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REPORT TO THE CONGRESS



BY THE COMPTROLLER GENERAL  
OF THE UNITED STATES



LM098295

Trans-Alaska Oil Pipeline--  
Progress Of Construction  
Through November 1975

Department of the Interior

The report discusses the construction schedule and status of the pipeline system, the Federal and State monitoring efforts of the construction, and certain environmental matters related to the construction of the pipeline.

Although construction of the Alaska pipeline was slightly behind schedule in November 1975, it is expected that the system will be completed by the scheduled date of November 1977.

Much is being done to help protect Alaska's environment, but there have been several instances of environmental damage.

RED-76-69

FEB. 17. 1976

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COMPTROLLER GENERAL OF THE UNITED STATES  
WASHINGTON, D C 20548

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To the President of the Senate and the  
Speaker of the House of Representatives

Our report concerns the progress of construction of the  
trans-Alaska oil pipeline through November 1975.

We made our review pursuant to the Budget and Accounting  
Act, 1921 (31 U.S.C. 53), and the Accounting and Auditing Act  
of 1950 (31 U.S.C. 67).

We are sending copies of this report to the Director,  
Office of Management and Budget, and to the Secretary of the  
Interior.

*James B. Stastny*  
Comptroller General  
of the United States

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COMPTROLLER GENERAL'S  
REPORT TO THE CONGRESS

TRANS-ALASKA OIL PIPELINE--  
PROGRESS OF CONSTRUCTION  
THROUGH NOVEMBER 1975  
Department of the Interior

D I G E S T

As of November 30, 1975, construction of the trans-Alaska oil pipeline system was about 3 weeks behind schedule. This slippage is not expected to affect the completion date of July 1, 1977. To place the project on schedule, the Alyeska Pipeline Service Company plans to do more construction work during the winter of 1975-76 than had been scheduled.

Although Alyeska--as agent for eight owner oil companies--plans to complete construction of the pipeline in the fall of 1976, the system will not be capable of transporting oil until July 1, 1977, because pump stations and the terminal are not scheduled to be completed before that date. Slippage in these critical areas would therefore have an adverse affect on the actual completion date of the pipeline system.

FEDERAL AND STATE MONITORING OF  
CONSTRUCTION OF THE TRANS-ALASKA  
OIL PIPELINE SYSTEM

The Department of the Interior's Authorized Officer reviewed and approved most of the design and construction plans for the trans-Alaska oil pipeline within the time frame required by the Federal right-of-way agreement. The agreement included requirements designed to reduce damage on the Alaskan environment caused by construction. The Federal and State Governments have set up organizations to review the pipeline system design and to keep watch over subsequent construction. Although Alyeska had to reschedule some work, the Authorized Officer's review of construction plans and designs has not affected the project's scheduled completion date adversely.

CONSTRUCTION SCHEDULE AND STATUS  
AS OF NOVEMBER 30, 1975

The planned pipeline system is to have a capability to transport 600,000 barrels of oil a day by July 1, 1977, and 1.2 million barrels a day by November 1977. The Prudhoe Bay oilfield is scheduled to be capable of producing between 1.5 and 1.6 million barrels a day by July 1978. Developers of the Prudhoe Bay oilfield expect to be able to supply oil to this pipeline on schedule in 1977.

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The pipeline system owner companies have not authorized construction of additional facilities needed to bring the system up to its design capacity of 2 million barrels a day. Owner company representatives told GAO that as of November 1975 a decision had not been made with regard to increasing the capacity in excess of 1.2 million barrels a day.

Alyeska is responsible for compliance with the environmental and technical stipulations. If its quality assurance program is functioning properly, such a system reduces the need for extensive Government monitoring. But the quality assurance program did not function properly during the early part of the 1975 construction season because Alyeska had not given its quality control organization authority to halt construction, which did not conform to environmental or technical regulations.

Therefore, Federal and State monitors had to carry out the quality control functions by requiring correction of some work. In June 1975 GAO brought the matter to the attention of the Authorized Officer. Alyeska acted to correct the deficiencies in its quality assurance and control program. The corrective action appears to be satisfactory.

#### PROTECTION OF THE ENVIRONMENT

Construction of the trans-Alaska oil pipeline system will affect the Alaskan landscape permanently. The line will cross 801 miles of previously undeveloped land. Some 30,000 acres of land will be disturbed. To construct the haul road, work pad, access roads, and construction camps, about 56 million cubic yards of gravel were mined from about 280 material sites along the pipeline route. The pipeline will cross about 356 rivers and streams and will roughly parallel the flood plain channels of 5 large rivers.

It is too early to assess the overall impact of construction on the environment because 60 percent of the work remains to be done and because the effectiveness of the technical requirements of the pipeline system will not be known until the system becomes operational. In some cases, the effect of these technical requirements will be known only if and when certain events, such as earthquakes, occur.

With 40 percent of the construction complete, much has been done to protect the environment, but some environmental damage has resulted from the construction effort. The most important environmental problems have been the lack of erosion control, construction related oil spills, and the failure to meet standards for sewage treatment at the temporary construction camps.

CHAPTER 1

INTRODUCTION

*C<sub>2</sub>* *R* By letter dated April 3, 1975, the Chairman of the Subcommittee on Public Lands, House Committee on Interior and Insular Affairs, asked us to report on the status of the construction of the trans-Alaska pipeline system at the end of the 1975 construction season and to identify any potential problems for the 1976 construction season. The Chairman requested that the report address whether Government monitoring is sufficient to assure protection of the environment while not significantly and unnecessarily affecting completion of the project. Because construction of the trans-Alaska oil pipeline system is one of the major programs for reducing U.S. dependence on imported oil, the Chairman agreed that our report on the status of construction at the end of the 1975 construction season should be addressed to the Congress. *HSE 01905*

As the Chairman's office directed, we did not obtain formal comments from agency officials; however, we discussed the contents of this report with appropriate Federal and State officials who expressed general agreement with the information presented. We also discussed the report with officials of the Alyeska Pipeline Company in Anchorage, Alaska. *CNA 00386* Alyeska officials raised no objections to the information presented.

EVENTS WHICH DELAYED CONSTRUCTION  
OF THE TRANS-ALASKA PIPELINE

Oil was discovered at Prudhoe Bay on the north slope of Alaska in January 1968. The size of the Prudhoe Bay field is estimated to be 10 billion barrels of crude oil.

In June 1969 three oil companies applied for a right-of-way permit to build a pipeline across Federal land in Alaska. In December 1969 the Congress passed the National Environmental Policy Act which required any agency of the Federal Government, before taking action which might have an impact on the environment, to consider alternative courses of action and, after soliciting the views of other Federal agencies which have jurisdiction over the environmental matters involved, to publish a detailed statement disclosing the environmental impact assumed to result from the action to be taken.

*70* In March 1970 three private conservation organizations brought a lawsuit against the Secretary of the Interior in the U.S. District Court for the District of Columbia. A *32* ~~748~~

preliminary injunction was granted in April 1970 restraining the Secretary from issuing permits for constructing the pipeline until the requirements of the Environmental Policy Act were met.

In March 1972 the Secretary of the Interior issued the final environmental impact statement and in May 1972 announced his intention to issue the construction permit.

In August 1972 the U.S. District Court for the District of Columbia ruled that the environmental impact statement "reasonably met all requirements of the National Environmental Policy Act" and lifted the injunction prohibiting the issuance of the pipeline permits. The environmental groups appealed this ruling to the U.S. Court of Appeals for the District of Columbia. On February 9, 1973, the Court of Appeals reversed the District Court ruling and ordered the District Court to reinstate the injunction because the Secretary's permit had exceeded the width of the right-of-way permitted under the Mineral Leasing Act of 1920.

On November 16, 1973, the Congress enacted Public Law 93-153 amending the Mineral Leasing Act of 1920 to increase the width of the right-of-way that the Secretary could authorize and authorizing construction of the trans-Alaska pipeline. Title II of the act directed the Secretary of the Interior and other appropriate Federal officers and agencies to issue and take all necessary action to administer and enforce rights-of-way, permits, leases, and other authorizations necessary for, or related to, the construction, operation, and maintenance of the trans-Alaska oil pipeline system, including roads and airstrips, as that system is generally described in the final environmental impact statement the Department of the Interior issued on March 20, 1972.

#### COMPANIES RESPONSIBLE FOR THE PIPELINE SYSTEM

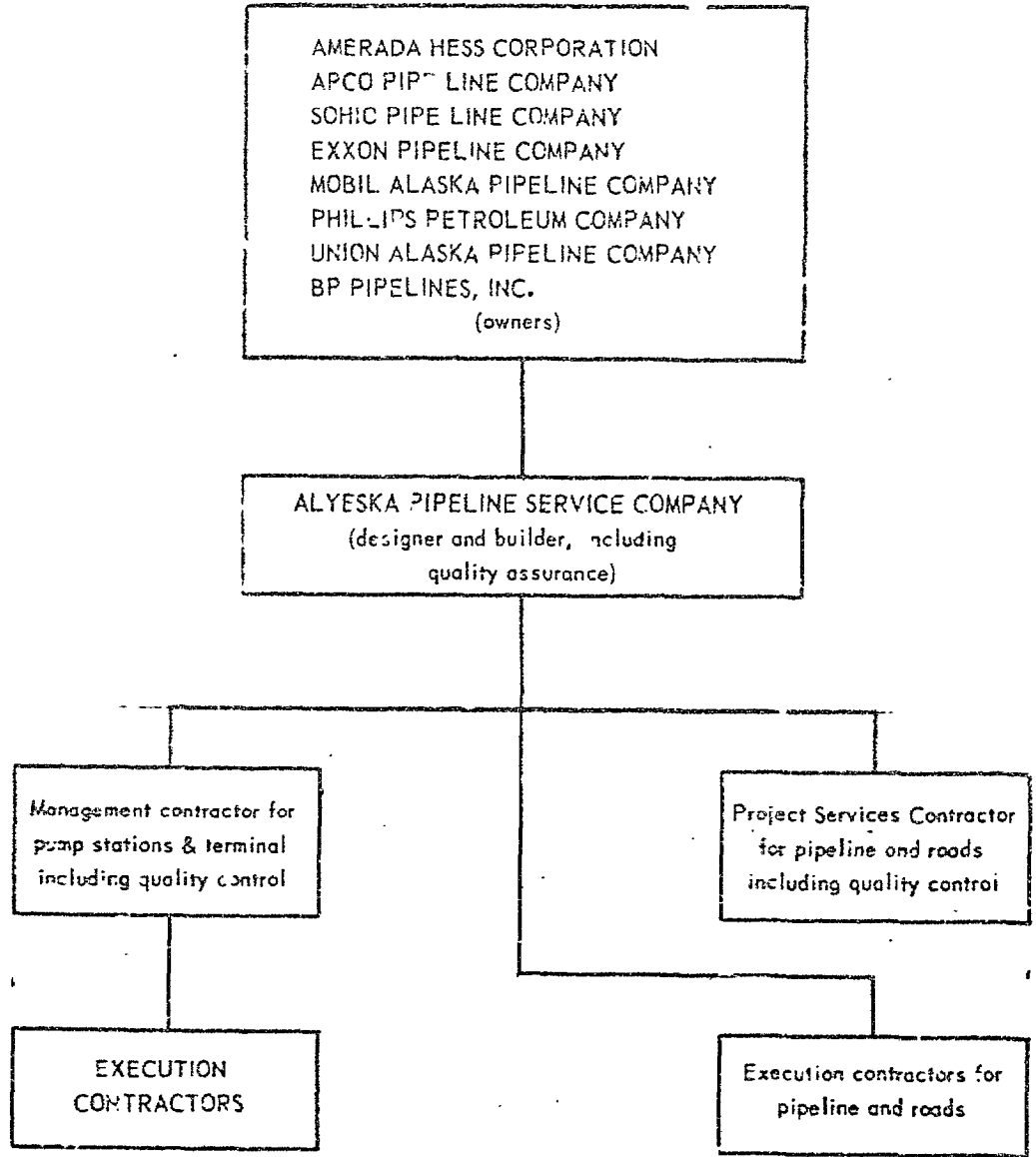
On January 23, 1974, the Secretary of the Interior and the owner oil companies signed the agreement and grant of right-of-way for the trans-Alaska pipeline. On May 3, 1974, the State of Alaska and the owner companies signed the right-of-way lease. The Federal and State right-of-way agreements include stipulations designed to insure maximum protection to the environment. To insure compliance with these stipulations, the Department of the Interior and the State of Alaska set up organizations to review the design of the pipeline system and to monitor its implementation. (See ch. 4.)



