SCOMM

155:5

ALASKA STATE LEGISLATURE

Senator Charlie Huggins, Chair
Senate Special Committee on Energy
State Capitol, Room 119
Juneau, AK 99801
Phone: 465-3878
Fax: 465-3265

Representative John Harris, Chair
House Rules Subcommittee on AGIA
State Capitol, Room 208
Juneau, AK 99801
Phone: 465-4859
Fax: 465-3799

Third Special Session
Twenty-Fifth Legislature

Gymnasium
Terry Miller Building, Juneau Alaska

Saturday June 7, 2008
10:00-5:30 p.m.

Joint Meeting AGENDA

- Presentations: Review of AGIA Findings and Determination; Natural Gas Pipeline Project as proposed by TransCanada Alaska Company, LLC and Foothills Pipelines Ltd. (TC Alaska) to the State of Alaska.

Administration and TransCanada: continued

(1) TC Alaska's AGIA Application Overview – **Tony Palmer**, Vice President, Alaska Business Development

~~Overview of Findings – **Pat Galvin**, Commissioner, DOR~~
~~**Tom Irwin**, Commissioner, DNR~~

change in order of business

(2) The Prize – **Bob Swenson**, Director Div.of Geological & Geophysical Surveys, DNR
Dave Houseknecht, Geologist, USGS

~~Jobs and Training – **Clark Bishop**, Commissioner, DOL; **Conrad Mulligan**, ARCADIS;~~

~~Pipeline Regulatory and Commercial Issues –~~
Black & Veach;
Greenburg Traurig;
Bill Sparger, Energy Project Consultants;
Pat Anderson, Pingo Internationak;
Kevin Banks, Actng. Dir. Division of Oil & Gas

