

ALASKA LEGISLATURE SPECIAL COMMITTEE/SUBJECT FILE 8672

1622 SCOMM 62: SENATE SPEC. COMM. ON OIL & GAS, 1989-1990



RECORDS CERTIFICATION



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Jim Butler

Signature of Camera Operator

12/14/83

Date

SCOMM 62: SENATE SPECIAL COMMITTEE ON OIL AND GAS, 1989-1990

MEMBERSHIP:

SENATOR DRUE PEARCE, CHAIR
SENATOR TIM KELLY
SENATOR RICK HALFORD
SENATOR PAUL FISCHER
SENATOR AL ADAMS

Established by SR 4, 1989.

Contents: 1 box (12") of files. 59 cassette tapes are available of meetings held March 1989 - May 1990.

2 cassettes of Senate Finance Committee, subcommittee on HB 566 4-30-90 meeting which came with these files are now stored with 1989-1990 Senate Finance Committee tapes.

2 videotapes which accompanied these files are now stored with the videotape collection of Leg. Library: "Prince William Sound Tanker Spill Prevention and Response Plan" by Alyeska Pipeline; "Slick Operators" by Scottish Eye.

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1. NORTH SLOPE GAS PIPELINE OVERVIEW
2. OIL SPILL COMMISSION EXECUTIVE SUMMARY
COMPARISON TO GOVERNOR'S OIL SPILL BILLS
3. OIL SPILL COMMISSION REVIEW
4. OIL SPILL RESPONSE
5. TAPS CORRECTION OVERVIEW, 1/30/90
6. SB 97
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14. SB 359
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20. SB 539
21. SB 540
22. SCR 30
23. SJR 11
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26. SJR 83
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29. HB 128
30. HB 566
31. HB 567
32. HJR 32

SCOMM

62:1

MAR 17 1989

DAVID F. ASMAN

g-x 3/21/89

Honorable Drue Pearce
Alaska State Senate
Box V
Juneau, Alaska 99811

Dear Drue:

March 14, 1989

The attached TIMES article, pertaining to last Friday's joint meeting of the Senate Resources and Oil & Gas Committees, prompts this missive.

At your early convenience, and if readily available, please send, or cause to be sent, to me copies of the prepared testimony or transcripts of remarks by the following:

- ** Judd Miller, Jr., representing EXXON USA, Inc.;
- ** Byron Grote, representing BP; and
- ** the representative of Northwest Alaskan Pipeline Company (if there was one present).

I'll obtain a copy of Bill McHugh's remarks from him at Yukon Pacific here in Anchorage.

With my thanks for your very kind attention and helpful assistance, and every good wish for your continued success and achievement!

Yours sincerely,

A large, stylized handwritten signature in black ink, appearing to read "D. Asman". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Attachment

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Exxon says gas market not there

Favors Canadian line when price goes up

by ROBERT LAURIE
Times Juneau Bureau

JUNEAU — Exxon USA Inc. says the best potential market for North Slope gas will be the Lower 48 and that the best way to get it there is by an overland pipeline.

Judd Miller Jr., Exxon's vice president responsible for marketing and transportation of natural gas in the United States, told a Senate panel Friday that the company has "serious reservations about the LNG export project." Exxon owns the rights to 37 percent of the gas produced at Prudhoe Bay.

'All else being equal, LNG from almost anywhere in the world could be delivered more economically to the Far East than North Slope gas.'

Judd Miller Jr.
Exxon USA Inc.

Another major North Slope gas producer last month, BP Exploration, came out in support of Yukon Pacific Corp.'s plan to ship liquified natural gas to the Far East. BP vice president Byron

Grote reiterated that support at the joint meeting of the Senate Resources and Oil and Gas committees Friday afternoon. BP owns the rights to about 20 percent of Prudhoe Bay gas deposits.

The third major North Slope producer, Arco Alaska Inc., has not stated its position publicly.

Yukon Pacific Corp., founded by former Gov. Walter Hickel, is proposing an 800-mile gasline paralleling the trans-Alaska oil pipeline. The gas would be cooled and liquified in Valdez and exported to Pacific Rim countries.

Northwest Alaskan Pipeline Company wants to build a pipeline from the North Slope to the Midwest. Northwest's project, originally proposed in 1976, has been delayed awaiting higher gas prices.

Testifying before the joint meeting, Miller said neither project is viable — yet.

"In reality, neither an overland pipeline to the Lower 48 states nor the export of LNG to Far East markets is economic at today's prices," Miller said.

In a written statement, Miller noted that studies by the American Gas Association and Gas Research Institute conclude that it won't be until after the year 2000 before Lower 48 demand and prices rise high enough for North Slope gas to be economical. Currently there is an oversupply of gas nationwide.

Oil and Gas committee chairwoman Sen. Drue Pearce, R-Anchorage, said she was not surprised by Exxon's testimony, but "disappointed that they don't sound more enthusiastic about any of the projects."

Miller presented a chart to the panel depicting the cost of delivering North Slope gas to Pacific Rim markets versus other suppliers. Miller said, on an investment basis, the \$5.4 billion pricetag of the pipeline has the effect of adding 7,600 miles to the shipping distance. Based on transportation costs, he says North Slope gas is effectively 11,000 miles from Japan — roughly half the circumference of the earth.

"All else being equal, LNG from almost anywhere in the world could be delivered more economically to the Far East than North Slope gas," Miller said.

Using his criteria, he pointed out uncommitted proven reserves "closer" to Japan that total nearly 33 times the amount of known North Slope reserves.

Yukon Pacific President Bill McHugh, testifying earlier, disagreed with Miller's assessment saying "there are no fatal flaws in our project."

Alaska State Legislature

Senator Drue Pearce, Chair

Senator Tim Kelly
Senator Rick Halford
Senator Paul Fischer
Senator Al Adams



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SENATE SPECIAL COMMITTEE ON OIL AND GAS

A G E N D A
MARCH 10, 1989
1:30 PM

SENATE FINANCE - ROOM 518

SUBJECT: UPDATE ON THE SALE OF NORTH SLOPE GAS

- I. JERRY BROSSIA, REGIONAL MANAGER (ON-LINE FROM FAIRBANKS)
STATE PIPELINE COORDINATOR
DIVISION OF LAND & WATER MANAGEMENT, DNR

BILL VAN DYKE, PETROLEUM MANAGER (ON-LINE FROM ANCHORAGE)
DIVISION OF OIL AND GAS, DNR
- II. BOB POE, DIRECTOR
OFFICE OF INTERNATIONAL TRADE
OFFICE OF THE GOVERNOR
- III. CUBA WADLINGTON, VICE PRESIDENT
REGULATIONS AFFAIRS
NORTHWEST ALASKA PIPELINE COMPANY

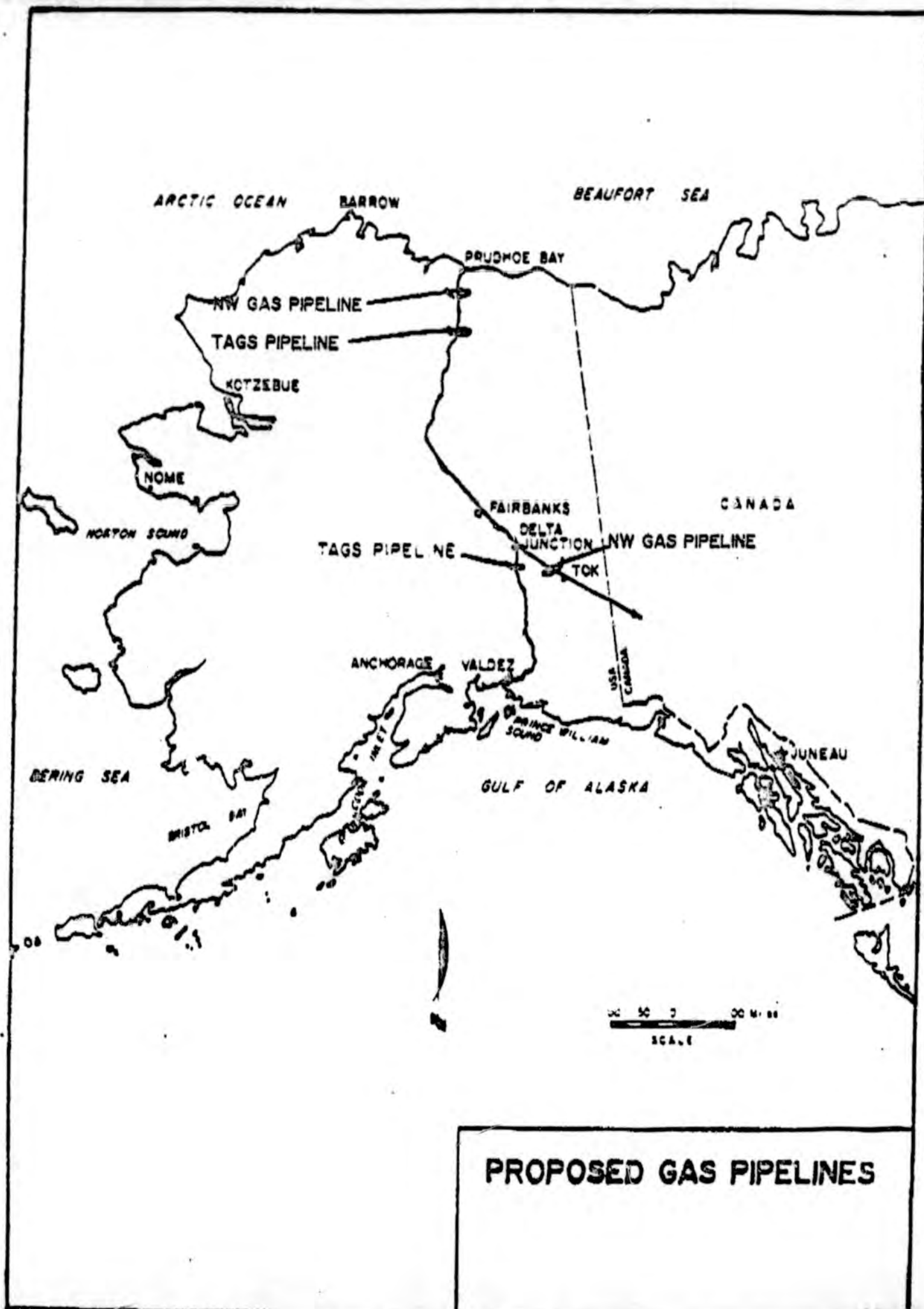
BILL MOSES, GENERAL COUNSEL
NORTHWEST ALASKA PIPELINE COMPANY
- IV. BILL MCHUGH, PRESIDENT, CEO
YUKON PACIFIC CORPORATION

JEFF LOWENFELS, GENERAL COUNSEL
YUKON PACIFIC CORPORATION
- V. BYRON GROTE, VICE PRESIDENT
COMMERCIAL
BP EXPLORATION
- VI. JUDD MILLER, JR., VICE PRESIDENT
EXXON COMPANY, U.S.A.
- VII. DR. JOHN KIM (ON-LINE FROM ANCHORAGE)
ALASKA CENTRAL FOR INTERNATIONAL BUSINESS
UNIVERSITY OF ALASKA, ANCHORAGE

NORTH SLOPE GAS BRIEFING AGENDA

Department of Natural Resources

- I. Introduction Jerry Brossia
Division of Land and Water Management
- II. Location & Status of Proposed Gas Pipelines.....Jerry Brossia
- III. Location & Estimated Quantities of Gas Reserves....Bill Van Dyke
Division of Oil and Gas

