



## **Comprehensive Monitoring Program Report**

### **TAPS Construction Program 1999/2000**

January 2001

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### **Executive Summary**

#### **Purpose**

The Joint Pipeline Office (JPO), 1999/2000 Construction Comprehensive Monitoring Program (CMP) provided oversight of construction activities, defined as the process by which modifications are made to the Trans Alaska Pipeline System (TAPS). Oversight of this process provided a unique opportunity for the JPO to assess compliance of several Grant/Lease requirements for many different TAPS facilities, throughout the 800-mile pipeline system.

Additionally, this CMP effort served to measure readiness for closure of Audit Action Item (AAI) 1955, one of only two remaining priority-one audit items from the 1993 BLM audit of TAPS. The deficiency identified by AAI 1955 was that drawings and data were not current and inaccurately represented the installed systems, leading to allegations that TAPS was "indeterminate."

#### **Scope/Methodology**

The construction oversight strategy implemented by JPO incorporated the entire life of a construction project, from the conceptual design phase through to the closeout phase and the associated document revision process. While JPO monitored all phases of construction activities, the scope of this report is heavily focused on the document revision process. The effectiveness of this process is integral to closure of AAI 1955 as well as compliance to the Grant/Lease requirement for maintenance of current and accurate records.

Alyeska Pipeline Service Company (APSC) governs the design, implementation, and closeout of modifications through adherence to the TAPS Engineering Manual (PM-2001) and, therefore, JPO oversight included measurement of compliance to this program. Compliance determinations were made by assessing the adequacy of both: 1) the documents identified as affected by a particular modification, and 2) the timely completion of those document revisions.

A representative sample of 26 projects was selected based primarily on integrity, environmental, and safety issues. The selected projects included the following subject areas:

- Valve Maintenance and Repair
- Corrosion Investigation and Repair
- Valve Control System Upgrades
- Civil Maintenance due to River Hydrology Changes
- Pipeline Bridge Investigation and Repair
- Y2K implementation
- Fuel Gas Line Remediation
- Upgrades to Control Systems Associated with Vapor Control

In addition to its own construction monitoring program, JPO leveraged information accrued from the self-diagnostic audits and surveillances performed by APSC's Audit Group to effectively focus oversight.

## **Results/Conclusions**

Of the 26 projects selected for oversight; 5 were not implemented, 2 were not monitored by JPO, and 3 were not required to comply with PM-2001. Seven of the remaining 16 projects were determined to be out of compliance with the Grant and Lease requirements for maintenance of current and accurate records. The overall change management performance was poor and provided little justification for closure of AAI 1955.

The evidence and conclusions presented in this report, however, are from projects implemented in 1999. APSC has spent a considerable amount of time and money on efforts to improve the efficiency of this process in the interim and JPO plans to select another representative sample of projects to measure as a part of the verification process necessary to consider closure of AAI 1955.

As a result of construction oversight, JPO determined that APSC is out of compliance with certain sections and stipulations of the Federal Grant of Right-of-Way and State Right-of-Way Lease specific to individual systems or programs. They are as follows:

## Section 9 of the Grant and Section 16 of the Lease - Construction Plans and Quality Assurance Program

- JPO finds APSC out of compliance with this section of the Lease because the quality program controls, established to determine supplier's capability for providing items and services that assure the integrity, maintenance, and safe operation of TAPS, are inadequate. In accordance with the Grant language, the Authorized Officer will evaluate the adequacy of APSC corrective action prior to revoking quality program approval.

### Stipulation 1.18 - Surveillance and Maintenance

- JPO finds APSC out of compliance with Stipulation 1.18.1 as they were unable to demonstrate that the pipeline bridge inspection program adequately ensures that identified maintenance deficiencies are corrected.
- JPO finds APSC's document management practices to be inconsistent with the requirements of Stipulation 1.18.3 as they were unable to demonstrate that complete and up-to-date records on construction activities are maintained.

### Stipulation 1.21 - Conduct of Operations

- JPO finds APSC out of compliance with Stipulation 1.21.1 as they were unable to demonstrate that the chosen strategy for Y2K compliance will ensure the safety and integrity of the pipeline system.
- JPO finds APSC's document management practices to be inconsistent with the requirements of Stipulation 1.21.1 due to the inability to demonstrate effective management of information necessary to safely operate and maintain the pipeline.

### Stipulation 3.2.1.1 - Pipeline System Standards

- USDOT finds APSC out of compliance with 49 CFR 192.317 and 195.703, as they have not fulfilled all the requirements of the USDOT Compliance Order, CPF 59502. This Order requires APSC to take all practicable steps to protect the Fuel Gas Line and associated appurtenances from future detrimental movement and external forces. JPO finds failure to fulfill this order a violation of Stipulation 3.2.1.1.

### Stipulation 3.9.1 - Construction and Operation

- JPO finds APSC to be out of compliance with this stipulation until the Fuel Gas Line corrective action program has been completed to the satisfaction of JPO and the Department of Transportation/ Office of Pipeline Safety (USDOT/OPS).

## 1.0 Introduction/Background

### 1.1 Introduction

The Comprehensive Monitoring Program (CMP) was reorganized in 1999 to focus on four key oversight areas: Construction/Termination, Maintenance, Operations, and Culture. The impetus for reorganization of the Joint Pipeline Office (JPO) oversight structure was to focus on regulatory compliance, the requirements of the Federal Agreement and Grant of Right-of-Way, and the State Right-of-Way Lease as they relate to the Trans-Alaska Pipeline System (TAPS) facilities.

The Grant and Lease are both subject to renewal in the year 2004 and JPO has been tasked with ensuring that the verification process will sufficiently document the state of TAPS compliance. Since this is a prohibitive amount of information to digest, the CMP reports for 1999 were delineated by activity to provide an easily understood, preliminary compliance check.

### 1.2 Background

#### 1.2.1 JPO Reports

A previous CMP report released in 1998, Project Performance, dealt with construction oversight. That report identified these issues: 1) insufficient project planning; 2) inconsistent adherence to the Quality Assurance program; 3) late or inadequate response to employee concerns; and 4) repetition of audit findings. The employee concerns issue will be addressed in JPO's future CMP report on Culture. The three remaining issues are addressed in this report.