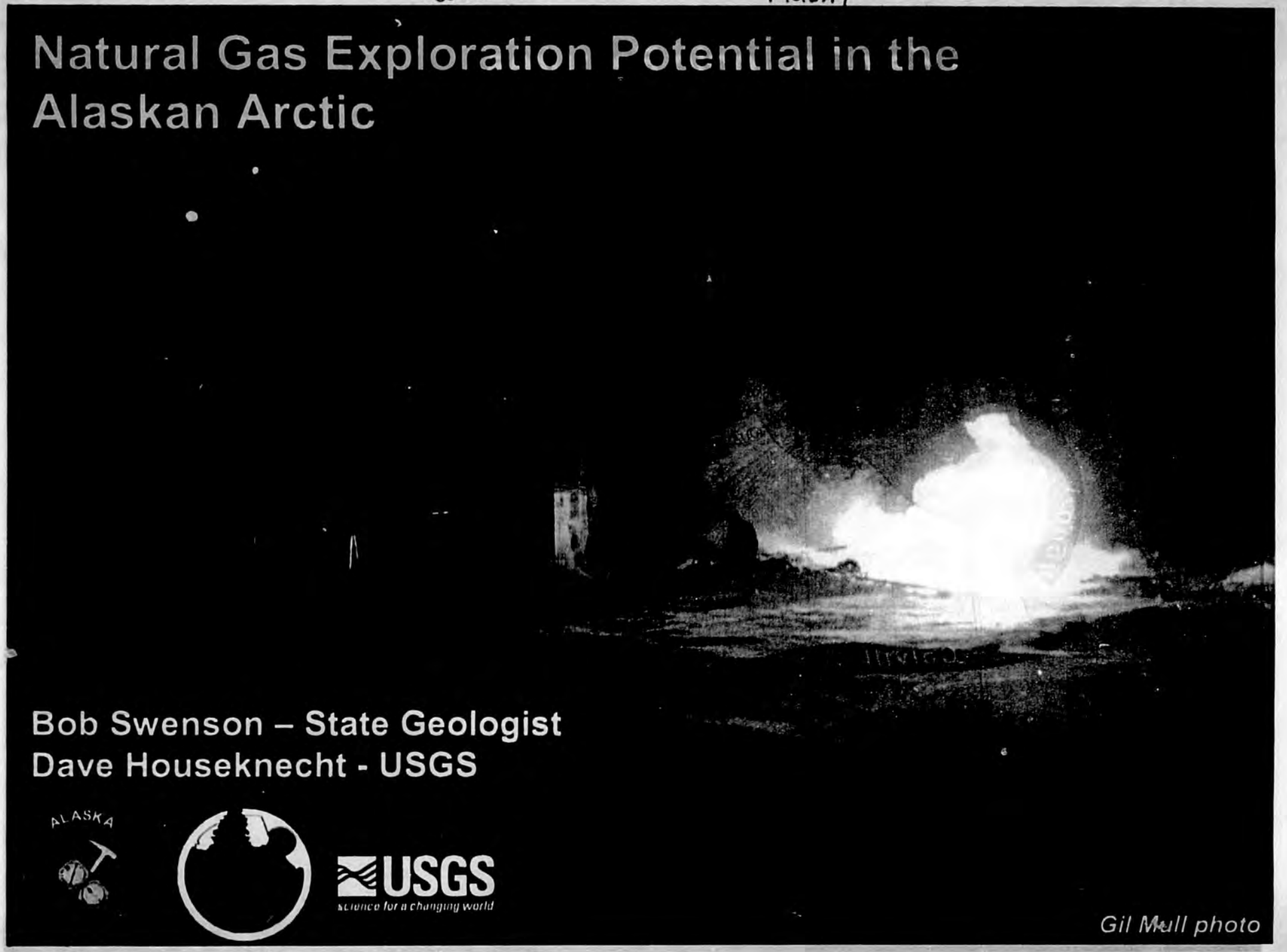
Testimony: By Invitation

Sp. Session on AGIA
Juneau

June 7, 2008
FRIDAY

3:15 PM

Natural Gas Exploration Potential in the Alaskan Arctic



Bob Swenson – State Geologist
Dave Houseknecht - USGS

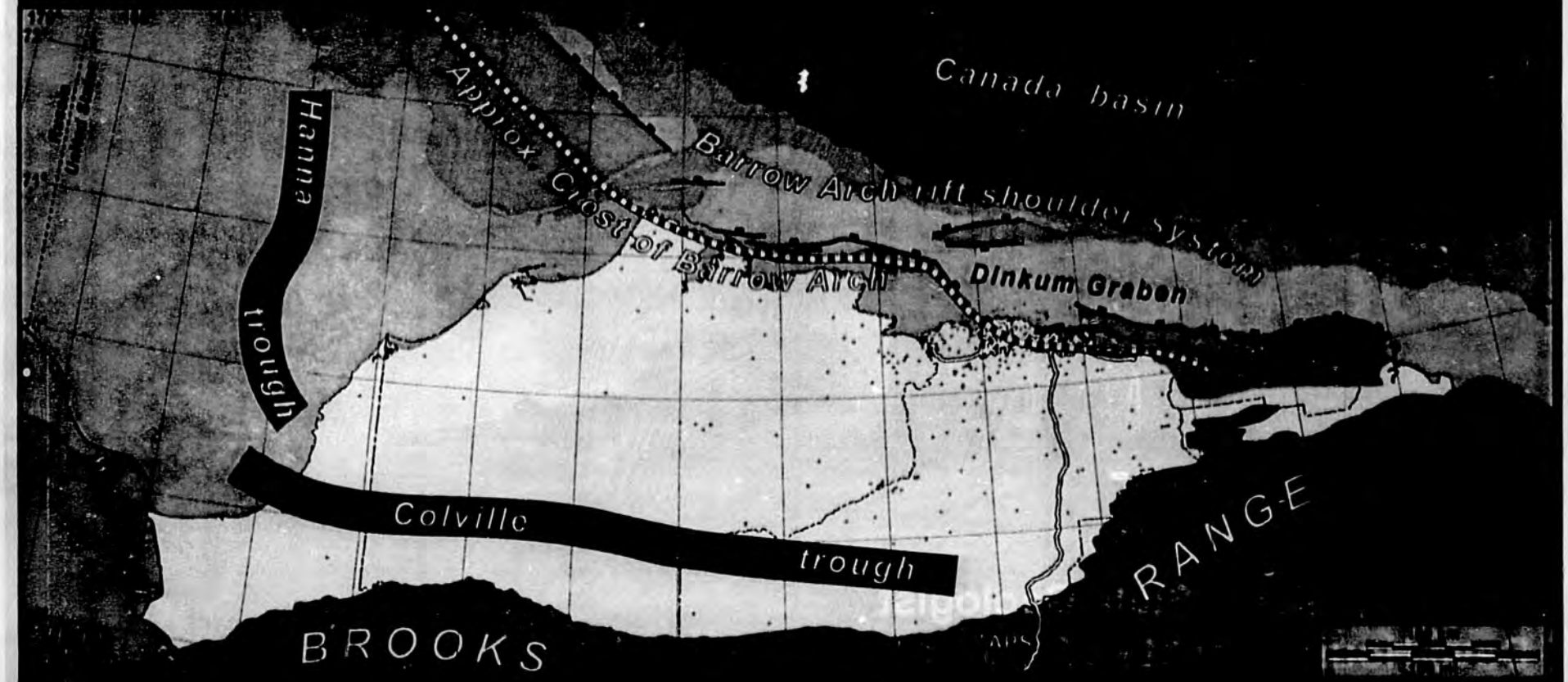
ALASKA

USGS
science for a changing world

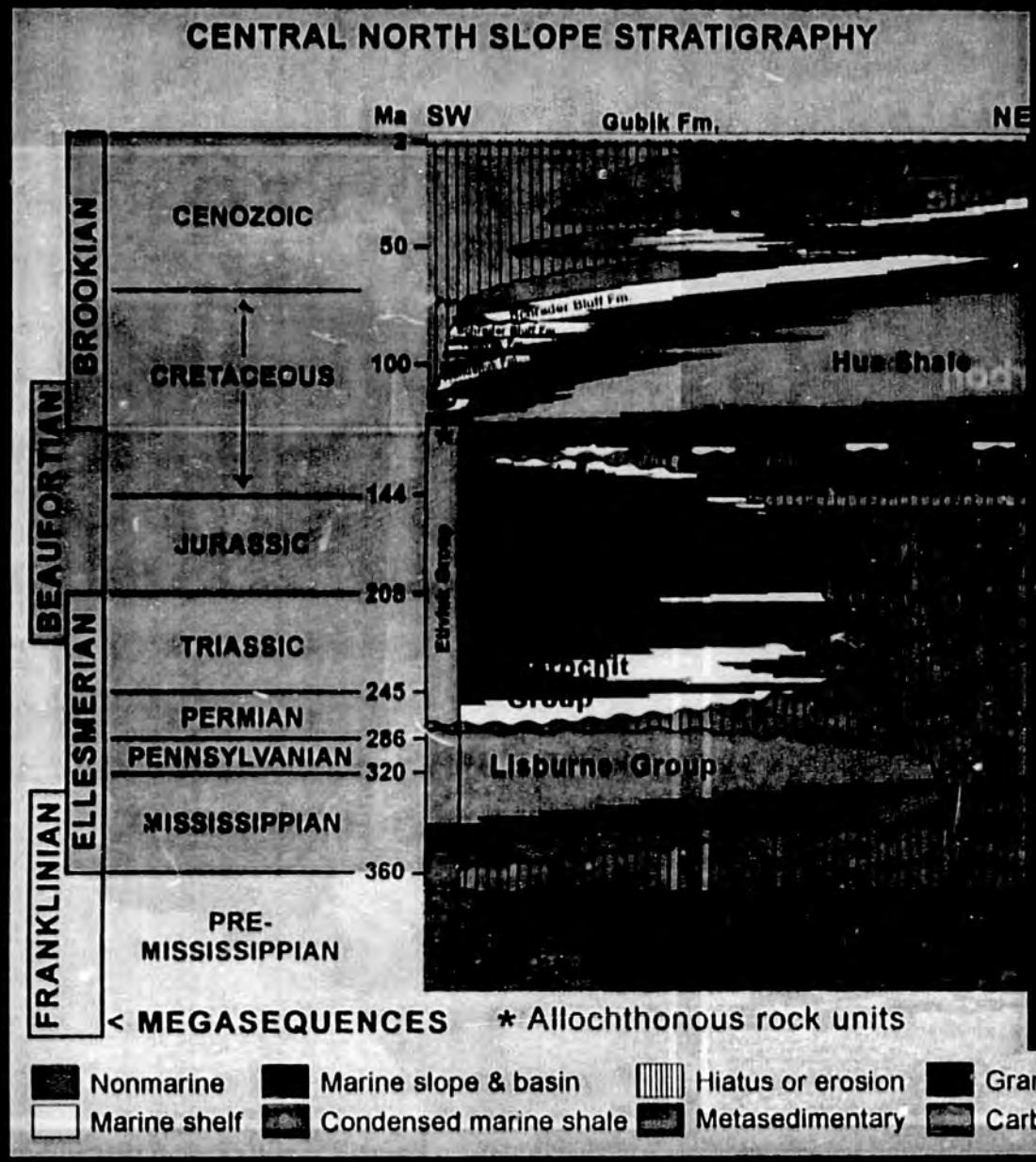
Gil Mull photo

dhouse@usgs.gov

Arctic Alaska - Key Geologic Features