In August 1970 the permittee companies formed the Alyeska Pipeline Service Company as their common agent for designing and constructing the pipeline system. The organization of private interests involved in this undertaking is shown on p. 4.

Construction of the pipeline system officially began on April 29, 1974. The project is privately financed by the owner companies. As of November 30, 1975, the owners' approved construction budget was \$6.375 billion.

COMPANIES RESPONSIBLE FOR DESIGNING, BUILDING, AND OPERATING THE TRANS-ALASKA OIL PIPELINE SYSTEM



CHAPTER 2DESCRIPTION OF THE TRANS-ALASKA OIL PIPELINE SYSTEM

The trans-Alaska oil pipeline system will consist of 801 miles of 48-inch pipe, 12 pumping stations, the Valdez terminal, and the communication system. At maximum development, the system would be capable of transporting 2 million barrels of oil a day.

THE PIPELINE

The 801-mile trans-Alaska oil pipeline will extend from Prudhoe Bay on Alaska's North Slope to the ice-free Port Valdez. (See app. I.,

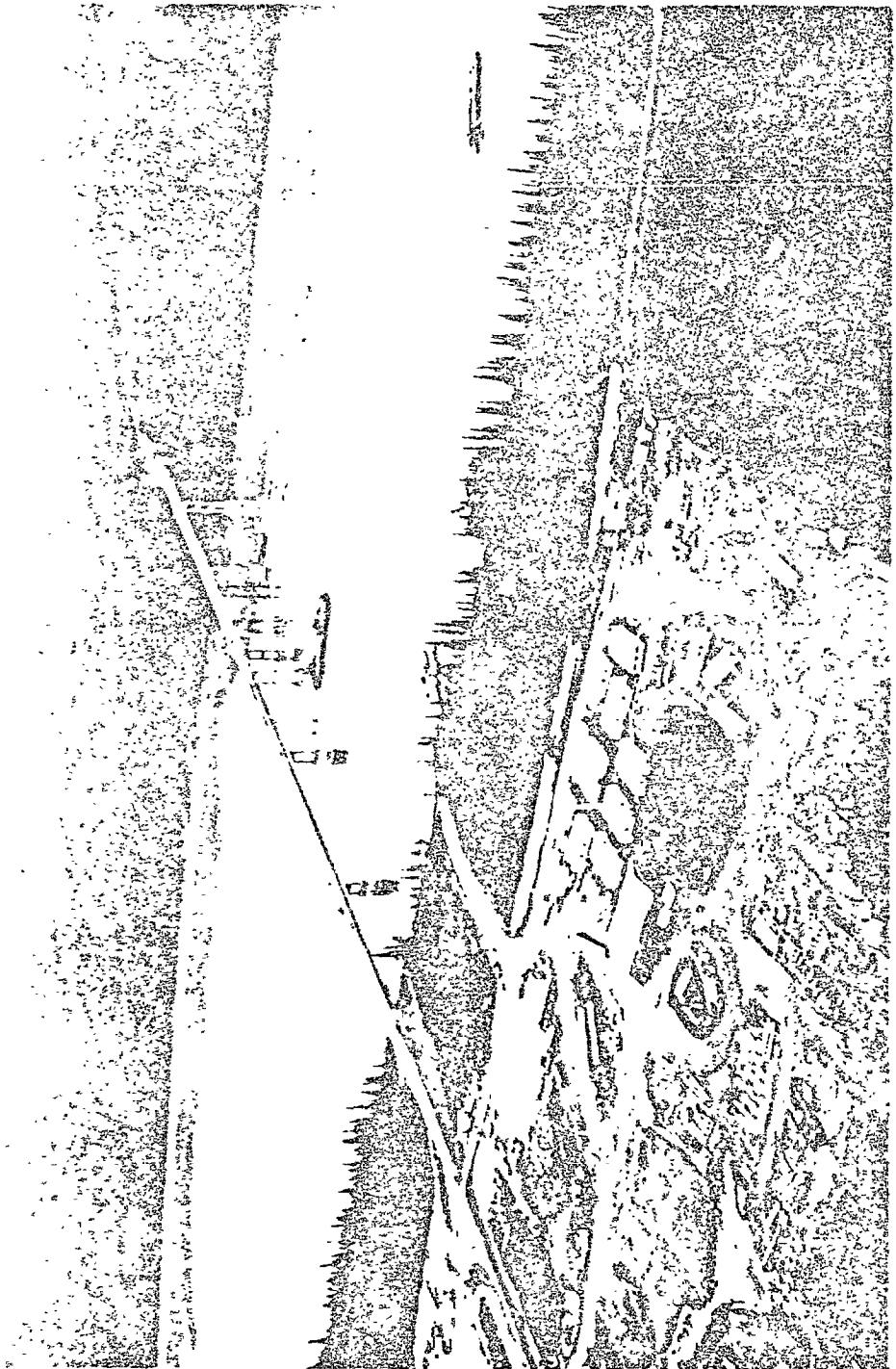
Alyeska built a 361-mile-long, 28-foot-wide, gravel-surface road roughly parallel to the pipeline route from the Yukon River crossing to the Prudhoe Bay oilfield. (See photograph 1 on p. 9.) Work on the road was completed late in 1974. In constructing the haul road, Alyeska served as a contractor for the State of Alaska. When the pipeline is completed, the road will be turned over to the State of Alaska and will become part of the State highway system.

Until October 1975 all vehicles going up the haul road had to be ferried across the Yukon River in summer or cross on an ice bridge in winter.

However, the Yukon River Bridge is now open to traffic. The State of Alaska constructed the bridge as part of the State highway system. Alyeska is sharing the construction cost because Alyeska vehicles will be the only users of the bridge until the haul road is turned over to the State of Alaska and because the pipeline will be suspended from the bridge. (See photograph on p. 6.)

PROFILE OF TRANS-ALASKA OIL PIPELINE ROUTE





Yukon River bridge with site of  
pump station 6 in the foreground

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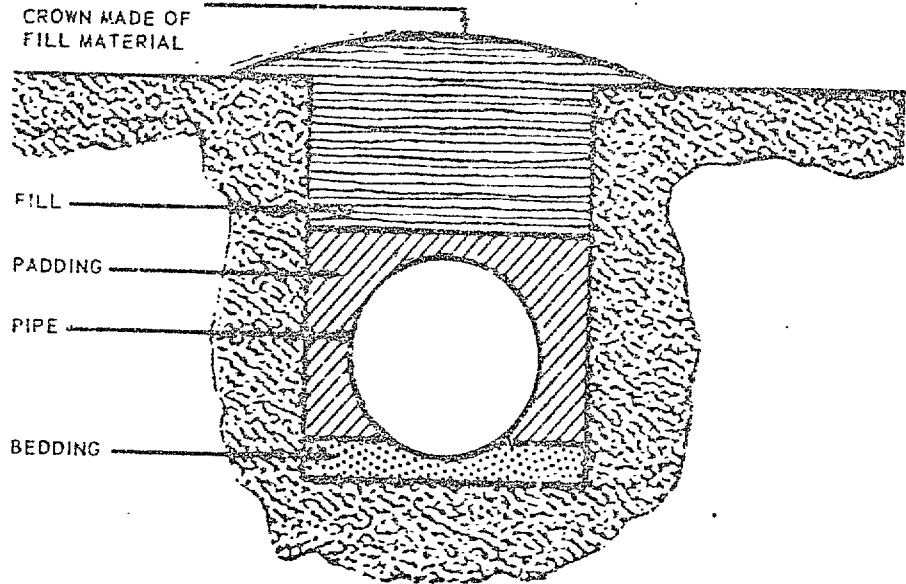
A total of 28 construction camps were built along the pipeline route. Temporary airfields were constructed near the construction camps for the support of road and pipeline construction. Permanent State airfields were constructed near three of the construction camps and will be used for the operation and maintenance, as well as for the construction, of the pipeline system.

The climate, soil, and seismic conditions along the route are unusual and require special construction techniques. The temperature ranges from the 90s in the summer to 80 below zero in the winter. The soil under much of the route is permanently frozen. In addition, earthquakes, which have ranged up to 8.5 on the Richter scale in one area, pose special construction and design problems.

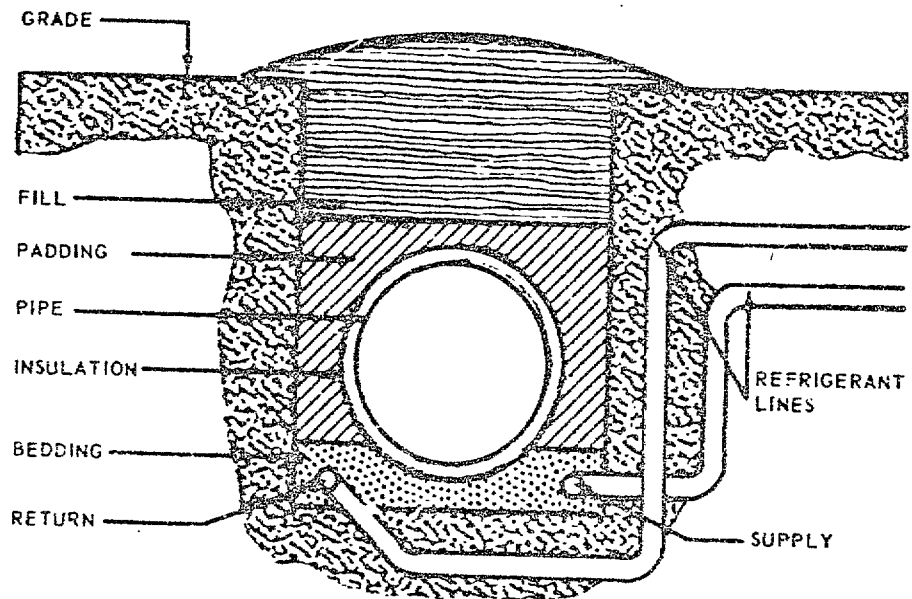
Where the soil is stable even when thawed, the pipe will be buried in the conventional manner. About 365.5 miles of the trans-Alaska pipeline will be buried conventionally and 4.2 miles of the pipeline will be buried and will be equipped with a ground refrigeration system. The ground refrigeration system allows the pipe to be buried in soil that is unstable when thawed, and is used in areas where the pipe would block animal movement if installed above ground. Most of the 356 river and stream crossings involving 23.3 miles of pipeline will be below ground. (See illustration on p. 8.)

The remaining 408 miles of the pipeline will be installed above ground in those areas where the soil would become unstable if thawed by heat from the pipeline. Above-ground pipe will be covered with insulation and mounted on support platforms which will be 50 to 70 feet apart. A support platform consists of a cross-beam installed between two vertical supports placed in the ground. To compensate for the expansion and contraction of the above-ground pipe, the line is being built in a zigzag configuration. (See photograph 2 on p. 9.) The pipe is clamped in a "saddle assembly" and mounted on a "sliding shoe" which can slide on the crossbeam. As the line expands and contracts, the pipe will be free to slide on the beam. (See illustration on p. 11.)