#### 1.2.2 APSC Commitments

One of the most significant commitments Alyeska Pipeline Service Company (APSC) and the Owner Companies have made to the U.S. Congress is the resolution of audit action items (AAIs) resulting from the TAPS audits. This report will serve as a measure of readiness for closure of AAI 1955, one of only two remaining priority-one audit items. AAI 1955 resulted from the report Audit of the Trans-Alaska Pipeline System, written by Quality Technology Company (QTC) for the Bureau of Land Management (BLM). This AAI was designated a "host" for fifteen other AAIs of programmatic similarity; the citing of TAPS drawings and data for not being current and inaccurately representing the installed systems. 1 The number and extent of these citations resulted in the allegation that TAPS was "indeterminate."

"Indeterminate" means that the information associated with the TAPS may not reflect the state of the physical equipment. The significance of this disparity between records and equipment can be illustrated by the following example: If a technician is using a drawing to perform maintenance on an electrical system which has been modified, but the drawing has not been revised to reflect that modification, a serious accident could occur.

One of the corrective actions for this audit, committed to by APSC, was the implementation of a configuration management system. Configuration management refers to the process by which information relevant to the safe operation and maintenance of TAPS is managed in a controlled and disciplined manner, resulting in current and accurate records.<sup>2</sup>

Herein lies the relevance to construction activities. Modifications not only represent a physical change to the TAPS system, but a change to the documentation associated with that system as well. And while APSC has been quite successful in implementing physical changes to the pipeline system, they have not effectively managed the associated information. Any assessment of APSC's ability to successfully steward their construction program must measure, in concert, the documentation revision process, which provides for "determinacy" of the system.

## **2.0 Purpose, Scope & Methodology**

### **2.1 Purpose**

The purpose of this CMP report is to address oversight of construction activities, defined as the process by which modifications are made to the TAPS. Oversight of this process provides a unique opportunity for the JPO to assess compliance of several Grant/Lease requirements, for many different TAPS facilities, throughout the 800-mile pipeline system.

This modification process involves nearly every functional organization within APSC as it progresses from problem identification to corrective action. To fully understand JPO's oversight program, an explanation of the relationship between the Maintenance and Construction CMP programs must be made. Construction projects very often result from recommendations made by the APSC surveillance, monitoring, and maintenance organizations; projects being the avenue of corrective action. Assessment of this cradle to grave process includes both maintenance and construction issues; therefore, to avoid duplication, some relevant information will reside in the Maintenance CMP report.

The life of a construction project can be divided into the three phases of design, implementation, and closeout. 1) The design phase originates after a deficiency or need is identified and involves the consideration of solution alternatives, resulting in a scope of work. 2) The implementation of a project entails the actual modification work, such as physically replacing a valve. 3) Closeout refers to the acceptance by the owner facility of the modification work and associated documentation. JPO monitors all phases of construction activities and conducts oversight from the several different perspectives presented below. This report will:

- Discuss JPO's approach to construction oversight and explain the methodology used in selecting projects for oversight.
- Discuss whether the construction program at APSC is serving as an effective corrective action avenue and successfully ensuring the integrity of the pipeline while protecting the environment and worker safety.
- Provide an assessment of APSC configuration management practices. Configuration management refers to the process by which current and accurate records are maintained, which reflect changes or modifications to the TAPS. Meeting the commitment to evidence an effective configuration management process is a significant part of the closure requirement for AAI 1955. This report will include an assessment of the adequacy of the configuration management performance specific to each of the projects selected for oversight. (Note: Configuration management is often referred to by APSC as change management.)
- Present Grant and Lease compliance issues identified through monitoring of construction activities.

## 2.2 Scope/Methodology

JPO oversight efforts can be categorized in two ways, planned and unplanned. Most of the information presented in this report relates to the planned construction oversight program developed for 1999. JPO resources, however, are frequently diverted by unanticipated events or issues, resulting in reports which fall outside the scope of planned work. Documentation associated with unexpected incidents such as natural disasters, oil spills, equipment failures, and accidents resulting from human error will be incorporated into the Operations CMP report. This report will include some information relative to construction activities which was generated as a result of emerging issues and concerned employee investigations.

### 2.2.1 Planned - Project Oversight

JPO 1999/2000 oversight of TAPS construction activities incorporated the entire life of a construction project, from the conceptual design phase through to closeout and the associated document revision process. The scope of this CMP report is heavily focused on the closeout phase of a project, which as previously discussed, is integral to the closure of AAI 1955. The maintenance of current and accurate records is also a requirement of Grant Stipulation 1.18.3, Surveillance and Maintenance. The JPO methodology used to assess the adequacy of the document revision process was to measure compliance to the APSC TAPS Engineering Manual, PM-2001.

APSC annually manages over 150 major projects, as well as numerous smaller modification efforts. As the JPO does not monitor all the construction activities performed on TAPS, a representative sample was selected for oversight. JPO selected 26 projects from APSC's 1999 Project Plan using the following selection criteria: 1) integrity level, 2) permit requirements, 3) design basis waiver requests, 4) audit action items, 5) safety concerns, 6) environmental or oil spill contingency plan considerations, 7) risk, and, 8) employee concern issues.

The 26 projects selected were separated into two distinct oversight categories: active and passive. This allowed JPO to focus on issues of major significance with maximum efficiency. Oversight of the active projects involved the coordinated efforts of a JPO team consisting of engineers, environmental specialists, field personnel, and agency representatives. The teams met in advance of project implementation to focus the field oversight efforts on relevant issues and to identify the appropriate surveillance attributes and their connection to Grant/Lease requirements.