Stratigraphy – Known & Potential Source Rocks



< *Paleogene Canning*

< *Seabee*

< *GRZ (HRZ)*

< *Lower Kingak*

< *Shublik*

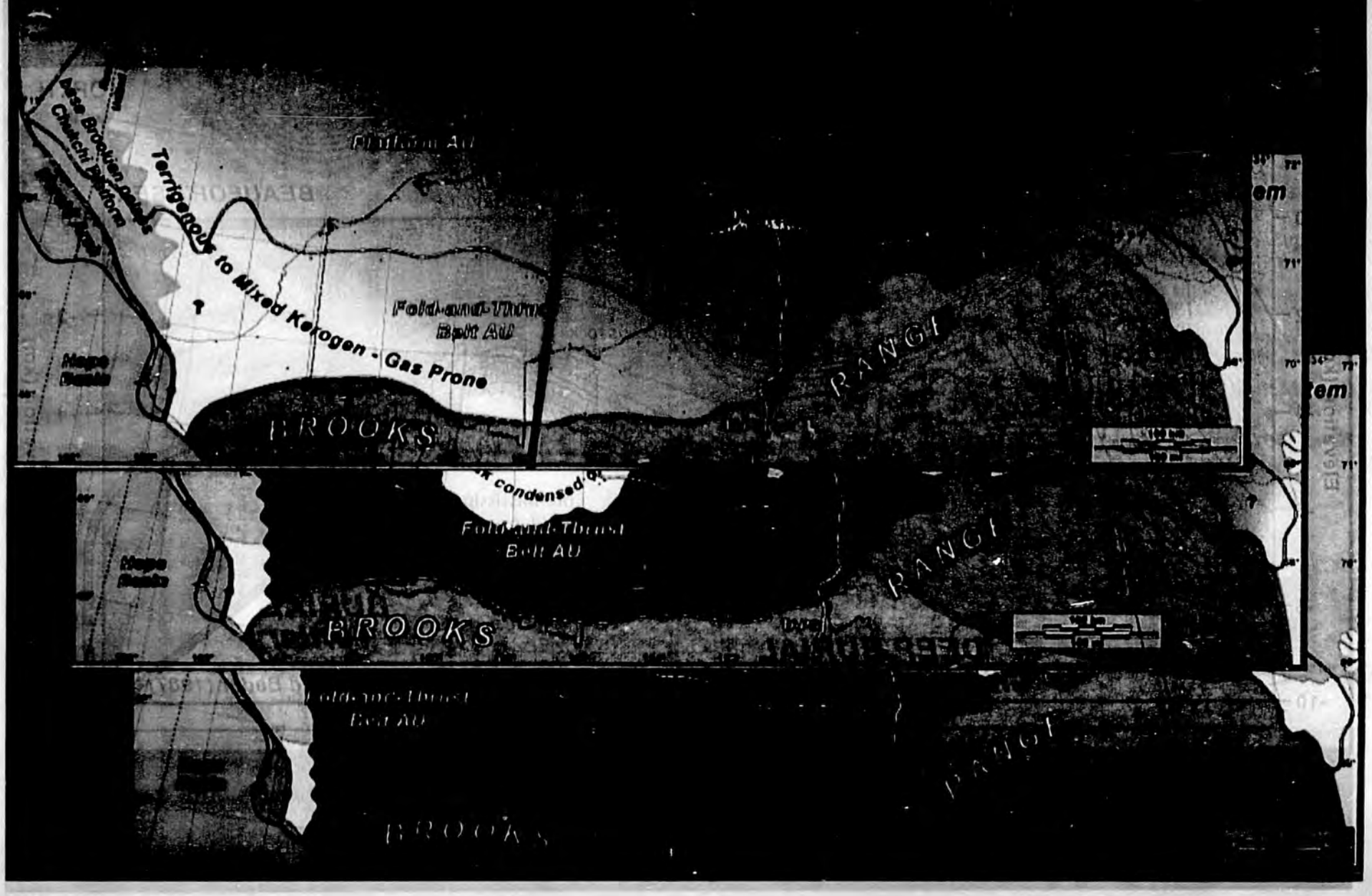
< *Lisburne (Kuna)*

< *Kekiktuk*

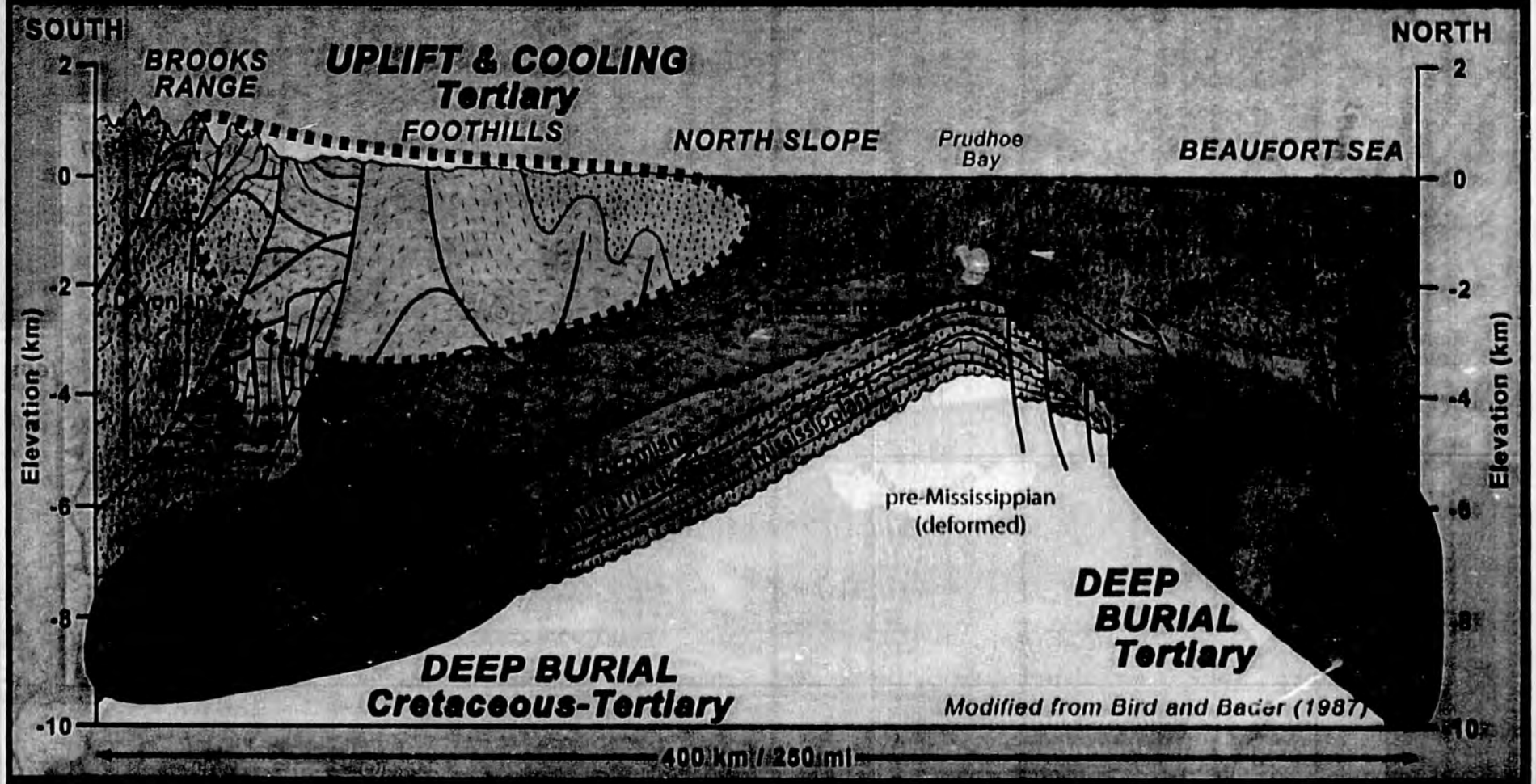
Source Rock & Hydrocarbon Characterization

- Synthesizing a decade of organic geochemical analyses and integrate with regional geologic data
- Characterization of hydrocarbon occurrences

