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Alaska Natural Gas Transportation System

Alaska Segment

Gasline Planning Update

Number 1

September 1981

Northwest Alaskan Pipeline Company
Manpower & Impact Planning Department
701 Douglas Avenue
Fairbanks, Alaska 99701

FOREWORD

The manpower statistics and other information which follow are intended to assist Alaska residents, businesses and government agencies in planning for construction of the gas pipeline project. This publication will be issued quarterly to keep you informed of new project developments.

If you would like to receive this "Gasline Planning Update" on a regular basis, complete and mail in the postcard which accompanies this publication.

Alaska Natural Gas Transportation System
Alaska Segment

GASLINE PLANNING UPDATE

Number 1

September 1981

EXECUTIVE SUMMARY

Page

I. CURRENT MANPOWER STATISTICS: Two hundred people were working on the project in Alaska as of September 1, 1981. Total project manpower (Alaska and Lower 48) for 1981 peaked in March at 1,478 people. 1

II. ALASKA MANPOWER PROJECTIONS: Alaska manpower requirements for the project are expected to peak in 1985 at more than 13,000 people. 8

III. PROJECT SCHEDULE: Pipeline camp construction is scheduled to begin in 1983; pipeline spread construction in 1984, and compressor and metering station construction in 1985. Project completion is scheduled for fall 1986. 11

IV. ALASKA FIELD PROGRAM SUMMARY -- 1981: The major engineering field programs this year were borehole drilling, surveys of the proposed alignment, and installation of several frost heave test sites. Environmental programs included studies of raptors, waterbirds, Dall sheep, fisheries and archeological resources. 12

V. LOGISTICS PLANNING: An estimated 1.8 million tons of material will move into and within Alaska during construction of the gasline. Thirty-four percent of the commodity movements will be mainline pipe, 35 percent petroleum products and 31 percent other materials. 20

Page

VI. ALASKA GAS CONDITIONING FACILITY: Sealifts of conditioning modules to Prudhoe Bay are scheduled to begin in 1983. The Alaska workforce for the facility is expected to peak at 1,000 to 1,200 people. 25

VII. FAIRBANKS HOUSING TRENDS: In July 1981, 262 single-family homes, condominiums and duplexes were for sale in Fairbanks at a median asking price of $96,000. A survey of 20 major modern rental complexes in June 1981 found no vacant units, although 4.2 percent of the units turned over during the month. 29

VIII. COMMUNITY PROFILE EVALUATION: A survey, made in conjunction with socioeconomic profiles which were published by Northwest Alaskan for six communities along the gasline route, found that the top two gasline information needs cited by respondents were employment and training opportunities. 39

APPENDICES

Gasline Project -- System Map

Alaska Segment Map

I. CURRENT MANPOWER STATISTICS

As of September 1, 1981, there were 200 people working on the gasline in Alaska: 57 Northwest Alaskan employees, 51 Fluor and 92 contractor and consultant personnel (see Table I-1). Seventy-two percent of the September 1, 1981 project workforce in Alaska were Alaska hires (see Table I-2).

During July 1981, 380 people were employed on the project: 11 percent officials and managers, 32 percent professionals, 11 percent technicians, 9 percent clerical workers and 37 percent craft, labor and service workers (see Table I-3). Twenty-two percent of the persons employed in July 1981 were females (see Table I-4).

In 1981 full-time equivalent manpower for the Alaska segment peaked in March with 579 personnel in Alaska and 899 in the Lower 48 for a total of 1,478 people (see Table I-5).

In August the Federal Inspector for the Alaska Natural Gas Transportation System approved the Affirmative Action Plan (AAP) for the Alaska segment of the pipeline. The plan, which applies to the company, its contractors and subcontractors, sets employment goals for each of four minority groups and for females for each job group. Employment percentage goals for minorities and females for 1981 are given in Table I-6.

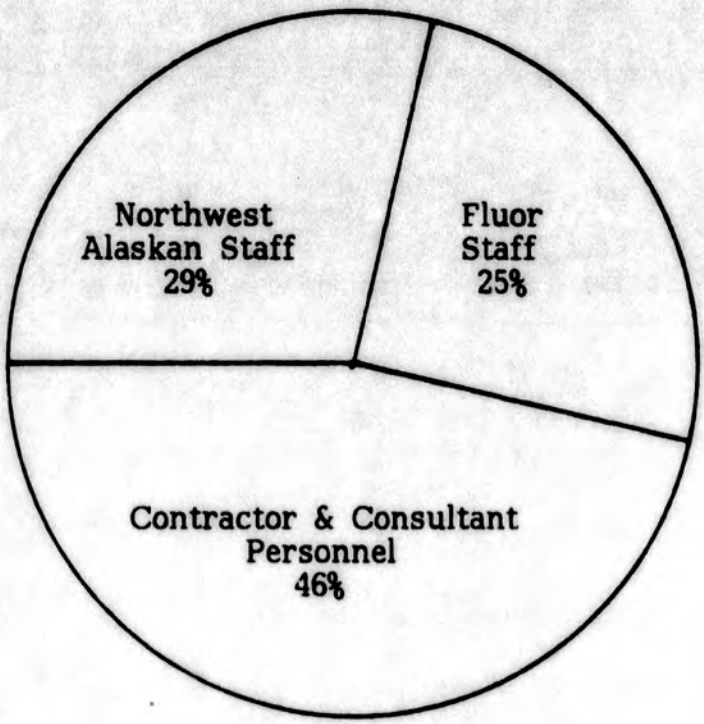
The AAP also sets goals for contracting to minority and female business enterprises. The 1981 goal for minority business enterprise participation is $31 million and the goal for female firms is $4 million.

I - 1

Alaskan Natural Gas Transportation System

ALASKA MANPOWER BY EMPLOYER

September 1, 1981



Employer	Number	Percent
Northwest Alaskan	57	29%
Fluor	51	25%
Contractors & Consultants	92	46%
Total Manpower	200	100%

Source: Northwest Alaskan Pipeline Company.

Alaska Natural Gas Transportation System

ALASKA MANPOWER BY PLACE OF HIRE

September 1, 1981

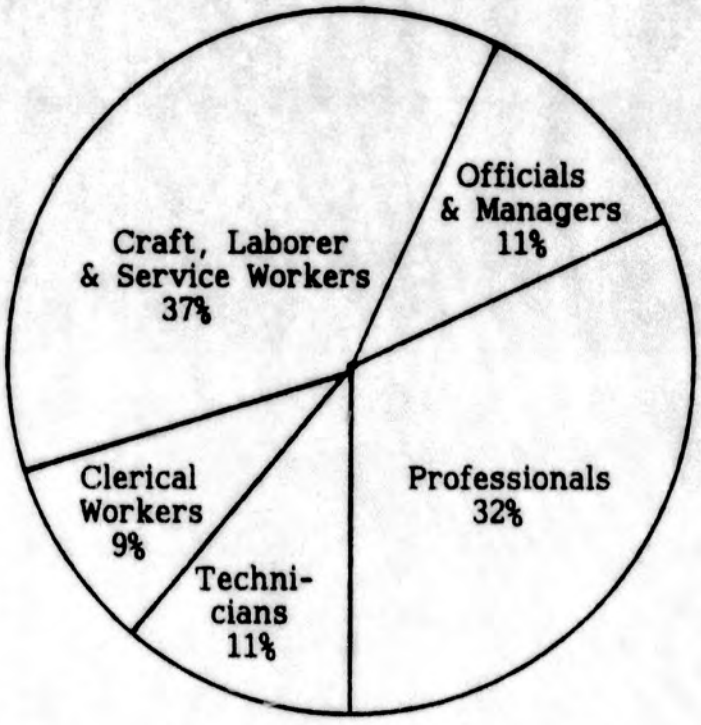
	---Alaska Hires---		- Lower 48 Hires--		
	Number	Percent	Number	Percent	Total
Northwest Alaskan					
Officials & Managers	4	33%	8	67%	12
Professionals	14	61%	9	39%	23
Technicians	9	82%	2	18%	11
Clerical Workers	11	100%	-	-	11
Sub-Total	38	67%	19	33%	57
Fluor					
Officials & Managers	1	17%	5	83%	6
Professionals	7	30%	16	70%	23
Technicians	12	92%	1	8%	13
Clerical Workers	9	100%	-	-	9
Sub-Total	29	57%	22	43%	51
Contract Personnel					
Officials & Managers	9	100%	-	-	9
Professionals	24	60%	16	40%	40
Technicians	6	100%	-	-	6
Clerical Workers	4	100%	-	-	4
Craft & Service Workers	33	100%	-	-	33
Sub-Total	76	83%	16	17%	92
Total					
Officials & Managers	14	52%	13	48%	27
Professionals	45	52%	41	48%	86
Technicians	27	90%	3	10%	30
Clerical Workers	24	100%	-	-	24
Craft & Service Workers	33	100%	-	-	33
TOTAL	143	72%	57	28%	200

Source: Northwest Alaskan Pipeline Company.

Alaska Natural Gas Transportation System

ALASKA EMPLOYMENT OPPORTUNITIES* BY JOB CLASSIFICATION

July 1981



Job Classification	Number	Percent
Officials & Managers	43	11.3%
Professionals	123	32.4%
Technicians	40	10.5%
Clerical Workers	35	9.2%
Craft (Including Operatives)	120	31.6%
Laborers	15	3.9%
Service Workers	4	1.1%
Total	380	100.0%

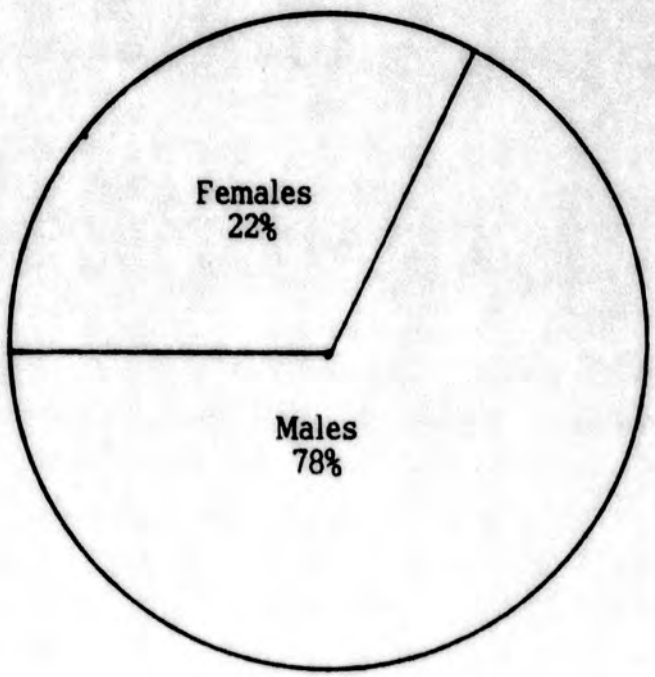
*Includes all persons employed during the month.

Source: Northwest Alaskan Pipeline Company.

Alaska Natural Gas Transportation System

ALASKA EMPLOYMENT OPPORTUNITIES* BY SEX

July 1981



	-----Males------		----Females-----		
Job Classification	Number	Percent	Number	Percent	Total
Officials & Managers	36	83.7%	7	16.3%	43
Professionals	104	84.6%	19	15.4%	123
Technicians	22	55.0%	18	45.0%	40
Clerical Workers	4	11.4%	31	88.6%	35
Craft (Including Operatives)	113	94.2%	7	5.8%	120
Laborers	15	100.0%	0	0.0%	15
Service Workers	2	50.0%	2	50.0%	4
TOTAL	296	77.9%	84	22.1%	380

*Includes all persons employed during the month.

Source: Northwest Alaskan Pipeline Company.

Alaska Natural Gas Transportation System
Alaska Segment

TOTAL PROJECT MANPOWER*

1981, By Month

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Northwest Alaskan								
Alaska	42	56	52	57	60	57	57	56
Lower 48	143	161	158	165	163	161	161	162
Sub-Total	185	217	210	222	223	218	218	218
Fluor								
Alaska	42	83	80	81	82	78	58	50
Lower 48	282	355	346	385	344	299	244	222
Sub-Total	324	438	426	466	426	377	302	272
Joint Venture**								
Alaska	15	44	70	48	48	43	37	19
Lower 48	140	176	238	222	223	172	152	129
Sub-Total	155	220	308	270	271	215	189	148
Other Contractors & Consultants								
Alaska	158	315	377	278	175	168	141	106
Lower 48	98	117	157	163	109	88	78	74
Sub-Total	256	432	534	441	284	256	219	180
Totals								
Alaska	257	498	579	464	365	346	293	231
Lower 48	663	809	899	935	839	720	635	587
TOTAL PROJECT	920	1,307	1,478	1,399	1,204	1,066	928	818

*Full-time equivalent manpower.
**Gulf Interstate/Michael Baker, JV.

Source: Northwest Alaskan Pipeline Company.

Alaska Natural Gas Transportation System
Alaska Segment

PROJECT EMPLOYMENT GOALS*

(As of July 1981)

Job Classification	Minority	Female
Officials & Managers	7.8%	13.8%
Professionals	9.4%	5.4%
Technicians	12.6%	9.4%
Clerical Workers	19.0%	45.6%
Service Workers	23.9%	30.0%
Craft Workers	17.5%	3.4%
Laborers	21.5%	5.5%
Operatives	12.3%	3.3%

PROJECT 1981 MINORITY & FEMALE BUSINESS ENTERPRISE GOALS**

1981

Minority Goal	Female Goal
$31 Million	$4 Million

*Includes Alaska and Lower 48; employment goals shown are averages of the job groups for the respective job categories.

**Includes Alaska and Lower 48; is based on contract opportunities of $208 million.

Source: Northwest Alaskan Pipeline Company.

II. ALASKA MANPOWER PROJECTIONS

Gasline manpower in Alaska is expected to reach 2,550 workers in 1983 when camp construction begins. Project employment is expected to peak at approximately 13,200 workers in 1985 when both pipeline spread and compressor station construction are underway. In 1986 peak employment is expected to reach about 9,100 in the second quarter, with gas flow scheduled for fall of that year. During demobilization of the construction workforce in 1987, the peak is estimated to be 770 people. Figure II-1 gives quarterly estimates of project manpower from 1982 through 1987.

During operation of the gasline there will be approximately 30 management/administrative personnel and 25 operations personnel in Fairbanks. About 100 additional personnel will work out of the following four district maintenance centers:

District	Area Covered	Location
1	Mile Post 1 to 179	Compressor Station No. 2
2	Mile Post 179 to 381	Compressor Station No. 7
3	Mile Post 381 to 579	Fairbanks Maintenance Center
4	Mile Post 579 to 741	Compressor Station No. 15

II - 1

Alaska Natural Gas Transportation System

ALASKA MANPOWER REQUIREMENTS

1982-1987, By Quarter

1982

1st Qtr	190
2nd Qtr	280
3rd Qtr	280
4th Qtr	260

1983

1st Qtr	900
2nd Qtr	2,300
3rd Qtr	2,550
4th Qtr	2,500

1984

1st Qtr	4,400
2nd Qtr	6,900
3rd Qtr	8,200
4th Qtr	6,000

1985

1st Qtr	8,900
2nd Qtr	13,200
3rd Qtr	12,300
4th Qtr	7,000

1986

1st Qtr	8,500
2nd Qtr	9,100
3rd Qtr	4,900
4th Qtr	1,800

1987

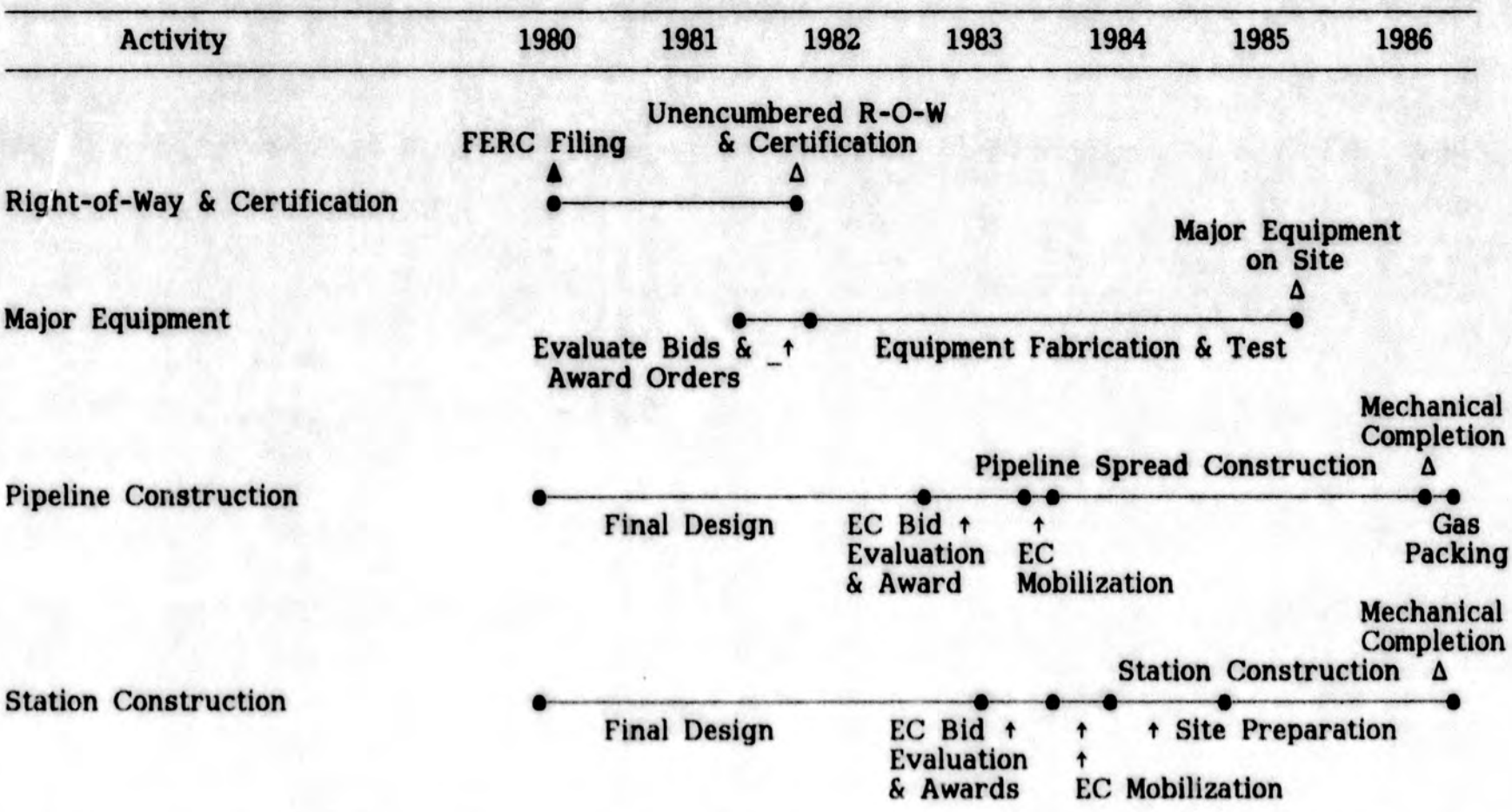
1st Qtr	400
2nd Qtr	770
3rd Qtr	550
4th Qtr	150

Source: Northwest Alaskan Pipeline Company.

III. PROJECT SCHEDULE

Alaska Natural Gas Transportation System
Alaska Segment

PROJECT SCHEDULE
1980-1986



Source: Northwest Alaskan Pipeline Company.

IV. ALASKA FIELD PROGRAM SUMMARY - 1981

Field Program	Contractor(s)	Schedule	Peak Field Manpower
Winter/Spring Drilling: Drilling of 861 test holes for centerline, compressor and metering stations and material sites to provide subsurface geotechnical data for design.	Doyon/Reading & Bates, JV (Fairbanks/Houston) The Drilling Company (Anchorage)	February-April	90
Facilities Water Supply Exploration: Testing at seven proposed construction camp sites to aid in final field selection of water well locations.	Geo-Physi-Con (Calgary)	March	15
Surface Disturbance: Nine sites have been instrumented and up to 24 more sites will be selected to evaluate the the effects of ground surfaces disturbed by earlier construction near the proposed pipeline route. Sites are selected in locations with an old existing disturbed area and an undisturbed area. The sites are monitored with temperature sensors, and in some cases weather stations, to measure the differences and changes in soil temperature between the disturbed and undisturbed areas at each site and to record the weather at the sites.	R & M Consultants (Fairbanks) (Drilling for this program was done by Doyon/ Reading & Bates JV as part of the winter/spring drilling program)	March-April	4

Field Program	Contractor(s)	Schedule	Peak Field Manpower
Atigun Pass Drilling Program: Drilling of 16 holes to determine subsurface geotechnical data for pipeline design.	Earthmovers of Fairbanks (Fairbanks) (R & M Consultants also had three personnel working on the program)	August-September	15
Aufeis Monitoring--River Crossings: Identification of significant aufeis (overflow ice) occurrences at various pipeline river and stream crossings; the development and decay of aufeis observed to determine the potential effects on the pipeline.	NORTEC (Anchorage)	February-May	6
Raptor Survey Program: Aerial surveys of the pipeline corridor in early spring (prior to tree leaf out) to identify raptor (eagle, falcon, hawk and owl) tree nest locations; summer surveys to identify and confirm nesting success of cliff nesting raptors, particularly the endangered peregrine falcon.	Alaska Biological Research (Fairbanks)	April-August	2
Waterbird Survey: A survey of migrating waterbirds in the Fairbanks area to help develop construction schedules which will minimize adverse impacts on these species.	Fluor Northwest, Inc. (Fairbanks)	April-August	2

IV. ALASKA FIELD PROGRAM SUMMARY - 1981 (Continued)

Field Program	Contractor(s)	Schedule	Peak Field Manpower
Dall Sheep Lambing: Aerial and ground surveys in spring and summer to identify Dall sheep lambing areas in the Brooks Range.	Fluor Northwest, Inc. (Fairbanks)	May-June	6
Fisheries Studies: Data collected for rivers, streams and lakes crossed by or adjacent to the proposed pipeline right-of-way to identify the presence and species of fish and the physical and chemical characteristics of the water-bodies.	LGL Alaska Inc. (Fairbanks) Fluor Northwest, Inc. (Fairbanks)	February-May	7
Bedrock Reconnaissance: Identification and evaluation of bedrock geologic features associated with the anticipated pipeline route excavations and foundations.	R & M Consultants (Fairbanks)	July	4
Material Site Reconnaissance: Potential gravel sources along the gasline route identified and evaluated to determine type and depth of overburden, clearing requirements, access evaluation and environmental considerations.	Gulf Interstate/Michael Baker, JV (Houston/Fairbanks) Fluor Northwest, Inc. (Fairbanks)	July	9

Field Program	Contractor(s)	Schedule	Peak Field Manpower
Field Archeological Survey: Cultural resource investigations along portions of the proposed pipeline alignment and at proposed facility locations.	University of Alaska (Fairbanks)	August-September	21
Environmental Site Reports: Assessments of the potential environmental impacts of the project for all proposed material sites, river and stream crossings and other project facility locations.	Fluor Northwest, Inc. (Fairbanks)	July-October	16
Restoration Studies: Studies of revegetation rates and natural vegetative succession to assist in the development of restoration strategies for the project.	Native Plants, Inc. (Salt Lake City) Fluor Northwest, Inc. (Fairbanks)	July-September	8
Soil Resistivity Survey: Soil resistivity tests (which measure soil moisture content) conducted in various locations from Prudhoe Bay to Eielson A.F.B.; data from these tests combined with core drilling information to predict the occurrence of permafrost conditions along the right-of-way.	Geo-Physi-Con (Calgary, Alberta)	March	5
Breakup Survey: Survey of stream and river channel conditions and measurements of flow at selected sites during spring breakup.	NORTEC (Anchorage)	April-May	6

Field Program	Contractor(s)	Schedule	Peak Field Manpower
Chilled Pipe Test Sites: Eighty-foot long test sections of 48-inch diameter pipe were buried at six sites along the proposed gasline route. The northernmost site is near Wiseman and the southernmost site is near the Canadian border. One insulated and one coated pipe were buried at each site. These sites were rigorously chosen to facilitate full-scale field testing of natural soils with various percentages of silt. Silt is known to be a key indicator of frost heave potential. The test sections are chilled to simulate the behavior of a buried chilled pipeline. The growth of the frost bulb provided by the chilled test sections and the movement of the test sections are measured and recorded by site computers and site operators.			
Livengood I	Doyon/Reading & Bates, JV (Fairbanks/Houston)	October 1980 - March 1981	42
Salcha River	Professional Contractors, Inc. (Anchorage)	October 1980 - February 1981	51
Sweetwater	C.R. Lewis Co. (Anchorage)	November 1980 - April 1981	48
Livengood II	Doyon/Reading & Bates, JV (Fairbanks/Houston)	January 1981 - April 1981	38
Wiseman	Modern/Tamik, JV (Fairbanks)	December 1980 - April 1981	40
Tanana	Earthmovers of Fairbanks	November 1980 - April 1981	41

Field Program	Contractor(s)	Schedule	Peak Field Manpower
Differential and Small Pipe Frost Heave Test Programs	Green Construction Company (Anchorage)	September-December	60 (Est.)

Differential Frost Heave Test Program: Two new test sections of 48-inch diameter pipe (one 120-foot and one 160-foot long) will be buried at the existing Fairbanks Frost Heave Test facility. Both ends of each buried test section will be anchored by artificial permafrost, and the mid-section will span thawed soil. The vertical boundaries between the artificial permafrost at the thawed soil area will be controlled to accommodate normal development of the frost bulb within the initially thawed soil area. As the frost bulb grows within the initially thawed soil area, the mid-section will attempt to heave upward and the anchored ends of the test section will hold the pipe down. Data from these tests will be used by the pipeline designers to evaluate the effects of soil forces on the pipeline.

Small Pipe Test Program: Two new 12-inch diameter by 25-foot long test sections will be buried at the existing Fairbanks Frost Heave Test facility. One of the test sections will operate at approximately the same temperature as the 10 existing test sections at the Fairbanks site, and the other will operate at approximately -10°F. Together these test sections will be used to define relationships between operating temperature, frost bulb growth, and frost heave, which are essential for determining pipeline startup operations.

IV. ALASKA FIELD PROGRAM SUMMARY -1981 (Continued)

Field Program	Contractor(s)	Schedule	k Field npower
Hydrographic Survey Program: Ground and aerial surveys made at stream and river crossings to determine stream velocity, water depth, flow characteristics, etc. which might affect gasline design.	NORTEC (Anchorage)	July-Aug	11
Uplift Resistance Tests: Eight-foot long test segments of 48-inch diameter and 18-inch diameter pipe were buried at the existing Fairbanks Frost Heave Test Site. Soil strength data will be recorded while the test segments are hydraulically lifted from the soil. Various tests have been designed to simulate summer and winter-time soil conditions around the chilled pipeline. These tests, together with on-going small-scale model uplift resistance tests, will be used to define soil strengths for use by the pipeline designers.			
Phase I	Modern/Tamik, JV (Fairbanks)	July-August	22
Phase II	Green Construction Company (Anchorage)	October-December	15 (Est.)

Field Program	Contractor(s)	Schedule	Peak Field Manpower
Survey: Centerline survey of pipeline alignment location, elevations, stream and river crossings and road crossings.	Trowbridge Engineering (Wisconsin) International Technology Limited (Anchorage)	January-June	85
Heat Pipe Test Site: A 135-foot long test section of 48-inch diameter pipe will be buried at a site near Fairbanks. Three different spacings of heat pipes will be placed along the length of the test section. In addition, the test will include demonstrations of three different heat pipe designs and special heat pipe performance evaluations. This test will be used to define the optimum selection and spacings of the vertical pipes for extraction of ground heat and freezing of the soil around the pipeline.	Pending	October-November	N.A.