The strategy utilized for projects selected for passive oversight was primarily a documentation review, with field surveillance conducted on a case by case basis. Projects can and do have an extensive paper trail comprised of the following: 1) design and implementation packages; 2) design change packages; 3) corrective action and non-conformance reports; 4) periodic construction reports; and 5) turnover and closeout packages. JPO followed the progress of these projects by review of this associated documentation and performed field oversight only if indicated. The following are the projects selected for active and passive monitoring:

#### 2.2.1.1 Actively Monitored Projects:

- Z029 - Check Valve (CKV) 122 Repair
- F041 - Remote Gate Valve (RGV) - 80 Replacement
- F064 - Mainline Valve Remediation
- B023 - RGV Control System Upgrade
- B146 - Mainline Valve Testing Program
- X019 - Mainline Corrosion Investigation and Repair
- F086/F022 - Linewide Buried Check Valve Investigation/Repair
- F075 - Flood Damage Repairs
- F066 - Pipeline Bridge Inspection/Repair
- Y2K Implementation

#### 2.2.1.2 Passively Monitored Projects:

- F081 - Valve Operator/Actuators
- Z021 - Transient Volume Balance (TVB) Leak Detection
- V309 - Mainline Remedial Anode Installations
- V109 - Pump Station (PS) Cathodic Protection (CP) Systems Upgrades
- X029 - PS Deadleg Inspections
- F065 - Mainline Coupon Program
- F087/F002 - Mainline Block & Bypass Valve Maintenance
- X080 - Cooperative Corrosion Agreement Program
- F088 - Valve Operator/Actuator
- F068 - Fuel Gas Line Remediation Program
- F062 - Ledeen Actuator Check Valves
- Z065 - PS 12 Tazlina River Crossing Erosion Repairs
- Z052 - Power Vapor Distributed Control System Upgrades
- Z073 - Vapor Control System Instrumentation Control Information Upgrades
- X059 - Valdez Marine Terminal (VMT) Tank Inspection/CP
- V119 - VMT CP System Upgrade

In addition to its internal construction oversight program, JPO utilized APSC self-assessments. APSC has an Audit Group which conducts periodic, self-diagnostic audits and surveillances. Compliance determinations accrued as a result of these reviews were used by JPO to effectively focus oversight efforts.

#### 2.2.2 Additional Construction Oversight Efforts

##### 2.2.2.1 Assessment of APSC's Supplier Evaluation Process

This assessment evaluated APSC's compliance with internal quality program requirements designed to assure suppliers are capable of providing items and/or services that ensure the integrity, maintenance, and operation of TAPS.

##### 2.2.2.2 North Pole Metering Station

The Authorized Officer of the JPO directed an inter-agency investigation of the North Pole Metering Station (NPMS) Project, #B176, in response to allegations from a concerned

employee. The concerned individual, a TAPS contract employee, alleged Quality Program requirements were being ignored and over a hundred "deficiencies" existed with the project. The investigation team focused on code, regulatory, and Grant/Lease compliance for selected piping and valves. The investigation was not an evaluation of APSC's procedural or manual compliance.

### 3.0 Requirements

#### 3.1 Grant/Lease Requirements

The sections and stipulations of the Grant of Right-of-Way measured as a result of construction oversight are as follows:

- Principle (1)
- Principle (3)
- Section 9 - Construction Plans and Quality Assurance Program
- Section 10 - Compliance With Notices To Proceed
- Section 16 - Laws and Regulations
- Stipulation 1.1.1.24 - Related Facilities
- Stipulation 1.3 - Authorized Officer
- Stipulation 1.7 - Notices to Proceed
- Stipulation 1.12 - Regulation of Public Access
- Stipulation 1.17 - Fire Prevention and Suppression
- Stipulation 1.18 - Surveillance and Maintenance
- Stipulation 1.20 - Health and Safety
- Stipulation 1.21 - Conduct of Operations
- Stipulation 2.1 - Environmental Briefing
- Stipulation 2.2 - Pollution Control
- Stipulation 2.3 - Buffer Strips
- Stipulation 2.4 - Erosion Control
- Stipulation 2.6 - Material Sites
- Stipulation 2.7 - Clearing
- Stipulation 2.8 - Disturbance of Natural Water
- Stipulation 2.9 - Off Right-of-Way Traffic
- Stipulation 2.12 - Restoration
- Stipulation 2.14 - Contingency Plans
- Stipulation 3.2 - Pipeline System Standards
- Stipulation 3.6 - Stream and Flood Plain Crossings and Erosion
- Stipulation 3.9 - Construction and Operation
- Stipulation 3.10 - Pipeline Corrosion

These Sections and Stipulations can be found in their entirety as Appendix A to this report.

#### 3.2 APSC Requirements

APSC has proclaimed that their programs incorporate the requirements of the Grant/Lease. As such, there are a number of APSC programs that construction activities must adhere to in order to evidence compliance with Grant/Lease requirements. The list includes, but is not limited to:

- TAPS Engineering Manual (PM-2001)
- Maintenance Systems Manual (MP-167)
- Trans-Alaska Pipeline Maintenance Repair Manual (MR-48)
- Quality Program Manual (QA-36)
- Corporate Safety Manual (SA-38)
- Environmental Protection Manual (EN-43)
- Regulatory Compliance Manual (OM-1, FG-78)

The TAPS Engineering Manual (PM-2001) is the APSC program that governs the design, implementation, and closeout phases of a construction project. As described in Section 2, JPO's oversight methodology includes measurement of compliance to PM-2001 requirements, specifically the requirements for project closeout (i.e. document revision process) as this directly relates to Grant/Lease Stipulation 1.18.3, which requires current and accurate records. Measurement of compliance to PM-2001 also relates directly to the closure of AAI 1955. AAI 1955, as previously outlined, includes APSC's formal commitment to configuration management (ensuring that accurate and current records result from modifications to TAPS). Since PM-2001 contains the working level instructions for meeting that commitment, assessment of this particular program was a significant part of JPO's construction oversight strategy.

The focus of measuring compliance to PM-2001 was assessing the adequacy of: 1) the documents identified as affected by a particular modification; and 2) the timely completion of those document revisions (APSC set a performance standard of 120 days from the end of implementation to closeout). JPO requested<sup>3</sup> this information from APSC for each of the projects presented in this report and the results of PM-2001 compliance are presented, by project, in the next section.

#### 4.0 APSC Self-Assessments

APSC's Audit Group, which conducts self-assessments, performed several surveillances during 1999, on individual projects selected for oversight by JPO. The findings associated with these surveillances are presented, by project, in Section 5 - Results.

