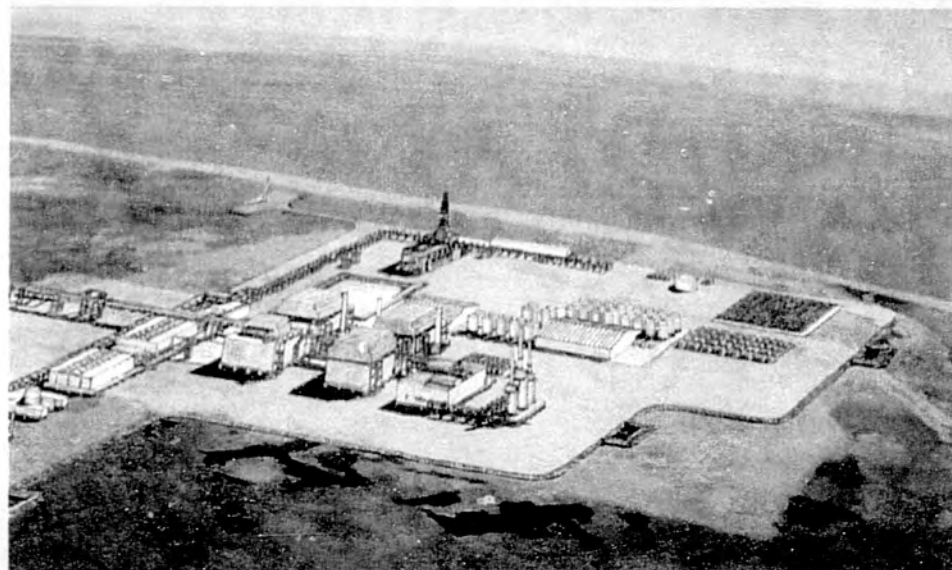
A G Inglis
Group Managing Director and
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presented: 6-17-2008 AGIA License Hearings
Tuesday
Anch. AK

ExxonMobil

Point Thomson Unit Development



ALASKA COMMITTEES ON AGIA / ENERGY

June 17, 2008

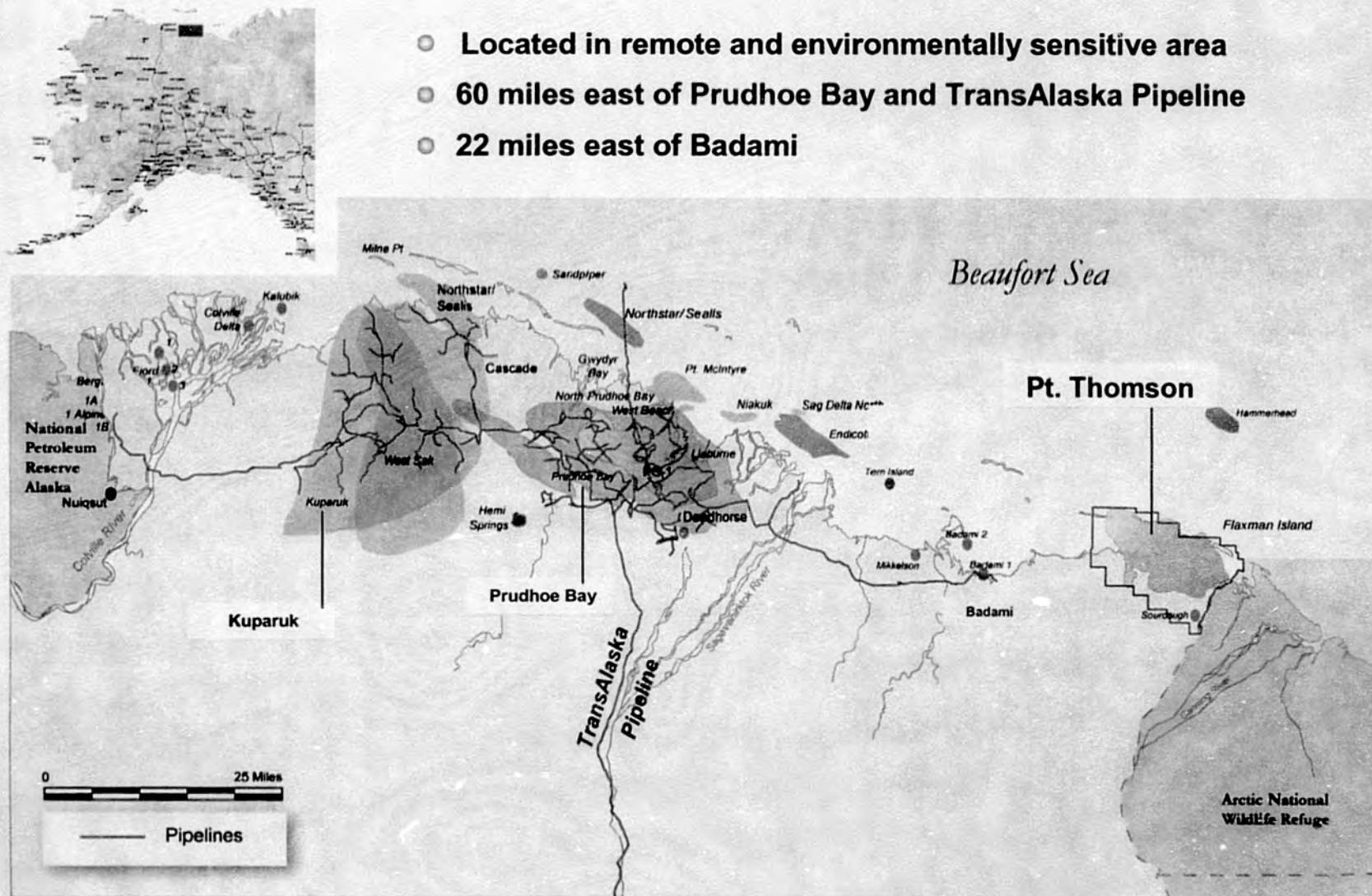
Craig A. Haymes
ExxonMobil Alaska Production Manager

\$60-100 Million cost
per well @ pt. Th.

Point Thomson – Isolated from Rest of North Slope

ExxonMobil

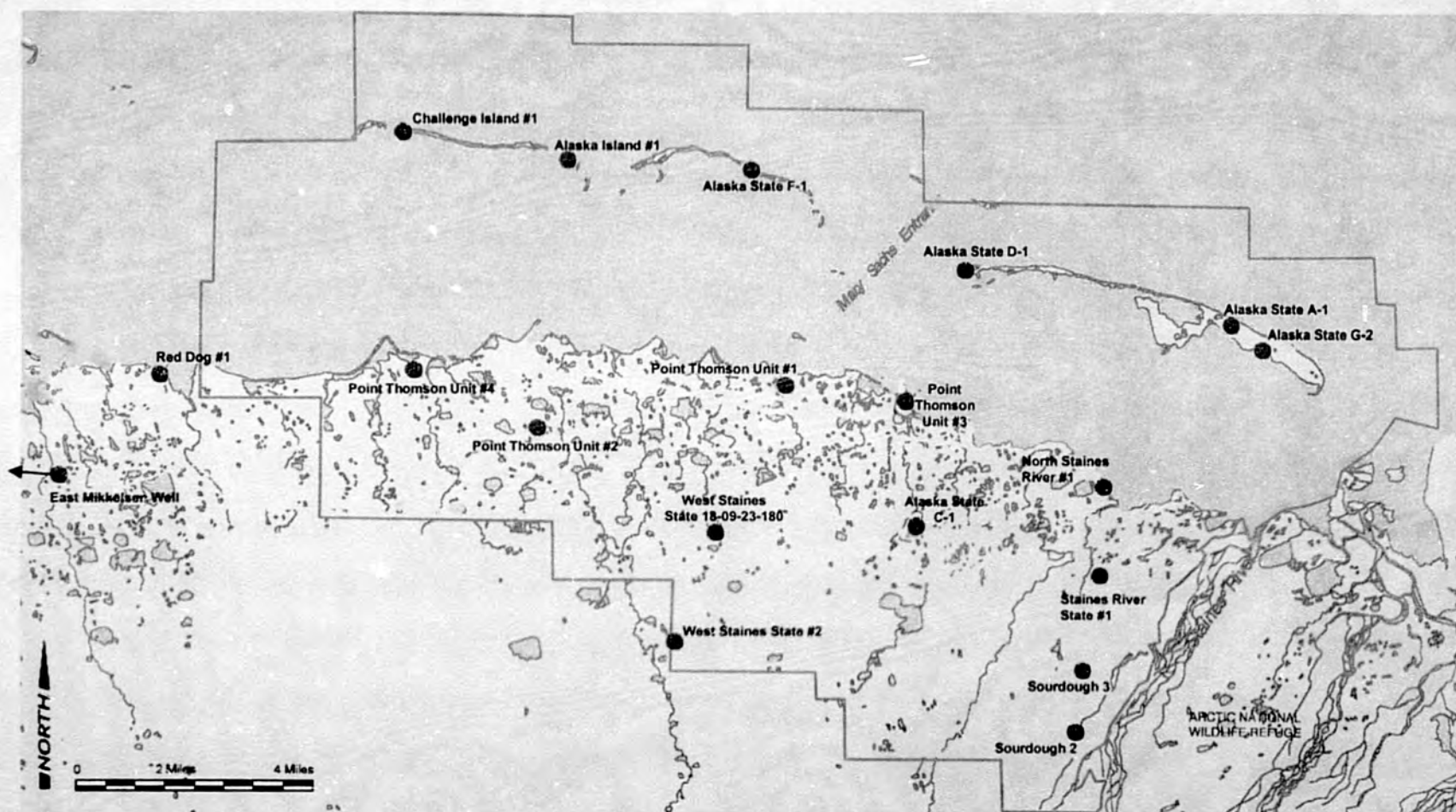
- Located in remote and environmentally sensitive area
- 60 miles east of Prudhoe Bay and TransAlaska Pipeline
- 22 miles east of Badami



Point Thomson – Obtaining Information

ExxonMobil

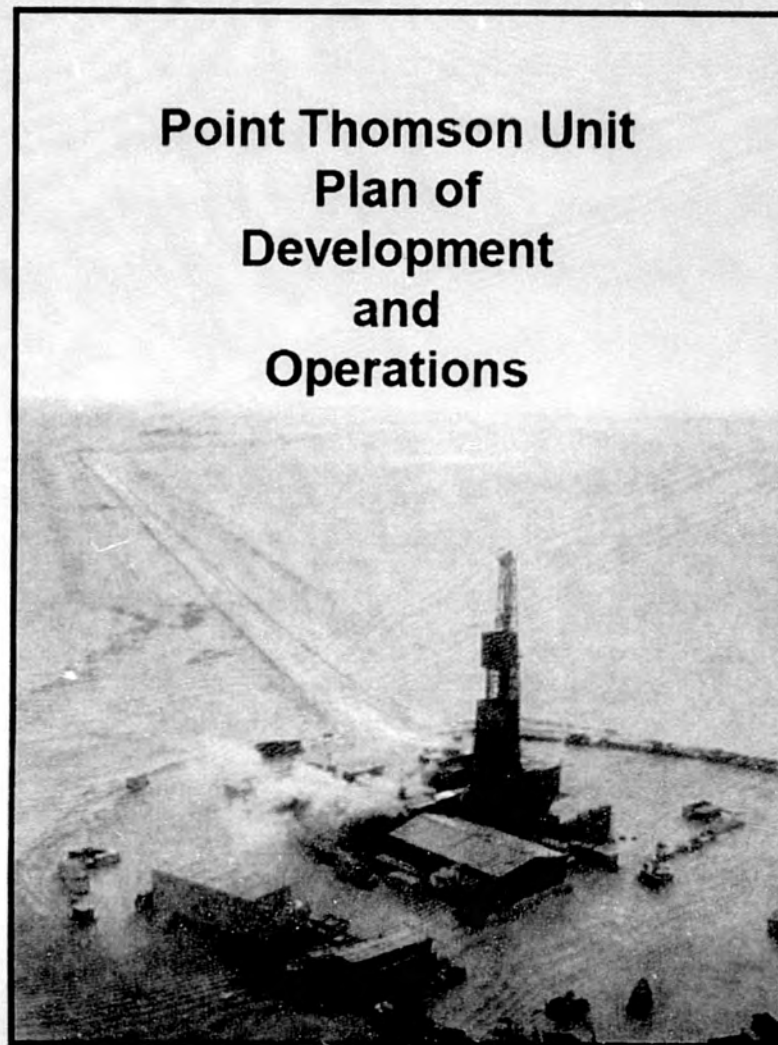
- 19 Exploratory Wells Drilled
- Eight 3D Seismic Acquisitions