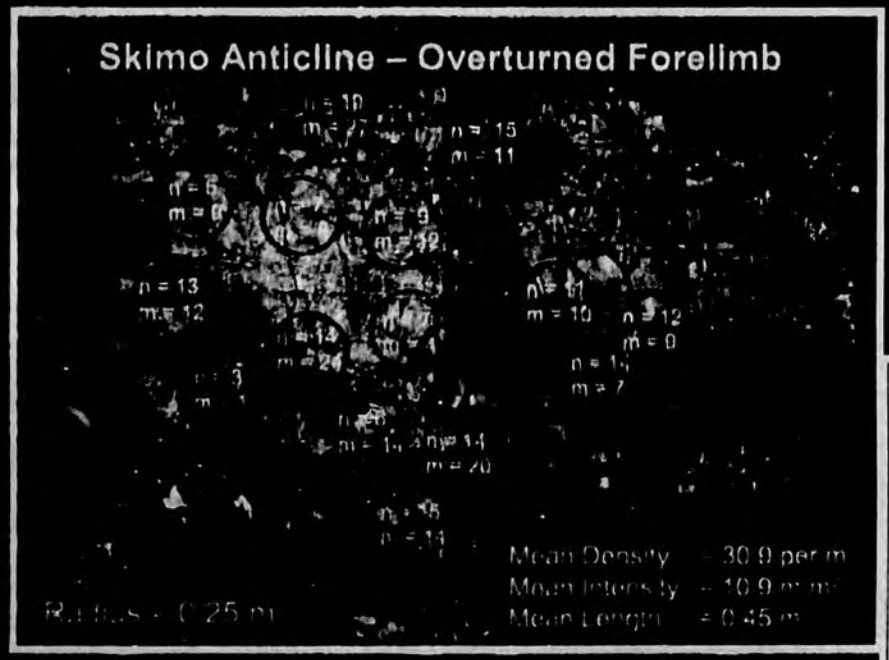
Arctic Alaska Source Rock Systems

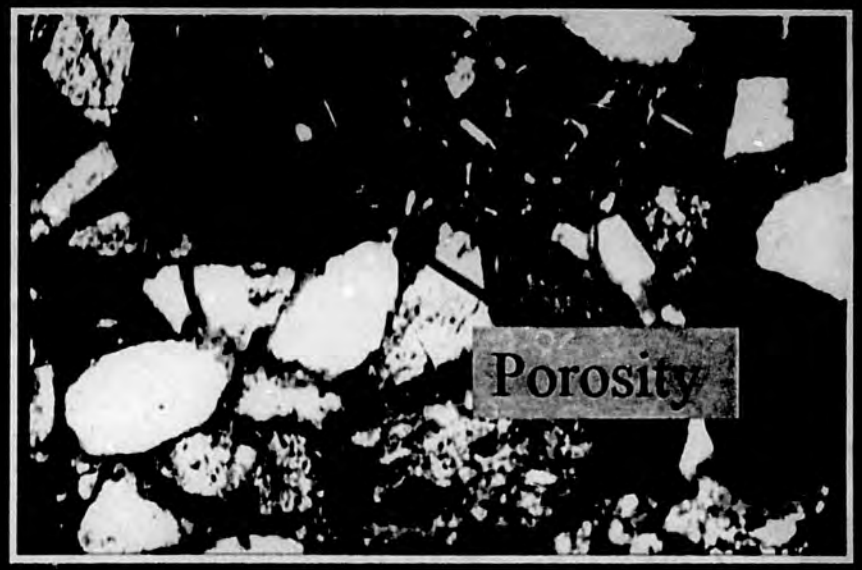


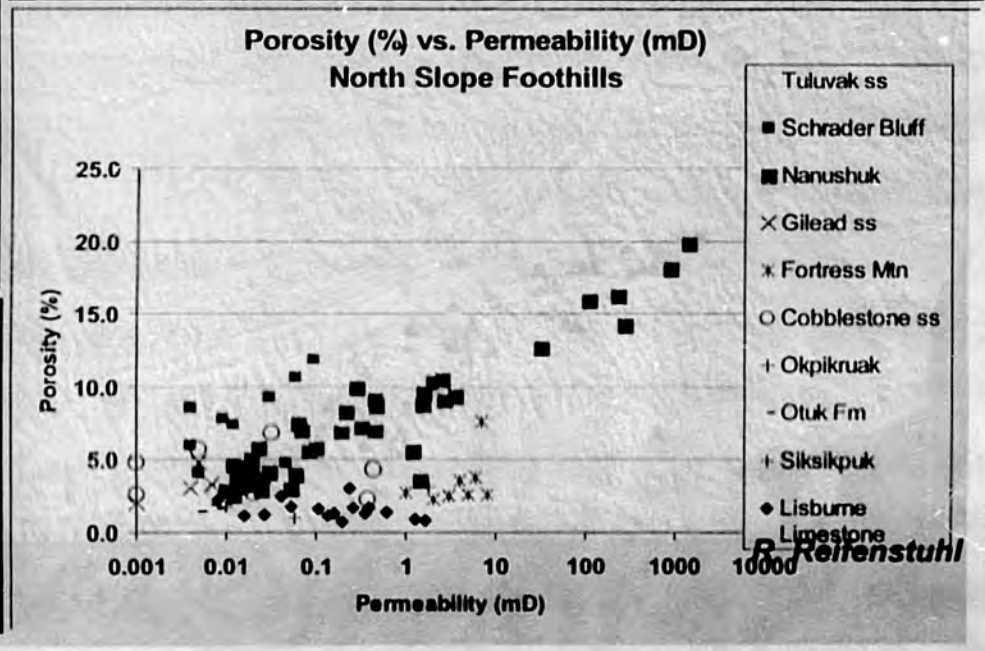
Overview of Regional Geology



• Reservoir quality studies

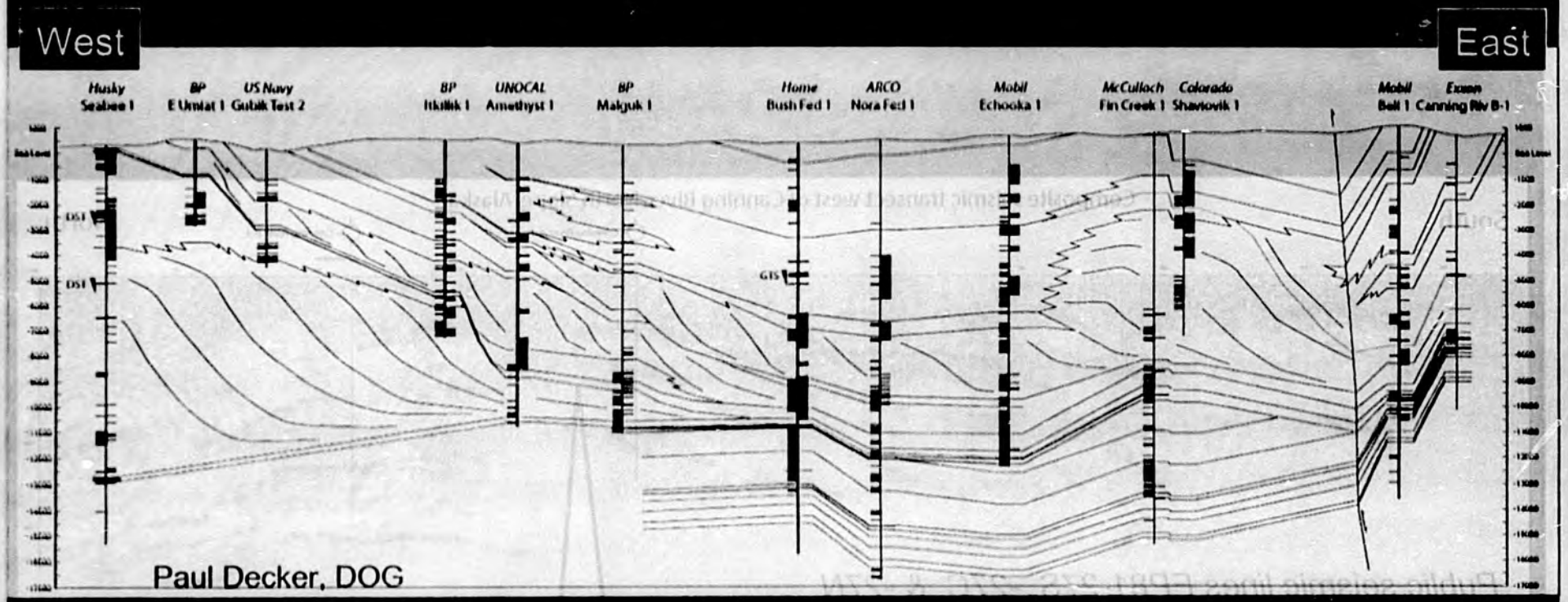






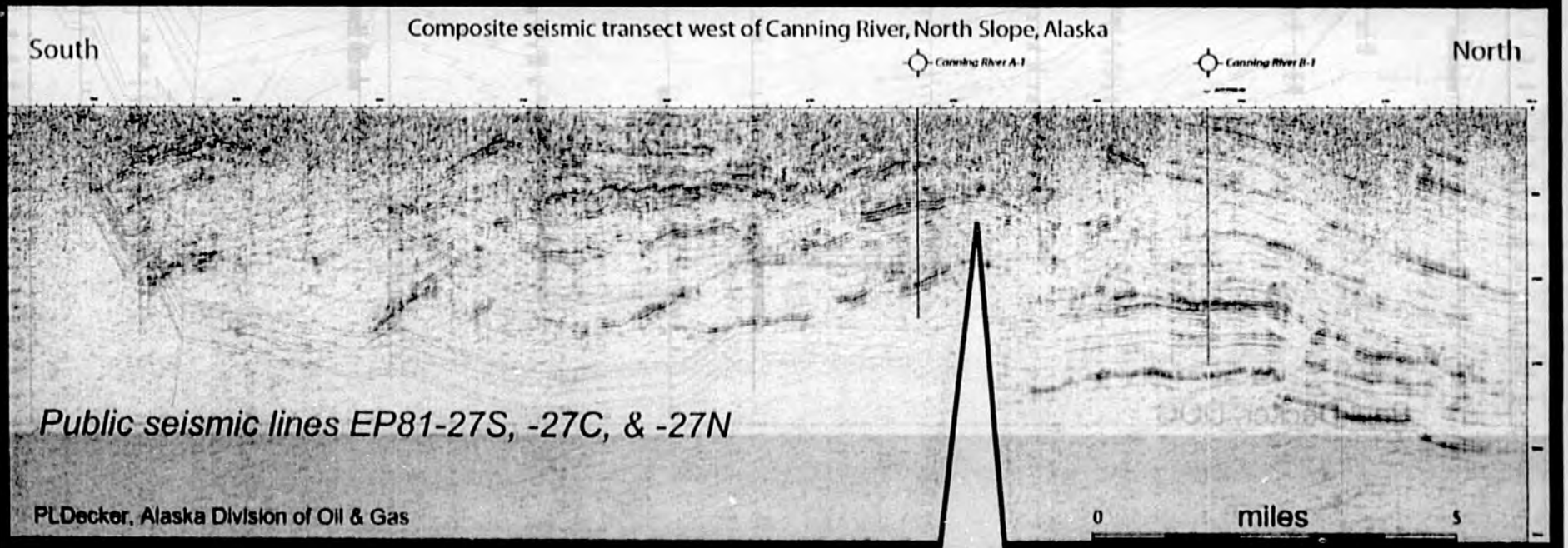
Foothills Drilling and Gas Occurrences

Foothills Cross Section - Oil and Gas Shows



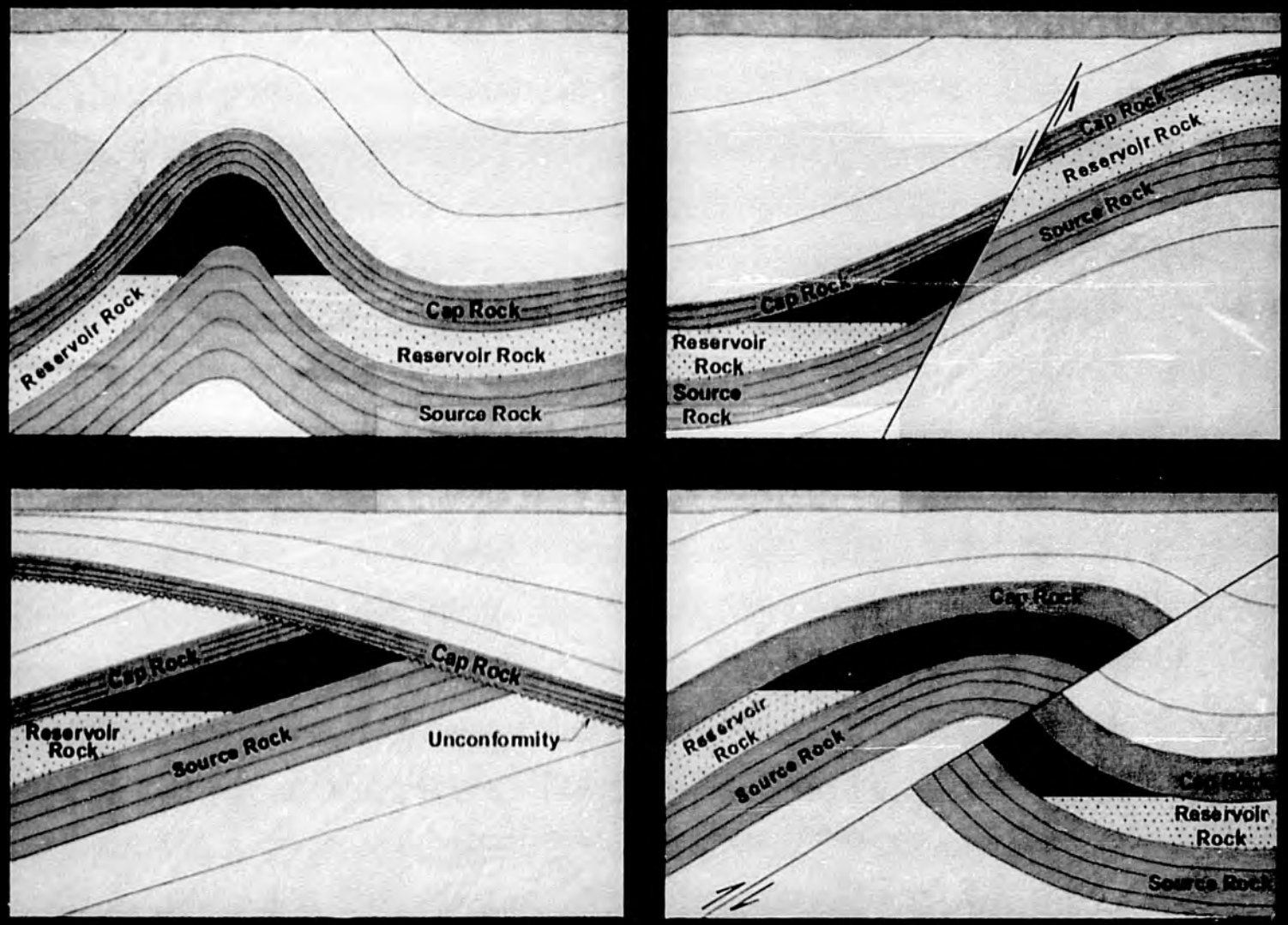
Foothills Structural Plays

Seismic Interpretation



Kavik structure

Conventional Exploration Play Types



Oil and Gas Trapping Mechanisms

USGS Role
dhouse@usgs.gov
USGS

Known Gas Accumulations in Arctic Alaska

Known Reserves Unit & Gas Reserves (BCF)	