In addition to the project surveillances, there were a number of audits and surveillances performed, measuring compliance to various APSC programs, relating to construction activities and Audit Action Item 1955. Synopses of the findings associated with these programmatic audits and surveillances are presented below.

#### 4.1 APSC Audits

##### 4.1.1 Engineering Design Control Audit #99-05

#### Finding #1: Project Turnover/Closeout Processes

- Project turnover signifies that the equipment or system modification is completed to the point that the facility manager judges it acceptable for operation and maintenance. Project closeout signifies that the necessary work and documentation for the modification has been completed.
- The implementing organization, the project lead, and the project engineer are responsible for preparing the documentation required for turnover and closeout. This documentation includes revising drawings and procedures; resolving and closing Field Action Requests (FARs) and Nonconformance Reports (NCRs); completing a Lessons Learned Report; and closing project finances.
- This finding identified that lax attention to turnover and closeout process stewardship and deficient governance has resulted in inconsistent adherence to requirements. Remiss project and facility management oversight on engineered projects has resulted in incorrect, outdated drawings; the necessity to work to redlines; outdated manuals and procedures; and incorrect equipment identifying numbers.

#### 4.1.2 Documentation and Quality Records Audit #99-12

##### Finding #3: Drawing Management

- Identification of Affected Drawings -REPEAT Audit Finding
- Use of Technical Drawing and Document Index (TDDI) REPEAT Audit Finding

When modifications occur, drawings must be updated to reflect the changes. Drawings affected by the modification are identified for revision by the project or field engineers, in concert with facility personnel. Identification is achieved through resident knowledge and use of the TDDI, a database that contains information on drawings, manuals, equipment identifiers, and procedures. This finding identified the inability (due to both performance of the electronic tools, and the management of the controlling processes) to consistently identify affected drawings. Some drawings would therefore not be revised to represent the new configuration of equipment.

##### Finding #5: Document Review Cycles

This finding identified that many categories of documents are not reviewed in a timely manner. Examples of documents include, but are not limited to:

- Standard Operating/Maintenance Procedures (SOPs/SMPs)
- Principle Implementing Procedures (PIPs)
- Controlled Manuals
- Generic Procedures
- Master Specifications

The significance of this finding is that documentation may no longer reflect current organization, processes, or procedures.

#### 4.2 APSC Surveillances

#### 4.2.1 Surveillance #99-S-VBU-015

This surveillance was conducted on a random sample of Valdez Business Unit (VBU) Piping & Instrumentation Drawings (P&ID) and various electrical drawings that have been revised and released since January 1, 1999. The focus of this surveillance was on the adequacy of the results of the drawing revision process rather than compliance with the process itself and was accomplished by a physical verification or "walk down" of the sample drawings.

- Finding #1: The verification revealed that 10 of the 25 drawings sampled contained technical discrepancies.

#### 4.2.2 Surveillance #99-S-VBU-027

This surveillance was conducted on a random sample of VBU engineering drawings. The focus of this surveillance was to test the following questions:

- Do the AutoCad drawings (electronic files) match the approved hardcopy drawings (scanned images)? This measures whether the AutoCad files are the same as the scanned images.
- For the information outside the area marked for revision, does the information in the revised drawing match the information in the previous revision? This measures whether inadvertent changes are being made to the drawings during the revision process.

There were no findings issued and the results of the reviews indicated a satisfactory condition.

#### 4.2.3 Surveillance #99-S-FBU-028

This unscheduled surveillance was conducted at Pump Station 1 to ensure that modification packages requiring inspection were receiving the proper review and approvals, and the TAPS Engineering Manual (PM-2001) and Maintenance System Manual (MP-167) processes were being followed.

- Finding #1: 1998 and 1999 modification packages were reviewed for documentation completion and necessary inspection requirements. Nine modification packages were missing inspection memos and integrity level determinations and contained documentation that was not fully approved.
- Finding #2: Inspections on modification packages have been cancelled without proper authority.
- Finding #3: Revisions to MP-167 and PM-2001 were not always read or reviewed in a timely manner.

#### 4.2.4 Surveillance #99-S-VBU-029

The scope of this surveillance was an unscheduled measure of the status of the Commissioning/Turnover (C/T) checklists that constitute part of the construction packages.

The focus was on the timeliness of the identification of the responsibilities, actions and documentation that would be required at the completion of the project activities. This surveillance was performed, in part, as an assessment of the extent of condition documented in Surveillance #99-S-VBU-024 (presented in Section 5 - Results), which noted the absence of a C/T checklist prior to the implementation of a single project.

- Finding #1: The review of project documentation files revealed that C/T checklists for 47 out of 55 completed and/or in-progress projects were not developed as required by PM-2001.

#### 4.2.5 Surveillance #99-S-VBU-030

This surveillance was conducted on the management of change process developed by the Operations Control Center (OCC) at the Valdez Marine Terminal and completed for the pipeline shutdown on November 13, 1999. There were no findings issued as a result of this effort and the audit team recommended that the positive management of change stewardship of the OCC should be used as an example for the rest of the company.

#### 4.3 Significance of APSC Self-Assessments

The primary significance of the findings presented above is that these are merely the next iteration of a problem first identified in 1994, which has continued without correction. JPO released an assessment<sup>4</sup> in 1998, which was a compilation of all the external and internal findings associated with configuration management from 1994 to 1998. That assessment illustrated a pattern of undisciplined document management practices continually repeating. The findings presented in this chapter demonstrate that the situation has remained unchanged.

The positive performance of individual organizations, such as OCC during the shutdown, should be recognized as it demonstrates that effective change management is possible at APSC. It will be necessary, however, for that level of discipline to exist company-wide to fully demonstrate APSC compliance to Grant/Lease requirements.

## 5.0 Results

JPO selected 26 projects for 1999/2000 construction oversight and requested that APSC provide, specific to each project, evidence that: 1) the documents affected by a particular modification were identified; and 2) revisions to those identified documents were completed in a timely fashion. APSC set a performance measure of 120 days for completion of the revision process but since this performance measure was intended as a guideline, JPO did not require rigid adherence. JPO found revisions taking over six months to be inconsistent with Stipulation 1.18.3 requirements for current and accurate records. The evidence provided to JPO by October, 2000, resulted in the following determinations. Of the 26 selected projects; 5 were not implemented, 2 were not monitored by JPO, and 3 were not required to comply with PM-2001. Ten of the 16 remaining projects were determined to be out of compliance with the closeout requirements of PM-2001 due either to the inability to demonstrate the identification of affected documents or the timeliness of the revision process.

