

# Compliance

## JPO examines grant, lease stipulations for TAPS

**O**n January 23, 1974, the United States of America entered into the Agreement and Grant of Right of Way for the Trans-Alaska Pipeline System with a consortium of seven oil companies. Four months later, the State of Alaska signed its Right-of-Way Lease for the Trans-Alaska Pipeline System.

The grant and lease spelled out the terms under which these companies

through their agent—Alyeska Pipeline Service Company—would have to operate. The Joint Pipeline Office assessed Alyeska’s compliance to 40+ primary stipulations that govern pipeline administration, environmental provisions and technical standards. This chapter outlines and overviews the monitoring of each stipulation and identifies if any outstanding issues or deficiencies need to be resolved.

### Grant/Lease Stipulation Categories:

#### General (examples):

- Stipulation 1.3 Authorized Officer and State Pipeline Coordinator
- Stipulation 1.4 Common Agent of Permittees
- Stipulation 1.6 Orders and Notices
- Stipulation 1.20 Health and Safety

#### Environmental (examples):

- Stipulation 2.2 Pollution Control
- Stipulation 2.5 Fish and Wildlife Control
- Stipulation 2.8 Disturbance of Natural Waters
- Stipulation 2.12 Restoration

#### Technical (examples):

- Stipulation 3.2 Pipeline Safety Standards
- Stipulation 3.4 Earthquakes and Fault Displacements
- Stipulation 3. Slope Stability
- Stipulation 3.11 Containment of Oil Spills

## General Stipulations

The following administrative stipulations may or may not require active, continuous monitoring. They do, however, require that Permittees/Lesseees comply with the legal terms and conditions of the Federal Grant/State Lease. Most provisions apply to all phases of TAPS, and all are for the duration of the Grant/Lease.

**Methodology:** In 2000 and 2001, JPO conducted an in-depth review of the Grant/Lease. The AO/SPC determined most stipulations require monitoring; however, other stipulations are legal administrative provisions that do not need continuous monitoring. These stipulations, though, are examined to ensure Permittees/Lesseees have met all legal requirements. JPO reviewed and documented the results in TAPS Assessment Report No. ANC-02-A-007 (March 2002).

### Stipulation 1.1 Definitions

**Introduction/Requirements:** Stipulation 1.1 defines the terms of the Grant/Lease with specific definitions.

**Conclusion:** Stipulation 1.1 does not require compliance monitoring or verification. No surveillance is required.

### Stipulation 1.2.1 Responsibilities

**Introduction/Requirements:** Except where the approval of the AO/SPC is required before Permittees/Lesseees may begin a particular operation, neither the United States, State of Alaska nor any of its agents or employees agrees, or is in any way obligated, to examine or review any plan, design, specification, or other document which may be filed with the AO/SPC by Permittees/Lesseees pursuant to these stipulations.

### **Stipulation 1.2.3**

*JPO has long believed that Grant/Lease requirements could be better communicated to managers, employees and contractors. JPO similarly believed that managers have not always known that they deferred compliance issues when they deferred projects. To remedy this situation, JPO and Alyeska agreed in writing to maintain a reference database called GL-2 that will include JPO-endorsed interpretations of the Grant/Lease along with Alyeska's method of compliance. JPO viewed GL-2 as a good faith method of compliance for Stipulation 1.2.3.*

**Conclusion:** Stipulation 1.2.1 does not require compliance monitoring or verification. No surveillance is required.

**Stipulation 1.2.2. Introduction/Requirements:** The absence of any comment by the AO/SPC or any other agent or employee or contractor of the United States with respect to any plan, design, specification, or other document which may be filed by Permittees/Lessees with the AO/SPC shall not be deemed to represent in any way whatever any assent to, approval of, or concurrence in such plan, design, specification, or other document or of any action proposed therein.

**Conclusion:** Stipulation 1.2.2 does not require compliance monitoring or verification. No surveillance is required.

**Stipulation 1.2.3 Requirement:** Regarding the construction, operation, maintenance and termination of the pipeline system: (1) Permittees/Lessees shall ensure full compliance with the provisions of this Grant/Lease, including these stipulations, by their agents, employees and contractors (including subcontractors of any tier), and the employees of each of them. (2) Unless clearly inapplicable, the requirements and prohibitions imposed upon Permittees/Lessees by these stipulations are also imposed upon each Permittee/Lessees' agents, employees, contractors, and subcontractors, and the employees of each of them. (3) Failure or refusal of a Permittee/Lessees' agents, employees, contractors, subcontractors, or their employees to comply with these stipulations shall be deemed to be the failure or refusal of the Permittee/Lessees. (4)

Permittees shall require their agents, contractors, and subcontractors to include the Grant/Lease stipulations in all contracts and subcontracts which are entered into by any of them, together with its agents, employees, contractors, and subcontractors, and the employees of each of them, shall likewise be bound to comply with these stipulations.

**Discussion/Results:** The second and third elements of this stipulation help define the Permittee/Lessees' responsibilities under the first element. Failure of the Permittees/Lessees' agents, employees, contractors, or subcontractors to comply with any part of the Grant/Lease, may be used as evidence of the Permittees/Lessees' failure to comply with Stipulation 1.2.3.

Ensuring that Grant/Lease requirements are clearly communicated to TAPS workers is an aspect of complying with this stipulation. Alyeska recently reinforced this communication through its GL-2 database.

Another aspect of compliance is effective corrective action. In JPO's opinion, Alyeska reasonably detected most deficiencies but correction of moderately low risk issues was often untimely. A memorandum of agreement between JPO and Alyeska (February 28, 2002) provided both interim and longer term approaches to improve corrective action management. JPO viewed this as a good faith method of compliance for Stipulation 1.2.3.

Stipulations 1.18.1, 1.20.1, and 1.21.1 as well as the quality assurance program requirements of Grant Section 9 and Lease Section 16 are frequently used for issues that could also be cited for Stipulation 1.2.3. No findings are outstanding for this stipulation.

**Conclusion:** There are no outstanding issues to be resolved.

**Stipulation 1.2.4. Introduction/ Requirements:** Permittees/Lesseees shall make separate application, under applicable statutes and regulations, for authorization to use or occupy federal/state lands in connection with the pipeline system where the lands are not within the right of way granted by this Grant/Lease.

**Discussion/Results:** Stipulation 2.9 differs from Stipulation 1.2.4 because Stipulation 2.9 requires the AO/SPC's approval of certain activities off the right of way. This stipulation requires appropriate application to use government land.

BLM and ADNR records were reviewed for any outstanding issues related to unauthorized use of land outside the right of way. Permittees/Lesseees applied for all known land use authorizations for TAPS related use or occupation of federal and state lands outside the TAPS right of way. However, JPO Surveillance Report No. JPO-98-GS-035 documented an unsatisfactory condition in 1998 that was corrected and closed. Alyeska had no authorization for an off right-of-way land use at Milepost 756 in the Pump Station 12 area. Workers installed anode ground beds and materials were stored outside of the right of way without a land use authorization. This unsatisfactory condition was corrected and closed Jan. 25, 2002.

**Conclusion:** Surveillance Report No. ANC-02-S-020 concluded there are no current, outstanding instances of unauthorized use.

### **Stipulation 1.3.1 – Authorized Officer/ State Pipeline Coordinator**

**Requirement:** Permittees/Lesseees shall furnish pipeline system records and documents data to the AO/SPC whenever requested. Requests shall not be unreasonably delayed or denied.

**Discussion/Results:** There was no evidence of any outstanding unfulfilled requests from the AO/SPC for access to documents. All previous issues concerning document access were resolved and have not been repeated (1999/2000 Construction CMP Report, pages 33-34). Alyeska, at JPO's request, has afforded one JPO staff member "read only" access to its work tracking program.

**Conclusion:** There are no outstanding issues to be resolved.

**Stipulation 1.3.2. Introduction/ Requirements:** The AO/SPC may require Permittees/Lesseees to modify the pipeline on federal or state lands without liability or expense to the United States or the State of Alaska, as is deemed necessary to 1) protect or maintain stability of geologic materials, 2) protect or maintain integrity of the pipeline, 3) prevent serious and irreparable harm to the environment (including but not limited to water and air quality, fish or wildlife populations, or their habitats) or 4) remove hazards to public health and safety.

**Discussion/Results:** This stipulation gave the AO/SPC authority to require the Permittees/Lesseees to modify the pipeline to prevent serious and irreparable harm to the environment or remove hazards to public health and safety. This stipulation, along with Stipulation 3.2.1.2, was used to authorize additional requirements.

JPO Surveillance Report No. ANC-02-S-021 concluded Permittees/Lesseees

### **Stipulation 1.2.4**

*In 1991, the Bureau of Land Management, Alaska Department of Natural Resources, Alaska Department of Fish & Game, the Alaska Division of Governmental Coordination and Alyeska lands and permit staffs began annually reviewing all maintenance projects for the upcoming year to determine the necessary permits. Monthly meetings attended by BLM, ADNR and Alyeska are held to discuss permit requirements and track scheduled project performance and completion. The meetings help keep the permit process moving.*

## Stipulation 1.3.2: AO/SPC- required modifications in 2001:

- Alyeska was allowed to discontinue annual fault monitoring surveys as long as it continued annual surveillance of the above ground pipe at each of the three identified faults and maintained the correct position of the pipe on the beams to assure design limits of movement are attainable (JPO Letter No. 01-010-DG, March 16, 2001).

- The AO/SPC believed the glaciers along the TAPS route required special geotechnical consideration. Specific procedures were required to detect glacier surges and a requirement to implement a contingency plan in case of glacier encroachment near the pipeline (JPO Letter No. 01-011-DG, March 19, 2001).

- Alyeska must provide a detailed analysis to show that pipe rupture will not occur from pipe or soil instability and it must

conduct surveillance of structural overfills at 22 locations along TAPS (JPO Letter No. 01-0112-DG, March 22, 2001).

- Alyeska was directed to maintain a network of ground-motion detectors to continuously monitor, record, and instantly signal the occurrence of ground motion in the vicinity of the pipeline. The Earthquake Monitoring System must initiate a 10-minute timed shutdown of the pipeline when a Design Operating Earthquake is reached. The pipeline controller has 10 minutes to respond and check the pipeline's condition. If a leak alarm occurs, the Operations Control Center operator will allow the shutdown to continue and close valves to minimize oil spill volume ( JPO Letter No. 01-008-DG, May 8, 2001).

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### Stipulation 1.3

...Permittees/Lessees shall modify the pipeline system at no cost to the United States or the State of Alaska as required by the Authorized Officer/State Pipeline Coordinator to protect pipeline system integrity, prevent harm to the environment, or public health and safety.

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modified and are currently working to modify the pipeline system whenever required by the AO/SPC to protect pipeline system integrity, prevent harm to the environment, or public health and safety. If the AO/SPC require Permittees/Lessees to modify the pipeline system, compliance will then be verified to determine if the required modifications were made.

**Conclusion:** There are no outstanding issues to be resolved.

### Stipulation 1.4.1 Common Agent of Permittees

**Introduction/Requirements:** This stipulation states the Permittees/Lessees have appointed Alyeska as their common agent to design, construct, operate, maintain, and terminate the Trans-Alaska Pipeline System. It also specifies that Alyeska represents each Permittee/Lessee and is empowered by all Permittees/Lessees to accept service of any court process or administrative proceeding relating to the Grant/Lease.

**Conclusion:** There are no outstanding issues to be resolved.

### Stipulation 1.4.2. Requirement:

Permittees/Lessees shall 1) maintain a common agent for the construction, operation, maintenance and termination of the pipeline system at all times during the term of the Grant/Lease; 2) ensure the common agent is a United States citizen or a corporation authorized to conduct business in Alaska; 3) ensure the common agent is an Alaska resident; and 4) maintain an office in Anchorage, Alaska for the common agent during the term of the Grant/Lease.

**Discussion/Results:** A Power of Attorney filed by the Permittees/Lessees with the U.S. Department of Interior and the Alaska Department of Natural Resources verified that Alyeska is the true and lawful agent and attorney in fact on behalf of each Permittee/Lessee with full power and authority to execute and deliver any and all instruments in connection with the design, construction, or operation of the pipeline (JPO Surveillance Report No. ANC-02-S-022).

Alyeska is a corporation which meets the second requirement.

**Conclusion:** There are no outstanding issues to be resolved.

**Stipulation 1.4.3. Requirement:** In the event Permittees/Lessees substitute a new common agent at any time, Permittees/Lessees shall give prompt written notice to the AO/SPC of such substitution, the name and office address in Anchorage, Alaska, or the new agent, and a copy of the Permittees/Lessees agreement with the new agent. The United States and the State of Alaska shall be entitled to rely on each appointment until a notice of the substitution of a new common agent takes effect. Each such notice shall not take effect until two full working days after and not including the date that it was received by the AO/SPC.

**Discussion/Results:** Permittees/Lessees have not substituted a new agent since Alyeska was designated. Compliance is not an issue until an attempt to substitute is made.

**Conclusion:** There are no outstanding issues to be resolved.

**Stipulation 1.4.4. Requirement:** Upon the transfer by any Permittee/Lessee of any right, title or interest of Permittees/Lessees in the right of way of this Grant/Lease, the transferee shall promptly execute and deliver to the AO/SPC such documents as may be required to evidence the transferee's appointment and ratification of the then-acting common agent. This evidence shall be to the satisfaction of the AO/SPC.

**Discussion/Results:** JPO Surveillance Report No. ANC-02-S-022 documented that the newest TAPS owner filed a power of attorney with the DOI and ADNR. This verified the transferee's appointment and

ratification of Alyeska as the common agent for TAPS.

**Conclusion:** There are no outstanding issues to be resolved.

### **Stipulation 1.5 Authority of Representatives of AO/SPC and Common Agent; Orders of AO/SPC**

**Requirement:** No order or notice given to Permittees/Lessees on behalf of the AO/SPC or any other person shall be effective as to Permittees/Lessees unless prior written notice of the delegation of authority to issue such order or notice has been given to Permittees/Lessees in the manner provided in Stipulation 1.6, Orders and Notices.

**Discussion/Results:** Stipulation 1.5.1 did not require compliance monitoring or verification.

**Conclusion:** There are no outstanding issues to be resolved.

**Stipulation 1.5.2. Requirement:** Permittees/Lessees shall comply with all lawful orders issued to them by the AO/SPC, the Secretary of the Interior or the Commissioner of Alaska Department of Natural Resources issued within their respective authorities and in accordance with Stipulation 1.6, Orders and Notices.

**Discussion/Results:** Each order shall be completed on a schedule agreed to by the AO/SPC and completed work in response to the order must meet stated objectives. The AO/SPC are authorized to extend deadlines for required completion of work under certain circumstances.

JPO's Comprehensive Monitoring Programs revealed numerous gaps in Alyeska's efficiency in completing work that JPO believed was essential to maintaining pipeline integrity, protecting

### **Stipulation 1.4.4**

*Each time a transfer of interest occurs, a verification of compliance is required to document each Permittee/Lessee has appointed Alyeska as their common agent.*

### Stipulation 1.5.2

*JPO issued eight orders and three notices to Alyeska between August and December 1999. These were discussed in detail in the 1999/2000 Maintenance CMP Report.*

*The orders fell into two basic categories: (1) long standing issues where work schedules had continually slipped past specified completion dates; and (2) urgent situations that required immediate attention.*

public safety and the environment. Alyeska deferred work on several projects JPO felt needed immediate attention. Several key issues involved noncompliance with the Grant/Lease, such as slope stability at Squirrel Creek. JPO determined that work on several key items should not be continually postponed or endlessly restudied. This decision led to JPO issuing eight orders and three notices to Alyeska between August and December 1999.

JPO Surveillance Report No. ANC-02-S-019 concluded that Permittees/Lesseees have complied with all orders issued by the AO/SPC. JPO issued 11 orders and notices to Alyeska between 1999 and 2000 and closed 10. The most recent closure (March 14, 2002) was the order for a cold restart plan. The remaining open notice covers Audit Action Item (AAI) 1955 and AAI 2076. JPO has closely followed progress of these last two open AAIs. Alyeska is completing work to close these within the first half of 2002.

**Conclusion:** As discussed, one notice remains open.

**Stipulation 1.5.3. Requirement:** Permittees/Lesseees shall 1) cause their common agent to maintain a sufficient number of authorized representatives to promptly deliver all notices, orders, and other verbal and written communications to the Permittees/Lesseees from the AO/SPC; 2) require such representatives to be registered with the AO/SPC and identified according to terms prescribed by the AO/SPC; 3) cause their common agent to consult with the AO/SPC at any time regarding the number and location of the representatives of the common agent.

**Discussion/Results:** JPO Surveillance Report No. ANC-02-S-019 verified that

the list of authorized representatives was current and on file.

**Conclusion:** There are no outstanding issues to be resolved.

### Stipulation 1.6 Orders and Notices

**Requirement:** Specifies the process the AO/SPC use to issue orders and notices when the AO/SPC judge a condition requires work completed to protect or maintain integrity of the pipeline, or prevent serious and irreparable harm to public health and safety and the environment.

**Discussion/Results:** This stipulation specified the process the AO/SPC must follow when they issued orders to the Permittees/Lesseees. It addressed obligations of the United States and the State of Alaska, and therefore does not require compliance monitoring or verification.

**Conclusion:** There are no outstanding issues to be resolved.

### Stipulation 1.7 Notices to Proceed

**Introduction/Requirement: 1.7.1.1.** Permittees/Lesseees shall not initiate any construction of the pipeline system without prior written permission of the AO/SPC. Such permission shall be given solely by means of a written Notice to Proceed (NTP) issued by the AO/SPC. Each NTP shall authorize construction only as therein expressly stated and only for the particular construction segment therein described.

The additional directives incorporated within this stipulation are largely administrative. For additional information about compliance with NTP, refer to Grant Section 10.

**Methodology:** Notices to proceed are an important tool for pipeline construc-

tion. They also are required during the operations and maintenance phase of TAPS. JPO's principal guidance to Alyeska was issued by letter on October 7, 1997 (97-074-JS). This letter clarified what actions qualified as construction requiring an NTP. For example, JPO's review of Stipulation 2.11.1 resulted in additional NTP requirements for use of explosives.

Since most of Stipulation 1.7 contained process and procedural requirements, this year's CMP activity involved review of recently issued NTP, documented which parts of this stipulation required compliance determination and identified any compliance deficiencies.

**Discussion and Results:** JPO Letter No. 97-074-JS required NTP when construction requires right of way for new facilities or when a construction project directly affects a design basis change to components directly involving the mainline pipe or critical systems necessary to safely operate and shut down TAPS. The new right of way and new facility use of NTP is analogous to original construction; meaning something new is being built and additional land is being disturbed. A design basis change involves either a new type of hardware or a significant redesign that involves not only the design of the component but also a change in the underlying design criteria.

JPO Letter No. 01-177-DG found Alyeska in compliance with Stipulation 2.11.1 that required a blasting plan to be submitted to the AO/SPC according to Stipulation 1.7 for the use of explosives. Because of the potential underground forces generated by blasting operations, it is important that any future blasting within the TAPS right of way be reviewed and

approved with a formal NTP. The current revision of the DB-180, Design Basis Update Manual contained the blasting requirements, however no blasting occurred within the right of way and no applications for NTP were received for blasting operations.

From late 1996 to the present, JPO reviewed and approved 30 Notices To Proceed. Thirteen were approved by the SPC, 11 approved by the AO and six were jointly approved.

JPO Technical Report No. ANC-02-E-001 examined the sub-requirements of the stipulation and identified specific compliance requirements. This report concluded that there were no compliance deficiencies identified.