V. LOGISTICS PLANNING

An estimated 1.8 million tons of material* will be moved into and within the State to support construction of the Alaska segment of the gas pipeline. Total projected material movements by quarter for 1982-1987 are given in Figure V-1. The logistics infrastructure, developed and expanded during construction of the Trans Alaska Pipeline System (TAPS) is a major asset to this project. Included in this infrastructure are airfields, access roads, material storage sites, the Prudhoe Bay haul road, and improved air and highway carrier capabilities.

Mainline pipe and petroleum products will account for about 70 percent of the total project material tonnage (see Figure V-2). Other items, such as compressor and metering station packages, consumable items, construction equipment, and miscellaneous materials, will constitute the remainder.

Northwest Alaskan Pipeline Company (NWA) will purchase, arrange for, and control the movement of all engineered materials from point of manufacture to designated material laydown sites in the field. Engineered materials include commodities such as mainline pipe, compressor and metering station materials, station equipment, insulation, and valves.

Execution Contractors (ECs) will purchase and control the transportation of construction equipment, consumables such as petroleum and explosives, cement, rebar, food, and spare parts.

Project material will enter the State by the following methods:

- Container/trailer marine transport via Anchorage.
- Roll-on/roll-off rail transport via Whittier.
- Bulk vessel/barge to Anchorage, Seward, Valdez and Prudhoe Bay.
- Direct truck via the Alaska Highway.
- Air freight.

Within Alaska, rail and truck transportation will predominate.

*This total does not include gravel.

Mainline Pipe

Over 617,000 tons of mainline pipe will be used by the project. Mainline pipe from domestic or overseas mills will be routed to a southern Alaska port via rail/barge or bulk barge transportation, then by rail or highway to Fairbanks for storage, double-jointing, coating, insulating, and highway movement to intermediate pipe storage yards.

Eighty-foot joints of pipe will be transported from the double-joint yard to intermediate pipe storage sites by trucks pulling self-steering pipe trailers. This trailer equipment will be capable of moving three joints of coated pipe per load.

Petroleum, Oil and Lubricants

Over 638,000 tons of petroleum, oil and lubricant (POL) products will constitute the largest single tonnage item on the project. There will be a continuous requirement throughout the course of the project for a multitude of POL products for construction equipment, camp heating and power generation, vehicle and aircraft operation, and other equipment and facilities. Each EC will be responsible for acquisition, transport and storage of POL products for construction, camp heating and other purposes.

Construction Equipment

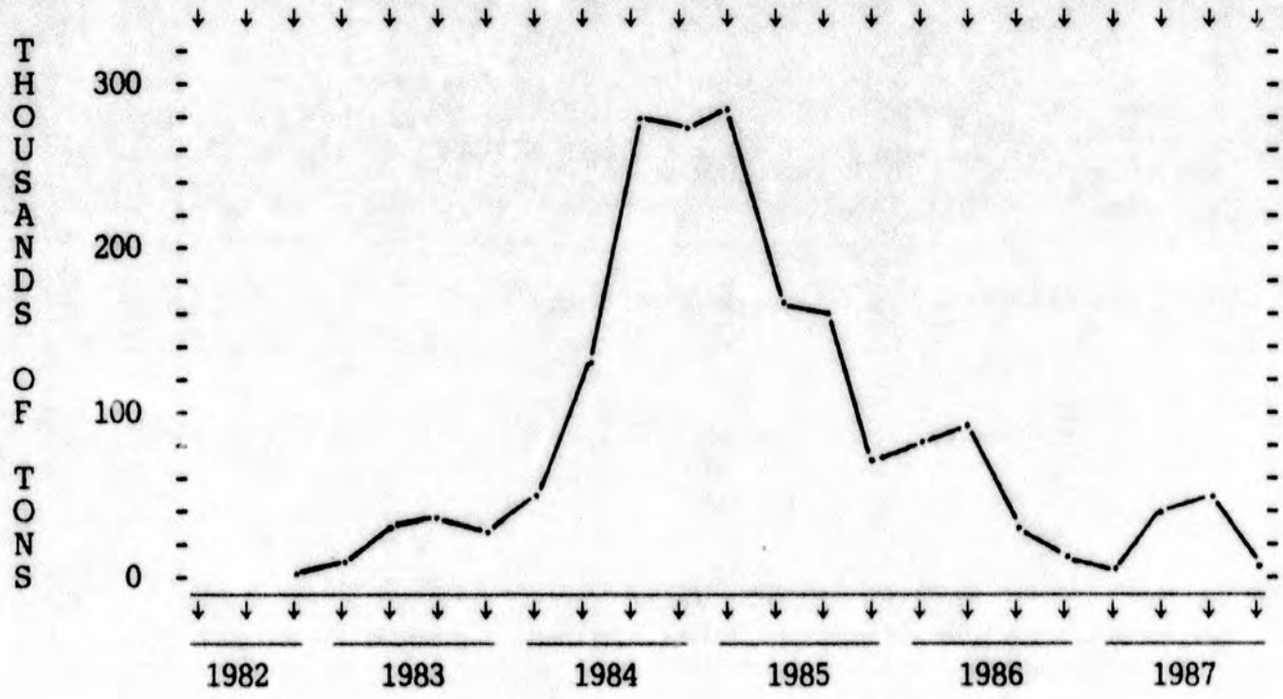
Mobilization and positioning of equipment, including repositioning during construction and demobilization are major logistic considerations. ECs are expected to supply and transport their own equipment. If necessary, they will draw upon the same commercial transport capacity utilized to support this project, all other projects, and normal public transportation. The equipment movement will include a wide variety of heavy equipment (side boom tractors, dozers, cranes, backhoes) and light vehicles (pickups, buses).

V - 1

Alaska Natural Gas Transportation System
Alaska Segment

PROJECTED MATERIAL MOVEMENTS

(Thousands of Tons)
1982-1987



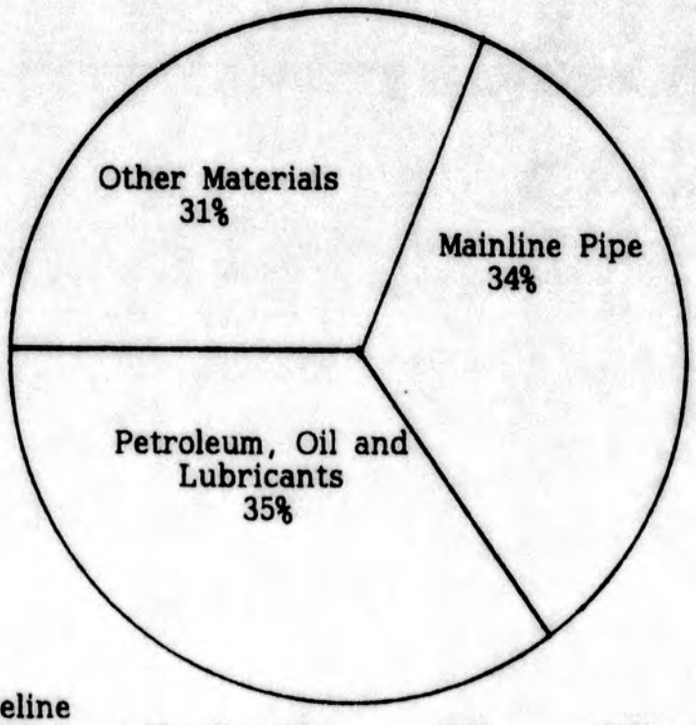
Section	Pipeline Milepost	1982	1983	1984	1985	1986	1987	Total
1	0-132	0.2	21.1	108.8	108.2	36.1	19.3	293.8
2	132-228	-	15.7	108.2	96.8	29.7	20.9	271.2
3	228-374	-	17.4	139.8	124.0	36.3	19.2	336.7
4	374-502	-	9.1	133.1	126.4	39.1	13.7	321.5
5	502-622	-	26.5	112.4	104.8	28.6	20.3	292.5
6	622-741	-	26.8	108.9	105.0	40.9	15.1	296.7
	Total	0.2	116.6	711.1	665.2	210.7	108.6	1,812.4

Source: Northwest Alaskan Pipeline Company.

Alaska Natural Gas Transportation System
Alaska Segment

PROJECTED MATERIAL MOVEMENTS BY COMMODITY

(Thousands of Tons)



Section	Pipeline Milepost	Mainline Pipe	POL	Other	Total
1	0-132	106.2	100.6	87.0	293.8
2	132-228	82.8	98.9	89.5	271.2
3	228-374	121.1	123.2	92.4	336.7
4	374-502	109.4	121.5	90.6	321.5
5	502-622	98.1	93.8	100.6	292.5
6	622-741	99.8	100.1	96.8	296.7
	Total	617.4	638.1	556.9	1,812.4

Source: Northwest Alaskan Pipeline Company.

VI. ALASKA GAS CONDITIONING FACILITY

Prudhoe Bay natural gas must be conditioned by removal of impurities before the gas can be transported through the Alaska gas pipeline. A conditioning plant, to be constructed at the northern terminus of the Alaska segment, is therefore essential to the Project. The design, engineering, construction and operation of the conditioning plant and the Alaska segment must be coordinated, because any delay in the conditioning plant becoming operational will delay the transportation of gas to the lower 48 states. The conditioning plant, sometimes referred to as the Alaska Gas Conditioning Facility (AGCF) to be located in Prudhoe Bay and will become part of the gas pipeline system.

In June 1980, the three principal North Slope gas producers -- ARCO, Exxon and Sohio -- and the gasline project sponsors agreed to establish a joint entity to fund design and engineering of the gas conditioning plant. In July 1980, a design and engineering board was established which included representatives of the producers, pipeline sponsors and the State of Alaska. In October 1980, Ralph M. Parsons Company of Pasadena, California was awarded a contract for the design and engineering of the AGCF.

Construction will utilize large, prefabricated modules moved by major sealifts to the North Slope. Fabrication sites for module construction will be located near major port facilities on the west coast of the United States. Module fabrication for the AGCF is scheduled to begin in November 1982. Summer sealifts to Prudhoe Bay are planned for 1983, 1984 and 1985. Mechanical completion is scheduled for September 1986 with full startup in November of that year. A major milestone schedule for design and construction of the AGCF is given in Figure VI-1.

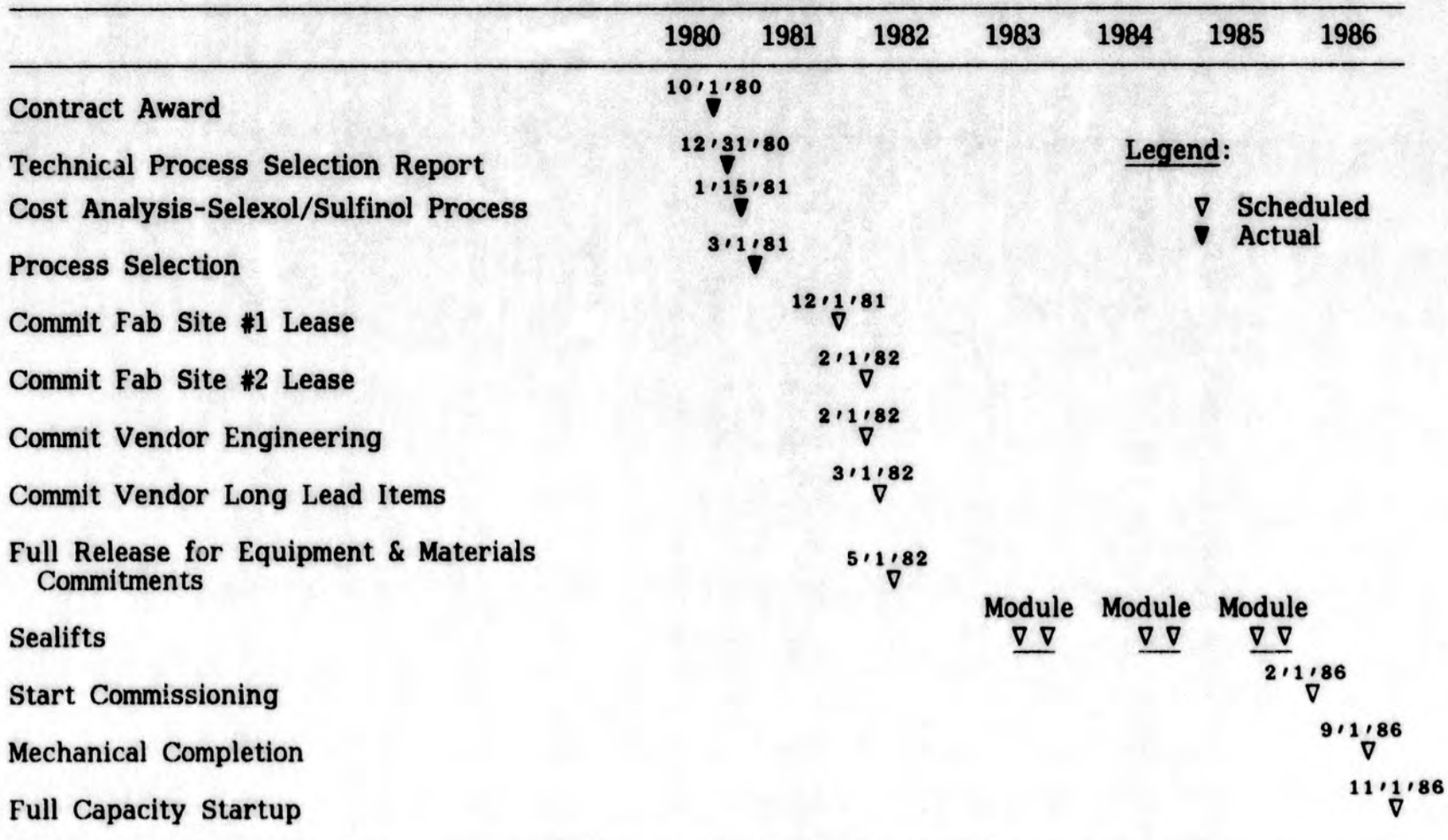
The home office design and engineering workforce for the AGCF is expected to peak at 1,200 to 1,400 people. The workforce at one Lower 48 fabrication site is projected to peak at 2,700 to 2,800 and reach 1,800 at a second fabrication site. The Alaska workforce for the AGCF, given in Figure VI-2, is projected to peak at 1,000 to 1,200 people.

Under normal conditions, the AGCF will be operated by a permanent crew of approximately 240 for each rotation (for a total workforce requirement of 480 people). All operations would be controlled from a central facility.

Alaska Natural Gas Transportation System

ALASKA GAS CONDITIONING FACILITIES MAJOR MILESTONE SCHEDULE

1980-1986



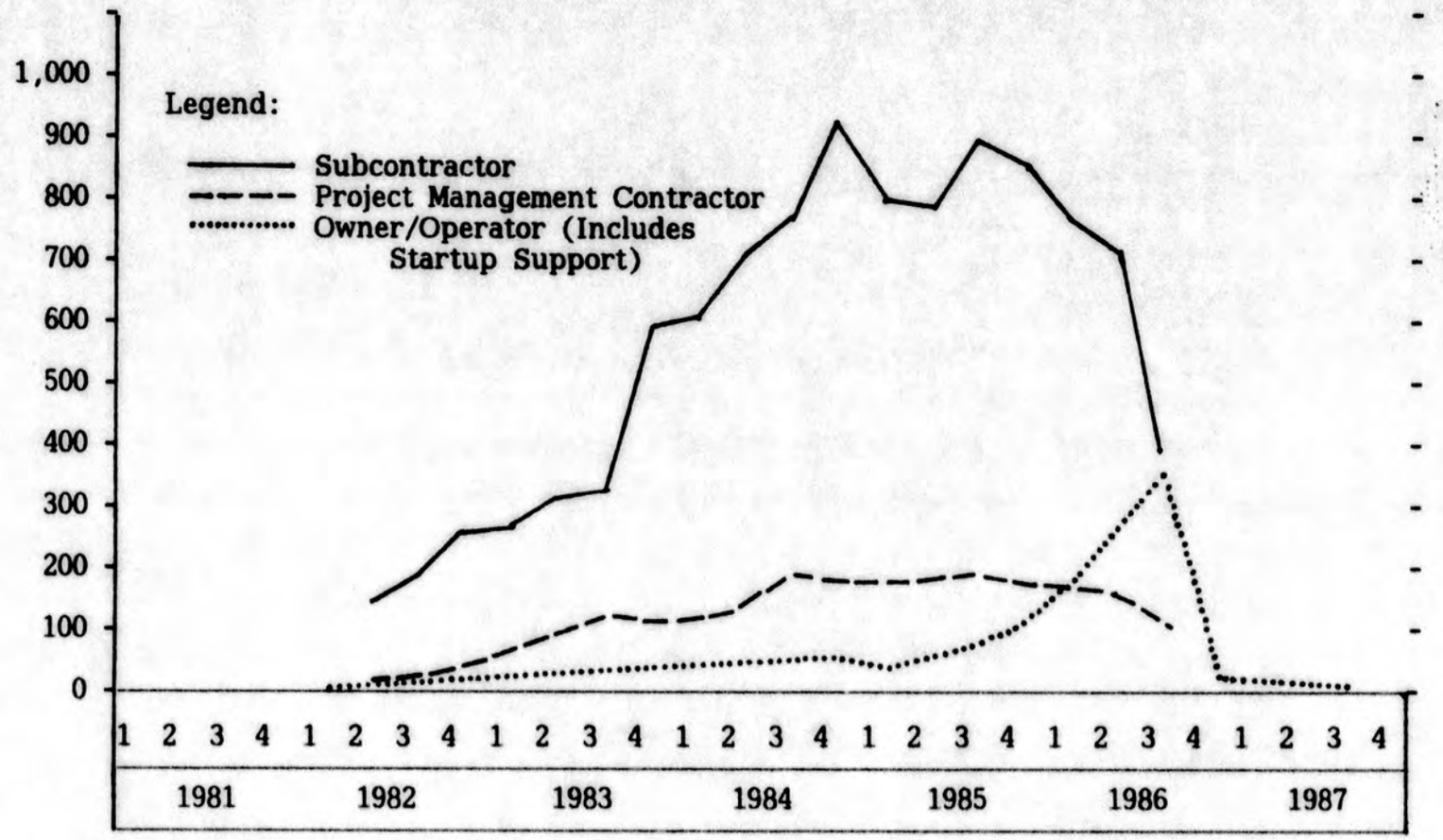
Source: Northwest Alaskan Pipeline Company.

VI - 2

Alaska Natural Gas Transporation System

ALASKA GAS CONDITIONING FACILITIES ALASKA MANPOWER PROJECTIONS

1982-1987, By Quarter



Source: Northwest Alaskan Pipeline Company.

VII. FAIRBANKS HOUSING TRENDS

Third Quarter, 1981

SUMMARY*

I. Residential Real Estate For Sale - July 1981

In July Northwest Alaskan staff surveyed local realtors and compiled data on housing advertised for sale by owners in the local newspaper. The survey found:

Type	Number Available	Median Asking Price
Single-Family Homes	198	$ 96,000
Condominiums	17	80,000
Duplexes	47	107,500
All Units	262	$ 96,000

- The 262 housing units for sale in July 1981 represented a 17 percent increase from 224 units available in September 1980.
- Most housing for sale was located in the Urban and North Pole areas. A total of 49 units were available in the Suburban area and 56 units were available in the Foothills.
- Between September 1980 and July 1981, the median asking prices rose 22 percent for single-family homes and 24 percent for duplexes.

*A copy of the complete housing trends report is available upon request from the Manpower and Impact Planning Department.

- Median asking prices for homes and duplexes were highest in the Foothills ($127,000) and lowest in the North Pole area ($90,000). Median prices in the Urban and Suburban areas were $95,000 and $96,500 respectively.

- More than 79 percent of the homes for sale in July 1981 had been built since 1970.

- Median lot sizes were 9,975 square feet in the Urban area and 11,250 square feet in the Suburban area. Lot sizes averaged 1 acre in the North Pole area and were largest in the Foothills at 1.9 acres.

- Eighty-six percent of the homes for sale had oil heat while 13 percent had electric heat and 1 percent had wood heat.

Map VII-1 gives Fairbanks area housing locations and Table VII-2 gives characteristics for each of those locations. Information on prices of housing for sale in July 1981 is given in Tables VII-3 and VII-4.

II. Survey of Major Apartment Complexes - June 1981

A June 1981 survey made for Northwest Alaskan Pipeline Company of 20 major modern rental apartment complexes in the Fairbanks area found the following:

Type	Average Rents	Total Units	Units Vacant	Units Turned Over	Turnover Rates
Efficiencies	$261	32	0	1	3.1%
One-Bedroom, Unfurnished	$388	152	0	1	.7%
One-Bedroom, Furnished	$435	486	0	17	3.5%
Two-Bedroom, Unfurnished	$453	165	0	14	8.5%
Two-Bedroom, Furnished	$523	200	0	6	3.0%
Three-Bedroom	$490	143	0	11	7.7%
All Units	$448	1,178	0	50	4.2%

- In comparison to the no vacancies found in June 1981, a similar survey in February 1981 had found 65 vacant units for a vacancy rate of 5.5 percent.

- In June 1981, the average rent for the units surveyed was $448 per month, a 6 percent increase from the average monthly rent of $424 for the February 1981 survey.

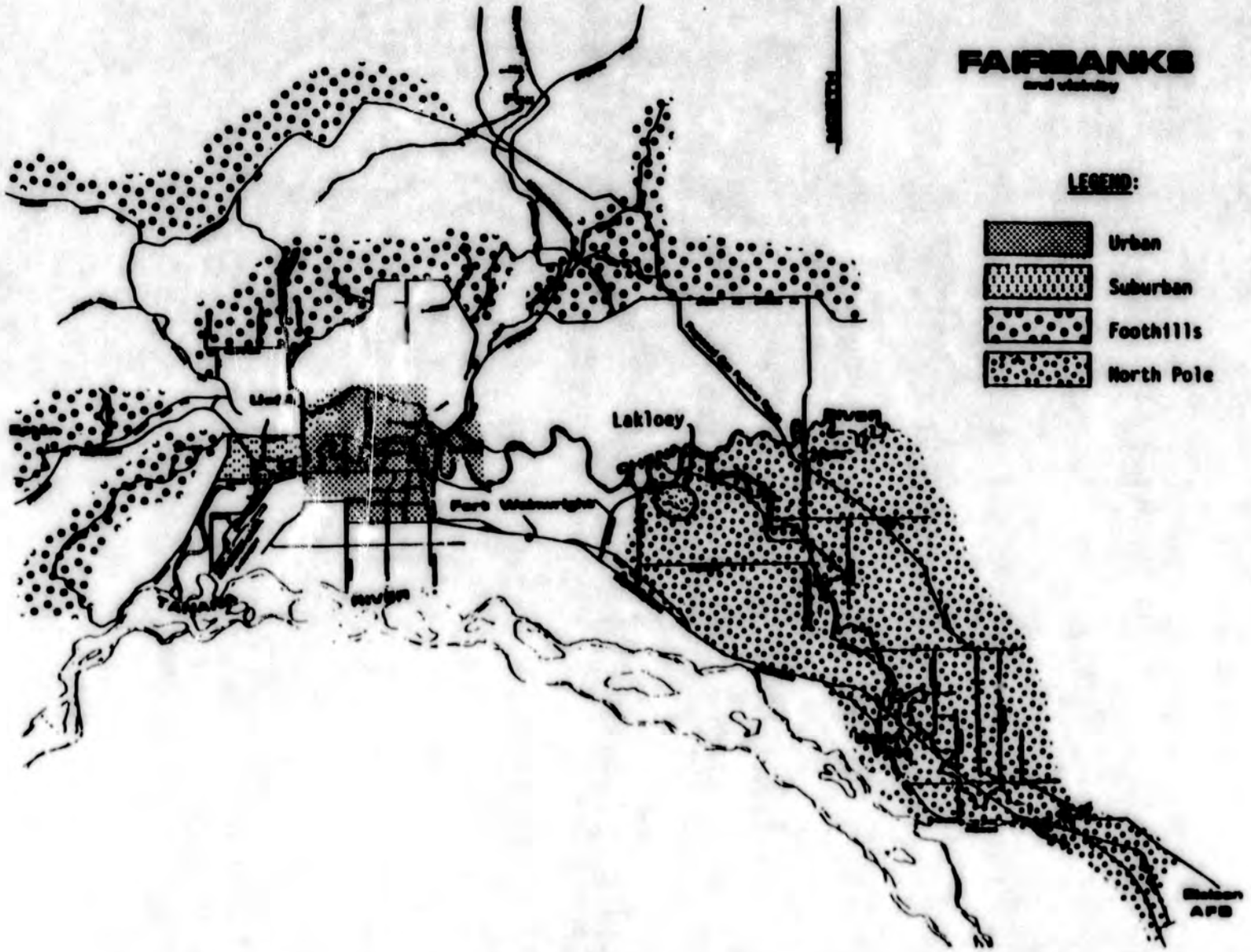
Table VII-5 summarizes information on the rental complexes surveyed.

III. Inventory of Condominium/Townhouse Complexes--September,1981

In September 1981, Northwest Alaskan staff compiled information on all condominium/townhouse complexes in the Fairbanks area. The survey found a total of 295 condominium/townhouse units: 28 one-bedroom, 181 two-bedroom, and 86 three-bedroom units. In July 1981, 17 of the 295 units, or 6 percent of the total inventory were for sale. The data from this survey is summarized in Table VII-6.

VII - 1

MAP OF FAIRBANKS AREA HOUSING LOCATIONS



HOUSING LOCATION CHARACTERISTICS

Fairbanks Area

	------Urban------	----Suburban----	-------Foothills-------	------North Pole------
Locations and Areas	City, Hamilton Acres, Shannon Park, Sisterville, Island Homes, Aurora, Westgate, Executive Park.	University West, College, Lakloey Hill.	Chena Ridge, Muskox, College Hills, Farmers Loop, Goldstream, Steese, Chena Hot Springs, McGrath Road, Ester.	City of North Pole and surrounding areas, Badger Road, Peede Road, Nelson Road, Laurance Road, Richardson Highway.
Lot Size/Zoning	Small lots; all zoned.	Small lots; except Lakloey Hill (3/4 acre lots); all zoned.	Large lots; many two acres or more; much of area zoned "rural estates"; some zoned "unrestricted use".	Large lots; much of area zoned "unrestricted use".
Environment	Low lying; ice fog.	Low lying, occasional ice fog; except Lakloey which is above ice fog.	Higher elevations, many with mountain views, winter temperatures 15-20° warmer than urban.	Low lying, some permafrost, winter temperatures 15-20° colder than urban.
Water & Sewer	City.	College utilities, community systems.	Individual wells and septic systems.	Individual wells and septic systems, except for city of North Pole.
Housing Characteristics	Older homes; some condominiums and many apartments; very few mobile homes.	Newer homes; some condominiums and some apartments; few mobile homes.	Newer homes and some luxury type; no condominiums and very few apartments; some mobile homes.	Newer moderate or lower priced homes; no condominiums and very few apartments; many mobile homes.
Schools, Shopping, Community Services	Close to schools and shopping; highest number of services.	Close to schools; moderate distance to shopping; moderate services.	Distant from schools and shopping; minimal services.	Distant from schools and shopping; minimal services, except City of North Pole.
Roads	Paved streets, city maintenance.	Paved streets; Borough service district maintenance.	Many unpaved access roads, road maintenance variable.	Many unpaved access roads; road maintenance variable. City is in North Pole service district for maintenance.
Distance from City Center	Under 10 minutes.	10-15 minutes.	15-30 minutes.	15-30 minutes.
Housing costs	Moderate.	Moderate.	Highest.	Lowest.