Point Thomson – POD Commitments

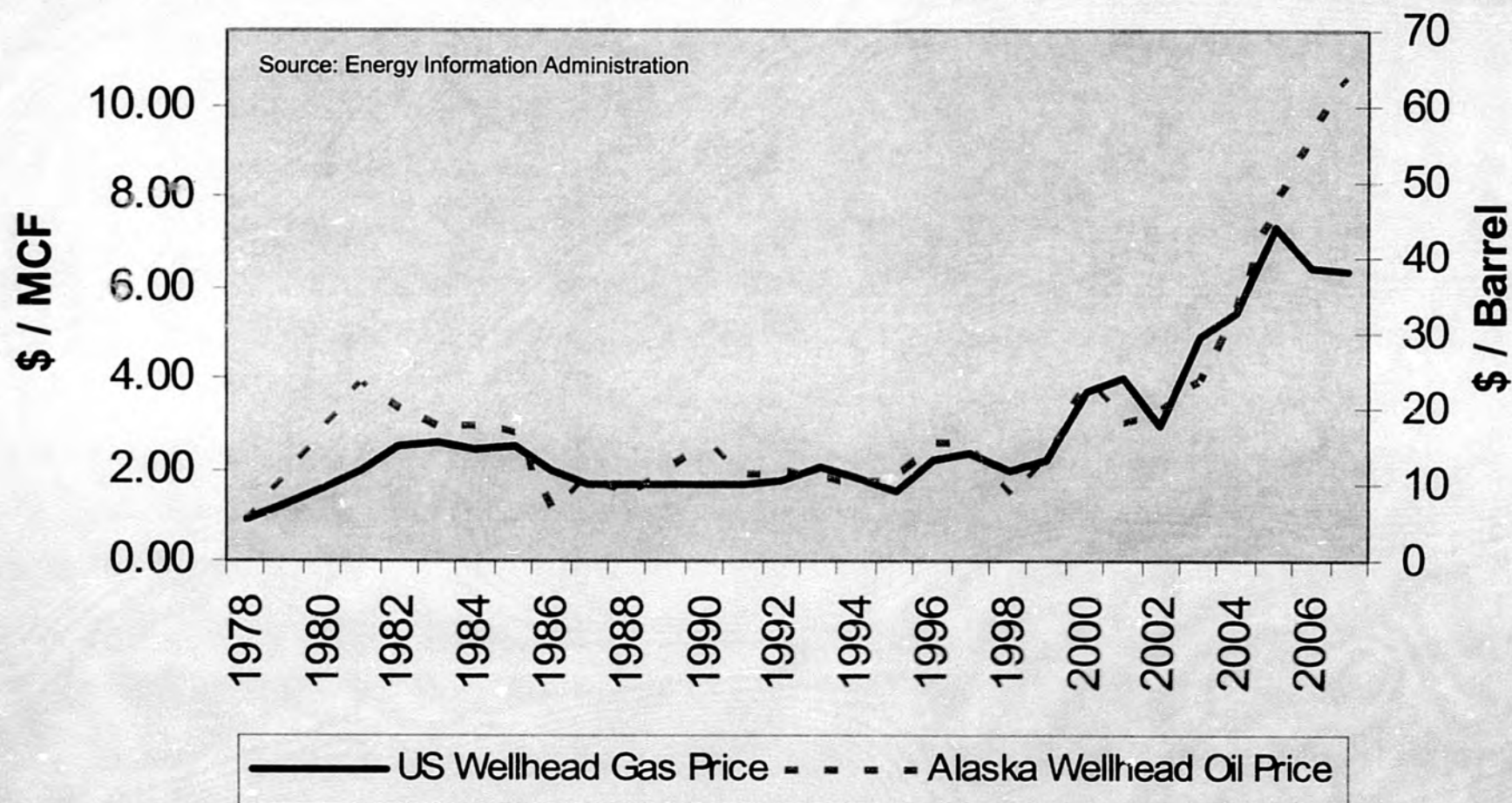
ExxonMobil

Point Thomson Unit Plan of Development and Operations



Historical Oil and Gas Prices

ExxonMobil



Point Thomson Plan of Development (POD)

ExxonMobil

Plan of Development (POD)

\$1.3 Billion Project

- Future Expansion Capability

Cooperative
Owner Efforts

Development Planning

Learning from
Worldwide Operations

Geological and Reservoir
Modeling

Data Interpretation

3D Seismic Surveys

Drilled 19 Exploration Wells

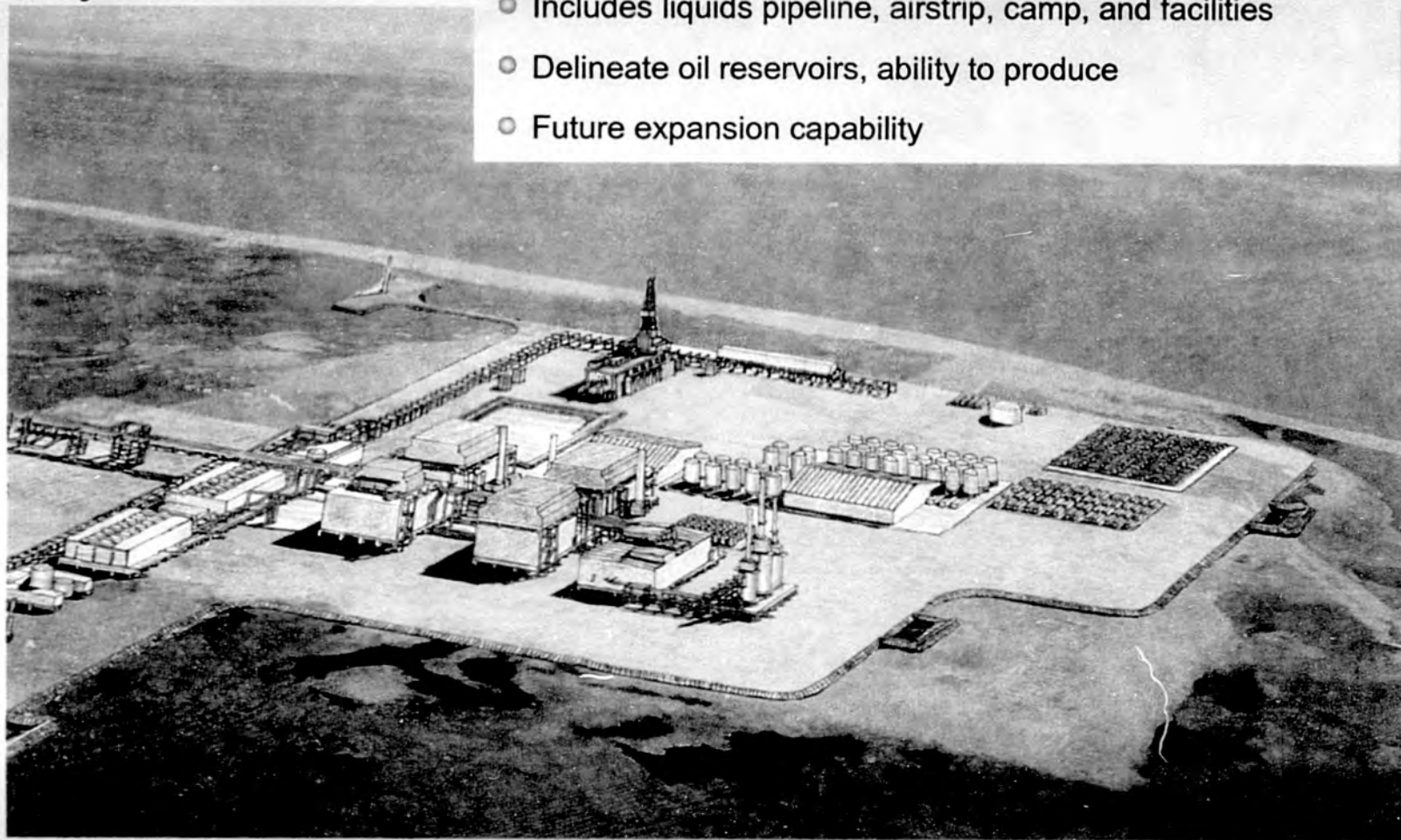
**> \$800 Million
spent to date**

PTU POD - Plan to Produce Condensate

ExxonMobil

Project Illustration

- Production by YE 2014: 10,000 BPD, inject remaining gas
- Includes liquids pipeline, airstrip, camp, and facilities
- Delineate oil reservoirs, ability to produce
- Future expansion capability



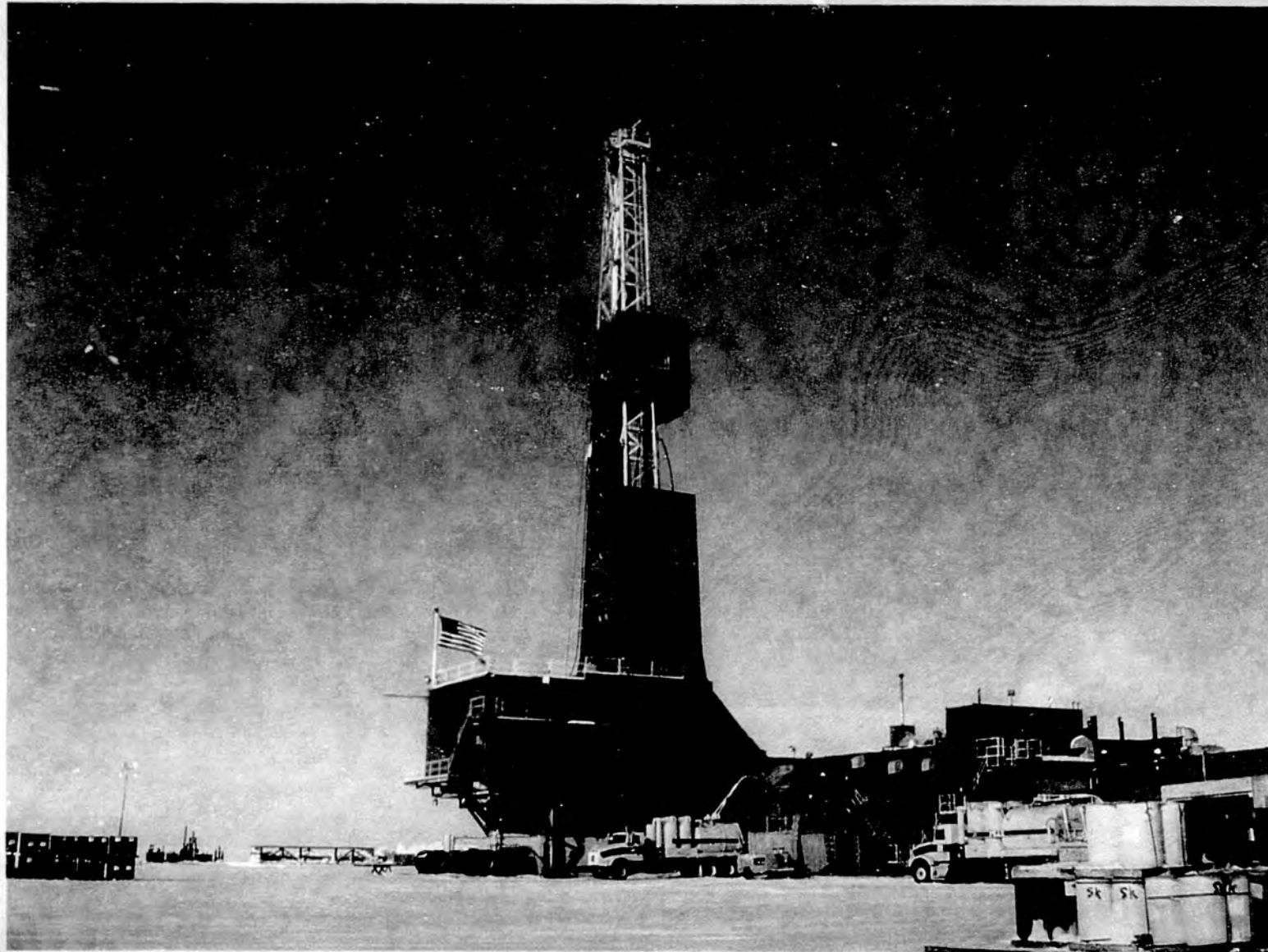
PTU – Project Activity Underway

ExxonMobil

- **Nabors Rig 27E contracted**
- **Rig upgrades (\$20M) commenced – Anchorage, North Slope**
- **Long lead drilling materials ordered**