**Conclusion:** There are no outstanding issues to be resolved.

#### **Stipulation 1.8 Changes in Condition**

**Requirement:** Unforeseen conditions arising during construction, operation, maintenance or termination of the pipeline may make it necessary to revise or amend these stipulations to control or prevent damage to the environment or hazards to public health and safety. In that event, Permittees/Lessees and the AO/SPC will agree on necessary revisions or amendments. For the grant, if the parties are unable to agree, the Secretary of the Department of Interior shall have final authority to determine the matter.

**Discussion/Results:** Stipulation 1.8 does not require compliance monitoring or verification.

**Conclusion:** There are no outstanding issues to be resolved.

#### **Stipulation 1.7**

The JPO currently reviews major TAPS projects through the Alyeska project packages called "Issued For Approval" (IFA) and "Issued For Construction" (IFC). This review identifies those projects requiring Notices To Proceed and allows the AO/SPC to designate projects for NTP submittal even if the aforementioned criteria are not met. This process allows the AO/SPC some latitude for judgment.

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*Stipulation 1.8 could be a significant tool for the AO and SPC in future years because it allows revisions to grant and lease requirements to deal with unforeseen situations.*

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## Stipulation 1.10.2

*Put to bed* in this stipulation is used to mean that access roads, material sites and other areas shall be left in such stabilized condition that erosion will be minimized through the use of adequately designed and constructed waterbars, revegetation and chemical surface control; that culverts and bridges shall be removed by Permittees/Lesseees in a manner satisfactory to the AO/SPC, and that such roads, sites and areas shall be closed to use.

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## Stipulation 1.9 Antiquities and Historical Sites

### Introduction/Requirements: 1.9.1.

Permittees/Lesseees shall engage an archeologist approved by the AO/SPC to provide surveillance and inspection of the pipeline system for archeological values.

**1.9.2.** If, in connection with any operation under this Grant/Lease, or any other agreement issued in connection with the pipeline system, Permittees/Lesseees encounter known or previously unknown paleontological, archeological, or historical sites, Permittees/Lesseees shall immediately notify the AO/SPC and said archeologist. Permittees/Lesseees' archeologist shall investigate and provide an on-the-ground opinion regarding the protection measures to be undertaken by Permittees/Lesseees. The AO/SPC may suspend that portion of Permittees/Lesseees' operations necessary to preserve evidence pending investigation of the site.

**1.9.3.** Six copies of all survey and excavation reports shall be filed with the AO/SPC.

**Methodology:** To ensure compliance with 1.9.1, JPO contacted the State Historic Preservation Office (SHPO) and the BLM Alaska State Archaeologist. The findings were recorded in Surveillance Report No. ANC-01-S-096.

**Discussion/Results:** Alyeska Letter No. 01-17784 (October 23, 2001) appointed an archeologist whose appointment was approved by the AO and SPC (JPO Letter No. 01-176-DG, December 10, 2001).

Alyeska must notify JPO and the appointed archeologist if there is a known or previously unknown paleontological, archeological, or historical site encountered. JPO conducted a surveillance

(ANC-02-S-041, February 27, 2002) documenting activities regarding Stipulation 1.9.2.

Before Alyeska begins ground work on BLM-managed land, they must obtain the proper permitting, including a Cultural Resource Use Permit. JPO is preparing a programmatic agreement with SHPO that will address in detail the procedures for future cultural clearance and data sharing.

**Conclusion:** There are no outstanding issues to be resolved.

## Stipulation 1.10 Completion of Use

### Introduction/Requirements: 1.10.1.

Upon completion of the use of all, or a very substantial part, of the right of way or other portion of the pipeline system, Permittees/Lesseees shall promptly remove all improvements and equipment, except as otherwise approved in writing by the AO/SPC, and shall restore the land to a condition that is satisfactory to the AO/SPC or, at the option of Permittees/Lesseees, pay the cost of such removal and restoration. The satisfaction of the AO/SPC shall be stated in writing. Where approved in writing by the AO/SPC, buried pipe may be left in place, provided all oil and residue are removed from the pipe and the ends are suitably capped.

**1.10.2.** All areas that do not constitute all, or a very substantial part of the right of way or other portion of the pipeline system, utilized pursuant to authorizations issued in connection with the pipeline system, shall be put to bed by Permittees/Lesseees upon completion of their use unless otherwise directed by the AO/SPC. Permittees/Lesseees' rehabilitation plans shall be approved in writing by the AO/SPC prior to termination of use of any

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such road, or any part there of, in accordance with Stipulation 2.12.

**Methodology:** There was no cessation of use that would trigger this requirement during this or any prior CMP work planning cycle. Consequently, no monitoring was conducted and no subordinate CMP assessment or report published. No review of post construction (1977-8) authorizations was conducted.

**Discussion/Results:** Perhaps the biggest question regarding this stipulation are the standby pump stations: 2, 6, 8 and 10. All have been required to be restartable within 180 days by the AO/SPC (as recapped by JPO letter 99-073-JS). Further the Permittees/Lessees have not applied for completion of use for any of these facilities.

While no construction era review was conducted, it is worth noting that there are no compliance findings, orders or notices outstanding that cite or pertain to this stipulation.

**Conclusion:** There are no outstanding issues to be resolved.

### **Stipulation 1.11 Public Improvements**

**Introduction/Requirements:** Permittees/Lessees shall:

- 1) have a system that promptly, thoroughly, and practicably identifies for Permittees/Lessees and Permittees/Lessees/contractors existing telephone, telegraph, and transmission lines, roads, trails, fences, ditches and like improvements on or near the pipeline system;
- 2) effectively protect the above improvement from damage;
- 3) not obstruct roads or trails with logs, slash, or debris; and
- 4) promptly repair Permittee/Lessee caused damaged to public utilities and

improvements to the satisfaction of the AO and SPC.

**Methodology:** JPO evaluated compliance by identifying the Alyeska manuals and controls that list and protect public improvements. JPO interviewed Alyeska staff using these manuals and controls to ensure they were operational. JPO also searched for complaints by records from users/owners of public improvements. For the Lease, staff also reviewed notice to proceed and other records dating back to 1974 (Technical Report FBU-01-E-001, Revision 1, October 15, 2001) which documented earlier use of and variances authorized to this stipulation by the SPC's Office.

**Discussion/Results:** JPO's review and documented results are in Technical Report FBU-01-E-001, Revision 1 (Oct. 15, 2001).

Alyeska's identification and protection of public improvements is based on drawing and procedures. While Alyeska has Geographic Information System, it is not developed to be used to identify and control public improvements. Controls, though, are embedded in the commonly used *TAPS Pipeline and Repair Manual* (MR-48) and the *TAPS Engineering Manual* (PM-2001). These manuals cover the project and maintenance activities that could affect public improvements. For utility crossings, MR-48 includes a table of utility crossings and a requirement to use utility contact phone numbers to confirm locations to avoid inadvertent damage.

JPO has no documented or anecdotal evidence of any problems. The CMP database contains no findings or unsatisfactory conditions relating to this stipulation. TAPS, due to its location, does not

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### Stipulation 1.12.1

On October 1, 2001, the JPO authorized Alyeska Pipeline Service Company to secure and lock all the gates leading to the pipeline right of way until February 28, 2002 because of the national security situation prompted by the events of September 11, 2001. On February 15, 2002 Alyeska requested, in writing, continued closure of these roads until November 30, 2002. This request was approved.

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have the type of utility crossings that are common in pipeline rights of way in more populated areas. As confirmed by reviewing Alaska Department of Natural Resources/JPO files, there was more activity governed by this stipulation during pipeline work pad construction and access road permitting.

**Conclusion:** There are no outstanding issues to be resolved.

### Stipulation 1.12 Regulation of Public Access

#### Introduction/Requirements:

**Stipulation 1.12.1.** During construction or termination activities, Permittees/Lessees may regulate or prohibit public access to or upon any access road on state land being used for such activity. At all other times, Permittees/Lessees shall permit free and unrestricted public access to and upon access roads, except with the written consent of the AO/SPC. Permittees/Lessees may regulate or prohibit public access and vehicular traffic on access roads needed to facilitate operations or to protect the public, wildlife and livestock from hazards associated with operation and maintenance of the pipeline. Permittees/Lessees shall provide appropriate warnings, flagmen, barricades, and other safety measures when Permittees/Lessees are using access roads, or regulating or prohibiting public access to or upon access roads.

**Stipulation 1.12.2.** During construction of the pipeline, Permittees/Lessees shall provide alternative routes for existing roads and trails on state land as determined by the AO/SPC whether or not these roads or trails are recorded.

**Stipulation 1.12.3.** Permittees/Lessees shall make provisions for suitable perma-

nent crossings for the public where the right of way or access roads cross existing roads, foot trails, winter trails, or other rights of way.

**Stipulations 1.12.4.** After construction of the pipeline, and with the concurrence of Permittees/Lessees, the AO/SPC may designate areas of the right of way to which the public shall have free and unrestricted access.

**Discussion/Results:** There are 284 access roads associated with TAPS: 175 on federal land and 98 on state land. There are 13 roads on privately owned lands. Two of the 284 roads traverse both federal and state land.

**Stipulation 1.12.1.** In the summer of 2001, JPO conducted a line-wide inspection of all access roads and then reviewed applicable documents. Eighteen state roads were open to the public and 77 roads were gated and closed. The AO/SPC can restrict access on these roads. JPO files contained the appropriate authorizations issued for the closed roads.

**Stipulation 1.12.2.** There are no compliance issues relating to Stipulation 1.12.2. It is primarily a construction era stipulation. There was no new construction or pipeline reroute during the 2001 surveillance period.

**Stipulation 1.12.3.** Alyeska's Environmental Atlas and Revised Statute (RS) 2477 documents prepared by the state were used to determine if any roads, trails, rights of way or cultural resources existed. When identified, they were noted in JPO surveillance reports.

**Stipulation 1.12.4.** Compliance action by the Permittee/Lessee was not required for 1.12.4. There were no findings generated from the 2001 surveillances (ANC-01-A-016, March 2002).

48 Federal Register 22001 (1983) provided federal guidance regarding ROW access.

**Conclusion:** There are no outstanding issues to be resolved.

### **Stipulation 1.13.1 Electronically Operated Devices**

**Introduction/Requirement:** This stipulation requires the Permittees/Lesseees to:

1) adequately suppress the pipeline electronically operated devices so that they do not adversely affect existing communications systems or navigational aids, and

2) position new TAPS structures so they will not obstruct radiation patterns of line-of-site communications systems, navigational aids and similar systems.

**Methodology:** JPO’s monitoring approach was twofold: effectiveness and maintenance record review. Since the major purpose of this stipulation was to keep TAPS electronically operated devices from interfering or otherwise adversely affecting existing communication systems or navigation aids, JPO checked for documented evidence of adverse impact. This included interviews with personnel from AT&T Alascom and Alyeska Supervised Control and Data Acquisition (SCADA) technicians, especially those who worked with and around the systems. JPO searched for any documented complaints or concerns. A review of a sample of the original TAPS construction applications for Notice to Proceed for permanent communications sites was also conducted.

The second approach was to select an operating segment of TAPS from Pump Station 5 to Pump Station 6 and review the annual Alascom routine maintenance forms for Remote Gate Valve (RGV) segment 5

covering the annual FCC requirement for “Transmitter Frequency and Power Output.” This segment used two independent VHF radio routes and included: eight RGVs, two Backbone Communication System (BCS) repeaters, two pump stations and 29 VHF radios. This approach verified that power output and assigned frequency were as specified.

**Discussion/Results:** JPO documented this review in Technical Report No. FBU-01-E-003 Revision 1 (Oct. 16, 2001).

JPO reviewed some of the original applications for NTP for the permanent communication system installations. These NTPs included the Keystone and Ptarmigan sites and authorization under the SPC’s office for construction to begin at these sites in 1975.

This is the second time JPO published a compliance determination regarding this stipulation. The CMP report on Operation of the TAPS (February 1999, page 30) found Alyeska complied with this stipulation based upon an earlier surveillance. No prior unsatisfactory conditions were recorded or findings issued.

**Conclusion:** There are no outstanding issues to be resolved.

### **Stipulation 1.14.1 Camping, Hunting, Fishing and Trapping**

**Introduction/Requirements:** This stipulation requires Alyeska to post signs prohibiting employees from camping, hunting, fishing, trapping and shooting within the right of way and to inform employees about fish and game regulations.

**Methodology:** Stipulation 1.14.1 applies to camping, hunting, fishing, trapping, and shooting by the Permittees/

### **Stipulation 1.13.1**

According to Alyeska Supervised Control and Data Acquisition (SCADA) personnel, there have never been “alignments” that are performed on towers. There would be a concern regarding the towers’ position only if placing a new structure interferes with existing communications or navigation services. This has not occurred to SCADA personnel’s knowledge during the life of the pipeline.

### Stipulation 1.14.1

JPO recently clarified the requirements of Stipulation 1.14.1 (JPO Letter No. 02-018-DG ). The letter specifies:

“...The JPO interprets this stipulation to apply to Alyeska employees, agents, contractors, sub-contractors, and their employees while they are on duty or on shift. Off-duty employees, off-shift employees, and members of the general public are not subject to these restrictions.

Placing existing Alyeska posters at conspicuous locations in all facilities shall serve to fulfill the requirement to post the ROW. All other signs addressing this stipulation must be removed by July 31, 2002.”

Lessees employees, agents, contractors, subcontractors, and their employees in all phases of TAPS within the TAPS right of way.

Stipulation 1.14.2 applies to all listed employees through all phases of TAPS, and to all applicable federal, state, and local laws and regulations related to hunting, fishing, and trapping.

The CMP and other JPO sources, including DNR records, were reviewed to evaluate compliance with these stipulations.

**Discussion/Results:** The posting of restricted activities does not apply to the public at large but does apply to TAPS workers while on a tour of duty at a remote location, including pump stations. A notice, 48 Federal Register 22001 (May 16, 1983), does restrict public access to the federal right of way. JPO maintained at that time Alyeska was in compliance with Stipulation 1.14.1. Alyeska complied with the Grant/Lease by placing signs prohibiting camping, hunting, fishing, trapping and shooting on the federal right of way. Since that time there have been disagreements between the different regulatory bodies concerning the content of the signs. These were recently resolved (see text box, this page).

Stipulation 1.14.2 was intended to ensure employees would clearly understand applicable hunting, fishing and trapping regulations. JPO determined that Alyeska effectively notified personnel of changes and restrictions in game regulations.

**Conclusion:** There are no outstanding issues to be resolved.

### Stipulation 1.15.1 Small Craft Passage

**Introduction/Requirements:** Permittees/Lessees shall not create any permanent obstruction to the passage of small craft in streams during all phases of TAPS. This applies to all waterways passable to small craft and to all Permittee/Lessee activities.

**Methodology:** JPO used a three-pronged approach to monitoring this stipulation. First, JPO focused on navigable waters since any new bridge construction or repairs that could obstruct small craft passage in navigable waters must be reviewed and approved by the U.S. Coast Guard. Second, JPO looked for any evidence of complaints, concerns or allegations that Alyeska activities were blocking or hindering small craft passage. Third, JPO staff inspected several bridges to document if obstructions were present. The inspections were not a random sample, rather an opportunistic sample of more northern locations taken while JPO staff monitored other situations.

Past JPO surveillances, reports and documents were reviewed to place current results in perspective with previous JPO monitoring.

**Discussion/Results:** JPO documented this review in Technical Report No. FBU-01-E-004, Revision 1 (October 22, 2001).

There are 28 rivers and streams listed in Table 2-30 on page 2-63 in the Design Basis Update Manual, DB-180 along the pipeline corridor that are classified as navigable by the USCG (based on letter No. 16590 to Alyeska, February 2, 1994).

The Coast Guard has regulatory jurisdiction and requires permits to be obtained for bridges over navigable waterways. Any modifications, alterations or non-routine maintenance activities

require review and approval by the USCG before work is done. All the USCG permitted structures over waterways must provide for small craft passage. Each bridge permit outlines the permitted minimum vertical and horizontal clearances.

No findings were issued and none are outstanding in the database.

**Conclusion:** There are no outstanding issues to be resolved although JPO plans additional coordination with the Coast Guard to review records.

### Stipulation 1.16 Protection of Survey Monuments

**Introduction/Requirements: 1.16.1** Permittees/Lessees shall mark and protect all geodetic survey monuments encountered during the construction, operation, maintenance and termination of the pipeline system. These monuments are not to be disturbed; however, if such a disturbance occurs the AO/SPC shall be immediately notified thereof in writing.

**1.16.2** If any land survey monuments, corners, or accessories (excluding geodetic survey monuments) are destroyed, obliterated or damaged, Permittees/Lessees shall employ a qualified land surveyor to reestablish or restore same in accordance with the *Manual of Instruction for the Survey of Public Lands* and shall record such survey in the appropriate records. Additional requirements for the protection of monuments, corners, and bearing trees may be prescribed by the AO/SPC.

Stipulation 1.16.1 applies to geodetic survey monuments which the Permittees/Lessees may encounter in work associated with TAPS, and Stipulation 1.16.2 applies to Bureau of Land Management (BLM),

Government Land Office (GLO), or Alaska Department of Lands (ADL) monuments, corners, and accessories throughout the pipeline system during all phases of TAPS.

**Methodology:** Much of the 2001 work plan was devoted to determining which monuments were covered by this requirement, resolving concerns raised by the TAPS Owners' compliance review, and reaching agreement with Alyeska to ensure that its revised policy provides required protection. Projects actively monitored by JPO were also sampled using surveillances.

**Discussion/Results:** JPO reviewed and documented results in TAPS Technical Report FBU-01-E-008. JPO also monitored this requirement as part of the 2000 and 2001 oversight of TAPS projects (Surveillance reports FBU-01-S-013 & 027 and JPO-00-S-106 & 129). Although there were no identified unsatisfactory conditions, this year's projects did not present any real risks to known monuments.

The Det Norske Veritas (DNV) Progress Review Report (TAPS Owners' compliance review) conducted for Alyeska (10561-C, page 23) addressed concerns that survey monuments have not been restored. It was not clear, depending upon the type of survey monument, if there was a need to notify JPO.

JPO found no evidence that Alyeska damaged, obliterated or destroyed any public land survey monument.

The pipeline right-of-way survey identified 303 BLM, GLO, or ADL monuments, corners, and accessories within proximity of the pipeline center line. These monuments are shown on Alyeska AL-00-G101 Drawings, sheets 1



*Hammond River, located near Mile Post 222, depicts compliance with Stipulation 1.15 because there are no permanent obstructions to impede small craft passage (JPO photo by Janetta Pritchard).*

## Stipulation 1.16.2

Alyeska reviewed the National Geodetic Survey on-line database and identified the location of geodetic survey monuments within 2,000 feet of the pipeline. Five, all in Valdez, were found missing. They included the Fort Liscum flagpole, the Day Cannery gable and the navigation lights originally at the Berth 3, 4 and 5 control towers.

The first two items were removed possibly before constructing the Valdez Marine Terminal. The navigation lights were removed when the location and lower profile of the new control rooms made the lights unnecessary. The nautical chart for Port Valdez was updated to reflect the removal of the lights.

The AO and SPC found no reason to order replacement of these sites and Alyeska informed the National Geodetic Survey (NGS) of the need to update the database.

through 143. JPO will conduct surveillance on a selection of the 303 government survey monuments to verify compliance with Stipulation 1.16.2.

**Conclusion:** There are no outstanding issues to be resolved.

## Stipulation 1.17.1 Fire Prevention and Suppression

**Introduction/Requirement:** Permittees shall promptly notify the AO and take all measures necessary or appropriate for the prevention and suppression of fires in accordance with 43 CFR 2801.1-5 (d). Permittees shall comply with the instructions and directions of the AO concerning the use, prevention and suppression of fires. Use of open fires in connection with construction of the pipeline system is prohibited unless authorized in writing by the AO.

State Lease requirements differ from the Grant in that the Lease is limited to fires on state land.