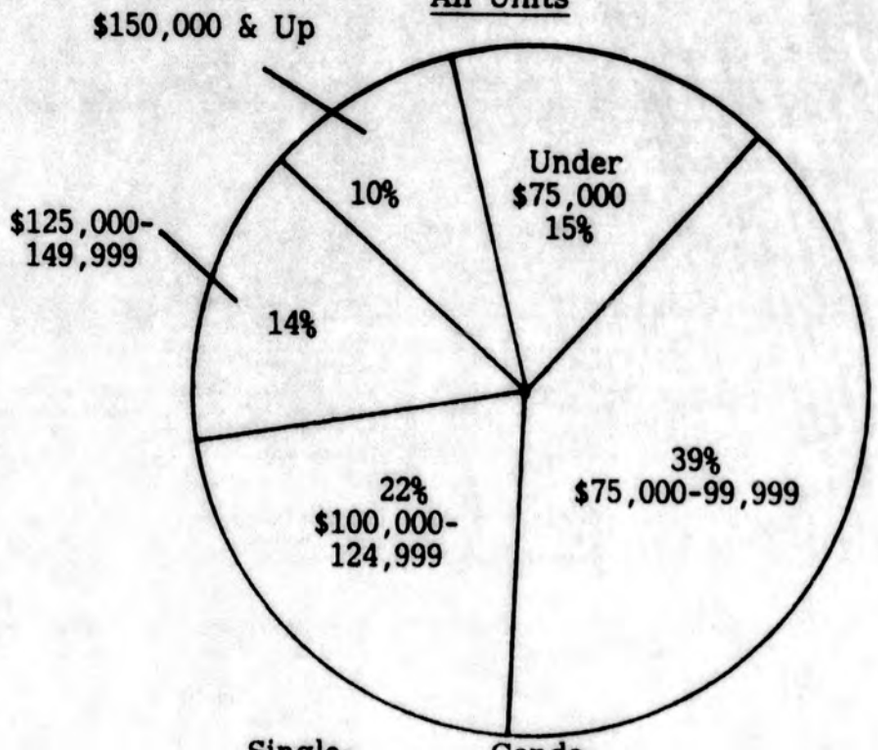
Source: Northwest Alaskan Pipeline Company, Manpower and Impact Planning Department.

PRICE DISTRIBUTION OF HOUSING FOR SALE*

By Type

Fairbanks Area
July 1981

All Units



Price Ranges	Single-Family	Condominiums	Duplexes	All Units
Under $50,000	-	3	-	3
$ 50 - 74,999	27	3	5	35
$ 75 - 99,999	81	9	13	103
$100 - 124,999	43	2	13	58
$125 - 149,999	30	-	7	37
$150 - 174,999	8	-	5	13
$175 - 199,999	4	-	2	6
$200,000 & Up	5	-	2	7
All Prices	198	17	47	262

*Single-family homes or duplexes priced under $50,000 were not included.
Source: Northwest Alaskan Pipeline Company, Manpower and Impact Planning Department survey.

ASKING PRICES OF SINGLE-FAMILY HOMES AND DUPLEXES FOR SALE*

By Size and Location

Fairbanks Area
July 1981

Size (square feet)	Urban	Suburban	Foothills	North Pole	All Areas
All Sizes					
Median:	$ 95,000	$ 96,500	$127,000	$ 90,000	$ 99,000
Range:	$ 55,000-$450,000	$ 54,000-$172,000	$ 54,000-$288,000	$ 52,000-$130,000	$ 54,000-$450,000
Units in Sample:	71	38	56	80	245
Under 1,400					
Median:	$ 85,000	$ 83,750	$ 92,250	$ 84,000	$ 84,750
Range:	$ 55,000-$119,000	$ 54,000-$108,000	$ 54,000-$136,000	$ 56,000-$120,000	$ 54,000-$136,000
Units in Sample:	18	12	12	26	68
1,400-2,199					
Median:	$ 95,000	$ 98,000	$125,000	$ 94,000	$102,000
Range:	$ 61,500-$156,000	$ 85,000-$172,000	$ 54,000-$165,000	$ 69,500-$116,000	$ 54,000-$172,000
Units in Sample:	31	16	27	23	97
2,200 and Up					
Median:	$131,000	$120,000	$179,500	$107,000	$127,500
Range:	$ 87,000-$450,000	$ 94,000-$162,500	$105,000-$288,000	$ 54,500-$165,000	$ 54,500-$450,000
Units in Sample:	17	9	14	22	62

* Single-family homes or duplexes under $50,000 were not included. The square footage was unknown for eighteen homes. Sizes were unknown for five homes in the Urban area, two in the Suburban area, three in the Foothills area, and nine in the North Pole area. Unknowns were included in "all sizes" calculations where applicable.

Source: Northwest Alaskan Pipeline Company, Manpower and Impact Planning Department survey.

DESCRIPTION OF MAJOR APARTMENT COMPLEXES*

Fairbanks Area
June 1981

Map Key	Major Complex	Year Built	Total Units	Number of Units by Type: Efficiency	--One-Bedroom-- Unfurn.	--One-Bedroom-- Furn.	--Two-Bedroom-- Unfurn.	--Two-Bedroom-- Furn.	Three-Bedrooms
1	Beistline Apartments**	1977	20	-	3	9	2	6	-
2	Chandalar Apartments	1970	60	-	-	6	25	25	4
3	Executive Apartments	1978	24	-	-	20	-	4	-
4	Francis Apartments	1966	16	-	-	-	-	-	16
5	Hamilton Plaza Apartments	1974	48	-	-	-	18	14	16
6	Kelsha Court	1977	68	21	21	14	-	-	12
7	Marika Apartments	1975	12	-	6	-	6	-	-
8	Marika Manor	1974	20	-	-	-	20	-	-
9	Midtown Apartments	1956	94	8	-	78	-	8	-
10	Midtown East Apartments	1960	32	-	-	-	-	-	32
11	Seavy Apartments	1968	12	-	-	-	2	1	9
12	Sprucewood Manor	1970	21	3	-	6	-	12	-
13	Tanana Village	1967	36	-	12	6	12	6	-
14	Townehouse Apartments	1972	34	-	-	18	-	-	16
15	University Village	1965	50	-	-	-	18	-	32
16	Walkada Apartments	1971	66	-	12	36	6	12	-
17	Wedgewood Manor***	1975-77	533	-	98	293	36	106	-
18	Westwynd Apartments	1975	12	-	-	-	6	6	-
19	Drakes Woodland	1970	8	-	-	-	2	-	6
20	Woodland Apartments	1960	12	-	-	-	12	-	-
	Totals		1,178	32	152	486	165	200	143

*Includes apartment complexes with 12 or more units which have been built since 1960. Midtown Apartments were built in 1956, but were included because they have recently been renovated.

**Although Beistline Apartments sold their two-bedrooms units, information on them was included with the same apartment complex.

***Wedgewood Manor has 133 one-bedroom and 4 two-bedroom furnished condominium units which were included in these figures.

Source: Survey of major apartment complexes made by Marilynn Forrest for Northwest Alaskan Pipeline Company, Manpower and Impact Planning Department, June 1981.

CONDOMINIUM AND TOWNHOUSE COMPLEXES
Fairbanks, Alaska
September 1981

Complex Name & Location	Year Built	Number of Units (each size)	Number of Bedrooms	Average Size (sq. ft.)	Garage (sq. ft.)	Average Monthly Condo Fee	Selling Price	Date
Eldorado I	1970	29	2	1,134	200	200	$ 80,000	3/81
Eldorado II	1973	11	2	1,134	200	200	$ 95,000	6/81
		12	3	1,270	200	200	$ 88,700*	1/81
Village Green	1972	8	2	1,094	308	250	$ 65,000**	
		16	3	1,228	308	250	$ 72,000**	
		8	3	1,500	484	250	$ 79,900	8/81
Woodside North	1975	27	2	2,130	484	50	$107,000	9/81
		28	3	2,268	484	50	$110,000	9/81
Park South	1977-78	16	1	563	-	75	$ 40,000	6/81
Regency Park	1977-78	12	2	700	-	100	$ 47,000	7/81
		12	2	750	-	100	$ 48,500	7/81
Woodridge Park	1978	8	1	665	-	105	$ 58,000	8/81
		16	2	815	-	105	$ 62,000	9/81
Hamilton Estates	1979	8	2	1,056	-	185	$ 63,000	7/81
		16	2	1,182	-	185	$ 68,000	5/81
University Estates	1980	12	2	1,046	-	140	$ 67,500	7/81
Aurora Estates	1981	1	1	1,300	-	165	$ 69,900	7/81
		9	2	1,300	-	165	$ 85,000	7/81
		4	3	1,300	-	165	$ 85,000	7/81
Riverside West	1981	3	1	995	238	175	$ 80,000	7/81
		9	2	995	238	175	$ 83,000	7/81
		6	3	1,253	238	175	$ 95,000	7/81
Linck Estates	1981	16	2-3	1,404	330	165	$125,000	7/81
		6	2-3	1,155	330	165	$120,000	7/81
		2	2-3	1,504	330	165	$130,000	7/81
Total		295						

*A recent estmated selling price for these units is $100,000.
**Recent selling prices were not available. These figures are estimates.
Source: Northwest Alaskan Pipeline Company, Manpower and Impact Planning Department survey.

VIII. SOCIOECONOMIC COMMUNITY PROFILE EVALUATION

SUMMARY*

In mid-1980 Northwest Alaskan Pipeline Company produced a series of Socioeconomic Community Profiles for six communities Southeast of Fairbanks which are located near the route of the proposed natural gas pipeline (Delta Junction, Dot Lake, Tanacross, Tok, Tetlin and Northway). There was substantial local involvement in preparation of the profiles including community meetings where residents reviewed and made recommendations regarding profile content.

The profiles were distributed to residents and other individuals in government and nonprofit agencies which serve those communities. Enclosed with the profiles was a survey questionnaire which asked recipients to:

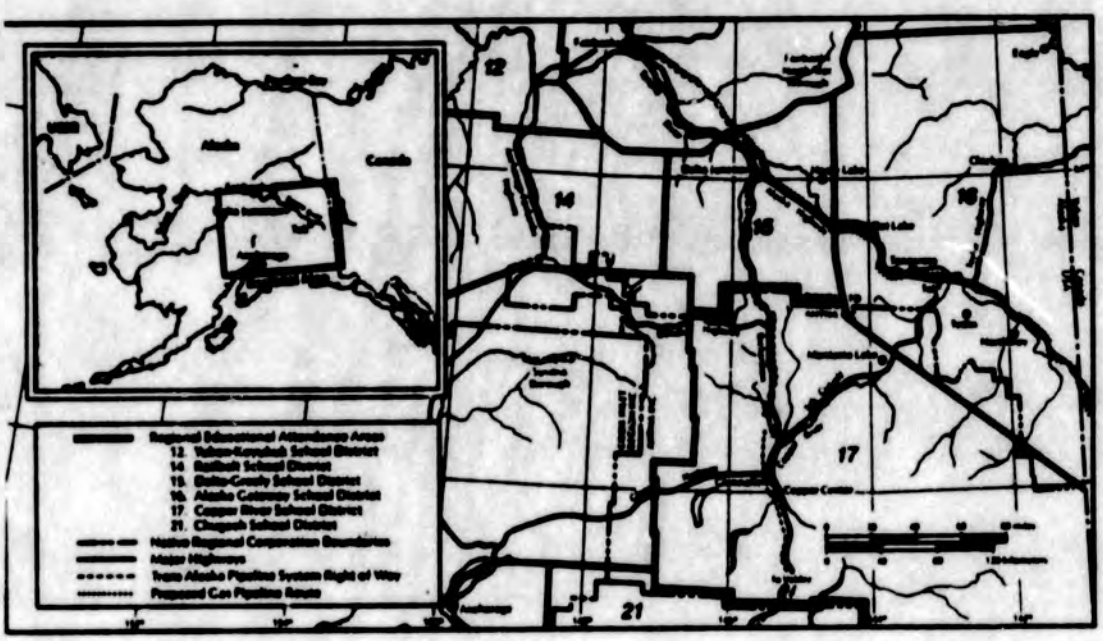
- Evaluate the accuracy of the profiles and identify topics which needed expansion.
- Give preferences for future gasline impact studies.
- Evaluate the process used to compile information for the profiles.
- Evaluate gasline information accessibility and needs.
- Express their major concerns regarding gasline impact.

This report analyzes and summarizes the results of the survey. A total of 1,104 questionnaires were distributed and 221 (20 percent) were completed and returned. Nine-hundred of the questionnaires were distributed to community residents and 173 (19 percent) were returned. The response rate was much higher in Tok (22 percent) and Delta Junction (20 percent) than in the four smaller villages which had response rates ranging from 8 to 12 percent. Results of the survey should thus be used cautiously both because of the relatively small sample size and because of potential biases in the sample including underrepresentation of village residents and women. Despite these limitations, the following conclusions can be made:

*A copy of the complete evaluation report is available upon request from the Manpower and Impact Planning Department.

VIII - 1

MAP OF UPPER TANANA REGION



- Respondents considered the profiles accurate (only four of the 221 responses, or 2 percent said they were not "generally accurate").

- They were generally pleased with the profile preparation process.

- They felt that more information was needed on economy, employment, housing, community needs and public safety to help make decisions regarding gasline impacts.

- About half of the respondents indicated that they felt information on the gasline had been very accessible However, about one-fourth indicated they had not been able to get the information they needed or did not know where to go for information.

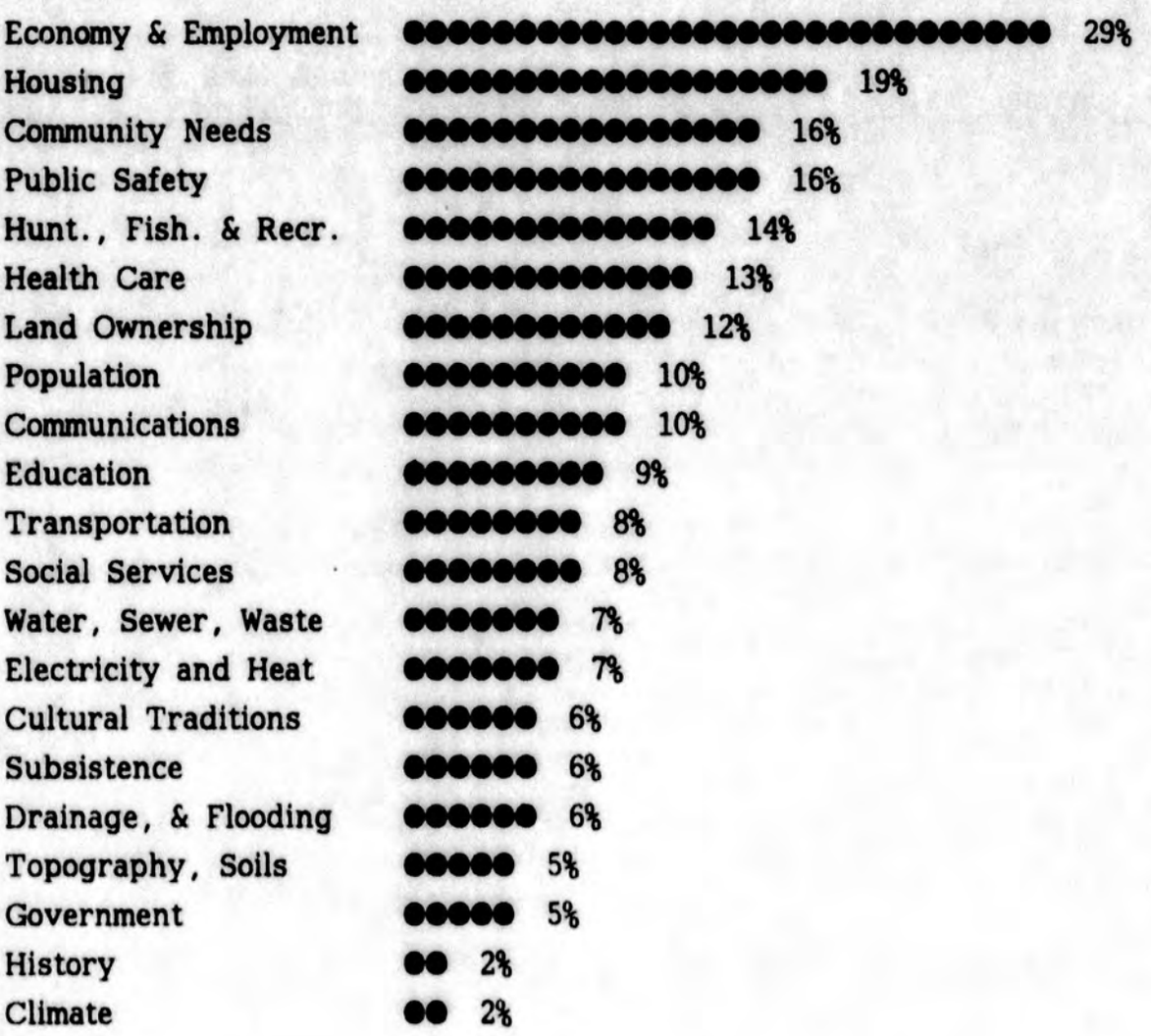
- The top two gasline information needs cited by respondents were employment opportunities and training opportunities.

- Respondent's top priorities for future studies were surveys of employment skills and training needs.

- Major gasline impact concerns were local employment opportunities, changing population and values, and increased social ills.

NEED FOR MORE INFORMATION ON PROFILE TOPICS[1]

Highway community residents[2]
(n = 173)



[1]Question: "The following is a list of topics covered in the profiles. Please check the topics which you think need more information to help make decisions regarding gas pipeline impacts."

[2]Delta Junction, Tok, Dot Lake, Tanacross, Tetlin and Northway.

Source: Northwest Alaska Pipeline Company, Manpower and Impact Planning Department.

When asked if they needed more information on topics covered in the profiles, respondents indicated that more information was needed on economy and employment, community needs assessments, and housing. Tok respondents also asked for more information on health care and land ownership. Village respondents also requested more information on public safety, education, hunting, fishing and recreation.

When asked if they needed more information about the gasline construction project, respondents expressed the greatest need for information about employment opportunities, training opportunities, construction schedule and manpower projections.

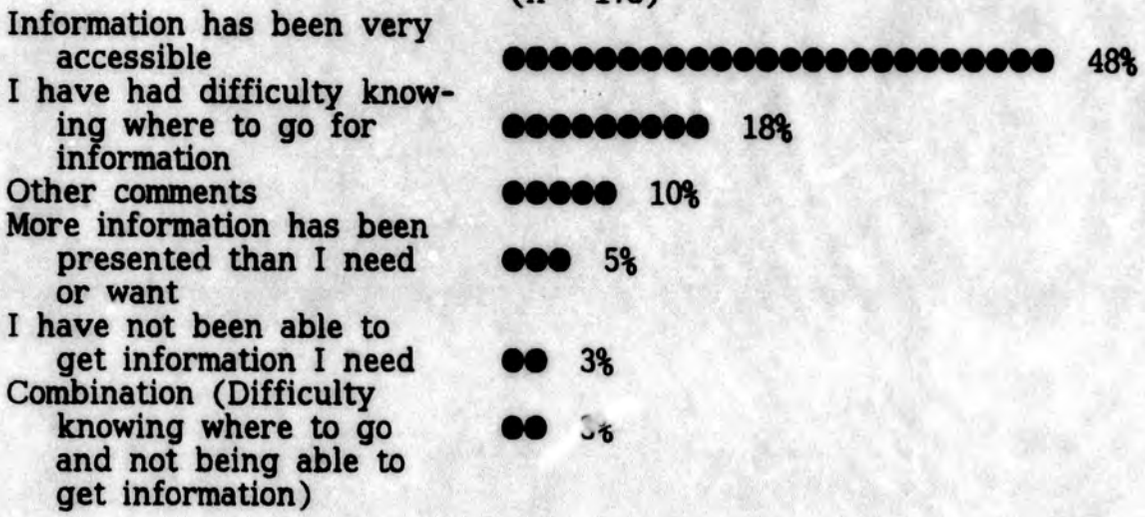
Given a list of potential future studies, respondents ranked them in terms of need, as follows: (1) survey of employment skills of residents; (2) survey of training needs of residents; (3) community attitudes toward the pipeline project; and (4) subsistence study.

In response to the question: "What are your main concerns about potential problems during gasline construction?" Residents expressed the greatest concern for employment opportunities. A high level of concern was also expressed about the changing population which would result from the pipeline project, particularly with regard to the values and behavior of "outsiders." Related to this was concern about the usual problems associated with boomtowns, including increased social ills, a shortage of housing, increased demand for community services, and a higher cost of living. In addition to employment opportunities, several respondents were concerned that community residents reap some benefits from the pipeline through local contracting opportunities, availability of natural gas for use in their homes, and other positive impacts which could counterbalance the anticipated negative impacts.

Given the limitations of the sample, one can conclude that the community profile project conducted by Northwest Alaskan Pipeline Company was successful in terms of both product and process. Future information projects directed at pipeline corridor communities and the agencies which serve them should seek to reach the 20 percent of the population which currently finds project information difficult to obtain. The types of information which are in greatest demand by residents of pipeline corridor communities are information which can help them maximize their direct benefits from the pipeline project such as of obtaining pipeline employment and contracts.

VIII - 3

GASLINE INFORMATION AVAILABILITY AND NEEDS[1]
Highway Community Residents[2]
(n = 173)

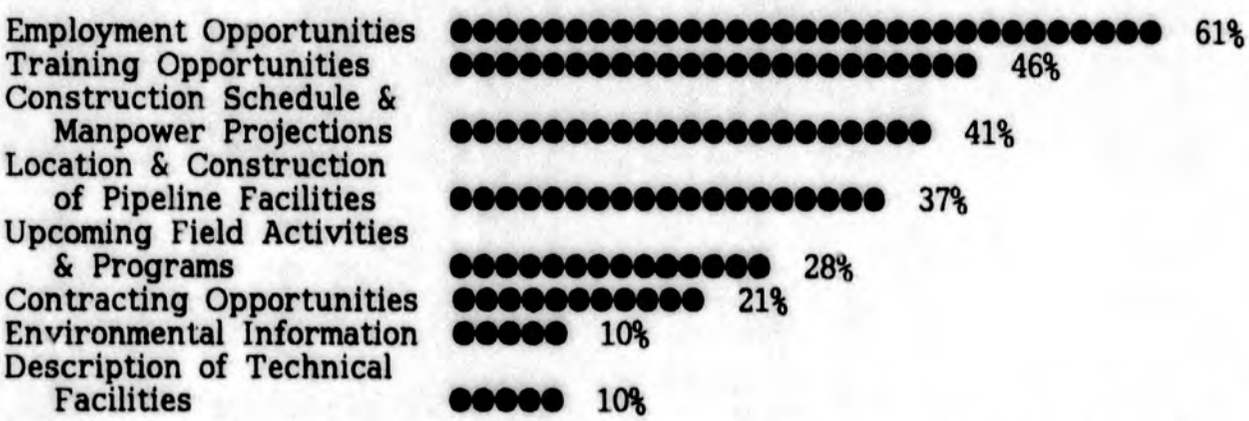


[1]Question: "Have you been able to obtain the information you need regarding the gasline project?"
[2]Delta Junction, Tok, Tetlin, Dot Lake, Tanacross and Northway.

VIII - 4

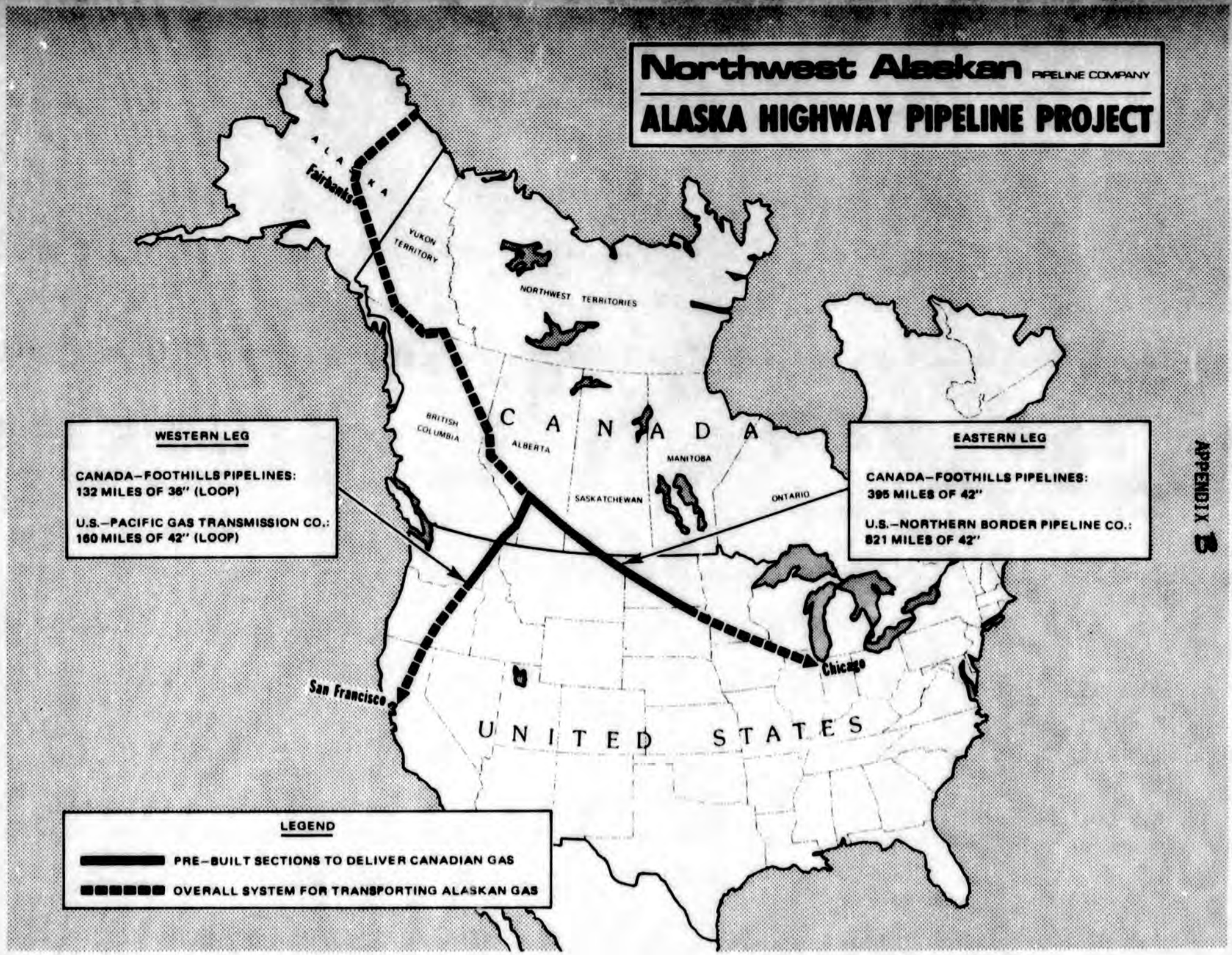
GASLINE PROJECT INFORMATION NEEDS[1]
Highway Community Residents[2]
(n = 173)

Want More Information:

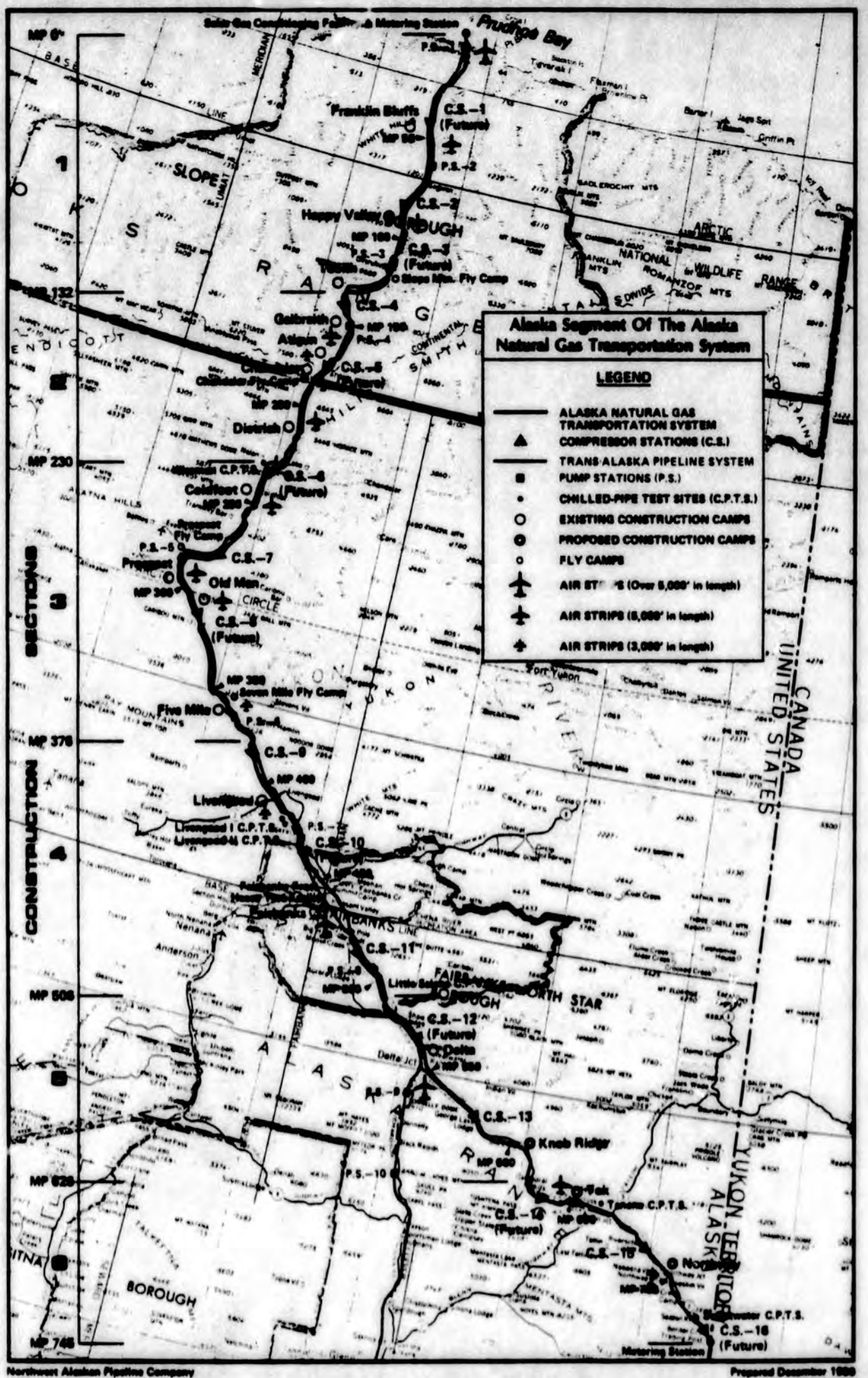


[1]Question: "Please check the topics for which you would like more information."
[2]Delta Junction, Tok, Dot Lake, Tanacross, Tetlin and Northway.

