ALASKAN ARCTIC GAS PIPELINE COMPANY

EXHIBIT F
(PORTION)
MAPS AND ALIGNMENT SHEETS AND
EXHIBIT G
(PORTION)
FLOW DIAGRAMS
CONTINENTAL DELIVERY SYSTEM
ARCTIC GAS PIPELINE SYSTEMS
ALASKAN ARCTIC GAS PIPELINE COMPANY
CANADIAN ARCTIC GAS PIPELINE LIMITED
AND
CONNECTING SOUTHERN CANADIAN AND
U.S. PIPELINE SYSTEMS
ALIGNMENT SHEETS

PIPELINE ROUTE IN ALASKA

For

ALASKAN ARCTIC GAS PIPELINE COMPANY

Prepared by

NORTHERN ENGINEERING SERVICES COMPANY LIMITED
DESCRIPTION OF ALIGNMENT SHEETS AND OVERLAYS

This volume contains a group of photomosaic strip maps—called "Alignment Sheets"—which show the area proposed to be traversed by the proposed pipeline. The proposed location of the pipeline and related facilities are shown on each sheet, and the sheets contained in this volume show the complete route over the area covered by this volume, with the top sheet covering the most western or northern end of the area, with following sheets moving to the east or south.

The other data which appears on each Alignment Sheet, and the Environmental overlay sheets which accompany Alignment Sheets, are described hereinafter.

ALIGNMENT SHEETS

The sheet following this sheet is a Master Index Map, (a small version of which is set forth on the lower right hand corner of each Alignment Sheet), and each Alignment Sheet may be located on such map. The numbering system on the Index Map refers to the last part of the nine digit drawing number which appears in the bottom right hand corner at each Alignment Sheet. For example, Alignment Sheet 3A-0200-1965 appears as sheet number 5 of Section 3A on the master index map.

ACCURACY OF SCALE

The mosaic Sections of the Alignment Sheets are unconstrained, which means that no corrections have been made for variations in flying altitude, airplane tilt, or distortion caused by mountainous terrain. As a result, the nominal horizontal scale 1" = 2000' shown on the Alignment Sheets is only approximate. The scale for each Alignment Sheet was checked against topographical maps, and the horizontal scale accuracy, expressed as a percentage, was calculated for each individual sheet. A weighted average was then calculated for the entire line section. The overall accuracy of Alignment Sheets 3A-0200-1010 to 3A-0200-1965 is 2.5%. It should be emphasized that this inaccuracy applies only to the mosaic sections of the Alignment Sheets and not to the pipeline mileage, which were scaled from government topographical maps and transferred to the mosaics.

AERIAL PHOTOGRAPHY

The aerial photography used to produce the mosaic has been obtained since 1970. All photography is at a nominal horizontal scale of 1" = 2000'.

ALIGNMENT SHEET DATA

The following information appears on the Alignment Sheets:

1. Pipeline and Facilities Location
   The facility referred to are pipeline compressor stations, meter stations, mainline block valves, linestraps, and associated access roads. Pipeline mileposts are also shown.

2. Terrain and Soils Information
   Airphoto interpreted terrain typing has been mapped on the photomosaic portion of the Alignment Sheets. An abbreviated legend which appears on the sheets defines the symbols used. Drillhole locations, logs and legends are also shown on the Alignment Sheets. A description and analysis of the terrain typing and the confirming borehole data is presented in other Sections of this application.

3. Borrow Areas, Staging Areas, Access Roads
   The borrow area, staging area, and associated permanent and temporary access roads planned by the Applicant have been shown in those situations in which they appear within the area covered by the mosaic.

4. Profile
   An approximate pipeline profile is shown on each Alignment Sheet at a horizontal scale of 1" = 2000' and a vertical scale of 1" = 200'. This profile was plotted from Alaska Topographic Series Maps.

5. Erosion Control Categories
   The category of erosion control measure applicable to the area shown on the mosaic is stated on each sheet. An explanation of the parameters that were used to select the categories of erosion control measures and a description of those categories, appears in other Sections of the application.

6. Areas of Potential Buoyancy
   The buoyancy condition and design solution applicable to the area shown on the mosaic is stated on each sheet. A description of potential buoyancy conditions and design solutions relative to the areas appears in other Sections of the application.