Prudhoe Bay	24,526
Pt. Thomson	8,000
Pt. McIntyre	1,526
Kuparuk River	1,150
Duck Island	843
North Star	450
Colville River	400
Barrow-Walakpa	34
Milne Point	14
TOTAL	35,417

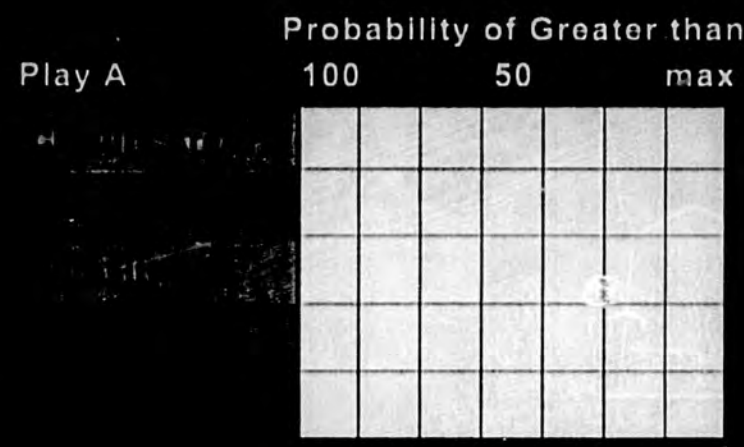
Data from AK-DOG Annual 2006 Rpt.

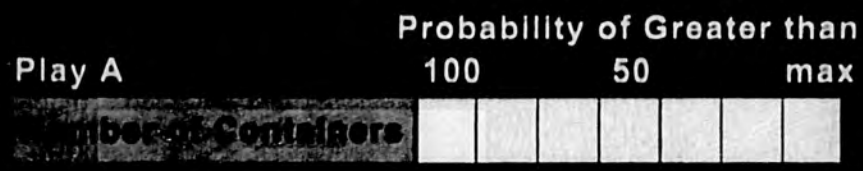
Other Known Accumulations Possible Gas Reserves (BCF)	
Onshore	
Gubik	600
Kavik	115
Square Lake	58
Meade	20
Umiat	5
East Umiat	4
East Kurupa	?
Kemik	?
Wolf Creek	?

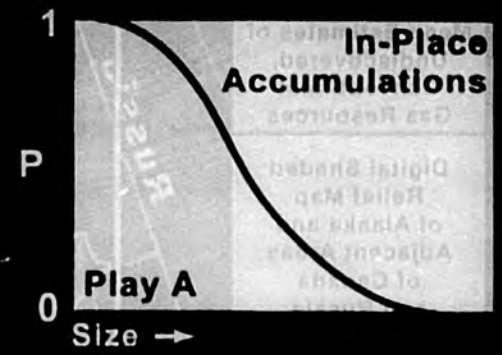
Data from Thomas et al., 1996 (DOE)
Craig & Sherwood, 2004 (MMS)
Bird pers. comm., 2003 (USGS)

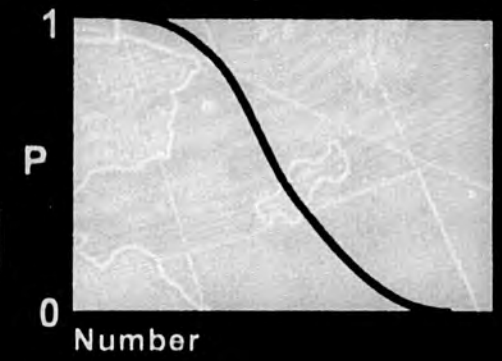
Alpine Play in NPRA – More Gas than Oil?