Source: Northwest Alaskan Pipeline Company, Manpower and Impact Planning Department.

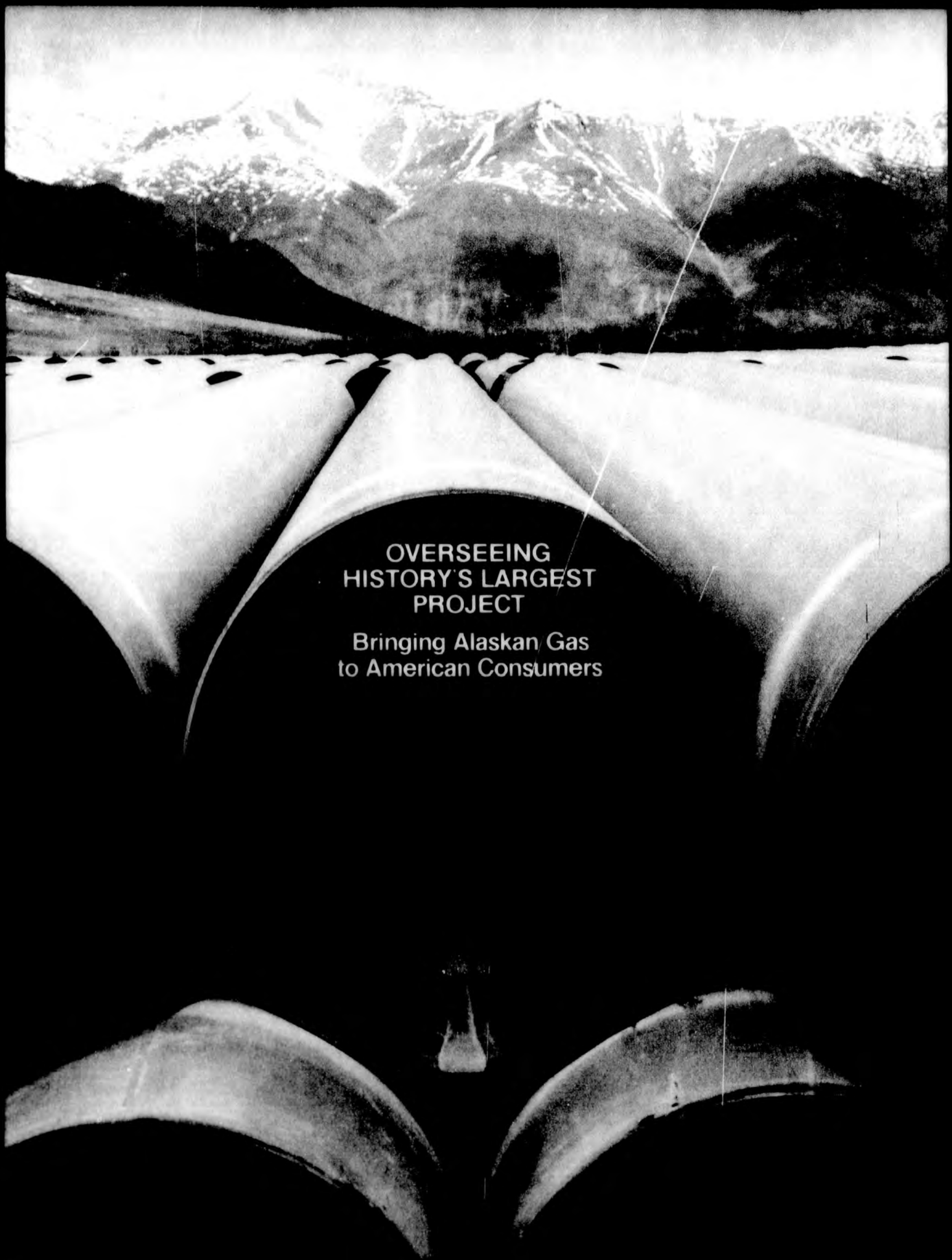

Northwest Alaskan PIPELINE COMPANY
ALASKA HIGHWAY PIPELINE PROJECT
ALASKA
Fairbanks
YUKON TERRITORY
NORTHWEST TERRITORIES
BRITISH COLUMBIA
CANADA
ALBERTA
SASKATCHEWAN
MANITOBA
ONTARIO
WESTERN LEG
CANADA–FOOTHILLS PIPELINES:
132 MILES OF 36" (LOOP)
U.S.–PACIFIC GAS TRANSMISSION CO.:
160 MILES OF 42" (LOOP)
EASTERN LEG
CANADA–FOOTHILLS PIPELINES:
395 MILES OF 42"
U.S.–NORTHERN BORDER PIPELINE CO.:
821 MILES OF 42"
Chicago
San Francisco
UNITED STATES
LEGEND
PRE–BUILT SECTIONS TO DELIVER CANADIAN GAS
OVERALL SYSTEM FOR TRANSPORTING ALASKAN GAS

APPENDIX B



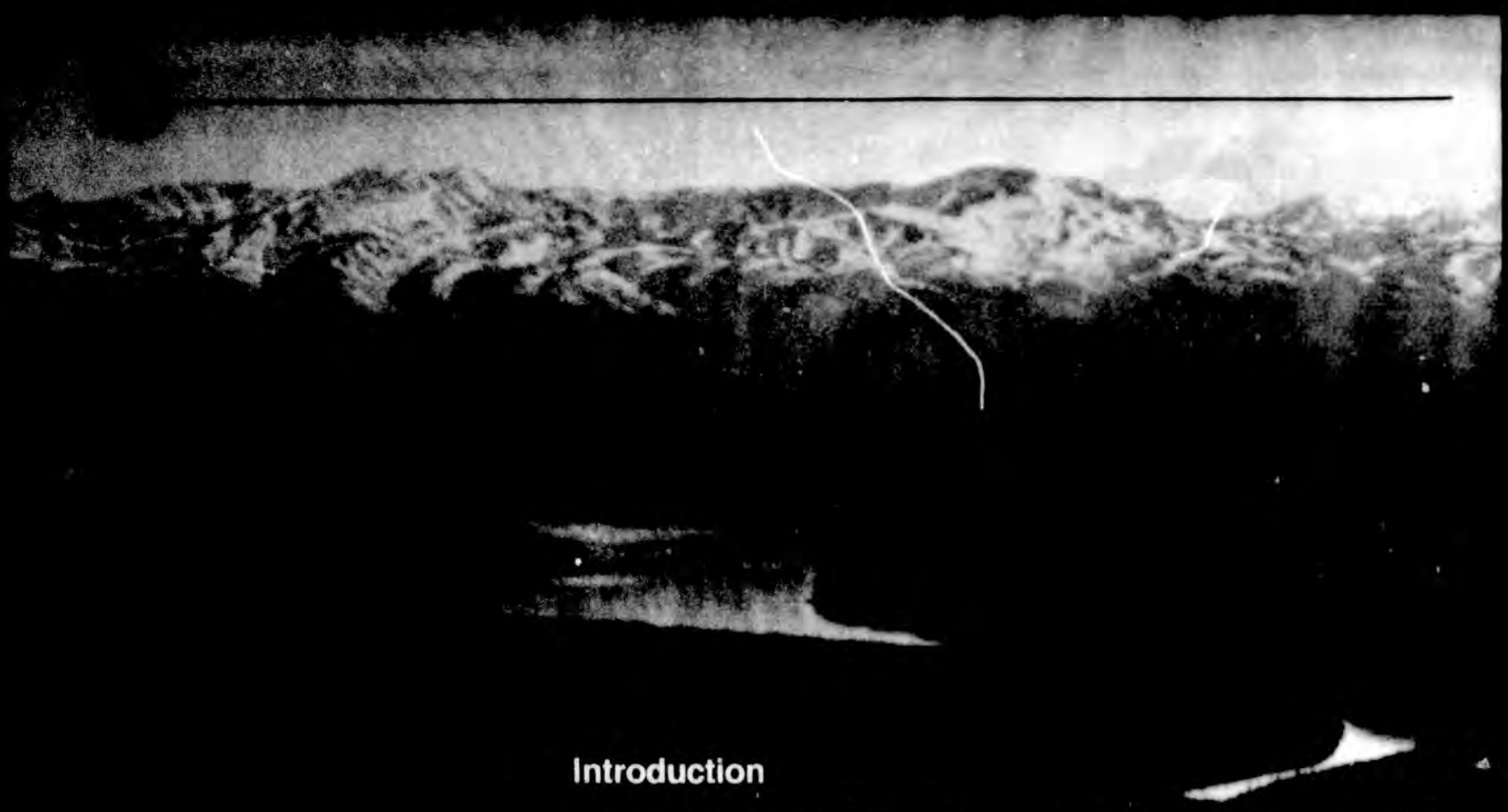
Northwest Alaskan Pipeline Company

Prepared December 1980
Revised May 1981



OVERSEEING HISTORY'S LARGEST PROJECT

Bringing Alaskan Gas to American Consumers

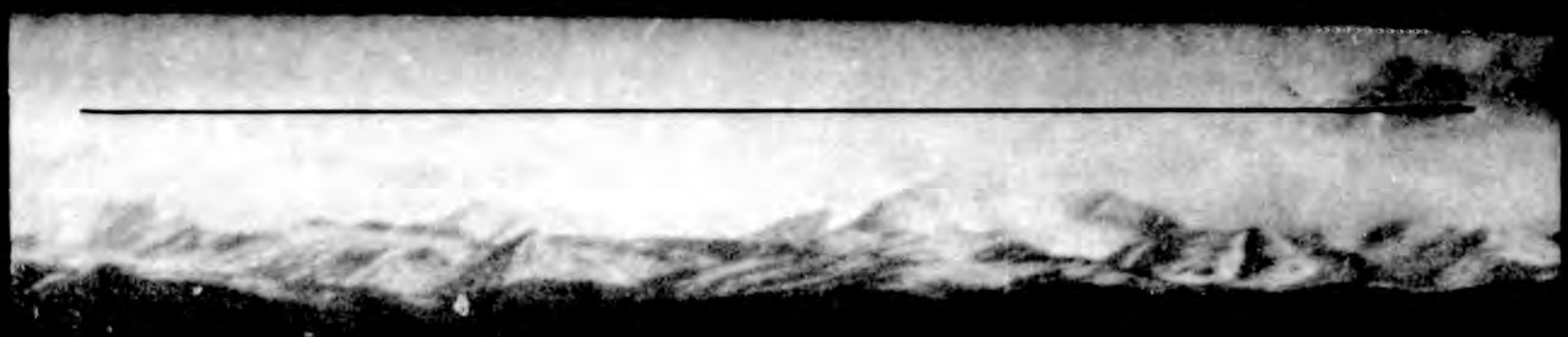


Introduction

Throughout most of this nation's history, Americans have enjoyed a comfortable life supported by inexpensive sources of conveniently available energy: vast timberlands, seemingly inexhaustible coal fields, and large reservoirs of oil and natural gas. As the nation grew and became more industrialized, however, it relied more and more on imported oil to satisfy its energy demand. National policy recognizes the urgency of reducing our dependence on imported oil. One means of doing so is to harvest more of America's own bountiful, but less convenient, resources.

One of the largest of these resources is the huge pool of natural gas that lies under an Arctic plain called the North Slope, in northernmost Alaska. Proven reserves of this clean-burning fuel at Prudhoe Bay are estimated at 26 trillion cubic feet — enough to supply the country's gas needs for 14 months, or 3.5 percent of the nation's needs for 25 years. Oil industry executives and government policymakers for years recognized it was a resource that must be tapped sometime. The big question was how to move the gas from Alaska's North Slope to the distant concentrated markets of the lower 48 states.

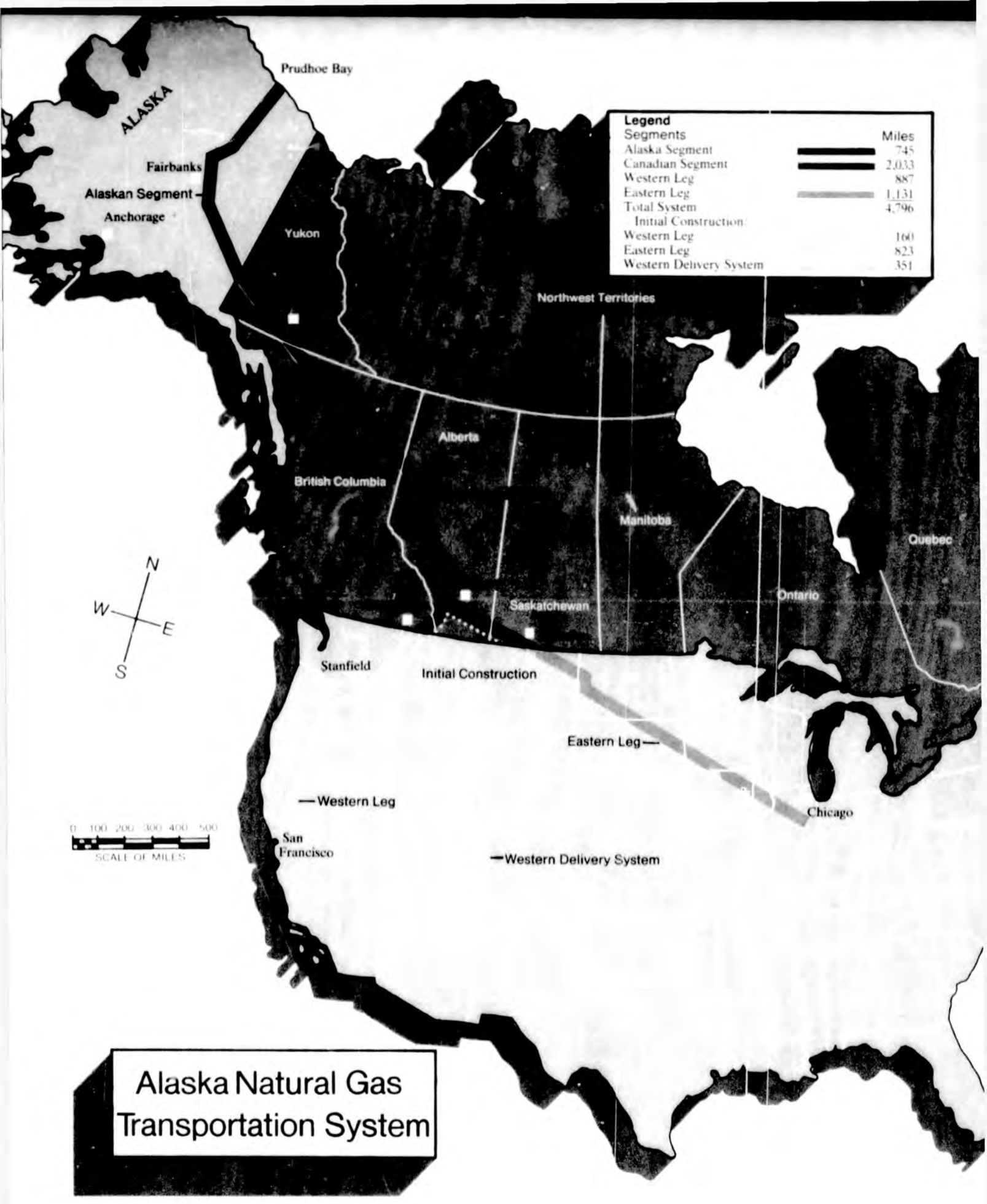
North Slope oil began to flow in 19 through a new oil pipeline across Alaska itself an engineering marvel. Plans were already forming then to bring the gas down as well. Mindful of the delays that beset approval and construction of the Trans-Alaska Oil



Pipeline System, the U.S. Congress in 1976 enacted the Alaska Natural Gas Transportation Act to simplify and expedite selection of a system to transport this gas to the continental U.S. That process is now largely completed, and the international system that was approved by both the U.S. and Canadian governments is the Alaska Natural Gas Transportation System. It will establish a new threshold of Arctic engineering accomplishment, and it will be the largest privately financed construction project ever undertaken in the world. Both the U.S. and Canada have established special agencies to oversee the construction: the U.S. Office of the Federal Inspector and Canada's Northern Pipeline Agency. These agencies are playing a critical role in assuring that the system is built quickly at reasonable cost, and is a technically and environmentally superior achievement of which both nations can be proud.

The Alaska Natural Gas Transportation System (ANGTS) is immense by any measure.

- It will stretch 4,800 miles from Alaska's Prudhoe Bay to the western and central U.S.;
- Its construction will employ a total of about 15,000 people in both countries;
- It will be the first chilled, buried pipeline across Alaskan and Canadian permafrost areas;
- It will be the largest capacity gas line in the world, able to transport 2.4 billion cubic feet of gas a day, or enough to supply the daily needs of the entire state of Michigan.



Alaska Natural Gas Transportation System

U.S. AIR FORCE

PAUL T. STEUCKE

Selecting the Route

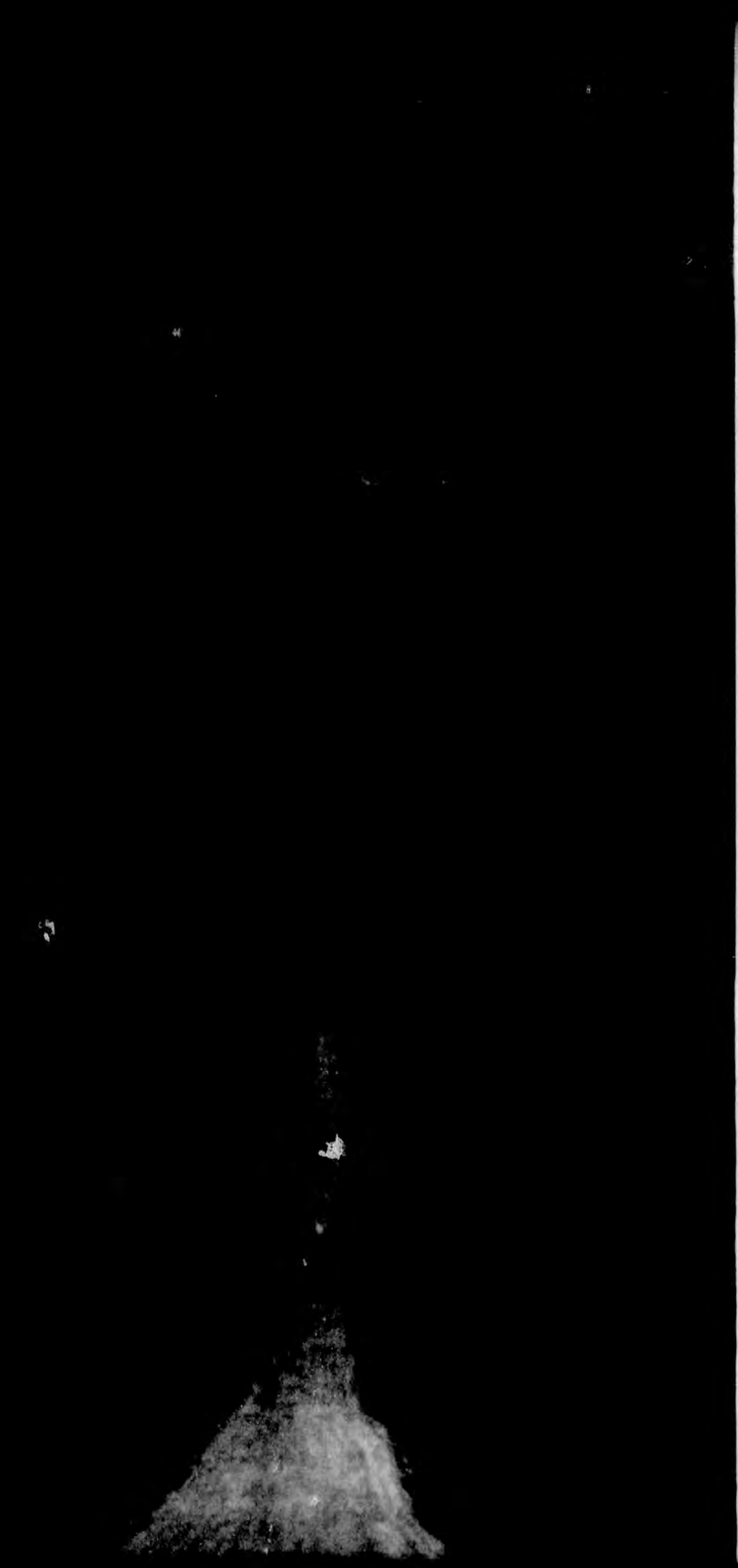
The 1976 Alaska Natural Gas Transportation Act (ANGTA) required the President to describe the nature and route of the system he found to be most desirable and designate a company to build and operate it. In September 1977, after numerous agency hearings and recommendations, President Carter selected an overland route through Canada as clearly superior to two competing route applications. The U.S. and Canada formally signed an agreement, also in September 1977, laying out the framework for international cooperation in planning and building the project. Canada fully supported the selected route. It had found the alternate overland route unacceptable for environmental and other reasons. Canada wishes to use the system to bring its own frontier gas reserves in northern provinces south, either to Canadian markets or to the U.S.

The President's selection was approved by Congress in November of 1977, clearing the way to proceed with planning and construction of the Alaska Natural Gas Transportation System.

As the map at left shows, the pipeline will closely follow the route of the Trans-Alaska Oil Pipeline System from Prudhoe Bay to Fairbanks. From there it will follow the Alaskan Highway into Canada. In Alberta it will divide into two pipelines, with the Western Leg moving south into the United States, through Idaho, Washington and Oregon before terminating just east of San Francisco. The Eastern Leg will cross into Saskatchewan and then into the U.S., traversing Montana, North and South Dakota, Minnesota, Iowa, and terminating near Chicago.

The pipeline will be built in four segments: Alaskan – 745 miles; Canadian – 2,033 miles (including those portions of the two legs in southern Canada); Eastern Leg – 1,431 miles; and Western Leg – 887 miles. The pipeline diameter will vary from 36 inches to 56 inches.

Before the gas can enter the pipeline at Prudhoe, it must be "cleaned" or conditioned, by removing impurities, heavy liquids, excess water and carbon dioxide. To do this a "conditioning plant" must be built on the North Slope. While it will use conventional technology, it will be the largest such plant in the world and its design and construction must allow for the harsh climate conditions. It is being designed in tandem with the pipeline, and completion of their construction will coincide.



Left, a solitary automobile traverses the Alaskan Highway, which the pipeline will parallel through much of the state.

Another element of construction which is related to but not actually part of the system is the Western Delivery System, an existing pipeline system which is being expanded to carry additional Canadian gas from Oregon around to southern California. Expansion of the Western Delivery System, owned by Northwest Pipeline Corp., involves construction of 351 miles of pipeline and will be completed by the fall of 1981.

Construction on the Western Leg began in Canada in August 1980, and in the U.S. in December 1980. Eastern Leg construction began in spring of 1981. These southern portions of the system are being built immediately to bring the U.S. additional Canadian gas while the more difficult Alaskan and northern Canadian segments are being designed and built. Canadian gas will begin to flow in October 1981 through part of the Western Leg, and through the Eastern Leg as far as Ventura, Iowa, in the fall of 1982.

There are substantial advantages to be gained by both countries in building the southern Canadian and lower 48 portions of the system early. For the builders of the system there are important financial advantages in an early flow of gas through the pipeline, as it will return part of their invested money at an earlier date, thus reducing the need to raise all the financial capital at once.

LEO BELLARTS

The Deputy Federal Inspector responsible for lower 48 construction, Peter Cook (center), watches pipe welding on the Western Leg.

The Federal Inspector's Role

The Office of the Federal Inspector is an independent, single-purpose agency of the federal government created by the President in July 1979 to oversee approval and construction of the Alaska Natural Gas Transportation System. The Federal Inspector is the single federal decision-maker, with broad authorities not normally given to a single entity. The concept is unique to government and, if successful, may be applied to future similar projects.

The 1976 Alaska Natural Gas Transportation Act authorized the role of Federal Inspector, and transferred to him by law critical enforcement powers that normally reside with the federal agency issuing the permit or certificate. The Federal Inspector maintains tight control over the scheduling and issuance of federal permits. The Federal Inspector also oversees engineering design review, cost control, procurement review, sponsor company management efficiency, pipeline safety and integrity, public land use, and equal employment opportunity.

His goal is to establish a responsible regulatory climate that will allow the private sector to build the project on schedule at the lowest possible cost to the consumer. In keeping with his mandate to expedite and simplify, he has set up a "one-window" approach that allows the sponsors and others to deal with one agency—OFI.

The concept of a single centralized entity is working well. The eight federal agencies involved in the project were cooperating fully with the Federal Inspector to assure that the intent of Congress and the President is carried out.

The Federal Inspector has assembled a small, specialized organization that is involved with, and informed on, every subject relevant to system construction. Canada has created an agency similar to the Office of the Federal Inspector to oversee its portion. That agency—the Northern Pipeline Agency—and the Federal Inspector are in close communication to coordinate schedules and resolve small problems before they become large ones.

To advise the Federal Inspector on policy matters, the President established an interagency advisory group called the Executive Policy Board (EPB). EPB membership consists of the eight federal agencies that are involved in the project in some way—the Departments of Agriculture, Energy, Labor, Transportation and Interior; the Environmental Protection Agency; the Army Corps of Engineers; and the Federal Energy Regulatory Commission.

ALYESKA PIPELINE SERVICE COMPANY

Above, two sections are joined by welder. Welds, so critical to the integrity of the pipeline, are closely inspected.
Immediately after coating and taping to control corrosion, this section of the Eastern Leg pipeline, at right, was lowered into the trench and covered with soil. This operation, called backfilling, must be carefully done so that the fertile top soil is returned to the surface to ensure continued agricultural productivity.