7. Repeatability Categories
   Right-of-way reevaluation technique code numbers appear on the Alignment Sheets. Those numbers related to categories of materials to be used, and techniques to be applied for purposes of reevaluation. Such materials and techniques are described in other Sections of this application.

8. River Crossing Reference Drawings
   Reference drawings numbers are shown on the Alignment Sheets for river and stream crossings. This typical reference drawing appears at the back of this Alignment Sheet volume.

9. Erosion Control and Buoyancy measures relative to the crossing are indicated or referred to on the river crossing drawing.

10. Depth of Cover
    Minimum depth of cover over the pipeline is shown on the Alignment Sheets as a general note. The factors upon which depth of cover is dependent appear in other Sections of the application.

11. Mapping Co-ordinate System
    The Universal Transverse Mercator Grid System is shown on all Alignment Sheets.

ENVIRONMENTAL DATA SHEETS

The second copy of the Alignment Sheets are Environmental Data Sheets which indicate environmental information relative to the area covered by the mosaic, including any specific environmental concerns and the related protective measure. Such information covers vegetation, birds, fish, mammals, archeology and ancient human land use.

Unless otherwise stated, the comments on the data sheets are applicable to a zone which is approximately 2,000 feet wide, on either side of the pipeline route, and which extends the full length of the sheet on which the comments are shown. Vertical lines appearing in the comment space indicate a boundary for comment applicability when a comment covers less than the full length of the sheet. Absence of comment indicates an area of relatively low sensitivity.
FLOW DIAGRAM DESCRIPTION

Flow diagrams are presented which show the maximum capacity of Applicant's proposed pipeline system for its first four years of operation, under average winter (October 19 to April 20) and average summer (April 20 to October 19) conditions. The formulas and assumptions used to generate the flow diagrams are given in Exhibit G.2, Flow Diagrams Data. The connecting facilities of Canadian Arctic Gas Pipeline Limited are shown as well as Applicant's facilities in order to demonstrate the capabilities of the combined facilities north of the Canada United States border. Applicant's operation commences in Operating Year 2, whereas Canadian Arctic Gas' operation commences in Operating Year 1.

Applicant's proposed system includes a pipeline from Prudhoe Bay to the Alaska-Yukon border, which connects to the Canadian Arctic Gas system at that point. The Canadian Arctic Gas system includes two gas supply lines which join at the origin of the main line at T avatar Lake, the main line from T avatar Lake to Caroline, Alberta, and two gas delivery lines which begin at the terminus of the main line near Caroline, as shown in Exhibit F, Location of Facilities. The data shown on the flow diagrams for the two gas supply lines and the two gas delivery lines reflect the maximum capacity of the entire system. That is, the sum of the maximum delivery capacities of the two gas supply lines is equal to the maximum capacity of the main line at its inlet, and the sum of the maximum capacities of the two gas delivery lines at their inlets is equal to the maximum delivery capacity of the main line. Each gas supply and gas delivery line has a maximum capacity somewhat in excess of that shown, but these capacities cannot be used simultaneously because the total flow is restricted by the maximum capacity of the main line. The maximum capacity of the main line at its inlet is prorated to each gas supply line in proportion to the design gas volumes from each supply source. The maximum delivery capacity of the main line is divided equally between the two gas delivery lines.

DRAWINGS

1-1  FLOW DIAGRAM, AVERAGE WINTER CONDITIONS - OPERATING YEAR 1
1-2  FLOW DIAGRAM, AVERAGE SUMMER CONDITIONS - OPERATING YEAR 1
1-3  FLOW DIAGRAM, AVERAGE WINTER CONDITIONS - OPERATING YEAR 2
1-4  FLOW DIAGRAM, AVERAGE SUMMER CONDITIONS - OPERATING YEAR 2
1-5  FLOW DIAGRAM, AVERAGE WINTER CONDITIONS - OPERATING YEAR 3
1-6  FLOW DIAGRAM, AVERAGE SUMMER CONDITIONS - OPERATING YEAR 3
1-7  FLOW DIAGRAM, AVERAGE WINTER CONDITIONS - OPERATING YEAR 4
1-8  FLOW DIAGRAM, AVERAGE SUMMER CONDITIONS - OPERATING YEAR 4
1-9  FLOW DIAGRAM, AVERAGE WINTER CONDITIONS - OPERATING YEAR 5
1-10 FLOW DIAGRAM, AVERAGE SUMMER CONDITIONS - OPERATING YEAR 5