Assessment Methodology – Geologic Basis

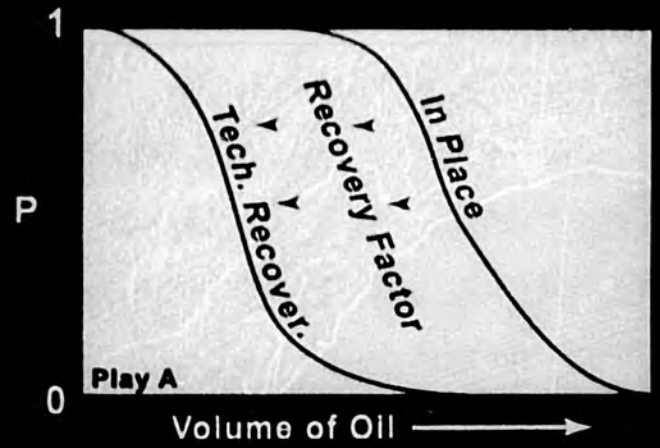




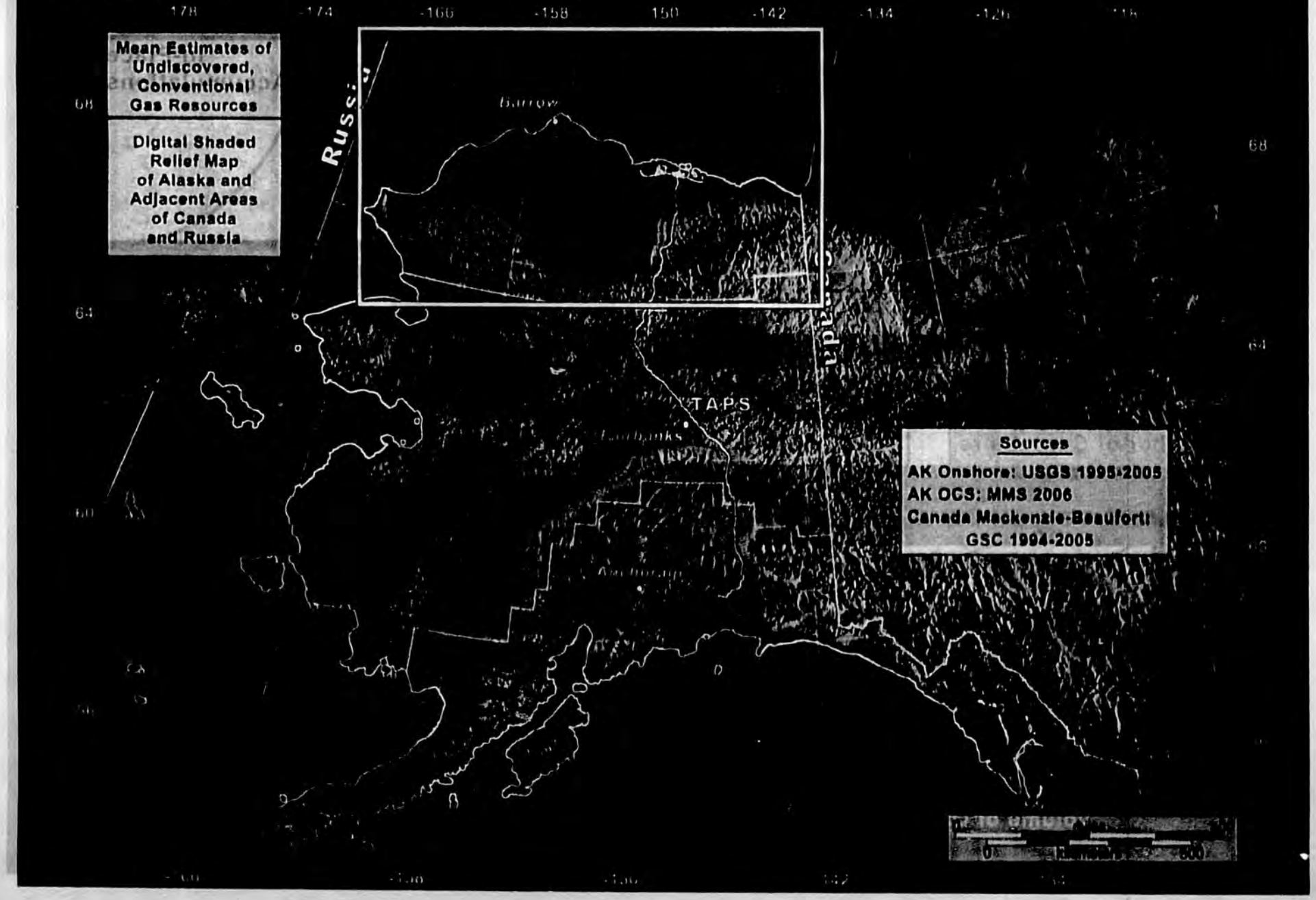




Oil vs. Gas



Undiscovered Conventional Gas Potential



Potential for Undiscovered Petroleum in Arctic Alaska

Mean Estimates of Undiscovered, *Conventional* Natural Gas in Arctic Alaska (trillion cubic feet)

	Non-Associated Gas	Associated Gas	Total Gas
Onshore & State Offshore Areas (USGS estimates)			
NPRA	**61.35**	**11.68**	**73.03**
Central North Slope	**33.32**	**4.20**	**37.52**
ANWR, 1002 Area	**3.84**	**4.76**	**8.60**
Subtotal	***98.51***	***20.64***	***119.15***

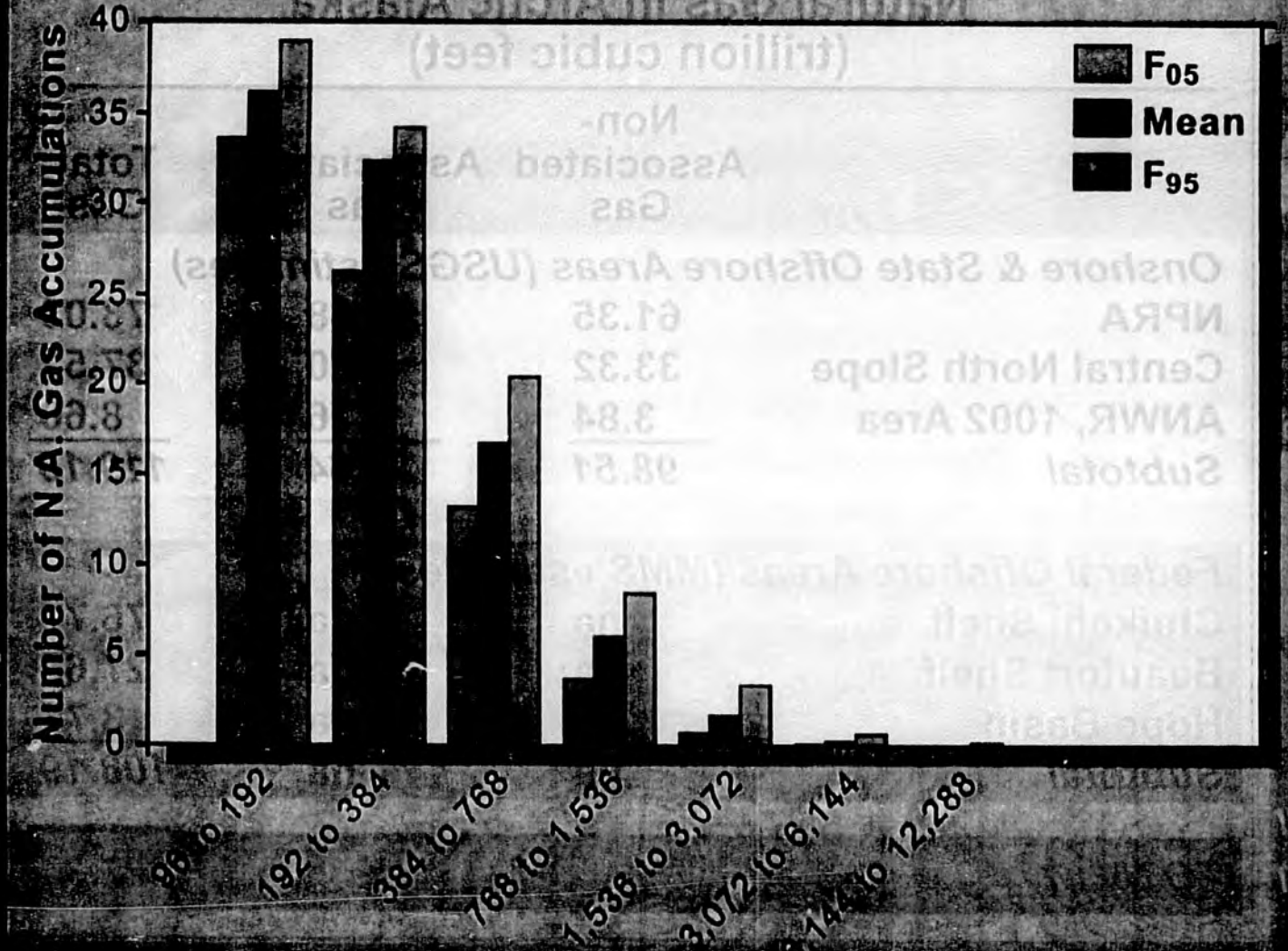
Offshore Areas (MMS estimates)

Chukchi Shelf	na	na	[illegible]
Beaufort Shelf	na	na	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

Resour
Mear

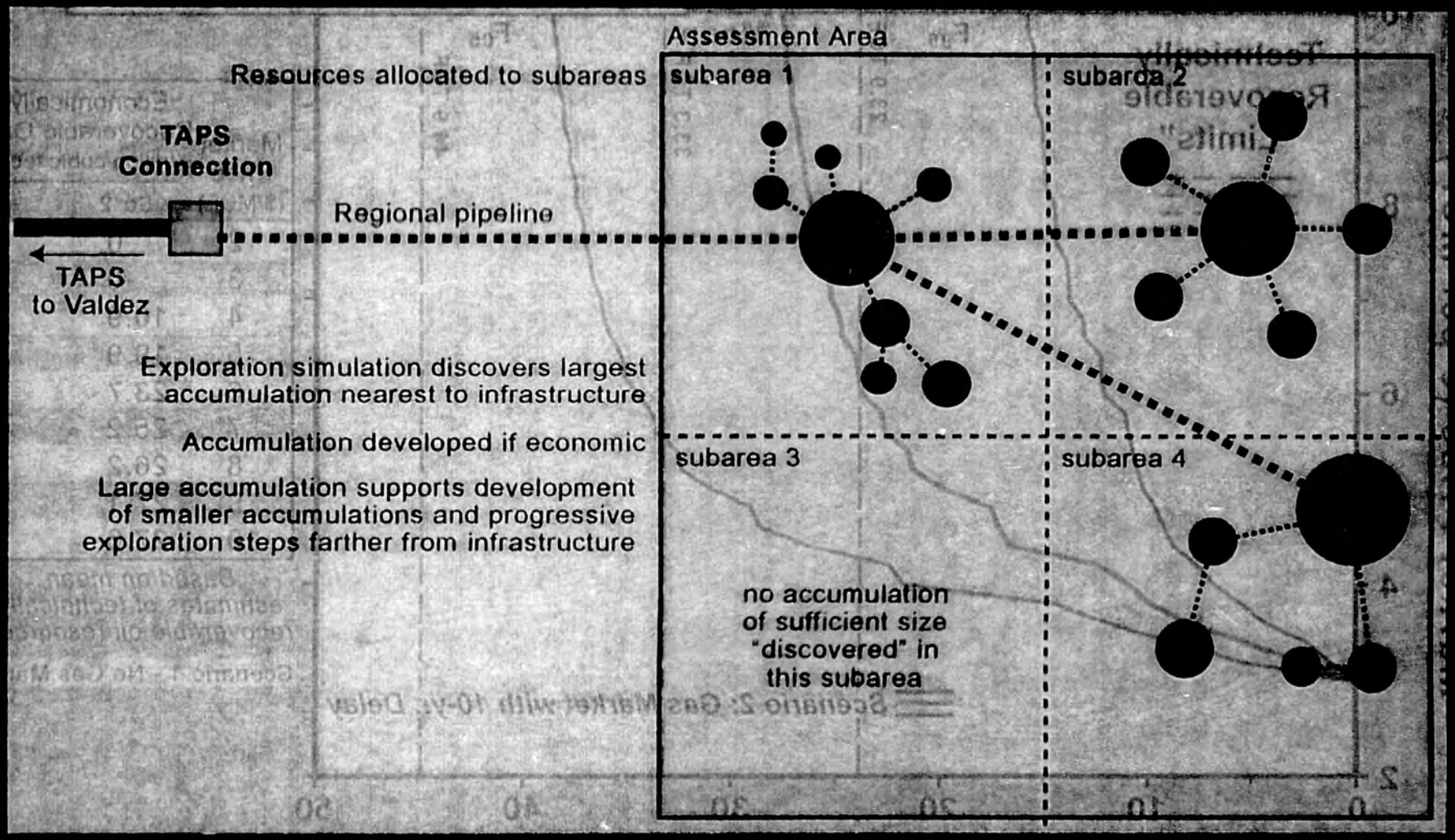
Sources: OCS estimates from MMS; onshore & state waters estimates from USGS