An Experienced Construction Team

Thirteen of the largest American and Canadian energy utility companies have joined to build a system that no single one of them could. They are all large, well-established energy companies that are constantly seeking new gas supplies. Some of the companies are participating in more than one segment, so there is some overlap between consortiums.

Ten companies have joined to build and operate the Alaskan segment of the line. That partnership is called Alaska Northwest Natural Gas Transportation Company, and its member

ALYESKA PIPELINE SERVICE COMPANY

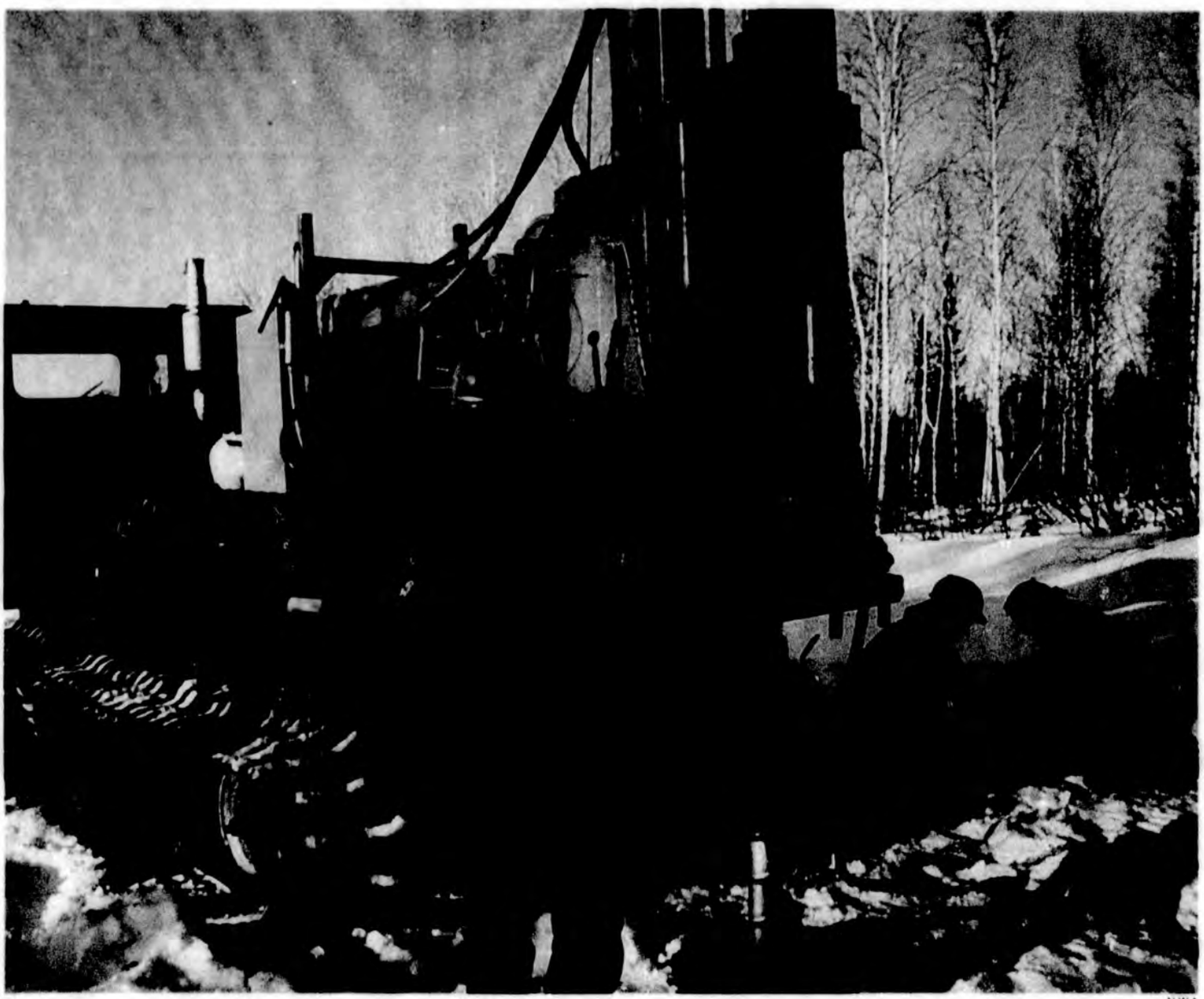
companies together account for almost 40 percent of American gas sales. The managing partner is Northwest Alaskan Pipeline Company of Salt Lake City.

Five companies—four U.S. and one Canadian—will build the Eastern part of the U.S. system. That group is called Northern Border Pipeline Company, and its managing partner is Northern Plains Natural Gas Company of Omaha, Neb.

The Western Leg is being built by Pacific Gas Transmission Company and its parent, Pacific Gas and Electric Company, both of San Francisco.

The Canadian segment is being built by Foothills Pipe Lines Ltd. through its five subsidiaries.

Test-boring is conducted in Alaska to permit analysis of subsurface soils.



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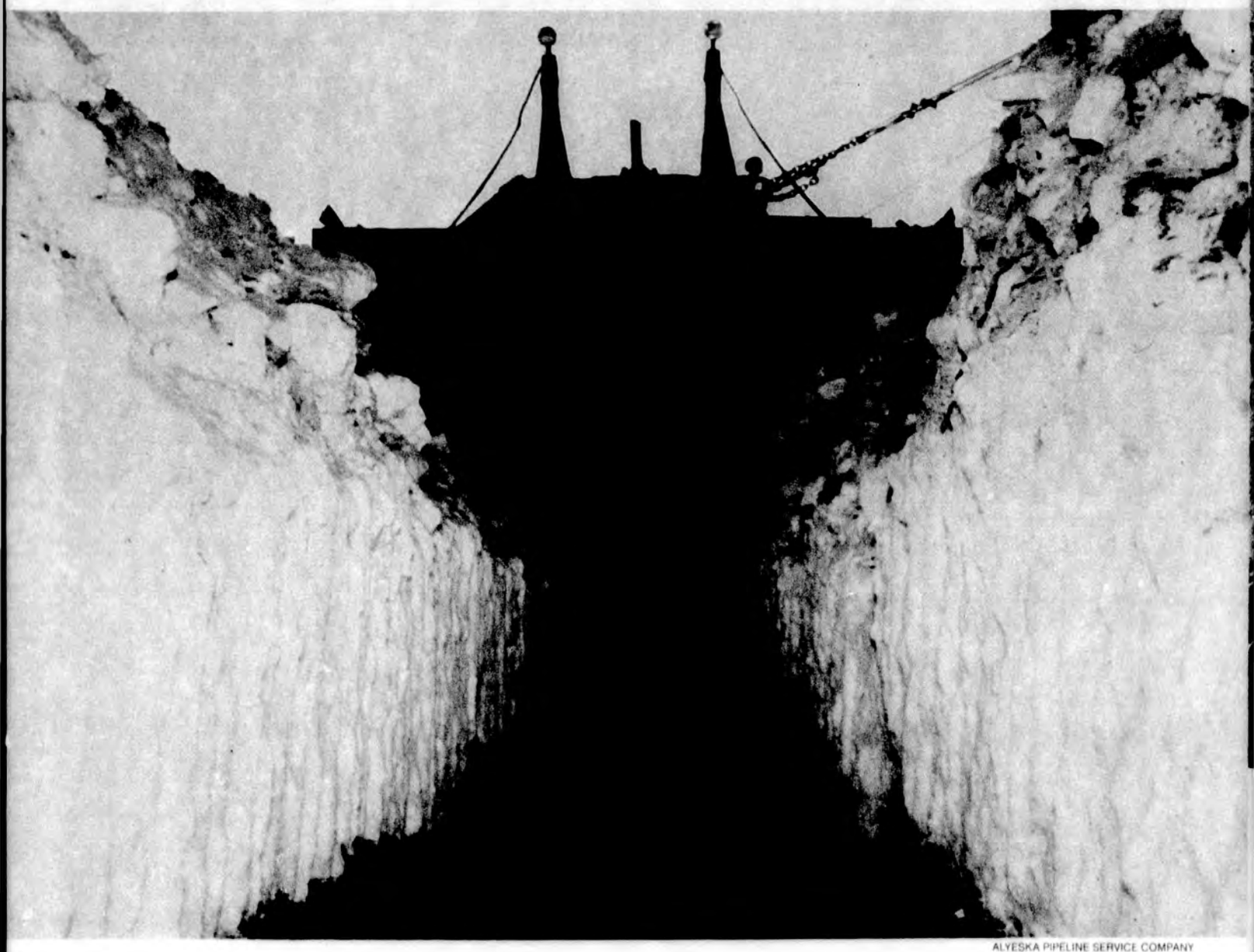


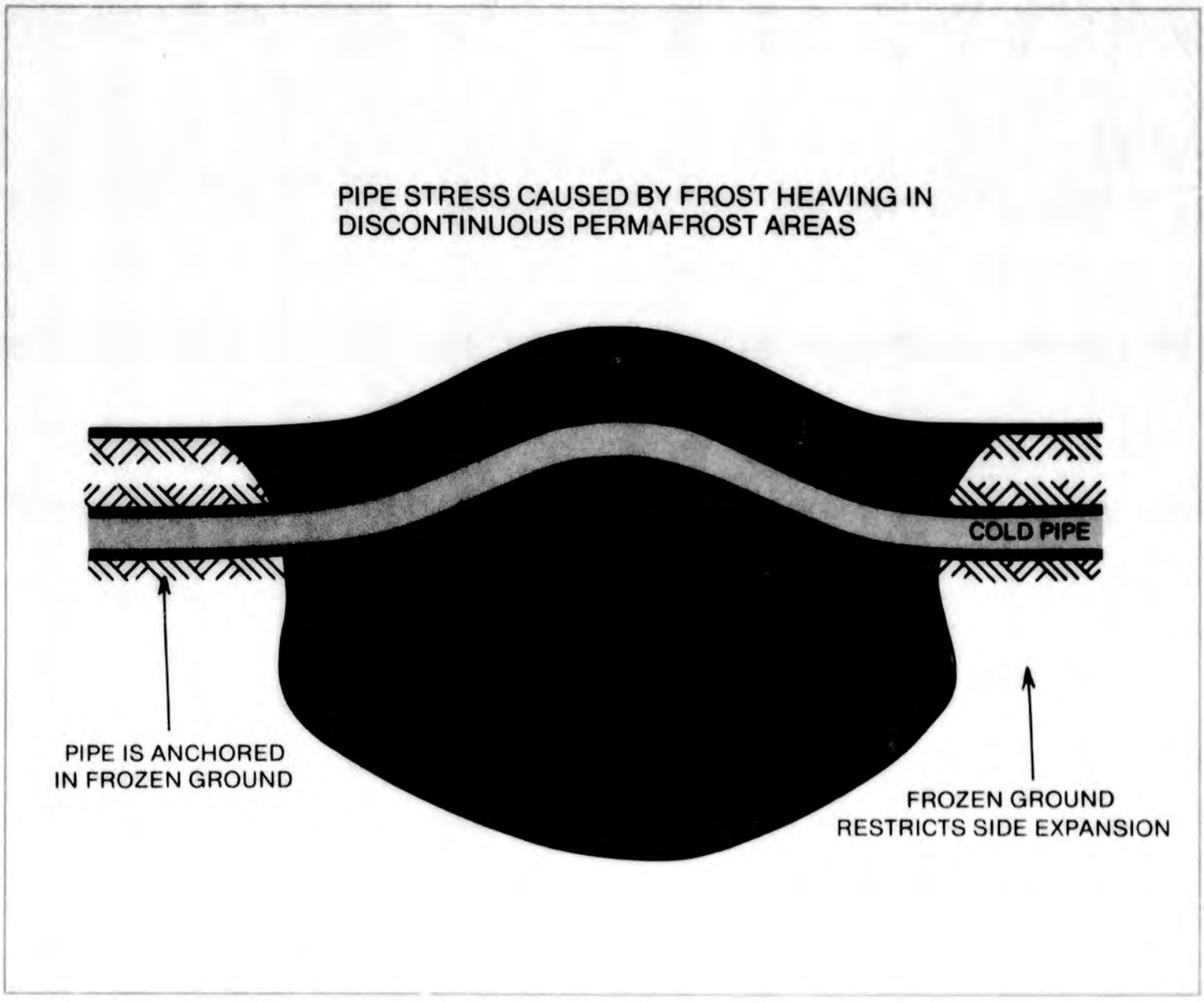
ALYESKA PIPELINE SERVICE COMPANY

Trenching machines must be specially adapted to operate efficiently in frozen arctic soils.

Challenges for the Engineers

Traditional technology should enable construction of the southern portions of the system without serious technical problems. The Eastern Leg, at 1,131 miles, is one of the longest pipelines ever built in the continental U.S. at one time. It is traditional pipeline construction. The Alaskan and Canadian northern regions offer some real engineering challenges, however, in building a chilled, buried pipeline through regions of frozen soil, snow, below-zero temperatures, and total darkness much of the year.

The Alaskan segment challenge receiving the most attention is a phenomenon known as frost heave. The North Slope is covered with a fragile mass of delicate vegetation called tundra. Under the tundra is a soil condition called permafrost, or soil that has been frozen for at least two years. Care must be taken not to damage the delicate surface material, since once damaged, it loses its insulative effect and the underlying permafrost could melt into a quagmire during long summer days. The problem arises where the permafrost is not continuous, for there poor drainage will allow water to seep to the chilled pipe. It will then freeze, expand, and push the soil and buried pipe upwards, causing severe distortion at the surface.



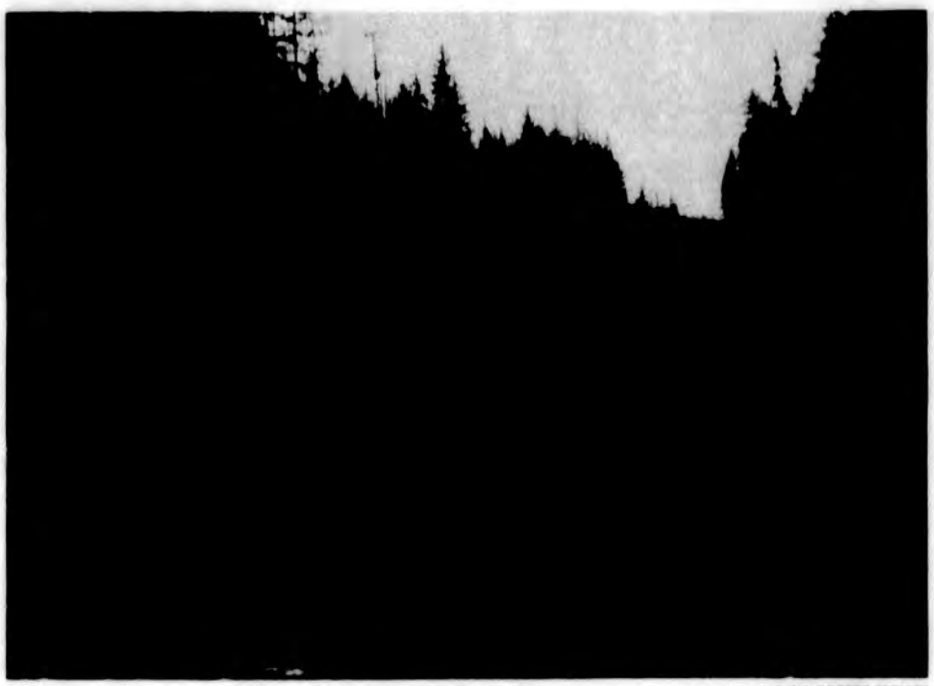
Pipe stress caused by frost heaving in discontinuous permafrost areas. Thawed area refreezes and expands, forcing pipe upward.
Pipe is anchored in frozen ground.
Frozen ground restricts side expansion.

Both the sponsor of the Alaskan segment and the Canadian sponsoring company are conducting extensive tests to determine the best way to prevent or alleviate frost heave, and substantial progress is being made. In addition, the Federal Inspector has established a committee of the best arctic engineering experts the government and academia have to offer. This group, called the Cold Regions Engineering Technical Committee, has also made significant contributions toward solving frost heave and other technical problems. There are other engineering concerns, such as pipeline safety and integrity, and minimization of longitudinal cracks.

While technically challenging, however, none of these problems is unsolvable, and none will significantly impede the progress of design and construction.

U.S.D.A. FOREST SERVICE

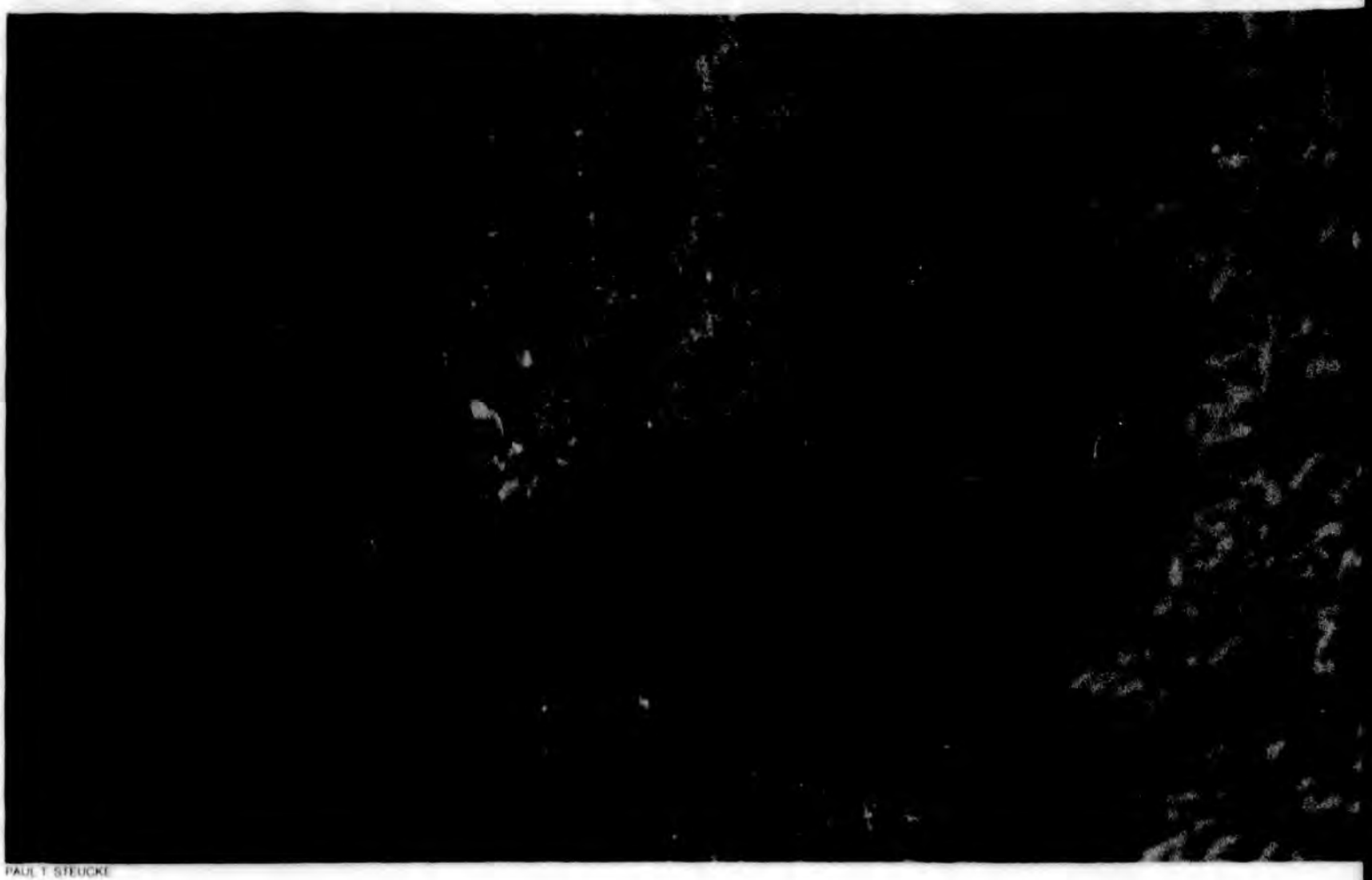
This water-filled trench above, on an Iowa section of the pipeline, resulted from heavy rainfall coupled with a naturally high water table. One of the major environmental concerns on the Eastern Leg was potential interference with tile drainage systems in high water table areas throughout the Midwest which drain the soil for agricultural purposes.
At right, the Western Delivery System right-of-way was re-graded and seeded after pipelaying.



U.S.D.A. FOREST SERVICE

Safeguarding the Environment

One of the reasons that the ANGTS route was chosen was its environmental superiority over the other overland proposal, in terms of wildlife protection and preservation of the physical environment. Significantly, industry and government both recognized from the time discussions began on an Alaskan gas pipeline that environmental considerations would have to be part of the planning.



PAUL T. STEUCKE

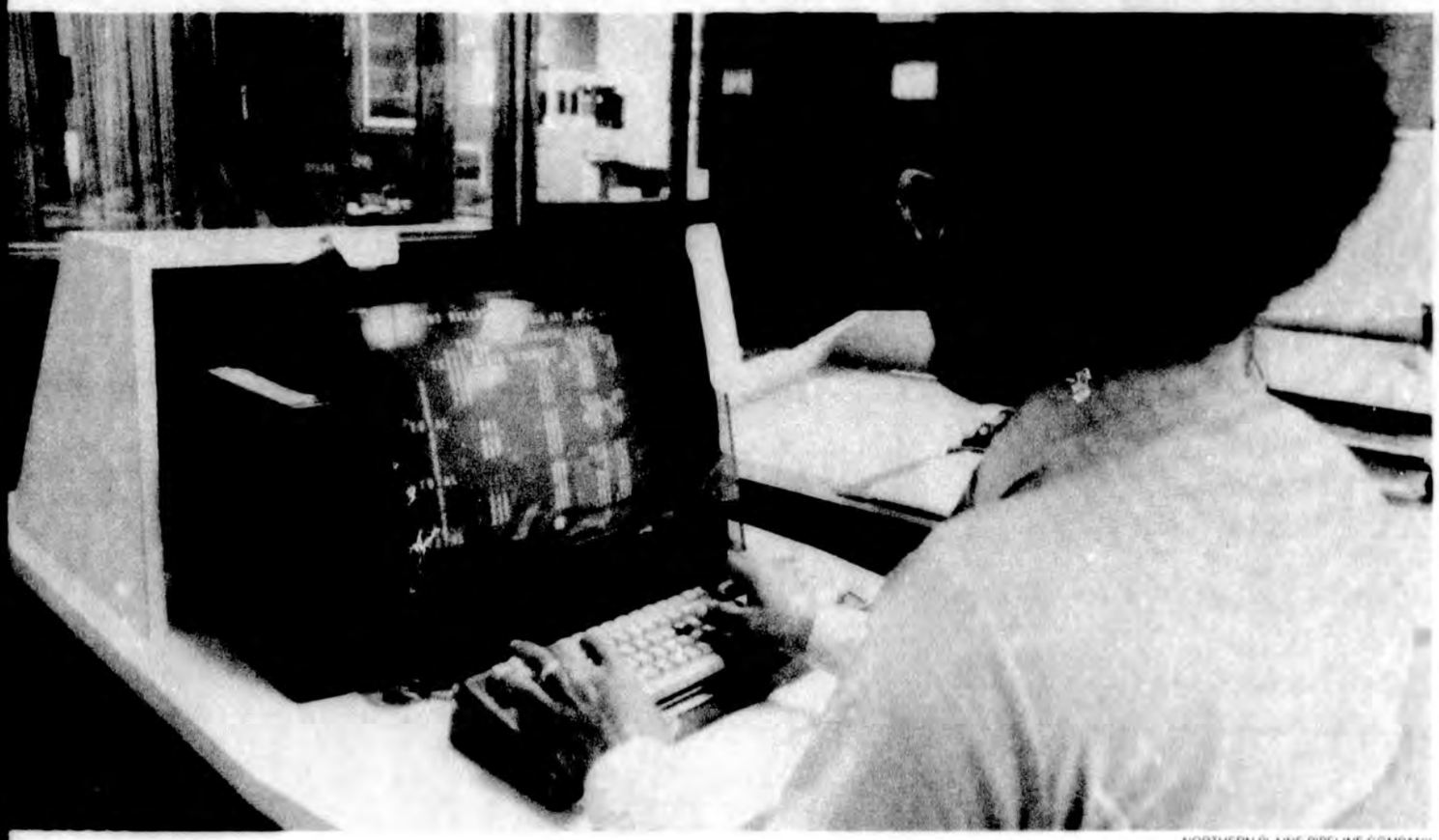
This moose exemplifies wildlife whose habitat will be carefully protected.

The Alaskan segment traverses pristine and environmentally unique territory, and therefore merits special attention. The Alaskan route selected avoids the William O. Douglas National Wildlife Range, one of the largest wildlife refuges in the world. For much of its length it will use already-developed land in an existing corridor, paralleling the oil pipeline and the Alaskan Highway. In addition, it will connect with existing pipelines in Canada, avoiding the construction of a totally new line through that country. Moreover, there are existing communications systems, airfields, and all-weather roads in place for monitoring and maintaining the system, thus minimizing additional land disturbance.

The major environmental impacts of the entire gas pipeline system were identified in an extensive 11-volume environmental impact statement prepared in 1976 by the U.S. Department of the Interior. The Federal Energy Regulatory Commission also prepared a detailed impact statement for the Alcan proposal, which later became the proposal selected. Extensive public comment was solicited and changes were ultimately made in the route proposed to avoid or mitigate the environmental impacts identified. However, environmental analyses continue to be made on specific sites and issues, such as wetlands, endangered species, waterfowl, stream crossings and material sites.

In the lower 48 states, the Eastern and Western Legs will pass through or near several unique or highly productive environmental regions. The Eastern Leg crosses small portions of the North Dakota Badlands and rough rangelands. Post-construction restoration of these areas will be difficult because of the thin and highly erodable topsoil layers. The route also passes through the biologically productive prairie potholes region of North and South Dakota, which are prime waterfowl nesting and staging areas in the upper Midwest. On the Western Leg, the Juniper Canyon area of Oregon may be vulnerable to construction activities because its steeply sloping walls make revegetation and erosion control difficult.

Because the Alaskan environmental interest and issues are so varied and unique, the Federal inspector plans to form a Citizens Environmental Advisory Committee to keep him current on the issues and to gain the Alaskan perspective in dealing with them. The Committee will consist of persons with experience in arctic environmental problems and solutions.