PTU - Drilling Rig with Upgrades Underway

ExxonMobil



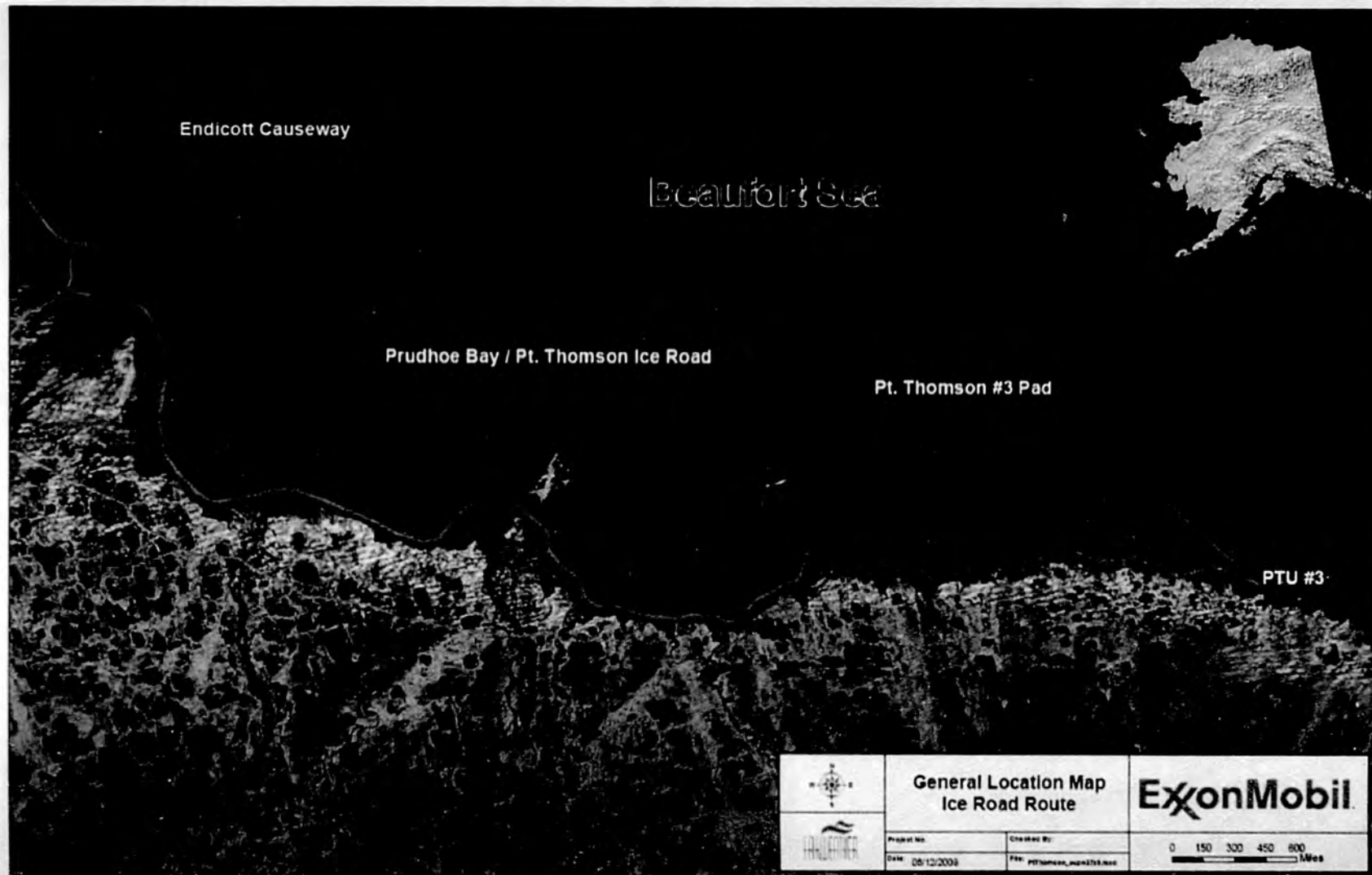
PTU – Project Activity Underway

ExxonMobil

- Nabors Rig 27E contracted
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- **50 mile ice road and airstrip contracted to Alaskan company**

PTU – 50 Mile Sea Ice Road

ExxonMobil



PTU – Project Activity Underway

ExxonMobil

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- **Drilling/Project site survey week of 6/23**
- **Permitting applications in June**
- **Barging of ice facilities and pad equipment in July/August**

PTU – Route for Summer Barge Activity

ExxonMobil



PTU – Summer Site Preparation Plan

ExxonMobil

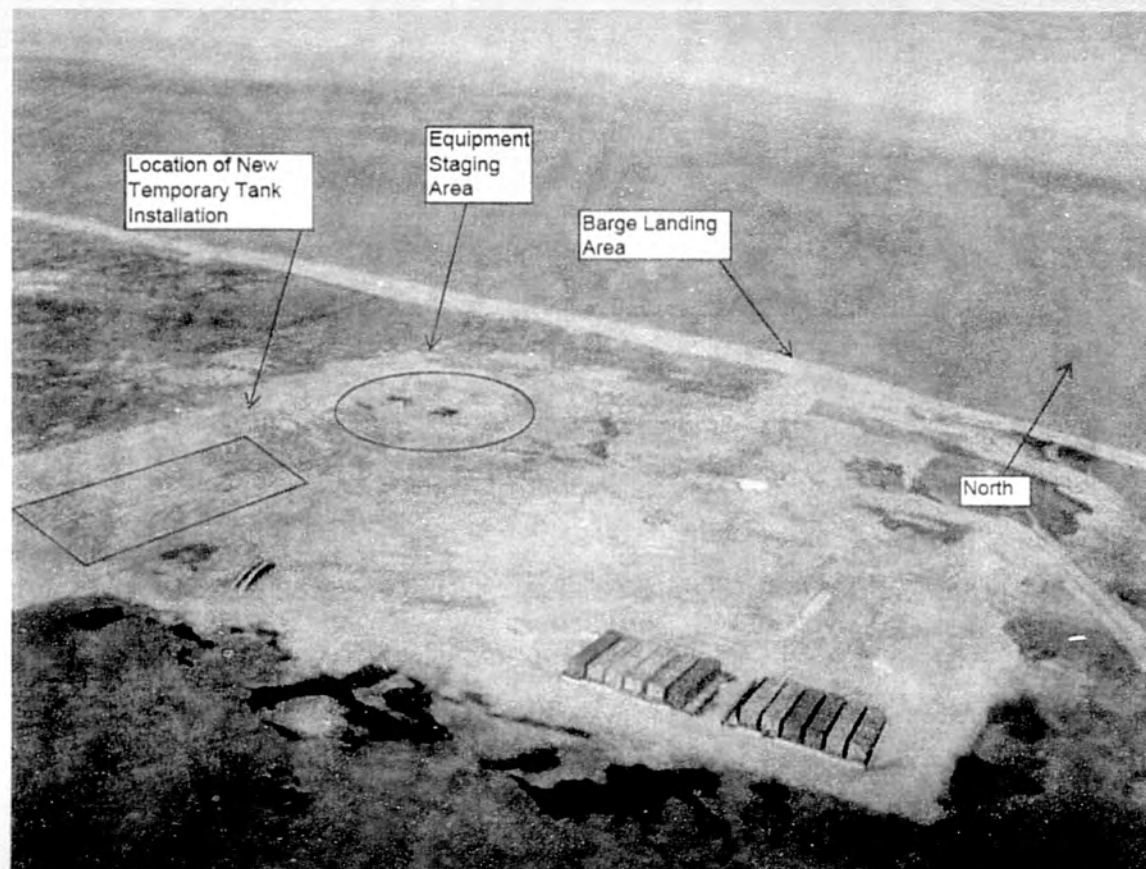


Figure 2
ExxonMobil
Point Thomson
Equipment Staging and Pad Preparation Project Schedule

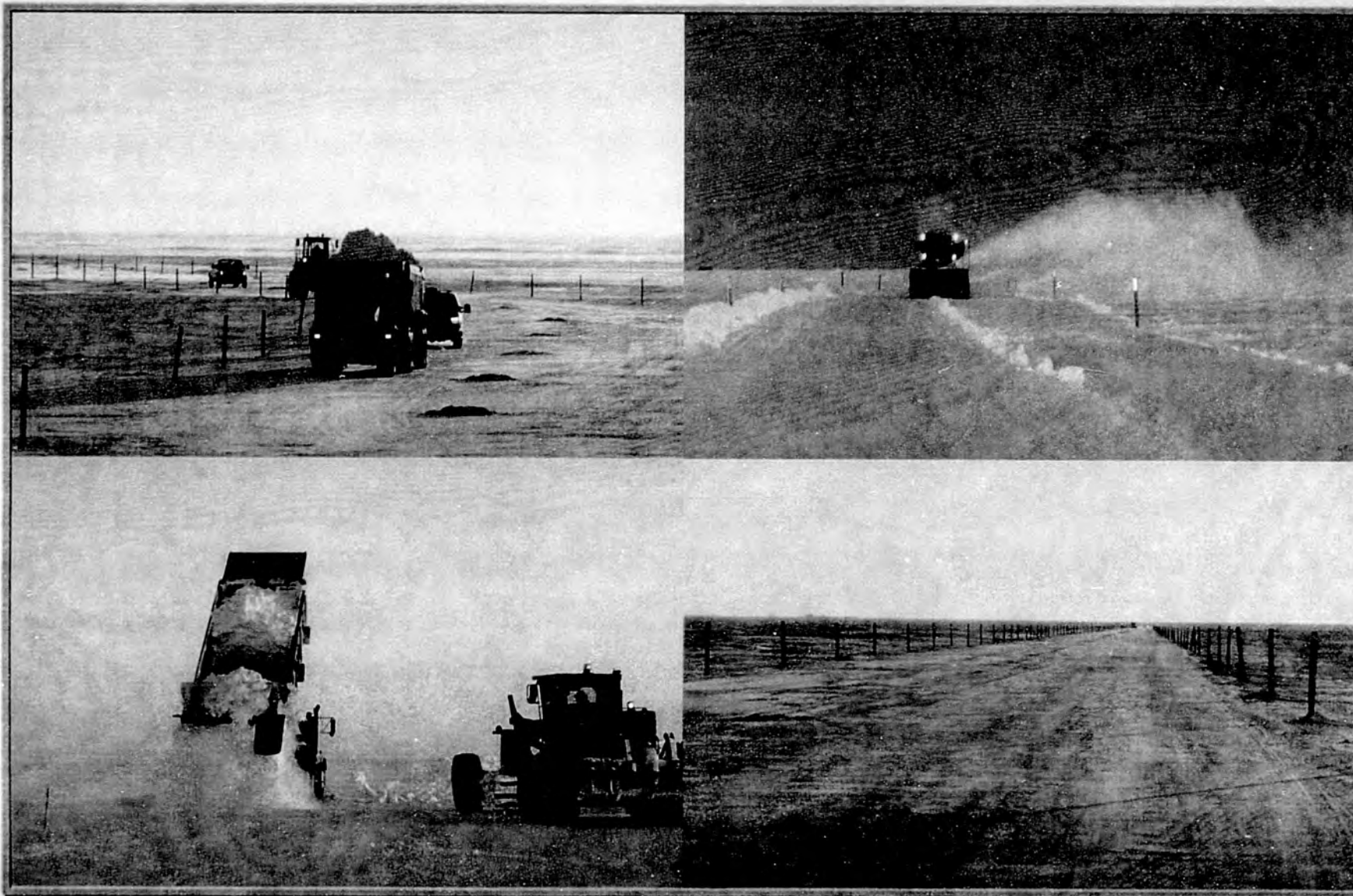
ID	Task Name	Start	Finish	May	Jun	Jul	Aug	Sep	Oct	Nov	2008 Dec	Jan
1	Barging of Equipment and Materials	7/15/08	8/30/08									
2	Camp Setup	7/15/08	7/20/08									
3	Gravel Hauling	7/21/08	7/30/08									
4	Pad Preparation	8/1/08	8/15/08									
5	Onsite Equipment Backhaul	8/16/08	8/17/08									
6	Final Equipment Staging	8/16/08	8/30/08									
7	Security Crew Standby	9/2/08	1/31/09									