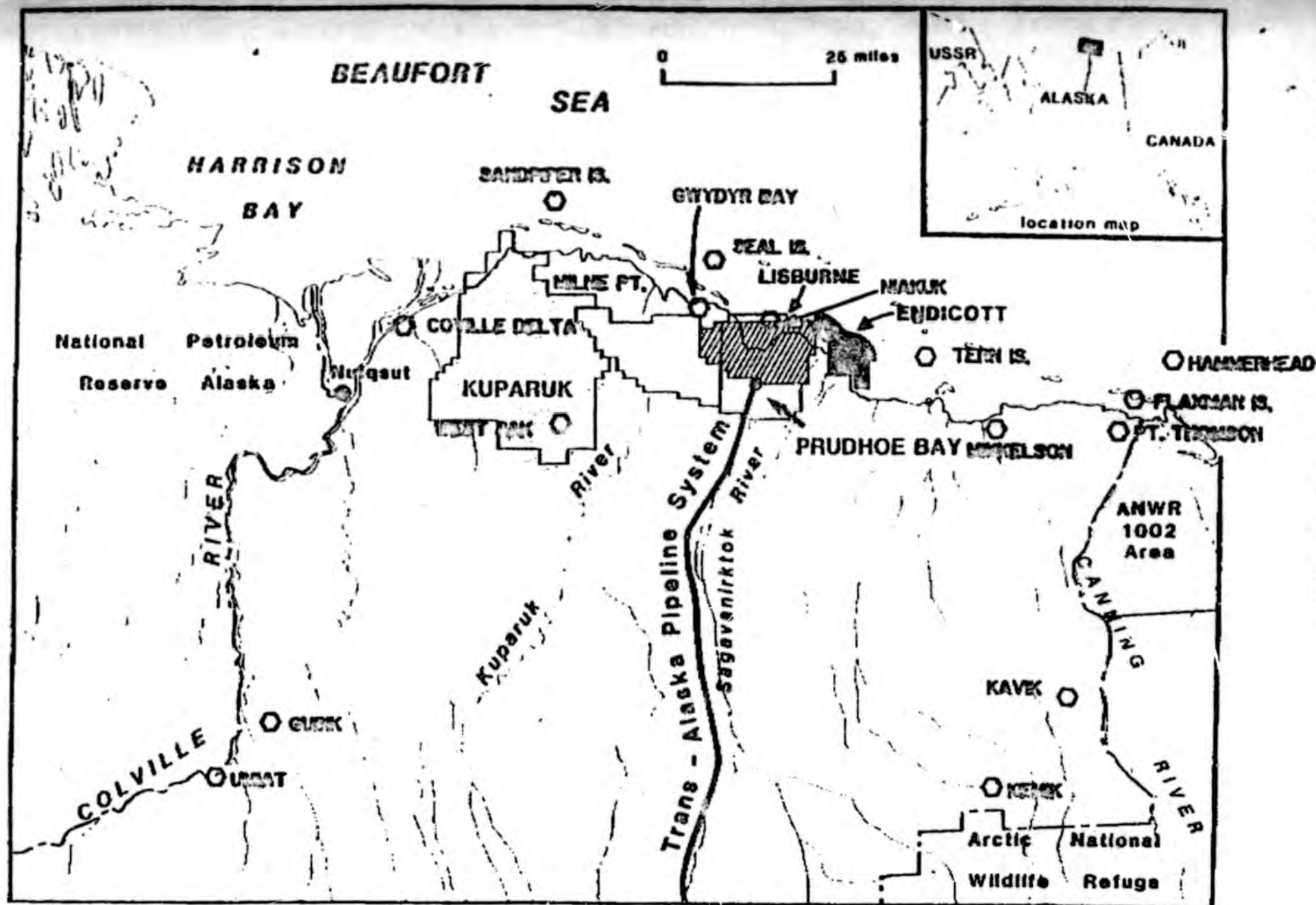


COMPARISON OF ANGTS AND TAGS NATURAL GAS TRANSPORTATION PIPELINES

DNR/DLMM
March 1, 1989

COMPARISON	ANGTS	TAGS
natural gas destination	domestic use to lower 48 states	export to Pacific Rim countries
transportation method	interstate gas pipeline	intrastate gas pipeline + LNG tanker transport
transportation route in Alaska	Prudhoe Bay to Alaska-Canada border	Prudhoe Bay to Anderson Bay in Port Valdez
major project components	48 inch chilled, buried pipeline 15 compressor stations gas conditioning facility	36 inch chilled, buried pipeline 10 compressor stations LNG Plant + marine terminal
pipeline length	745 miles (Alaska segment)	797 miles
quantity of gas/day transported	2.4 billion cubic feet/day	2.3 billion cubic feet/day
estimated cost to construct	\$11.5 billion	\$8 billion
projected revenue to the state	not available	\$477 million over the life of the project
jobs created	not available	10,000 peak, 6,000 average during construction

project status on state land	RW Lease application pending	Conditional RW Lease issued
project status on federal land	RW Grant issued	RW Grant issued



DEVELOPED & UNDEVELOPED GAS DISCOVERIES ON THE NORTH SLOPE

○ DENOTES UNDEVELOPED DISCOVERIES

Developed North Slope Oil and Gas Fields
(As of October 1988)

<u>Field Name</u>	<u>Discovery Date</u>	<u>Estimated Original Recoverable Reserves</u>	<u>Remaining Reserves</u>
Prudhoe Bay	12/67	25,000 BCF 10,800 MMBO	23,000 BCF 4700 MMBO
Kuparuk River	4/69	640 BCF 1340 MMBO	570 BCF 845 MMBO
Prudhoe Bay (Lisburne Pool)	12/67	900 BCF 190 MMBO	890 BCF 150 MMBO
Milne Point	10/69	60 MMBO	55 MMBO
Endicott	3/78	800 BCF 375 MMBO	790 BCF 330 MMBO
S. Barrow	4/49	25.2 BCF	8 BCF
E. Barrow	5/74	12.4 BCF	9 BCF
Totals		27,400 BCF 12,800 MMBO	25,267 BCF 6080 MMBO

BCF - Billion Cubic Feet of Gas
MMBO - Million Barrels of Oil

DO&G Rev. 11/88

Figure 4

Undeveloped North Slope Oil and Gas Discoveries
(As of October 1988)

<u>Name</u>	<u>Discovery Date</u>	<u>Estimated Recoverable Reserves</u>
Umiat	12/46	50 MMBO
Gubik	8/51	600 BCF
E. Umiat	3/63	?
West Sak	4/69	0 - 3000 MMBO
Kavik	11/69	?
Kemik	6/72	?
Flaxman Island	9/75	?
Pt. Thomson	10/77	5000 BCF 300 MMBO
Mikkelson	1978	?
Gwydyr Bay	1981	<10 MMBO
Tern Island	5/83	?
Seal Island	1/84	150 MMBO
Colville Delta	1985	?
Hammerhead	2/86	?
Sandpiper Island	1986	?
Niakuk Discovery	4/85	60 MMBO

BCF - Billion Cubic Feet of Gas
MMBO - Million Barrels of Oil

Totals

**1060 MMBO
5600 BCF**

DO&G Rev. 11/88

Figure 5

DRAFT 3/8/89

ORAL REMARKS OF
CUBA WADLINGTON JR., VICE PRESIDENT FOR REGULATORY AFFAIRS
NORTHWEST ALASKAN PIPELINE COMPANY

ALASKA STATE LEGISLATURE,
SENATE SPECIAL COMMITTEE ON OIL & GAS
AND SENATE RESOURCES COMMITTEE
MARCH 10, 1989

I AM CUBA WADLINGTON JR., VICE PRESIDENT FOR REGULATORY AFFAIRS, NORTHWEST ALASKAN PIPELINE COMPANY, THE AGENT AND OPERATING PARTNER FOR ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY, THE SPONSORS OF THE ALASKAN SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM. ACCOMPANYING ME IS OUR GENERAL COUNSEL, WILLIAM J. MOSES.

MADAM CHAIRMAN, THANK YOU FOR THE OPPORTUNITY TO BE HERE TODAY TO GIVE AN UPDATE ON THE A-N-G-T-S PROJECT. VERNON JONES, WHO IS CHAIRMAN OF THE BOARD OF OUR SPONSORING CONSORTIUM, APPEARED HERE BEFORE THE JOINT COMMITTEE ON OIL AND GAS IN MARCH 1984. CONDITIONS HAVE CHANGED IN SEVERAL SIGNIFICANT WAYS OVER THE PAST FIVE YEARS. I'LL EXPLAIN WHY WE NOW HAVE A STRONGLY STRENGTHENED CONVICTION THAT THE PRUDHOE BAY GAS IS NEEDED DOMESTICALLY BY THE UNITED STATES. AND I'LL EXPLAIN WHY WE HAVE RENEWED OPTIMISM THAT TIME IS BRINGING US CLOSER TO PROJECT REMOBILIZATION.

ON JANUARY 24TH OF THIS YEAR, WE APPEARED IN ANCHORAGE BEFORE A PUBLIC CONFERENCE HELD BY THE ECONOMIC REGULATORY

ADMINISTRATION OF THE U.S. DEPARTMENT OF ENERGY. OUR PREPARED STATEMENTS AT THAT CONFERENCE PROVIDE AN UP-TO-DATE ELABORATION OF OUR OUTLOOK FOR THE ANGTS PROJECT. THEY ARE BY VERNON JONES, MYSELF, AND BY MR. JAMES JENSEN WHO IS A RECOGNIZED AUTHORITY ON OIL AND GAS ECONOMICS AND DEVELOPMENT. IN ADDITION, WE LATER FILED SUPPLEMENTAL COMMENTS WITH THE ECONOMIC REGULATORY ADMINISTRATION WHICH, I BELIEVE, ALSO PROVIDE VALUABLE BACKGROUND INFORMATION.

WITH YOUR CONCURRENCE, I WOULD LIKE TO PLACE THESE FOUR DOCUMENTS IN THE RECORD AND THEN MAKE A BRIEF ORAL STATEMENT. I HAVE EXTRA COPIES WITH ME FOR COMMITTEE MEMBERS AND STAFFS.

THE U.S. SPONSORS OF THE ALASKAN SEGMENT OF ANGTS HAVE INVESTED ABOUT \$ 1.5 BILLION JUST ON THE ALASKAN SEGMENT OF THE SYSTEM. THIS INVESTMENT IS IN DESIGN, PRELIMINARY ENGINEERING, SATISFYING GOVERNMENT REQUIREMENTS, AND CONSTRUCTION PLANNING. WE MADE THIS EXPENDITURE IN GOOD FAITH, BASED ON A FRAMEWORK OF FEDERAL LAW. THIS INCLUDED EXPLICIT COMMITMENTS TO AN OVERLAND TRANSPORTATION SYSTEM TO BRING THE 26 TRILLION CUBIC FEET OF PROVED PRUDHOE BAY GAS RESERVES TO THE LOWER 48 STATES.

WE REMAIN DEDICATED TO COMPLETING THIS PROJECT AT THE EARLIEST FEASIBLE DATE WHEN THE GAS CAN BE SOLD WITHOUT GOVERNMENT SUBSIDY, AT MARKET CLEARING-PRICES. THAT DATE IS APPROACHING MUCH FASTER THAN IS GENERALLY REALIZED.

THE FIRST KEY ISSUE THAT I'LL DISCUSS IS "NEED." IS THERE A DOMESTIC REQUIREMENT FOR THE GAS DURING THE PERIOD STARTING ABOUT 1996?

OUR CONCEPT OF DOMESTIC "NEED" FOR THE ALASKAN GAS IS BASED ON AN ECONOMIC TEST. IF THE GAS IS REASONABLY EXPECTED TO BE SALEABLE ON A FREE-MARKET BASIS IN THE LOWER-48 STATES, WITHOUT GOVERNMENT SUBSIDY, THEN IT MEETS THIS PRIMA FACIE TEST. BY DEFINITION, IF COMPETITIVELY-PRICED ALASKAN GAS IS NOT AVAILABLE, DEMAND FOR THAT ENERGY COULD BE MET ONLY IF AMERICAN CONSUMERS MAKE USE OF HIGHER PRICED AND/OR LESS DESIRABLE ALTERNATIVES.

THE CURRENTLY PROVED PRUDHOE BAY GAS RESERVES, DELIVERED TO THE LOWER-48 STATES BY A PIPELINE SYSTEM, CAN MEET THIS FREE-MARKET TEST BASED ON SIX KEY CONSIDERATIONS:

--FIRST: THE COST OF THE ANGTS. THE RECENTLY REVISED COST ESTIMATE FOR THE REMAINING ELEMENTS OF THE ANGTS WILL MAKE THE DELIVERED GAS PRICE HIGHLY COMPETITIVE DOMESTICALLY IN THE YEARS AHEAD. I WILL ELABORATE ON THIS LATER.

--THE SECOND BASIS FOR DOMESTIC NEED IS A VARIETY OF INDEPENDENT SUPPLY/DEMAND FORECASTS. REASONABLE PROJECTIONS OF A DOMESTIC "NEED" FOR THE ALASKAN GAS DURING THE YEARS AHEAD HAVE BEEN MADE BY A NUMBER OF INDEPENDENT, RESPECTED ANALYTICAL ORGANIZATIONS SUCH AS THE GAS RESEARCH INSTITUTE.

A NEW, VERY RECENT STUDY IS ATTACHED TO THE PREPARED STATEMENT OF VERNON T. JONES, WHICH HAS BEEN PLACED IN YOUR RECORD. IT LENDS ADDITIONAL WEIGHT TO OUR POSITION. THE STUDY WAS PREPARED BY THE WASHINGTON POLICY AND ANALYSIS CONSULTING GROUP UNDER THE DIRECTION OF A FORMER DEPUTY SECRETARY OF ENERGY.

ALL OF THESE SUPPLY/DEMAND STUDIES HAVE ONE THING IN COMMON: THEY PROJECT A VERY REAL NEED FOR THE PRUDHOE BAY GAS IN THE LOWER-48 STATES BY THE YEAR 2010 AT THE VERY LATEST.

--THE THIRD BASIS FOR DOMESTIC NEED IS U.S. NATIONAL ENERGY SECURITY. DOMESTIC DEMAND FOR NATURAL GAS IS ALMOST CERTAIN TO GROW BEYOND CURRENT FORECASTS DUE TO THE RAPIDLY INCREASING U.S. DEPENDENCE ON FOREIGN OIL, NOW OVER 40% AND EXPECTED TO BE ABOUT 70% BY 2010. LET ME REPEAT THAT: 70% DEPENDENT UPON FOREIGN OIL IMPORTS BY THE YEAR 2010! THAT IS AN ALARMING FIGURE, AND IT SHOULD BE OF CONCERN TO ALL AMERICANS. OUR NATION OBVIOUSLY WILL BECOME DANGEROUSLY VULNERABLE TO OIL SUPPLY DISRUPTIONS AND/OR PRICE SHOCKS. MUCH GREATER USE OF DOMESTIC NATURAL GAS PREDICTABLY WILL BECOME A PUBLIC POLICY IMPERATIVE AS AN IMPORTANT MEANS TO LIMIT THIS VULNERABILITY. THE WASHINGTON POLICY AND ANALYSIS STUDY CONCLUDES THAT GREATER DOMESTIC USE OF NATURAL GAS CAN RESULT IN A 2 MILLION BARREL PER DAY REDUCTION IN DEMAND FOR IMPORTED OIL. THE REPORT INDICATES THAT ALASKAN PIPELINE GAS IS NEEDED TO MAKE THIS POSSIBLE. THE ANGTS, AT FULL CAPACITY, WILL PROVIDE THE ENERGY EQUIVALENT OF 30 PERCENT OF THIS TOTAL--600,000 BARRELS OF OIL PER DAY. THAT'S AN IMPRESSIVE CONTRIBUTION TO U.S. ENERGY SECURITY BY ANY MEASURE.