Subsequently, APSC was informally provided these determinations and requested a delay in publication of this report for consideration of additional evidence. JPO agreed and the individual project results presented below include evidence provided by APSC and VECO employees on November 8th and 9th, 2000. The results are presented by category, with a brief summary of each project scope. The categories are: 1) APSC surveillance or audit findings; 2) compliance to the TAPS Engineering Manual, PM-2001; and 3) Grant/Lease compliance issues. Appendix B to this report is a bibliography of all the JPO reports generated as a result of construction oversight for 1999/2000.

## 5.1 Actively Monitored Projects

### 5.1.1 Project #Z029 - Check Valve 122 Repair

Project scope was to repair CKV-122, as testing of this valve had revealed extensive leak through and performance degradation.

#### 5.1.1.1 APSC Surveillance Findings

There was one finding issued as a result of Surveillance #98-S-VBU-007. It is as follows: "One contract person arrived on the CKV-122 jobsite without APSC required training."

#### 5.1.1.2 PM-2001 Compliance

Implementation of this project concluded on September 26, 1998. APSC provided evidence that drawings and documents affected by this modification were identified. Revisions to the drawings were completed June 28, 1999 and the System Integrity Manual (SIM) was revised July 14, 2000. This does not meet either APSC's performance measure or JPO's definition of "timely."

#### 5.1.1.3 Grant/Lease Compliance

The document revision performance of this project was inconsistent with Stipulation 1.18.3 requirements for maintenance of current and accurate records.

### 5.1.2 Project #F041 - RGV 80 Replacement

Testing of RGV 80 revealed extensive leak through and performance degradation, necessitating replacement.

#### 5.1.2.1 APSC Surveillance Findings

There was one finding issued as a result of Surveillance #99-S-FBU-029. Surveillance Finding No. 1: Three synthetic slings located on the RGV-80 work site were found to be damaged and unfit to use for lifting.

#### 5.1.2.2 PM-2001 Compliance

Implementation of the project concluded on September 26, 1998. APSC provided evidence that affected drawings and documents were identified. Revisions to the drawings were completed June 28, 1999 and the applicable SIM manual was revised July 14, 2000. This does not meet either APSC's performance measure or JPO's definition of "timely."

#### 5.1.2.3 Grant/Lease Compliance

The document revision performance of this project was inconsistent with Stipulation 1.18.3 requirements for maintenance of current and accurate records.

#### 5.1.3 Project #F064 - Mainline Valve Remediation

Project scope was the replacement of mainline RGV- 60. Testing results for this valve, while meeting APSC's performance standards, did indicate leakage. Since RGV-60 is located in an environmentally sensitive area on the bank of the Yukon River, APSC chose to replace the old valve with a rebuilt valve.

##### 5.1.3.1 APSC Surveillance Findings

There was a surveillance conducted on this project, Surveillance #99-S-FBU-025, but no findings were issued as a result.

##### 5.1.3.2 PM-2001 Compliance

Implementation of this project concluded in September, 1999. APSC provided evidence that affected drawings and documents were identified. Revisions to the drawings were completed April 10, 2000 and the SIM manual was revised July 14, 2000. This does not meet either APSC's performance measure or JPO's definition of "timely."

#### 5.1.3.3 Grant/Lease Compliance

The document revision performance of this project was inconsistent with Stipulation 1.18.3 requirements for maintenance of current and accurate records.

#### 5.1.4 Project #B023 - RGV Control System Upgrade

This project was conceived to prevent uncommanded RGV closures. The scope of work for this project was the first phase of a two-phase program to upgrade the linewide control system that has direct and supervisory control at the pipeline RGVs.

##### 5.1.4.1 APSC Surveillance Findings

There was a surveillance conducted on this project, Surveillance No. 99-S-FBU-021, but there were no findings issued as a result, and the one observation made was positive.

##### 5.1.4.2 PM-2001 Compliance

Implementation of this project was concluded on 10/29/99 and the project was closed in July of 2000. The project team for #B023 did an excellent job of identifying all of the associated documentation, complete with revision status, for this modification. The time taken for the revision process, however, did not meet either APSC's performance measure or JPO's definition of "timely."

#### 5.1.4.3 Grant/Lease Compliance

The document revision performance of this project was inconsistent with Stipulation 1.18.3 requirements for maintenance of current and accurate records.

#### 5.1.5 Project #B146 - Mainline Valve Testing Program

This project consisted of the 1999 scope of work for mainline valve testing, one of the elements of the TAPS Valve Program. The primary objective of the TAPS Valve Program is to determine the sealing capability of all 177 valves on TAPS. This project's testing plan called for the testing of 50 valves. Information on the overall status of the Valve Program can be found in the 1999/2000 Maintenance CMP.

#### 5.1.5.1 APSC Surveillance Findings

There were two findings issued as a result of Surveillance #99-S-FBU-032. Finding No. 1: A review of the completed mainline valve test procedure revealed the individual participants did not initial the controlled procedure as required by Department Operating Procedure (DOP) N 6.00.02. Finding No. 2: Measuring and Test Equipment (M&TE) being used had no identification number, description, or calibration due date as required by Principal Implementing Procedure (PIP) 12.1.

#### 5.1.5.2 PM-2001 Compliance

Implementation of this project was concluded in November of 1999. This effort is ongoing and the yearly update was issued in April of 2000. This project was not required to adhere to PM-2001, as the project status represents a funding mechanism for ongoing engineering work rather than an actual modification to the TAPS.

#### 5.1.5.3 Grant/Lease Compliance

There were no deficiencies identified.

#### 5.1.6 Project #X019 - Mainline Corrosion Investigation and Repair

The Mainline Corrosion Investigation program is a continuous program to investigate and remediate corrosion sites identified in the bi-annual corrosion pig surveys of the TAPS. The investigation program provides three primary functions:

- To confirm the residual wall thickness in the suspect areas by visual and stationary measurement methods and determine if a repair is required.
- To inhibit further external corrosion in the excavated area by repairing the pipe coatings and upgrading the cathodic protection systems.
- To validate corrosion pig monitoring methods and provide calibration grids for future pigging programs.