PTU – Project Activity Underway

ExxonMobil

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PTU – Ice Road Construction & Maintenance **ExxonMobil**



PTU – Rig Move Over Ice Road

ExxonMobil

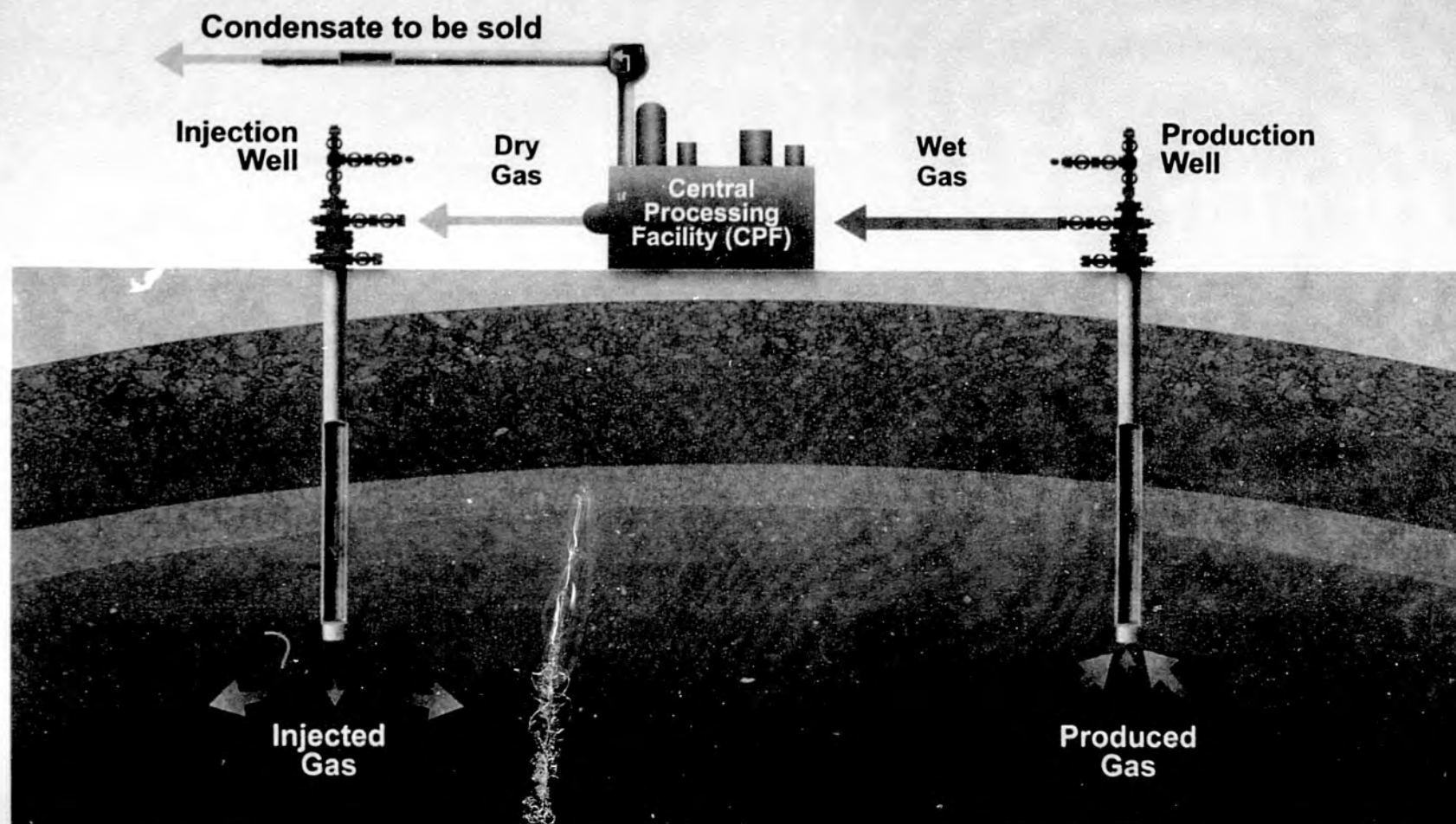


PTU – Project Activity Underway

ExxonMobil

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- **Spud 1st well February 2009**

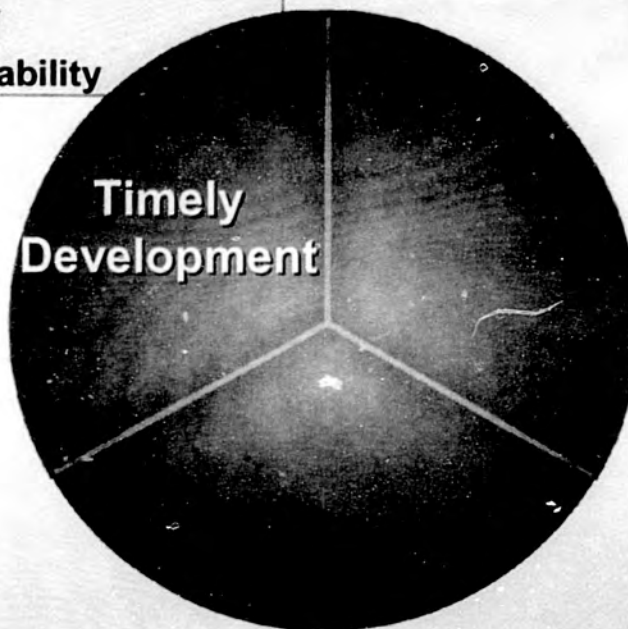
Point Thomson - Produce Condensate by Cycling Gas ExxonMobil



PTU POD - Addressing DNR's Concerns

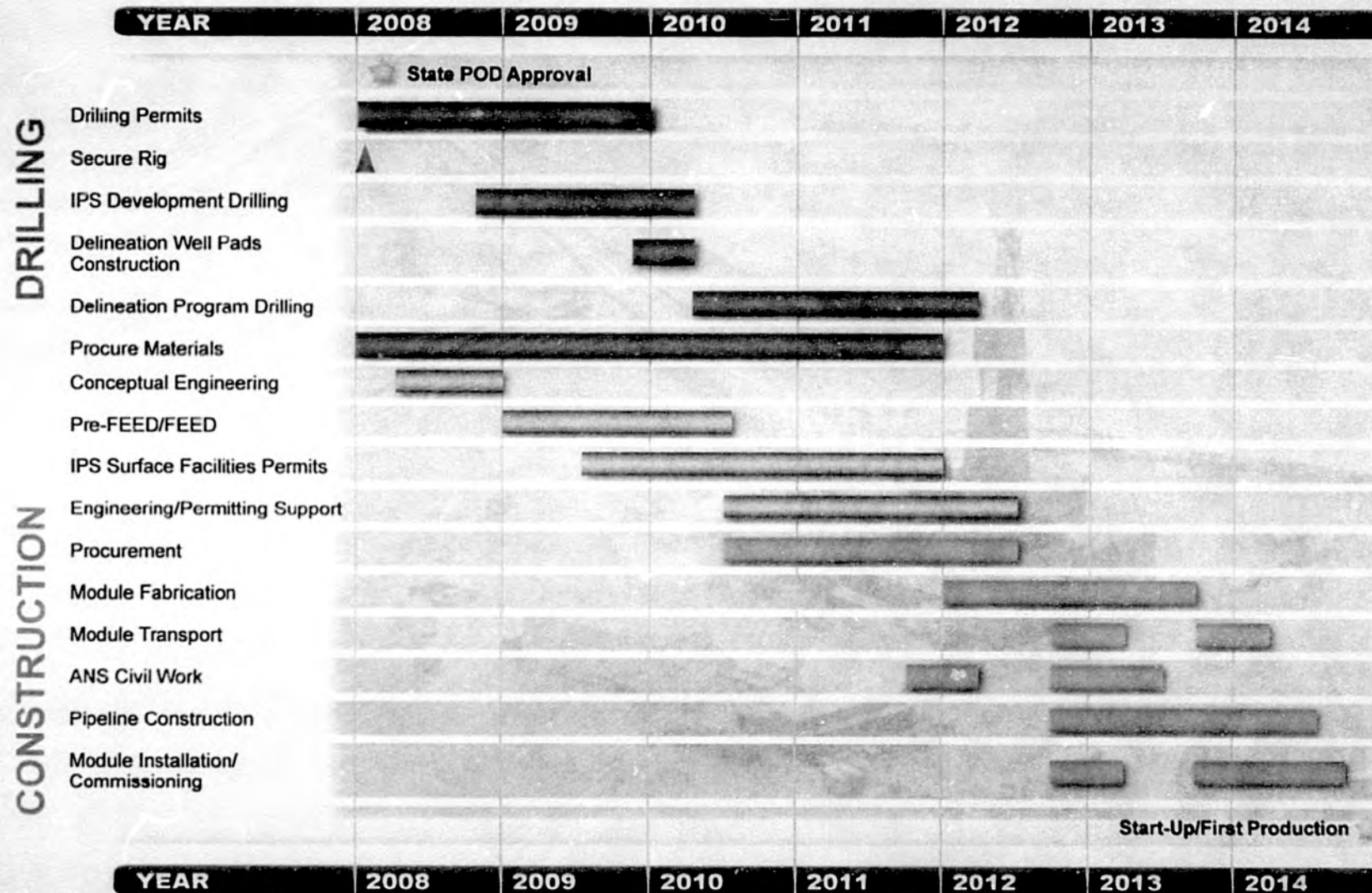
ExxonMobil

- Engineering & Drilling Starts 2008
 - > 200 jobs by next winter
- Production begins 2014
- 10,000 Barrels per Day
- Future Expansion Capability