PRESIDENT BUSH, IN ADDRESSING WAYS TO ENHANCE U.S. NATIONAL SECURITY LAST YEAR, DECLARED: QUOTE. THERE'S NO SECURITY FOR THE UNITED STATES IN FOREIGN OIL. . . WE MUST TURN TO ALTERNATIVES LIKE NATURAL GAS. UNQUOTE.

--THE FOURTH BASIS FOR DOMESTIC NEED IS ENVIRONMENTAL REQUIREMENTS. CONCERN IS GROWING ABOUT ACID RAIN, GROUND-LEVEL OZONE, CARBON MONOXIDE, ATMOSPHERIC PARTICULATES, AND THE SO-CALLED GREENHOUSE EFFECT. INCREASED USE OF NATURAL GAS CLEARLY CAN IMPROVE THE SITUATION. MORE STRINGENT STANDARDS APPEAR

INEVITABLE AND WILL RESULT IN INCREASED DEMAND FOR NATURAL GAS. THE WASHINGTON POLICY AND ANALYSIS STUDY THAT I'VE MENTIONED CONCLUDES, AND I QUOTE: A MAJOR FORCE DRIVING THE INTRODUCTION OF MORE NATURAL GAS INTO THE U.S. ECONOMY IN THE FUTURE COULD BE AN EFFORT TO MEET ENVIRONMENTAL STANDARDS IN THE MOST COST-CONSCIOUS MANNER. UNQUOTE.

BUT AN EVEN MORE COMPELLING CASE IS MADE IN A COMBINED REPORT BY THE NATIONAL ACADEMY OF SCIENCES, THE NATIONAL ACADEMY OF ENGINEERING AND THE INSTITUTE OF MEDICINE, TO PRESIDENT BUSH. AND I QUOTE:

. . . WE SHOULD EXPLORE MEANS FOR REDUCING ENERGY DEMAND WITHOUT ~~IMPEDING~~ ECONOMIC GROWTH, FOR EXAMPLE, BY USING FOSSIL FUELS WITH GREATER EFFICIENCY, AS WELL AS INCENTIVES AND OTHER MEANS TO INCREASE USE OF THE 'CLEANEST' FOSSIL FUELS SUCH AS NATURAL GAS. UNQUOTE.

--THE FIFTH BASIS OF DOMESTIC NEED IS THAT IMPORTS OF NATURAL GAS WILL NOT BE ENOUGH TO SATISFY DOMESTIC REQUIREMENTS. IT IS UNREALISTIC TO ASSUME THAT U.S. IMPORTS OF GAS FROM CANADA, MEXICO, OR OF LNG CAN BE OBTAINED ESSENTIALLY WITHOUT LIMITATION, INDEFINITELY AND AT MORE ATTRACTIVE PRICES THAN ALASKAN PIPELINE GAS. CREDIBLE FORECASTS WHICH TAKE BOTH PRICE AND AVAILABILITY INTO CONSIDERATION CALL FOR GAS FROM AN ALASKAN PIPELINE IN ADDITION TO SUBSTANTIALLY INCREASED LNG IMPORTS AND CANADIAN GAS.

THE CANADIAN NATIONAL ENERGY BOARD RECENTLY RELEASED A REVISED ENERGY SUPPLY AND DEMAND FORECAST. IT SHOWS CLEARLY THERE WILL HAVE TO BE INCREASING RELIANCE IN CANADA UPON GAS FROM

"FRONTIER" AREAS STARTING IN THE LATE 1990'S. ABOUT 1.2 BILLION CUBIC FEET OF GAS PER DAY FROM THE MACKENZIE DELTA AND ARCTIC ISLANDS, WHICH WILL HAVE MANY OF THE SAME ECONOMIC COSTS THAT THE BUILDERS OF THE ANGTS FACE IN CONSTRUCTING A PIPELINE FROM THE NORTH SLOPE, WILL PROBABLY START FLOWING BEFORE THE YEAR 2000.

SUBSTANTIAL MEXICAN IMPORTS, HOWEVER, DO NOT APPEAR LIKELY. MEXICAN GOVERNMENT POLICY IS TO MAXIMIZE THE USE OF NATURAL GAS DOMESTICALLY.

REGARDING LNG IMPORTS, WHEN THE LIMITED UNUSED CAPACITY IN EXISTING DOMESTIC TERMINALS IS USED UP, ANY ADDITIONAL CAPACITY CAN THEN ONLY BE OBTAINED BY A COSTLY, CONTROVERSIAL AND PROTRACTED PROCESS OF SITING AND ENVIRONMENTAL APPROVALS OF MAJOR NEW TERMINALS.

IT SEEMS CLEAR, THEREFORE, THAT THE U.S. GAS MARKET WILL BE SERVED BY A VARIETY OF SOURCES, EACH WITH ITS LIMITATIONS. IN SUCH AN ENVIRONMENT, THE OVERLAND DELIVERY OF THE PRUDHOE BAY RESERVES SHOULD BE HIGHLY COMPETITIVE. AGAIN, EACH OF THESE SOURCES WILL BE NEEDED TO MEET DOMESTIC DEMAND.

--THE SIXTH AND FINAL BASIS FOR DOMESTIC NEED IS A PROJECTED ELECTRIC POWER GENERATION SHORTFALL IN THE UNITED STATES. THIS HAS MAJOR IMPLICATIONS FOR DOMESTIC GAS DEMAND. THERE IS A VERY SERIOUS POTENTIAL SHORTFALL OF ELECTRIC POWER GENERATION CAPABILITY IN THE U.S. IN THE NEXT TEN YEARS AND ON INTO THE NEXT CENTURY. NATURAL GAS TURBINES CAN BE CONSTRUCTED QUICKLY AND AT FAR LESS COST THAN ANY TYPE OF STEAM-GENERATION PLANT. THEY ARE PROBABLY THE ONLY REALISTIC WAY TO AVERT POWER SHORTAGES.

THE U.S. ENERGY INFORMATION ADMINISTRATION RECENTLY PROJECTED A BASE-CASE NEED FOR ABOUT 127 GIGAWATTS OF ADDITIONAL ELECTRIC GENERATING CAPACITY BY THE YEAR 2000, INCLUDING ABOUT 33 GIGAWATTS CURRENTLY UNDER CONSTRUCTION. THIS TOTAL IS EQUIVALENT TO BUILDING ABOUT 127 MAJOR NUCLEAR POWER GENERATING PLANTS IN THE NEXT DECADE.

THE SIGNIFICANCE OF THIS PROJECTION IS THE 10- TO 12-YEAR LEAD TIME REQUIRED FOR REGULATORY APPROVAL AND CONSTRUCTION OF NEW STEAM GENERATION PLANTS. OBVIOUSLY, THE LEAD TIME FOR SUCH CONSTRUCTION IS BEING DISSIPATED BY EVERY PASSING MONTH. IN THE MEANTIME, NATURAL GAS COMBINED-CYCLE OR COMBUSTION TURBINES ARE RAPIDLY TAKING OVER THE MAJOR SHARE OF FUTURE PLANNED CONSTRUCTION.

THE PLAIN RESULT OF THIS GROWING RELIANCE UPON NATURAL GAS FOR ELECTRIC POWER GENERATION HAS NOT YET BEEN FULLY REFLECTED IN MOST SUPPLY AND DEMAND PROJECTIONS. THE RECENT WASHINGTON POLICY AND ANALYSIS REPORT I'VE MENTIONED, HOWEVER, STATES, AND I QUOTE:

. . . WE FELT CONFIDENT WITH A DETAILED ANALYSIS THAT SHOWED GAS SUPPLYING NEARLY ONE-SIXTH OF THE PRIMARY ENERGY USED IN GENERATING ELECTRICITY BY 2010. THIS ALONE WOULD REQUIRE ABOUT 6 TRILLION CUBIC FEET OF GAS ANNUALLY, OR MORE THAN TWICE AS MUCH AS IS BEING USED NOW BY THE ELECTRICITY INDUSTRY. UNQUOTE

A UNIQUE ATTRIBUTE OF THE PROVEN PRUDHOE BAY RESERVES, DUE TO THEIR MAGNITUDE, IS THE ABILITY TO SUPPLY A LONG-TERM -- UP TO AT LEAST 25 YEARS -- ASSURED SOURCE OF SUPPLY FOR THE

CONSTRUCTION AND FINANCING OF BASELOAD ELECTRIC GENERATING PLANTS.

IN SUMMARY OF DOMESTIC NEED, WE BELIEVE THAT BY ANY REASONABLE ASSESSMENT, THE PRUDHOE BAY GAS RESERVES WILL BE NEEDED BY AMERICAN CONSUMERS DURING A PERIOD COMMENCING ABOUT 1996.

THE REASONABLY PROJECTED DOMESTIC NEED FOR PRUDHOE BAY'S PROVEN GAS RESERVES SHOULD BY ITSELF BE SUFFICIENT TO DEMONSTRATE THAT GOVERNMENT AUTHORITIES AT ALL LEVELS SHOULD AVOID ANY ACTION THAT MIGHT JEOPARDIZE THE OVERLAND DELIVERY OF THAT GAS TO AMERICAN CONSUMERS. THERE ARE, IN ADDITION, TWO OTHER IMPORTANT CONSIDERATIONS.

FIRST: THERE IS SIMPLY NOT ENOUGH PROVED AND ECONOMICALLY TRANSPORTABLE GAS RESERVES ON THE NORTH SLOPE TO WARRANT CONSTRUCTION OF TWO MAJOR GAS CONDITIONING PLANTS AND TWO LARGE-DIAMETER PIPELINE SYSTEMS IN THE SAME TIME FRAME.

THE ONLY BASIS UPON WHICH A MAJOR GAS TRANSPORTATION SYSTEM CAN BE FINANCED AND CONSTRUCTED IS PROVED RESERVES. PROVED RESERVES, AS YOU KNOW, ARE SOMETHING ENTIRELY DIFFERENT FROM UNDISCOVERED RESOURCES AND OTHER SPECULATIVE CATEGORIES OF POTENTIAL GAS FINDINGS.

THE ANGTS HAS ALWAYS RELIED UPON THE 26 TCF OF PROVED GAS RESERVES AT PRUDHOE BAY, NOTABLY GAS ASSOCIATED WITH THE PRODUCTION OF OIL AND THEN REINJECTED INTO THE PRUDHOE BAY FIELD. THIS IS WELL ESTABLISHED IN THE PRESIDENT'S DECISION OF SEPTEMBER 1977 AND ELSEWHERE IN THE REGULATORY RECORD. THIS GAS REQUIRES MINIMAL GATHERING OR PRODUCTION EXPENDITURES. MOREOVER,

IT IS CONCENTRATED IN A SMALL AREA WITH SUBSTANTIAL EXISTING SUPPORT FACILITIES. FOR THESE REASONS, TOGETHER WITH THE LARGE QUANTITY OF PROVEN RESERVES, GAS IN THE GENERAL PRUDHOE BAY AREA--INCLUDING THE ENDICOTT, KUPARUK, AND LISBURNE RESERVOIRS--IS TRULY THE "CREAM" OF WHATEVER GAS RESOURCES MAY EXIST ON THE NORTH SLOPE. THESE CONSIDERATIONS WOULD BE IMPORTANT IN MOST OTHER PARTS OF THE WORLD. BUT THEY ARE OF CRITICAL IMPORTANCE TO ECONOMIC VIABILITY IN THE ARCTIC. WITH RESPECT TO ANY OTHER POTENTIAL, BUT UNPROVEN OR UNDEVELOPED NORTH SLOPE GAS SOURCES, WE CAN SAY WITH REASONABLE CONFIDENCE THAT--EVEN UNDER THE BEST OF CIRCUMSTANCES--UNCERTAINTIES AS TO GAS AVAILABILITY, TRANSPORTABILITY, AND COSTS WILL DELAY ANY MAJOR PIPELINE PROJECT RELYING ON SUCH POTENTIAL ALTERNATIVES UNTIL LONG AFTER A PROJECT USING THE PRUDHOE BAY GAS COMES ON STREAM.

AS INDICATED BY THE EXPERT TESTIMONY OF MR. JAMES JENSEN OF JENSEN ASSOCIATES, INC., WHOSE STATEMENT I'VE PLACED IN YOUR RECORD, THE CHOICE IS CLEAR FOR THE REASONABLY FORESEEABLE FUTURE, EXTENDING WELL INTO THE NEXT CENTURY: EITHER GAS WILL BE AVAILABLE FOR AMERICAN CONSUMERS WHEN NEEDED OR PRUDHOE BAY GAS WILL BE COMMITTED TO SOME OTHER LARGE-SCALE PURPOSE, BUT NOT BOTH.

A SECOND MAJOR CONSIDERATION FOR GOVERNMENT AUTHORITIES IS THE BODY OF UNRESOLVED LEGAL ISSUES RAISED BY YUKON PACIFIC CORPORATION'S PROPOSED EXPORT PROJECT. THESE ISSUES NO DOUBT WILL HAVE TO BE RESOLVED BY THE FEDERAL COURTS. I WILL NOT FURTHER ELABORATE OTHER THAN TO REEMPHASIZE THAT THE ANGTS SPONSORS HAVE ALREADY INVESTED ABOUT \$1.5 BILLION DOLLARS IN GOOD

FAITH RELIANCE ON EXPLICIT GOVERNMENT REPRESENTATIONS. WE WILL TAKE ALL NECESSARY ACTIONS IN THE APPROPRIATE FORUMS TO PROTECT THE SPONSORS' INTERESTS IN THAT INVESTMENT AND WILL CONTINUE TO WORK TOWARD THE STATED NATIONAL OBJECTIVE OF PROVIDING PRUDHOE BAY GAS TO LOWER-48 CONSUMERS AT THE EARLIEST OPPORTUNITY.