With one exception, JPO's fire protection monitoring was more focused on structural/facility fire prevention and suppression. JPO recognized that these issues may be more related to other requirements in the Grant/Lease, but the issues are reported here for ease of reading.

**Methodology:** JPO did not conduct an assessment during this work plan cycle. This report recaps the results of 1997 JPO facility fire protection reviews, JPO's monitoring of Alyeska's response to the June 1999 Donnelly Flats Wildfire, JPO's 1999 order to demonstrate effectiveness of the Valdez Marine Terminal (VMT) tank fire protection system, JPO's monitoring of the VMT East Metering Building Fire Foam Test, and the Mile Post 400 spill

response. No AO/SPC "instructions or directions" have been issued so monitoring was broad rather than specific to set requirements.

Notifying the AO/SPC of fires is required through this stipulation. For efficiency, Alyeska developed with JPO concurrence, an Event Notification form—Alyeska Form 2124 (December 2001)—that covers required notifications for this and other stipulations.

**Discussion/Results:** This stipulation requires Alyeska to promptly notify the JPO of fires and take all appropriate measures to prevent and suppress fires.

Alyeska properly reported fires to JPO. There have been 41 fires since 1997. The most significant was the June 1999 Donnelly Flats Wildland fire that threatened Pump Station 9.

Eight surveillance reports (97-GS-085-092) documented JPO's 1997 review of facility fire prevention and suppression. These surveillance reports served as the basis for many of the conclusions of the April 1998 Safety CMP Report (pages 2-3).

Two surveillance reports, JPO-99-S-059 and the follow-up JPO-00-S-019, documented JPO's monitoring of Alyeska's response to the Donnelly Flats Wildfire. JPO did not identify any compliance deficiencies.

Two JPO observations/recommendations resulted: 1) that the lessons learned from Alyeska's internal report be incorporated into the appropriate Alyeska manual; and 2) that sprinklers be available for supplemental protection of buildings. The second surveillance verified Alyeska's follow through on these issues.

The three related JPO orders to test the VMT Fire Suppression System were

discussed extensively in the 1999/2000 Maintenance CMP Report (pages 30-34). The orders are closed. Unlike the AO's use of this stipulation in these orders, the State Pipeline Coordinator did not use Lease Stipulation 1.17.1 because the VMT is on private land.

JPO Technical Report VMT-01-E-001 documented JPO's monitoring of the fire foam test in the VMT East Metering Building. The report concluded that the test was successful and the nozzles and foam system performed as required, No compliance issues were identified.

The Milepost 400 after action report documented an interagency review of the spill north of Fairbanks caused by the bullet hole. While lessons were learned and recorded, no compliance problems were noted.

JPO's monitoring of TAPS major projects occasionally identified and recorded fire protection issues such as fire extinguishers that are beyond their inspection date (Finding No. 1 of JPO-00-A-002, which covered the September, 1999 Maintenance Shutdown). Assessment ANC-02-A-001 documented follow-up monitoring and closure of this issue.

Over the last couple of years, there was active fire marshal compliance inspection and enforcement. Most of these issues were worked to conclusion acceptable to the state fire marshal. The fire marshal requirements are not expressly included under Stipulation 1.17.1 so these issues are not, in and of themselves, Stipulation 1.17.1 compliance issues.

Reliability Centered Maintenance studies are underway. Alyeska agreed (1999/2000 Maintenance CMP Report) to remedy any significant safety or integrity issues resulting from these studies. RCM, again, will provide additional assurance

that critical fire systems are maintained in a functional status.

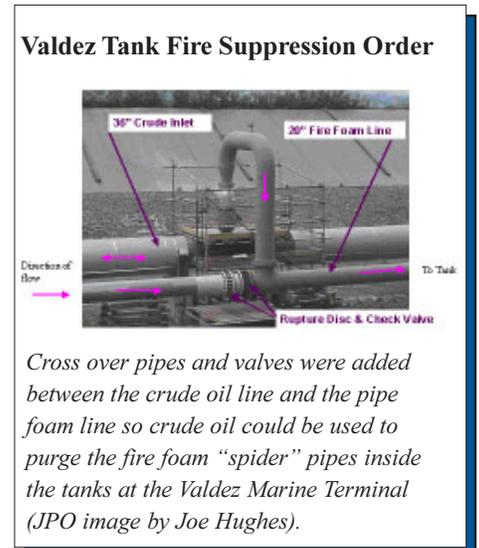
**Conclusion:** There are no outstanding issues to be resolved.

### Stipulation 1.18.1 Surveillance and Maintenance

**Introduction/Requirements:** During the construction, operation, maintenance and termination of the pipeline system, Permittees/Lessees shall conduct a surveillance and maintenance program applicable to the subarctic and arctic environment. This program should: (1) provide for public health and safety; (2) prevent damage to natural resources; (3) prevent erosion; and (4) maintain pipeline system integrity.

The Permittees/Lessees surveillance and maintenance programs shall effectively detect and correct deficiencies that would lead to noncompliance with the Grant/Lease when those noncompliances affect protecting natural resources, providing for worker or public safety, maintaining pipeline system integrity or prevention of erosion.

**Background:** DOT regulations (49 CFR 195.412) require that each operator shall, at intervals not exceeding 3 weeks, but at least 26 times each calendar year, inspect the surface conditions on or adjacent to each pipeline right of way. Methods of inspection include walking, driving, flying or other appropriate means of traversing the right of way. State of Alaska regulations (18 AAC 75.055(a)(3)) require remote pipelines be inspected weekly by aircraft, except when precluded by weather or safety conditions. Consistent with these requirements, the pipeline oil spill contingency plan lists Alyeska's weekly



### Stipulation 1.18

The level of monitoring devoted to this requirement is considerable. Since 1997, the CMP database measured 1,618 attributes (each attribute documents an observation, determination, or evaluation of a requirement, perhaps at a specific location or a single activity) relating to this stipulation that were drawn from more than 254 monitoring reports. There were 334 unsatisfactory conditions noted; 34 findings were issued citing this stipulation. Three of these findings remain open and are discussed later in this stipulation review.

visual inspection of the pipeline via aircraft.

**Stipulation 1.18.2.** Permittees/Lesseees shall have a communication system that ensures the transmission of information required for the safe operation of the pipeline system

**Stipulation 1.18.3.** Permittees/Lesseees shall maintain complete and up-to-date records on construction, operation, maintenance, and termination activities performed in connection with the pipeline system. Such records shall include surveillance data, leak and break records, necessary operational data, modification records and such other data as the AO/SPC may require.

**Stipulation 1.18.4.** Permittees/Lesseees shall provide and maintain access roads and airstrips. The AO/SPC will approve their number and location to ensure that Permittees/Lesseees' maintenance crews and federal and state representatives will be able to continually access the pipeline system.

**Methodology:** This is the third CMP work plan cycle that has evaluated Grant and Lease Stipulation 1.18 (TAPS Maintenance Program, 1999/2000, January 2001 and TAPS Construction Program 1999/2000, January 2001, An Evaluation of Selected Portions of the TAPS Maintenance Program January 1997-April 1999, Evaluation of Alyeska Pipeline Service Company's Operation of the Trans-Alaska Pipeline System, February 1999, CMP report: A Look at Alyeska Pipeline Service Company's Operation of the Trans-Alaska Pipeline System 1999/2000, February 2001). This stipulation was also addressed in four other CMP reports.

JPO's work plan took a multifaceted approach to this stipulation. First, JPO continued to work with Alyeska on its implementation of Reliability Centered Maintenance (RCM). JPO viewed Alyeska's adoption of RCM as a good faith effort to comply with the integrity surveillance and maintenance aspects of Stipulation 1.18.1. Second, JPO's 2001 monitoring effort focused on follow-up. This follow-up included incidents/events that occurred during the year and addressing issues identified in prior JPO monitoring reports. Third, JPO requires, receives and reviews Alyeska's System Integrity Monitoring Program reports (contained in Alyeska Manual MP-166). These reports cover civil monitoring which includes rivers and flood plains, fuel gas line stability, above ground pipe, below ground pipe, fault monitoring, glacier monitoring, slope stability, facility, bridges, and earthquake response plan as well as corrosion monitoring. These reports often directly related to requirements in the technical Grant/Lease stipulations and are a significant part of Alyeska's surveillance program. The issues and results of reviewing these reports are discussed under the appropriate stipulation.

#### INCIDENT/EVENT FOLLOW-UP:

**MILEPOST 170 AND CHECK VALVE 50 PIPE MOVEMENT:** Both incidents involved hydraulically caused pipe movement (so called "hammer" effect). Milepost 170 was extensively discussed in the 1999/2000 Operations CMP (pages 28-32). The Check Valve 50 incident, south of Pump Station 5, was a less dramatic (no tilting of shoes or shearing of bolts) but still significant pipe movement. The incident occurred in 2001 during operational

response to the Milepost 400 bullet hole spill. Stipulation 1.18 findings related to Milepost 170 questioned if the surveillance and maintenance program was conducted in a manner applicable to subarctic and arctic conditions. These findings questioned why tripped anchors, sheared bolts, and tilted shoes were not detected by Alyeska. The Check Valve 50 incident reinforced this concern.

To address pipe movement detection and consequences in a structured manner, JPO and Alyeska are using the RCM methodology. The JPO findings on Milepost 170 will remain open until conclusion and implementation of the results of that study.

**REMOTE GATE VALVE 104:** JPO performed a surveillance of the propane vault at RGV 104 and found the vault was filled with water and the propane tank leaked. There was no record of propane leaking at RGV 104 in the Alyeska database. The state fire marshal issued a “Notification of Fire Hazard and Order to Correct” letter on October 30, 2001. JPO Surveillance Checklist VMT-01-S-036 stated that all RGV-104 concerns were resolved and JPO issued letter NO. 02-012-DG (March 6, 2002) to Alyeska formally closing this finding.

**PREVIOUSLY REPORTED ISSUES:**

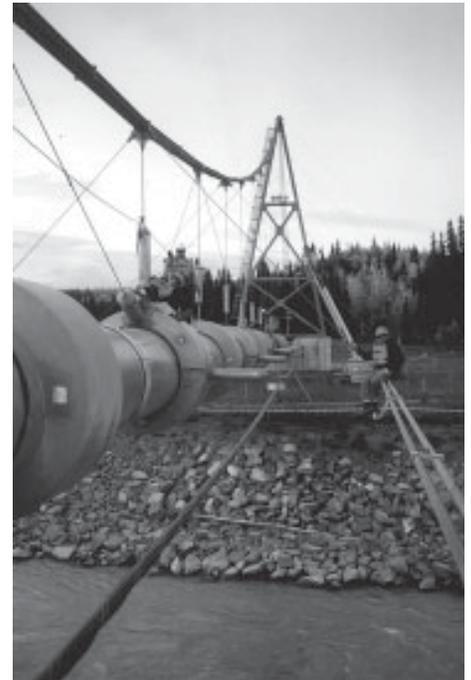
The JPO TAPS Construction Program 1999/2000 CMP; TAPS Maintenance Program January 2001 CMP; and Operations February 2001 CMP, determined that Alyeska was out of compliance with certain sections and stipulations of the Grant/Lease specific to individual systems or programs.

JPO found Alyeska out of compliance with Stipulation 1.18.1 because it was

unable to demonstrate that the pipeline bridge program adequately ensured that identified maintenance deficiencies were corrected. Alyeska agreed to develop a new procedure to reside in the *Integrity Monitoring Program Manual, MP-166*, but the effort was not completed at the time the 1999/2000 Maintenance CMP Report was issued. Section MP-166-2.09 “Access Road and Work Pad Bridge Monitoring,” became effective July 13, 2001 and resolved noncompliance with Stipulation 1.18.1. JPO will include this concern in the 2002 work plan and develop a monitoring schedule to reevaluate it.

The scope of Alyeska Project F066 originally included an inspection of the Tanana River Pipeline Bridge, but this inspection was deferred. The inspection of the Tazlina River Pipeline Bridge identified cable tension measurements greater than the specified design tension and/or allowable load. Since both the Tanana and the Tazlina River Pipeline bridges are suspension bridges, JPO requested that the Tanana River Bridge be inspected in 2000, according to the five-year inspection requirement to determine the extent of condition. The Tanana River Pipeline Bridge was inspected by Alyeska project F066 in 2001, and resolved this compliance deficiency.

As discussed under Stipulation 2.5, and in the 1999/2000 CMP Report, JPO/ADF&G monitoring found that in 1999 Alyeska was insufficiently detecting and therefore not documenting fish passage restrictions at culverts and low water crossings. This deficiency resulted in both stipulation 1.18.1 and 1.18.3 findings (finding two of JPO-00-A-001).



*These image show contractors inspecting the cables and fasteners on the Gulkana Bridge (JPO images by Lee Sires).*

### Orders/Notices/Directives: A

JPO directive citing Stipulation 1.18 was open at the start of the 2001 work plan. This incident involved a fatality and is discussed in detail under Stipulation 1.20.

This directive and all associated findings were closed by Letter 01-191-DG (December 28, 2001).

Alyeska Letter No. 00-16344 (October 4, 2000) closed Corrective Action Request 00-002 (1999/2000 CMP Report, page 13) that addressed the above finding. The noncompliance issues for finding #2 with relation to Stipulation 1.18.3 are resolved.

JPO and Alyeska finalized a Memorandum of Agreement (MOA) that formally established six months as the time limit to update documents (February 28, 2002). This MOA provides a firm standard to monitor against.

JPO found Alyeska's document management practices to be inconsistent with the requirements of Stipulation 1.18.3 when Alyeska could not demonstrate that it maintained complete and current records on construction activities. Alyeska maintenance records only partially documented some civil maintenance and above ground maintenance repairs. This hindered the trending of information about damage caused by flood, erosion and thawing. JPO reported this to be a deficiency with Stipulation 1.18.3. Although Alyeska disagreed with this noncompliance determination, it agreed to and has worked to improve tracking of civil maintenance. JPO will continue monitoring this aspect. Any future or repeat deficiencies will be tracked through CMP findings.

**Stipulation 1.18.2.** JPO stands by its statement in the Operations CMP, February 1999 where it noted that the Permittees/Lessees communications system was acceptable at TAPS start-up, but that the planned "fiber optics project, when completed, should improve the system." Given the problems experienced during the construction of the fiber optics line, the AO/SPC will use the NTP (Stipulation 1.7) protocol and require evidence of fiber

optics system reliability before authorizing the use of fiber optics to control TAPS.

**Stipulation 1.18.4.** Any substantive modification or change in access roads and airstrips, including their number and location, shall be adopted through the Notice to Proceed process described in Stipulation 1.7, to ensure that the change meets the requirements of this stipulation. In addition, access road construction will be guided by the requirement of Stipulation 3.2.3. No construction or modification occurred since 1997.

**Conclusion:** All findings, issues, and deficiencies relating to Stipulation 1.18 were worked to conclusion or are covered by acceptable corrective action plans. Vigilant monitoring of stipulations 1.18.1 and 1.18.3 will continue.

### Stipulation 1.19 Housing and Quarters

**Introduction/Requirements:** Permittees/Lessees shall accommodate all requests for adequate meals, lodging, office space, reasonable use of Permittees/Lessees communications systems, and reasonable surface and air transportation.

**Methodology:** JPO routinely used these services so problems would have become obvious.

**Discussion/Results:** JPO reviewed and documented results in Technical report FBU-01-E-002 (April 16, 2001). No information or documentation was discovered that would indicate unsatisfactory conditions resulting in a finding relative to this stipulation.

**Conclusion:** There are no outstanding issues to be resolved.

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## Stipulation 1.20 Health and Safety

**Introduction/Requirements:** Permittees/Lesseees shall take all measures necessary to protect the health and safety of all persons affected by their activities performed in connection with the construction, operation, maintenance or termination of the pipeline system, and shall immediately abate any health or safety hazards. Permittees/Lesseees shall immediately notify the AO/SPC of all serious accidents which occur in connection with such activities.

**Methodology:** JPO examined data from the JPO's CMP database and reports, Alyeska documents, fire marshal inspections, and OSHA inspections and requirements.

**Discussion/Results:** JPO Assessment No. ANC-02-A-001 compiled and reviewed numerous JPO reports which covered issues or aspects related to worker or public safety. From January 1, 1997 to June 30, 2001 that report identified three focus areas.

*Protect the health and safety of all persons.* Alyeska and its contractors use professional safety staff to identify safety hazards, violations of safety procedures, and recommend corrective action to the appropriate manager.

JPO looked at corrective action taken on deficiencies identified by JPO and other government agencies.

There have been several findings related to this stipulation presented in numerous JPO reports. The CMP report Evaluation of Alyeska Pipeline Service Company's TAPS Employee Safety Program (April 1998) listed one finding that Alyeska constructed buildings without approval plans from the state fire marshal.

The finding was satisfactorily closed after JPO review.

JPO completed four assessments of Alyeska operations and construction projects, three that resulted in findings. Two assessments addressed various aspects of electrical work, fire alarms, and fire suppression systems. All deficiencies were corrected and closed. Removal and replacement of RGV 60 was the focus of the third assessment with one finding: safety equipment (such as fire extinguishers) was not inspected according to Occupational Safety and Health Administration (OSHA) standards. Subsequent surveillances did not reveal an unsatisfactory trend and the finding was closed.

JPO produced 13 engineering reports of Alyeska operations and construction projects with two resulting in findings. JPO investigation of an Alyeska employee fatality at the Valdez Marine Terminal found Alyeska to be in noncompliance of Stipulation 1.20 by failing to take all measures necessary to protect the health and safety of all persons affected by its activities. Alyeska has since implemented additional safety measures and JPO closed the findings. The second engineering report resulted from the investigation of the Berth 4 spark incident at the terminal. The health and safety of persons working in the vicinity of the loading dock were put in jeopardy when this occurred. Alyeska corrected the condition and the finding was closed.

Of the 182 surveillances conducted of Alyeska operations and construction projects, 23 surveillances with 43 unsatisfactory attributes were found. Some of the surveillances were included in two CMP reports. Two surveillances resulted in findings and both have been closed.

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## Stipulation 1.20

Under this stipulation, JPO focused on the three distinct parts and related surveillance activities since 1997:

- Protect the health and safety of all persons.
- Abate health or safety hazards.
- Notify the AO/SPC of serious accidents.

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## Stipulation 1.20

Though funding of corrective actions is not specifically addressed, the MOA (February 28, 2002) spelled out funding as it relates to compliance with Stipulation 1.18.

“Alyeska agrees that it will notify the JPO if a funded corrective action on a system (as defined in the draft interpretation for Stipulation 1.18.1) becomes unfunded. Alyeska also agrees that the standardized prioritization developed during this effort will be applied to the 2003 budget.”

Protecting the health and safety of all persons is paramount. Findings related to health and safety require prompt attention and correction. JPO expects this and has issued four Orders and two Notices related to Stipulation 1.20. Three Orders were issued on the Valdez Marine Terminal Fire Suppression System; one Order to replace all non-plenum rated cables located at the Operations Control Center at the VMT; and two Notices related to the VMT Tanker Vapor Control System. All six have been verified and closed.

Seven Alaska OSHA inspections resulted in 12 citations being issued. With the exception of the fatality mentioned previously, findings related to these citations were not issued because they were handled by a regulatory agency.

The state fire marshal conducted two inspections. The 2000 inspection resulted in 167 violations and the 2001 inspection resulted in 125 violations. These were also handled by a regulatory agency.

*Abate health or safety hazards.* Alyeska is required to immediately abate any health or safety hazards by mitigating or eliminating all recognized hazards. Hazards identified by JPO, OSHA, state fire marshal, employee concerns, and nonconformance reports were reviewed for timely abatement. Four hazards were not abated within a reasonable time frame, two of which remain open. This does not in itself constitute a finding. However, if the trend continues, it could lead to a finding and eventual noncompliance with the stipulation. The two open items will be included in JPO's annual work plan.