PTU POD - Clear and Committed Timeline

ExxonMobil

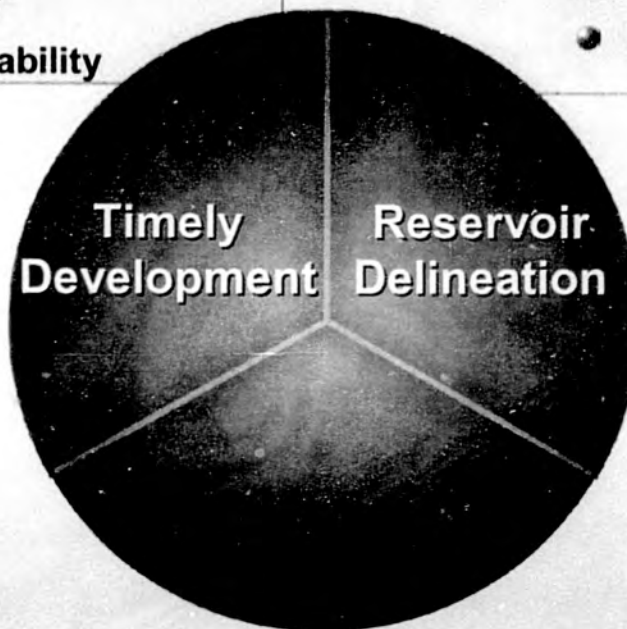


PTU POD - Addressing DNR's Concerns

ExxonMobil

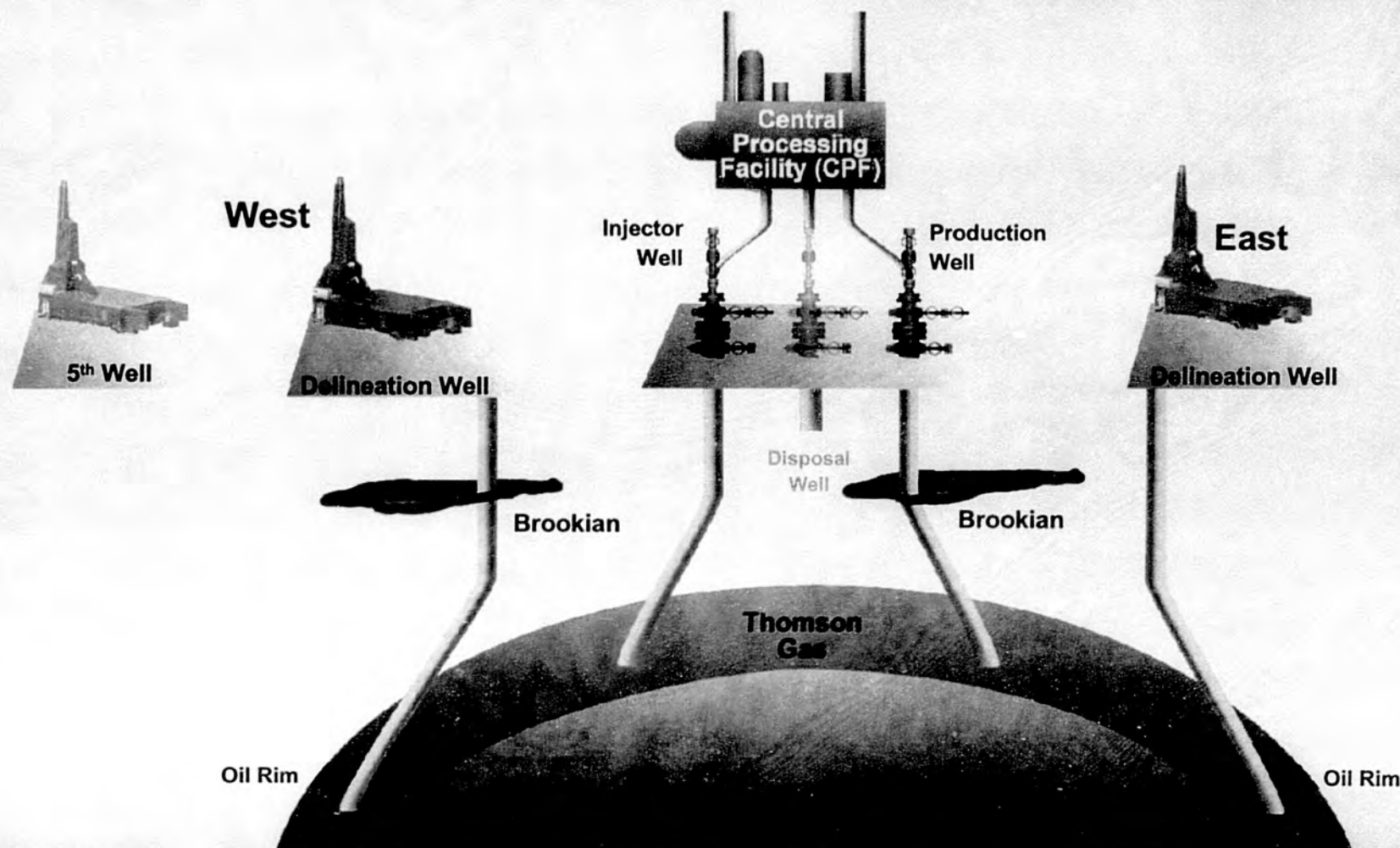
- **Engineering & Drilling Starts 2008**
 - > 200 jobs by next winter
- **Production begins 2014**
- **10,000 Barrels per Day**
- **Future Expansion Capability**

- **Drilling Program – Gas, Oil, Condensate**
 - 2 gas cycling wells
 - 3 oil / gas delineation wells
 - Additional Wells if required



PTU POD - Plan to Develop and Delineate

ExxonMobil



PTU POD - Addressing DNR's Concerns

ExxonMobil

- **Engineering & Drilling Starts 2008**

- > 200 jobs by next winter

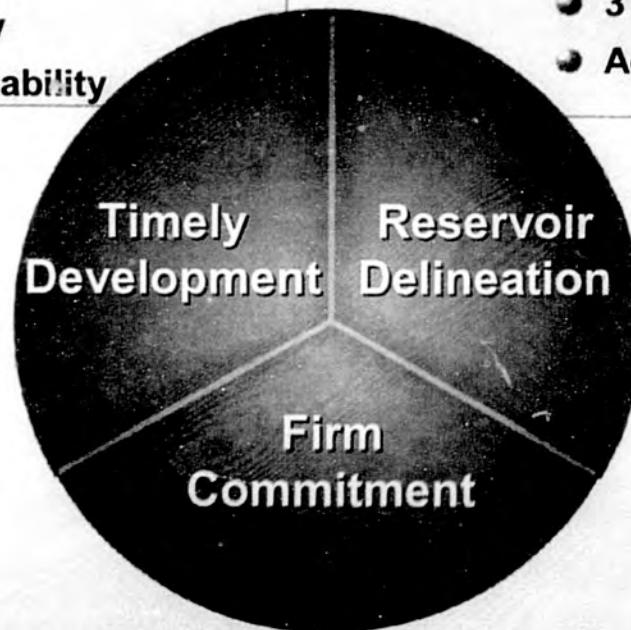
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- 10,000 Barrels per Day

- **Future Expansion Capability**

- **Drilling Program – Gas, Oil, Condensate**

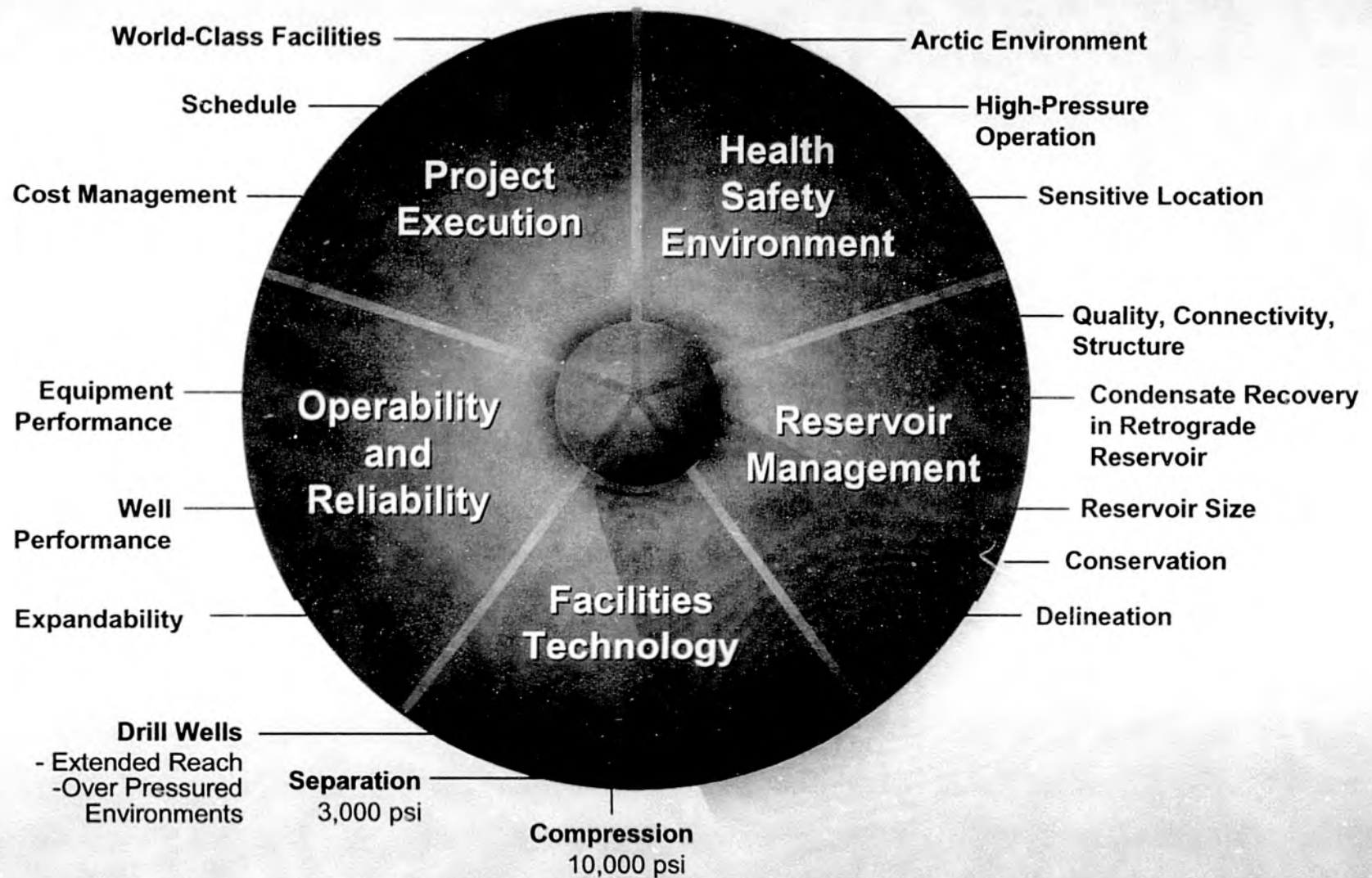
- 2 gas cycling wells
- 3 oil / gas delineation wells
- Additional Wells if required



- **Term of POD through to Production**
- **Owners support \$1.3 Billion Project**
- **Already Secured Rig; Long Lead Materials**
- **Scheduled Milestones for State to Monitor Progress**
- **Owners Support Assured by Corporate Executives**
- **Agreed to Unit Termination if Milestones Not Met**