The scope of work for this project included the investigation of 20 locations; 11 above ground and 9 below ground.

#### 5.1.6.1 APSC Surveillance Findings

There was no surveillance conducted on this project.

#### 5.1.6.2 PM-2001 Compliance

The bulk of implementation of this project was concluded in the fall of 1999, but several work items remained uncompleted due to winter conditions, delaying closeout until May, 2000. Three documents were identified as affected by this modification; two databases were updated with corrosion and test station information and one G100 Construction

Record Drawing was updated to reflect the installation of 2 repair sleeves. This project complied with PM-2001 requirements.

#### 5.1.6.3 Grant/Lease Compliance

There were no deficiencies identified.

#### 5.1.7 Project #F086/F022 - Linewide Buried Check Valve Investigation/Repair

Check valves are designed to prevent the reverse flow of oil and have been strategically placed to limit the volume of oil spilled in the event of a pipeline leak. This project was driven by a 1996 Risk Assessment, resulting in APSC's commitment to investigate all buried TAPS check valves over a five-year period.

##### 5.1.7.1 APSC Surveillance Findings

There was no surveillance conducted on this project.

##### 5.1.7.2 PM-2001 Compliance

This project is a multi-year, in progress, effort which is scheduled for closure in January of 2001. APSC provided the list of documents identified as affected by this modification but since the project has not been closed yet, the revisions have yet to be completed.

##### 5.1.7.3 Grant/Lease Compliance

There were no deficiencies identified since the project has yet to be concluded.

#### 5.1.8 Project #F075 - Flood Damage Repairs

Several river bank locations adjacent to the pipeline were damaged by flooding in 1998. This project provided for the construction of various repair structures on the Dietrich, Koyukuk, and Sagavanirktok Rivers.

##### 5.1.8.1 APSC Surveillance Findings

There was no surveillance conducted on this project.

##### 5.1.8.2 PM-2001 Compliance

This project involved construction at three different sites. Implementation at MP 218.5 was concluded on August 31, 1999; the RGV 34 site was finished August 25, 1999; and MP 186.2 site work was concluded November 18, 1999. The project has not yet been closed due to ongoing work; APSC determined that no drawings or documents required revision as a result of this project.

##### 5.1.8.3 Grant/Lease Compliance

There were three findings issued as a result of a JPO Assessment.<sup>5</sup> They are as follows:

##### Finding No. 1:

APSC had not submitted a site revegetation plan prior to January 15, 2000 and had not completed revegetation by June 1, 2000 at the Dietrich River project at MP 186.2 as required by Special Condition 7 of the Bureau of Land Management (BLM)

Notice to Proceed. Subsequent to the issuance of this finding, APSC submitted a plan and completed revegetation at the site. This finding is now considered closed.

Finding No. 2:

APSC had two permit violations on the Middle Fork Koyukuk River project at pipeline milepost 218.5. One violation of Alaska Department of Fish and Game (ADF&G), BLM and Alaska Department of Natural Resources (ADNR) permit requirements involved moving a temporary riprap storage site in the floodplain of the river without approval. This violation has been corrected. The second violation of ADF&G and BLM permits involved placement and removal of unauthorized fill material from Alignment Slough, a fish stream. This violation was also corrected and JPO considers this finding closed.

Finding No. 3:

JPO issued a finding of violation of Stipulation 2.9 - Off Right-of-Way Traffic, for operating equipment off right-of-way after the authorization for the activity expired. JPO considers this finding closed.

5.1.9 Project #F066 - Pipeline Bridge Inspection/Repair

APSC's pipeline bridge inspection program requires a five-year inspection for structural integrity on all pipeline bridges. The scope of work for this particular project included inspections of the Tazlina, Tanana, and Gulkana River pipeline bridges

5.1.9.1 APSC Surveillance Findings

There was no surveillance conducted on this project.

5.1.9.2 PM-2001 Compliance

This project was concluded in September 1999 and has not yet been closed. This work effort was not required to adhere to PM-2001 as it was categorized a project as a funding mechanism; it does not represent an actual modification to TAPS.

5.1.9.3 Grant/Lease Compliance

JPO finds APSC to be out of compliance with Stipulation 1.18.1 - Surveillance and Maintenance due to the following:

- APSC was unable to demonstrate that the pipeline bridge inspection program adequately ensures that identified maintenance deficiencies are corrected. APSC has agreed to develop a new procedure to reside in the Integrity Monitoring Program Manual, MP-166, but this effort has yet to be completed.
- The scope of this project originally included an inspection of the Tanana River pipeline bridge, but this inspection was dropped due to lack of funding. 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, in accordance with their five-year inspection requirement to determine the extent of condition. APSC chose to defer this inspection for another year (out of compliance with their requirements, which were negotiated with JPO and the United States

Coast Guard) and therefore, JPO considers this to be a noncompliance to the referenced stipulation.

#### 5.1.10 Y2K Implementation

This effort entailed APSC's response to the potential for computer problems associated with the processing of date/time data during and after the rollover into the twenty-first century.

##### 5.1.10.1 APSC Surveillance Findings

There was no surveillance conducted.

##### 5.1.10.2 PM-2001 Compliance

This was not a project and therefore not required to comply with PM-2001.

##### 5.1.10.3 Grant/Lease Compliance

The APSC Y2K program was not a construction project per se, but rather, a work effort determined critical due to its significance to communications and operations of TAPS. JPO computer specialists monitored the preparation and documentation phases of this program and personnel were on site December 31, 1999 to measure its effectiveness. Additional information about this effort can be found in the Operations CMP report.

Preparation for the rollover was effective and no problems occurred. However, there were two categories of systems and applications designated; "compliant" and "ready". "Compliant" systems would accurately process date/time data. "Ready" systems would be suitable for continued use into the year 2000 as installed, but could create problems later if modifications were made to the original system or if systems were tied together. APSC committed to develop databases to house the information necessary for making modification decisions, and to amend PM-2001 to include Y2K requirements for project engineering and implementation. However, the amended section in PM-2001 that speaks to Year 2000 compliance does not mention the "compliant" vs. "ready" concept, nor does it mention any required database research.