The two open items are: 1) In 1998 an employee concern revealed that the evacuation alarms could not be heard in the turbine pump building at Pump Station 3. This is a code violation. Correction was delayed several times but is funded for 2002; 2) Building fire detectors were excluded from the Pump Station 4 office building due to faulty wiring connections. Corrective action was also delayed several times due to funding.

After this assessment, JPO conducted surveillances to verify that walking and working surface deficiencies were corrected. One ladder at Check Valve 111A needed repairing and a finding was issued.

Memorandum of Agreement – Alyeska has agreed to a number of improvements spelled out in a compliance MOA signed by Alyeska and the AO/SPC (February 28, 2002). Alyeska has agreed to review its corrective action process and identify additional improvements that will increase the efficiency and effectiveness of the current process by April 15, 2002. In addition, “The corrective action process will use a risk-based prioritization standard (including grant and lease compliance and risks to safety, the environment and TAPS integrity) that will appropriately distinguish deficiencies and focus management attention on timely implementation of corrective actions.”

*Notification of serious accidents.* A comprehensive review of the Alyeska log as well as accidents reported to OSHA and the state fire marshal's office from January 1, 1997 to June 30, 2001 did not reveal any serious accidents Alyeska failed to report.

**Conclusion:** The open finding regarding the ladder at Check Valve 111A needs to be resolved.

### Stipulation 1.21.1 Conduct of Operations

**Introduction/Requirement:** Permittees/Lesseees shall perform all pipeline system operations in a safe and workman-like manner to ensure the safety and integrity of the pipeline system, and shall at all times employ and maintain personnel and equipment sufficient for that purpose. Permittees/Lesseees shall immediately notify the AO/SPC of any condition, problem, malfunction, or other occurrence which in any way threatens the integrity of the pipeline system.

**Methodology:** This is the third CMP cycle where TAPS operations were evaluated (*Evaluation of Alyeska Pipeline Service Company's Operation of the Trans-Alaska Pipeline System*, February 1999 and *A Look at Alyeska Pipeline Service Company's Operation of the Trans-Alaska Pipeline System 1999/2000*, February 2001). Operational issues and this stipulation were also addressed in three other CMP reports (*An Evaluation of Selected Portions of the TAPS Maintenance Program January 1997-April 1999*, *TAPS Maintenance Program, 1999/2000*, January 2001 and *TAPS Construction Program 1999/2000*, January 2001). JPO devoted considerable monitoring effort to this requirement. Since 1997, the CMP database has more than 700 attributes relating to this stipulation.

**Discussion/Results:** This section discusses the focus areas and then reviews the CMP database results for 1997-2001.

**Change Management or Configuration Management:** JPO's concern is that when Alyeska modifies a critical system, it must identify the drawings, specifications, test routines and other documents needing updating and then complete the update in a timely manner. These topics are a major subset of one of the last two open Audit Action Items (AAI 1955). The February 1999 Operations CMP report overviewed change management and the January 2001 Construction CMP Report (pages 4-5) overviewed AAI 1955.

JPO's review of 1999-2000 construction projects revealed that more work was needed to close AAI 1955 and to ensure compliance with this stipulation. The further review of AAI 1955 is almost complete. Interim oral reports from JPO were favorable and represented an

improvement over the results documented in the January 2001 Construction CMP Report. JPO completed two surveillance reports (ANC-02-S-342 & 343) verifying that deficiencies in TAPS document accuracy, resulting in findings, were corrected.

February 28, 2002, Alyeska and JPO finalized the MOA (see sidebar). Among other items, this MOA formally established a time limit of six months to update documents involving critical systems and therefore comply with Stipulation 1.18.3.

Completing this MOA coupled with a successful audit of AAI 1955 resolves prior compliance deficiencies with this aspect of Stipulation 1.21.1

**Orders and Notices:** Two notices and orders citing this stipulation were open at the start of the 2001 work plan cycle: Compulsory redesign of VMT's Vapor Control System and Cold Restart.

**VMT's Vapor Control System.** The CMP Report, *TAPS Maintenance Program 1999/2000* describes this issue and notice (January 2001, pages 21, 34-35). JPO monitored many of the required improvements and documented the results in 29 surveillance reports. JPO also reviewed Alyeska progress reports and coordinated with the U.S Coast Guard Marine Safety Office Valdez (JPO Technical Report No. VMT-02-E-001). JPO closed the notice (JPO Letter No. 02-004-DG, February 11, 2002). An RCM study follow-up notice essentially required Alyeska to complete important improvements to the Vapor Control System. Future RCM follow-up monitoring will not require a notice under Stipulation 1.6 because Alyeska in an MOA agreed to implement critical fixes from future RCM studies (1999/2000 Maintenance CMP report attachment).

### Stipulation 1.21.1

The major efforts in 2001 were to:

- work with Alyeska to resolve deficiencies related to documented change or configuration management;
- monitor the two open orders and notices (cold restart and Valdez vapor control system) issued under Stipulation 1.6 that addressed this stipulation (*TAPS Maintenance Program, 1999/2000*, January 2001, pages 28-35)
- select and monitor projects at the VMT to determine if lessons learned from past incidents and near misses were being implemented; and
- respond to and review incidents, events, past issues and general pipeline operations.

“A TAPS cold restart study must first be completed before developing a new plan...for restarting the pipeline under extreme cold conditions after an extended shutdown. Study results will help Alyeska obtain objective information about system performance in the event of an extended shutdown.”

— February 1999 Operations CMP Report

This cold restart study was completed and the JPO order requiring the study is closed. JPO’s evaluation of TAPS cold restart procedures and system performance continues.

**Cold Restart.** JPO received several significant studies and draft procedures pursuant to the cold restart order this work planning cycle. TAPS hardware was modified during the September 22, 2001 shutdown to aid cold/cool restart. JPO’s review of the cold restart plan and procedures led to four additional questions that JPO and Alyeska were resolving (JPO Letter 02-012-JS, March 14, 2002). Alyeska and JPO’s understanding of the cold restart operating parameters has markedly increased since the late 1990s. The order was closed per JPO Letter 02-013-JS. Future JPO reports will provide details as this initiative progresses. As of April 2002, the cold restart issue is primarily related to continuity of oil supply and not safe pipeline operations. Accordingly, future JPO inquiries may not cite this stipulation.

**Valdez Marine Terminal (VMT) Project Monitoring:** During the 2000 project year, three incidents occurred at the VMT. The three incidents were: a spark on Berth 4, the Berth 4 valve cavitation/vibration, and the crude oil storage tank mixing motor gearbox failures. After analyzing the root cause, preventive actions were implemented. JPO’s monitoring did not reveal any repeat of the 2000 incidents and found the preventive actions operational (JPO Assessment No. VMT-01-A-002, November 27, 2001). Like many JPO issues, these preventive actions affect many stipulations and sections, the assessment focused on the quality assurance, worker safety, and surveillance/maintenance requirements. The preventive actions also are an element of “conducting operations in a safe and workmanlike manner” as required by Stipulation 1.21. Projects along the pipeline were also monitored,

but no significant Stipulation 1.21 issues were either expected or uncovered (Surveillance report FBU-01-S-013).

**Incident/Event follow-up:**

**Y-2K:** The 1999/2000 Operations CMP Report highlighted the need to track Y-2K review of “ready” systems that were not in use at the time. Alyeska responded to JPO’s concerns in letter no 01-17077 (May 1, 2001). JPO determined this response was adequate and closed it.

**Milepost 170 and Check Valve 50 Pipe Movement:** Both issues involved hydraulically caused pipe movement. Milepost 170 was extensively discussed in the 1999/2000 Operations CMP (pages 28-32). These situations were also discussed in Stipulation 1.18.

To address pipe movement detection and consequences in a structured manner, JPO and Alyeska are using the RCM study of the above ground pipe. The JPO finding on Milepost 170 remains open until conclusion and implementation of the results of that study. The JPO determined that this RCM resolution satisfied Stipulation 1.21. Critical corrective actions resulting from RCM studies will be implemented per MOA (Alyeska Letter # 02-18299, February 28, 2002).

**September 22, 2001 Shutdown**

**Incidents:** Three incidents, at Pump Station 3, 4 and 5 each caused various sized oil spills at the pump stations, the most significant was at Pump Station 5. Each was caused by different factors. A JPO representative was at Pump Station 5 monitoring the shutdown while another one monitored TAPS restart at the Valdez Operations Control Center. JPO then reviewed observations and Alyeska’s plans for preventive actions. No Stipulation 1.21 findings were issued because

JPO determined that the preventive actions were adequate.

**Oil Movement:** JPO has actively monitored Alyeska's operation and control of oil during normal and upset conditions. The deficiencies cited in the February 1999 Operations CMP report were corrected and recorded in the 1999/2000 Operations CMP report.

While Alyeska's use of detailed root cause/causal factor analysis for significant issues is unquestioned and commendable, JPO has documented (through surveillance reports) prior situations where evaluating smaller and less significant issues should have been performed. JPO recommended that evaluations be tailored to fit the scale of the event or situation. JPO will continue to monitor pipeline operations and evaluation of incidents. JPO's only outstanding compliance in this area is Milepost 170.

**Conclusion:** The findings, issues, and deficiencies relating to Stipulation 1.21 have been worked to conclusion or are covered by acceptable corrective action

plans. There are no outstanding issues to be resolved.

#### **Stipulation 1.22.1 Applicability of Stipulations**

**Introduction/Requirements:** Stipulation 1.22.1 specifies that nothing in the stipulations applies to activities of Permittees/Lessees that have no relation to the pipeline system. Stipulation 1.22.2 states that nothing in the Grant/Lease stipulations affects any right or cause of action that otherwise would be available to Permittees/Lessees against any person other than the United States/State of Alaska.

**Discussion/Results:** Stipulation 1.22 is a legal and administrative provision of the Grant and Lease that does not require monitoring or verification.

**Conclusion:** There are no outstanding issues to be resolved.

#### **Stipulation 1.21.1**

*Under this stipulation, JPO focused on the following aspects of pipeline operations:*

- *Change management or configuration management*
- *Oil movement including controller training, pipeline operations, cold restart and pressure management*
- *Incident evaluation including near misses*
- *Incident reporting*
- *System integrity including the Reliability Centered Maintenance (RCM) initiative and Alyeska's corrective action management (i.e., detecting and correcting deficiencies).*

**Reliability Centered Maintenance (RCM)** is a highly prescriptive process used to identify the maintenance needs of a physical asset to ensure operational safety and functional reliability. The RCM analysis actively involves the asset operators, maintainers, and responsible engineering resources in a comprehensive and interactive manner.

The RCM methodology JPO advocates complies with the only existing internationally recognized RCM standard, and is designed to quantifiably answer seven questions relevant to an operating asset.

JPO is continuing with the RCM analyses process and will issue formal reports for the analyses that have been and will be accomplished. The follow up of the RCM's results and recommendations will be a major part of the JPO 2002 work plan.

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# Environmental Stipulations

## ***Access to TAPS***

*The TAPS right of way is 800 miles long with 284 associated access roads.*

*The workpad and access roads cross over 800 different rivers and streams.*

*Alyeska facilities, equipment and operations are controlled to protect air, land and water quality along TAPS through various means, such as Grant/*

*Lease stipulations, federal and state regulations, permit conditions and Alyeska policies*

## **Stipulation 2.1 Environmental Briefing**

### **Introduction and Requirements:**

Prior to and during construction of the pipeline system, Permittees/Lessees shall provide for environmental and other pertinent briefings for construction and other personnel by such federal/state employees as may be designated by the AO/SPC. Permittees shall arrange the time, place and attendance for such briefings upon request by AO/SPC. Permittees shall bear all cost of such briefings other than salary, per diem, subsistence, and travel costs of federal employees. In addition, Permittees shall separately arrange with the State of Alaska for such similar briefings as the state may desire.

**Discussion/Results:** JPO completed Assessment No. FBU-01-A002 (July 2, 2001) finding that this requirement is essentially an authority for JPO to conduct environmental briefings at its discretion. Since there have been no government requests in many years, the compliance determination was straightforward and no additional monitoring was required.

JPO used its surveillance process to monitor Alyeska's self-required environmental briefing program. Fourteen times JPO project surveillances cited Stipulation 2.1 to observe how Alyeska conducted its environmental briefing. Twice deficiencies or inconsistencies were cited, usually involving nonattendance of some crew members. No CMP findings resulted. Since the briefings do not relate to this requirement, this assessment determined that the two "unsatisfactory conditions" be closed in the CMP database.

The assessment observed that JPO staff attending Alyeska's environmental briefings have never found the information inadequate.

**Conclusion:** There are no outstanding issues to be resolved.

## **Stipulation 2.2. Pollution Control**

**Introduction/Requirement:** Permittees/Lessees shall conduct all activities associated with the pipeline system in a manner that will avoid or minimize degradation of air, land and water quality. In the construction, operation, maintenance and termination of the pipeline system, Permittees/Lessees shall perform their activities in accordance with applicable air and water quality standards, related facility siting standards, and related plans of implementation, including but not limited to standards adopted pursuant to the Clean Air Act, as amended, 42 U.S.C. § 1857 *et seq.*, and the Federal Water Pollution Control Act, as amended, 33 U.S.C. § 1321 *et seq.*

**Methodology:** JPO reviewed its Comprehensive Monitoring Program (CMP) oversight records such as audits, assessments, technical reports and surveillances of Alyeska performance from January 1997 to September 2001. During this time, 185 oversight records that referred to 482 attributes were reviewed. Also, compliance reports from Alaska's Department of Environmental Conservation, Department of Fish and Game, and the U.S. Environmental Protection Agency were incorporated into the analysis.

**Discussion/Results:** Pollution control provides for human safety and environ-

mental protection. Pollution prevention focuses on the design, manufacture, purchase, or use of materials or products that are less toxic and reduce waste, and applies to all types of waste (e.g. solid and hazardous waste, wastewater, and waste energy).

The 1999-2000 CMP Report identified two JPO Notices related to Stipulation 2.2. The first directed Alyeska to complete all compulsory redesign conclusions and recommendations identified in the Reliability Centered Maintenance reports for Berths 4 and 5 at the Valdez Marine Terminal, and to submit its plan and schedule for redesign completion for Berths 4 and 5 to JPO for review and approval. The second directed Alyeska to provide a detailed plan and schedule to conclude the management review of the non-compulsory items in the VMT Tanker Vapor Control System (TVCS), to include the requirements listed in JPO's report on the VMT TVCS Management Review, October 7, 1999. Both notices have since been closed.

Currently, there are no JPO documented findings or unsatisfactory conditions related to Grant/Lease Stipulations 2.2.1 through 2.2.6.2.

Stipulation 2.2 specifically required compliance with state and federal air and water quality standards and JPO coordinated with EPA, ADEC and ADF&G to monitor Alyeska's compliance. The three regulatory agencies reported no outstanding compliance issues associated with this stipulation.

**Conclusion:** There are no outstanding issues to be resolved.

### Stipulation 2.3 Buffer Strips

**Introduction/Requirements:** Stipulation 2.3.1 applies to construction activity and establishes a one-half (1/2) mile buffer strip around public interest areas. Stipulation 2.3.2 requires 500 foot vegetative screens between highways and material sites and vegetative screens at pipeline /highway crossings. Stipulation 2.3.3 requires 300 foot buffer strips of undisturbed land along streams. Stipulation 2.3 also provides for increases and decreases in buffer strips size through written authorization from the AO/SPC. Activities that occur within buffer strip or that alter the size of vegetation screens and buffers require written approval from the AO/SPC.

**Methodology:** JPO reviewed the documents that identified areas requiring buffer strips, physically visited and photographed a few sites, and reviewed past JPO buffer strip monitoring.

**Discussion/Results:** JPO reviewed and documented the results in JPO Assessment FBU-01-A-003 Revision 1. The photographs and site visits were documented in 11 surveillance reports.

Public interest areas, material sites, pipeline crossings of state highways, and the spatial relationship of the right of way to streams and water bodies are identified on Alyeska G-100 maps and the Environmental Atlas of the Trans-Alaska Pipeline.

A review of the past three years of Alyeska's planned projects lists and end of year summary reports indicated that construction activities occurred in areas addressed by Stipulation 2.3. In each instance when activity occurred, written authorization was requested and given by the AO/SPC.

### Stipulation 2.2

Subcategories of the pollution control stipulation are:

- 2.2.2. Water and Land Pollution
- 2.2.3. Thermal Pollution
- 2.2.4. Air Pollution and Ice Fog
- 2.2.5. Pesticides, Herbicides and other Chemicals
- 2.2.6. Sanitation and Waste Disposal

### Model for assessment plans

Assessment plans for most stipulations for a similar model are:

1. JPO clarifies the requirement for both the federal Grant and state Lease.
2. JPO reviews its past monitoring of this requirement, assures that this monitoring was consistent with the requirement, summarizes trends, and updates the CMP database.
3. JPO identifies the need for any future compliance monitoring.
4. JPO documents results and identifies any compliance deficiencies (i.e., findings) in a CMP technical report.

JPO records also indicated that Stipulation 2.3 was referenced three times in previous surveillance documents during the three-year review period. There were no unsatisfactory findings referring to this stipulation.

The provisions found within Stipulation 2.3 were most applicable during the initial design and construction phase of the pipeline. It was during this period that the mode and location of the pipeline and related facilities with respect to established buffer strips at public interest areas (parks, monuments, historic sites, etc.), material sites, roadways, and water bodies could easily have been influenced and adjusted. The pipeline alignment has been modified twice since initial installation. In both instances written authorization was issued by the AO/SPC through a Notice to Proceed (NTP).

Instances when construction activity occurs within buffer strips are either planned maintenance projects or emergency repair projects. Authorization to conduct the activity is normally obtained through permitting. After the appropriate permits are obtained, the AO/SPC give written authority for construction activity through an NTP. Permit application reviewers identify site-specific concerns related to the projects during the review period prior to issuing the NTP.

No information or evidence was discovered that would indicate a problem with Stipulation 2.3.

**Conclusion:** There are no outstanding issues to be resolved.

#### Stipulation 2.4 Erosion Control

**Introduction/Requirements:** This stipulation addresses erosion control along the TAPS right of way.

In addition to bridges, low water crossings, culverts crossing these water bodies, Alyeska must provide drainage and erosion control structures to handle surface sheet-flow and subsurface flows.

**Methodology:** Compliance with Stipulation 2.4 was evaluated by reviewing the CMP database from January 1997 to January 2002.

**Discussion/Results:** JPO surveillance efforts from 1997 through 2001 included observing routine Alyeska maintenance activities as well as project specific oversight. The data was summarized and reported in JPO Assessment ANC-02-A-002 (January 2002). Eight unsatisfactory conditions remain open; seven reference requirements of *Alyeska's Erosion Control Plan for Maintenance Operations Manual (EP-106)* and require field inspection before closing. The remaining unsatisfactory condition is associated with concerns identified in Finding JPO-99-S-066-F/01 (also referenced in JPO Assessment ANC-01-A-013). JPO efforts to resolve the issue are being addressed under Stipulation 1.18.

In addition, both the 1997-1999 and 1999-2000 CMP reports noted that Alyeska needed to maintain complete and current surveillance and maintenance records. In response, Alyeska created a system to track line-wide surveillance and maintenance efforts on the 3,275 drainage structures along the ROW. This program should allow Alyeska to maintain complete and up-to-date information on all drainage structures along TAPS, including low water crossings and culverts, specifi-



**Stipulation 2.4.** Erosion control project on the west fork of the North Fork Chandalar River (photo by Mike Thompson).

cally mentioned in the 1999-2000 CMP Report.

**Conclusion:** Issues associated with Finding JPO-99-S-066-F/01 are addressed under Stipulation 1.18 through an MOA with Alyeska that was signed February 28, 2002. There are no outstanding issues to be resolved.