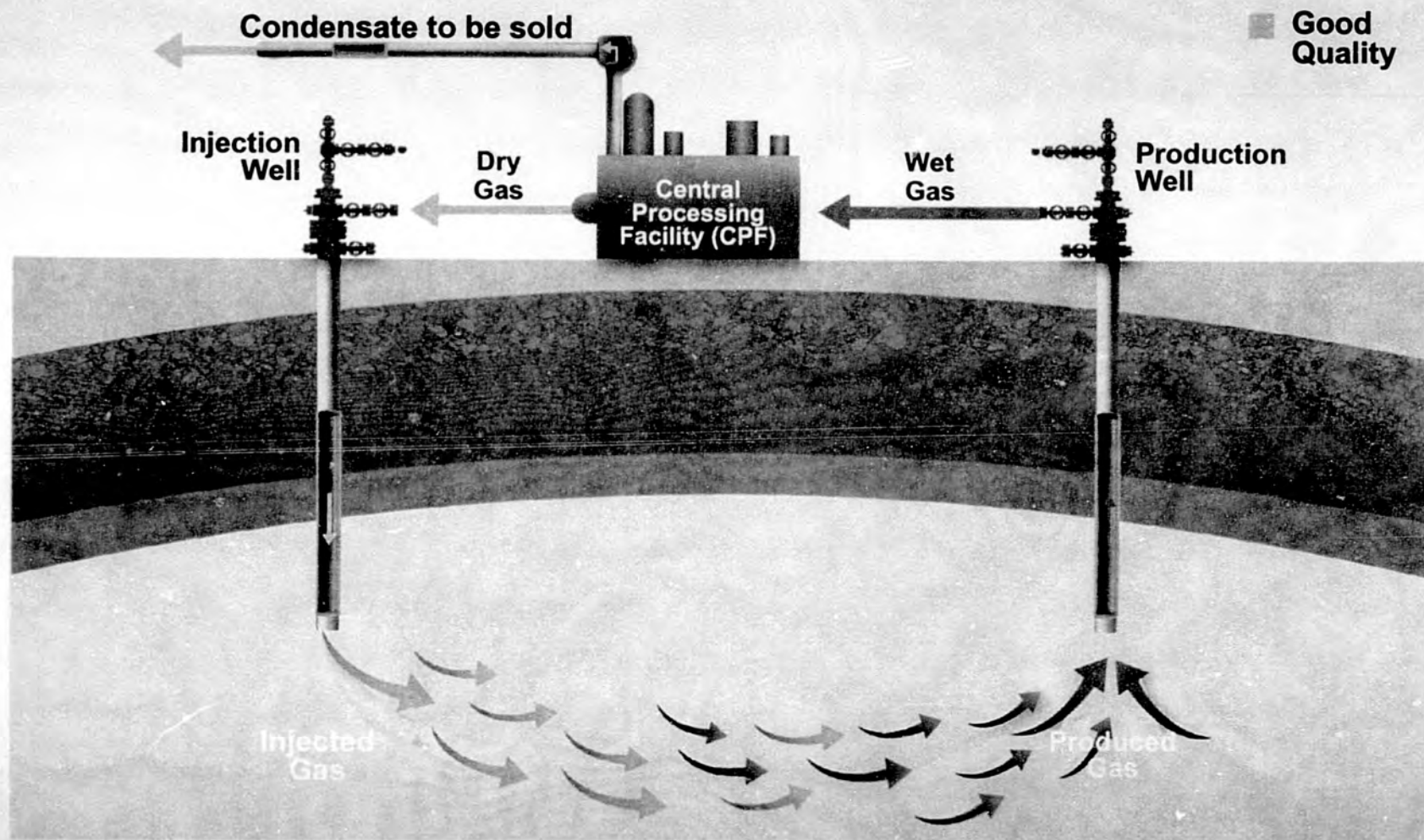
PTU POD - Prudently Manages Risk

ExxonMobil



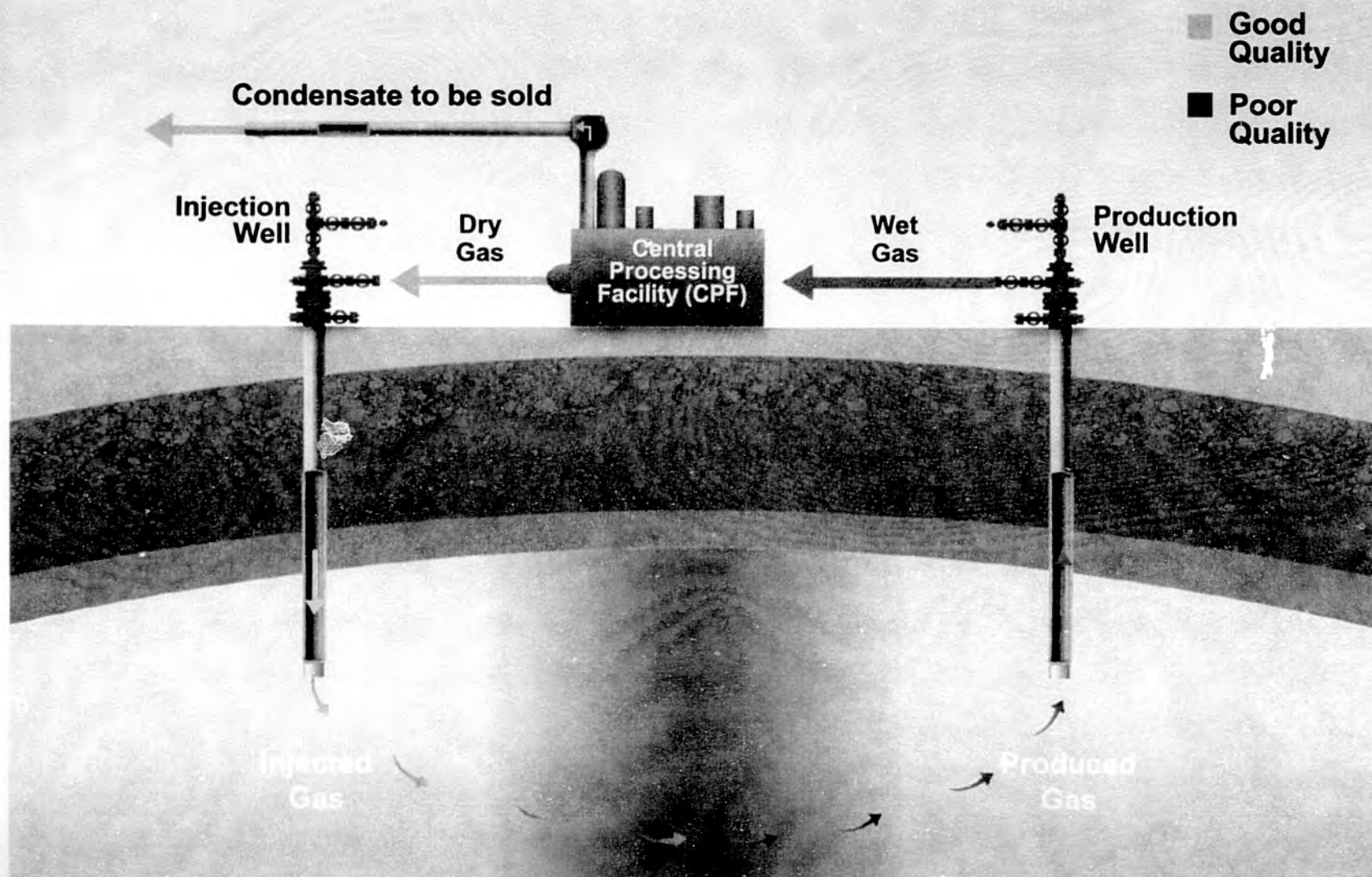
PTU - Reservoir Quality and Performance

ExxonMobil



PTU - Reservoir Quality and Performance

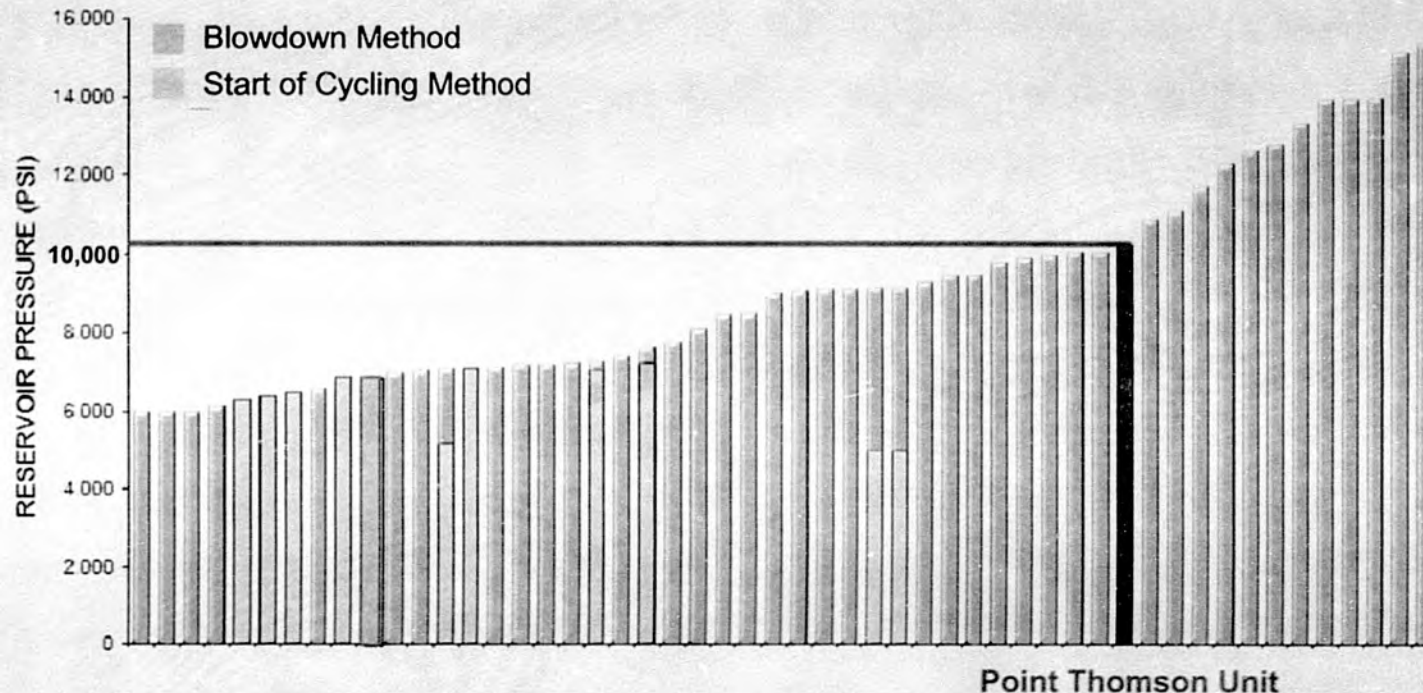
ExxonMobil



Cycling at High-Injection Pressure

ExxonMobil

World-Wide Gas – Condensate Reservoirs

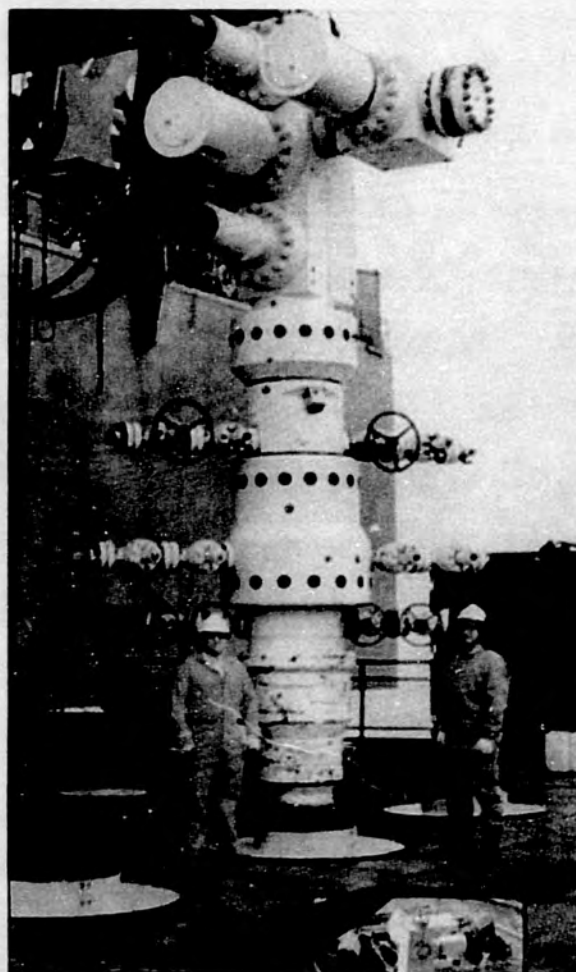


- No cycling projects similar to Point Thomson
 - >10,000 psi injection pressure
- World's highest pressure gas cycling project