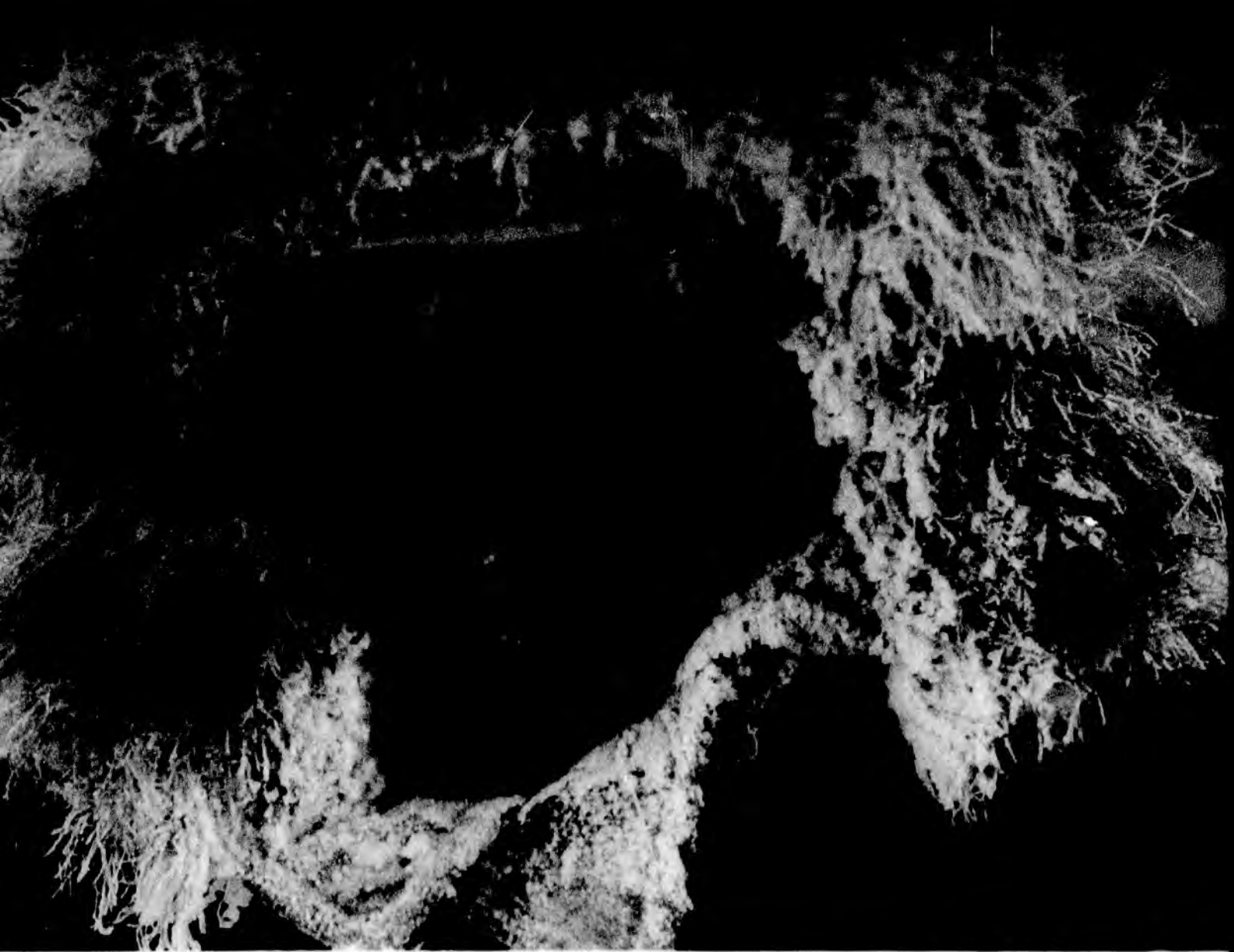
NORTHERN PLAINS PIPELINE COMPANY

ALYESKA PIPELINE SERVICE COMPANY

Above, an employee of the Eastern Leg sponsor company uses an electronic information management system to stay on top of construction progress. At left, geologists do preconstruction surveying in Alaska for the Alaska segment sponsor company. Results of this and similar tests will be used in designing the pipeline.

The Human Factor— A High Priority

Large construction projects have too often been built with engineering considerations almost obscuring the effect on people. Congress and the President made clear from the start that the Alaska gas pipeline project is to be built with human goals to be considered along with technical ones. The Federal Inspector has thus charted a course that requires full consideration of factors such as employment opportunities regardless of race or sex; use of minority business for contract needs; training; socioeconomic impact; and preservation of cultural resources along the route.



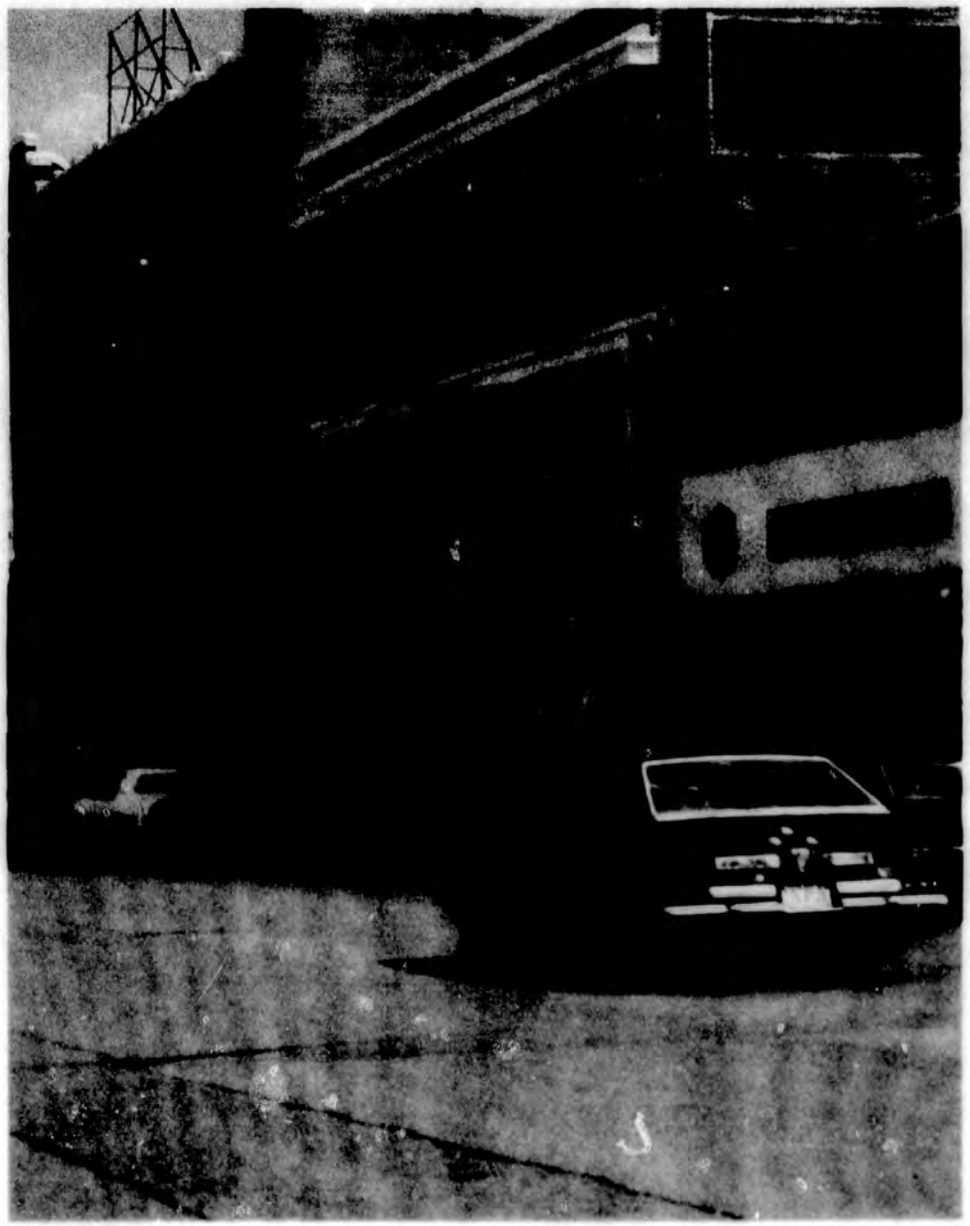
This Alaskan native is a former Athabascan Indian chief. Athabascans are one of several Native tribes indigenous to southeastern Alaska, through which the gas line will pass. Potential impact of the pipeline on such communities will be carefully monitored, and measures sought to avoid disruption of tribal cultures.

Equal Employment Opportunity

Thousands of jobs will be available in both Alaska and the lower 48 states through the construction period, and there will be a high degree of competition for these jobs. The Federal Government in 1980 issued regulations to assure equal job opportunities, and requiring that a fair proportion of contracts awarded by the sponsoring companies be awarded to minority or female businesses. The Federal Inspector has negotiated and approved employment and contracting goals for the building of all three U.S. segments, and will enforce these goals with the same diligence as engineering and other specifications.

Training

To qualify for many of the jobs, however, especially in Alaska, minorities (including Alaskan natives) and women often need special training. The Federal Inspector, the U.S. Department of Labor, the State of Alaska, and others are jointly working with the sponsor companies to plan for and fund programs to begin training early enough to ready potential employees for employment before construction begins, and also to plan on-the-job training programs.



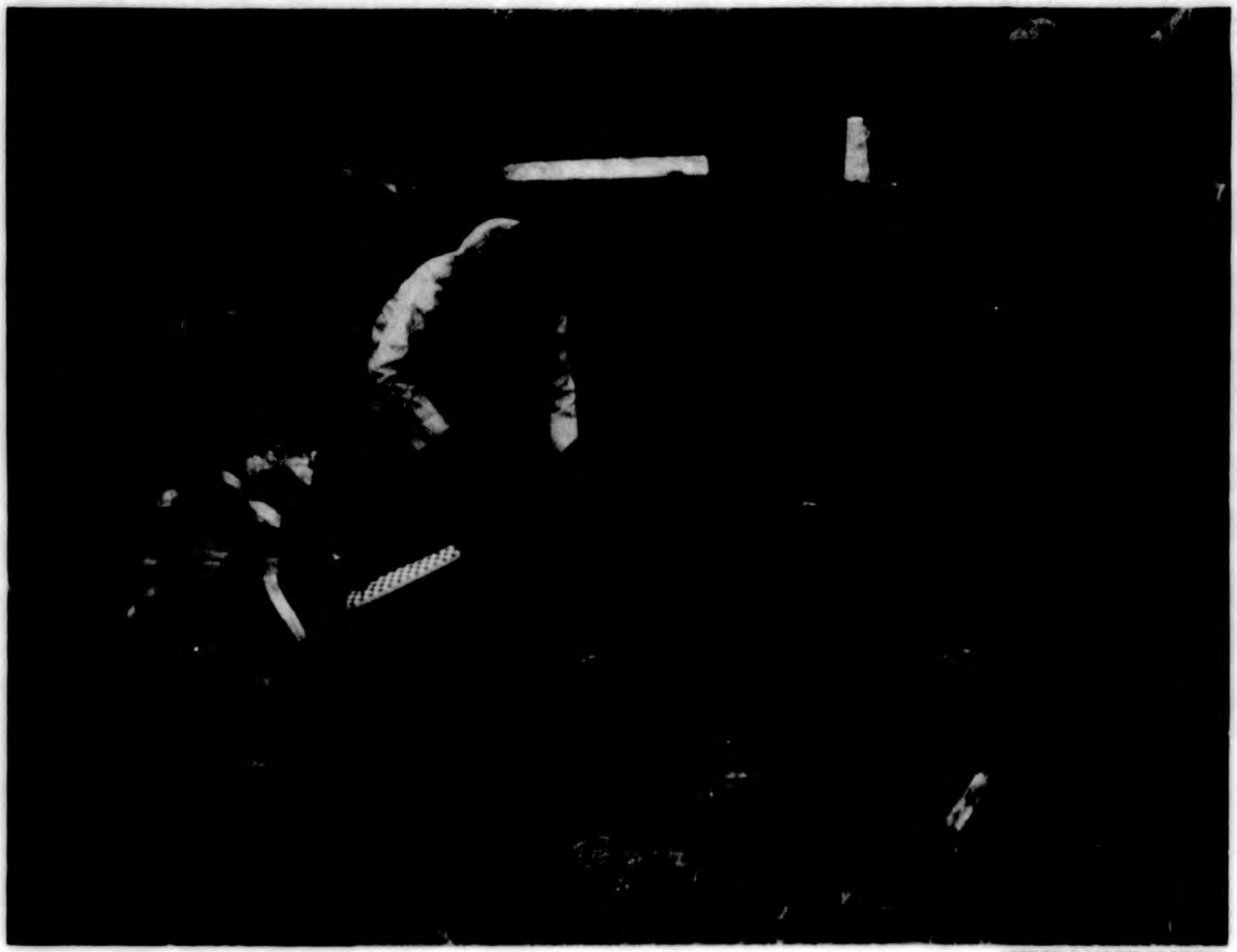
JOYCE R. MORRISON

Towns like Glasgow, Montana, shown above, experience brief booms when pipeline construction is occurring nearby.

Socioeconomics

Socioeconomics covers many community-oriented issues, including small business development, subsistence, transportation, interaction between immigrant and local workers, recreation, and housing. For example, location of work camps near a community affects the economics and social atmosphere of the community, as well as public services such as police, sewage, health, and transportation facilities.

While such concerns apply to the entire system, the major impacts are expected to be in Alaska. There, the state and local governments are taking the lead in cooperation with community leaders and the pipeline sponsors to identify potential negative impacts and develop measures to mitigate them. The Federal Inspector has a socioeconomic advisor who serves as an information channel and official liaison to the communities, the affected states, the sponsors, and others.



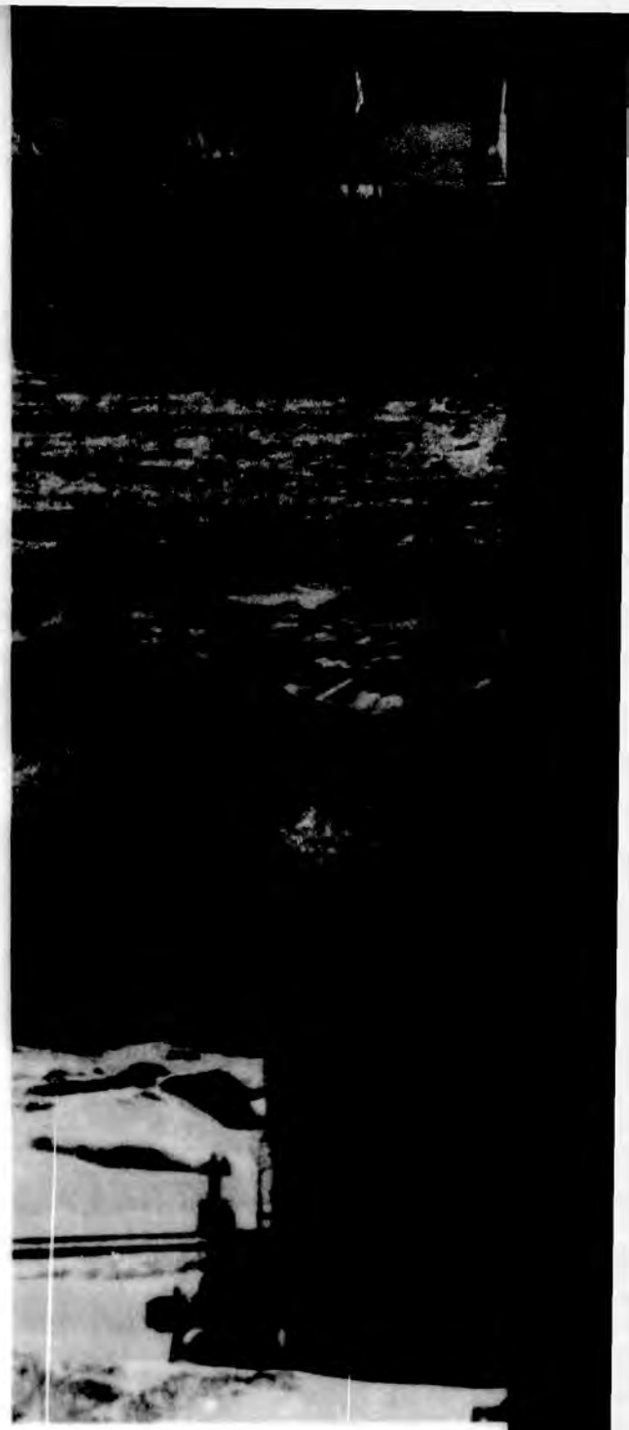
NORTHERN PLAINS PIPELINE COMPANY

Shown above, archeological surveys have already been done on the East and West Legs in the lower 48, and will be completed in Alaska before construction begins.

Cultural Resources

The pipeline passes through areas formerly inhabited by historic and prehistoric societies, such as the native Alaskans in the southeastern portion of the state, and American Indians in Montana, North and South Dakota. The Federal Inspector has a program to identify the locations of these archeological, cultural and historic sites early in the planning phase to lessen the potential for unexpected finds during construction.

In addition to monitoring cultural resource survey and mitigation work along the entire pipeline route, OFI coordinates with pipeline sponsors, the state historic preservation officials, and other federal agencies to assure proper treatment of archeological resources. Extensive archeological survey work has been or will be done on all three segments. An emergency salvage plan for each segment will provide an expeditious method of protecting cultural resources without delaying construction.



Project Cost

At a total cost which will reach tens of billions of dollars, the Alaska gas pipeline system will set a new record for a privately financed project. Financing, like construction, is occurring by segment, as well as by stages of construction. Financing of the first phase of lower U.S. construction, involving more than a billion dollars, has been obtained, as has initial Canadian construction financing. Obtaining financing for the Alaskan construction has been the most complex, in part because of unique terrain and climate conditions, and resultant engineering challenges.

In 1980 agreement was reached between the pipeline companies building the gas line and the three major producers (Exxon, Sohio, and Atlantic Richfield) which own most of the Prudhoe gas reserves. They agreed to finance jointly the design and engineering of both the Alaskan portion of the pipeline and the conditioning plant. The State of Alaska participated in this agreement and is involved in the design review process, even though it did not commit funds to design.

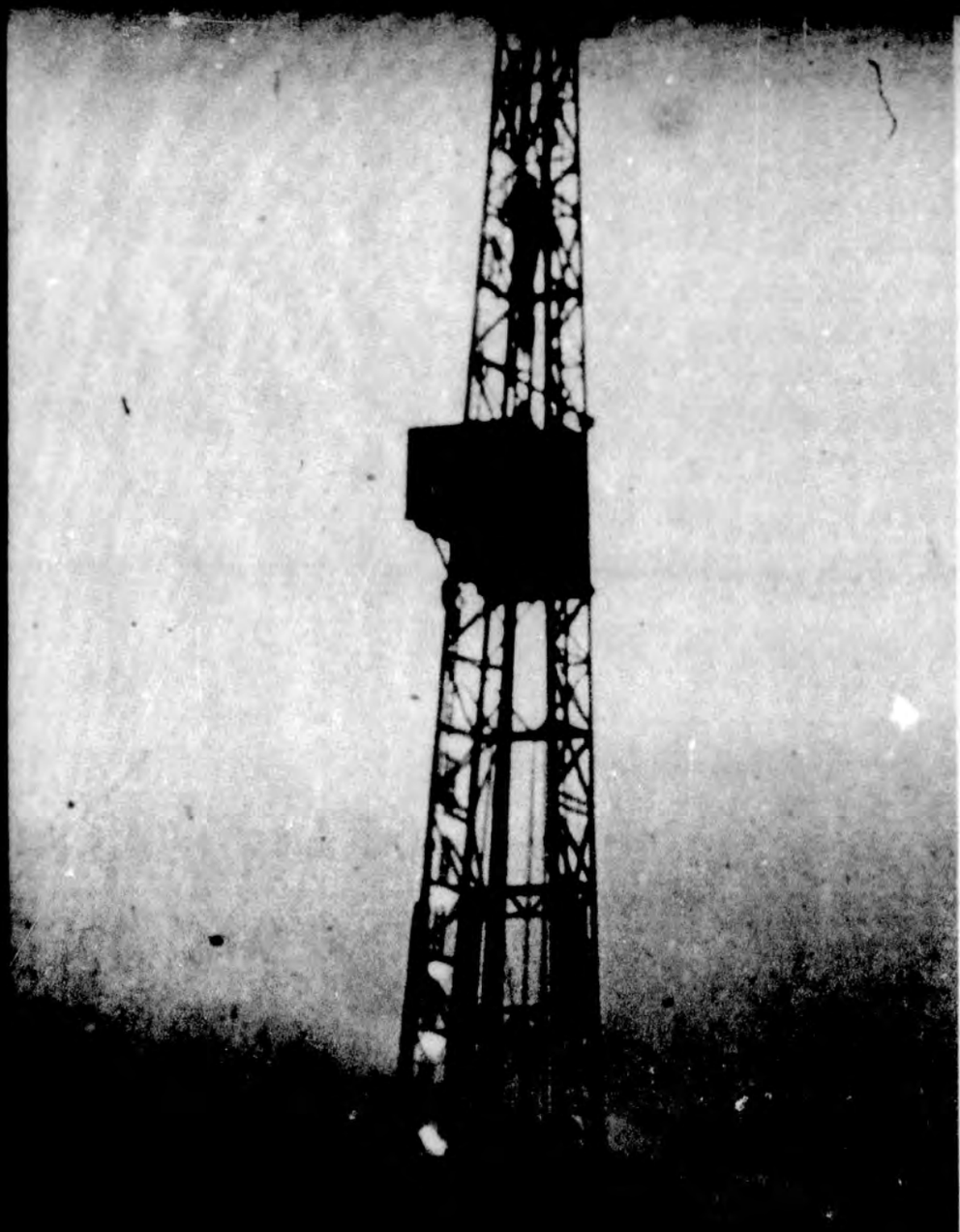
In May 1981 the sponsors and the producer group agreed on a plan to finance construction of the Alaskan segment. Joint involvement of the sponsoring pipeline companies and the producers assures that the pipeline and the gas conditioning plant to be built at Prudhoe Bay will be coordinated and compatible. Because the producer companies are also part owners of the oil pipeline, their involvement further assures that gas line activities will not negatively affect the oil line.

Historically, sponsors of large construction projects underestimate costs. To avoid this, and to assure that the system will be built at the lowest possible cost, the President included in his announcement of the selected route, the requirement that an "incentive rate of return" mechanism be designed to reward the sponsors for effective cost management. This mechanism, which applies to Alaska and Eastern Leg segments, is an experimental and exceedingly complex requirement. The U.S. Federal Energy Regulatory Commission order defining the mechanism of it sets a rate of return from 15 to 17.5 percent for the various segments of the line. This is the return which the sponsors will earn on their investment if they can build their portions of the system within their final cost estimate. Lower or higher rates of return may be earned depending on the degree to which the actual costs of construction exceed or are exceeded by the final estimate. The Canadian government has imposed a similar requirement on the project's Canadian segment. Additional cost control will be provided through the audit and rate base approval process.

PAUL T. STEUCKE

Anchorage is the transportation hub of Alaska. Many materials are brought in by ship and hauled to Fairbanks by rail.

About half of the project's total cost will be for materials: steel pipe, compressors, temporary camp facilities, etc. The original 1977 agreement between the U.S. and Canada required that procurement for the largest such items (i.e., pipe, valves, fittings, and turbo machinery) be generally competitive, to keep these costs as low as possible. To carry out the spirit of that agreement, procedures were negotiated to provide reciprocity of information throughout the bidding and selection process. Major procurement for the first phase of construction was made smoothly, with distribution between U.S., Canadian, European and Japanese manufacturers.



Snow swirls around Prudhoe Bay oil drilling rig. Oil and gas workers there must learn to adapt to extremely harsh weather conditions.

AMERICAN GAS ASSOCIATION

Summary

Construction of the Alaska Natural Gas Transportation System will not only be an impressive international engineering feat, but more importantly, it will provide an additional source of domestic energy and thus make the U.S. less vulnerable to the vagaries of international energy supply that can plunge the country into a crisis almost overnight.

Successful completion of the project, on time and reasonably within cost, will demonstrate that the private sector in America is strong and capable of conceiving and carrying out a tremendously ambitious plan. It will test the concept of a single specialized federal agency equipped with the proper legal powers to enable strong oversight and leadership in coordinating all the many interests that must participate in a project of this size. It will be the most striking example in our time of a cooperative working partnership between nations, states, and private companies.

Shortly after he assumed the office, the Federal Inspector testified at an oversight hearing before a subcommittee of the House Interior and Insular Affairs Committee.

"My experiences during these first three months as Federal Inspector have more than supported (my) preliminary assessment of the task which lies ahead," he said in his testimony. "The diversity of terrain, the sensitivity of the environment, the unique construction conditions, the geographic scope of the project, the number of government and corporate entities involved, and the cost of the project together pose a considerable challenge to all participants.

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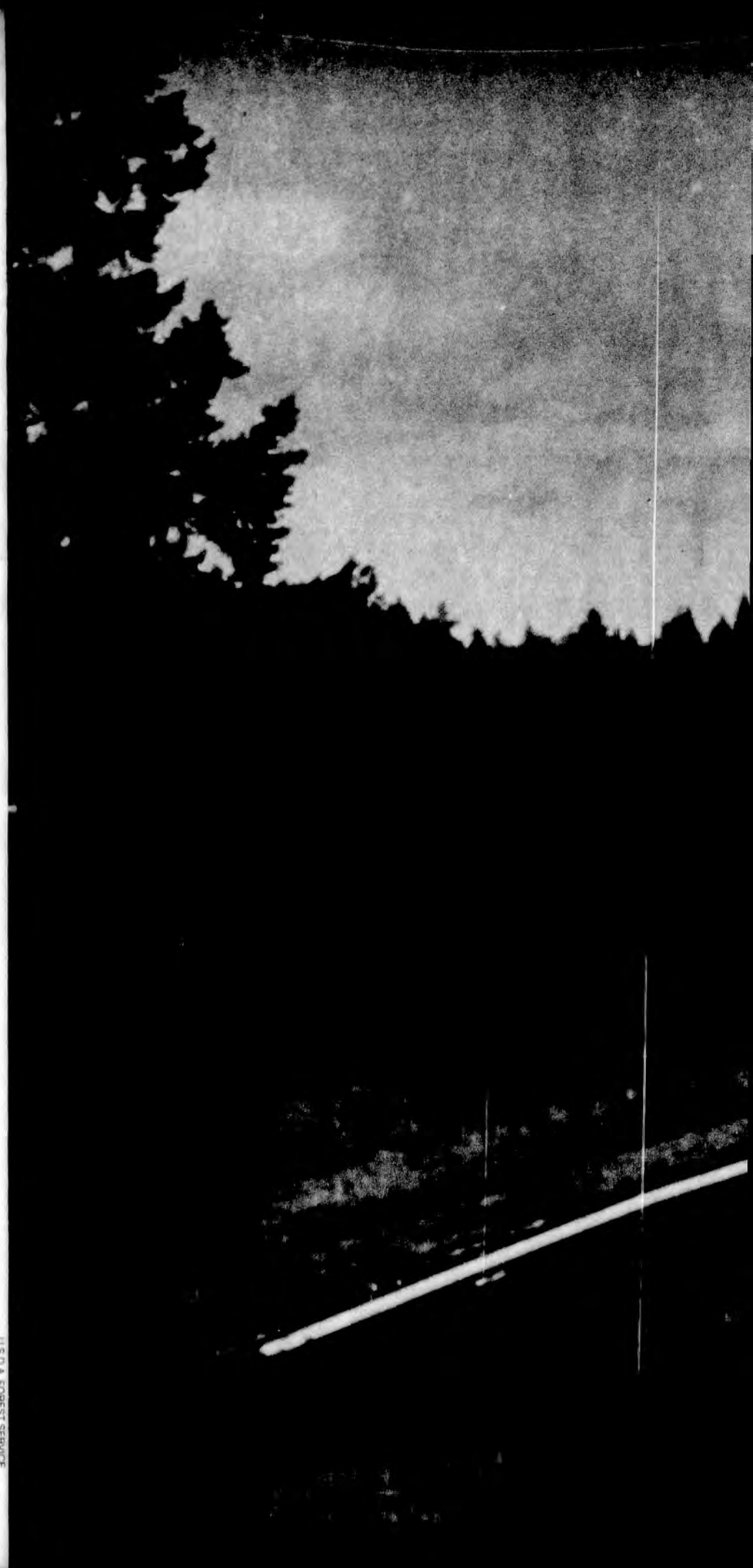
Natural gas supplies about 27 percent of our nation's energy needs. Energy consumption is illustrated on a grand scale by this view of Manhattan at night, above, and on a more personal scale by a commonplace American kitchen scene.

AMERICAN GAS ASSOCIATION

"This, however, should not deter us, because the benefits to the country are substantial. This project offers us a unique challenge to marshal the resources of a number of communities—government, industry, financial, academic—to build an energy transportation system with significant and undisputed benefits to the nation."



This segment of the Western Leg in Washington is welded and awaits lowering into the trench.