CONVENTIONAL BURIAL

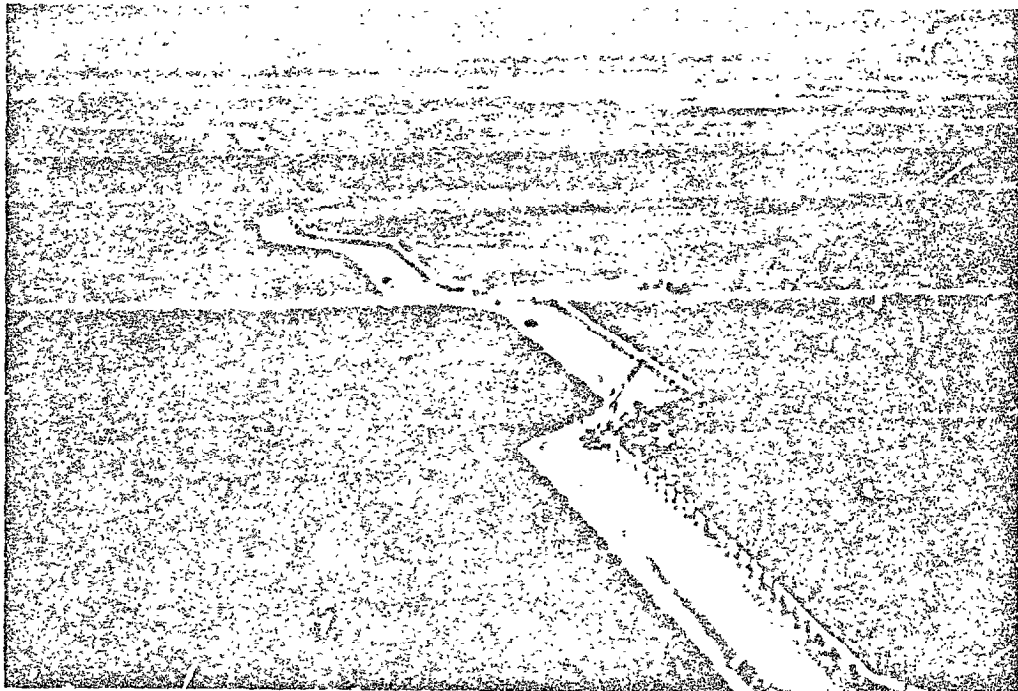


SPECIAL BURIED



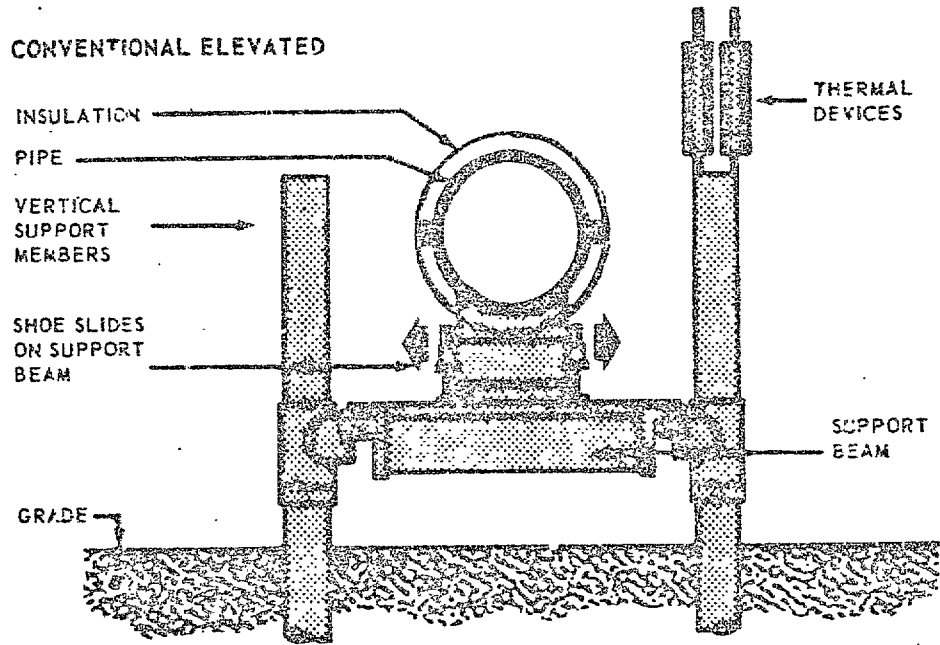


1. Cleared pipeline right-of-way (center) and State highway (right), north of the Yukon River

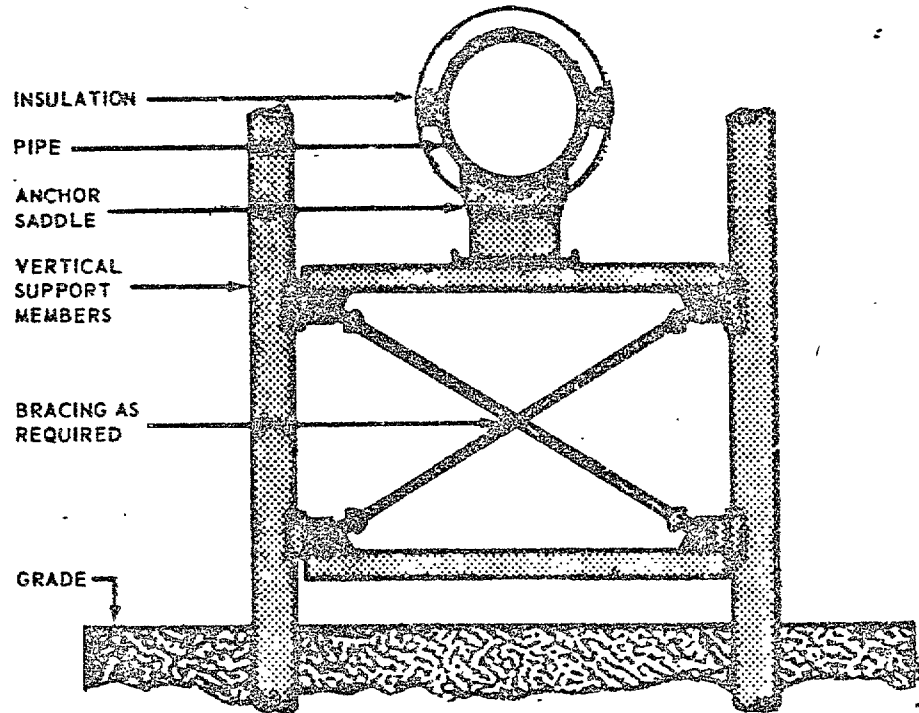


2. Zigzag configuration of pipeline

CONVENTIONAL ELEVATED



ANCHOR SUPPORT





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To stabilize the pipe on the crossbeams, it will be anchored at the end of each zigzag configuration (every 300 to 1,800 feet).

To prevent the soil around the platform supports from thawing, a thermal device will be installed inside many of the supports to keep the ground frozen.

The pipeline is equipped with 142 valves which will be used to limit the amount of oil spilled if a leak or break occurs in the pipe. There are 62 block valves, which will be remotely controlled to stop the flow of oil in any direction, and 71 check valves, which will prevent a reversal of oil flow by closing automatically whenever the direction of oil flow reverses. Check valves will be installed on uphill slopes to prevent the downhill flow of oil in case of a pipeline break. Nine of the valves are combination block and check valves.

Before the start of pipeline construction, the right-of-way was cleared and a work pad was constructed. The gravel work pad, which covers most of the right-of-way, is needed to protect from construction traffic the vegetative mat that insulates the permafrost. If this mat were damaged, the permafrost would thaw, and the resulting gullies and waterflow could irreparably damage the environment.

### THE PUMP STATIONS

At each of the 12 pump stations planned for the pipeline system, all the equipment and most of the piping will be in insulated buildings. Each pump station will have shops and warehouses, housing for the operating personnel, a food service facility, electrical generators, a central heating plant, water treatment and storage facilities, a sewage and waste disposal system, and an automatic fire detection and extinguishing system.

Two pairs of block valves will be installed in the pipeline at each station. One pair of valves would block the main-line oil flow so as to isolate the station during an operating emergency. These valves can be controlled either from the pump station control room or from the pipeline control station in Valdez. The second pair of block valves allow mechanical devices to be sent through the pipe to keep it free of deposits, check for corrosion, and check for structural deviations.

Each pump station will be equipped with an automatic pressure-relief system able to detect excessive static and surge pressures in the pipeline. To relieve such pressures, the valves will divert oil out of the line into a 55,000-barrel pressure-relief tank. When normal operating conditions are restored, a booster pump will transfer the oil from the relief tank back into the line.

#### THE TERMINAL

The terminal site covers about 1,000 acres on the south shore of Port Valdez. Oil received through the pipeline from Prudhoe Bay will be stored in 510,000-barrel tanks at the terminal until it is loaded aboard tankers. Initially, 18 such tanks will be erected at the terminal.

Four berths, three fixed to the shore and one floating, will be constructed during the first phase of construction. An additional berth can be constructed in the future if needed. The four berths will permit the simultaneous loading of four tankers up to 150,000 tons each. The tankers can be loaded at the rate of 80,000 to 110,000 barrels an hour, resulting in an average tanker turnaround time of between 1 and 2 days.

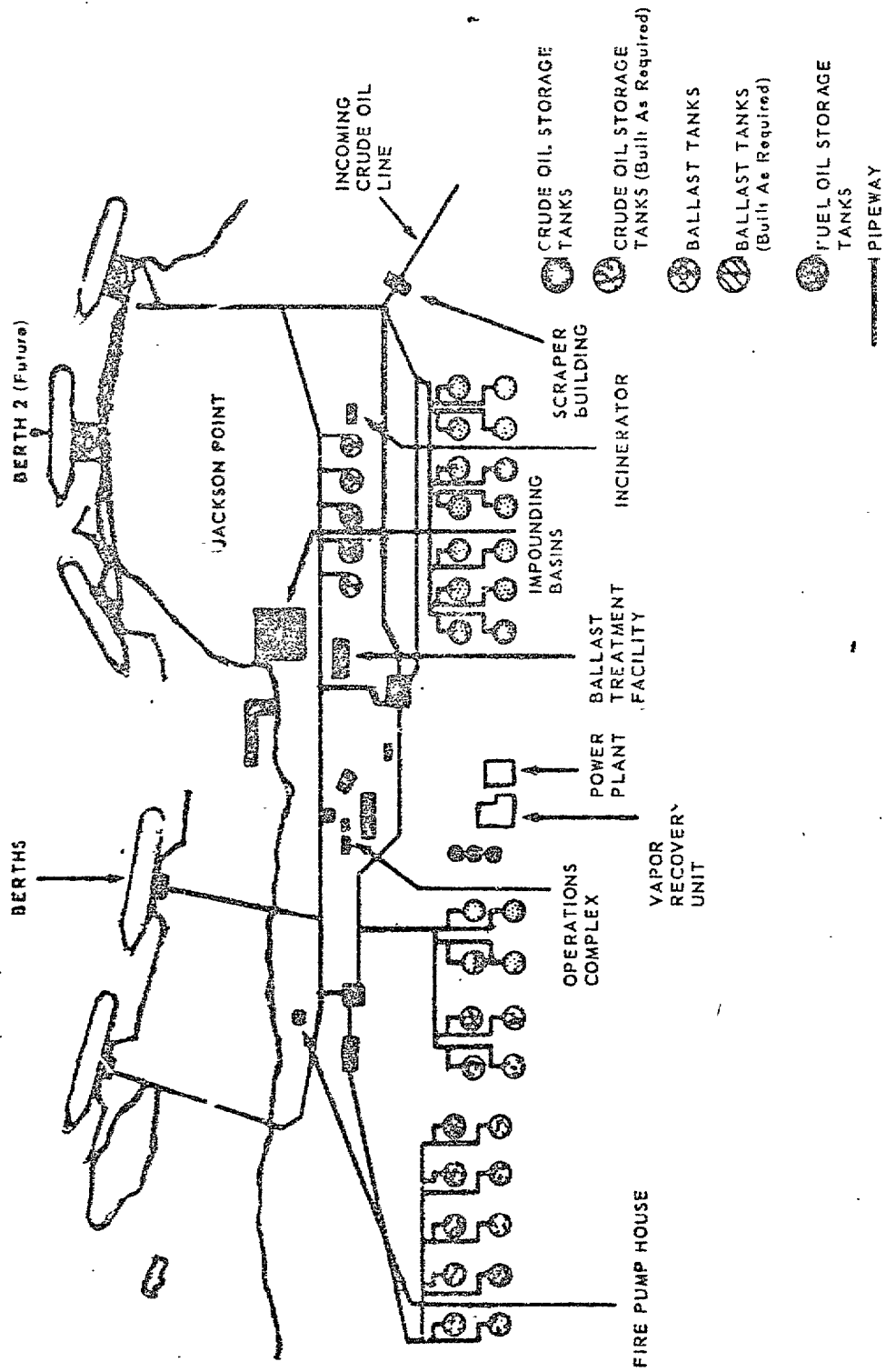
The terminal will have a ballast water treatment facility to process the ballast water received from incoming tankers. The ballast water will be transferred to one of three 430,000-barrel tanks where the oil, which rises to the surface, will be recovered and transferred to the terminal's oil storage tanks. The ballast water will then be treated and discharged into the sea.