### Stipulation 2.5 Fish and Wildlife Protection

**Introduction/Requirements:** Permittees/Lessees shall provide for uninterrupted movement and safe passage of fish; avoid impacting fish spawning beds and fish rearing areas; limit use of zones of restricted activity to protect fish and wildlife breeding, nesting, spawning and migration; and provide opportunities for free passage and movement by terrestrial mammals.

**Methodology:** JPO reviewed its oversight records: reports, assessments and surveillances of Alyeska's performance from January 1998 to September 2001. Fish Habitat Permits and Notices of Violation issued by the Alaska Department of Fish and Game and other relevant correspondence were also reviewed.

Because fish passage deficiencies were identified in JPO Assessment No. JPO-00-A-001 (February 2000) follow-up surveillances were accomplished in 2001.

**Discussion/Results:** JPO reviewed and documented results in Assessment Report ANC-01-A-011 (November 2001).

There were frequent observations of noncompliances in 1998 and 1999 related to fish passage. The February 2000 ADF&G/JPO report: *Alyeska Pipeline Service Company Compliance with Fish Passage and Related Environmental, Surveillance, Maintenance and Quality*

*Program Requirements* concluded that, "Noncompliance with fish passage requirements results from the lack of effective implementation of Alyeska's internal requirements contained in its Environmental, Surveillance and Maintenance programs." Following this report, Alyeska developed the "2000 High Priority Closeout Tracking" program to identify and restore efficient fish passage at cross-channel structures along TAPS.

Minor maintenance of culverts and low water crossings continued to be accomplished under the conditions and stipulations of a line-wide fish habitat permit. Surveillances conducted in 2000 revealed a marked decline in the number of "unsatisfactory" conditions recorded in the JPO CMP database. JPO records evaluated in 2001 did not contain any violations of ADF&G requirements or unsatisfactory conditions or findings.

There were no compliance issues associated with zones of restricted activity or the free passage and movement by terrestrial mammals.

**Conclusion:** There are no outstanding issues to be resolved.

### Stipulation 2.6 Purchase of Materials:

#### Introduction/Requirements:

**Stipulation 2.6.1.1.** If Permittees/Lessees require materials from public lands, Permittees/Lessees shall make application to purchase such materials in accordance with 43 CFR, Part 3610/ appropriate state laws and regulations. Permittees/Lessees shall submit a mining plan in accordance with 43 CFR, Part 23. No materials may be removed without the written approval of the AO/ SPC.

### Soil erosion

Soil erosion, a naturally occurring process on all land, may be slow and continue relatively unnoticed, or it may occur rapidly. Sediment reaching streams or watercourses can accelerate bank erosion, clog drainage ditches and stream channels, cover fish spawning grounds and reduce downstream water quality. The rate and magnitude of soil erosion by wind and water is controlled by factors such as rainfall intensity and runoff (snow melt), glacial flooding, soil erodibility (may be affected by past erosion), slope gradient and length, vegetation, thermal regime and soil surface roughness.

Erosion control is a component of many TAPS operational and maintenance functions including but not limited to earth work, slope stabilization, drainage protection measures, sediment control (water quality), icing control, revegetation, storm water management, and reclamation. Therefore, erosion control projects can range in importance from minor maintenance of rutting on a roadway to emergency measures necessary to ensure pipeline integrity.

**Stipulation 2.6.1.2.** Insofar as possible, use of existing materials sites will be authorized in preference to new sites.

**Stipulation 2.6.1.3.** Gravel and other construction materials shall not be taken from stream beds, river beds, lake shores or other outlets of lakes, unless the taking is approved in writing by the AO/SPC.

**Stipulation 2.6.2.1.** Materials site boundaries shall be shaped in such a manner as to blend with surrounding natural land patterns. Regardless of the layout of materials sites, primary emphasis shall be placed on prevention of soil erosion and damage to vegetation.

**Methodology:** *BLM Manual, Section 3600, Instruction Memorandum No. 99-021* requires annual inspections of mineral material sites on federal land. JPO policy requires annual inspection of the sites on state land as well. There are 66 active mineral material sites used by Alyeska along the TAPS corridor—39 sites on federal land and 27 sites on state land (down from the 73 sites active last year). Sixty-five sites were inspected and all 66 material site files were reviewed in 2001. Additionally, one finding of deficiency was reviewed from a prior compliance assessment.

**Discussion/Results:** JPO results were documented in TAPS Assessment Report ANC-01-A-005 (May 2001). Sixty-nine surveillance reports document the inspection of 65 sites and 66 files.

Year 2001 work built upon prior assessments (JPO Assessment Report 00-A-003, 1999-2000 Maintenance CMP Report, pages 27-28; Assessment 98-A-016, Maintenance CMP Report, April 1999, pages 30-31). All reviewed sites were in compliance with these stipulations.

Under Stipulation 2.6.1.1, Alyeska submitted mining plans in accordance with 43 CFR, Part 23 as well as the appropriate state laws and regulations for all of the active material sites.

Alyeska had not opened any new material sites in several years but continued to use existing materials sites; therefore, it is not out of compliance with Stipulation 2.6.1.1.

Under Stipulation 2.6.1.3, all material sales for gravel taken from waterways were approved in advance by the AO/SPC. All contracts for material sales from riverbeds have expired. Alyeska has informed JPO that it does not intend to mine from the riverbeds in the future.

Under Stipulation 2.6.2.1, the inspections did not reveal excessive damage to vegetation but did note one site near Trimms Creek where erosion occurred. JPO directed Alyeska to repair the dike (ANC-01-A-005). A September 11, 2001 inspection confirmed the repair but revealed that the dike was washing out and might breach again (ANC-01-A-009). Alyeska accomplished the second repair in October 2001 (Alyeska Letter No. 01-17968, December 10th, 2001). Two E-mail correspondences, with electronically transmitted images between Alyeska and JPO, closed out the erosion concern (E-mail dates: October 31, 2001 and November 1, 2001).

The assessment and its cover letter (No. 01-052-DW, June 4, 2001) addressed the closure of JPO Finding No. 98-016-F/01. JPO approved the language for the updates to the mining plans for three rip rap sites (JPO letter No. 01-045-DW, May 3, 2001). JPO reviewed and accepted Alyeska's mining plan revisions and closed Assessment Finding No. 98-A-016/F-01 (JPO Letter No. 02-009-MC.)



#### Stipulation 2.6.2.1

*Trimms Creek — as shown here September 11, 2001— revealed erosion to JPO. Alyeska subsequently repaired the area (JPO image by Stan Bronczyk)*

**Conclusion:** There are no outstanding issues to be resolved.

### Stipulation 2.7 Clearing

**Introduction/Requirements:** Permittees/Lessees shall:

1) identify approved clearing boundaries on the ground prior to beginning clearing operations, and

2) not cut timber or other vegetation outside of clearing boundaries, or trees which mark the boundaries, except as authorized by the AO/SPC.

**Methodology:** Five JPO surveillance reports were generated specifically for this review. The evaluation consisted of a historical review of records maintained within the JPO dating back to 1997, and a site visit to a recently completed river revetment project along the Dietrich River at Pipeline Milepost 228. Among the historical documents, seven JPO surveillances and one engineering report (conducted during 1999 and 2000) were examined. All included Stipulation 2.7 attributes relating to projects including RGV 80 upgrade, construction of river training structures, revetment on the Koyukuk River, and check valve excavation. All attributes were found satisfactory.

Alyeska correspondence, land use permits, temporary use permits, and NTPs issued for projects and emergency repairs were reviewed to establish specific stipulation requirements for the individual activities Alyeska proposed. Subsequent documentation submitted by Alyeska and JPO correspondence and E-mail was reviewed to determine if sufficient documentation was available to verify the closure of that authorization.

**Discussion/Results:** JPO reviewed and documented results in Technical Report

FBU-01-E-006 (July 18, 2001). There were no unsatisfactory conditions or findings identified during the review.

Only one incident of noncompliance was identified during the review process. Alyeska disclosed that two trees outside of the TAPS right of way were removed without prior authorization. The JPO response included corrective actions with a prescribed time to complete these actions. Subsequent correspondence from Alyeska provided adequate detail to determine that the corrective actions were implemented within the required time. In addition, minor procedural processes were implemented by Alyeska to help prevent future occurrences.

**Conclusion:** There are no outstanding issues to be resolved.

### Stipulation 2.8 Disturbance of Natural Waters

**Introduction/Requirements:** All activities of Permittees/Lessees in connection with the pipeline system that may create new lakes, drain existing lakes, significantly divert natural drainage, permanently alter stream hydraulics, or disturb significant areas of stream beds are prohibited unless such activities along with necessary mitigation measures are approved in writing by the AO/SPC.

**Methodology:** Before approving the activities, the AO/SPC obtained approval for the proposed project from the ADF&G area biologist and, if fish are present and potentially affected by the action, from JPO's ADF&G biologist.

The AO/SPC does not approve activities that may create new lakes, drain existing lakes, significantly divert natural drainages, permanently alter streams, or



*Dietrich River at Pipeline Milepost 228 (JPO photo by Dennis Gnath).*

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## Stipulation 2.8

The AO/SPC's current interpretation of necessary mitigation measures encompassed those measures necessary to:

- 1) avoid an adverse impact altogether by not taking an action;
  - 2) minimize an adverse impact by limiting the degree of magnitude of an action;
  - 3) rectify the impact by repairing, rehabilitating or restoring a disturbed natural water to its original or normal physical condition and natural biological productivity and diversity by means of best practicable technology available with the intent of reestablishing native plant and animal species;
  - 4) reduce or eliminate an adverse impact over time by conducting specific actions during the life of the action; or
  - 5) compensate for an adverse impact by replacing or providing substitute natural resources or environments of equal natural value.
- 

disturb significant areas of stream beds until the Permittees/Lessees have obtained all necessary permits. Permits may be required under the Rivers and Harbors Act (404 permits), the Clean Water Act, or other federal statutes. The Permittees/Lessees must obtain an ADF&G fish habitat permit for any activity that disturbs natural waters that contain fish pursuant to AS 16.05.840 or AS 16.05.870.

**Discussion/Results:** Alyeska Government Letter No. 01-17291 (June 22, 2001) requested authorization to remove multiple beaver dams in the Pump Station 12 area. The letter noted that the local ADF&G office was contacted and the office biologist reviewed the action and indicated no concern. JPO Letter No. 01-089-DW (July 6, 2001) authorized the request noting that none of the directly connected water bodies were fish bearing, and that ADF&G had determined that no Fish Habitat Permits were required.

Alyeska Government Letter No. 01-17406 (July 25, 2001) requested authorization to remove a portion of a beaver dam at PLMP 736, and if necessary, install a flow through device to control water levels behind the dam if it is rebuilt. The letter noted contact with the local ADF&G biologist, who indicated no concerns with the proposed actions. JPO Letter No. 01-102-DW (August 8, 2001) authorized the requested work, restating the proposed actions to be authorized, noting the status of the unnamed drainage as not being an identified fish bearing stream and concluding from ADF&G that a fish habitat permit was not required. Additional conditions were provided to protect the occupying beavers from stress and prevent erosion downstream.

Alyeska Government Letter No. 01-17397 (July 26, 2001) requested authorization to remove portions of beaver dams at PLMP 562 and 596 to control water levels around VSMS. The letter noted that the two locations were in different ADF&G field office jurisdictions, and while appropriate information was sent to both offices, contact was made with only one. JPO Letter No. 01-104-DW (August 9, 2001) authorized the work, noting that one dam was apparently inactive. The letter further noted that neither site was directly connected to any fish bearing streams and giving the ADF&G determination that no Fish Habitat Permits were required.

Alyeska Government Letter No. 01-17416 (July 26, 2001) requested authorization to remove beaver dams in Engineer Creek (at PLMP 449). JPO Letter No. 01-103-DW (August 9, 2001) authorized the actions, noting that Engineer Creek supported resident fish, even though it was not important for spawning, rearing or migration of anadromous fish. The letter stated that a fish habitat permit was not necessary given the project descriptions and several attached conditions related to timing, rate of water flow and moving stranded fish.

**Conclusion:** There are no outstanding issues to be resolved.

## Stipulation 2.9 Off Right-of-way Traffic

**Introduction/Requirements:** Permittees/Lessees shall not operate mobile ground equipment off the designated construction zone in the right of way, access roads, state highways, or authorized areas, unless approved in writing by

the AO/SPC or when necessary to prevent harm to any person.

**Methodology:** JPO reviewed the stipulation authorizations issued since January 1997. A search of JPO files was conducted to find correspondence relating to incidents of Alyeska taking mobile ground equipment off the right of way without written permission from the AO/SPC. Interviews with JPO staff were conducted for any recollections of Alyeska operating out of the right of way without written permission.

**Discussion/Results:** JPO reviewed and documented results in Assessment Report ANC-01-A-006 (July 2001).

This assessment reviewed two past incidents where Alyeska took equipment off the right of way without proper authorization. The issues were resolved and no additional corrective or preventive actions were deemed necessary.

**Conclusion:** There are no outstanding issues to be resolved.

### Stipulation 2.10 Aesthetics

**Introduction/Requirement:** Permittees/Lessees/Lessees shall consider aesthetic during planning, constructing and operating the pipeline system.

Specifically, this stipulation requires that:

“...where the right of way crosses a state highway in forested terrain, the straight length of the pipeline right of way visible from the highway shall not exceed six hundred (600) feet in length, unless otherwise approved in writing by the Authorized Officer/State Pipeline Coordinator.”

This stipulation also gives the AO/SPC the power to impose other requirements to protect aesthetics.

**Methodology:** JPO staff identified the locations where the pipeline right of way crosses state highways and then they examined applicable records for the past three years to determine if JPO staff or the public had expressed concerns about ROW aesthetics. JPO physically surveyed and photographed five locations on two state highways and two major roads. These sites were chosen to represent a sampling of road crossings in different vegetative zones.

**Discussion/Results:** The pipeline right of way crosses state highways 39 times and other state maintained major roads seven times. Approximately 2/3 of these crossings are in forested areas. JPO noted in its surveillance reports (FBU-01-S-028, 029, 030, 031, and 032) that a record search yielded no internal or external reported aesthetic concerns and that the provisions in Stipulation 2.10.1 were most applicable during design and construction.

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### Stipulation 2.9

*Alyeska routinely requests off right-of-way authorization when they need to perform a task or complete a project.*

*Sometimes other permits are also needed.*

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### Stipulation 2.10

*Straight line view of the pipeline crossing a state highway near Mile Post 166 along the Dalton Highway (JPO image by Ron McCallister).*

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It should be noted that although the right of way is visible in a straight line for more than 600 feet at most highway crossings in forested areas, the proper permitting activities were accomplished before construction and the AO/SPC deemed the original construction and past Permittee/Lessee action authorized under the Notice to Proceed to comply with this stipulation.

Also, JPO recognized that the State Department of Transportation of Public Facilities has modified road alignments, roadbed elevation and brushing during such activities as snow plowing and clearing. These activities have, consequently, altered the width of buffer strips and view of the pipeline crossings.

**Conclusion:** There are no outstanding issues to be resolved.

#### **Stipulation 2.11 Use of Explosives**

**Introduction/Requirements:** Permittees/Lessees shall submit a plan for using explosives, including but not limited to blasting techniques to the AO/SPC.

**Methodology:** JPO evaluated compliance by researching its CMP database and other records and reports to determine if any complaints or reports had been received to indicate unsatisfactory conditions on TAPS. JPO further examined Alyeska's Master Specifications C-415 for the use of explosives, submitted plans for explosive use, construction plans, and Notices to Proceed issued by JPO.

**Discussion/Results:** JPO reviewed and documented results in Engineering Report FBU-01-E-005 (November 2001). No information or documentation was discovered that indicated unsatisfactory conditions resulting in a finding relating to this stipulation.

While researching historical records, it was found that one Notice to Proceed related to blasting had been issued by field memo. Construction plans were submitted for approval that included blasting plans and Notices to Proceed were issued. Blasting plans were submitted and "approval" letters issued in response to the submittal.

After evaluating this stipulation, JPO conveyed, in writing to Alyeska, that it may again use the formal Notice to Proceed protocol for any significant blasting within the right of way.

This stipulation covers an activity that is relatively high risk for pipeline construction but relatively lower risk for operations and maintenance. During construction, explosives were used where appropriate to shatter rock and otherwise prepare for pipe burial. With an existing pipeline system, explosives are not routinely used, other than for "rip rap" sites that are regulated and permitted by separate laws and regulations.

**Conclusion:** There are no outstanding issues to be resolved.

#### **Stipulation 2.12 Restoration**

**Introduction/Requirements:** Permittees/Lessees shall restore disturbed land to the satisfaction of the AO/SPC.

**Methodology:** JPO reviewed reports, assessments and surveillances of Alyeska's performance from January 1997 to September 2001. Fish Habitat Permits and Notices of Violation issued by the Alaska Department of Fish and Game and other relevant correspondence were also considered in this assessment.

**Discussion/Results:** There were no outstanding observations or findings relating to this stipulation or any ADF&G

restoration requirement, Assessment Report ANC-01-A-015 (November 2001).

Grant/Lease stipulations and ADF&G fish habitat permits may include requirements for avoiding or minimizing impacts to fish resources and habitats by restoring any disturbance to riparian vegetation. Restoring disturbed areas was required in many TAPS projects. Surveillances, assessments and reports were used to verify compliance with the stipulation and ADF&G permit conditions. Any deficiencies observed are scheduled for corrective remedial action.

During the reporting period for this stipulation, there were 49 restoration attributes examined during 16 surveillances. Approximately 10% of the attributes were recorded as “unsatisfactory.” A review of JPO oversight records revealed that these unsatisfactory conditions were corrected by Alyeska follow-up maintenance or by a specific action.

Alyeska is currently monitoring the stability and effectiveness of several projects (including structure stability, revegetation success and fish and invertebrate use of the project areas) for a period of five years beginning in 2001.

**Conclusion:** There are no outstanding issues to be resolved.

### Stipulation 2.13 Reporting of Oil Discharges

**Introduction/Requirements: 2.13.1.** A discharge of oil by Permittees/Lessees into or upon the navigable waters of the United States, adjoining shorelines, or into or upon the waters of the contiguous zone in violation of the Federal Water Pollution Control Act, as amended, 33 U.S.C. § 1321 *et seq.* and the regulations issued



thereunder, or in violation of applicable laws of the State of Alaska and regulations issued thereunder, is prohibited. Permittees/Lessees shall give immediate notice of any such discharge to: (1) the AO/SPC, and (2) such other federal and state officials as are required by law to be given such notice.

**2.13.2.** Permittees/Lessees shall give immediate notice of any spill or leakage of oil or other pollutant from the pipeline, the Valdez terminal facility, or any storage facility to: (1) the AO/SPC; and (2) such other federal and state officials as are required by law to be given such notice. Any oral notice shall be confirmed in writing as soon as possible.

**Methodology:** JPO reviewed Alyeska documents on reporting procedures and submitted spill reports to determine compliance.

**Discussion/Results:** Spills must be reported to several government agencies. In addition to the AO and SPC, spills must be reported to the Department of Environmental Conservation and the National Response Center (which in turn notifies



*The top photo depicts the Becky Creek Low Water crossing before the channel was reconstructed on August 7, 2001. The bottom photo shows the area after reconstruction (JPO photos by Dennis Gnath, ADF&G).*

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## Spill reporting protocol

Spills are reported via telephone and an electronic report (fax, E-mail or line printer); electronic report; weekly letter; or monthly log depending on the substance spilled, the amount spilled and whether the spill happened on water, land, within secondary containment or a building, or into air.

JPO received spill reports via each of these four protocols and reviewed each report upon receipt.

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the U.S. Coast Guard or Environmental Protection Agency, as appropriate). A single set of reporting requirements were developed and sent to Alyeska on December 21, 1994 (Letter No. 94-231-T).