Wells Required for High-Pressure Operations

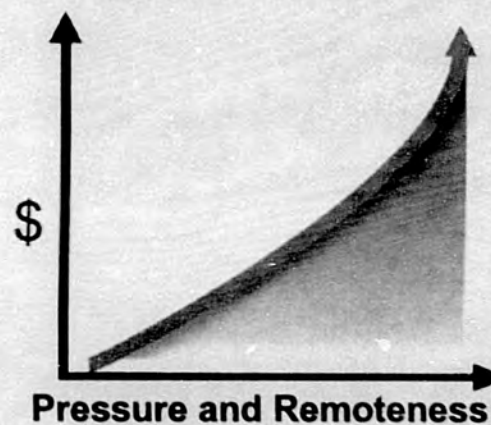
ExxonMobil

Point Thomson Well



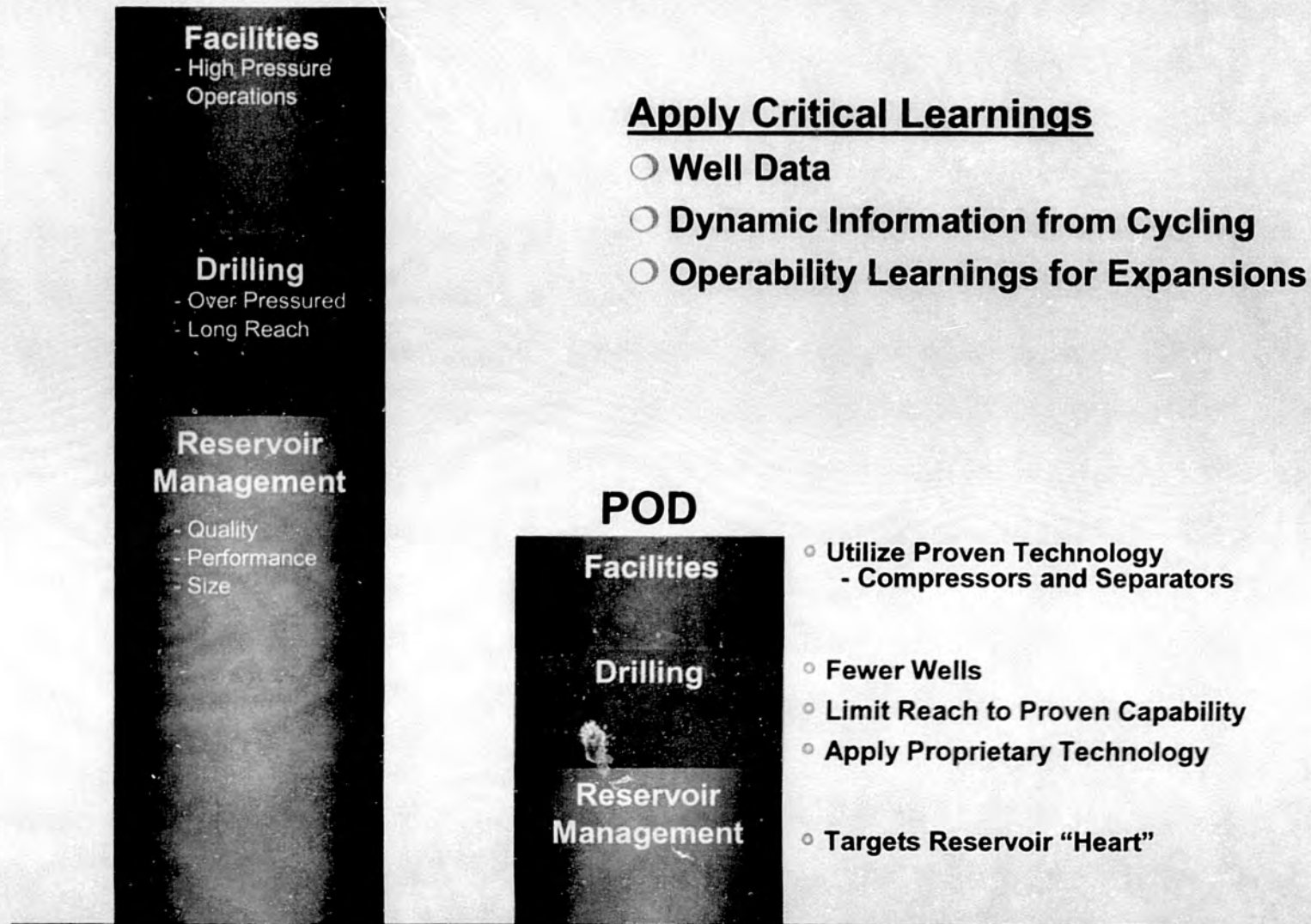
Point Thomson Drilling

- **Abnormal pressure**
- **Extended reach**
- **Heavy mud**
- **World class wells**



PTU POD - Phased Approach Mitigates Risk

ExxonMobil



Proposed Plan of Development for Point Thomson

ExxonMobil

- **Provides for Production**

- Commence Engineering 2008
- Commence Drilling Program Winter '08-'09
- Provides Jobs – Over 200 People Employed Next Winter
- 10,000 Barrels Condensate Per Day - 2014

- **Further Delineates Reservoirs**

- Producer and Injector Wells
- 3 oil/gas Delineation Wells
- Additional wells if required

- **Provides Information About Reservoirs**

- Reservoir Quality, Performance, and Size
- Prudently Manages Risk – Reservoir & Technology

- **Conservation**

- Cycling Enhances Resource Recovery

- **Minimizes Environmental Impacts**

- IPS Utilizes Existing Gravel Pad
- Offshore Drilling from Onshore Pad
- Utilization of Ice Roads

- **Expandability**

- Cycling, Oil Production, and Major Gas Sales



Importance of PTU Gas to Gas Pipeline

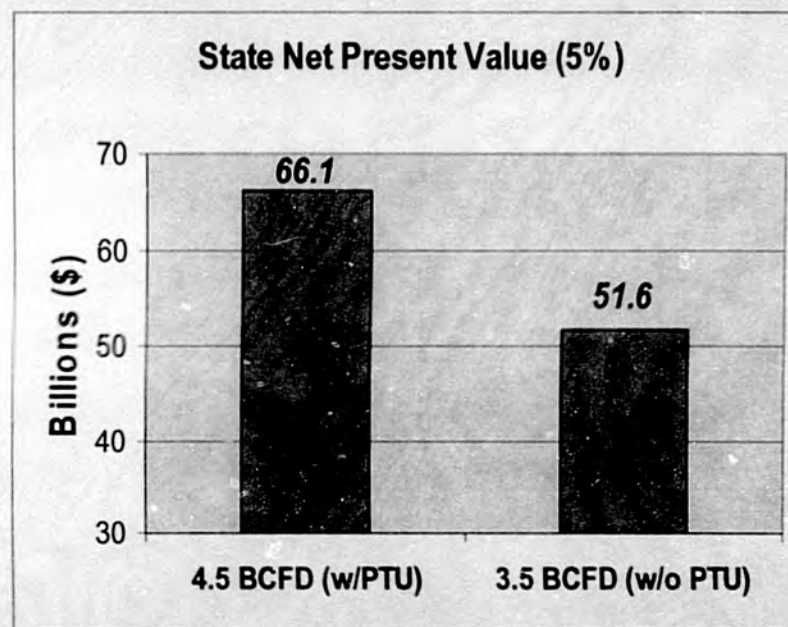
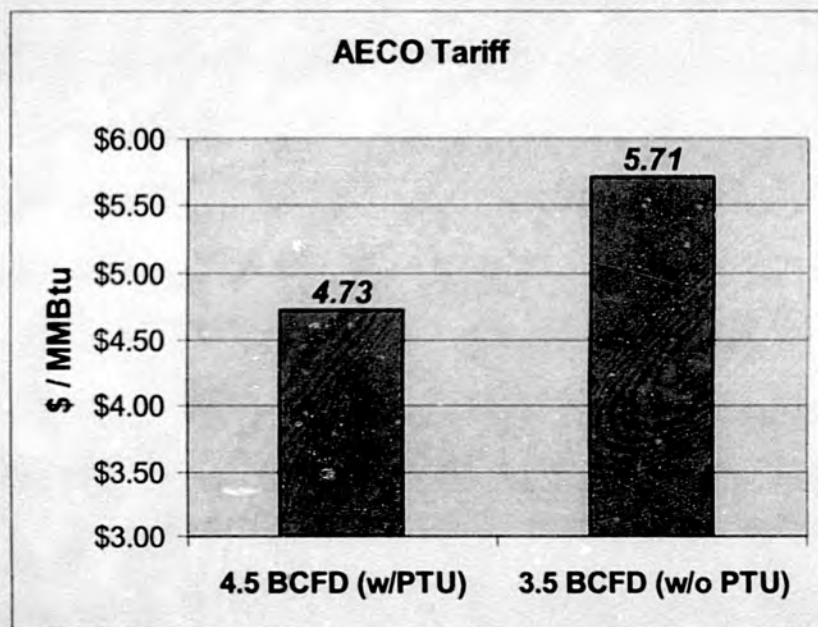
ExxonMobil

- **PTU Gas represents ~25% of the discovered North Slope gas resource**
- **Supports critical firm transportation commitments (“FT”) necessary to secure project financing**
- **Provides security of supply for downstream consumers**
 - Not relying solely on Prudhoe Bay Unit gas or “yet to find” gas to meet commitments
- **Improves liquid recoveries at Prudhoe Bay**
 - Not required to produce Prudhoe Bay Unit at higher gas rates to meet FT / marketing requirements
- **Provides economies of scale for a gas pipeline project**
 - Allows optimization of initial project design
 - Reduces tariff, increases value to all stakeholders

Importance of PTU Gas to Gas Pipeline

ExxonMobil

- Without PTU gas, pipeline tariff increases by ~\$1.00 / MMBtu
 - Less value for State (\$14.5 billion dollars) and Producers
 - Essentially requires a PBU gas discovery within the next few years
- Significant impacts on shippers, including explorers
 - Annual Impact: **\$1.3 billion dollars**
 - 3.5 BCF / Day * 365 Days * \$1.00 / MCF
 - Impact over 25 years: **\$32 billion dollars**



Source: Black and Veatch – Alaska Gasline Determination Forum

PTU – DNR Summary of PetroTel's Assessment ExxonMobil

● **PTU lease holders have not been provided the recent PetroTel study, but based on DNR's summary of the analysis;**

- Report appears to be based on selective and limited data
- Report indicates significant critical work yet to be done
- Report does not address key development planning, reservoir planning, economics, environmental considerations, costs, feasibility of drilling wells . . .

● **No sound technical conclusions can be drawn from this report; significant work remains.**

● **The DNR's summary of the PetroTel report clearly overstates the developable liquid hydrocarbons (condensate and oil)**

- Oil recovery at PTU is unlikely to exceed 5% (PetroTel - "close to 50%")

● **Our technical work shows that over 90% of developable hydrocarbons (gas, condensate, oil) can be produced today through a gas sales development**

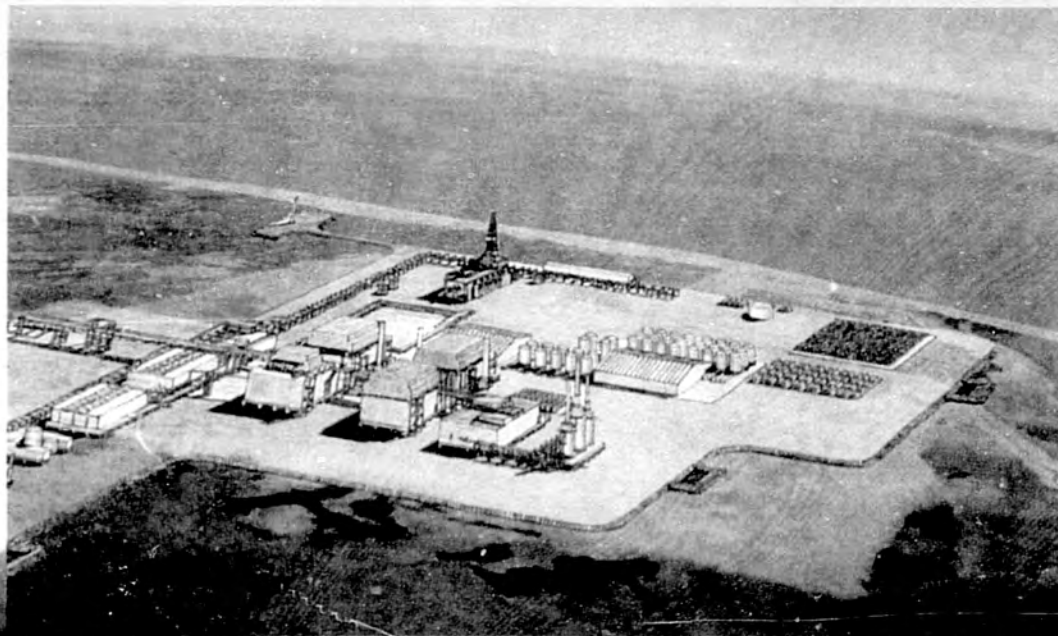
● **Our POD provides the opportunity to recover even more liquids prior to the start of gas pipeline operations**

● **PTU lease holders remain willing to share their technical work and expertise on these issues**

*appendix "O"
in Findings
Determination
Summary only not
full rpt.*

Point Thomson Project

ExxonMobil



ExxonMobil
Taking on the world's toughest
energy challenges.