A vapor-recovery system is being constructed to prevent oil fumes in the storage tanks from escaping into the atmosphere. Flue gases from the boilers of the terminal powerplant will be compressed for discharge into the space above the oil in the storage tanks, to provide an inert gas blanket over the crude oil. The inert gas will be fed, under low pressure, into the tanks as oil is being withdrawn for loading. When the storage tanks are being filled, vented gas will be withdrawn to the vapor-recovery unit for reprocessing. Any excess gas will be bypassed to an incinerator.

The control system for the entire pipeline will be located at the Valdez terminal. A schematic drawing of the terminal complex follows.

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VALDEZ TERMINAL, MAXIMUM DEVELOPMENT



THE COMMUNICATIONS SYSTEM

The pipeline communications system consists of a microwave system, a back up satellite communications system, and a radio communications system. The microwave system, which is owned by RCA-Alaska Communications, Inc., will provide 240 channels for public use and 60 channels for pipeline use. The microwave system generally parallels the pipeline and has 41 permanent microwave stations between Prudhoe Bay and Valdez. Of the 41 stations, 12 are being built at the pump stations, 1 will be built at Valdez, and 28 will be built at other sites.

The microwave system will link all pump stations, pipeline maintenance stations, and remotely controlled block valves with the Valdez control center.

The microwave system will be backed up by the satellite communications system. Four stations, three at pump stations and one at the Valdez terminal, will be able to communicate with each other via the satellite. The satellite is designed to handle all pipeline control data in the event of any break in communications along the chain of microwave stations.

The 62 block valves on the pipeline will be linked to the main communications network by radio via two independent very high frequency channels. The radio system will monitor and control all valve operations at each remote block valve site.

CHAPTER 3

CONSTRUCTION SCHEDULE AND STATUS AS OF NOVEMBER 1975

As of November 30, 1975, construction of the trans-Alaska oil pipeline system was 2.5 percent, or about 3 weeks, behind schedule. This slippage is not expected to affect the planned completion date of July 1, 1977. To place the project on schedule, Alyeska plans to do more work during the winter of 1975-76 than was originally scheduled. Manpower levels at the pump stations and terminal are not being reduced during the winter season.

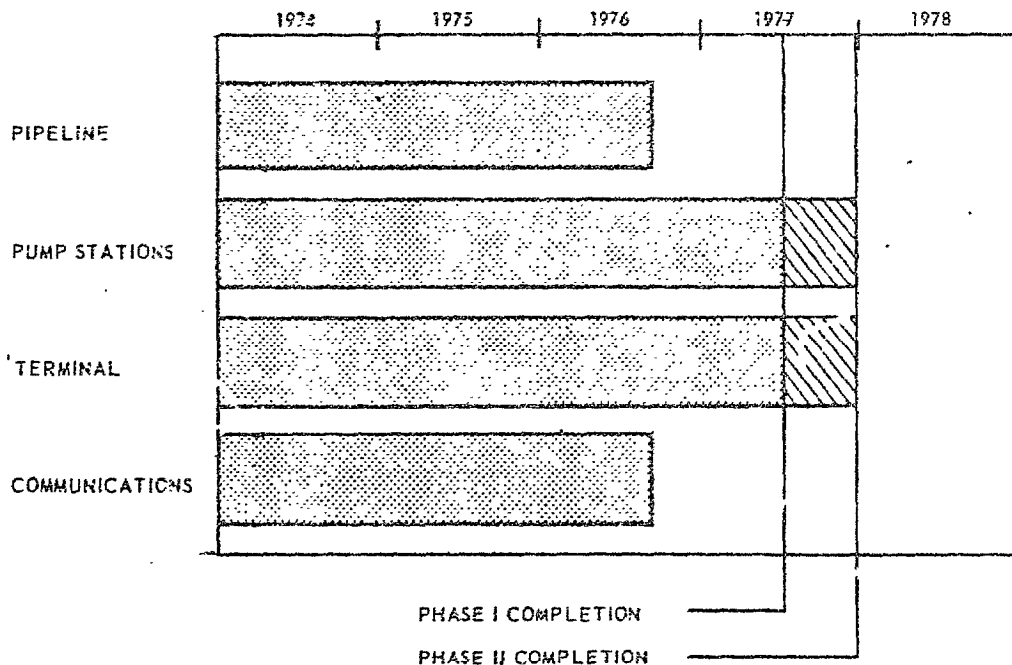
CONSTRUCTION SCHEDULE

Construction of the trans-Alaska oil pipeline system is scheduled in two phases. Phase I is scheduled for completion by July 1, 1977, when the pipeline system will have the capability of transporting 600,000 barrels of oil a day. Phase I includes the construction of

- the oil pipeline;
- five pump stations for moving the oil and one for pressure relief;
- passthrough facilities at six other pump station sites;
- the terminal, including three berths; and
- the communications system.

Phase II is scheduled for completion by November 1, 1977, when the pipeline system will be capable of transporting 1.2 million barrels of oil a day. To provide this increased capability, three additional pump stations and one additional berth at the terminal will be constructed. The pipeline system construction schedule is shown on the following page. The completion date for the project has not been changed since construction began on April 29, 1974.

PIPELINE SYSTEM SUMMARY SCHEDULE

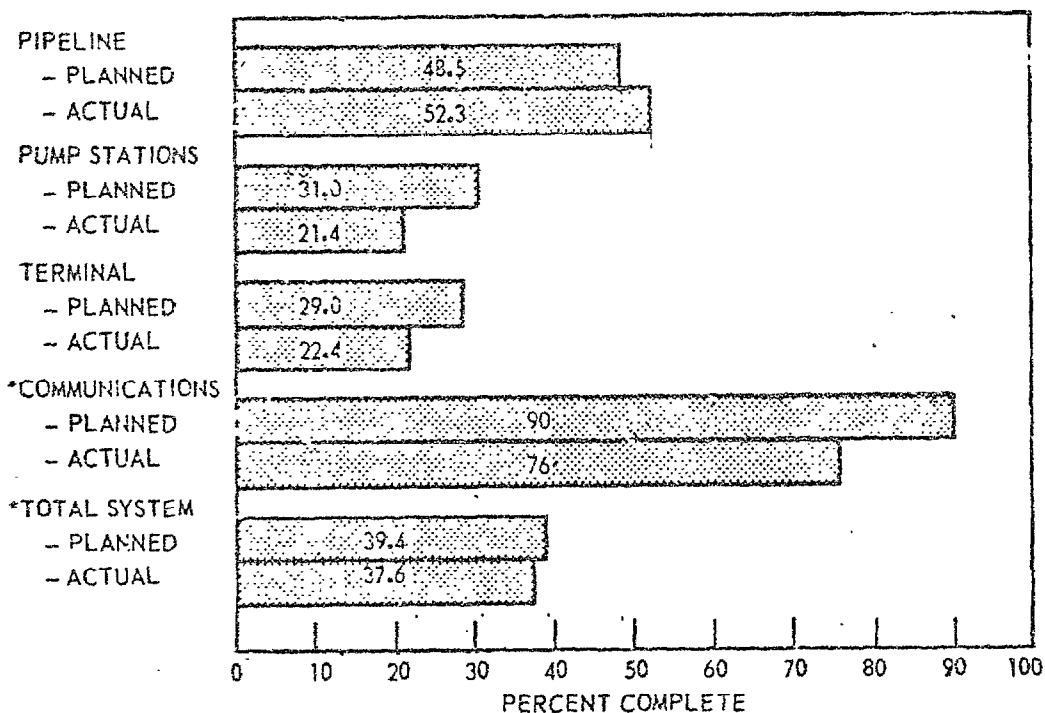


The pipeline system owner companies have not authorized construction of additional facilities needed to bring the system up to its design capacity of 2 million barrels a day. We were advised by owner company representatives that a decision had not yet been made with regard to increasing the capacity in excess of 1.2 million barrels a day.

STATUS OF CONSTRUCTION

Alyeska had planned to have the pipeline system 43 percent complete by November 30, 1975, but as of that date the project was only 40.5 percent complete. The following chart shows, by system component, the percent of construction completed as of November 30, 1975.

PERCENTAGE OF CONSTRUCTION COMPLETED AS OF NOVEMBER 30, 1975



\*The data for the communications system is as of November 7, 1975, and is not included in the total system percentages.

Pipeline

The 801 miles of pipeline are scheduled to be completed by November 1976. As of November 30, 1975, the pipeline was 55.5 percent complete compared with the 52.8 percent-completion scheduled by that date. Alyeska estimated that construction of the oil pipeline was about 6 weeks ahead of schedule.

Pipeline construction fell behind schedule during the early stages of the project. Factors which contributed to the schedule slippage included the late delivery and construction of camp housing; problems with camp sewage treatment facilities; late delivery of construction equipment; and problems in obtaining supplies, material, and spare parts.

Difficulties installing the vertical support members (see p.11) that support the pipe when it is installed above ground is an example of the type of schedule problems that developed. Installation of the vertical supports fell behind schedule because the equipment for drilling holes in the ground did not arrive on schedule. Further, due partly to the prototype procedure, the drills did not function properly, the work crews had difficulty in operating the drills, and the drills required more repairs than anticipated.

The schedule called for installation of 23,500 of the vertical supports by July 6, 1975, however, on that date only 14,122 supports had been installed. To speed up the work, Alyeska purchased more drills than it had planned to and leased additional drills. Alyeska also scheduled more two-shift work on the vertical support installation. In addition, the installation crews worked faster as they learned how to use the equipment. Alyeska was able to close the gap that had developed in the vertical support installation. By November 30, 1975, some 46,800 vertical supports had been installed compared with the 50,450 scheduled for installation by that date.

#### Pump stations

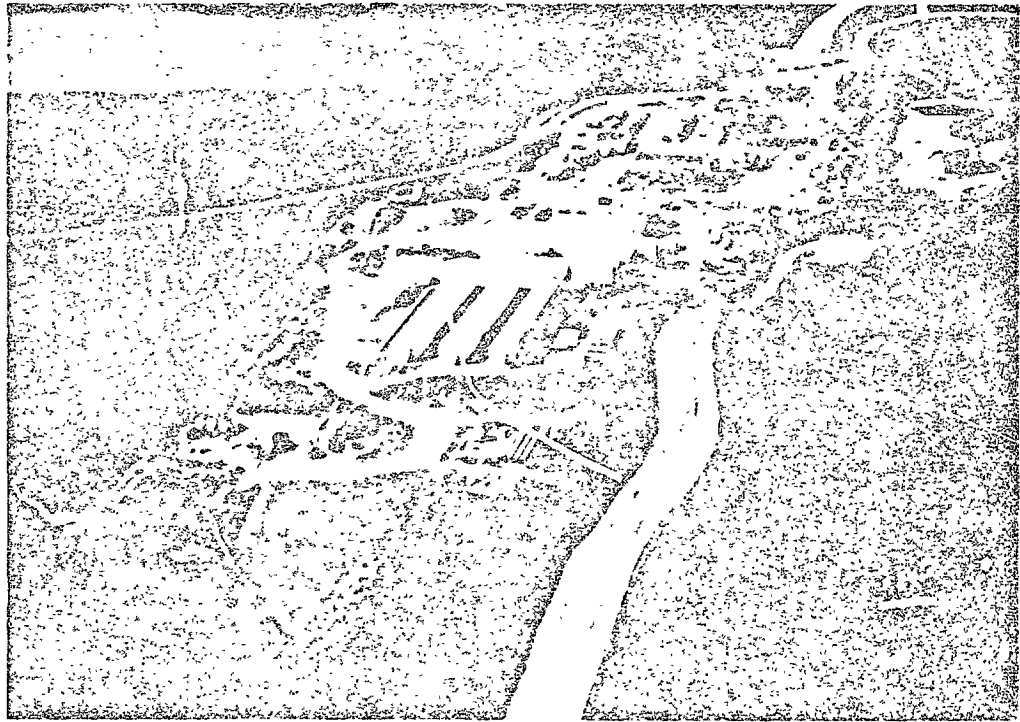
Construction of the pump stations was scheduled to be 33.7 percent complete by November 30, 1975, but was actually only 23.9 percent complete. (See photograph 3 on p. 21.) Alyeska estimated that construction of the pump stations was about 10 weeks behind schedule. The schedule slippage at the pump stations resulted from two major problems. One problem was the late delivery of reinforcing steel bars, anchor bolts, piping, and fittings. Due to late deliveries, Alyeska was unable to build up its work force to the planned level at the pump stations.