Alyeska's internal spill reporting protocol is described in Section 7.4 of its *Environmental Protection Manual* (EN-43-1, Ed. 7, Rev. 0, December 31, 2001). A summary of the requirements for reporting spills to government agencies is contained in Section 1.3.3 of the Pipeline Oil Discharge Prevention and Contingency Plan (Alyeska document CP-35-1).

All telephone contacts and electronic reports are screened to determine the severity of the event and whether immediate agency oversight of the response and cleanup is warranted or whether there are any related integrity or procedural issues that merit investigation.

The weekly letters (one covering the pipeline and one for the Valdez Marine Terminal) and the monthly logs are also reviewed on receipt. No discrepancies from reporting requirements have been noted. We are unaware of any failure to report a spill.

**Background:** There are many more smaller spills, several ounces or cups, compared to larger spills, greater than 55 gallons. While a cumulative database of all spills reported from 1970 to present does not exist, there were over 4,500 spills (of all sizes) reported during pipeline construction. Between 1977 and 1996 there were just over 1,000 spills reported. From 1977 to October 31, 2001 there have been 154 spills of crude oil greater than 55 gallons.

When JPO receives a report of a spill, it looks at several major considerations.

First is the size and whether it is ongoing or stopped. Large spills, especially ongoing releases, require a timely response, including integration with the Incident Response Team, which includes state and federal on-scene coordinators and Alyeska. The second consideration is location and whether the oil is spreading. Spills that threaten sensitive resources are subject to the same response as larger spills that may be contained. Any spill that may impact health, subsistence or human safety is also responded to immediately. Another consideration is the cause of the spill. Even if the spilled oil is not a threat to the environment, if the cause of the spill is one that suggests a concern about pipeline integrity, the JPO agencies will initiate an analysis of the event and whether corrective actions are required.

**Conclusion:** There are no outstanding issues to be resolved.

## Stipulation 2.14 Contingency Plans

**Introduction/Requirements: 2.14.1.** It is the policy of the Department of the Interior that there should be no discharge of oil or other pollutant into or upon lands or waters. Permittees/Lessees must therefore recognize their prime responsibility for the protection of the public and environment from the effects of spillage.

**Discussion Results:** This is an administrative requirement.

**2.14.2.** Permittees/Lessees shall submit their contingency plans to the AO/SPC at least 180 days prior to scheduled start-up. The plans shall conform to this Stipulation and the National Oil Hazardous Substances Pollution Contingency Plan, 36 F.R. 16215 (August 20, 1971) and shall: (1) include provisions for Oil Spill

Control 1; (2) specify that the action agencies responsible for contingency plans in Alaska shall be among the first to be notified in the event of any pipeline system failure resulting in an oil spill; (3) provide for immediate corrective action including oil spill control and restoration of the affected resource; (4) provide that the AO/SPC shall approve any materials or devices used for oil spill control and shall approve any disposal sites or techniques selected to handle oily matter; and (5) include separate and specific techniques and schedules for cleanup of oil spills on land, lakes, rivers and streams, sea and estuaries.

**Discussion/Results:** Stipulation 2.14.2 applied prior to TAPS start-up and does not require continuous active monitoring.

**2.14.3.** Prior to pipeline start-up, such plans shall be approved in writing by the AO/SPC, and Permittees/Lessees shall demonstrate their capability and readiness to execute the plans. Permittees/Lessees shall update as appropriate the plans and methods of implementation thereof, which shall be submitted annually to the AO/SPC for written approval.

**Methodology: 2.14.3.** To monitor Alyeska's implementation of the C-PLAN, JPO's assessment (JPO No. ANC-02-A-010) focused on: field inventories of response equipment, and surveillances of field exercises and unannounced exercises. The AO approved Alyeska's Pipeline Oil Discharge Prevention and Contingency Plan (Alyeska document CP-35-1) through November 30, 2002, as documented by JPO letter No. 01-172-DG (April 4, 2002).

**Discussion/Results:** During 2001, all pump stations with oil spill response equipment were visited and the equipment inventories were checked. Also, mainte-

nance records for oil spill response were checked. There were no significant discrepancies in the equipment inventories and all equipment appeared to be in very good to excellent condition. The equipment inventories included opening randomly selected pallets and inventorying the contents, and starting randomly selected motorized equipment (JPO Surveillances ANC-01-S-003 through -008, JPO Letter No. 01-109-DG, and DEC letter to Alyeska, April 10, 2001).

Some inconsistencies were noted in the maintenance records for smaller pieces of equipment. As a result, Alyeska examined its preventive maintenance program for this spill response equipment and proposed improvements for tracking maintenance of the equipment (DEC letter to Alyeska, April 10, 2001 and Alyeska responses Government Letter No. 01-17176, May 23, 2001 and 01-17341, July 10, 2001).

**Exercises:** In addition to observing scheduled field exercises, including a joint Fairbanks Business Unit/Valdez Business Unit exercise on the Lowe River and the Port of Valdez (Surveillance ANC-01-S-015), JPO reviewed the exercise documentation at Pump Stations 1, 3, 4, 5 and 6. The records were compared to the requirements contained in the *Fairbanks Business Unit Oil Spill Response Exercise Program for the Trans Alaska Pipeline System*. In general, exercise documentation packages were complete, well organized and followed pre-developed format and contents. Individual stations followed the three-year exercise schedule and conducted exercises per the pump station and contingency plan scenario schedules.

## Contingency Plan Review

The TAPS oil spill contingency plans (C-Plan) must meet both the requirements of the Federal Agreement and Grant and ADEC administered Alaska regulations (18 AAC 75), Environmental Protection Agency administered regulations (40 CFR 112), Department of Transportation administered regulations (49 CFR 194) and, as appropriate, U.S. Coast Guard administered regulations (33 CFR 154). Based on these multiple requirements, the plans are subject to a major, multi-agency review every three years. Consistent with ADEC regulations, these reviews include public review portions including public meetings or hearings. JPO participates. Each agency has a list of plan requirements that is generally comprehensive and hence there is a wide range of overlap. Yet they vary considerably in degree of detail and prescription. In general, the ADEC regulations are considered both comprehensive and the most detailed, and thus form the framework of the joint review.

### Stipulation 2.14.3

Exercises range from routine pipeline right-of-way reconnaissance involving up to eight people to large scale tabletop/right-of-way equipment deployments involving approximately 50 people from adjacent pump stations. All pump stations conduct exercises involving pump station location scenarios. Tabletop and equipment deployment exercises all use ICS forms for sizing up the incident, creating an incident action plan and documenting actions using unit log forms. In all cases, the training rosters and the number of documented exercise participants were consistent.

Alyeska personnel involved in planning, conducting and documenting these exercises were commended for their work (JPO Letter No. 01-109-DG and surveillances ANC-01-S-003 through -008).

**Unannounced exercises:** Four unannounced exercises were held during fiscal year 2001.

On September 29, 2000 members of JPO's Oil Spill Team arrived at Pump Station 7 and at the gate of the Fairbanks Nordale Yard facility. The exercise package was delivered to the Operations and Maintenance Supervisor. The scenario required reconnaissance between Pump Stations 7 and 8. Agency representatives rode with each recon team. The objective of the exercise was to implement the reconnaissance as described in the C-Plan. Alyeska performed satisfactorily.

Drill observations were recorded in the Drill Evaluation Report (JPO Letter No. 00-068-JH, October 6, 2000). The follow-up actions were described in Alyeska Government Letter No. 00-16399 (October 19, 2000).

On December 21, 2000, JPO initiated an announced call-up exercise for Alyeska's Fairbanks Business Unit. The objective was to identify and verify the availability of qualified personnel to fill key positions in the Incident Management Team for a two shift, 24 hour operation. On December 28, 2000, a similar exercise was conducted at Alyeska's Valdez Business Unit. The objective was successfully met by both organizations (JPO Letter No. 01-014-CA, January 19, 2001).

On May 30, 2001 the Oil Spill Team presented an unannounced exercise at Pump Station 5, with 4 objectives revolving around a leaking tank scenario. All objectives were successfully met (Surveillance Report ANC-01-S-002). The

maintenance coordinator, who was the pre-designated initial incident commander and responsible for much of the organization's performance in the scenario, was fairly new to Pump Station 5 having worked only his second shift there. Pump Station 5 (like other pump stations) has a standard procedure of pre-designating individuals to an incident command organization chart at the start of each and every two week shift. This allowed the initial incident commander to immediately identify and contact the appropriate individuals to respond effectively to the scenario.

While none of these unannounced exercises completely tested Alyeska's ability to respond to a major event, they do demonstrate that the components of a successful response were present.

**Conclusion:** There are no outstanding issues to be resolved.

**2.14.4.** If, during any phase of the construction, operation, maintenance or termination of the pipeline, any oil or other pollutant should be discharged from the pipeline system, the control and total removal, disposal and cleaning up of such oil or other pollutant, wherever found, shall be the responsibility of Permittees/Lessees, regardless of fault. Upon failure of Permittees/Lessees to control, dispose of, or clean up such discharge, the AO/SPC may take such measures as they deem necessary to control and clean up the discharge at the full expense of Permittees/Lessees. Such action by the AO/SPC shall not relieve Permittees/Lessees of any responsibility as provided herein.

**Methodology:** 2.14.4. This assessment is based on the after action report for the October 4, 2001 oil spill at Mile Post 400. That report was completed jointly by

representatives of the agencies involved in the response and Alyeska.

**Background:** The state regulations require calculation of a Response Planning Standard Spill Volume (RPS), which for the pipeline is 53,259 barrels. The state regulations use this volume by saying that all of the oil that reaches water must be cleaned up in 72 hours. That which remains on land must be cleaned up as soon as possible. Because the 53,259 barrels volume is calculated for an area where very little oil will reach water, the Department of Environmental Conservation has agreed to use the second largest calculated volume, which is 52,050 barrels. State regulations allow a Prevention Credit of 5% (for drug and alcohol testing of key personnel) against that volume so it is reduced to 49,450 barrels. Of this, 17,574 barrels is assumed to be stranded on land, with the remainder, 31,876 barrels becoming the open water RPS. Alyeska must show the capability to recover this volume, from water, in 72 hours. Another RPS volume is computed for the pump stations. The maximum occurs at Pump Station 1, where, after reductions for oil retained by secondary containment and on land, the open water RPS is 39,648 barrels.

The plan includes required training for spill responders. There are more than 20 modules on subjects from spill prevention to reconnaissance to oil spill containment booming, plus hazardous materials courses (called HAZWOPER training). The modules include classroom and practical training, initial, and refresher training. Regularly, the most commonly

needed modules are taught together over a multi-day period.

There are other available responders besides Alyeska employees trained in oil spill response as a collateral duty. SERVS, an Alyeska entity which provides tanker escort and response services for the oil tanker companies and the Valdez Marine Terminal, is available to support a pipeline response. Alyeska is also a member of Alaska Clean Seas, a North Slope spill response cooperative. Responders and equipment from Alaska Clean Seas are available to assist in a spill response. Alyeska has also contracted with and provided training for members of Alaska Native organizations, including Rampart, Stevens Village and Minto, to provide additional responders.

**Discussion/Results:** Stipulation 2.14 directs Alyeska to be appropriately prepared to respond to an oil spill. The ultimate test of compliance is responding to an actual spill. On October 4, 2001 such a spill occurred.

After pipeline security alerted on suspicious behavior near the pipeline and then discovered the bullet holes in the pipeline, Alyeska and JPO sprang into action.

Proper telephonic notice was given according to regulatory requirements. An incident command organization, consistent with the approved C-Plan and the State-Federal Unified Plan, was formed and included a federal on-scene coordinator and a state on-scene coordinator as the Unified Command.

**Conclusion:** There are no outstanding issues to be resolved.

### A timely response...

Response time is an important consideration in spill response. The pipeline plan includes estimates of transit times from pump stations to sites along the pipeline in good weather conditions and foul conditions. In the Port of Valdez, protection of sensitive areas near the terminal includes being able to boom the Valdez Duck Flats and the Solomon Creek Fish Hatchery. Whether done simultaneously by multiple response teams, or sequentially, Alyeska is working to demonstrate to the agencies that the booming can be done more quickly than the 9 to 9.5 hours currently stated in the plan.



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*Pamela Stuart, BLM's special agent in charge and JPO's Dave Perez (ADNR) responded to the October 4, 2001 oil spill. The spill — caused by a bullet hole — required Alyeska and numerous governmental agency representatives to respond quickly to a real emergency (JPO image).*

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## Technical Stipulations

### Stipulation 3.1 General

The following standards should be complied with in design, construction, operation and termination of the pipeline system.

### Stipulation 3.2 Pipeline Safety Standards

**Introduction and Requirements:** Requirements cited in this stipulation include the primary regulatory requirements of Department of Transportation, Office of Pipeline Safety in Stipulation 3.2.1.1(2)(4), welding in Stipulations 3.2.2.3 and 3.2.2.5, lightning protection 3.2.2.6 and access roads 3.2.3.1-4. The following are the stipulations:

#### 3.2. Pipeline System Standards

#### 3.2.1. General Standards

**3.2.1.1.** All design, material and construction, operation, maintenance and termination practices employed in the pipeline system shall be in accordance with safe and proven engineering practice and shall meet or exceed the standards outlined in the sidebar on the next page.

**3.2.1.2.** Requirements in addition to those set forth in the above minimum standards may be imposed by the AO/SPC as necessary to reflect the impact of subarctic and arctic environments. If any standard contains a provision that is inconsistent with a provision in another standard, the more stringent shall apply.

#### 3.2.2. Special Standards

**3.2.2.1.** The design shall also provide for remotely controlled shut off valves at each pump station; remotely controlled mainline block valves (intended to control spills); and additional valves located with the best judgment regarding wildlife habitat, fish habitat, and potentially hazardous areas.

**3.2.2.2.** All practicable means shall be utilized to minimize injury to the ground organic layer.

**3.2.2.3.** Radiographic inspection of all main line girth welds and pressure testing of the pipeline shall be conducted by Permittees/Lesseees prior to placing the system in operation.

**3.2.2.4.** Permittees/Lesseees shall provide for continuous inspection of pipeline system construction to ensure compliance with the design specifications and these stipulations.

**3.2.2.5.** Welder qualification tests shall be by destructive means, except that operators of automatic welding equipment for girth welding of tank seams shall be tested by radiography in accordance with ASME Boiler and Pressure Vessel Code, Section 9, Subsection Q-21 (b).

**3.2.2.6.** Lightning protection shall conform to the requirements of ANSI C5.1-1969, "Lightning Protection Code-1968.17.

### **3.2.3. Standards for Access Roads**

**3.2.3.1.** Design, materials and construction practices employed for access roads shall be in accordance with safe and proven engineering practice and in accordance with the principles of construction for secondary roads for the subarctic and arctic environments.

**3.2.3.2.** Permittees shall submit a layout of each proposed access road for

approval by the AO/SPC in accordance with Stipulation 1.7.

**3.2.3.3.** Access roads shall be constructed to widths suitable for safe operation of equipment at the travel speeds proposed by Permittees/Lesseees.

**3.2.3.4.** The maximum allowable grade shall be 12 percent unless otherwise approved in writing by the AO/SPC.

**Methodology:** No CMP assessment or technical report for Stipulation 3.2 was planned for this monitoring cycle. The Office of Pipeline Safety's enforcement inspections were the principal oversight conducted on their regulations. An MOA was executed to address issues with lighting protection uncovered by the owners' DNV audit. The following assesses the key monitoring results for Stipulation 3.2.

**Methodology:** In 2000 and 2001, OPS conducted a thorough regulatory compliance and system integrity analysis of key TAPS operation and maintenance systems. The compliance inspections focused on:

- Geotechnical stability and pipeline support
- Corrosion control
- Supervisory Control and Data Acquisition (SCADA)
- Hydraulic and over pressure controls
- Mainline valves
- Relief tanks
- Oil spill contingency plans and response

The results of the inspections were entered into the JPO CMP database.

**Discussion/Results:** 49 CFR, Parts 190 through 199 required Alyeska to manage and maintain the Trans-Alaska Pipeline System according to regulatory and sound engineering practice. As a result of OPS comprehensive regulatory compliance

## **Pipeline system standards**

The following are safe and proven engineering practices and are adopted standards for the pipeline.

(1) U.S.A. Standard Code for Pressure Piping, ANSI B 31.4, "Liquid Petroleum Transportation Piping System."

(2) Department of Transportation Regulations, 49 CFR, Part 195, "Transportation of Liquids by Pipeline."

(3) ASME Gas Piping Standard Committee, 15 December 1970: "Guide for Gas Transmission and Distribution Piping System."

(4) Department of Transportation Regulations, 49 CFR, Part 192, "Transportation of Natural and Other Gas by Pipelines: Minimum Federal Safety Standards."

**The United States Department of Transportation's (DOT) Research and Special Programs Administration**

(RSPA), acting through the Office of Pipeline Safety (OPS), administers the Department's national pipeline safety regulatory program, pursuant to Chapter 601 of 49 United States Code to assure the safe transportation of natural gas, petroleum, and other hazardous materials by pipeline.

OPS develops and enforces regulations to assure safety in design, construction, testing, operation, maintenance, and emergency response of pipeline facilities. In addition, OPS incorporates industry standards from the American Petroleum Institute, the American Society of Mechanical Engineers, the National Fire Protection Association, and other standard organizations to enforce their pipeline safety regulations.

Since 1986, the entire pipeline safety program has been funded by a user fee assessed on a per mile basis on each pipeline operator OPS regulates.

inspections the following enforcement actions occurred.

1) *Notice of Probable Violation, Proposed Civil Penalty, and Proposed Compliance Order* (CPF # 5 2000 5018, Sept. 14, 2000), notified Alyeska of three probable violations of pipeline safety regulations Title 49, Code of Federal Regulations, Parts 195. The probable violations related to:

- Item 1: not having updated maps/records of the North Pole Metering facility. Alyeska was ordered to update their as-built drawings for the North Pole Metering facility.

- Item 2: pressure safety valves were improperly set following the hydrostatic testing of the meter skid at the North Pole Metering facility. Alyeska was assessed a civil penalty of \$25,000 and ordered to either lower the Maximum Operating Pressure (MOP) or redo the hydrostatic testing to higher pressure. Alyeska retested the facility to 1800 pounds per square inch to establish an MOP of 1400 pounds per square inch.

- Item 3: improperly securing the North Pole Metering facility. Alyeska was ordered to improve security at the front gate of the North Pole Metering facility. It reconstructed the facility's front gate.

The final order was issued on March 14, 2001. The case concurrently closed when Alyeska did not contest any of the allegations, corrected all deficiencies and paid the fines.

2) *Notice of Probable Violation and Proposed Compliance Order* (CPF # 5 2001 0012, December 3, 2001) notified Alyeska of three probable violations of pipeline safety regulations Title 49, Code of Federal Regulations, Parts 192 on its fuel gas line. The violations related to an

improperly designed valve vault; an exposed "buried" pipe at MP 84 hill; and outdated operations and maintenance manual. The NOPV was submitted to Alyeska and future actions are pending OPS review of Alyeska's response.

3) *Notice of Probable Violation, Proposed Civil Penalty and Compliance Order* (CPF No. 5 2002 5003, February 6, 2002 ) related to: tripped VSM anchors at Mile Post 170; not safely repairing the pipeline after Alyeska bypassed Pump Station 12, which increased the pressure at a site they were excavating; and not having appropriate pressure safety valve records. A civil penalty of \$80,000 was assessed. The NOPV was submitted to Alyeska. Future actions are pending OPS review of Alyeska's response.

4) Based on our investigation of the Trans-Alaska Pipeline bullet accident on October 4, 2001, the USDOT/OPS issued a *Warning Letter* (CPF 5 2002 5001, January 2, 2002 ) notifying Alyeska of its failure to file a written report to USDOT/OPS within 30 days. The report was not submitted until 57 days after the accident. Alyeska was notified that a similar future occurrence could result in an assessed civil penalty.