Additional information on the Office of the Federal Inspector or the Alaska Natural Gas Transportation System is available at the following offices:

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NORTHWEST ALASKAN PIPELINE COMPANY

CURRENT HOUSING TRENDS

Fairbanks Area

Second Quarter, 1981

Manpower and Impact Planning Department
Northwest Alaskan Pipeline Company
701 Douglas Avenue
Fairbanks, Alaska 99701

CURRENT HOUSING TRENDS

Fairbanks Area
Second Quarter, 1981

TABLE OF CONTENTS

	Page
List of Tables	ii
List of Figures	ii
Executive Summary	iii
Residential Real Estate for Sale	
Introduction	1
Housing Availab	4
Housing Prices	6
Other Trends	7
Survey of Major Apartment Complexes	
Introduction	15
Vacancy Rates	15
Average Rents	20
Other Trends	22

LIST OF TABLES

Table	Title	Page
1	Summary of Housing Location Characteristics	3
2	Availability of Housing for Sale -- By Type	4
3	Asking Prices of Housing for Sale -- By Type	6
4	Asking Prices of Single-Family Homes for Sale -- By Number of Bedrooms and Location	10
5	Asking Prices of Single-Family Homes and Duplexes for Sale -- By Size and Location	11
6	Lot Size of Single-Family Homes and Duplexes for Sale -- By Location	13
7	Description of Major Apartment Complexes	17
8	Rental Vacancies in Major Apartment Complexes	19
9	Average Monthly Rents for Major Apartment Complexes	21

LIST OF FIGURES

Figure	Title	Page
1	Map of Fairbanks Area Housing Locations	2
2	Housing for Sale -- By Location and Type	5
3	Price Distribution of Housing for Sale -- By Type	8
4	Median Asking Prices of Housing for Sale -- By Type and Size	9
5	Year Built for Single-Family Homes and Duplexes for Sale -- By Location	12
6	Map of Major Apartment Complexes	16
7	Apartment Units In Major Complexes -- By Year Built and Size	18

CURRENT HOUSING TRENDS

Fairbanks Area
Second Quarter, 1981

EXECUTIVE SUMMARY

I. Residential Real Estate For Sale - April 1981 (Pages 1 to 14)

In April Northwest Alaskan staff surveyed local realtors and compiled data on housing advertised for sale by owners in the local newspaper. The survey found:

Type	Number Available	Median Asking Price
Single-Family Homes	96	$ 97,000
Condominiums	11	80,000
Duplexes	24	106,250
All Units	131	$ 97,000

- The 131 housing units for sale in April 1981 represented a 42 percent drop from 224 units available in September 1980.
- Most housing for sale was located in the Urban and North Pole areas. Only 18 units were available in the Suburban area, and only 24 units in the Foothills.
- Between September 1980 and April 1981, the median asking prices rose 23 percent for single-family homes and 22 percent for duplexes.
- Median asking prices for homes and duplexes were highest in the Foothills ($133,750) and lowest in the North Pole area ($86,500). Median prices in the Urban and Suburban areas were $99,750 and $109,500 respectively.
- More than 70 percent of the homes for sale in April 1981 had been built since 1970.
- Median lot sizes were 10,625 square feet in the Urban area and 11,454 square feet in the Suburban area. Lot sizes averaged 1 acre in the North Pole area and were largest in the Foothills at 2.1 acres.
- Eighty-six percent of the homes for sale had oil heat while 12 percent had electric heat, 1 percent had coal heat, and 1 percent had wood heat.

II. Survey of Major Apartment Complexes - April 1981 (Pages 15 to 22)

An April 1981 survey made for Northwest Alaskan Pipeline Company of 20 major modern rental apartment complexes in the Fairbanks area found the following:

Type	Average Rents	Total Units	Vacant Units	Vacancy Rates
Efficiencies	$259	32	1	3.1%
One-Bedroom, Unfurnished	$385	140	-	-
One-Bedroom, Furnished	$431	497	2	.4%
Two-Bedroom, Unfurnished	$428	127	-	-
Two-Bedroom, Furnished	$505	237	-	-
Three-Bedroom	$482	145	-	-
All Units	$442	1,178	3	.25%

- A similar survey in February 1981 had found 65 vacant units for a vacancy rate of 5.5 percent.
- Some complexes surveyed now keep waiting lists.
- All complexes surveyed expect to be full by summer 1981 with very low tenant turnover.
- The April 1981 average rent was 4.5 percent higher than the February 1981 average rent.
- Many of the complexes surveyed indicated they planned to increase rents in summer 1981.
- Problems and delays in getting phone service were mentioned by several landlords surveyed.

I. RESIDENTIAL REAL ESTATE FOR SALE

Fairbanks Area
April 1981

Introduction

A key indicator of Fairbanks housing trends is the availability and cost of residential real estate. To get an overview of the local market, Northwest Alaskan staff contacted local realtors the second week in April 1981 and asked them to provide the following information on each of their single-family, condominium and duplex listings:

- General location
- Year built
- Lot size
- Type of heat
- Asking price
- Size: square feet and number of bedrooms
- Garage size

In addition, data were compiled on all housing advertised for sale by owners in the Friday, April 10, 1981 edition of the Fairbanks Daily News-Miner. Since similar data had also been collected for real estate listings in September 1980 and January 1981, trends in availability and price could be measured.

Single-family homes and duplexes valued at less than $50,000 were not included because units below these price levels were considered to be substandard. However, condominium units under $50,000 were included. Mobile homes, housing without complete plumbing, units in dilapidated condition or units which were only partially completed were not included.

Since location is generally a major factor in housing desirability, housing for sale was grouped into four geographic areas: Urban, Suburban, Foothills, and North Pole. Figure 1, which is a map of the Fairbanks area, illustrates the general boundaries for these areas and the accompanying Table 1 summarizes housing characteristics for each area.

Figure 1

MAP OF FAIRBANKS AREA HOUSING LOCATIONS

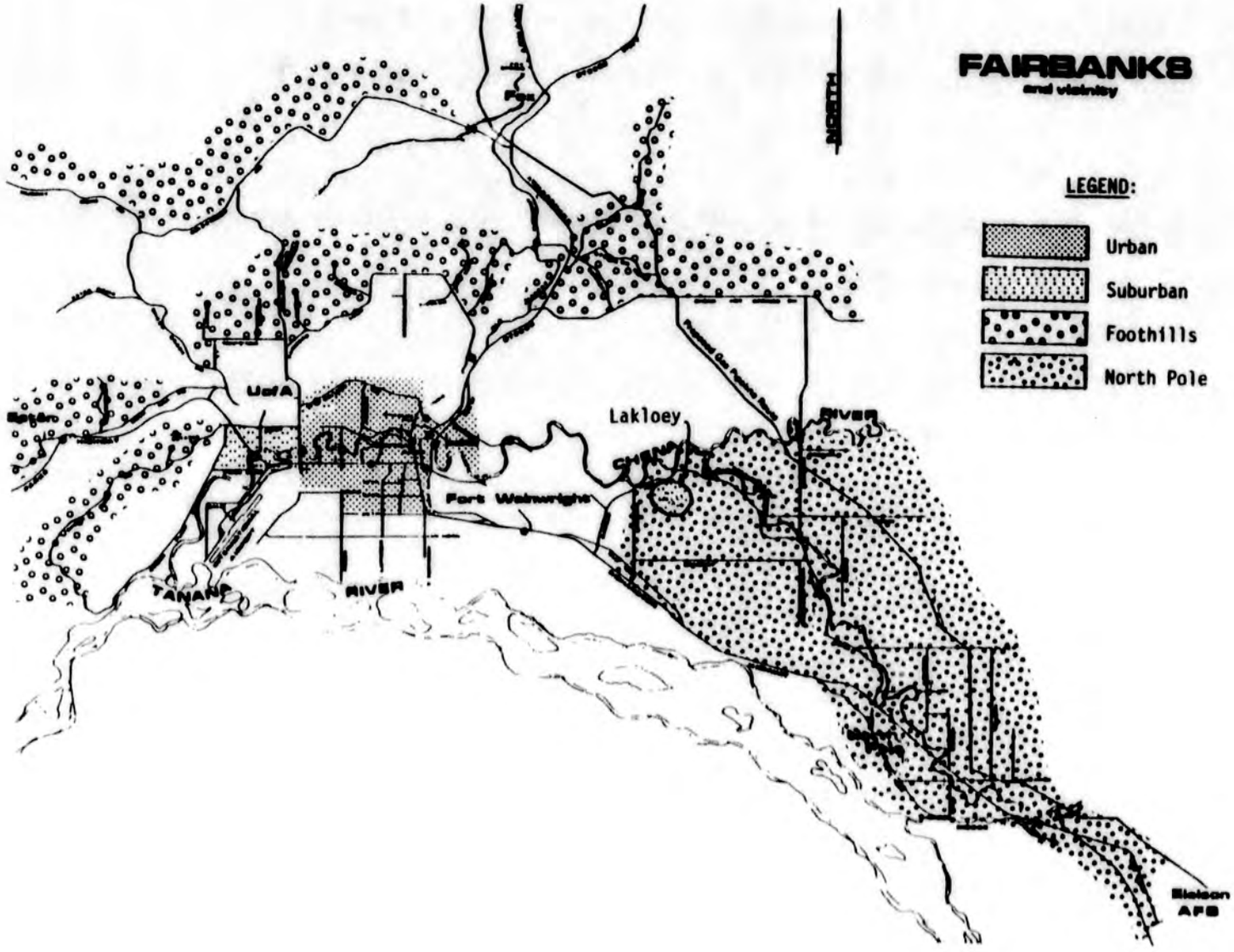


Table 1

SUMMARY OF HOUSING LOCATION CHARACTERISTICS

Fairbanks Area

	------Urban------	----Suburban----	-------Foothills-------	-----Badger Road-----
Locations and Areas	City, Hamilton Acres, Shannon Park, Slaterville, Island Homes, Aurora, Westgate, Executive Park.	University West, College, Lakloey Hill.	Chena Ridge, Muskox, College Hills, Farmers Loop, Goldstream, Steese, Chena Hot Springs, McGrath Road, Ester.	City of North Pole and surrounding areas, Badger Road, Peedee Road, Nelson Road, Laurance Road, Richardson Highway.
Lot Size/Zoning	Small lots; all zoned.	Small lots; except Lakloey Hill (3/4 acre lots); all zoned.	Large lots; many two acres or more; much of area zoned "rural estates"; some zoned "unrestricted use".	Large lots; much of area zoned "unrestricted use".
Environment	Low lying; ice fog.	Low lying, occasional ice fog; except Lakloey which is above ice fog.	Higher elevations, many with mountain views, winter temperatures 15-20° warmer than urban.	Low lying, some permafrost, winter temperatures 15-20° colder than urban.
Water & Sewer	City.	College utilities, community systems.	Individual wells and septic systems.	Individual wells and septic systems, except for city of North Pole.
Housing Characteristics	Older homes; some condominiums and many apartments; very few mobile homes.	Newer homes; some condominiums and some apartments; few mobile homes.	Newer homes and some luxury type; no condominiums and very few apartments; some mobile homes.	Newer moderate or lower priced homes; no condominiums and very few apartments; many mobile homes.
Schools, Shopping, Community Services	Close to schools and shopping; highest number of services.	Close to schools; moderate distance to shopping; moderate services.	Distant from schools and shopping; minimal services.	Distant from schools and shopping; minimal services, except City of North Pole.
Roads	Paved streets, city maintenance.	Paved streets; Borough service district maintenance.	Many unpaved access roads, road maintenance variable.	Many unpaved access roads; road maintenance variable. City is in North Pole service district for maintenance.
Distance from City Center	Under 10 minutes.	10-15 minutes.	15-30 minutes.	15-30 minutes.
Housing costs	Moderate.	Moderate.	Highest.	Lowest.

Source: Northwest Alaskan Pipeline Company, Manpower and Impact Planning Department.

Housing Availability

The April 1981 real estate survey found 131 housing units for sale in the Fairbanks area: 96 single-family homes, 11 condominiums, and 24 duplexes. This is up about 20 percent from the 109 units that had been available in January 1981, but about 40 percent less than the 224 units for sale in September 1980. One change registered in April 1981 was that 73 percent of the housing units for sale were single-family homes compared to 64 to 65 percent in the two previous surveys. In April 1981 only 8 percent of the units for sale were condominiums compared to 16 to 18 percent in the prior surveys.

Table 2 which compares the housing for sale in April 1981, with that available in September 1980, shows that the number of units dropped 33 percent for single-family homes, 73 percent for condominiums, and 40 percent for duplexes, for an overall decline in availability of 42 percent.

Figure 2, which compares housing units for sale by location and type for September 1980, January 1981 and April 1981, shows that the availability of housing is greatest in the Urban and North Pole areas. Of the 131 housing units for sale in April 1981, 55 were in the Urban area, 18 were in Suburban areas, 24 were in the Foothills, 32 were in the North Pole area and the location was unknown for two homes.

Table 2

AVAILABILITY OF HOUSING FOR SALE*

By Type

Fairbanks Area
September 1980 and April 1981 Comparisons

Type of Unit	September 1980	April 1981	September-April Change
Single-Family Homes	143	96	-33%
Condominiums	41	11	-73%
Duplexes	40	24	-40%
All Units	224	131	-42%

*Single-family homes or duplexes priced under $50,000 was not included.

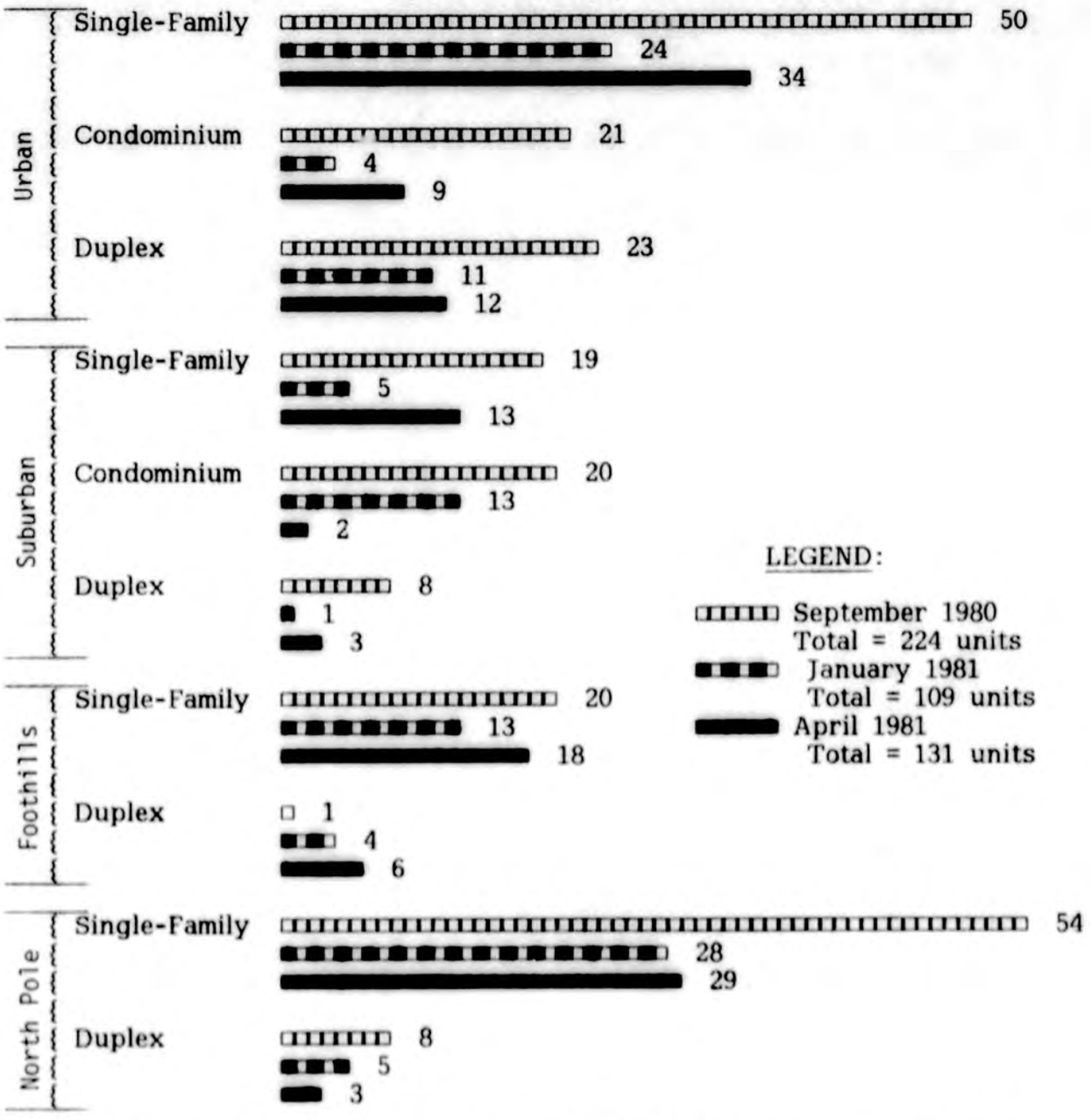
Source: Northwest Alaskan Pipeline Company, Manpower and Impact Planning Department survey.

Figure 2

HOUSING FOR SALE*

By Location and Type

Fairbanks Area
September 1980, January 1981 and April 1981 Comparisons



* Single-family homes or duplexes priced under $50,000 were not included. The locations of two single-family homes were unknown.

Source: Northwest Alaskan Pipeline Company, Manpower and Impact Planning Department survey.

Housing Prices

Median asking prices for the 131 housing units listed for sale in April 1981 were $97,000 for single-family homes, $80,000 for condominiums, and $106,250 for duplexes. Table 3 compares September 1980 and April 1981 ranges and median prices. Median asking prices for single-family homes increased from $79,000 to $97,000, or approximately 23 percent from September 1980 to April 1981. Similarly, median asking prices for duplexes increased from $86,750 to $106,250, or approximately 22 percent in the same time period.

Table 3

ASKING PRICES OF HOUSING FOR SALE*

By Type

Fairbanks Area
September 1980 and April 1981 Comparisons

	----September 1980----			-------April 1981-------			Sept-April Median Change
	Low	High	Median	Low	High	Median	
Single-Family Homes	$50,000	165,000	79,000	$52,000	275,000	97,000	+23%
Condominiums	33,000	100,000	52,500	42,500	112,000	80,000	**
Duplexes	52,500	135,000	86,750	66,000	250,000	106,250	+22%
All Units	$33,000	165,000	76,550	$42,500	275,000	97,000	+27%

*Single-family homes or duplexes priced under $50,000 were not included.

**Median does not give an accurate picture of price changes. Representative prices for September and April were available for two complexes: Woodridge Park condominiums (about 825 square feet in size) rose from $61.82/square foot to $65.48/square foot, an increase of 5.9 percent. Woodside North condominiums which are 2,130 to 2,300 square feet in size went from $42.25/square foot to $48.70/square foot, an increase of 15 percent.

Source: Northwest Alaskan Pipeline Company, Manpower and Impact Planning Department survey.

As shown in Figure 3, 32 of the units for sale in January 1981 were priced under $75,000. Most of these are very small condominiums or small older single-family homes and duplexes. Only 99 housing units valued at $75,000 or more were available: 72 single-family homes, 6 condominiums and 21 duplexes.

Figure 4, which compares prices by type and size, shows that median asking prices were $68,250 for a two-bedroom home, $97,000 for a three-bedroom and $120,000 for a four or more bedroom. When single-family homes and duplexes are combined, the square footage comparisons in Figure 4 show that most are in the 1,400-2,199 square foot size range which has a median price of $105,000. This represents a 23 percent increase from the $85,500 median for 1,400-2,199 square foot homes and duplexes in January 1981.

Table 4 summarizes data on the range and median asking prices for single-family homes in the four locations according to the number of bedrooms. It shows that most homes for sale in the Urban and North Pole areas were three-bedroom homes where the median prices were $92,000 and $90,000 respectively. Most homes in the Suburban and Foothills areas had four or more bedrooms. The median price for the Suburban four or more bedroom homes was $107,500, compared to $142,250 in the Foothills.

Table 5 gives the range and median asking prices for single-family homes and duplexes for sale in April 1981 by size for the four locations. Homes and duplexes in the Foothills area typically had higher median asking prices than those in other areas. The median asking price for a 1,400-2,200 square-foot Foothills home was $133,750. By comparison, the median asking prices for homes and duplexes in this size range were $105,000 in the Urban area, $110,000 in the Suburban area, and $95,750 in the North Pole area. Overall median asking prices for homes and duplexes were highest in the Foothills area ($133,750) and least expensive in the North Pole area ($86,500).

Other Trends

Year Built. The year of construction was known for 90 of the 120 single-family homes and duplexes for sale in April 1981. Figure 5 shows that only 29 percent of the homes for sale in the Urban area were built since 1975, compared to 73 percent in the Suburban area, 61 percent in the Foothills, and 65 percent in the North Pole area.

Lot Size. The lot sizes were known for 106 of the 120 single-family homes and duplexes for sale in April 1981. Table 6 compares low, high, and median lot sizes for the four locations. Median lot sizes in the Urban and Suburban areas were 10,625 square feet and 11,454 respectively or about one-quarter of an acre. The median lot size for homes located in the North Pole area was 43,560 square feet or one acre. Lot sizes for homes and duplexes for sale in the Foothills areas ranged from .7 acre to 9.3 acres, with a median lot size of 2.1 acres.

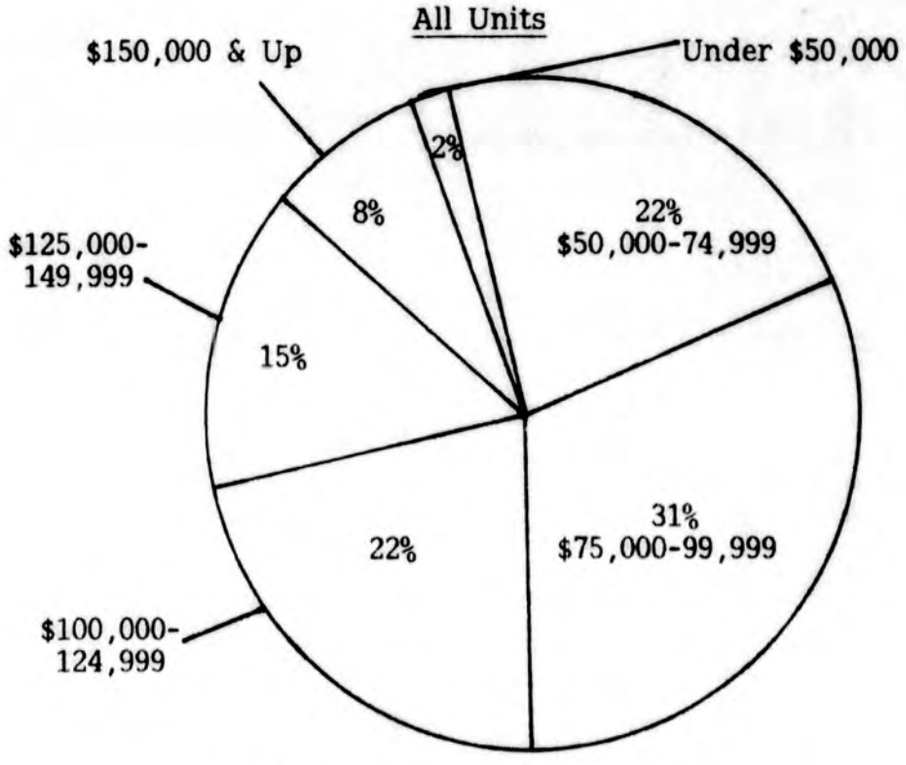
Figure 3

PRICE DISTRIBUTION OF HOUSING FOR SALE*

By Type

Fairbanks Area
April 1981

All Units



Price Ranges	Single-Family	Condominiums	Duplexes	All Units
Under $50,000	-	3	-	3
$ 50 - 74,999	24	2	3	29
$ 75 - 99,999	28	5	7	40
$100 - 124,999	23	1	5	29
$125 - 149,999	13	-	6	19
$150 - 174,999	6	-	1	7
$175 - 199,999	1	-	-	1
$200,000 & Up	1	-	2	3
All Prices	96	11	24	131

*Single-family homes or duplexes priced under $50,000 were not included.

Source: Northwest Alaskan Pipeline Company, Manpower and Impact Planning Department survey.

Figure 4

MEDIAN ASKING PRICES OF HOUSING FOR SALE*

By Type and Size

Fairbanks Area
April 1981

	Units for Sale	
Single-Family Homes**		
Two-Bedroom	18	$68,250
Three-Bedroom	46	$97,000
Four or + Bedroom	31	$120,000
Duplexes	24	$106,250
Single-Family Homes & Duplexes***		
Under 1,400 sq. ft.	25	$69,900
1,400-2,199 sq. ft.	50	$105,000
2,200 sq. ft. & up	30	$125,500
Condominiums	11	$80,000
Summary		
Homes	96	$97,000
Homes & Duplexes	120	$98,750
Homes, Duplexes & Condominiums	131	$97,000

*Single-family homes or duplexes priced under $50,000 were not included.
**The number of bedrooms was unknown for one single-family home.
***The size was unknown for 15 single-family homes and duplexes.

Source: Northwest Alaskan Pipeline Company, Manpower and Impact Planning Department survey.

Table 4

ASKING PRICES OF SINGLE-FAMILY HOMES FOR SALE*

By Number of Bedrooms and Location

Fairbanks Area
April 1981

Size	Urban	Suburban	Foothills	North Pole**	All Locations
Two-Bedrooms					
Median:	$ 63,750	-	$ 70,000	$ 68,200	$ 68,250
Range:	$ 55,000-$ 79,500	-	$ 62,000-$ 71,900	$ 52,000-$ 83,000	$ 52,000-$ 83,000
Units in Sample:	4	-	5	8	18***
Three-Bedrooms					
Median:	$ 92,000	$114,250	$132,500	$ 90,000	$ 97,000
Range:	$ 53,000-$185,000	$ 72,000-$126,000	$117,000-$139,000	$ 52,500-$116,000	$ 52,500-$185,000
Units in Sample:	19	6	5	15	46****
Four or + Bedrooms					
Median:	$120,000	$107,500	$142,250	$104,000	$120,000
Range:	$ 80,000-$168,500	$ 94,500-$123,000	$126,000-$275,000	$ 93,500-$120,500	$ 80,000-$275,000
Units in Sample:	11	7	8	5	31

* Single-family homes under $50,000 were not included.
** The number of bedrooms was unknown for a single-family home in the North Pole area.
*** The location was not known for one two-bedroom home.
**** Location was unknown for one three-bedroom.

Source: Northwest Alaskan Pipeline Company, Manpower and Impact Planning Department survey.

Table 5

ASKING PRICES OF SINGLE-FAMILY HOMES AND DUPLEXES FOR SALE*

By Size and Location

Fairbanks Area
April 1981

Size (square feet)	Urban	Suburban	Foothills	North Pole	All Areas
All Sizes					
Median:	$ 99,750	$109,500	$133,750	$ 86,500	$ 98,750
Range:	$ 53,000-$250,000	$ 72,000-$126,000	$ 62,000-$275,000	$ 52,000-$130,000	$ 52,000-$275,000
Units in Sample:	46	16	24	32	120
Under 1,400					
Median:	$ 64,000	$ 72,000	$ 70,950	$ 71,500	$ 69,900
Range:	$ 53,000-$ 79,500	-	$ 70,000-$ 71,900	$ 52,000-$ 95,500	$ 52,000-$ 95,500
Units in Sample:	9	1	2	13	25
1,400-2,199					
Median:	$105,000	$110,000	$133,750	$ 95,750	$105,000
Range:	$ 74,900-$160,000	$ 94,500-$126,000	$ 62,000-$155,000	$ 56,000-$108,000	$ 56,000-$160,000
Units in Sample:	19	7	12	12	50
2,200 and Up					
Median:	$151,000	$116,750	$144,200	$117,500	$125,500
Range:	$ 80,000-$250,000	$ 97,000-$125,000	$120,000-$275,000	$ 66,000-$130,000	$ 66,000-$275,000
Units in Sample:	10	6	8	6	30

* Single-family homes or duplexes under $50,000 were not included. The square footage was unknown for fifteen homes and the location was unknown for two of those. Sizes were unknown for eight homes in the Urban area, two in the Suburban area, two in the Foothills area, and one in the North Pole area. Unknowns were included in "all sizes" and "all locations" calculations where applicable.