I SAID EARLIER THAT I WOULD ELABORATE ON THE REVISED COST ESTIMATE FOR THE ANGTS. THE DELIVERED GAS PRICE TO THE LOWER-48 STATES IS A CRITICAL DETERMINANT OF FEASIBILITY AND TIMING OF AN OVERLAND PIPELINE SYSTEM FROM ALASKA. I'LL NOW EXPLAIN WHY WE'RE CONFIDENT THAT THE PRUDHOE BAY GAS WILL BE SALABLE TO AMERICAN CONSUMERS ON A FREE-MARKET BASIS, WITHOUT GOVERNMENT SUBSIDY, DURING THE PERIOD 1996 TO 2021.

I WILL FIRST REVIEW THE PRICES PROJECTED FOR IMPORTS BY THE U.S. OF PIPELINE GAS AND LNG SO THAT WE HAVE A BASIS FOR DETERMINING WHETHER THE ANGTS GAS REASONABLY COULD BE COMPETITIVE WITH THESE POTENTIAL ALTERNATIVES.

THE GAS RESEARCH INSTITUTE, A WELL-RECOGNIZED ANALYTICAL ORGANIZATION, HAS FORECAST "ACQUISITION PRICES" AT THE U.S. BORDER FOR BOTH PIPELINE IMPORTS AND LNG OF \$3.20 PER MILLION BTUs IN 1995, \$3.32 IN 1996 AND ABOUT \$6.50 IN THE YEAR 2010. ALL OF THESE PRICES ARE EXPRESSED IN CONSTANT 1987 DOLLARS.

A RISING TREND IN REAL PRICE--THAT IS, IN ADDITION TO ANY INCREASES IN THE GENERAL PRICE LEVEL DUE TO INFLATION--IS CLEARLY EVIDENT. IT IS IMPORTANT TO NOTE THAT GRI FORECASTS AN INCREASING TOTAL DOMESTIC DEMAND FOR NATURAL GAS THROUGH 2010 DESPITE THIS INCREASE IN REAL PRICES. WITH THESE FIGURES AS A BACKGROUND FOR COMPARISON PURPOSES, I WILL ADDRESS THE PRICE AND

MARKETABILITY OF ALASKAN GAS AS DELIVERED BY PIPELINE THROUGH CANADA TO THE U.S. BORDER.

BEFORE DOING SO, I WOULD OBSERVE THAT EXPERT GAS MARKET ANALYSTS REASONABLY MIGHT DIFFER OVER ANY PARTICULAR FORECAST OF GAS PRICES, WHICH NECESSARILY IS BASED ON ASSUMPTIONS REGARDING FUTURE ECONOMIC GROWTH, WORLD OIL PRICES, ETC.

OF OVERRIDING IMPORTANCE, HOWEVER, IS THE FACT THAT THERE IS A CONSENSUS AMONG QUALIFIED OBSERVERS THAT THE REAL PRICE OF BOTH LOWER-48 GAS PRODUCTION AND GAS IMPORTS WILL RISE OVER THE YEARS AHEAD. ONLY THE RATE OF INCREASE MAY DIFFER. THIS FACT, AS I WILL DEMONSTRATE, VIRTUALLY ASSURES THE DOMESTIC MARKETABILITY OF ALASKAN PIPELINE GAS AND LEAVES OPEN ONLY THE QUESTION OF SPECIFIC TIMING.

NOW, THE SALABILITY OF ALASKAN PIPELINE GAS OBVIOUSLY WILL BE DETERMINED BOTH BY THE CAPITAL COSTS OF THE PIPELINE SYSTEM AND THE WELLHEAD PRICE OF THE GAS.

IN MAY 1988, THE U.S. AND CANADIAN SPONSORS OF THE ANGTS COMPLETED AN IMPORTANT REESTIMATE OF THE CAPITAL COST OF THE REMAINING ELEMENTS OF THE ANGTS. THE STUDY DREW UPON AN EXTENSIVE BODY OF PROPRIETARY AND CONFIDENTIAL INFORMATION DEVELOPED SINCE OUR EARLIER COST ESTIMATES PREPARED IN THE LATE 1970s AND EARLY 1980s. IT TOOK INTO CONSIDERATION:

--ADVANCES IN PIPELINE DESIGN,

--INFORMATION GATHERED FROM EXTENSIVE FIELD TESTING PROGRAMS AND OPTIMIZATION STUDIES CONDUCTED BY THE PROJECT SPONSORS, AND

--SIGNIFICANT CHANGES IN THE ECONOMIC CLIMATE.

THE RESULT WAS A DRAMATICALLY LOWER COST ESTIMATE, RESULTING IN PART FROM THE FOLLOWING:

- REDUCED CONSTRUCTION SCHEDULE,
- IMPROVED WELDING TECHNOLOGY,
- MORE TRADITIONAL OWNER/CONTRACTOR FUNCTIONS,
- USE OF EXISTING COMMUNICATION SYSTEMS,
- REDUCED CONTINGENCY ALLOWANCES,
- HIGHER PRESSURE, SMALLER DIAMETER MAINLINE PIPE, BUT
HIGHER GAS THROUGHPUT, AND
- MORE MODEST ASSUMPTIONS ABOUT THE RATE OF INFLATION AND
INTEREST RATES.

EXPRESSED IN 1988 DOLLARS, THE CAPITAL COST OF THE PROJECT, INCLUDING THE NORTH SLOPE CONDITIONING PLANT, TOGETHER WITH THE REMAINING PIPELINE SEGMENTS IN ALASKA, CANADA AND THE LOWER-48 STATES, WAS ESTIMATED AT \$14.6 BILLION, COMPARED TO \$26.1 BILLION IN THE EARLIER ESTIMATE--APPROXIMATELY A 45% REDUCTION. THIS, IN TURN RESULTED IN A NEW, LOWER COST OF THE PIPELINE DELIVERY SERVICE.

BASED ON THE NEW CAPITAL COST ESTIMATE, THE TRANSPORTATION COST OF DELIVERING ALASKAN GAS TO THE LOWER-48 STATES IS \$2.44 PER MILLION BTUs IN THE YEAR 1996, EXPRESSED IN 1987 DOLLARS.

WITH A REASONABLE ALLOWANCE FOR THE WELLHEAD PRICE OF THE GAS ADDED, THE ALASKAN GAS OBVIOUSLY WOULD BE COMPETITIVE WITH THE PROJECTED PRICE IN 1996 OF \$3.32 FOR IMPORTS AND LNG THAT I MENTIONED EARLIER.

UP TILL NOW, I'VE USED A 1996 INITIAL IN-SERVICE DATE AS AN EXAMPLE. THE ANGTS GAS WOULD BE COMPETITIVE AT THAT TIME BASED

ON THE PROJECTED PRICES; HOWEVER, THE SPECIFIC DATE THAT THE ALASKAN GAS WILL FLOW WILL BE DETERMINED BY ACTUAL DEVELOPMENTS IN THE MARKET PLACE, INCLUDING THE WORLD PRICE OF OIL. IN THIS REGARD, SEVERAL KEY FACTORS WILL MAKE THE ANGTS GAS MUCH MORE SALABLE AS TIME PASSES. THEY ARE:

- FIRST, THE CAPITAL COSTS OF THE "PREBUILT," OPERATING PORTIONS OF THE SYSTEM--ABOUT 1/3 OF THE TOTAL MILEAGE--CONTINUE TO BE DEPRECIATED. THIS RESULTS IN A PROGRESSIVELY LOWER TRANSPORTATION COST OF SERVICE, AND
- SECOND, AS I'VE PREVIOUSLY STATED, THE REAL COST OF GAS IMPORTS, LNG, AND OTHER ALTERNATIVES IS PROJECTED BY MOST OBSERVERS TO RISE SUBSTANTIALLY OVER TIME. ON THE OTHER HAND, BOTH THE PRUDHOE BAY GAS PRICE AND PIPELINE CONSTRUCTION COSTS SHOULD REMAIN ESSENTIALLY LEVEL IN REAL DOLLAR TERMS. THE PRUDHOE BAY GAS, IT SHOULD BE NOTED, WILL INCUR VIRTUALLY NO ADDITIONAL PRODUCTION OR GATHERING COSTS. THE NET EFFECT IS TO MAKE ALASKAN PIPELINE GAS PROGRESSIVELY MORE ATTRACTIVE THAN POTENTIAL ALTERNATIVES IN THE YEARS AHEAD.

THE ANGTS SPONSORS RECOGNIZE CLEARLY THE RADICALLY ALTERED DOMESTIC GAS MARKET TODAY AS COMPARED TO THE LATE 1970S WHEN THE ALASKA GAS PIPELINE PROJECT WAS INITIATED. AT THAT TIME, A HANDFULL OF MAJOR INTERSTATE GAS TRANSMISSION COMPANIES PLANNED TO PURCHASE THE PRUDHOE BAY GAS FOR RESALE FROM THEIR OWN INVENTORY. EVEN THEN, IT WAS DETERMINED THAT THIS GAS WOULD BE ACCESSIBLE TO LOCAL DISTRIBUTION COMPANIES IN 47 OF THE LOWER-48 STATES. TODAY, WITH THE EMPHASIS ON OPEN ACCESS TO

TRANSPORTATION SERVICES, WE EXPECT AN EVEN MORE WIDELY SPREAD UTILIZATION.

WE HAVE MENTIONED PREVIOUSLY THAT THE LONG-TERM, ASSURED SOURCE OF SUPPLY REPRESENTED BY THE PRUDHOE BAY GAS IS HIGHLY ATTRACTIVE. THESE ATTRIBUTES ARE PARTICULARLY IMPORTANT AS GAS INCREASINGLY BECOMES THE FUEL OF CHOICE FOR MAJOR ELECTRIC GENERATING PLANTS. THE SUCCESSFUL FINANCING OF MAJOR COMBINED-CYCLE AND COMBUSTION TURBINE GAS PLANTS REQUIRES ASSURANCE OF GAS SUPPLY AND REASONABLY PREDICTABLE PRICES. THE ALASKAN GAS, THROUGH THE ANGTS, CAN MEET THAT REQUIREMENT.

AS THE SO-CALLED GAS "BUBBLE" DISSIPATES OVER THE NEXT TWO YEARS, AS MOST RESPONSIBLE OBSERVERS PREDICT, THE SPOT MARKET FOR GAS PURCHASES IS LIKELY TO BECOME MORE UNPREDICTABLE AND, THEREFORE, LESS ATTRACTIVE. UNDER THESE CIRCUMSTANCES, WE FORESEE A RENEWED RECEPTIVENESS TO LONG-TERM SUPPLY ARRANGEMENTS, WHICH WILL SUPPORT BUILDING THE ANGTS.

IN SUMMARY, ALASKAN PIPELINE GAS, BASED ON REASONABLE PRICE PROJECTIONS FOR POTENTIAL ALTERNATIVES, SHOULD BE VERY SALABLE IN THE DOMESTIC MARKET DURING THE PERIOD COMMENCING ABOUT 1996. THE DELIVERED GAS WILL BE INCREASINGLY COMPETITIVE EACH YEAR THAT PASSES FROM 1996 FORWARD INTO THE NEXT CENTURY AS THE REAL PRICES OF ALTERNATIVES CONTINUE TO RISE.

IN CLOSING, I WANT TO REITERATE THE ANGTS SPONSORS' CONVICTION THAT THE PRUDHOE BAY GAS RESERVES WILL BE NEEDED BY AMERICAN CONSUMERS. ONLY THE PRECISE TIMING OF AN OVERLAND PIPELINE DELIVERY SYSTEM CANNOT BE SPECIFIED. ONE FINAL NOTE: WE ARE VERY MUCH AWARE OF YOUR INTEREST, ALONG WITH MOST OTHER

ALASKANS, IN SEEING THE NORTH SLOPE GAS BROUGHT TO MARKET AT THE EARLIEST POSSIBLE DATE. WE SHARE THAT INTEREST. WE SINCERELY BELIEVE THAT AN OVERLAND PIPELINE SYSTEM TO SERVE THE DOMESTIC U.S. MARKET REMAINS THE BEST AND THE EARLIEST POSSIBILITY TO MEET THAT OBJECTIVE. THANK YOU AGAIN MADAM CHAIRMAN.

STATEMENT OF JUDD MILLER, JR.
VICE PRESIDENT, EXXON COMPANY, U.S.A.
BEFORE THE SENATE SPECIAL COMMITTEE ON OIL AND GAS
ALASKA STATE LEGISLATURE
MARCH 10, 1989

My name is Judd Miller, Jr., Vice President of Exxon Company, U.S.A. I am responsible for Exxon's marketing and transportation of natural gas in the United States. Exxon appreciates the opportunity to testify at this hearing today on the prospects of commercializing North Slope gas.

Summary

Substantial gas reserves exist on the North Slope of Alaska. Exxon, like the state and its citizens, has a substantial interest in seeing these reserves commercialized. However, the reserves are far distant from any market. The transportation system required will be huge both in scope and magnitude of dollars required with a long lead time needed to bring the project into operation. Before such a project can move forward there must be evidence of markets and prices sufficient to provide reasonable assurance to the many participants that the investment will be sound. Today, neither an overland pipeline to the lower 48 states nor the export of liquified natural gas (LNG) to Far East markets is economic. Real growth in energy prices and in market demand will be necessary before any project to move North Slope gas reserves to market can be economic.