In addition to calendar year 2000 violation inspections, OPS also continued following up on probable violations issued to Alyeska during previous years. Those actions included:

1) *Notice of Probable Violation, Proposed Civil Penalty and Compliance Order* (CPF No. 5 2000 5006, February 10, 2000), relating to over pressure of the pipeline at Pump Station 5, settlement of the pipeline at Mile Post 652, to inadequate cathodic protection of Relief Tank 190. A civil penalty of \$75,000 was

proposed. An administrative hearing was conducted in February 2001, and the case is under final consideration by the hearing officer.

2) *Notice of Probable Violation, Proposed Civil Penalty and Compliance Order* (CPF No. 59502, March 5, 1999) notified Alyeska of three probable violations of pipeline safety regulations Title 49, Code of Federal Regulations, Parts 195. The probable violations related to:

Item 1: TAPS over pressure at Mile Post 568, and at Pump Station 7. Alyeska was assessed a civil penalty of \$50,000 and issued an order to review and modify pipeline operational procedures and controls.

Item 2: cracked fiberglass coating on above ground pipe at transition joints. Alyeska was issued an order to assess all such coating on the pipeline and repair those that are cracked.

Item 3: the fuel gas line became exposed at MP 13.02 and 16.57 and was washed out and lying in water at MP 78.6, 86, 84 mile hill, and 120 APS. The compliance order required Alyeska to take all practicable steps to protect its fuel gas line and associated appurtenances in those areas from future detrimental movement and external forces.

A final order was issued on May 8, 2001. Alyeska complied with all aspects of the proposed compliance order and the case was closed concurrently.

**Conclusion:** Alyeska responded to all notices and orders issued to them, either by requesting hearings to communicate additional evidence, by complying to final orders, or by correcting undisputed deficiencies in an appropriate time. Additional compliance history can be

obtained by visiting USDOT/OPS's web site at <http://ops.dot.gov/index.htm>

**Stipulation 3.2.1.2.** Authorizes the AO/SPC to establish requirements to reflect the impacts of arctic and subarctic environments.

**Stipulation 3.2.2.1.** This mainline valve-related stipulation is important for two reasons. First, it provides authority to require additional mainline valves for shutdown pump stations. Second, while it has not been so used, it could provide additional authority for the replacement of valves with significant and consequential leak through.

No compliance findings are outstanding regarding this stipulation.

**Stipulation 3.2.2.2.** No issues or findings related to this stipulation were identified through construction project monitoring. This stipulation becomes important during pipeline reroutes or large construction activities.

**Stipulation 3.2.2.3.** Mainline girth welds were radiographically inspected at mainline valve replacements. Pressure testing at the VMT this year complied with requirements (JPO Surveillance VMT-01-S-035). No issues or findings related to this stipulation were identified.

**Stipulation 3.2.2.4.** This stipulation involves both compliance with the approved design basis and during construction. This stipulation is significant during new pipeline/facility construction. No 2001 construction project was judged to invoke this stipulation. For 1999/2000, no deficiencies against this stipulation were cited (1999/2000 Construction CMP Report).

**Stipulation 3.2.2.5:** JPO twice verified that welder qualification tests were by destructive means (JPO Engineering

### Stipulation 3.2.2.1

The AO/SPC are satisfied with the number and location of current TAPS mainline valves. Valve testing, maintenance and replacement have been discussed in prior CMP reports (April 1999 TAPS Maintenance CMP, pages 14-16; 1999-2000 TAPS Maintenance CMP, pages 25-26). Three valves were replaced or repaired for leak through and a fourth, RGV 39, is scheduled for replacement in 2002. Check Valve 74, was replaced when it lost its seat ring (1999/2000 Operations CMP, pages 32-34).

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report No. 00-E-029—Check Valve 74 replacement and Surveillance Report No. 00-S-026—Mile Post 710 sleeve). A third JPO surveillance, JPO-99-S-097, documented that Alyeska welding plans captured the requirement for destructive testing for the RGV 60 replacement but JPO did not specifically verify this activity. No findings were identified. Monitoring of this requirement will continue during the upcoming RGV 39 replacement.

**Stipulation 3.2.2.6.** The Det Norske Veritas (DNV) Progress Review Report (TAPS owners’ compliance review) questioned Alyeska’s compliance with this stipulation. Alyeska and JPO entered into a Memorandum of Agreement (Alyeska Letter # 01-18019, December 20, 2001) and Alyeska agreed on a corrective action plan and schedule.

**Stipulation 3.2.3.1-4.** These stipulations involve standards for access roads. No new access roads were constructed in the last several years. In 2000, JPO wrote 13 surveillance reports (00-S-73, 74 and 83 to 93) closing out the work pad bridge audit action item that focused on revamping bridges to meet Stipulation 3.6.1.2.1 and its 50 year flood design requirement. These surveillance reports were also coded to this stipulation for its “safe and proven engineering practice...for arctic and subarctic conditions.” No findings were identified

**Conclusion:** There are no outstanding issues to be resolved.

### **Stipulation 3.3.1 Construction Mode Requirements**

**Introduction/Requirements:** This stipulation provides for the selection and

design of the above ground or buried construction.

**Methodology:** No mainline pipe has been replaced since the Atigun Pass reroute in 1991, therefore, the recent work was more documentary than evaluative. Work included a review of the database. Since some monitoring results were coded to this stipulation (virtually all of these should have been coded to Stipulations 3.9.1, or 1.18.1), these were reviewed as well.

**Discussion/Results:** Technical Report No. ANC-02-E-003 (February 28, 2002) discussed this requirement and provided post-construction history. There are no findings or orders outstanding on this subject.

An example of an issue that JPO previously coded to this stipulation was the Atigun Pass heat pipe first identified as a finding in JPO Surveillance Report No. 98-GS-068 and verified closed in Surveillance Report No. 99-S-111. This issue was later discussed in the 1999/2000 Operations CMP (page 16).

A second example involves depth of cover at over bends and side bends. This issue is discussed in the 1999/2000 Maintenance CMP (page 16) and subordinate engineering reports. This issue resulted in JPO Letter No. 01-012-DG (March, 22, 2001) establishing (under the authority of Stipulation 1.3.2 ) performance requirements for depth of cover for side bends and over bends. This letter also documented JPO’s concurrence that this issue should not be covered under Stipulation 3.3.

The AO/SPC see no need to revisit the historical use of this stipulation. No further compliance monitoring is planned.

Nevertheless, this requirement remains useful for future construction.

**Conclusion:** There are no outstanding issues to be resolved.

**Stipulation 3.4 Earthquakes and Fault Displacements**

**3.4.1.1.** The pipeline system shall be designed, where technically feasible, by appropriate application of modern, state-of-the-art seismic design procedures to prevent any oil leakage from the effects (including seismic shaking, ground deformation and earthquake-induced mass movements) of earthquakes distributed along the route as follows:

Zone	Richter magnitude
Valdez to Willow Lake .....	8.5
Willow Lake to Paxson .....	7.0
Paxson to Donnelly Dome .....	8.0
Donnelly Dome to 67 deg. N .....	7.5
67 deg. N. to Prudhoe Bay .....	5.5

**Methodology:** JPO reviewed the original TAPS seismic design, seismic design analysis and retrofit work mandated by BLM/QTC audit and past reviews by JPO staff and JPO work plan initiatives (JPO No. ANC-02-E-002, February 26, 2002). Alyeska conducted an internal audit of the company’s seismic program (Seismic Program Audit #01-09, October 12, 2001) and documented its findings to JPO in Government Letter #01-7768 (October 19, 2001).

**Discussion/Results:** Alyeska Audit #01-09 examined the seismic program from April 1, 1996 through June 30, 2001. Professional seismic systems consultants developed the audit program and supported the completion of the audit

fieldwork. The audit assessed TAPS seismic program criteria, internal controls, and implementation to assure that Alyeska had maintained seismic design integrity outlined in the design basis and to assure that plans for response and recovery to an earthquake event complied with design basis requirements.

The audit resulted in 10 findings. One finding was categorized as high risk (the lack of a fully staffed seismic coordinator to provide technical oversight of seismic engineering); seven findings were considered medium risk and two were low risk.

Alyeska’s Government Letter #01-7768 discussed the 10 findings, analyzed their significance, detailed management’s response and gave a corrective action date.

In May 2001, Alyeska published its inaugural annual *TAPS Earthquake Preparedness Program Management Plan* that identified necessary improvement to ensure TAPS facilities function as required during and after design basis earthquakes.

The January 2002 Engineering Report (ANC-02-E-002) determined that:

- The TAPS design basis ground motions are in alignment with current seismic engineering understanding of ground motions likely to occur along the pipeline route from Pump Station 1 to the Valdez Marine Terminal.
- The seismic integrity of TAPS was analyzed and the required retrofit work completed from Pump Station 1 to the VMT.
- The proper functioning of the pipeline design depends on proper maintenance by Alyeska and monitoring of the effects of

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**Seismic Design**

A BLM audit and TAPS Owners Assessment (1993 and 1994) identified problems related to seismic design adequacy of post-original construction of TAPS facilities and the failure to implement a seismic preparedness program. The reports concluded that TAPS facilities were initially designed and constructed to state of the art seismic design criteria and standards, however, new or modified TAPS facilities were allowed to drift out of compliance. Alyeska’s extensive work responding to the BLM/TAPS owners audit allowed Alyeska to regain seismic design control. JPO verified and closed the seismic audit issues.

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## Earthquake Monitoring System

The EMS is required as part of Alyeska's overall operations supervisory system.

The 1993 TAPS owners audit (AAI 2080) found the Digital Strong Motion Accelerographs, now called the Earthquake Monitoring System, was out of compliance with the original Notice to Proceed for Terminal Control System (TCS-XX-1). It was found that stations at Pump Station 1 and 4 were removed and the recording system was removed at all stations. The system was replaced in 1998 and verified operational as part of closure plan CAP387 for AAI 2080 (August 19, 1998)

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changing (thawing) soil conditions on the effectiveness of the design.

- The completion of the work items in the TAPS 2001 Earthquake Preparedness Plan will strengthen Alyeska Seismic Program and resolve most of the findings of the Seismic Program Audit. JPO will monitor this completion and additional items proposed in the response to the Audit #01-09. Alyeska's scheduled completion is the end of 2002. Of particular interest is the completion of an Earthquake Emergency Response Plan that emphasizes seismic damage assessment and reconnaissance to potential seismic geo-hazards. The recommendation is to drill and test the plan.

JPO is satisfied that issues and concerns related to Stipulation 3.4.1.1 are being addressed by Alyeska. No findings, notices or orders are outstanding.

**Conclusion:** There are no outstanding issues to be resolved.

**3.4.1.2.** Where such design is not technically feasible, the potential damage from an oil spill shall be minimized by special design provisions that shall include, but shall not be limited to: (1) a network of ground-motion detectors that continuously monitor, record and instantaneously signal the occurrence of ground motion in the vicinity of the pipeline reaching the operational design level (the critical levels of ground motions shall be approved in writing by the AO/SPC); (2) rapid programmed shutdown and prompt close inspection of system integrity in the event of ground motion reaching the operational design level; and (3) a special contingency plan for oil spill control for each such seismically hazardous area which shall be filed in accordance with Stipulation 2.14. This plan shall specifi-

cally consider expected field conditions in the particular area in the aftermath of a destructive earthquake.

**Methodology:** To determine compliance, JPO staff requested (JPO Letter No. 01-050-DG, May 11, 2001) that Alyeska conduct a test of its Earthquake Monitoring System (EMS) on Sept. 22, 2001 to ensure that the EMS met the requirements specified in JPO Letter No. 01-008-DG (May 8, 2001). The test focused on the EMS's ability to shut down the pipeline in response to an operational design level earthquake. A secondary test function sampled the EMS capability to generate a list of facilities requiring post-earthquake inspection. TAPS Technical Report (JPO No. ANC-01-E-008, December 18, 2001) documented the results of this test.

**Discussion/Results:** During the multi-station test of the EMS in September 2001, an earthquake was simulated at three stations by transmitting a test script from the station at the Valdez Operations and Control Center to Pump Station 11 and Pump Station 12. The interpretation of the EMS requirements were specified in JPO Letter # 01-008-DG. The three provisions are summarized as:

- (1) Alyeska must have an operating earthquake monitoring system that detects, records and signals that earthquakes of the operational design level has been reached. The design level is defined in the Grant/Lease as the highest level that would not produce a general pipe deformation sufficient to limit operations. That is considered equivalent to the Design Basis (DB-180) Design Contingency Event. It is the level of acceleration for which the design may approach the point of failure but generally not reach it.

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(2) The system shall initiate a rapid programmed shutdown if the ground motion equals the operational design level with the caveat the operator will have 10 minutes to intercede and prevent a shutdown with the prime directive to minimize oil spillage.

(3) The EMS shall determine limits of the pipeline experiencing ground motion exceeding the operational design level and generate a list of facilities experiencing ground motion exceeding this level.

In JPO Surveillance 99-S-106 (October 25, 1999), JPO determined that all stations were operating except the vertical component of acceleration at the Valdez Station which was found outside calibration limits. In Surveillance JPO-00-S-001 (January 6, 2000) the situation was verified as fixed.

The September 22 test generated results for alarm performance (alarms triggered as expected), shutdown performance (the area for inspection provided by the EMS exceeded the standard set in JPO Letter #01-008-DG and the performance was successful); and generation of list facilities experiencing ground motion exceeded the operational design level. The EMS identified areas where it calculated the severity of the earthquake exceeded 50% of the Design Contingency Earthquake (DCE), except no facilities were designated for inspection at the Valdez Marine Terminal even though the response level at VMT would have been 139% DCE. The omission of the VMT did not meet the performance requirements of JPO Letter #01-008-DG. Alyeska Seismic Program Audit #01-09 (October 12, 2001) also found this condition in Finding #01-09.

Alyeska communicated to JPO that the EMS inspection checklist is scheduled to be undated by the end of 2001 (TAPS Earthquake Preparedness Management Plan, July 16, 2001). In its letter (No. 01-189-DG, December 19, 2001), JPO reiterated to Alyeska that the current state of inspection checklist was unacceptable. "Please ensure the inspection checklist generated by the EMS is complete and provide evidence of such by February 28, 2002."

With this checklist ready in an event of a large earthquake, Alyeska is not out of compliance with Stipulation 3.4.1.2.

**Conclusion:** There are no outstanding issues to be resolved.

### Stipulation 3.4.2 Fault Displacements

**3.4.2.1.** Prior to applying for a Notice to Proceed for any construction segment, Permittees/Lesseees shall evaluate the risk of oil leakage resulting from fault movement and ground deformation and show it has been adequately assessed and provided for in the design of any proposed new facilities within a fault zone to the satisfaction of the AO/SPC.

**Methodology:** JPO compared Design Faults to those used in the 1999 U. S. Geological Service Alaska Hazard Assessment Maps and examined pipeline faults zones for construction since start-up.

**Discussion/Results:** There are three identified active faults crossing the TAPS right of way: Denali, McGinnis Glacier, and Donnelly Dome. A review of the 1999 Probabilistic Seismic Hazard Maps of Alaska showed no newly identified faults crossing TAPS pipeline route.

**Conclusion:** There are no outstanding issues to be resolved.

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Alyeska has acknowledged the EMS inspection checklist deficiency (Alyeska Letter No. 02-18229) and agreed to correct the deficiency in the computer software by June 2002. As an interim measure Alyeska provided a paper copy of the correct checklist to the Operation Control Center supervisor and the Valdez engineering manager.

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There are three identified active faults that cross TAPS. An active fault is one that would cause ground breakage at or near the pipeline alignment. This image is the Denali Fault—a major tectonic feature crossing Alaska from east to west (JPO image by Doug Lalla).

**3.4.2.2.** If Permittees propose any new segments of the pipeline within active fault zones, they are required to

- (1) resist failure resulting in leakage from two feet of horizontal and/or vertical displacement in the foundation material anywhere within the fault zone; and
- (2) exclude storage tanks or pump stations within the fault zone.

**Methodology:** JPO examined pipeline fault zones to determine if there was any new construction since start-up. Additionally, JPO reviewed the current Fault Crossing Designs.

**Discussion/Results:** Examination of the pipeline right of way found no new construction in the three designated fault zones. After reviewing the available Fault Crossing Designs documentation, JPO determined that design documentation was not fully explanatory. JPO then requested that Alyeska clarify and validate the original fault crossing design. Alyeska provided a *Fault Crossing*

*Design Assessment Final Report* prepared by Michael Baker Jr., Inc. (February 8, 2002). The report showed that the modeling of the pipeline movement in response to maximum fault displacement was consistent with the original design analysis. There were three pipe support beams (bents) at the Denali Fault where the pipe displaced slightly beyond the limits of the cross beams at the full design temperature. The pipeline currently operates far below the maximum design temperature. Analysis of the Denali Fault Crossing has been incorporated into the Above Ground Pipeline Reliability Centered Maintenance Analysis.

Based on Alyeska's above ground fault crossing assessment and the incorporation of small discrepancies found in the *Above Ground Pipeline Reliability Centered Maintenance Analysis*, Alyeska is not out of compliance with Stipulation 3.4.2.2.

**Conclusion:** There are no outstanding issues to be resolved.

**3.4.2.3.** Where the pipeline crosses a fault or lies within a fault zone that is reasonably interpreted as active, Permittees/Lessees shall monitor crustal deformation in the vicinity of the pipeline. Such monitoring shall include annual geodetic observation of permanent reference marks established on stable ground. Said reference marks shall be positioned so as to form closed figures and to detect relative horizontal and vertical displacements as small as 0.10 feet across principal individual faults within the fault zone and to provide for monitoring of crustal strain with an absolute error of two parts per million within the fault zone. Further, where annual slip on a fault exceeds 0.10 feet for two successive years, Permittees/Lessees shall install recording or

telemetering slip meters. Data obtained from the monitoring shall be provided to the AO/SPC at specified regular intervals throughout the operational life of the pipeline. Said data shall be used by the Permittees/Lessees to help initiate corrective measures to protect the pipeline from failure caused by tectonic deformation that would result in leakage.

**Methodology:** JPO checked the position of the pipe and the position of the Denali Fault and compared it to the design (JPO Surveillance ANC-01-S010 (July 6, 2001). JPO also reviewed Alyeska's Fault Crossing Design Assessment and examined the original fault design (Alyeska report, February 8, 2002).

**Background:** Originally this stipulation required Permittees/Lessees to annually monitor any fault that crossed the pipeline to an accuracy of two parts per million to protect the pipeline from failures caused by tectonic deformation. Alyeska asked and the Department of the Interior granted relief from this requirement for the three known active faults. In September 1977, the Department of Interior (Letter No. P001-TAPS-3853) reviewed Alyeska's request and determined that other means of monitoring pipeline deformation or displacement acceptable to the AO/SPC and approved by them in writing may be used.

In December 1988, the AO/SPC (JPO Letter No. P001-TAPS-3853, December 29, 1988) allowed Alyeska to discontinue fault monitoring but required annual assessment of survey monument points from which movement could be detected if there were a major seismic event.

Alyeska conducted additional surveys at the fault crossings in 1993, 1994. Alyeska documented the results of the

fault crossing surveys. The report found no identifiable trends in the direction of the predicted direction of fault movement. The observed movements were attributed to flawed measurements and geotechnical instabilities that could be the result of settlement, jacking or local ground shifting.

In 1995, Alyeska, with JPO's participation, conducted a risk assessment of its fault monitoring policy. This risk assessment recommended that a future fault monitoring survey be conducted when annual observations indicated significant ground or pipe movement, and after a significant earthquake on any fault.

In order to formalize the fault monitoring requirements and assure the design limits of movement are maintained the AO/SPC, under the authority of Stipulation 1.3.2 (JPO Letter No. 01-010-DG), authorized Alyeska to evidence the pipeline was within the design limits at the three identified faults by documenting and reporting annually the pipe position on the support beams.