...ies of Gas Accumulation Sizes



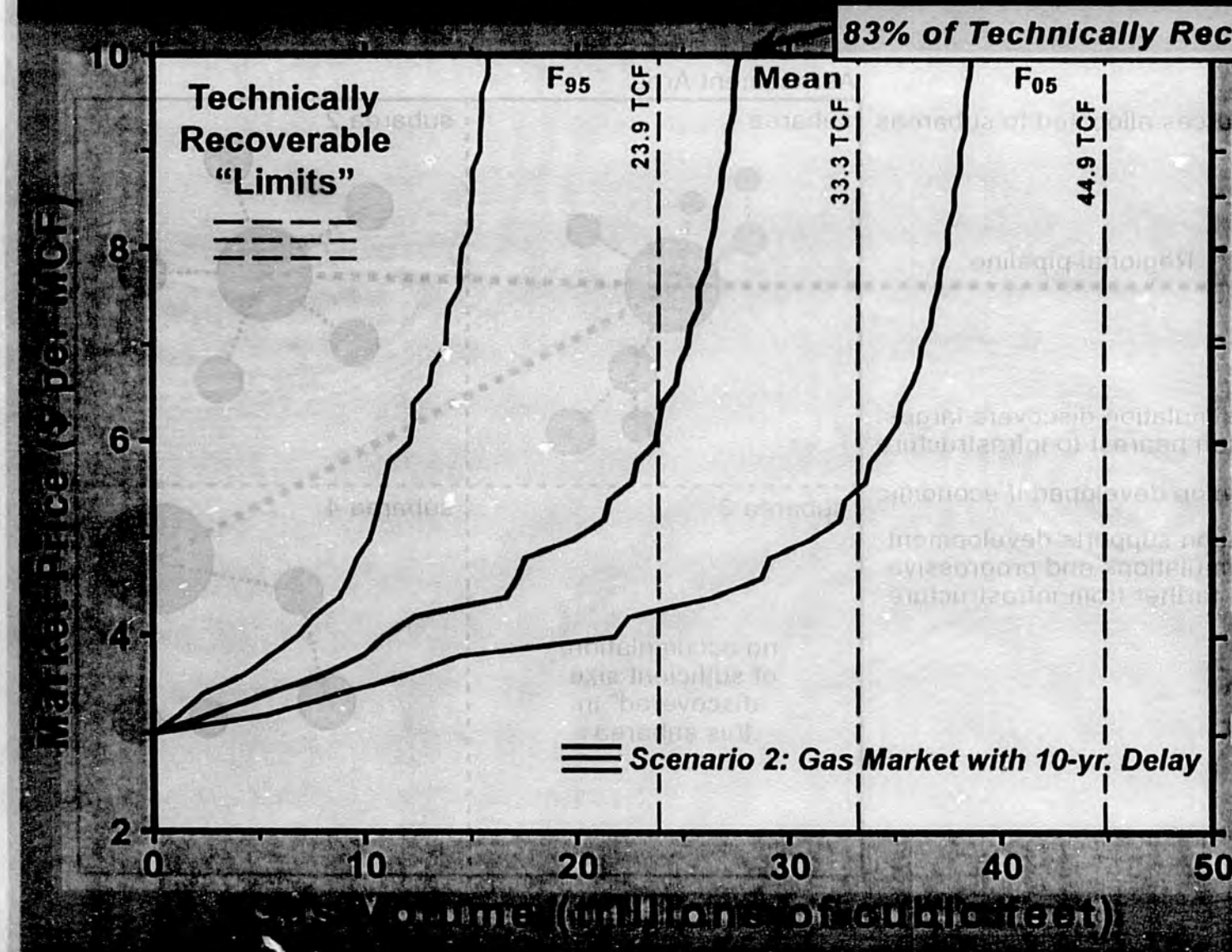
USGS

Economic Analysis Simulates Exploration and Development



Central North Slope Economically Recoverable Gas

Undiscovered, Non-Associated Natural Gas Resources



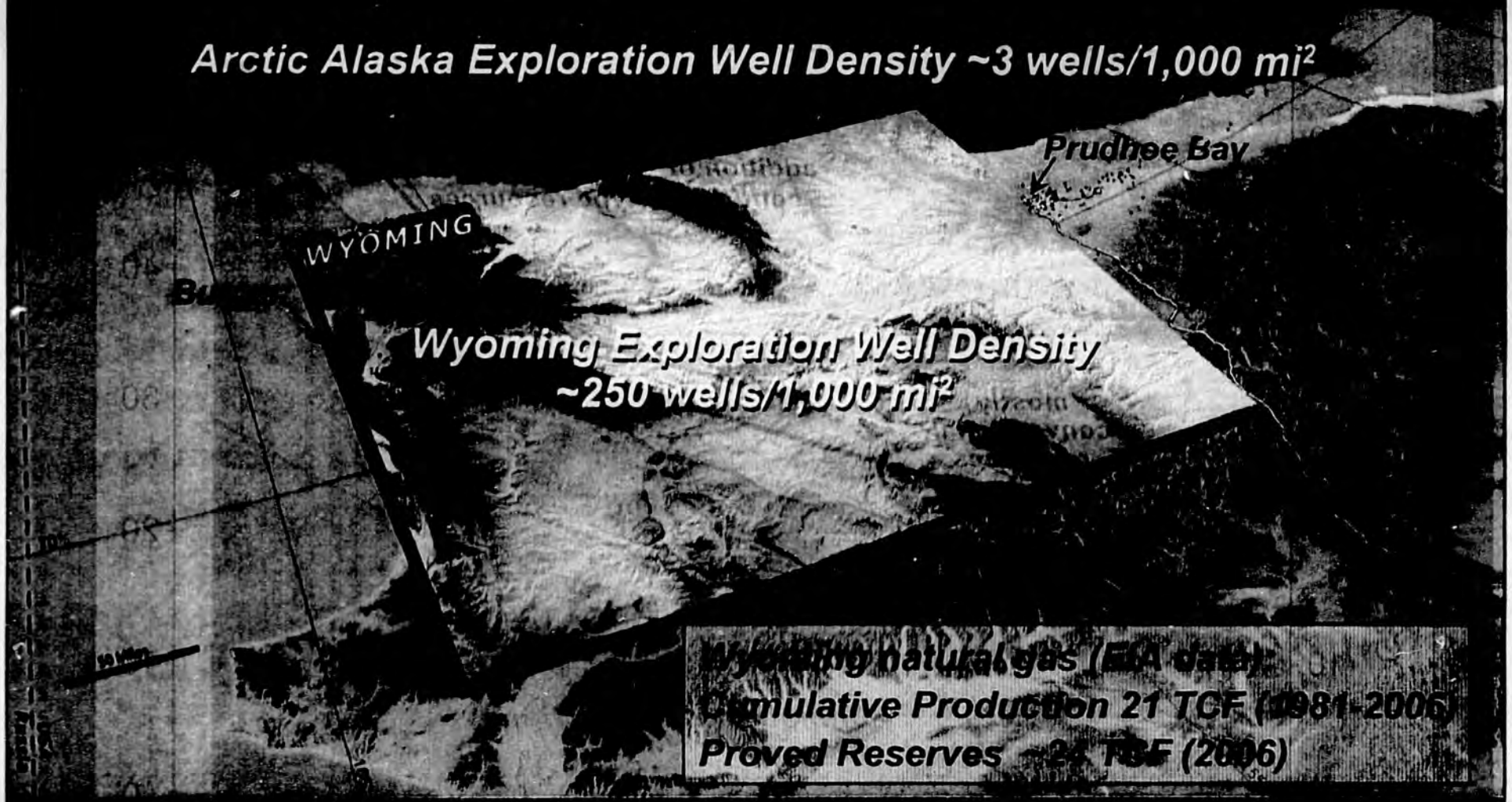
Market Price ($/MCF)	Economically Recoverable Gas (billion cubic feet) Sc. 2
2	0
3	0
4	10.9
5	19.9
6	23.7
7	25.2
8	26.2
9	27.1
10	27.6