Since the discovery of the Prudhoe Bay field over 20 years ago, Exxon has considered and reconsidered many alternative methods of commercializing the gas reserves including a pipeline to the lower 48 states, liquefaction and shipment to domestic or foreign markets, and less conventional alternatives such as chemical conversion to methanol or petrochemical facilities at a south Alaska tidewater location. Based on these studies, Exxon believes that the best market for Alaska's North Slope gas will be the lower 48 states and that an overland pipeline will be the best mode of transportation to that market. We have serious concerns that LNG made from North Slope gas would not be competitive in Far East markets because of the large and unique pipeline investment required; an investment that competing LNG suppliers in the Far and Middle East would not incur.

Nevertheless, the Trans-Alaska Gas System (TAGS) sponsors are to be complimented for their efforts to develop an outlet for North Slope gas. Although we have serious reservations about the LNG export project, Exxon does not want to discourage anyone from proposing promising alternatives for commercializing Alaska's North Slope reserves.

Introduction

I would like nothing better than to tell you today that commercial development of Alaska's North Slope reserves is at hand. However, I cannot do that. In reality, neither an overland pipeline to the lower 48 states nor the export of LNG to Far East markets is economic at today's prices. An assured market and a substantial real growth in energy prices will be required before a project to commercialize North Slope gas reserves can be economic. Exxon believes that such a market will develop in the lower 48 states which will

ultimately be the best market for North Slope gas. We further believe that an overland pipeline is the best mode of transportation to that market.

Exxon, like the State and its citizens, has a substantial interest in seeing these reserves commercialized. Exxon has approximately a 37 percent working interest in the gas reserves in the Prudhoe Bay Field and significant interests in Point Thomson and other nearby fields. Commercialization of these reserves would provide new job opportunities, further economic development and additional revenue for Alaska, as well as substantial income for Exxon.

Project Scope and Fundamentals

The Prudhoe Bay Field alone is estimated to contain 26 Tcf of gas.¹ There is also an estimated 8 Tcf of gas in Point Thomson and other nearby fields.² Any project to commercialize reserves of that magnitude would be a major, world-scale endeavor by any standards. Whether it is an overland pipeline to the lower 48 states or the export of LNG to Far East markets, it will be one of the largest privately financed projects in the free world.

The magnitude of the financial and business undertakings are as significant as the physical scope of the facilities. Large investments will be required -- \$10 billion or more -- and the lead times will be long -- 5 or more years of substantial investment -- before a single dollar of revenue will be received and many more years before any return on the investment can be realized. Numerous interests must be brought together, including the owners of the gas on the North Slope, the buyers of the gas, the pipeline owners, governments and financial institutions. Financing will require complex arrangements involving numerous entities and will only be possible if the project's economic basis is fundamentally sound.

Investors in a project of that magnitude will require stable supplies, dependable markets and a product which can be priced at a competitive level. In addition to these market fundamentals, a stable government fiscal and regulatory environment will be essential.

Alternatives Considered to Market North Slope Gas

Since the discovery of the Prudhoe Bay Field, Exxon has considered and reconsidered many alternative methods of commercializing Alaska North Slope gas reserves. These considerations have included overland pipelines to the lower 48 states and transportation of the gas to a tidewater port for liquefaction and shipment to domestic or foreign markets. Less conventional

¹ Alaska Department of Natural Resources, Historical And Projected Oil And Gas Consumption January 1989.

² Id.

alternatives, such as chemical conversion to methanol and locating petrochemical facilities at tidewater have also been studied. Based on our consideration of many alternatives, we have consistently concluded that the best market for North Slope gas will develop in the lower 48 states and that an overland pipeline will be the most economical and efficient method for delivering the most energy to that market.

At the time the present project for an overland pipeline was selected by the President and Congress, a competing project was also considered under which North Slope gas would be transported by pipeline to a tidewater port on the southern coast of Alaska and there liquified and shipped as LNG to California. That project was ultimately rejected because an overland pipeline could transport gas more efficiently and could be expanded at lower cost than an LNG project. Following selection of the Alaska Natural Gas Transportation System (ANGTS), Exxon participated as a member of the pipeline/producer consortium performing the design and engineering of the system. We remain active in that consortium to this day.

Overland Pipeline to Lower 48 States

Studies by the American Gas Association³ and Gas Research Institute⁴ have concluded that North Slope gas can be accommodated in the lower 48 states after the year 2000 and that energy prices will increase to a level which will make North Slope gas economic. These studies indicate that the Lower 48 demand will be sufficient to accommodate all domestic gas production, imports from other countries, as well as gas from the North Slope of Alaska. Our conclusions are generally consistent with those studies. We are optimistic that an overland pipeline to deliver the gas to the lower 48 states can be constructed in the time frame indicated by the studies.

In 1988, the pipeline sponsors of the ANGTS announced a 45 percent reduction in their prior cost estimate for the ANGTS. Given the improvements in pipeline design and construction techniques since their prior estimate, Exxon agrees that the cost of building the ANGTS can be significantly reduced as suggested by the ANGTS pipeline sponsors. Further reductions in cost that would enhance the economics of transporting the gas to the lower 48 states may also be possible.

An overland pipeline is a safe and efficient means of transporting energy over long distances. In addition, an overland pipeline can be expanded at relatively low cost if needed to accommodate new discoveries. Such expansion capability would encourage exploration for new gas reserves.

³ American Gas Association, The Gas Energy Supply Outlook, October 1987.

⁴ Gas Research Institute, 1987 GRI Baseline Projection Of U.S. Energy Supply And Demand To 2010, December 1987; 1988 GRI Baseline Projection Of U.S. Energy Supply And Demand (Preliminary) August 1988.

The use of North Slope gas in the lower 48 states will enhance U.S. energy security and ensure a stable long term supply of environmentally desirable fuel. Utilization of North Slope gas to meet U.S. energy needs can back out 400,000 to 600,000 barrels per day of imported oil.

Trans-Alaska Gas System

Lately, much attention has been focused on exports of North Slope gas as LNG to markets in the Far East. Governor Hickel and the team at Yukon Pacific are to be complimented for their efforts to develop the TAGS project. The TAGS project is a complex project consisting of integrated pipeline, liquefaction, shipping and regasification facilities. The 800-mile pipeline through Alaska would, in itself, be a project rivaling the Trans-Alaska oil pipeline. The LNG facility would be one of the world's largest and would require a substantial LNG ship fleet as well.

Exxon has considered the export of North Slope gas to the Far East and I must tell you that we have serious reservations that such a project would be competitive with other supplies in that market. Because of the substantial investment required to transport North Slope gas across Alaska, the LNG from such a project would be at a severe competitive disadvantage relative to other Far East and Middle East sources of LNG that would not be burdened by such a large pipeline investment. The supplies of LNG potentially available from these other sources vastly exceed any forecasts of demand for LNG in the Far East.

I have two charts that demonstrate this graphically. The first is a map which shows the potential supplies of LNG for Far East markets. The numbers shown under each country represent that country's gas reserves expressed in trillions of cubic feet. As shown, there is a lot of gas in the Far East and Middle East. The arrows from Alaska reflect the distances that North Slope LNG would be transported using tankers that are estimated to cost 2.4 billion dollars. The dashed line across Alaska represents the 5.4 billion dollar pipeline to Valdez, which, on an investment basis, is equivalent to adding 7,600 miles to the LNG shipping distance. Thus, North Slope gas is effectively 11,000 miles from Japan. 11,000 miles is roughly equal to one-half the circumference of the earth, therefore, all else being equal, LNG from almost anywhere in the world could be delivered more economically to the Far East than North Slope gas.

The table on my next chart puts shipping distances and potential supplies for the Far East into perspective. Shown are various countries arranged by their distance to Japan. Shown for each country are its estimated total proven reserves, the reserve which may be needed to meet current contracts assuming they are extended to the year 2020, and the remaining uncommitted reserves. As you can see, there are 1,127 trillion cubic feet of uncommitted reserves that are effectively closer to Japan than Prudhoe Bay. That volume is roughly 33 times the total known reserves on the North Slope. Assuming an export volume of 14 million tons of LNG per year, the suppliers closer to Far East markets than the North Slope could deliver that volume for over 1,400 years.

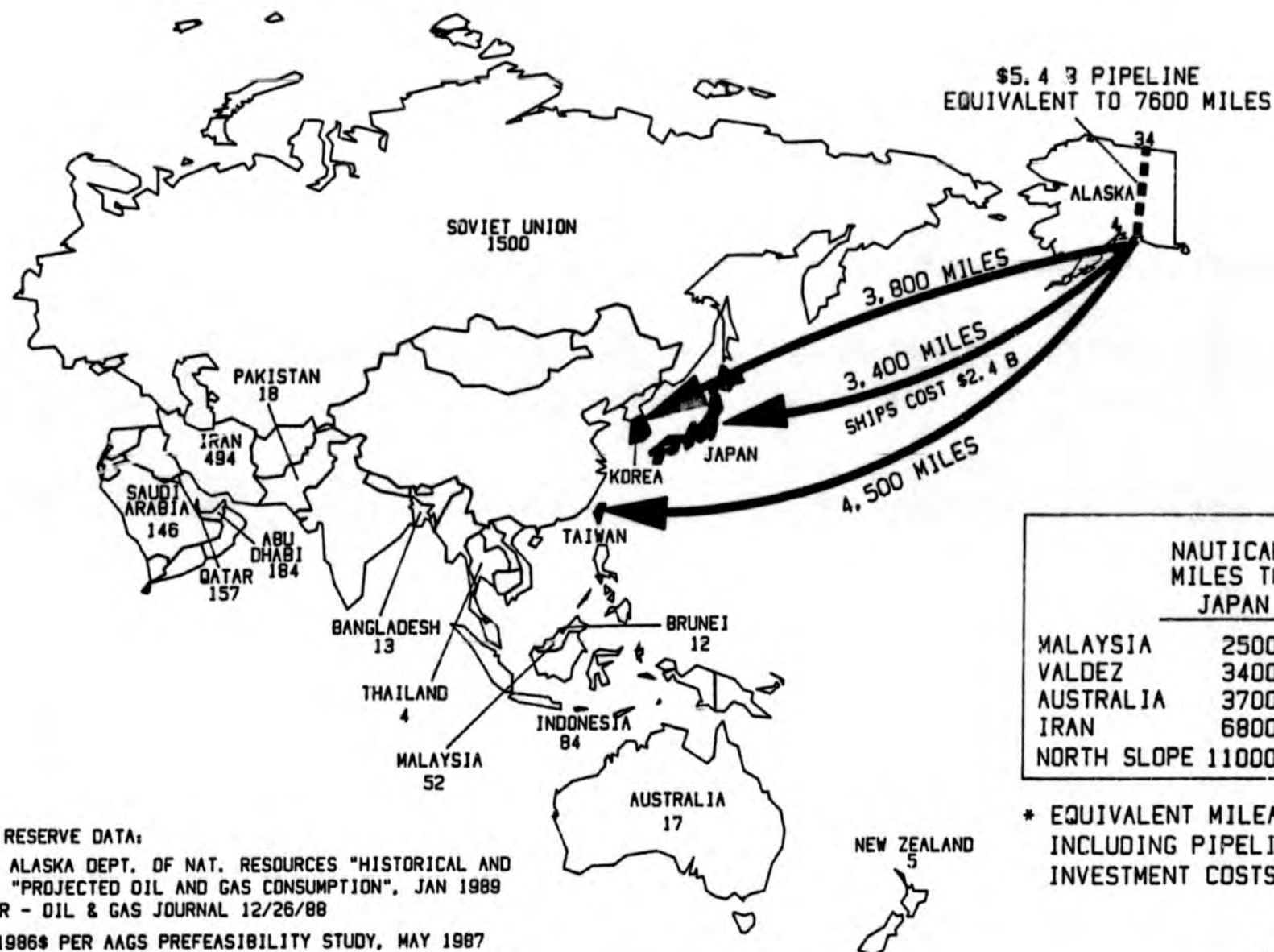
I would not want to be interpreted as suggesting that all of these reserves will be made available to Far East markets soon or even ever. However, it is clear that should Far East demand grow so that the full TAGS volume of 14 million tons of LNG per year could be accommodated, North Slope LNG would be the high cost supply in a potentially oversupplied market and thus, would not be competitive with other LNG supplies. (It should be noted that in Exxon's view, a smaller 7-8 million tons of LNG per year project would be grossly uneconomic.) It is also clear that there are ample supplies of gas in other countries that could be competitive in Far East markets.

Conclusion

Alaska's North Slope gas reserves are an important component of the energy future of both Exxon and the state of Alaska. On balance, Exxon continues to believe that an overland pipeline to the lower 48 states will be the best alternative for commercializing North Slope gas. In reaching this conclusion, numerous alternatives to bring these reserves to market have been studied. While Exxon has serious reservations about an LNG export project, we would not want to discourage anyone from proposing promising alternatives for commercializing the reserves. We will continue to examine options to market North Slope gas considering the market fundamentals against which any project must be tested.

POTENTIAL SUPPLIERS OF LNG TO FAR EAST MARKETS

XX = TCF OF RESERVES



SOURCE OF RESERVE DATA:

ALASKA - ALASKA DEPT. OF NAT. RESOURCES "HISTORICAL AND
"PROJECTED OIL AND GAS CONSUMPTION", JAN 1989

ALL OTHER - OIL & GAS JOURNAL 12/26/88

COSTS IN 1986\$ PER AAGS PREFEASIBILITY STUDY, MAY 1987
DISTANCES PER "WORLD-WIDE MARINE DISTANCE TABLES", 1976

* EQUIVALENT MILEAGE
INCLUDING PIPELINE
INVESTMENT COSTS.