Project design requirements do not adequately emphasize the potential for future modification problems. Further, successful implementation of this approach requires a level of discipline and information management that APSC has not demonstrated in the past. One of the reasons AAI 1955 has not yet been closed is that APSC has been unable to consistently identify documents (inclusive of databases) that are affected by modifications. JPO does not consider the successful passage through the critical dates to be the true test of this program and consequently finds APSC to be out of compliance with Stipulation 1.21.1 - Conduct of Operations.

## 5.2 Passively Monitored Projects

### 5.2.1 Project #F081 - Valve Operator/Actuators

This project was conceived to correct the cause of RGV and Battery Limit (BL) actuator motor failures. This project was not implemented in 1999.

## 5.2.2 Project #Z021 - Transient Volume Balance (TVB) Leak Detection

The fundamental purpose of this project was to make the TVB leak detection system Y2K compliant.

### 5.2.2.1 APSC Surveillance Findings

There was one finding issued as the result of Surveillance #99-S-VBU-024. Finding No. 1: There was no agreed upon Project Commissioning/Turnover (C/T) Checklist.

### 5.2.2.2 PM-2001 Compliance

Implementation of this project ended at the Y2K transition; the project has not yet been closed. APSC provided evidence that affected drawings and documents were identified but since the project is not yet closed, the revisions are not complete. This does not meet APSC's performance measure or JPO's definition of "timely."

### 5.2.2.3 Grant/Lease Compliance

APSC's document management practices on this project are found to be inconsistent with the requirements of Stipulation 1.18.3 due to the inability to evidence the maintenance of current and accurate records.

## 5.2.3 Project #V309 - Mainline Remedial Anode Installations

The annual cathodic protection (CP) survey performed on underground piping indicated discrete areas where CP potentials fall below mandated criteria levels. This project was developed to address locations where CP equipment required repairs or modifications.

### 5.2.3.1 APSC Surveillance Findings

There was no surveillance conducted on this project.

### 5.2.3.2 PM-2001 Compliance

Implementation of this project ended in October of 1999 but the project has not yet been closed out. APSC provided a list of documents, which were identified as being affected by this project, but since closeout has not been completed, the revisions have not been completed. This does not meet APSC's performance measure or JPO's definition of "timely."

### 5.2.3.3 Grant/Lease Compliance

APSC's document management practices on this project are found to be inconsistent with the requirements of Stipulation 1.18.3 due to the inability to evidence the maintenance of current and accurate records.

## 5.2.4 Project #V109 - PS CP Systems Upgrades

The project scope was to upgrade or remediate areas in the pump stations, identified by annual corrosion surveys, where minimum CP requirements were not being met. This project was not implemented in 1999.

## 5.2.5 Project #X029 - PS Deadleg Inspections

The pump station deadleg inspections are part of the annual corrosion inspection program as directed in APSC's Systems Integrity Monitoring Program, MP-166.

#### 5.2.5.1 APSC Surveillance Findings

There was no surveillance conducted.

#### 5.2.5.2 PM-2001 Compliance

Implementation (with the exception of work at PS-12) of this project concluded in May of 2000; the project has not yet been closed out. APSC identified only the corrosion data base (CDM) as being affected by this modification and it has been updated to reflect all the data collected to date. The closeout process for this project was delayed due to resolution of PS-12 remaining work. This project complied with PM-2001 requirements.

#### 5.2.5.3 Grant/Lease Compliance

There were no deficiencies identified.

#### 5.2.6 Project #F065 - Mainline Coupon Program

This project was the first phase of a multi-year program for installation of up to 100 corrosion coupons per year, as negotiated with JPO.

##### 5.2.6.1 APSC Surveillance Findings

There was no surveillance conducted on this project.

##### 5.2.6.2 PM-2001 Compliance

Implementation of this project was concluded in September of 1999. This project was closed out in April of 2000. APSC did not provide evidence that affected documentation was identified and did not meet their own performance measure or JPO's definition of "timely".

##### 5.2.6.3 Grant/Lease Compliance

APSC's document management practices on this project are found to be inconsistent with the requirements of Stipulation 1.18.3 due to the inability to evidence the maintenance of current and accurate records.

#### 5.2.7 Project #F087-F002 - Mainline Block & Bypass Valve Maintenance

During the 1996 Valve Winterization program, a number of deficiencies were identified and documented using the Non Conformance Reporting (NCR) system. This project was a continuation of investigation, repair, and modification efforts to address those deficiencies.

##### 5.2.7.1 APSC Surveillance Findings

There was no surveillance conducted on this project.

##### 5.2.7.2 PM-2001 Compliance

This project is a multi-year project, still in progress, and scheduled for closure by January, 2001. APSC provided a list of documents, which were identified as potentially being

affected by this project. Since closeout is not yet completed, the revisions are still in process.

#### 5.2.7.3 Grant/Lease Compliance

There were no deficiencies identified.

#### 5.2.8 Project #X080 - Cooperative Corrosion Agreement

APSC's Comprehensive Corrosion Program (CCP) was developed as a result of agreements reached between themselves, USDOT, and JPO. The agreed upon corrosion prevention strategy is a pro-active effort to identify early stages of possible corrosion on TAPS, and then to install supplemental corrosion protection. The X080 project is a multi-year effort to implement this strategy; this report reviews the activities conducted in 1999.

##### 5.2.8.1 APSC Surveillance Findings

There was no surveillance conducted.

##### 5.2.8.2 PM-2001 Compliance

This project consisted of work at various sites which was initiated and concluded at different times; project closeout has not been completed. APSC provided a list of documents identified as affected by the modification, however final revisions are not completed.

##### 5.2.8.3 Grant/Lease Compliance

There were no deficiencies identified.

#### 5.2.9 Project #F088 - Valve Operator/Actuator

This project was developed to repair and/or replace the operator/actuators as needed, for facility or mainline valves. This project was not implemented in 1999.