For example, during one 2-week period, at the peak of the summer work schedule, only 430 of the planned 1,034-man work force was able to be used in pump station construction. As a result, only 1 percent of the total pump station construction was done during this 2-week period, whereas the schedule called for 2.4 percent. Alyeska officials told us that they expected the material delivery problems at the pump stations to be resolved by the end of 1975 through use of the defense priority system (see p. 23) and other actions being taken to expedite delivery of supplies.

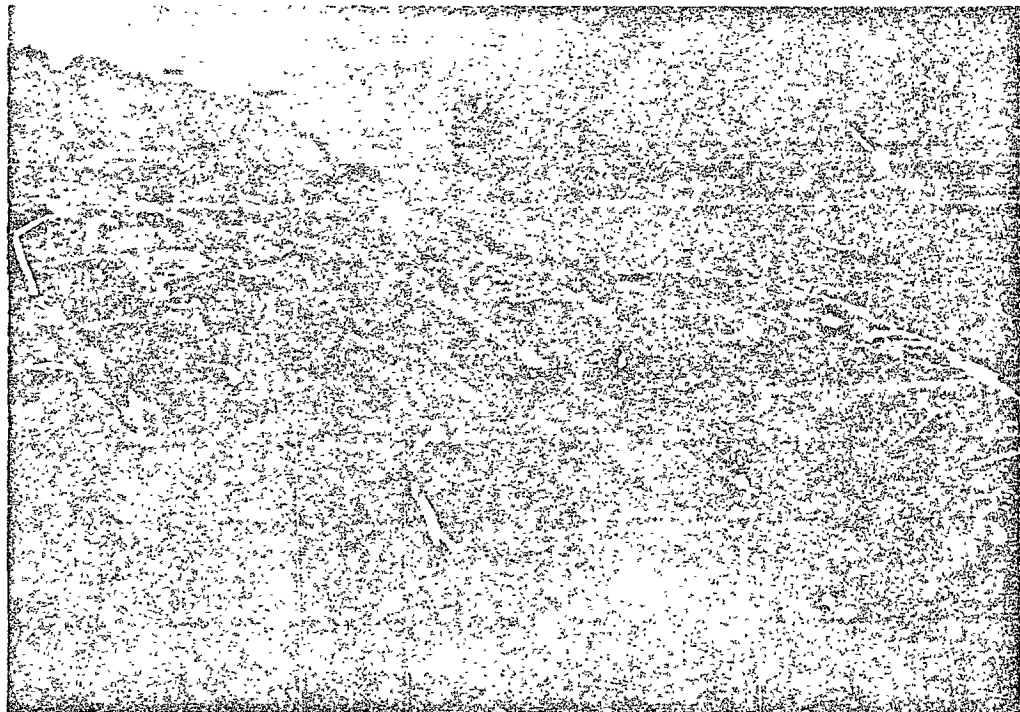


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The second problem occurred at pump station 6 when the contractor encountered ice about 30 feet below the surface. As a result, 25,000 cubic yards of unstable soil had to be removed and replaced with rock. The pump station will require a refrigerated foundation to keep the soil stable. To overcome the schedule slippage at pump station 6, Alyeska plans to do the concrete work at this station during the winter of 1975-76, even though this work will be extremely difficult at that time of year.



3. Pump Station 3—north of the Yukon River—August 1975



4. Valdez pipeline terminal October 1975

### Terminal

Construction of the terminal was scheduled to be 32 percent complete by November 30, 1975, but was actually only 25.3 percent complete. (See photograph 4 on p. 21.) Alyeska estimated that the terminal was about 8 weeks behind schedule. The two major problems that affected construction of the terminal were late delivery of construction materials and much more excavation work than had been planned. The late deliveries were caused by shortages of pipe and fittings at the prefabricators' shops. As a result the prefabricators had to slip promised delivery dates until they could obtain pipe and fittings from suppliers. The prefabricators expected to obtain the needed supplies in November 1975 and to start double workshifts. The other major material delivery problem at the terminal involved the structural steel for the power plant.

To prevent damage from earthquakes the terminal facilities are being constructed on bedrock. This requires that organic overlay and glacial till be excavated and removed. Plans for the construction of the terminal were based on the excavation and disposal of an estimated 4 million cubic yards of this material. The present estimate is that 9 million cubic yards of this material must be removed. Alyeska officials told us that the final total may run as high as 13 million cubic yards. The excavated area must then be filled with rock, which will require a quarry operation.

### Communications system

The microwave communication system was 76 percent complete as of November 7, 1975. Construction activities are scheduled to continue into the winter until the system is 90 percent complete. Alyeska officials told us that the original plan was to reach 90 percent before November 7, 1975. They said the system would be about 90 percent complete by the end of 1975 and would be completed on schedule.

### USE OF THE DEFENSE PRODUCTION ACT

On September 23, 1974, Alyeska was granted use of the Defense Production Act for procuring items which would delay completion of the project if not delivered on schedule. Defense suppliers must give preference to purchase orders with a Defense Production Act priority. For example, the delivery dates on six Alyeska purchase orders were advanced from 1 to 5 months when the defense priority was applied.

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On December 30, 1974, use of the Defense Production Act was also granted to the oil companies constructing the oil production facilities at the Prudhoe Bay oilfield. As of October 1975, this priority system had been applied to over 600 purchase orders.

## ITEMS CRITICAL TO THE CONSTRUCTION SCHEDULE

Completion of the 801-mile-long pipeline is scheduled for November 1976. The pump stations and the terminal are scheduled to be completed on July 1, 1977. Alyeska's ability to meet these target dates is contingent upon the timely completion of certain critical tasks which, if delayed, will adversely affect completion of the trans-Alaska oil pipeline system. Items critical to completion of the project are the river crossings north of the Yukon River, pipe installation in Keystone Canyon, buildings at the pump stations, and the powerplant and vapor-recovery system at the terminal.

### River crossings

Construction of some of the pipeline's river crossings north of the Yukon River is critical because of the severe winter weather and because construction is not permitted during the fish-spawning seasons. Similarly, those river crossings near falcon-nesting areas are off limits to construction during falcon-nesting periods. Alyeska officials told us that these river crossings must be completed during the winter of 1975, to meet the November 1976 pipeline completion date.

### Keystone Canyon pipe installation

Keystone Canyon is located about 25 miles north of the Valdez terminal in the Chugach Mountains. Installation of pipe in Keystone Canyon is critical because it is the most difficult pipe installation area on the pipeline route due to the canyon's rugged terrain. (See photograph on p. 25.) Pipe installation in the canyon is expected to proceed at a rate of 200 to 500 feet a day compared with the 3,000 to 4,000 feet a day that can be installed in other areas. In addition, the short construction season caused by a late spring thaw and heavy snows early in the winter limits construction in the canyon. Alyeska officials told us that the route was being prepared during the 1975 construction season and that plans called for installing the pipe during the 1976 construction season.

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Preparation of right-of-way in Feystone Canyon  
during August 1975

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## The powerplant

Construction of the powerplant at the terminal is the most critical schedule item and sets the end date for the entire project. Construction of the powerplant involves a sequential chain of activities, many of which cannot start until the prior activity has been completed. For example, since the powerplant condensers are to be located on top of the generator buildings, they cannot be placed until the buildings are erected. Powerplant construction fell behind schedule because the structural steel for the buildings was delivered later in the 1975 construction season than planned. Alyeska plans to make up the schedule slippage by working during the winter.

## The vapor-recovery system

The vapor-recovery system for the crude oil storage tanks at the terminal is also a critical schedule item. As does the powerplant, construction of the vapor-recovery system involves a sequential chain of activities. For example, the five rotary compressors must be installed before the related piping and instrumentation systems. As of November 30, 1975, construction of the vapor-recovery system was nearly on schedule.

## Pump station buildings

Completion of the pump station buildings before winter is critical because, without the buildings, only a limited amount of work can be done during the winter of 1975-76. Some of the structural steel for the construction of these buildings has arrived at the construction sites, but much of it is still spread out along the supply line or is yet to be fabricated. Alyeska officials expect that, barring further delays due to nondelivery of construction supplies and prior weather conditions, the buildings can be erected by January 1976.

## THE PRUDHOE BAY OILFIELD

The Prudhoe Bay oilfield is being developed and operated by the Atlantic Richfield Company and BP Alaska Incorporated. The field will have about 150 operational wells when complete. Piping will connect each well to one of the six gathering centers where the natural gas will be separated from the crude oil before the oil enters the pipeline system.

The field development schedule is to have the capability of producing

- 900,000 barrels of oil a day by July 1977;
- 1.2 million barrels a day by October 1977; and
- 1.8 million barrels a day by July 1978.

BP pipelines and ARCO Pipeline Company officials told us that the sustained-production rate when the field is completed will be about 1.5 to 1.6 million barrels a day. Thus the oilfield is scheduled to be capable of producing more oil than the pipeline system is scheduled to be capable of transporting when phases I and II are complete.

Atlantic Richfield officials told us that as of October 29, 1975, their company work was behind schedule but the scheduled completion dates could be met by using more manpower than originally planned and by doing more winter work. These officials told us that the major problem that caused their companies to fall behind schedule was getting the supply barges into Prudhoe Bay in the summer of 1975. Many of the barges did not get through to Prudhoe Bay because of ice conditions, and the material from these barges is now being trucked overland. Some of the barges that did get through are now trapped in the ice 1 mile from the Prudhoe Bay dock area and cannot be offloaded. Atlantic Richfield plans to extend the dock to reach the barges. Atlantic Richfield officials told us that their companies could meet the July 1, 1977, scheduled operational date even if the barges cannot be offloaded until the summer of 1976.

Officials of both Atlantic Richfield and BP Alaska told us that they had experienced some problems in obtaining construction supplies and that the use of the defense priority system had helped them in overcoming these problems.

#### THE VESSEL TRAFFIC CONTROL SYSTEM FOR PORT VALDEZ

In the Trans-Alaska Pipeline Authorization Act, the Congress directed that a vessel traffic system for the port of Valdez be established to reduce the possibility of ship collisions and groundings and to protect waterways, shorelines, personnel, and cargo. The Coast Guard is constructing the system, which will consist of tanker lanes, improved navigational aids, a communications system, a radar system, and a control center.



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The Coast Guard has established the tanker lanes and has added navigational aids, such as whistles, buoys, and lights. Contracts have been let for site preparation at the radar site, construction of the control center, and construction of the control center housing; as of November 30, 1975, site preparation and foundation work was in progress. The control center housing is to be ready by December 1976 and site preparation at the radar site and construction of the control center are to be completed by January 8, 1977.

As of November 30, 1975, bids for construction of the radar and communication systems were being reviewed. The radar and communication systems are scheduled for completion by August 1977. Coast Guard officials told us that they planned to use a Coast Guard escort vessel anchored in Fort Valdez to provide an equivalent level of radar and communications service should the vessel traffic system not be operational when oil is ready to be shipped out of the Valdez terminal.