LNGRES6

POTENTIAL SUPPLIERS OF LNG TO FAR EAST MARKETS

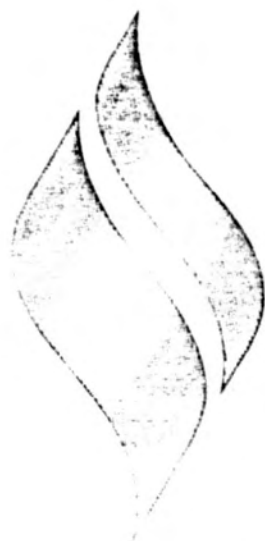
<u>COUNTRY</u>	<u>APPROXIMATE NAUTICAL MILES TO JAPAN</u>	<u>ESTIMATED PROVED RESERVES (TCF)</u>		
		<u>TOTAL</u>	<u>REQUIRED TO MEET EXISTING CONTRACTS IF EXTEND TO 2020</u>	<u>UNCOMMITTED</u>
Brunei	2400	12	9	3
Malaysia	2500	52	11	41
Indonesia	2900	84	26	58
Thailand	3000	4	-	4
U.S.-South Alaska	3400	4	2	2
Australia	3700	17	11	6
Bangladesh	4500	13	-	13
New Zealand	4800	5	-	5
Pakistan	5800	18	-	18
Abu Dhabi	6300	184	4	180
Qatar	6500	157	-	157
Saudi Arabia	6600	146	-	146
Iran	6800	494	-	494
Reserves effectively closer than North Slope:		1190	63	1127

33 TIMES THE KNOWN NORTH SLOPE
GAS RESERVES. EQUIVALENT TO
14 MT OF LNG (.8 Tcf) PER YEAR
FOR OVER 1,400 YEARS.

SOURCE OF TOTAL RESERVES DATA:

- South Alaska & North Slope - Alaska Department of Natural Resources publication entitled "Historical and Projected Oil and Gas Consumption" published January 1989.
- All others - Oil & Gas Journal 12/26/88

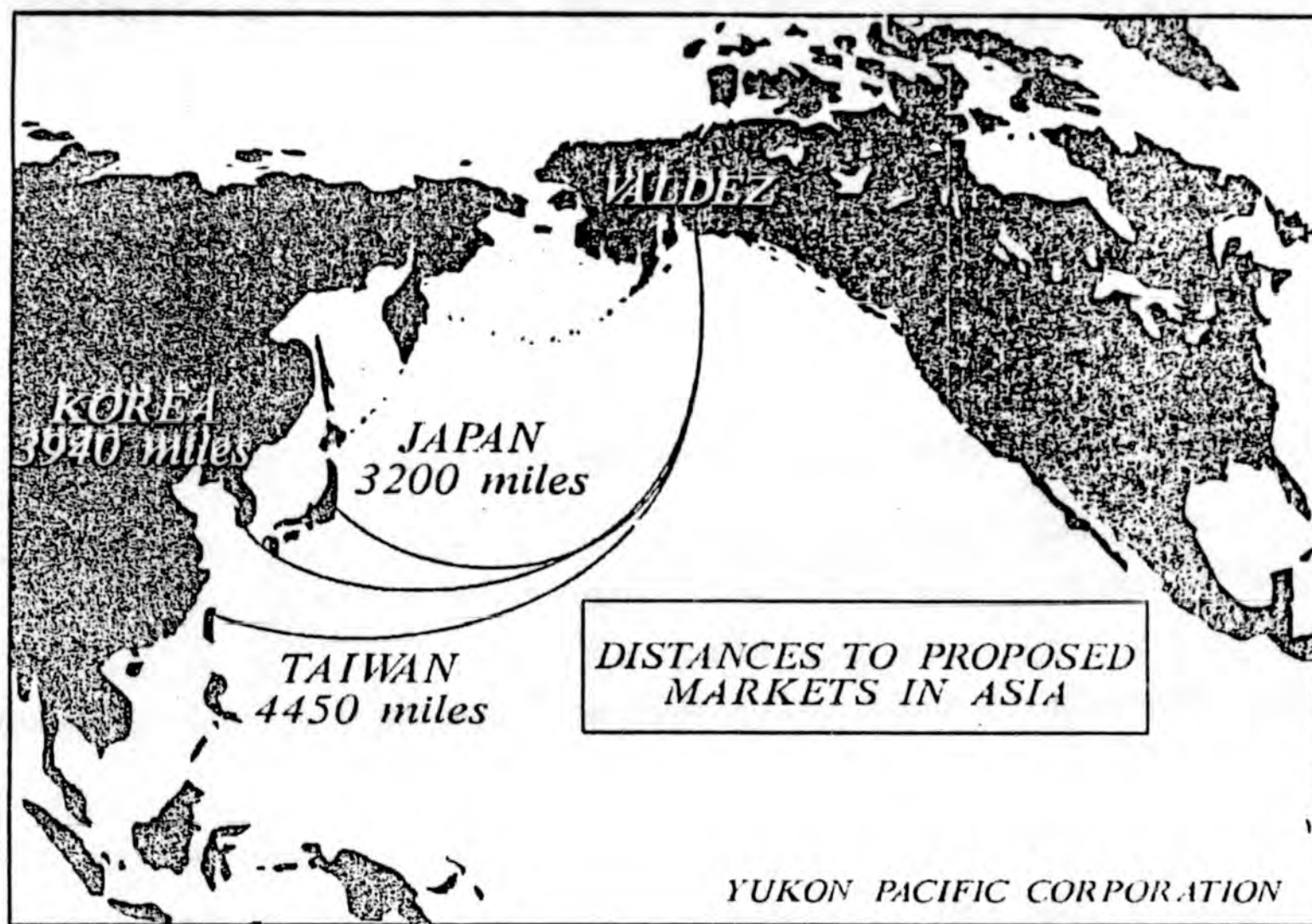
DISTANCES PER "WORLD-WIDE MARINE DISTANCE TABLES", 1976



**YUKON
PACIFIC
CORPORATION**
TRANS ALASKA GAS SYSTEM

CSX Corporation

- Majority owner of Yukon Pacific
- Major transportation company
- 1987 turnover:
\$8 billion on \$13.2 billion in assets



Phase I TAGS Permits

1. Define F.E.R.C. role ☐
2. Obtain Federal Right-of-Way
(requires Environmental Impact Statement) ☐
3. Obtain Presidential Finding
(required under ANGTA) ☐
4. Obtain State Right-of-Way ☐
5. Obtain Federal Export License ☐

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4. Obtain State Right-of-Way ☒
5. Obtain Federal Export License ☐

* Application pending, awaiting decision

YUKON PACIFIC CORPORATION TASKS

PHASE II

- o Detailed Design
- o Detailed Permitting
- o Final Cost Estimate
- o Final Contracts

Asian LNG Demand by 2000

(million tons)

	<u>Currently under Contract</u>	<u>Projected by 2000</u>		<u>Total New Demand</u>	
		1987	1989	1987	1989
Japan	34.0	38.0	48.0	4.0	14.0
Korea	2.0	3.5	8.7	1.5	6.7
Taiwan	<u>1.5</u>	<u>3.0</u>	<u>4.5</u>	<u>1.5</u>	<u>3.0</u>
TOTAL	37.5	44.5	61.2	7.0	23.7

Source: Government and Research Institute Projections in each country

Reasons for LNG Demand Growth in Asia

- Greater electricity demand than expected
- LNG more competitive, especially vs. nuclear
- Rising environmental concerns
- Diversification to reduce energy source risk
- Distribution infrastructure is growing

Alaska LNG is Competitive in Asia

- Price competitive
- Economies of scale
- U.S. a secure supplier
- Expand U.S. trade where most needed

Capital Cost Estimates

(\$ millions)

	<u>To Deliver 7MMT/YR</u>	<u>To Raise to 14MMT/YR</u>	<u>TOTAL</u>
Alaska facilities	6,816	1,824	8,640
Shipping	<u>980</u>	<u>1,120</u>	<u>2,100</u>
Total	\$7,796	\$2,944	\$10,740

Economic Feasibility

- Sales threshold of 7-8.5 mmt in mid-1990's.
- Economic studies based on \$24/bbl crude oil and LNG price of \$4/mmbtu.
- Price will fluctuate up and down with crude oil.
- Alaska does not have a posted crude oil price.

TAGS Gas Supply

North Slope Gas Reserves	36 TCF
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Undiscovered Resources	102 TCF
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Gas Ownership:

ARCO, EXXON, British Petroleum,
State of Alaska and minor owners

"Undiscovered, recoverable supplies of natural gas from Alaska's North Slope may exceed 100 trillion cubic feet."

Presidential Finding Excerpt
Yukon Pacific Corporation
Exhibit "M"

STATE INCENTIVES TO MOVE FORWARD

- Tax, Royalty Income of \$1-2 million/day.
- 10,000 Construction jobs.
- 550 Permanent jobs.
- Spur to other exploration, refining
- Alaska's largest opportunity

What can the State do to help?

- Continue International Trade Office efforts. Customers and competitors are governments; it helps for our government to lend support.
- Continue cooperative efforts in right-of-way and environmental permitting.
- Maintain stable tax climate.
- Enter into royalty gas sales discussions when appropriate.



BP EXPLORATION

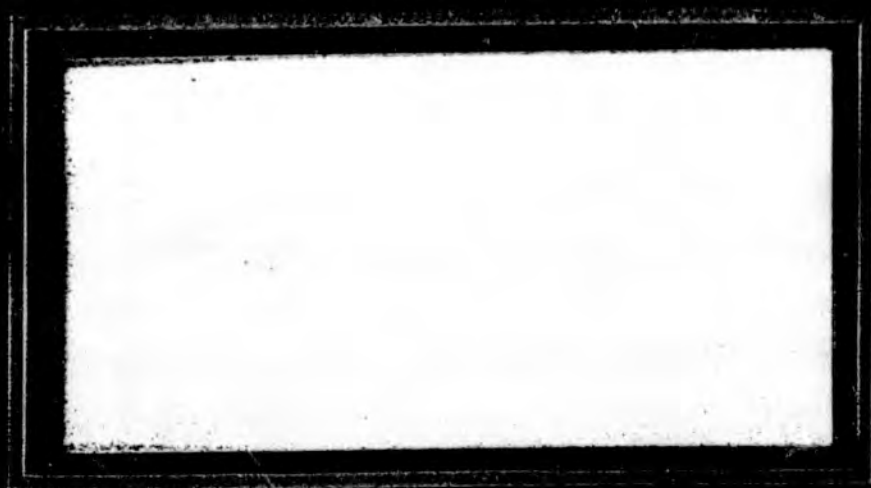
B.E. Grote
Vice President
Commercial, Alaska

BP Exploration (Alaska) Inc.
900 East Benson Boulevard
P.O. Box 196612
Anchorage, Alaska 99519-6612
(907) 564-5121

BP EXPLORATION POSITION REGARDING NORTH SLOPE NATURAL GAS

- BP Exploration is the owner of approximately 25% of the 26 trillion cubic feet of gas at Prudhoe Bay.
- We are determined to see the gas developed as soon as possible and have continuously sought out alternatives for moving the gas to market.
 - We have been a member of the ANGTS Design and Engineering Cooperative Agreement since 1980.
 - We have evaluated a wide range of options, including TAGS, since the initial delay of ANGTS announced in 1982.
- In March, 1984, we spoke before the Alaska State Legislature Joint Committee on Oil and Gas indicating our support of ANGTS as the most likely means of getting gas to market.
- While BP Exploration continues as an ANGTS participant, we now believe that the progress made by Yukon Pacific warrants full consideration.
- E.J.P. Browne, Chief Executive, BP Exploration, U.S.A., stated in February that BP is willing to work with Yukon Pacific to determine if the TAGS project is possible and would be prepared, under the right circumstances, to commit our gas to the project.
- Both ANGTS and TAGS face a number of major hurdles -- most serious of which are the uncertainties of future energy prices and the sheer scale of both projects.
- In the absence of a gas pipeline, we still strive to get maximum benefit from the gas being produced -- as fuel for field production facilities and the Trans-Alaska Pipeline, as a component of miscible injectant for enhanced oil recovery, and finally by reinjecting the remainder to maintain reservoir pressure.
- The State of Alaska can help progress North Slope gas development by working to prevent the creation of any barriers that would restrict the range of options available for consideration.

March 10, 1989



ALASKA SEGMENT

ALASKA NATURAL GAS TRANSPORTATION SYSTEM

Alaskan Northwest Natural Gas
Transportation Company

YUKON PACIFIC CORPORATION
(ERA DOCKET NO. 87-68-LNG)

CUBA WADLINGTON JR
VICE PRESIDENT
NORTHWEST ALASKAN PIPELINE CO.

JANUARY 24, 1989

UNITED STATES OF AMERICA
DEPARTMENT OF ENERGY
BEFORE THE
ECONOMIC REGULATORY ADMINISTRATION

PREPARED STATEMENT OF
CUBA WADLINGTON JR., VICE PRESIDENT FOR REGULATORY AFFAIRS
NORTHWEST ALASKAN PIPELINE COMPANY

AT PUBLIC CONFERENCE, JANUARY 24, 1989
ANCHORAGE, ALASKA
ERA DOCKET NO. 87-68-LNG (YUKON PACIFIC CORPORATION)

I. INTRODUCTION

I am Cuba Wadlington Jr., Vice President for Regulatory Affairs, Northwest Alaskan Pipeline Company, the agent and operating partner for Alaskan Northwest Natural Gas Transportation Company ("Alaskan Northwest"), the sponsors of the Alaskan segment of the Alaska Natural Gas Transportation System ("ANGTS").