POINT THOMSON UNIT

Plan of Further Development and Operation
For the period October 1, 2005 to December 31, 2014

Point Thomson Unit Plan of Development and Operations



POINT THOMSON UNIT

**Plan of Further Development and Operation
For the period October 1, 2005 to December 31, 2014**

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POINT THOMSON UNIT

Plan of Further Development and Operation For the period October 1, 2005 to December 31, 2014

1. Introduction

This Plan of Further Development and Operation (POD) describes the timely delineation, development and operation, and proper conservation of the oil and gas resources of the Point Thomson Unit (PTU or Unit) area. The POD sets forth a plan to begin production of PTU hydrocarbons through a phased approach to fully delineate and develop both liquids and gas within the Unit area. The costs of work activities during the term of this POD are estimated at \$1.3 billion.

The initial phase of production constitutes a major development project. The project involves drilling wells beginning in the 2008-09 winter season and constructing production facilities, pipelines, and support infrastructure.

PTU hydrocarbons will be produced and processed at PTU. Liquid hydrocarbons will be delivered for sale through new and existing oil pipelines and all remaining gas will be injected back into the Thomson Sand reservoir to maintain pressure for continued hydrocarbon recovery and for subsequent gas sales. Production start-up is anticipated by year-end 2014. The overall project, including the schedule, is described in detail in this POD.

This POD provides a minimum of five wells to further delineate and develop the Thomson Sand reservoir and other hydrocarbon reservoirs in the PTU. The drilling program is described in Section 3. Specific plans are included for delineation, evaluation, and testing of the oil in the Thomson oil rim and the Brookian. All wells will be designed to be capable of being used as producers or injectors if viable.

This POD includes development work for initiating gas sales from the PTU. This encompasses reservoir and facilities engineering work and application for pool rules from the Alaska Oil and Gas Conservation Commission (AOGCC), all of which are needed for individual owner participation in a gas pipeline project open season.

The work in this POD will accomplish the following key objectives for the State and PTU owners:

- Establishes production of hydrocarbons in a timely manner, prior to gas sales, providing benefits to the people of Alaska in the form of taxes, royalties, and jobs;
- Minimizes environmental impacts;
- Provides for delineation, appraisal and development of reservoirs within the Unit area;
- Allows individual PTU owners to take advantage of gas sales opportunities and participate in an open season for a gas pipeline; and
- Extends infrastructure on the Eastern North Slope thereby facilitating other potential developments in the area.

This POD also describes work performed since expiration of the most recently approved plan of development. Exxon Mobil Corporation (ExxonMobil), as Point Thomson Unit

Operator and on behalf of the PTU Working Interest Owners (Owners), requests approval of this POD for the period October 1, 2005, through December 31, 2014.

2. Point Thomson Unit Development

Resource Base

The Thomson Sand, the primary reservoir in the PTU, is a large high pressure gas-condensate reservoir. The Pre-Mississippian section directly underlies and is in pressure communication with the Thomson Sand. Because of the proximity and pressure communication between these reservoirs, development of the Thomson Sand will also deplete the Pre-Mississippian section.

The Thomson Sand contains an oil rim below the gas. The potential for production contribution from the oil rim is uncertain. The delineation program includes drilling, testing and evaluation of the potential for oil rim production. Thomson Sand reservoir wells will be designed to penetrate and evaluate the Brookian in one or more potential accumulation areas (e.g., either Flaxman, Iceberg, or Calloway). If encountered, formation evaluation (open-hole logging, sidewall cores, fluid samples and testing as appropriate) will be conducted to evaluate the potential for production contribution.

As part of owner efforts to determine an appropriate development plan for PTU, an extensive reservoir evaluation and development planning assessment was completed in 2007. This work included a Thomson Sand reservoir description and uncertainty analysis and provided comprehensive and integrated geologic and reservoir simulation models to allow for evaluation of a wide range of development options. The analysis provided an improved understanding of the factors having the greatest impact on resource size and reservoir performance and further confirmed that uncertainty exists due to variations in predictions of reservoir size, quality, and connectivity.

Development Considerations

The optimal development plan for the PTU must take into account the following development considerations:

- Anticipated resource size, quality, performance and uncertainty associated with these parameters;
- Timing and availability of a gas pipeline;
- Minimizing impacts in an environmentally sensitive location;
- Management of technology related to high pressure gas production and injection and extended reach drilling in abnormally pressured formations; and
- Prudent management of capital, especially due to high cost of development in a remote arctic location.

A discussion of these development considerations and options to address them is included in this POD to provide the necessary context for PTU development plans.

A key consideration for any development plan is the uncertainty as to how the reservoir will perform under production. Certain development plans are more robust and better able to accommodate this uncertainty. The Thomson Sand gas contains the dominant share of the hydrocarbon resource in the PTU, and selling gas is central to any development plan to

provide greater hydrocarbon recovery and generate maximum value to all parties and interests from the resource within the Unit area.

In general, gas depletion for a major gas sale development is best at coping with downside reservoir scenarios because it is less sensitive to compartmentalization or reservoir heterogeneity while accessing the largest quantity of hydrocarbons. A gas sales development is the best way to develop the PTU resources for the maximum benefit of the State and the owners. However, it requires a gas pipeline and gas market, and it is recognized that a gas pipeline is at least a decade away.

There are other development options, such as gas injection that have the advantage of a readily available market for the condensate production and are not dependent on external enablers such as a gas pipeline, but introduce other challenges.

Any PTU development project must be implemented in a high cost environment which is driven by the development location (remote, arctic, environmentally sensitive location) and the resource characteristics (deep, high pressure, low yield gas condensate reservoir with a large areal extent). Gas injection has a number of challenges including the need for well communication over long distances and the fact that the majority of the liquids recovered in a gas injection project would be recovered in a gas sales development.

Based on the uncertain timing, viability and lengthy project execution period associated with a gas pipeline, alternatives to a gas sales development were considered with the goal of bringing the PTU hydrocarbon resources into production in a timely manner, prior to gas sales, utilizing a prudent development plan. When considering a gas injection project, two competing forces must be considered:

- Large scale development provides economy of scale and lower unit development costs but is exposed to greater impacts from uncertainties surrounding the key development parameters.
- Small scale development has reduced economy of scale and higher unit development costs but is less impacted by uncertainties surrounding the major development parameters. It also provides early confirmation of important development data to be used for full development of the PTU oil and gas resources.

Taking into account these development considerations, a phased development plan was determined to be the most prudent approach for PTU. To implement this approach, an initial production system (IPS), which incorporates gas injection into the Thomson Sand, was selected. The IPS development approach was selected because it will:

- establish production and revenue prior to gas sales
- test the key areas of uncertainty, which include:
 - + evaluation of the reservoir characteristics and performance to determine subsequent development option(s), which could include gas injection expansion and/or gas sales
 - + technology qualification and implementation to ensure development reliability and efficiency (i.e., to ensure minimal impacts to project cost, schedule and long-term operability). Key technology challenges include:
 - high pressure gas operations (~10,000 psi)
 - high pressure gas separation

- extended reach drilling into abnormally pressured formations
- high rate gas well production (i.e., well design and production)
- allow efficient use of capital and reduce the risk of under-utilized facilities
- establish infrastructure, including export pipeline, wells, gravel mine, gravel pads, communications facilities, airstrip, camp facilities, and a disposal well which are consistent with future development phases
- minimize environmental impacts
- provide maximum flexibility to incorporate learnings and utilize the installed infrastructure to develop additional oil and gas resources within the Unit area

IPS development plans are more fully described in Section 4. Subsequent phases of field development will depend upon delineation, IPS results and the status of a gas pipeline project. Development scenarios include: 1) expansion of gas injection, 2) gas sales, or 3) a combination of expanded gas injection and gas sales. Use of IPS facilities for potential delineation, long term production and development of the Brookian after initial Thomson Sand development, will also be determined.

3. Drilling

This POD fully delineates all of the PTU reservoir horizons. A multi-year drilling program will be commenced in the 2008-09 winter season to drill a minimum of five wells. The Point Thomson Delineation and Development Schedule in Section 5 depicts a continuous drilling program. Drilling will deliver production to IPS and evaluate Thomson Sand gas and oil rim potential, Pre-Mississippian, and Brookian oil potential. Delineation objectives of the program are provided below.

The drilling program involves wells drilled from the central, western, and eastern areas of the field. New gravel pads will be constructed to accommodate delineation wells to the western and eastern areas of the PTU and future drilling for full field development. The well program will be optimized during detailed well planning based upon results from previous wells to achieve the most efficient combination of delineation targets.

The drilling will begin from the Point Thomson No. 3 location with the central injector and producer wells for the IPS project. Operations from the PTU-3 site minimize environmental impacts by utilizing an existing gravel pad and provide greater drilling flexibility. The central gas injection well will develop an area located northwest of the PTU-3 site. The central producer will develop an area to the southeast of PTU-3. These wells will be fully evaluated using wireline logs, core, and samples and pressures from the reservoir. While the wells have been located to achieve project objectives, the overall IPS schedule, as detailed in Section 5, will allow time (without impacting production start-up) to side-track a well should it encounter reservoir conditions that are not anticipated and that could adversely impact performance.

A disposal well will also be drilled from the Point Thomson No. 3 location to support drilling, delineation and production operations.

Drilling from the western pad will target the Thomson Sand gas and oil legs and the Brookian. Where practicable, wells will penetrate the Pre-Mississippian. The area west of PTU-1 is an area of the field with uncertainty as to structure, facies and reservoir rock

quality. The program allows drilling toward the western syncline ("graben") and other western targets, including potential horizontal trajectory well bores in the oil column.

Drilling from the eastern pad will also target penetrating the Thomson Sand reservoir, including the eastern extent of the oil rim and the Brookian. Similar to the western area delineation drilling, the eastern pad drilling will evaluate structure, contacts and facies, with potential for a horizontal well into the oil rim.

Viable wells will be tied back to the IPS facilities.

The wells drilled under this POD will gather important information on stratigraphy, reservoir rock properties, structure, PVT data, fluid contacts and productivity. In particular, additional data acquired during the drilling program will be integrated with existing data to determine viability of oil production and potential integration with IPS facilities. The drilling program will provide opportunities for collection of critical dynamic reservoir information through testing or longer term production.

Delineation drilling provides definition for development optimization with the following objectives:

- Evaluate areas of Thomson Sand reservoir uncertainties (facies and structure) and confirm areas of high gas resource density
- Gain additional information on the Pre-Mississippian
- Obtain fluid properties from various locations and reservoirs
- Improve understanding of the oil characteristics and long-term productivity of the Thomson Sand oil rim
- Evaluate Brookian productivity and characteristics

The drilling program continues with a third well designed to evaluate oil production from the oil rim in addition to evaluating other PTU reservoir uncertainties. The presence of an oil rim in the Thomson Sand reservoir has been known for some time. Assessment of oil rim potential involves fluid sampling, coring, pressure monitoring and analysis followed by extended on-site well tests, where merited.

The remaining drilling objectives and locations will be determined in detailed design based on previous drilling results.

The Brookian reservoirs have substantial risks and uncertainties associated with their development as demonstrated previously on the North Slope at Badami. Results to date at PTU have been consistent with the poor reservoir quality seen at Badami. Past studies have found these developments to not be commercially viable on a stand-alone basis.

In wells planned for Thomson Sand development, LWD (logging while drilling) data will be collected in Brookian penetrations to evaluate one or more of the prospects known as Iceberg, Calloway or Flaxman. These results will be evaluated to determine the value of additional information such as sidewall cores, wireline logs and fluid samples.

Commercial development of the Thomson Sand is viewed as the best path to potential development of the Brookian by providing a shared infrastructure that would reduce appraisal and development costs. To facilitate Brookian delineation and development, the suitability of IPS surface facilities for a long term Brookian production test after initial Thomson Sand development will be determined.