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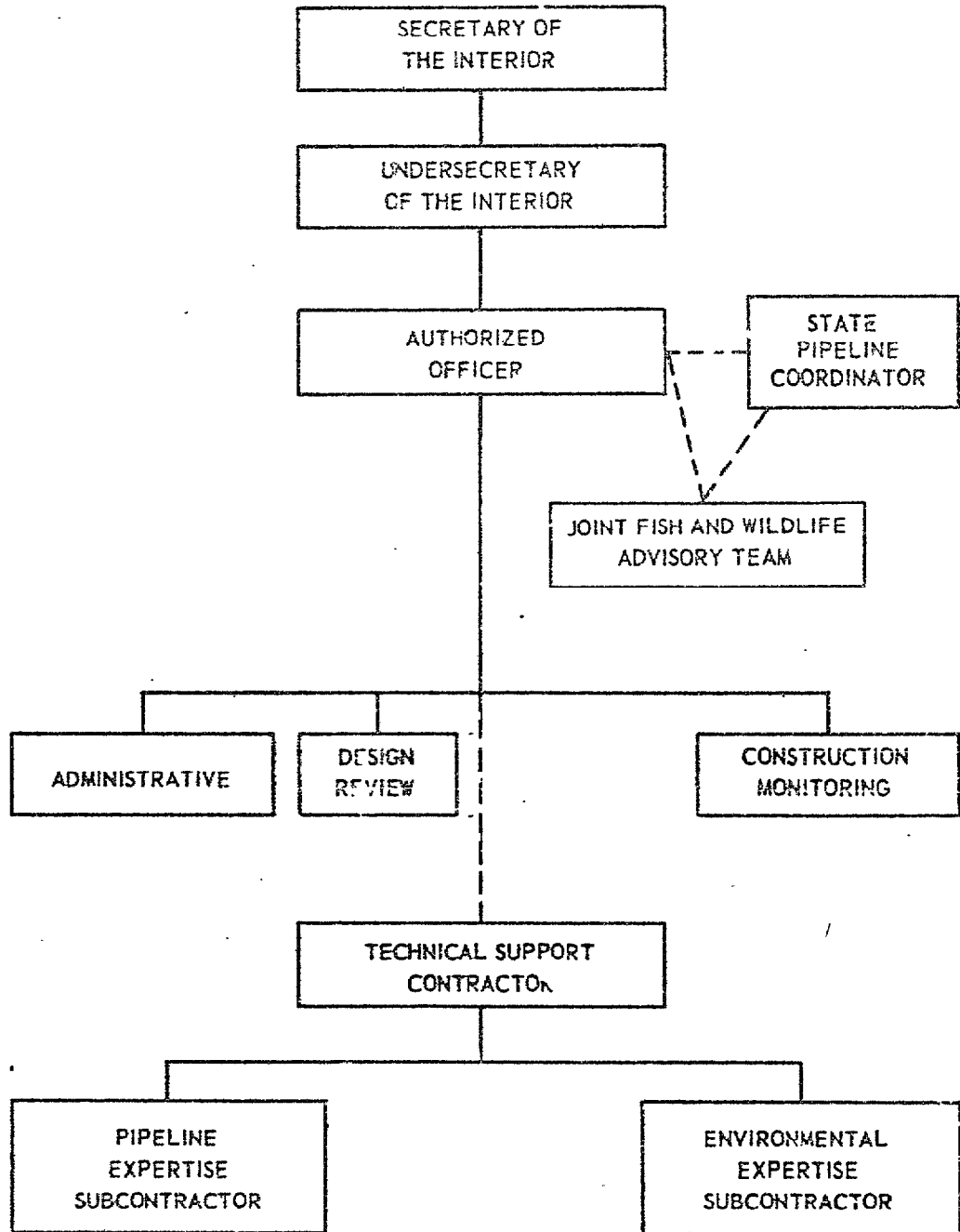
## CHAPTER 4 FEDERAL AND STATE MONITORING OF CONSTRUCTION OF THE TRANS-ALASKA OIL PIPELINE SYSTEM

The trans-Alaska oil pipeline system is being constructed through 574 miles of Federal lands, 188 miles of State lands, and 39 miles of private land. Public Law 93-153 directed the Secretary of the Interior to issue, administer, and enforce the right-of-way permit through Federal lands and to issue regulations or stipulations for protection of the environment. The Secretary and the permittee companies signed the right-of-way agreement on January 23, 1974. The agreement included the stipulations required by Public Law 93-153.

Also on January 23, 1974, the Secretary named the Department's Authorized Officer and delegated to him responsibility for insuring compliance with the terms, conditions, and stipulations of the agreement. On January 30, 1974, the Governor of Alaska named the State Pipeline Coordinator and assigned to him responsibility for surveillance of pipeline construction on State lands to insure protection of the environment. An agreement between the Department of the Interior and the State of Alaska provides that either the Authorized Officer or the State Pipeline Coordinator may issue orders to protect the physical integrity of the pipeline on State lands. The State right-of-way lease, issued on May 3, 1974, includes stipulations similar to those in the Federal right-of-way permit.

To insure compliance with the right-of-way agreement, the Authorized Officer reviews and approves the plans for construction, operation, maintenance, and termination of the pipeline system and monitors implementation of Alyeska's quality assurance and quality control programs. To meet these responsibilities, the Secretary established a separate organization headed by the Authorized Officer, as shown in the following chart.

ORGANIZATION OF INTERIOR'S ALASKA PIPELINE OFFICE  
DURING PIPELINE CONSTRUCTION



The Authorized Officer contracted with Mechanics Research, Inc., for expertise on compliance with the environmental and technical stipulations. To obtain expertise on fish and wildlife, the Authorized Officer and the State of Alaska established a joint fish and wildlife team. The staffing of these organizations, as of August 1975, is shown in the following table.

	<u>Federal</u>			<u>Fish and wildlife</u>
	<u>Authorized Officer</u>	<u>Contractor</u>	<u>State</u>	
Management and administration	23	19	13	9
Technical	9	13	4	11
Field surveillance	<u>16</u>	<u>39</u>	<u>15</u>	<u>13</u>
Total	<u>48</u>	<u>71</u>	<u>32</u>	<u>33</u>

REVIEW AND APPROVAL OF PIPELINE CONSTRUCTION PLANS

The right-of-way agreement provides that construction not be initiated without a formal written notice to proceed from the Authorized Officer. He may issue a notice to proceed only when, in his judgment, the construction plan (including the design) conforms with the general, technical, and environmental stipulations. The Authorized Officer is allowed 90 days to review each application for a notice to proceed. If the Authorized Officer needs additional information to satisfy himself that the proposed construction will conform with the stipulations, the 90 days begin when Alyeska submits the additional information.

As of September 30, 1975, the status of notices to proceed, needed to build the pipeline, was as follows.

<u>Status</u>	<u>Federal</u>	<u>State</u>	<u>Both</u>	<u>Percent of total</u>
Issued	230	449	679	96
In process	<u>7</u>	<u>24</u>	<u>31</u>	<u>4</u>
Total	<u>237</u>	<u>473</u>	<u>710</u>	<u>100</u>

The Authorized Officer took steps to insure that the Federal review and approval process did not delay construction. For example, from September 1974 to April 1975 the Authorized Officer's staff worked extended workdays and workweeks to complete their reviews of applications for notices to proceed. In addition, the Authorized Officer reviewed the applications according to Alyeska-provided construction schedule priorities so that the notices to proceed could be issued by the time the contractors were ready to start work. In some cases the Authorized Officer issued notices to proceed for all work specified in the application except that part which did not conform with the stipulations, so that construction could proceed.

The average time the Authorized Officer took to review the applications and issue the 230 Federal notices to proceed was about 70 days; the average time the State Pipeline Coordinator took for the 449 State notices was about 65 days. It took longer than 90 days to issue some notices either because additional information was needed or because applications of higher priority had to be reviewed first.

Alyeska officials told us that the Federal and State reviews had not adversely affected project completion but had required rescheduling of some construction work.

#### MONITORING OF CONSTRUCTION

The right-of-way agreement requires that Alyeska establish a comprehensive quality assurance program designed to help insure that the environmental and technical stipulations are fully complied with throughout all phases of construction, operation, maintenance and termination of the pipeline system. The Authorized Officer is responsible for approving the quality assurance program before any construction can begin and for monitoring program implementation.

The Authorized Officer tentatively approved Alyeska's quality assurance program in July 1974. He did not give his final approval at that time because the program inadequately described the level of communication and coordination among the Federal monitors, quality assurance program, and the execution contractors because quality control requirements were not specified in the quality assurance manuals, even though compliance with the stipulations by the contractors and subcontractors was to be accomplished through quality control.

Despite these inadequacies in the quality assurance program, the Authorized Officer issued notices to proceed so that construction would not be delayed. The Authorized Officer, through his technical support contractor, relies on a system of spot checks to monitor the effectiveness of Alyeska's quality assurance program. Spot checks consisted of inspecting materials, workmanship, or work in progress to ascertain conformance or nonconformance with plans, specifications, notices to proceed, stipulations, or other provisions of the right-of-way agreement. The project manager of the technical support contractor estimated that two-thirds of the construction activities were not seen by the monitors but that the spot checks did measure the effectiveness of Alyeska's quality assurance program on a nonscientific sample basis.

During the early part of the 1975 construction season, Federal and State monitors found that many violations of the stipulations were not being corrected through Alyeska's quality control or quality assurance program. To obtain corrective actions, the Federal and State monitors required correction of nonconforming work.

In June 1975 we brought this matter to the attention of the Authorized Officer. (See app. II.) In July 1975, the Authorized Officer, the State Pipeline Coordinator, and Alyeska studied the quality assurance problems to determine what corrective actions should be taken. (See app. III.) The study showed that many of the quality control problems were similar to the concerns expressed by the Authorized Officer when he tentatively approved the quality assurance program. The study showed the need

- to give quality control representatives the authority to halt nonconforming work;
- for a closer interface between Federal and State monitors and Alyeska so that nonconforming work found by the monitors could be quickly corrected; and
- for many more environmentally oriented quality control personnel.

On July 11, 1975, Alyeska officially gave field-level quality control the authority to direct execution contractors to correct deviations from approved procedures and standards and to halt construction work that violated approved procedures and standards. Closer coordination

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was obtained by holding biweekly meetings of Federal, State, and Alyeska representatives to discuss quality problems and by daily and weekly meetings at the field level of Federal, State, Alyeska, and contractor personnel to discuss quality problems. Also Alyeska took actions to resolve environmentally oriented quality control problems but as of November 2, 1975, had not hired additional environmentally oriented quality control personnel.

On August 18, 1975, the Authorized Officer gave final approval to Alyeska's quality assurance program. At that date, the Authorized Officer had issued about 85 percent of the notices to proceed and about 22 percent of the total project had been completed, including the installation of about 33 percent of the pipe.

Federal and State officials told us that quality assurance and quality control had improved because the quality control personnel had been using their authority to halt nonconforming work. These officials stated, however, that they were not certain whether the construction completed during the period that quality control was not functioning properly met the quality required by the stipulations. The uncertainty existed because there were not enough Federal and State monitors to provide 100 percent coverage of construction activities during that period. Federal and State monitors told us that any poor quality construction should be found during the tests of the pipeline system before it becomes operational.

### OBSERVATIONS

The review of pipeline system design and construction plans by the Authorized Officer and the State Pipeline Coordinator has not delayed project construction. The Authorized Officer and the State Pipeline Coordinator made reasonable efforts to expedite processing of the 710 notices to proceed issued as of September 30, 1975. These efforts included working overtime, processing notices to proceed in the order of priority required by construction schedules, and issuing notices to proceed with the construction that complied with the stipulations.

Alyeska, through its quality assurance program, is responsible for compliance with the environmental and technical stipulations. If functioning properly, such a program reduces the need for extensive government monitoring. The quality assurance program did not function properly during the early part of the 1975 construction season because Alyeska had not given quality control personnel the authority to halt nonconforming work. Therefore Federal

and State monitors had to carry out the quality control functions by requiring corrections of nonconforming work. Alyeska has taken certain action to correct the deficiencies in its quality assurance and quality control program. The corrective action appears to be satisfactory.

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CHAPTER 5

PROTECTION OF THE ENVIRONMENT

Construction of the trans-Alaska oil pipeline system will have a permanent impact on the Alaskan landscape. The line will cross 801 miles of land, much of which was previously undeveloped. Some 30,000 acres of land will be disturbed. To construct the haul road, work pad, access roads, and construction camps, about 56 million cubic yards of gravel were mined from about 280 material sites along the pipeline route. The pipeline will cross about 356 rivers and streams and will roughly parallel the flood plain channels of 5 large rivers.

The Mineral Leasing Act of 1920, as amended, required that the Secretary of the Interior impose stipulations to protect the environment before granting a right-of-way. The right-of-way agreement between the Department of the Interior and the permittee companies contains 14 environmental and 10 technical stipulations.