Source: Northwest Alaskan Pipeline Company, Manpower and Impact Planning Department survey.

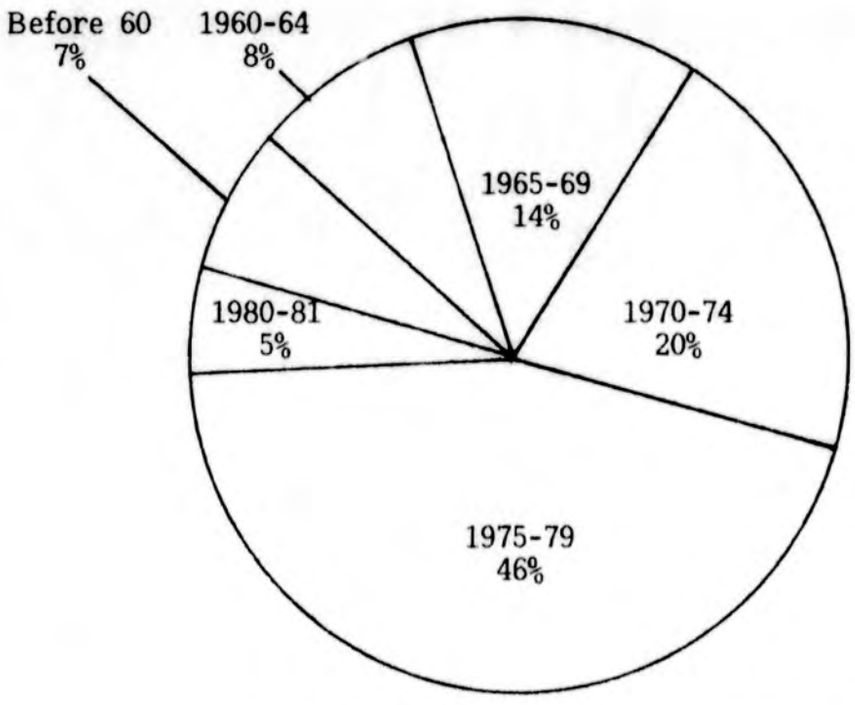
Figure 5

YEAR BUILT FOR SINGLE-FAMILY HOMES AND DUPLEXES FOR SALE*

By Location

Fairbanks Area
April 1981

ALL LOCATIONS



	Urban	Suburban	Foothills	North Pole	All Locations**
No. of Units	35	11	18	26	90
Before 1960	11%	-	-	8%	7%
1960-64	14%	-	-	8%	8%
1965-69	20%	-	22%	8%	14%
1970-74	26%	27%	17%	11%	20%
1975-79	23%	73%	61%	54%	46%
1980-81	6%	-	-	11%	5%

*Single-family homes and duplexes under $50,000 were not included.
**Location and year built was unknown for two units and year built was unknown for another 28 of the 120 single-family homes and duplexes.

Source: Northwest Alaskan Pipeline Company, Manpower and Impact Planning Department survey.

Table 6

LOT SIZE OF SINGLE-FAMILY HOMES AND DUPLEXES FOR SALE*

By Location

Fairbanks Area
April 1981

Location	Lot Size** Low	Lot Size** High	Lot Size** Median	Total Units For Sale
Urban	4,450 sq. ft.	48,352 sq. ft. (1.1 acres)	10,625 sq. ft.	42
Suburban	7,505 sq. ft	43,560 sq. ft. (1 acre)	11,454 sq. ft.	13
Foothills	30,000 sq. ft. (.7 acre)	403,583 sq. ft. (9.3 acres)	93,524 sq. ft. (2.1 acres)	22
North Pole	9,000 sq. ft.	217,800 sq. ft. (5.0 acres)	43,560 sq. ft. (1.0 acre)	29

*Single-family homes or duplexes priced under $50,000 were not included. The area and lot size was unknown for two and the lot size was unknown for another twelve.

**1 acre = 43,560 square feet.

Source: Northwest Alaskan Pipeline Company, Manpower and Impact Planning Department survey.

Type of Heat. The type of heat was known for 120 of the 131 housing units for sale in April 1981. Eighty-six percent of the units had some form of oil heat and 12 percent electric , 1 percent coal and 1 percent wood heat. In general, homes which have electric heat are less desirable because they cost more to heat. In March 1981, it cost an estimated $2,120 annually to heat a 2,300 square foot home with oil, compared to $4,275 to heat the same home with electricity. No new homes have been built with electric heat since mid-1975 when the local utilities began to prohibit installation of electric heating systems. Due primarily to the high cost of electricity in recent years, a substantial number of homes with electric heat have been converted to oil.

II. SURVEY OF MAJOR APARTMENT COMPLEXES

Fairbanks Area
April 1981

Introduction

To get an overview of the local rental housing market, Northwest Alaskan Pipeline Company conducted a survey of 20 major modern apartment complexes. All but two of those included in the survey contained at least 12 units and had been built since 1965. Drake's Woodland Apartments, which has only eight units was included because they are large three-bedrooms. Midtown Apartment complex, which was built in 1956, was included because it was recently renovated. The survey did not include Fairview Manor, a 272-unit complex which was built in 1951 with 56 efficiencies, 162 one-bedrooms, 48 two-bedrooms and 6 three-bedrooms.

Since all of the complexes had been surveyed in a February 1981 report done for the Northwest Alaskan Pipeline Company, this sample of 20 complexes allowed us to analyze trends in vacancy rates, rental prices and other factors. Figure 6 illustrates the location of all the complexes included in our survey. Table 7 gives the name, year built, and a breakdown of the number, size and type of units in each complex. Figure 7, which gives percentage distributions of the year built for these units, shows that 79 percent were built since 1970 and 57 percent were built since 1975. This figure also illustrates the distribution of the 1,178 units in our sample by size: 3 percent are efficiencies, 54 percent are one-bedrooms, 31 percent two-bedrooms and 12 percent three-bedrooms.

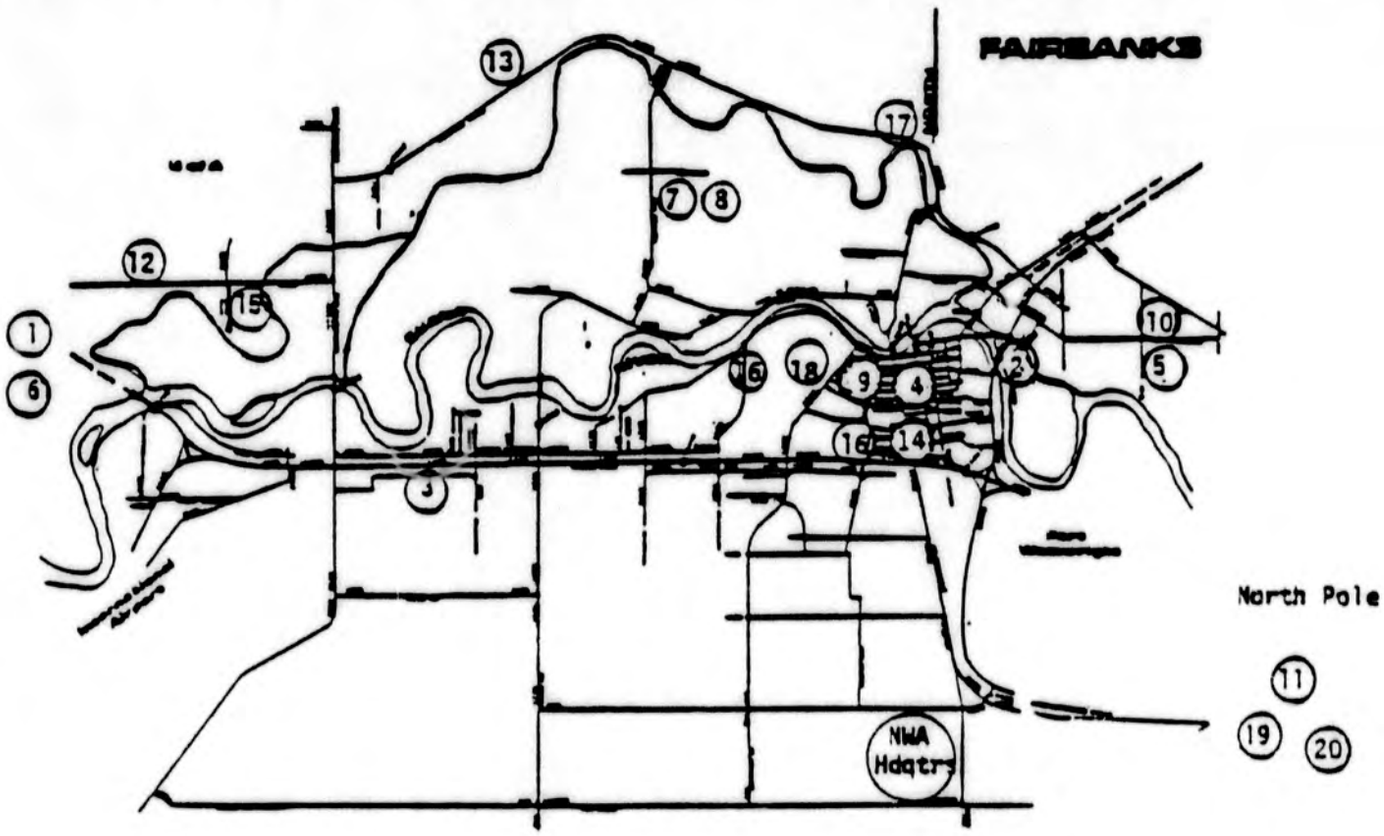
Vacancy Rates

The February 1981 survey of these complexes found 65 vacant units for a vacancy rate of 5.5 percent. By comparison, the April 1981 survey found only 3 units available for a vacancy rate of less than one percent. Table 8 compares the distribution of the rental vacancies in the February and April 1981 surveys for different sizes of apartments.

Figure 6

MAP OF MAJOR APARTMENT COMPLEXES

Fairbanks Area
April 1981



For Map Key See Table 7

Table 7

DESCRIPTION OF MAJOR APARTMENT COMPLEXES*

Fairbanks Area
April 1981

Map Key	Major Complex	Year Built	Total Units	Number of Units by Type: Efficiency	--One-Bedroom-- Unfurn.	Furn.	--Two-Bedroom-- Unfurn.	Furn.	Three-Bedrooms
1	Beistline Apartments	1977	20	-	3	9	2	6	-
2	Chandalar Apartments	1970	60	-	-	6	25	25	4
3	Executive Apartments	1978	24	-	-	19	-	5	-
4	Francis Apartments	1966	16	-	-	-	-	-	16
5	Hamilton Plaza Apartments	1974	48	-	-	-	12	18	18
6	Kelsha Court	1977	68	21	21	14	-	-	12
7	Marika Apartments	1975	12	-	6	-	6	-	-
8	Marika Manor	1974	20	-	-	-	-	20	-
9	Midtown Apartments	1956	94	8	-	78	-	8	-
10	Midtown East Apartments	1960	32	-	-	-	-	-	32
11	Seavy Apartments	1968	12	-	-	-	2	1	9
12	Sprucewood Manor	1970	21	3	-	6	-	12	-
13	Tanana Village	1967	36	-	-	18	-	18	-
14	Townehouse Apartments	1972	34	-	-	18	-	-	16
15	University Village	1965	50	-	-	-	18	-	32
16	Walkada Apartments	1971	66	-	12	36	6	12	-
17	Wedgewood Manor	1975-77	533	-	98	293	36	106	-
18	Westwynd Apartments	1975	12	-	-	-	6	6	-
19	Drakes Woodland	1970	8	-	-	-	2	-	6
20	Woodland Apartments	1960	12	-	-	-	12	-	-
	Totals		1,178	32	140	497	127	237	145

* Includes apartment complexes with 12 or more units which have been built since 1960. Midtown Apartments were built in 1956, but were included because they have recently been renovated.

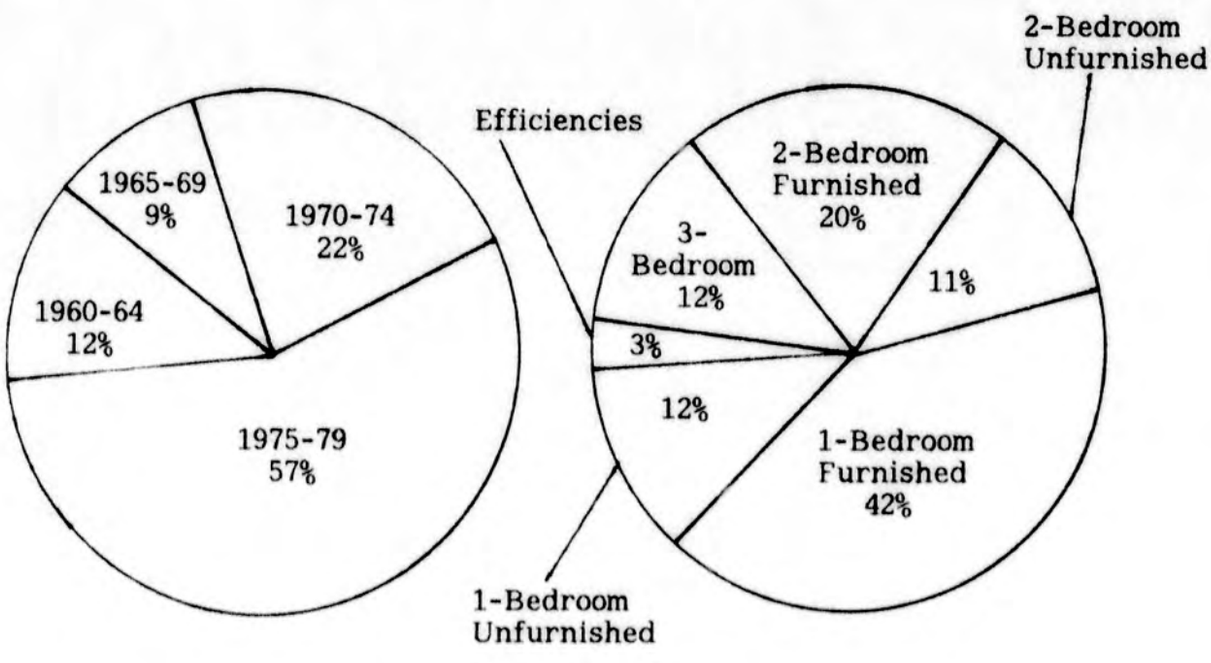
Source: Survey of major apartment complexes made by Marilynn Forrest for Northwest Alaskan Pipeline Company, Manpower and Impact Planning Department, April 1981.

Figure 7

APARTMENT UNITS IN MAJOR COMPLEXES

By Year Built and Size

Fairbanks Area
April 1981



*Based on information for 1,178 units in 20 apartment complexes which have 12 or more units and were built since 1960. See Table 7 for list of complexes.

Source: Survey of major apartment complexes made by Marilynn Forrest for Northwest Alaskan Pipeline Company, Manpower and Impact Planning Department, April 1981.

Table 8

RENTAL VACANCIES IN MAJOR* APARTMENT COMPLEXES

Fairbanks Area
February, March and April 1981 Comparisons

	Units Vacant February 1981	Units Vacant March 1981	Units Vacant April 1981
Efficiencies	6	8	1
One-Bedroom Unfurnished	6	4	-
One-Bedroom Furnished	27	23	2
Two-Bedroom Unfurnished	8	3	-
Two-Bedroom Furnished	11	2	-
Three-Bedroom	7	3	-
TOTAL	65	43	3
Vacancy Rate	5.5%	3.7%	.25%

*Based on vacancy data for 1,178 units in 20 apartment complexes which have 12 or more units and were built since 1960. See Table 7 for list of complexes.

Source: Survey of major apartment complexes made by Marilynn Forrest for Northwest Alaskan Pipeline Company, Manpower and Impact Planning Department, April 1981.

The April 1981 survey found one efficiency and two one-bedroom furnished apartments available. During March 1981, when nine of the 20 complexes surveyed announced rent increases effective April 1, a total of 43 apartment units became available for rent, a 4 percent total vacancy rate. Landlords surveyed said they had little difficulty filling the vacancies. More than half the vacancies occurring in March were in one-bedroom units. Managers reported only minimal turnover for two-bedroom units and none in three-bedroom apartments. In some instances landlords filled their one-bedroom units with tenants who immediately went on the waiting list for a two- or three-bedroom unit, thus assuring themselves of first consideration once an opening occurred for a larger unit within the complex.

Landlords indicated that despite the recent rent increases, tenants were remaining in their apartment complexes, possibly due to the lessening availability of similar type apartment units at lower rents. Most of their tenant turnover in March was due to people purchasing their own homes or transferring jobs, unlike the turnover earlier in the year, when some tenants vacated their units to find cheaper housing.

About nine months ago nearly all of these complexes ran regular ads in the Fairbanks Daily News-Miner, but now only four are running ads and one of these is just advertising for names for future openings. Waiting lists are now kept for half the complexes surveyed. In April 1981, the number of names on each list averaged one-fourth of the total number of units in the complex. Most landlords surveyed, including those who do not maintain waiting lists, indicated that they receive daily inquiries from prospective tenants who need an apartment immediately. One manager of a medium-sized complex commented, "I have had to turn away at least 30 people a week who need housing right away." Another indicated, "If we had another 533 units out there, we could fill them."

It is apparent that by this summer the vacancy rates for newer apartment complexes and perhaps all rental units will be negligible, and tenants will no longer have the flexibility to move when the rents in their complexes are raised. As one owner put it, "For the first time since 1976, the owners can call the shots."

Average Rents

The survey found that between February 1981 and April 1981, nine complexes had rent increases of between $15 and $75 per unit, and average rents increased three to six percent during that two-month period. Table 9, which compares rents from the February and April surveys, shows that the largest average rent increases were for one-bedroom unfurnished apartments which rose from $364 to $385 (+6 percent) and one-bedroom furnished units which rose from $410 to $431 (+5 percent). Average rents for two- and three-bedroom apartments

Table 9

AVERAGE MONTHLY RENTS FOR MAJOR* APARTMENT COMPLEXES

Fairbanks Area
February 1981 and April 1981 Comparisons

Apartment Sizes	Average Rents (Units shown in parentheses) February 1981	Average Rents (Units shown in parentheses) April 1981	Rent % Change February 1981 to April 1981
Efficiencies	$259 (32)	$259 (32)	0%
One-Bedroom Unfurnished	$364 (140)	$385 (140)	6%
One-Bedroom Furnished	$410 (497)	$431 (497)	5%
Two-Bedroom Unfurnished	$414 (127)	$428 (127)	3%
Two-Bedroom Furnished	$492 (237)	$505 (237)	3%
Three-Bedroom	$466 (145)	$482 (145)	3%

* 1976 data is based on a survey of 29 apartment complexes representing 1,500 units. The 1978 and 1981 data is based on 1,178 units in 20 apartment complexes which have 12 or more units and were built since 1960 See Table 7 for a list of complexes.

Sources: February 1981 and April 1981 data was based on a survey of major apartment complexes made by Marilynn Forrest for Northwest Alaskan Pipeline Company, Manpower and Impact Planning Department.

increased 3 percent during that period. The average rent for a three-bedroom apartment increased from $466 to $482. There was no change in the average $259 per month rent for an efficiency unit.

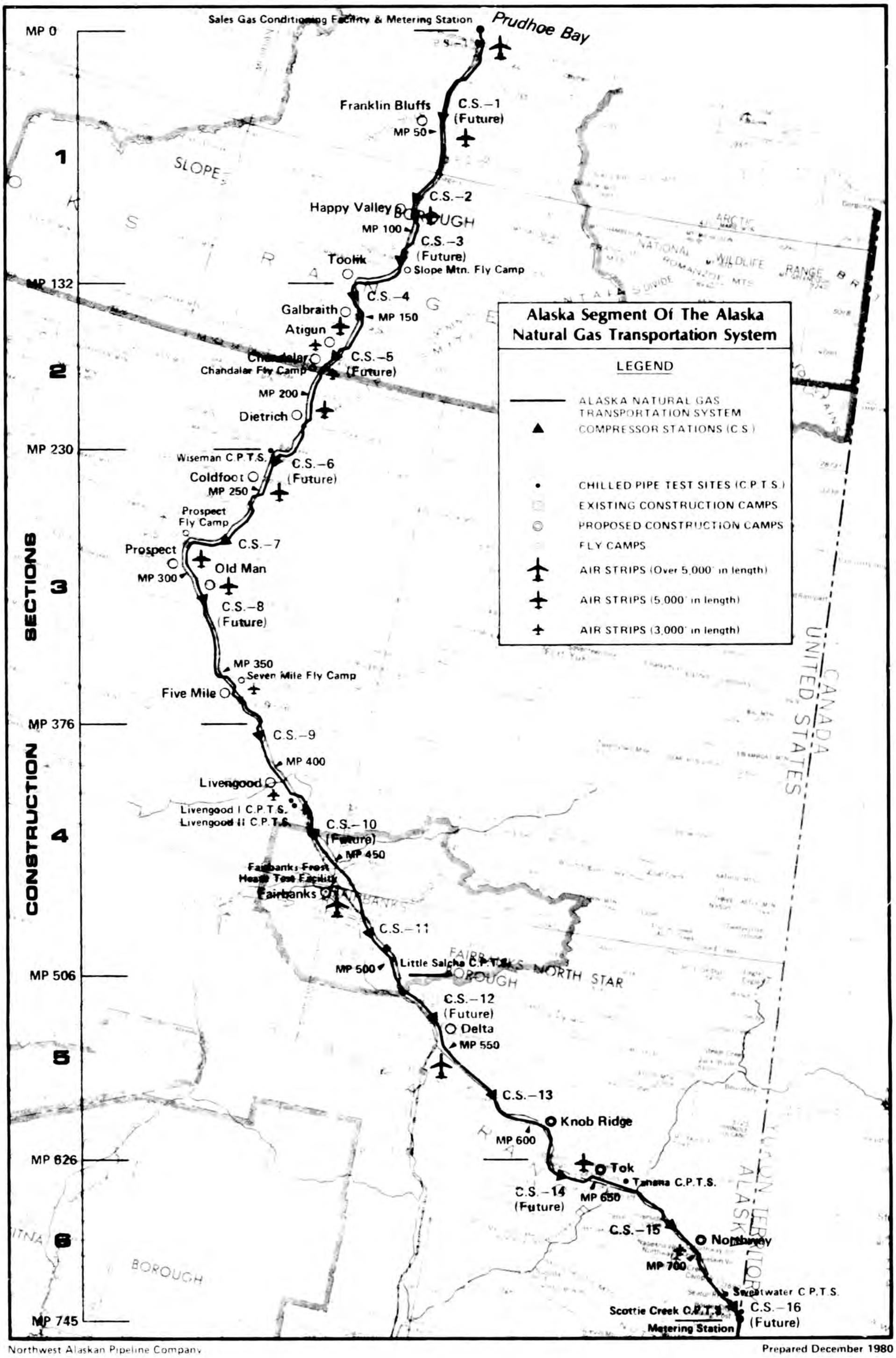
Apartment complex managers had expressed concern in February about the effect of planned rent increases on their occupancy rates; yet in April these managers were able to conclude that the increases had little or no effect on tenant turnover. "We didn't lose a single tenant", noted the manager of one complex which had raised rents in March. Complex managers indicated recent rent increases were vital toward meeting basic costs of running the complexes; however, several managers indicated that in view of the tightening rental market situation, additional increases are likely as early as this summer.

Other Trends

Problems and delays in getting phone service were mentioned by several landlords surveyed. They said private lines are virtually impossible to obtain and new tenants at one complex must wait a minimum of two months for phone service on a four party line.

Recent rent increases were necessary to meet the basic costs of running the complexes. Therefore, one complex, in an effort to keep down heating costs and rental rates, plans to build its own small coal-fired heating plant.

Alaska Segment Of The Alaska Natural Gas Transportation System

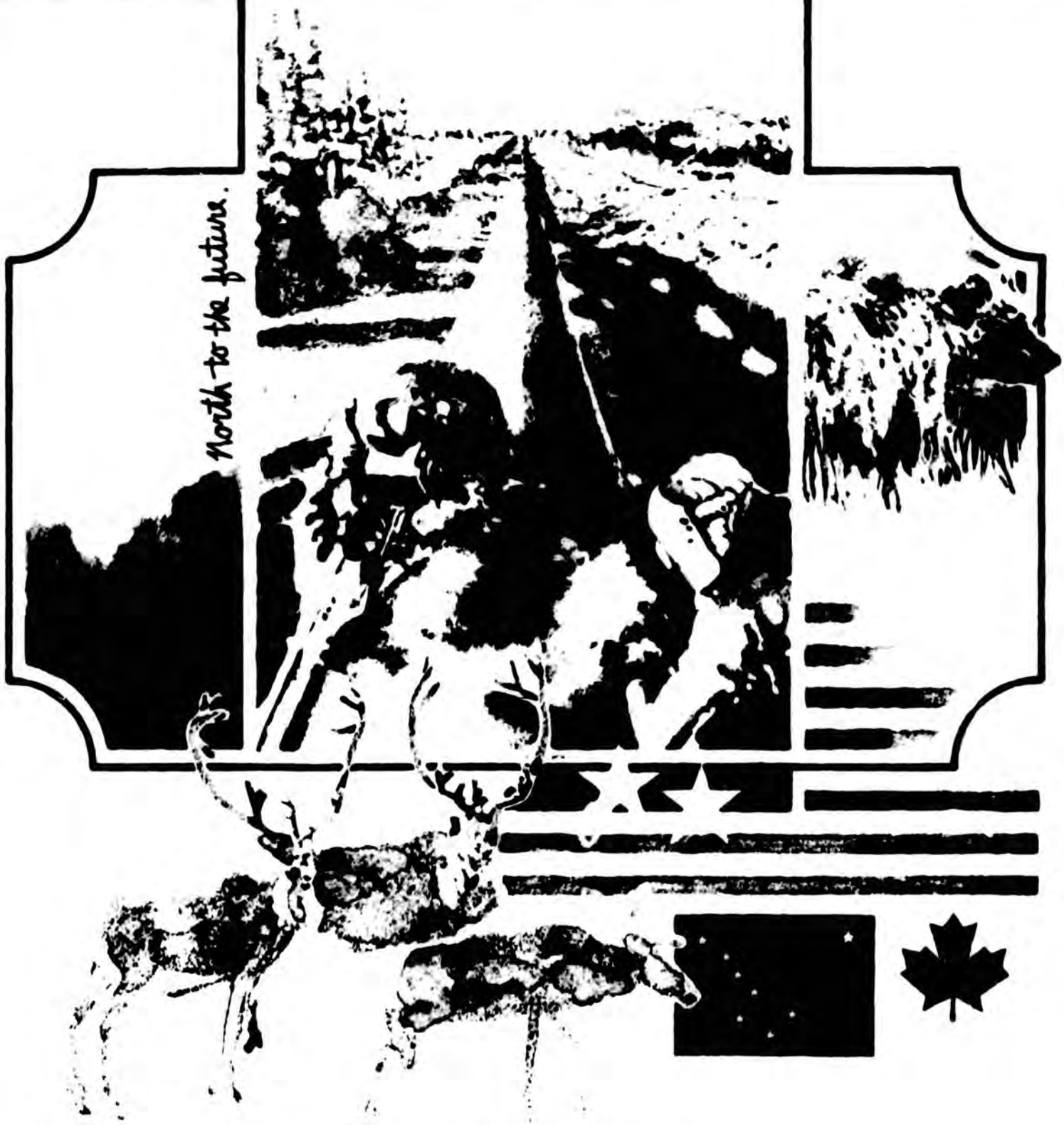


Northwest Alaskan Pipeline Company

Prepared December 1980

PLEASE NOTE

THE ORGINAL FILE CONTAINS AN OVERSIZED DOCUMENT THAT IS UNSUITABLE FOR FILMING. PLEASE REFER TC THE ALASKA STATE ARCHIVES TO VIEW THE ORIGINAL.



Alaska Natural Gas Transportation System

Northwest Alaskan
PIPELINE COMPANY