Based on mean estimates of technically recoverable oil resources

Scenario 1 - No Gas Market

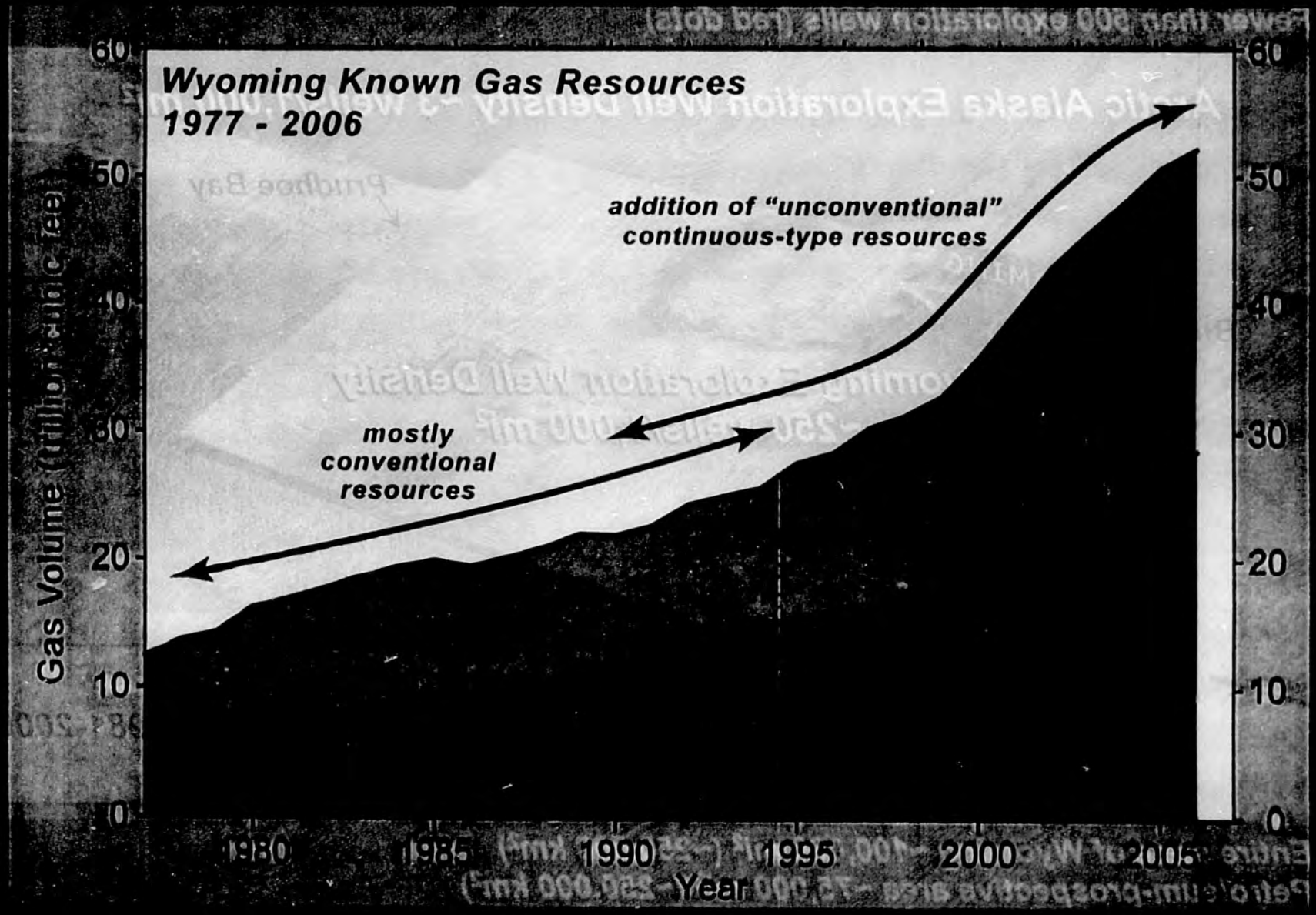
Arctic Alaska Exploration Maturity

- Prospective area onshore & offshore shelves ~ 150,000 mi² (~400,000 km²)
- Fewer than 500 exploration wells (red dots)



- Entire state of Wyoming ~100,000 mi² (~250,000 km²)
- Petroleum-prospective area ~75,000 mi² (~250,000 km²)
- ~19,371 exploration wells

Wyoming Gas Reserves & Production History

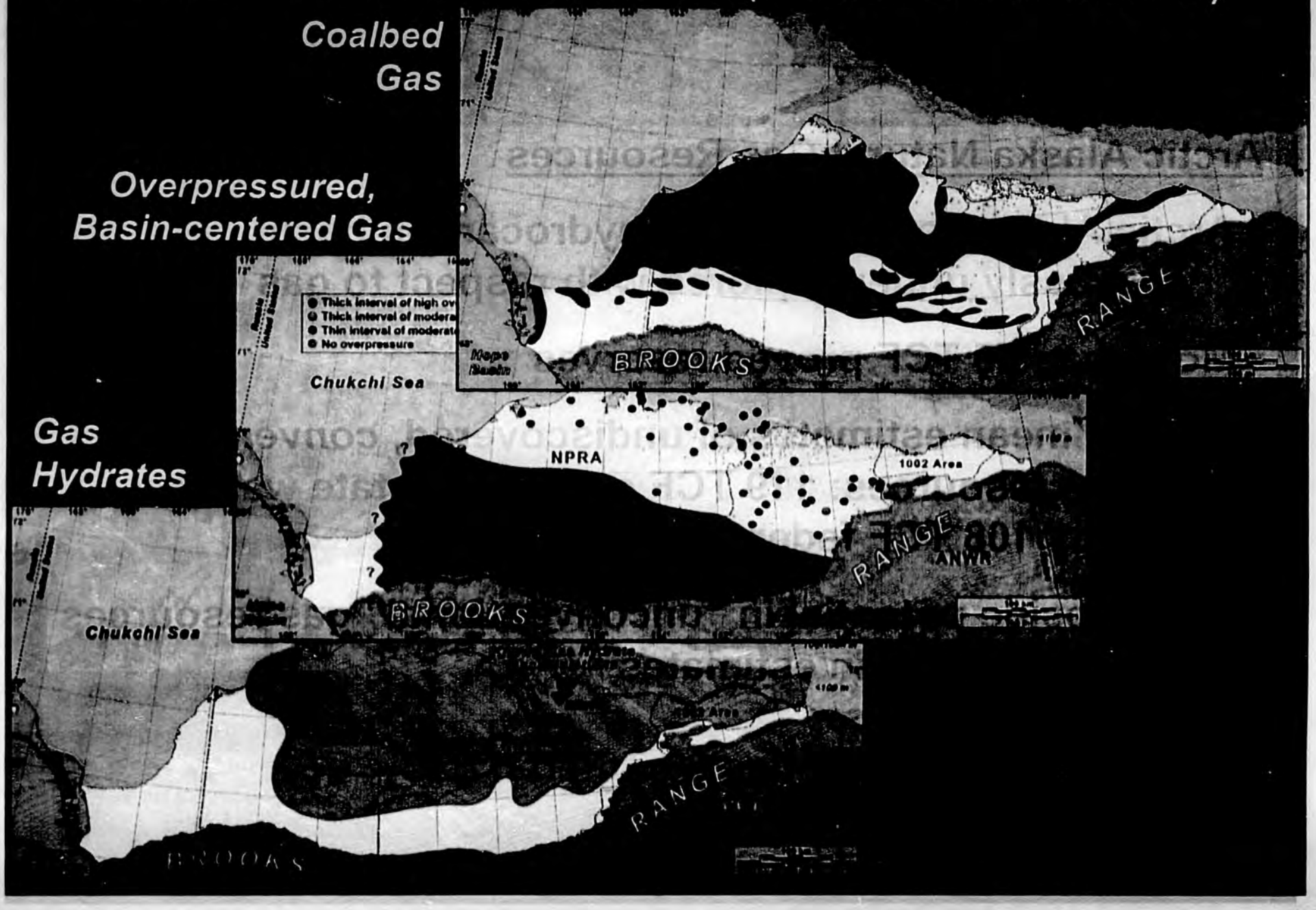


"Unconventional" Gas Resources (continuous resources)

Coalbed Gas

Overpressured, Basin-centered Gas

Gas Hydrates



Summary

Arctic Alaska Natural Gas Resources

- Arctic Alaska: supercharged hydrocarbon basin grossly under explored with respect to gas
- More than 35 TCF proved reserves
- Recent mean estimates of undiscovered, *conventional* gas resources: 119 TCF onshore & state waters plus 108 TCF federal offshore
- Huge upside potential in "unconventional" gas resources not included in estimates