THE ENVIRONMENTAL STIPULATIONS

The environmental stipulations are designed to minimize the environmental damage during construction, operation, maintenance, and termination of the pipeline system. These stipulations include provisions relating to fish and wildlife and their habitats, explosives, erosion control, pollution control, buffer strips, land clearing, off right-of-way traffic, restoration, esthetics, oil spills, contingency plans, material purchases, and environmental briefings. For example, the fish and wildlife stipulation controls construction in streams by requiring safe passage of fish and protection of their spawning beds. The restoration stipulation requires that all disturbed areas be restored to the satisfaction of the Authorized Officer.

Environmental problems

The most important environmental problems that occurred during the 1975 construction season related to the lack of erosion control, the occurrence of oil spills, and the failure to meet standards for sewage treatment. Other environmental problems have arisen, but they have had only limited impact.

Erosion control

Erosion causes environmental damage by removing soils from their natural locations and depositing them, in the form of sediments, where damage will result to other resources. Sediment deposited in streams adversely affect fishery resources; sediment deposited on land damages the natural vegetation.

To comply with the erosion control stipulations, Alyeska developed plans and procedures for controlling erosion and for restoring disturbed areas.

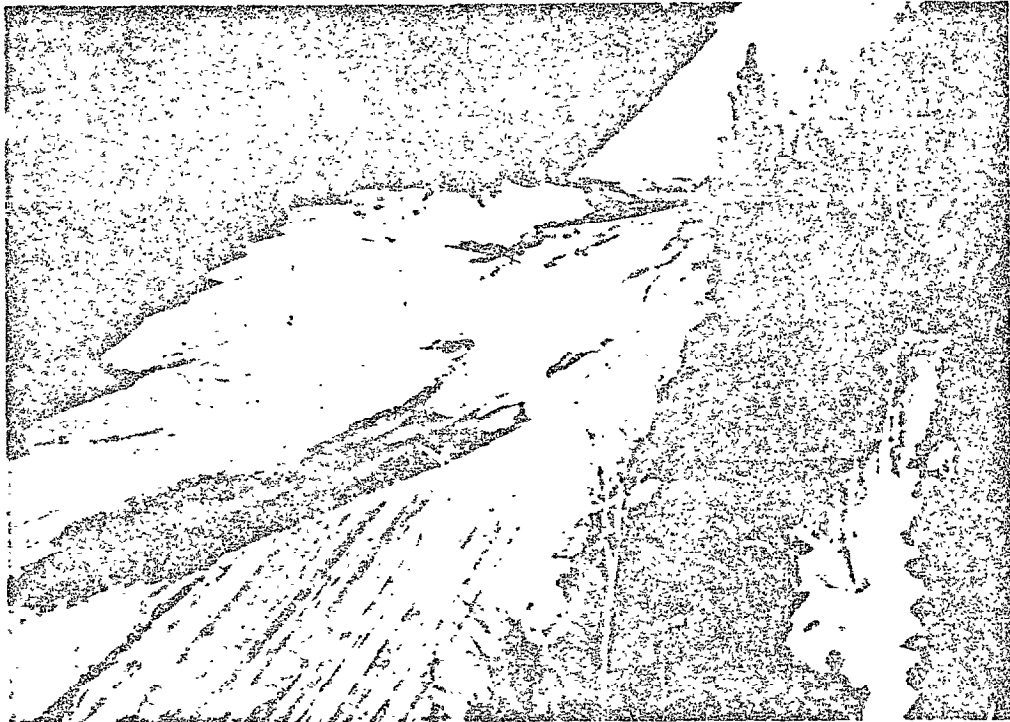
In the spring of 1975, Federal monitors found that these approved erosion control plans had not been properly carried out. Erosion control facilities were not always included in completed construction, drainage structures were inadequate in size and number, and disturbed areas had not been revegetated. For example, Federal monitors estimated that in one 31-mile section, 70 percent of the natural drainageways had not been equipped with culverts or low-water crossings.

The Authorized Officer said that part of the erosion control problem was that Alyeska, in trying to meet the requirements for minority hires, decided to place the erosion control work under separate subcontractors rather than the main execution contractors. By the time these contracts were issued and the work force was mobilized in the field, it was too late in the season to carry out the erosion control plans. Some erosion control work which remains to be done is the responsibility of the execution contractors.

As a result, the spring runoff caused siltation of water and lands, as well as saturation and structural failure of the work pad in many areas. An example of this condition is shown in photograph 5 on p. 39.

Federal monitors told us that, although the erosion problems might not have caused permanent environmental damage, data was not available to measure the extent of the damage. For example, the effect that siltation of streams has had on fish and fish-spawning beds is not known at this time.

An inventory of the specific areas where erosion control work is required was made during the summer of 1975. Alyeska developed erosion control plans for these areas, and the Authorized Officer reviewed and approved the plans.



5. Erosion of construction work pad caused by lack of drainage structure located north of the Yukon River



6. Floating barricades being used to minimize oil spills into Galbraith Lake

Federal monitors told us that the plans, if properly carried out, will prevent erosion problems from recurring in the spring of 1976

### Oil spills

To comply with the pollution control stipulations, Alyeska established procedures for reporting oil spills to the Environmental Protection Agency, the Authorized Officer, the State Pipeline Coordinator, the U.S. Coast Guard, and the Alaska Department of Environmental Conservation. For example, during the 12-month period ended July 31, 1975, Alyeska reported 71 oil spills on land amounting to 32,215 gallons. In addition, there were 22 oil spills in water amounting to 76,355 gallons. Federal and State monitors cited the following examples of the spills which they considered to be the most serious.

The Galbraith Lake Camp spill, discovered on February 7, 1975, was attributed to a leaking fuel line in the camp's heating system. At that time it was estimated that 100 gallons of fuel had been spilled onto the frozen ground. However, when the ground thawed in June 1975, oil began seeping from the ground and into a stream adjacent to the camp that empties into Galbraith Lake. The actual amount of fuel spilled has not been determined, but estimates run as high as 65,000 gallons.

Although cleanup efforts were initiated, this action did not prevent oil from entering the stream and Galbraith Lake. (See photograph 6. p. 39.) Water samples taken in July 1975 showed that the water from the stream above Galbraith Lake Camp contained less than 2 parts per million of dispersed oil in water; 10 samples taken from the lake ranged from 1 to 79 parts per million and averaged 14.1 parts per million of dispersed oil in water. Fish and wildlife advisors said they do not know what, if any, impact this would have on Galbraith Lake's fish population.

The Toolik Camp spill, discovered in May 1974, was also caused by a leaking fuel line and subsequent seepage from the oil-saturated ground. It was estimated that 2,000 to 5,000 gallons of oil had been spilled at this location. Cleanup operations had recovered about 2,000 gallons of oil as of August 1975. Seepage surfacing down-slope from the camp has killed approximately 2 acres of tundra, but no oil has reached Toolik Lake.

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Two major spills have occurred at the Happy Valley Camp. A spill of about 5,000 to 6,000 gallons occurred in 1970 and is of continuing concern due to seepage, and a spill of about 1,800 gallons occurred in April 1975. These spills, in addition to smaller spills, permeated the work pad in the shop area of the camp, and during the spring thaw, oil seeped from the pad into a creek adjacent to the camp.

An oil spill was discovered at the Franklin Bluffs Camp in October 1975. The spill occurred when fuel from the camp's heating system escaped from a fuel line that had been cut but not plugged. Before the leak was discovered, about 29,000 gallons of fuel were spilled, contaminating about 1 acre of tundra adjacent to the camp.

### Sewage treatment

The pollution control stipulations require that waste water from construction camps comply with the State of Alaska water quality standards. Alyeska obtained permits from the State to discharge treated effluent from sewage treatment plants into holding ponds at 25 construction camps. The permits require that 85 percent of the biochemical oxygen demand and suspended solids be removed from the effluent before discharge.

Alyeska's sewage treatment plants have not consistently met the pollution control requirements of the stipulation. For example, on May 31, 1974, the Authorized Officer cited Alyeska for noncompliance and directed Alyeska to bring the plants into compliance by June 15, 1974, or have them shut down. On August 1, 1975, the Authorized Officer again cited Alyeska for noncompliance. Alyeska responded to the Authorized Officer with plans to improve the sewage treatment operations. However, 29 percent of the tests made between August 16 and September 27, 1975, failed to meet the permit requirements. One of the plants failed to meet the permit requirements in six of the seven weekly tests.

A Federal monitor told us that, when a plant fails to meet the requirements for 3 consecutive weeks, 10 percent of the camp's population is removed weekly until the plant does meet the permit requirements. Several camps have had their populations reduced due to sewage treatment problems. Federal monitors also told us that the effect of the waste water on the streams was not known because sufficient water samples had not been taken to determine if lethal levels of oxygen were occurring in the streams.

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### Other environmental problems

There are many other instances where environmental damage has resulted from construction activities, but they have had only limited impact. Some examples of these environmental problems are discussed below.

### Sukakpak Mountain gravel pit

Alyeska, as contractor for the State of Alaska, built the haul road from the Yukon River to Prudhoe Bay. During construction of the road, Alyeska requested a permit to use a material site on the lower slopes of Sukakpak Mountain in the Brooks Range. The Bureau of Land Management must approve requests for disposal of mineral materials. In this case, the Authorized Officer gave Alyeska permission to begin using this material site before the Bureau of Land Management had approved the disposal because the material was needed to continue construction. After the access road was constructed and the pit opened, the Bureau of Land Management rejected the request because Sukakpak Mountain is one of the most scenic vistas along the pipeline and should be retained in its natural state. Although the access road and gravel pit have a considerable visual impact on Sukakpak Mountain, plans are being made to rehabilitate the site.

### Feeding and killing of animals

The pollution control stipulations require that all trash and garbage be disposed of in a manner acceptable to the Authorized Officer.

Wildlife has been attracted to construction sites and camps because of inadequate disposal of garbage and because construction crews feed the animals. To minimize the danger of people being mauled or bitten, some animals have been destroyed. Fish and wildlife records show that at least five bears, four foxes, and one wolf have been killed.

Alyeska has hired personnel to pick up and properly dispose of trash at the construction sites and has adopted a policy of discharging workers caught feeding animals.

THE TECHNICAL STIPULATIONS

The technical stipulations establish requirements for pipeline standards, construction mode, earthquake design, slope stability design, corrosion protection, and containment of oil spills.

Since the technical stipulations are generally designed to insure the integrity of the pipeline system, their effectiveness cannot be fully determined until the system is operational. In the interim, the Authorized Officer has monitored Alyeska's compliance by reviewing the plans and specifications and by spot checking to insure that Alyeska's quality assurance program is functioning properly.

OBSERVATIONS

Construction of the trans-Alaska oil pipeline system will have a major and permanent effect on the Alaskan landscape. The line will cross about 801 miles of land, much of which was previously undeveloped, and will disturb some 30,000 acres. It is too early to assess the overall impact of construction on the environment because 60 percent of the work remains to be done and the effectiveness of the technical requirements of the pipeline system will not be known until the system becomes operational. In some cases, the effect of these technical requirements will be known only after certain events, such as earthquakes, have occurred.