JPO conducted a 2001 surveillance and determined the pipe was positioned correctly on the supports, assuring the design limits of movement could be accommodated at the Denali Fault. Prior to the surveillance, JPO conducted a search of available records to determine the design limits. The design records did not fully explain or discuss the design. To assure that the design was fully documented and that the pipe position at the three faults was correct, JPO requested that Alyeska "provide clarification and validation of the original fault crossing design, and verification that the pipe is located on its supports in compliance with design."

### Stipulation 3.4.2.3

In 1988, the Bureau of Land Management authorized Alyeska to discontinue annual fault monitoring.

This was done after several years of measurements that showed no significant movement. It required Alyeska to:

- Annually inspect the fault monitoring monuments to check for damage and/or subsidence.
- Ensure all monuments are well marked and protected from human disturbance.
- Provide a survey of monitoring points after any major seismic event.

In 1995, Alyeska, with JPO participation, conducted a risk assessment of its fault monitoring policy. The recommendation was to conduct future fault monitoring survey when annual observations indicated significant ground or pipe movement and after significant earthquakes on any the faults.

The AO/SPC formally required Alyeska to provide evidence the pipeline was within the design limits at the three identified faults by documenting and reporting annually the pipe position on the support beams.

## Stipulations 3.5 and 3.9

Major work efforts for Stipulations 3.5 and 3.9 oversight include:

- RCM studies of the above ground pipe system;
- Field surveillance and assessment reports;
- Defining grant and lease compliance requirements by developing JPO performance standards;
- Investigating thawed ground conditions at numerous locations along TAPS, and the effect such thawed conditions may have on the stability of affected slopes.

**Discussion/Results:** In 2001, JPO confirmed that the position of the pipe at the Denali Fault meets the original design position requirements (JPO Surveillance # ANC-01-S-010, July 6, 2001). Upon JPO's request, Alyeska reassessed the original fault crossing designs and provided the report, *Fault Crossing Design Assessment Final Report* (February 8, 2002). The results of this analysis, in terms of pipe configuration monitoring, is incorporated into the *Above Ground Pipeline Reliability Center Maintenance Analysis*.

**Conclusion:** The RCM process will be used to help review this stipulation.

### Stipulation 3.5 Slope Stability, and Stipulation 3.9 Construction and Operations

**Introduction/Requirement:** Stipulation 3.5 *Slope Stability* requires that if unstable slopes cannot be avoided, then the pipeline must be protected from potential ground movement.

Stipulation 3.9 *Construction and Operation* requires that degradation of permafrost shall not jeopardize pipeline foundations. It should be recognized that one half of the pipeline (approximately 400 miles) is built above ground on thaw unstable soil. There are numerous slopes that consist of unstable soils either with or without a potential for soil liquefaction. Thus, wherever there may be thaw unstable soils on slopes that have thawed, there could be a potential to jeopardize pipeline foundations. Examples of this condition have occurred in the past on the Klutina Hill, where thawing was arrested through the use of additional insulation

with wood chips, and on the Squirrel Creek slopes, that experienced a general ground thawing. Previous and current work at JPO has endeavored to identify those locations subject to thawing that would potentially jeopardize pipeline foundations. JPO follow-up oversight is based on the results of the recent Reliability Centered Maintenance (RCM) analysis of the above ground pipe.

Under these stipulations, JPO has focused on the following aspects of slope stability:

- Identifying slopes and other locations on the pipeline exhibiting symptoms of thawed ground in conjunction with above ground pipe;
- Identifying slopes with questionable factors of safety in view of changing environmental conditions;
- Conducting an RCM analysis of the above ground pipe system;
- Replacing Vertical Support Members (VSMs) on the northern slope of Squirrel Creek (MP 717);
- Improving the monitoring and maintenance of slopes, and the above ground pipe support system.

Stipulations 3.5 and 3.9 share a common denominator of thawing or thawed ground as the root cause of various effects on the above ground pipe support system and the stability of some slopes, especially under dynamic conditions.

**Methodology:** This is the third CMP work plan where TAPS issues on slope stability and construction and operations were evaluated (1999-2000 Maintenance CMP reports and April 1999 Maintenance CMP Report). This oversight included Alyeska documentation reviews (i.e., studies and engineering reports), field surveillance activities, and consulting with

various experts on cold region engineering. Since 1998, two slope stability assessments were published, there have also been nine surveillances, six findings, one order, and two design basis variance approvals. Corrective action from all findings and orders to date have been closed. Field surveillance identified those locations where permafrost degradation has led to potentially jeopardizing select above ground pipe or pump station facilities.

**Discussion/Results:** Two assessments (ANC-01-A-012 and ANC-01-A-013) of Stipulations 3.5 and 3.9 were completed. Both assessments recognized a common issue that may affect both slope stability and degradation of permafrost, which in turn might jeopardize pipeline foundations or facilities. This common issue is the thawing of warm permafrost south of the Brooks Range. Current and future JPO work continue to investigate this issue in concert with Alyeska's ongoing monitoring, special studies, and project work.

JPO issued special performance standards for Stipulation 3.5 via letter no. JPO-01-009-FC, and for Stipulation 3.9 by Letter No. JPO-01-110-DG. JPO also requested information from Alyeska via Letter No. 01-157-DG to identify pipeline locations that have thawing ground conditions. Alyeska initiated a geo-hazards study to identify such locations.

**Orders and Notices:** In 1999, Order No. 1 (99-063-JH) required repairs to the above ground system at Squirrel Creek (MP 717). After corrective action by Alyeska, this order was closed in 2000 (00-012-WT). No new orders or notices have been issued. There are no outstanding orders or notices regarding Stipulations 3.5 and 3.9.

**Design Basis Variances:** Two design basis variances were approved:

(1) A static factor of safety for the Pump Station 11 hill being slightly less than design basis criteria, and

(2) A dynamic factor of safety for the Squirrel Creek slopes being slightly less than design basis criteria.

**Conclusion:** Assessments on both slope stability and construction and operations have concluded that thawing of warm permafrost south of the Brooks Range on TAPS presents potential long-term geotechnical maintenance and monitoring elements for the above ground pipe support system. An ongoing RCM study of the above ground pipe will address numerous potential failure modes and follow-up tasks to address a variety of above ground pipe monitoring and maintenance issues.

### **Stipulation 3.6 Stream and Flood Plain Crossings and Erosion**

**3.6.1.1.** For each region through which the pipeline passes, the pipeline shall be designed to withstand or accommodate the effects (including runoff, stream and flood plain erosion, meander cutoffs, lateral migration, ice-jams, and icings) of those meteorologic, hydrologic (including surface and subsurface) and hydraulic conditions considered reasonably possible for the region. The following standards shall apply to such pipeline design:

**3.6.1.1.1.** For stream crossings and portions of the pipeline within the flood plain.

**3.6.1.1.1.1.** The pipeline shall cross streams underground unless a different means of crossing is approved in writing by the AO/SPC.

Considerable effort has been expended in conducting an RCM analysis of the above ground pipeline support system. The effort is still in progress at the time of this report but will be published in April 2002.

### Stipulation 3.8

The AO and SPC modified Alyeska's glacier monitoring requirements in 2001. The modifications require Alyeska to:

- prepare a generic contingency plan for glacier surges
- take and analyze aerial photographs of the glaciers every five years; if a glacier is estimated to reach the pipeline within five years, then aerial photos will be taken and analyzed annually
- survey Black Rapids and Canwell glaciers semimonthly to assure a glacier surge does not go undetected
- prepare a contingency plan for a glacier that is expected to reach the pipeline in less than five years; if analysis indicates that a glacier is likely to threaten the pipeline in less than two years, a conceptual engineering study will be completed and measures executed to protect or relocate the threatened pipelines facilities.

**3.6.1.1.12.** The design flood shall be based on the concept of the "Standard Project Flood" as defined in Corps of Engineers Bulletin 52-8, Part 1.

**3.6.1.1.3.** The depth of channel scour shall be established by appropriate field investigations and theoretical calculations using those combinations of water velocity and depth that yield the maximum value. At the point of maximum scour, the cover over the pipe shall be at least 20% of the computed scour, but not less than four feet.

**3.6.1.1.4.** For overhead crossings, comparable analysis shall be made to ensure that support structures are adequately protected from the effects of scour, channel migration, undercutting, ice forces and degradation of permafrost.

**3.6.1.1.5.** In flood plains, appropriate construction procedures shall be used wherever there is potential channelization along the pipe.

**3.6.1.1.6.** The pipe trench excavation shall stop an adequate distance from the water crossing to leave a protective plug (unexcavated material) at each bank. These plugs shall be left in place until the stream bed excavation is complete and the pipe laying operation is begun. The plugs shall not be completely removed until absolutely necessary. The trench shall be backfilled with stable material as soon as the pipe is laid.

**3.6.1.2.** Culverts and Bridges. Culverts and bridges necessary for maintenance of the pipeline shall be designed to accommodate a 50 -year flood in accordance with criteria established by the American Association of State Highway Officials and the Federal Highway Administration and endorsed by the State of Alaska Department of Highways.

**Methodology:** Alyeska monitors the river and floodplains crossings along TAPS by implementing the MP-166 River and Floodplain Monitoring program. JPO conducted periodic field surveillances coupled with review of these annual MP-166 reports.

When JPO and Alyeska monitoring identifies a breached river in need of repair; Alyeska submits permit requests necessary to complete the repairs. These permit requests require a design submittal for JPO review. JPO conducts design reviews and field surveillance activities for select repair projects.

**Discussion/Results:** For each stream and floodplains region through which the TAPS passes, the pipeline was designed to withstand or accommodate the effects of hydrologic and hydraulic conditions considered reasonable for the region. A summary of design criteria and historical documentation for these "crossings" is summarized in Report JPO-99-E-018, *Summary Report on the River/Floodplain Crossings of the Trans-Alaska Pipeline System (TAPS)* (August 27, 1999).

Between Prudhoe Bay and the Port of Valdez, Alaska, the Trans-Alaska Pipeline crosses a large number of both major and minor rivers. An objective of the pipeline design was to ensure integrity of the pipeline under all possible flow conditions within a diversity of river types and to minimize disturbances to the environment resulting from construction and operation of the pipeline. Design criteria were established for all anticipated conditions and a field program conducted in 1973 led further to the finalization of the criteria. Criteria were also developed in accordance with the requirements of applicable

codes and the stipulations for the Grant/Lease for TAPS.

The design of the buried river and floodplain crossings required consideration of many factors. The fundamental criterion for pipeline integrity was to ensure that the pipe not become exposed by the various forces related to stream flow. Processes that could result in exposure are riverbed scour, floodplain erosion, and lateral channel migration. In addition, these processes are affected by the occurrence of aufeis and pipeline related thermal effects. The final design, based on generally accepted engineering methods, resulted in pipeline placement at burial depths with sag points located such that the pipe is not expected to become exposed due to river channel migration. For elevated crossings, adequate freeboard was provided for Coast Guard navigation requirements and/or pipeline design flood levels. Debris and ice ride-up were also considered in establishing freeboard.

JPO Technical Report FBU-02-E-003 summarized the results of the JPO CMP database. The database identified 62 reports of monitoring this stipulation that contained 187 attributes that were measured. Of this number, eight unsatisfactory conditions were noted. At the present time all “unsat” conditions have been corrected and the findings are closed.

The most significant issue was corrective action. The Alyeska system integrity team engineers identified situations requiring corrective action, the issues were referred to Alyeska asset managers but there would be no formal link to budgeting or fix. Many times the fix was completed. Sometimes it was not. The February 28, 2002 signed memorandum of

agreement (Stipulation 1.18, 1.20 and 1.21) contains both interim and longer term actions to address this gap between issue identification and resolution.

**Conclusion:** There are no outstanding issues to be resolved.

### Stipulation 3.7.1 Sea Waves

**Introduction/Requirement:** This stipulation is specific to the Valdez Marine Terminal (VMT) and requires that the VMT be protected by cutoff devices designed and located to prevent major oil leakage from breaking of pipes by destructive sea waves comparable to those generated in Port Valdez by the March 27, 1964 earthquake. The AO/SPC interpret this stipulation to mean that the cutoff devices (i.e., valves) be demonstrated as functional.

**Methodology:** JPO clarified and specified the scope of Stipulation 3.7 and worked cooperatively with Alyeska to ensure that the JPO-approved TAPS design basis identified the specific valves covered by this stipulation. This included reviewing applicable piping and instrumentation drawings for inclusion of important ancillary valves. JPO then conducted three surveillances to compile evidence that the valves are functional and issued an assessment report.

**Discussion/Results:** Assessment No VMT-01-A-001 was issued May 4, 2001 and included three surveillance reports that documented valve stroking tests or operations that JPO found to demonstrate valve functionality. The surveillances documented the specific test or operations which demonstrated that each group or type of valves worked.

With the use of the defined term “oil” in this stipulation, the breadth of this



**The Valdez Marine Terminal.**

*Stipulation 3.7.1 requires that the VMT be protected by cutoff devices designed and located to prevent major oil leakage from breaking of pipes by destructive sea waves comparable to those generated in Port Valdez by the March 27, 1964 earthquake.*

## Improved Cathodic Protection

TAPS was originally constructed with passive zinc anodes (two zinc strips, one on each side of the pipe) as the primary source of cathodic protection. Now approximately 310 of the 380 miles of buried mainline pipe are protected by impressed current cathodic protection.

stipulation was defined in Stipulation 1.1.1.16 to cover unrefined liquid hydrocarbons. Valves in the Crude Oil Loading System, the Ballast Water Piping System (BWPS), and the Tanker Vapor Control System (TVCS) were evaluated in this assessment because they can stop the flow of oil toward the ocean.

All of the surveillance attributes were found to be satisfactory and no findings were issued against this stipulation.

**Conclusion:** There are no outstanding issues to be resolved.

### 3.8 Glacier Surges

**Introduction/Requirements:** The stipulation requires Alyeska to install surveillance systems to adequately warn of impending glacier surges that could potentially damage the pipeline system. Procedures to initiate and operate these surveillance systems and protective procedures in the event of surges will be submitted in accordance with Stipulation 1.7.

**Methodology:** In December 2001, JPO evaluated Alyeska's programs and activities as they related to this stipulation and conducted a surveillance (FBU-01-E-009 revision 1 and FBU-S-01-033). JPO also researched the CMP database and other internal sources. Prior JPO evaluations included a CMP Report: Evaluation of APSC Operations of TAPS, February 1999; that relied upon 1997 Assessment Report (97-A-018, December 23, 1997); and Surveillance Report (JPO-97-GS-043).

**Discussion/Results:** Glaciers that are currently monitored under this provision are: Black Rapids, Castner, Fels, Canwell and Worthington. In March 2001, the AO/SPC invoked special provisions (Stipula-

tion 1.3.2) to modify Alyeska's glacier monitoring requirements (JPO Letter No. 01-011-DG).

On May 31, 2001 Alyeska informed JPO (Government Letter No. 01-17204) of its compliance. In April 2002, the glacier surge contingency plan will be added to Alyeska's System Integrity's Monitoring Procedure (MP-166-2.06, Section 5.2.2.C). The aerial photography schedule is contained in Alyeska's System Integrity's Monitoring Procedure (MP-166-2.06, Section 5.2.2.D.2).

JPO Surveillance Report FBU-S-01-033 documented Alyeska's actions and determined they complied with the special requirements.

**Conclusion:** There are no outstanding issues to be resolved.

### 3.10. Pipeline Corrosion

**Introduction/Requirement: 3.10.1.** Permittees shall provide detailed plans for corrosion resistant design and methods for early detection of corrosion. These shall include: (1) pipe material and welding techniques to be used and information on their particular suitability for the environment involved; (2) details on the external pipe protection to be provided (coating, wrapping, etc.), including information on variation of the coating process to cope with variations in environmental factors along the pipeline route; (3) plans for cathodic protection including details of impressed ground sources and controls to ensure continuous maintenance of adequate protection over the entire surface of the pipe; (4) details of plans for monitoring cathodic protection current including spacing of current monitors; (5) provision for periodic intensive surveys of trouble spots, regular preventive mainte-

nance surveys and special provisions for abnormal potential patterns resulting from the crossing of the pipeline by other pipelines or cables; and (6) information on precautions to be taken to prevent internal corrosion of the pipeline. Permittees shall also provide for periodic internal pitting surveys by electromagnetic or other means.

**Methodology:** JPO Engineering Report No. 00-E-021 TAPS Corrosion History (June 22, 2000) provided a complete history of TAPS corrosion and corrosion monitoring efforts. A summary of the more significant historical events was published in the 1999/2000 TAPS Maintenance CMP Report (pages 17-18 ). The issues and compliance determinations (page 19) remain in effect.

**Discussion/Results:** JPO Engineering Report No. 00-E-028 explained JPO and Alyeska's efforts in TAPS Corrosion Monitoring and Control and provides the basis for the compliance determination cited in the 1999/2000 Maintenance CMP Report. Alyeska's below ground corrosion excavations and pipe inspections are continuing in 2002. With the improvement of ultrasonic corrosion pigs (the measuring instruments that travel inside the pipe measuring pipe thickness) the challenge will be to identify and abate corrosion growth. JPO engineering staff finds no basis to change the CMP determination.

**Conclusion:** There are no outstanding issues to be resolved.

### Stipulation 3.11 Containment of Oil Spills

**Introduction/Requirements: 3.11.1.** Permittees shall provide oil spill containment dikes or other structures around

storage tanks at pump stations and at the Valdez terminal. The volume of the containment structures shall be at least: (1) one-hundred ten (110) percent of the total storage volume of the storage tanks in the relevant area, plus (2) a volume sufficient for maximum trapped precipitation and runoff which might be impounded at the time of the spill. Such structures shall be constructed to withstand failure from earthquakes in accordance with Stipulation 3.4 and shall be impervious so as to provide seepage-free storage until disposal of their contents can be effected safely without contamination of the surrounding area.

**3.11.2.** Permittees shall provide containment dikes or other structures to minimize effects of oil spills at critical locations along the pipeline in accordance with Stipulation 2.14.

**Methodology:** This analysis was based on the results of a study that Alyeska was required to conduct as a condition of approval of the oil spill contingency plan set in 1998. The study, including its methods and conduct, were closely observed by JPO.

**Discussion/Results:** Secondary containment is required around storage tanks at all pump stations and the Valdez Marine Terminal. The capacity and design requirements of the permanent tank farms at the pump stations and the VMT generally received their design review prior to construction. Since then, Pump Station 1 has constructed additional containment berms and the condition of the secondary containment at all pump stations was reviewed to ensure compliance with 18 AAC 75.075.

The stipulation also addressed additional containment as required by the oil

### Corrosion Monitoring

Since 1997, there have been more than 800 corrosion investigations (i.e., corrosion digs) of the below ground pipeline.

JPO monitoring of TAPS corrosion is an interagency endeavor. Department of Transportation's Office of Pipeline Safety is actively involved in regulating Alyeska to corrosion management and cathodic protection requirements in 49 CFR 195. JPO expects to continue this monitoring for the life of TAPS. Should future work require revisions of TAPS corrosion plans or programs, the AO/SPC have the authority to request plans, surveys or information.

spill contingency plan. While Alyeska is in the process of planning and constructing berms at or near the pipeline crossings with the Gulkana River, the Tonsina River and the Klutina River, these berms are not

required by the AO/SPC and therefore not presently subject to Stipulation 3.11.2.

**Conclusion:** The permeability of the liner in its current condition exceeds the criteria for the original installation. No outstanding issues need to be resolved.



**“Protecting human safety and the environment through oversight and monitoring have been and will continue to be JPO’s major objectives.”**

– Jerry Brossia, Authorized Officer

– John Kerrigan, State Pipeline Coordinator