The delivered gas price in the lower-48 states is a critical determinant of the feasibility and timing of an overland pipeline system from Alaska. I will explain why we are confident that the Prudhoe Bay gas will be salable to American consumers on a free-market basis, without government subsidy, and squarely within the Yukon Pacific Corporation's ("Yukon Pacific") supposed period of export (i.e., 1996-2021).

II. THE DOMESTIC MARKET FOR NATURAL GAS

I will first review the prices projected for pipeline imports and liquefied natural gas ("LNG") so that we have a basis for determining whether the ANGTS gas reasonably could be competitive with these potential alternatives. All prices are at the U.S. lower-48 border.

The "acquisition prices" of pipeline imports and LNG have been projected to 2010 by the Gas Research Institute ("GRI"), a highly respected analytical organization whose forecasts are widely used in industry and government.

GRI's Acquisition Prices of Natural Gas ^{1/} (1987 Dollars/ million Btu)

	1987	1988	1990	1995	2000	2005	2010
Pipeline Imports	2.14	2.16	2.67	3.20	3.86	5.08	6.37
LNG	3.04	2.96	2.83	3.20	4.10	5.46	6.80

From these data, a rising trend in real prices is clearly evident, and LNG imports generally are more expensive than pipeline imports. It is important to note that GRI forecasts an increasing total domestic demand for natural gas through 2010 despite this increase in real prices. With these figures as a background for comparison purposes, I will address the price and marketability of Alaskan gas as delivered by pipeline through

^{1/} Gas Research Institute, Baseline Projection Data Book; 1988 GRI Baseline Projection of U.S. Energy Supply and Demand to 2010, Washington, D.C., released Fall 1988, p. 344. "Acquisition price," as defined by GRI, is the weighted average price for each of the supply sources at the point of entry into the U.S. pipeline transportation system. To facilitate comparison with the projected ANGTS prices, the GRI figure of 3.20 for 1995 converts to \$3.32 for 1996 (a 3.82% escalation, specified by GRI).

Canada to the U.S. border.

Before doing so, I would observe that expert gas market analysts reasonably might differ over any particular forecast of gas prices, which necessarily are based on assumptions regarding future economic growth, world oil prices, etc.

Of overriding importance, however, is the fact that there is a consensus among qualified observers that the real price of both lower-48 gas production and imports will rise over the years ahead. Only the rate of increase may differ. ^{2/} This fact, as I will demonstrate, virtually assures the domestic marketability of Alaskan pipeline gas and leaves open only the question of specific timing.

III. MARKETABILITY OF ALASKAN PIPELINE GAS

A. The Levelized Cost of Service Concept

Salability of Alaskan pipeline gas domestically will be determined primarily by: (1) capital costs of the pipeline system and (2) the wellhead price of the gas. Within reasonable limits, steps can be taken to facilitate and perhaps accelerate marketability by introducing flexibility in cost recovery. To do so, we plan to modify, i.e., "levelize," the traditional cost

^{2/} See, for example, Energy Information Administration ("EIA"), U.S. Department of Energy, Annual Energy Outlook 1987 With Projections to 2000, October 1987, pages 28, 35, 40. EIA, on page 28 also presents forecasts by Data Resources, Inc. and the Wharton Econometric Forecasting Associates. See also Washington Policy and Analysis, Natural Gas: A Strategic Resource for the Future, November 28, 1988, p. 16.

recovery pattern which starts high and steeply declines as facilities are depreciated. Levelization is accomplished by deferring the recovery of certain costs to later years. Since the levelized approach starts with a much lower rate, salability of the Alaskan gas at market clearing prices can be assured. We have long planned to implement this concept, which was first elaborated upon publicly in our testimony before the Congress in November 1983. ^{3/}

The levelization concept consists of two elements. First, some part of the wellhead price is deferred in the early years to be made-up with payments in later years. The gas producers obviously will want to be satisfied that they can obtain a satisfactory return over the life of the project. Second, transportation cost recovery is reduced in the early years by partially deferring depreciation and by capitalizing return on equity. These two elements can be combined in varying degrees to achieve a target price, i.e., the market clearing price for natural gas.

B. Revised Capital Cost Estimate for the ANGTS

In May 1988, the Canadian and U.S. sponsors of the ANGTS completed an important reestimate of the capital cost of the remaining elements of the ANGTS. The study drew upon an extensive body of proprietary and confidential information

^{3/} See Testimony of Vernon T. Jones, before the Subcommittee on Energy Regulation of the Energy and National Resources Committee, U.S., Senate, November 16, 1983, prepared statement, pages 37-40.

developed since the earlier cost estimate prepared in the late 1970s and early 1980s. It took into consideration:

- advances in pipeline design,
- information gathered from extensive field testing programs and optimization studies conducted by the project sponsors, and
- significant changes in the economic climate.

The result was a dramatically lower cost estimate, resulting in part from the following:

- reduced construction schedule,
- improved welding technology,
- more traditional owner/contractor functions,
- use of existing communication systems,
- reduced contingency,
- higher pressure, smaller diameter mainline pipe, but higher gas throughput, and
- more modest rate of inflation and steady interest rates.

Expressed in January 1, 1988 dollars, the capital cost of the project, including the North Slope conditioning plant together with the remaining pipeline segments in Alaska, Canada and the lower-48 states, was estimated at \$14.6 billion, compared to \$26.1 billion in the earlier estimate--a 45% reduction. This, in turn resulted in a new cost of the pipeline delivery service.

C. Revised Cost of Service for the ANGTS

Based on the new capital cost estimate, a traditional, initial cost of service of \$3.90 per million Btu in 1987 dollars

for a 1996 in-service date first was derived. ^{4/} We then structured a levelized cost of service in which the initial cost commences at a substantially lower rate and remains level in real dollars for a number of years. Although the levelized cost figure that we determined appears reasonable as an example, the actual scheduling of costs to be deferred would be the subject of negotiations between all parties concerned, including regulatory authorities. The levelized figure that we arrived at is \$2.44 per million Btu at the lower-48 border, which does not include recovery of the gas price.

I will now compare the ANGTS levelized transportation cost of service for a 1996 in-service date to the projected border prices of pipeline imports and LNG for the same year, which will indicate how much latitude there is for wellhead price recovery in the initial year of operation.

Cost Comparison-Year 1996
(1987 dollars, million Btu)

Pipeline Imports & LNG	\$3.32
ANGTS Transportation	
Levelized Cost of Service	<u>-2.44</u>
Amount available for	\$0.88
Initial Gas Price	
Netback	

^{4/} See Northwest Alaskan Pipeline Company, New Transportation Economics for Alaskan Gas, June 1988. (Copy attached as Exhibit A.) The cost of service prices specified therein, expressed in January 1, 1988 dollars, have been converted to 1987 dollars for use in this testimony to facilitate comparisons. Further, the ANGTS cost of service is specified at the border between Canada and the lower-48 in this testimony which also will facilitate comparisons. All cost of service figures include recovery of financing costs, including interest and an allowance for equity funds used during construction.

The \$3.32 figure is GRI's projected price, adjusted to 1996 (see f.n. 1 supra). By subtracting the \$2.44 ANGTS levelized transportation cost from \$3.32, as shown, the difference of \$0.88 would be available to commence recovery of the ANGTS wellhead price. It must be kept in mind, of course, that the levelization concept allows for full recovery of both the wellhead price and all transportation costs in subsequent years.

Up till now, I've used a 1996 initial in-service date as an example. The ANGTS gas would be competitive at that time based on the projected prices; however, the specific date that the Alaskan gas will flow will be determined by actual developments in the market place. In this regard, several key factors will make the ANGTS gas much more salable--even without a levelized cost of service--as time goes on. They are:

- the capital costs of the "prebuilt," operating portions of the system (about 1/3 of the total mileage) continue to be depreciated, thus resulting in a progressively lower transportation cost of service.
- the real cost of gas imports, LNG, and other alternatives is projected by most observers to rise substantially over time, as I've previously documented. On the other hand, both the Prudhoe Bay gas price and the pipeline construction costs should remain essentially level in real dollar terms. The Prudhoe Bay gas, it should be noted, will incur virtually no additional production or gathering costs. The net effect is to make Alaskan pipeline gas progressively more attractive than potential alternatives

in the years ahead.

We have previously placed in the record the reestimated ANGTS costs in comparison with the figures for the potential alternatives presented in the study done for Yukon Pacific by Dames & Moore and Decision Focus, Inc. ("D & M Report"). ^{5/} It is crystal clear from that comparison that Alaskan pipeline gas will achieve a substantial, increasing price advantage during the period 1997 through 2017. By 2007, the ANGTS gas will be 37% less expensive than Mexican imports, 36% less than LNG imports, and 8% less than Canadian imports. By 2017 the ANGTS advantage widens considerably, and its delivered cost then will be less than even the wellhead price of most domestically produced gas.

D. Marketing Concept for Alaskan Pipeline Gas

The ANGTS sponsors recognize clearly the radically altered domestic gas market today as compared to the late 1970s when the Alaska gas pipeline project was initiated. At that time, a handfull of major interstate gas transmission companies planned to purchase the Prudhoe Bay gas for resale from their own inventory. Today, with the emphasis on open access to transportation services and competition among suppliers, a new approach is required. In short, the major end users of the gas, i.e., local distribution companies ("LDCs"), certain electric

^{5/} See Alaskan Northwest's Reply Comments to the ERA, Docket 87-68-ING, September 23, 1988, pages 29-31. The D & M Report is in Yukon Pacific's Initial Comments of August 24, 1988, Exhibit R, Table 6-7 on page 6-30.

utility systems, and possibly major industrial users need to be key elements in bringing the Alaskan gas to market.

We have noted previously that the long-term, assured source of supply represented by the Prudhoe Bay gas is highly attractive. These attributes will be particularly important as gas increasingly becomes the fuel of choice for major electric generating plants. The successful financing of major combined cycle and combustion turbine gas plants requires assurance of gas supply and reasonably predictable prices. Gas supply contracts of 15 years or more typically are demanded, but currently are not always available.

As the gas "bubble" dissipates over the next two years, as most responsible observers predict, ^{6/} the spot market for gas purchases is likely to become more unpredictable and, therefore, less attractive. Under these circumstances, we foresee a renewed receptiveness to long-term supply arrangements.

Our concept is that, at the appropriate time, we will establish a group of, say, 30-40 selected LDCs, utilities, and possibly major industrial users who will provide letters of intent to purchase the gas and some degree of financial participation in the project. An expanded group of transmission companies would also be included, along with the North Slope producers.

With such an expanded group, the individual risk and the financial contribution from each participant would be lessened

^{6/} See, for example, EIA, Annual Energy Outlook 1987, p. 13.

considerably in contrast to the approach of the 1970s.

IV. SUMMARY-CONCLUSION

Alaskan pipeline gas, based on reasonable price projections for potential alternatives (e.g., pipeline imports, LNG), should be very salable in the domestic market during Yukon Pacific's proposed period of export. The delivered gas will be increasingly competitive each year that passes from 1996 forward into the next century as the real prices of alternatives continue to rise.

The sponsors expect to use a levelized cost of service to recover costs which will help ensure sale of the gas at market clearing prices.

Establishment of a new grouping of major gas users together with the transmission companies and the producers will be explored as a means of facilitating project remobilization.

Finally, since the gas reasonably will be salable domestically on a free-market basis, it is indisputable that American consumers will have to pay higher prices or make use of less desirable energy sources if Alaskan pipeline gas is not available.

THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

**NEW
TRANSPORTATION
ECONOMICS
FOR
ALASKAN GAS**



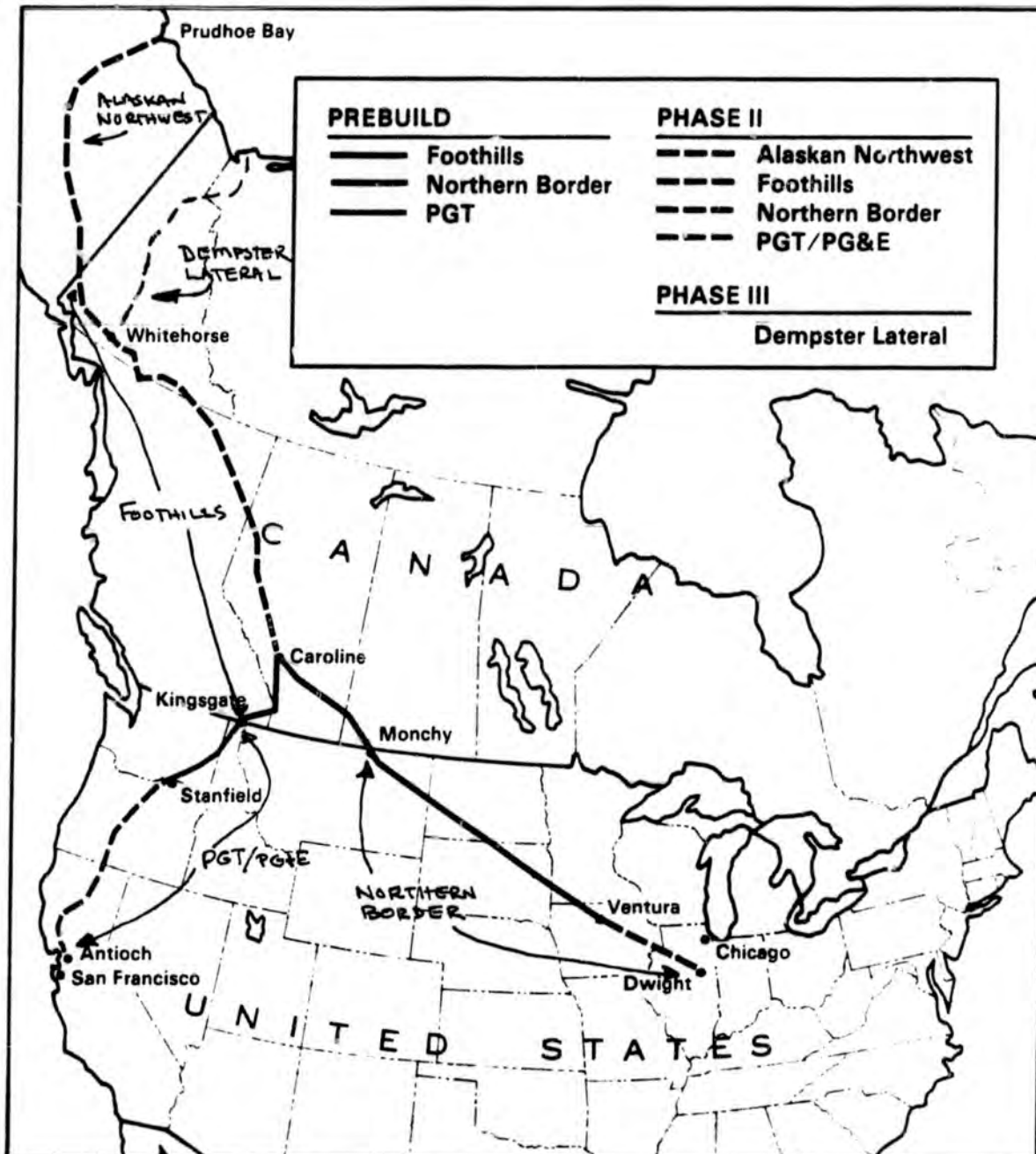
NORTHWEST ALASKAN PIPELINE COMPANY

**Operator For
Alaskan Northwest Natural Gas Transportation Company**

JUNE 1988

Exhibit A

THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM



THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

OVERVIEW

- Alaskan Northwest Natural Gas Transportation Company (ANNGTC) is the U.S. sponsor for the Alaskan segment of the Alaska Natural Gas Transportation System (ANGTS), and Foothills Pipe Lines (Yukon) Ltd. is the Canadian sponsor of ANGTS, a project selected in both the United States and Canada as the most effective and environmentally sound means to deliver Alaskan gas reserves to the lower 48 United States. The ANGTS is the subject of a bilateral agreement between the United States and Canada and legislation in both countries which provides for the expeditious approval and construction of the project.
- In the early 1980's, the Phase I or Prebuild portion of the ANGTS was constructed and placed into operation for the delivery of Canadian gas in advance of the transportation of Alaskan natural gas. This represents completion of approximately one-third of the ANGTS.
- The project sponsors remain committed to the timely construction of the northern or Phase II portions of the system. The securing of governmental/regulatory approvals to date in combination with the completion of a substantial portion of project engineering design and the technical knowledge acquired from pre-construction field studies will enable the ANGTS sponsors to construct the remaining portion of the project in the most expeditious time frame possible.
- In early 1987 ANNGTC and Foothills decided to conduct a reassessment of project design, capital cost estimates and related cost of service. The re-estimate has resulted in significant reductions in the cost of transporting Alaskan gas to lower 48 markets. These lower costs incorporate advances in pipeline design and information gathered from extensive field testing programs conducted by the project sponsors as well as the significant changes in the economic climate from earlier estimates.
- The information concerning the capital cost re-estimate and cost of service provided in the remainder of this document indicates why the project sponsors believe that the ANGTS will be completed in accordance with the Agreement on Principles between the United States and Canada.

THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

**COMPARISON OF CAPITAL COSTS FOR PRUDHOE BAY
GAS**

(BILLIONS OF \$'s)

	<u>1982 \$</u>	<u>January 1, 1988 \$</u>	
	<u>1982</u>	<u>1982</u>	<u>1988</u>
ALASKAN SEGMENT	\$14.2	\$15.6	\$ 7.2
CANADIAN SEGMENT	7.9	8.2	5.6
LOWER 48 STATES	<u>2.1</u>	<u>2.3</u>	<u>1.8</u>
TOTAL	<u>\$24.2</u>	<u>\$26.1</u>	<u>\$14.6</u>

% Reduction from 1982 estimate (expressed in 1988 dollars)	45%
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THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

1982 VERSUS 1988 ASSUMPTIONS

GENERAL	1982 BASELINE ESTIMATE	1988 RE-DESIGN ESTIMATE
Flow	2100 MMCFD	2300 MMCFD
Pipe diameter	48" 56"	42"/48"
Pressure	1260 /1080 psig	2160 /1680 psig
Mainline provision for future Delta flow	Yes	Yes
Economic forecast	High interest and inflation rates beyond 1982	More modest rate of inflation and steady interest rates

KEY FACTORS CONTRIBUTING TO REDUCTION IN CAPITAL COSTS ESTIMATE

(1988 ESTIMATE FROM 1982 ESTIMATE)

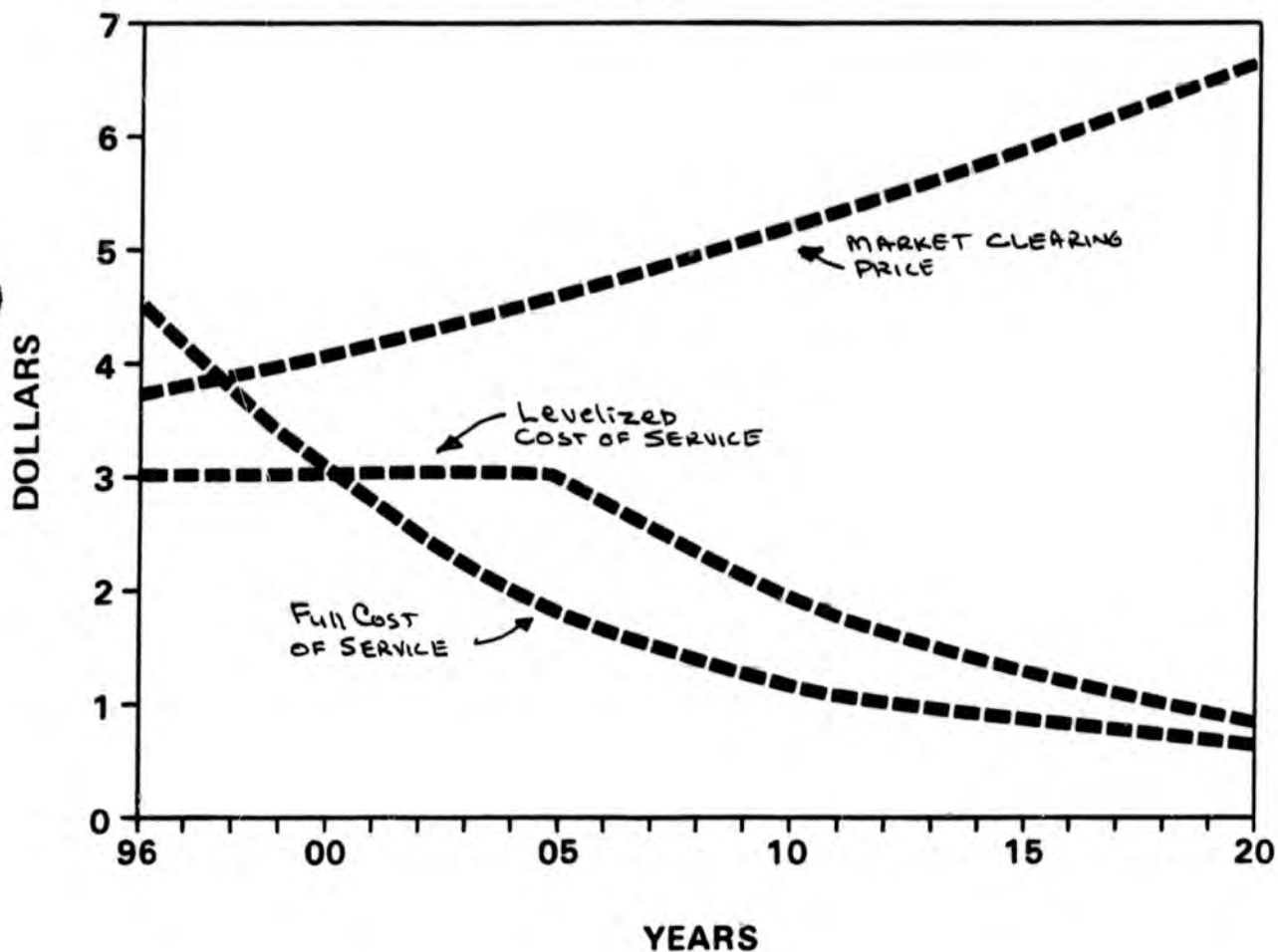
- Reduced construction schedule.
- Incorporation of results from project test sites.
- Advancements in pipeline design.
- Improved welding productivity.
- More traditional owner/contractor functions.
- Use of existing communication systems.
- Reduced contingency.

THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM
COMPARISON OF COST OF SERVICE
1988 \$/MMBTU - PRUDHOE TO LOWER 48

	<u>1996 In-Service</u>	
	<u>Full Cost</u>	<u>Levelized Cost</u>
ALASKAN SEGMENT	\$2.33	\$1.48
CANADIAN SEGMENT	1.76	1.06
LOWER 48 STATES	<u>.51</u>	<u>.51</u>
TOTAL COST OF SERVICE TO LOWER 48 STATES	<u>\$4.60</u>	<u>\$3.05</u>

THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM
COMPARISON OF COST OF SERVICE
1988 \$/MMBTU - PRUDHOE TO LOWER 48

- Market Clearing Price, 2.5% Real Growth - MMBtu
- Full Cost of Service
- Levelized Cost of Service





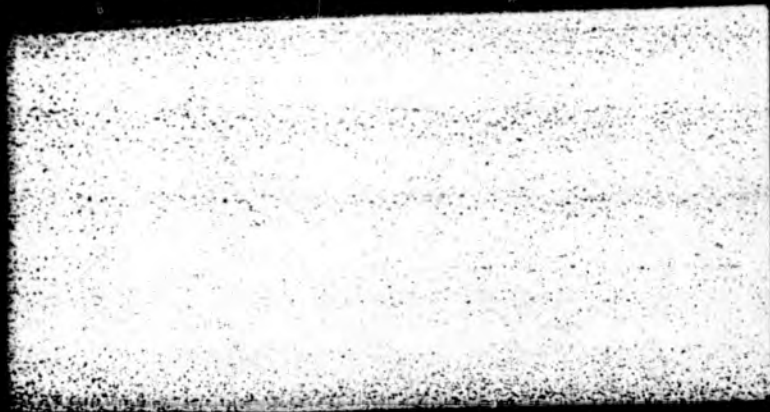
NORTHWEST ALASKAN PIPELINE COMPANY

**Operator For
Alaskan Northwest Natural Gas Transportation Company**

**295 Chipeta Way
Salt Lake City, UT 84108-1281**

THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM
PROGRESS TO DATE — ACCOMPLISHMENTS

- Alaska Natural Gas Transportation Act of 1976 enacted by Congress and signed by the President.
- Agreement on Principles between the United States and Canada applicable to the ANGTS was executed in September, 1977 for a minimum term of 35 years.
- ANGTS approved by Presidential decision and ratified by Congress in 1977.
- Certificates of public convenience and necessity granted to Foothills and conditional certificates to ANNGTC following public hearings before the National Energy Board in Canada and the Federal Power Commission in the United States.
- Northern Pipeline Act enacted by the Canadian Parliament in April, 1978 formally granting Canadian certificates to Foothills.
- Thirty-year federal right-of-way for Alaskan segment granted in 1980.
- Congressional waiver of U.S. laws in 1981 to assist project financing.
- In 1981 and 1982, respectively, the Western and Eastern Legs of Phase I of the ANGTS were completed.
- In 1983, Foothills granted a right-of-way in Yukon by easement agreement with the Government of Canada for a period of 25 years with an option to renew for 24 additional years. Easement conditional upon receipt of ministerial consent to commence initial construction, recently extended to November, 1992.
- A substantial portion of major pipeline engineering design has been completed.



ALASKA NATURAL GAS TRANSPORTATION BY PIPELINE

Alaska Northwest Natural Gas
Transportation Company

YUKON PACIFIC CORPORATION
(ERA DOCKET NO. 87-68-LNG)

SUPPLEMENTAL COMMENTS RELATING TO
JANUARY 24, 1989 CONFERENCE

UNITED STATES OF AMERICA
DEPARTMENT OF ENERGY
ECONOMIC REGULATORY ADMINISTRATION

YUKON PACIFIC CORPORATION

ERA DOCKET NO. 87-68-LNG

SUPPLEMENTAL COMMENTS RELATING TO
JANUARY 24, 1989 CONFERENCE

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Dated: February 7, 1989

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Exhibit A	Energy Information Adminis- tration, <u>U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves, 1987 Annual Report, October 1988</u>
Exhibit B	Alaska Oil and Gas Conservation Commission, <u>Bulletin, "Estimate of Gas Reserves in Alaska," May 1988</u>
Exhibit C	Alaska Department of Natural Resources, <u>Historical and Projected Oil and Gas Consumption, January 1989</u>
Exhibit D	Gas Research Institute, <u>1988 Baseline Projection of U.S. Energy Supply and Demand to 2010 (Draft 1/10/89), December 1988</u>