## CHAPTER 6

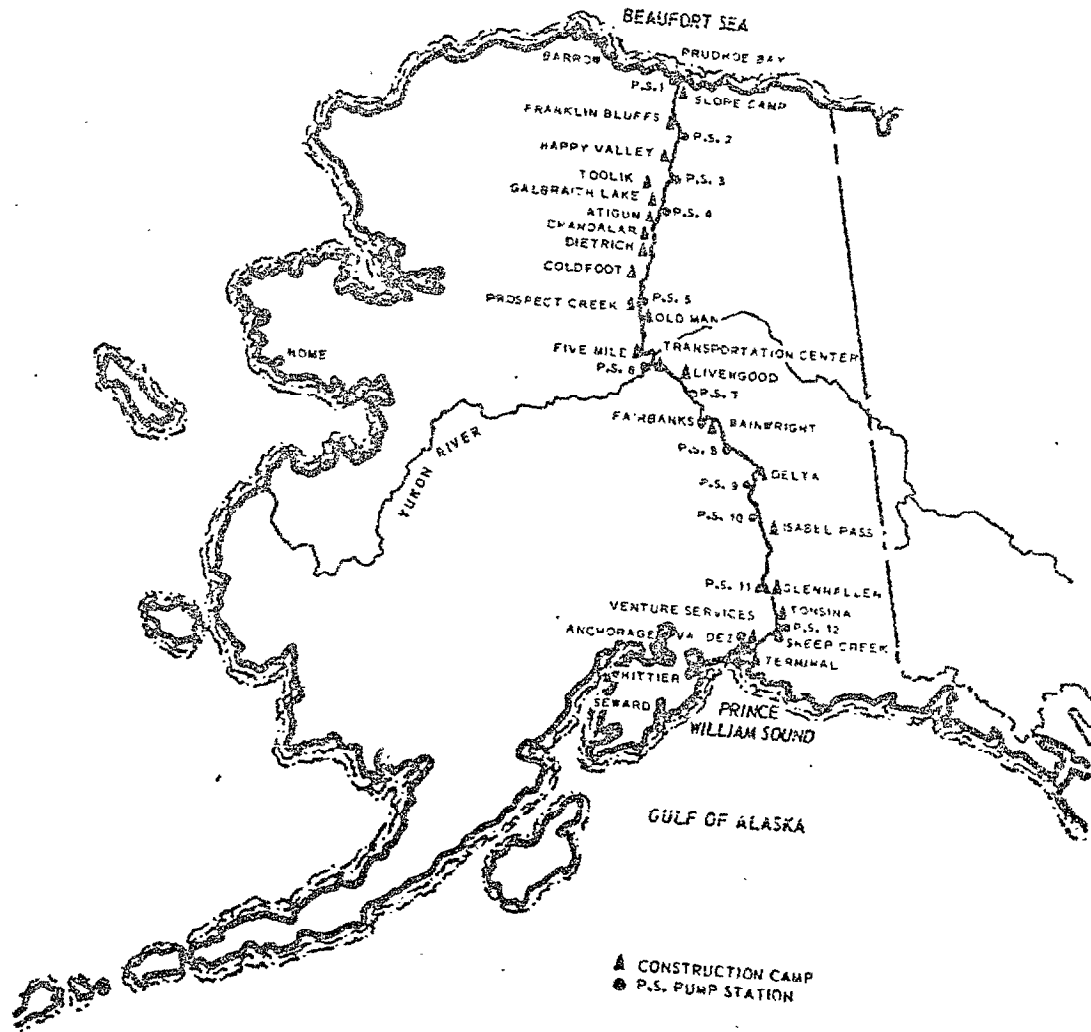
### SCOPE OF REVIEW

We reviewed pipeline activities at the Department of the Interior's Alaska Pipeline Office in Anchorage, Alaska; the State Pipeline Coordinator's office in Anchorage, Alaska; the Alyeska Pipeline Service Company in Anchorage, Alaska; and various field offices of these organizations along the pipeline route.

We reviewed applicable laws, regulations, and agreements relating to the granting of the right-of-way and protection of the environment during construction of the trans-Alaska pipeline system and their implementation. We also discussed these matters with officials of the above named organizations.



TRANS-ALASKA OIL PIPELINE ROUTE



UNITED STATES GENERAL ACCOUNTING OFFICE  
REGIONAL OFFICEROOM 201, 412 FIRST AVENUE NORTH  
SEATTLE, WASHINGTON 98109

JUL 16 1975

Mr. A. P. Rollins, Jr.  
Authorized Officer  
Department of the Interior  
Alaska Pipeline Office  
808 E Street  
Anchorage, Alaska 99501

Dear Mr. Rollins:

This letter confirms the meeting that John O'Meara and Evan McKinney of my staff held with you on June 27, 1975, concerning violations of the stipulations of the right-of-way permit for the trans-Alaska pipeline. It was agreed that the violations occurred because the contractor's quality control programs and the quality assurance program of Alyeska Pipeline Service Company have not functioned as intended.

In the Trans-Alaska Pipeline Authorization Act, dated November 16, 1973, the Congress authorized and directed the Secretary of the Interior and other appropriate Federal offices and agencies to issue and take all necessary action to administer and enforce the rights-of-way, permits, leases, and other authorizations that are necessary for or related to the construction, operation, and maintenance of the trans-Alaska oil pipeline system. The Agreement and Grant of Right-of-Way requires that the permittees have a quality assurance program to assure that the technical and environmental stipulations of the Agreement will be fully complied with throughout all phases of the construction, operation, maintenance, and termination of the pipeline system.

In July 1974, your office tentatively approved Alyeska's quality assurance program. One of your concerns at that time was that quality control was not directly reflected in the quality assurance manuals, even though compliance with the stipulations by the contractors and subcontractors was to be achieved through quality control. As of June 27, 1975, you still had this same concern.

Quality control was to be conducted by the construction management contractors and the execution contractors with Alyeska monitoring the effectiveness of the quality control through their quality assurance program. The Federal monitoring effort was to assure through spot checks that the quality control and assurance programs were functioning.

Federal monitoring personnel told us that the quality assurance and quality control programs are not functioning as intended, resulting in violations to the stipulations. Some recent examples of violations that were pointed out to us are as follows. On June 24 and 25, 1975, Federal monitors observed violations of stipulations relating to welding, taping, berm support, and lowering-in and padding of the pipe. There were no inspectors present and the pipe was being placed in the ground in spite of the defects.

On June 24, 1975, while accompanying Federal monitors, we observed the construction of a low water stream crossing near Dietrich camp. The work had not been authorized by the Authorized Officer's Field Representative and was causing siltation of the water. A quality control inspector was present but had not prevented the violations.

On June 15, 1975, quality control inspectors issued a satisfactory inspection report on a low water stream crossing being constructed, even though they noted it did not conform to the approved design. Federal monitors checked the same crossing 9 days later and issued a nonconformance spot-check report since it did not conform to approved standards and had caused silt deposits to build up near the crossing.

The Federal spot-check summary as of May 5, 1975, shows a significant number of nonconformance spot checks as shown below.

<u>Stipulations</u>	<u>Spot checks</u>		<u>Percent</u>
	<u>Total</u>	<u>Nonconformance</u>	<u>Nonconformance</u>
General	1,196	253	21
Environmental	2,839	582	21
Technical	<u>2,167</u>	<u>296</u>	14
Total	<u>6,202</u>	<u>1,131</u>	<u>18</u>

Violations of the erosion control stipulations occurred during the construction prior to spring break-up, but the environmental damage did not occur until erosion-producing conditions were created by the heavy run-off associated with spring break-up. Similarly, other violations of the stipulations could develop into environmentally damaging problems should the proper conditions arise at some time in the future.

We recognize that you have contacted Alyeska several times concerning this matter, but it appears that adequate corrective action has not been taken. We would appreciate being advised of what further actions you plan to take to see that Alyeska incorporates adequate quality control and quality assurance in accordance with the Agreement and Grant of Right-of-Way for the trans-Alaska pipeline.

APPENDIX II

APPENDIX II

We appreciate the opportunity of discussing these matters with you and thank you for the cooperation we have received from you and your staff.

Sincerely yours,



Philip A. Bernstein  
Regional Manager

UNITED STATES DEPARTMENT OF THE INTERIOR  
ALASKA PIPELINE OFFICE  
808 E STREET  
ANCHORAGE, ALASKA 99501

August 18, 1975

Mr. Philip A. Bernstein  
Regional Manager  
U.S. General Accounting Office  
Regional Office, Room 201  
415 First Avenue North  
Seattle, Washington 98109

Dear Mr. Bernstein:

Thank you for your letter of July 16, 1975. While we generally agree with the substance of the letter, I believe you will find the ensuing comments pertaining to Alyeska's Quality Control of interest (page and paragraph numbers are annotated to your letter):

Page 2, paragraph 4--Although we are not able to track your statistics in total, we do note that as of May 5, our Technical Support Contractor (MRI) had issued 6,552 stipulation reports, and 3,762 separate spot check memoranda noting 1,135 possible stipulation violations. Current evaluation of those possible non-conformances indicates that all have been corrected or cleared with the exception of two. These are currently working and we have no reason to believe, at this time, that a solution satisfactory to this office cannot be attained.

Page 2, paragraph 5--We have been and are still concerned about the erosion control and the erosion control procedures. This office requested and conducted a meeting on April 19, with Alyeska and their execution contractors in Fairbanks on this subject. The purpose of the meeting was to hopefully stave off problems that would develop without adequate plans and corrective measures being planned and placed in force. Unfortunately, their track record in this instance has not been good. At the present time the erosion control problem has been turned around and in most instances work is being conducted in a manner as to minimize these upset conditions. Part of the problem that we found in the erosion control was that Alyeska, in trying to meet the stipulation requirements for minority hires (example: small businesses and ethnic groups) had decided to put this portion of their work effort under separate subcontractors working for Alyeska and not the main execution contractors. The time it took to issue the contracts, get these people mobilized and working in the field was not compatible with the time-frame to take adequate erosion control corrective

measures. In other words, compliance with that portion of the Agreement and Grant of Right-of-Way (paragraph 28 "Nondiscrimination and Equal Employment Opportunity") detracted from timely compliance with the Stipulations (specifically paragraph 2.4 "Erosion Control"). There remain, however, some portions of the work for which the execution contractor is responsible and for which his performance in the past was less than satisfactory.

Page 2, paragraph 6--We have recently approved, in total, Alyeska's Quality Assurance Program. Some of the more recent actions which you may find of interest are:

- a. Meetings were held with Alyeska on July 8 and 9, outlining this office's concern with the status of the quality control effort. Resultant to these meetings a quality assurance evaluation team (ad hoc) was formed with representation from Alyeska, the State Pipeline Coordinator and this office. A field evaluation of "current" problems was made on July 14, 15 and 16. A subsequent report (in-house working document) was formulated outlining various concerns. Subsequently, a meeting was held with project management of Alyeska, and the government. Responsibilities were assigned for rectifying outstanding deficiencies of which this office's effort was completed on July 29, 1975. Copies of these reports are enclosed for your information.
- b. When Mr. E. L. Patton, President of Alyeska Pipeline Service Company, testified before Congressman Melcher's Subcommittee on Public Lands of the Committee on Interior and Insular Affairs in Anchorage August 8, 1975, he acknowledged that Alyeska had had a problem in the Quality Control area, but had taken steps to correct these shortcomings.

I trust that these comments are responsive to the concerns expressed in your letter. Further, we appreciate the help your office has to date afforded us. Should items of this or any other nature be of a special or specific concern to your personnel, I would appreciate the opportunity to discuss these subjects in depth with them in advance of report compilation inasmuch as they could possibly be afforded information as to what actions are being taken by this office that they may not otherwise understand.

Sincerely yours,  
/s/

A. P. Rollins, Jr.  
Authorized Officer

Enclosure, Encl. 1 - Reports  
cc: Mr. John O'Meara

PRINCIPAL OFFICIALSRESPONSIBLE FOR THE ADMINISTRATION OF  
ACTIVITIES DISCUSSED IN THIS REPORT

Tenure of office	
From	To

DEPARTMENT OF THE INTERIOR

## SECRETARY OF THE INTERIOR:

Thomas S. Kleppe	Oct. 1975	Present
Kent Frizzell (acting)	July 1975	Oct. 1975
Stanley K. Hathaway	June 1975	July 1975
Kent Frizzell (acting)	May 1975	June 1975
Rogers C. B. Morton	Jan. 1971	May 1975

## ASSISTANT SECRETARY OF THE INTERIOR--

## ENERGY AND MINERALS:

William L. Fischer (acting)	Jan. 1976	Present
Jack W. Carlson	Aug. 1974	Jan. 1976
King Mallory (acting)	May 1974	July 1974
Stephen A. Wakefield	Mar. 1973	Apr. 1974
John B. Rigg (note a)	Jan. 1973	Mar. 1973
Hollis M. Dole	Mar. 1969	Jan. 1973

## ASSISTANT SECRETARY OF THE INTERIOR--

## LAND AND WATER RESOURCES:

Jack O. Horton	Mar. 1973	Present
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## OFFICE OF THE UNDER SECRETARY--

## TECHNICAL ASSISTANT

John E. Latz	June 1973	Present
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## OFFICE OF THE UNDER SECRETARY--

## AUTHORIZED OFFICER:

A. P. Rollins, Jr.	Jan. 1974	Present
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<sup>a</sup>Deputy Assistant Secretary in charge