#### 5.2.10 Project #F068 - Fuel Gas Line (FGL) Remediation Program

This project was the initial phase of a five-year corrective action plan for depth of cover, exposed pipe, and other compliance issues associated with the Fuel Gas Line.

##### 5.2.10.1 APSC Surveillance Findings

There was a surveillance performed on the Fuel Gas Line, #99-S-FBU-019, to verify reburial of FGL pipe in the MP 12-18 area, but no findings were issued as a result.

##### 5.2.10.2 PM-2001 Compliance

The implementation phase of this project was concluded in September, 1999. Closeout was finalized 4/18/00. APSC made the determination that no documents were affected by this modification. This project substantially complied with PM-2001 requirements.

##### 5.2.10.3 Grant/Lease Compliance

There are two open JPO findings associated with the Fuel Gas Line. They are:

Finding No. JPO-98-GS-011-F01: Fuel Gas Line MP 12-18 has been afflicted with heave buckling or exposure by erosion. Pump Station 1 facility settlement in the main generator room is 7 inches. APSC is addressing this finding in the Fuel Gas Line five-year corrective action program, which includes five separate projects.

Finding No. JPO-98-GS-012-F01: FGL has standing or flowing water, thermokarsting or upheaval buckling, which have resulted in less than required cover over the FGL pipe (49 CFR Part 192). Pump Station 3 also has settlement problems.

### **USDOT Regulatory Compliance**

The Department of Transportation/Office of Pipeline Safety (USDOT/OPS) has issued a Notice of Probable Violation, Proposed Civil Penalty and Compliance Order, CPF No. 59502, relating to the fuel gas line becoming exposed at MP 13.02 and 16.57 and being washed out and lying in water at MP 78.6, 86, 84, Mile hill, and 120 APS. The Compliance Order requires APSC to take all practicable steps to protect the fuel gas line and associated appurtenances in those areas from future detrimental movement and external forces. USDOT is also taking enforcement action relating to lateral vaults on the FGL at MP 18, 47, and 70 that are filled with frozen water. The vaults must be designed to minimize the entrance of water and the valve must be readily accessible during an emergency.

APSC is not in compliance with Stipulation 3.9 - Construction and Operation, until the findings outlined above have been corrected by completion of APSC's FGL Corrective Action Program to the satisfaction of JPO and USDOT/OPS.

#### 5.2.11 Project #F062 - Ledeen Actuator Check Valves

This project was conceived to install ledeen actuator check valves downstream of PS-9 to eliminate degradation of the Drag Reducing Agent (DRA) stream by check valve clappers. This project was not implemented in 1999.

#### 5.2.12 Project #Z065 - PS-12 Tazlina River Crossing Erosion Repairs

The north bank of the Tazlina River experiences periodic erosion due to flooding. This project directed the construction of a repair structure to stabilize the riverbank.

##### 5.2.12.1 APSC Surveillance Findings

There was no surveillance conducted.

##### 5.2.12.2 PM-2001 Compliance

The implementation phase of this project was concluded in June, 1999; closeout was completed July 16, 2000. APSC determined that no drawings or documents were affected by this modification.

##### 5.2.12.3 Grant/Lease Compliance

There were no deficiencies identified.

#### 5.2.13 Project #Z052 - Power Vapor Distributed Control System Upgrades

The upgrade to the power generation and vapor recovery distributed control system is driven by the following concerns:

The plant utilities and boiler controls for two of the three boilers are combined, creating a common failure that would cause a total loss of power generation. Due to changing priorities and work load, this project was not monitored by JPO.

#### 5.2.14 Project #Z073 - Vapor Control System Instrumentation Control Information Upgrades

There have been a number of problems associated with the instrumentation control system. This project will:

- provide a filter differential pressure read out in the control room
- make incinerator fuel/steam control changes
- upgrade compressor enclosure gas monitor detection/control
- install new open path infrared type gas detectors in compressor module ductwork
- upgrade printer, optical disc and other archive devices
- incorporate new data server in Bailey cabinet.

This project was not implemented in 1999.

#### 5.2.15 Project #X059 - VMT Tank Inspection/CP

This project was part of the ongoing VMT tank maintenance program. The scope of work for 1999 included crude oil storage tanks 9, 11, and 81. The tanks are vertical, aboveground, steel storage tanks, which deteriorate over time due to corrosion and settlement and must be inspected and maintained to ensure integrity.

##### 5.2.15.1 APSC Surveillance Findings

There was no surveillance conducted on this project.

##### 5.2.15.2 PM-2001 Compliance

Implementation and closeout of this project were concluded in November of 1999. APSC provided evidence that affected drawings and documents were identified and revised.

##### 5.2.15.3 Grant/Lease Compliance

There were no deficiencies identified.

#### 5.2.16 Project #V119 - VMT CP System Upgrade

Due to changing priorities and work loading, this project was not monitored by JPO.

### 5.3 Assessments of APSC Supplier Evaluation Processes

This issue is fully documented in a JPO Assessment released this year. The following is a summary of the results:

- Finding No. 1: APSC has not consistently demonstrated surveys and field inspections of contractors and subcontractors facilities were conducted by either APSC or its contractors.

- Finding No. 2: APSC does not mandate surveys and field inspections of contractor and sub-contractor facilities.
- Finding No. 3: APSC could not provide quality determination records which identify suppliers that maintain their own quality list (e.g. QSL) of sub-contractors providing items or services in support of TAPS.

#### 5.4 North Pole Metering Project Investigation

This investigation is fully documented in a JPO report. The following is a summary of the results of that investigation.

The concerned employee's North Pole Metering Project #B176 deficiency list quantifying 127 items lacked sufficient detail, was not linked to codes, regulations, or specifications, and was inconsistently scoped. Many "items" on the list were redundant entries, several were non-specific with no basis of deficiency.

The United States Department of Transportation (USDOT) Office of Pipeline Safety (OPS) issued a Notice of Probable Violation, Proposed Civil Penalty, and Proposed Compliance Order dated September 14, 2000 notifying APSC of three probable violations of pipeline safety regulations 49 CFR Part 195. The violations related to: 1) improper setting of pressure safety valves following the hydrostatic testing of the meter skid; 2) out of date maps and records; and 3) improper security of the North Pole Metering facility. APSC is complying with the Proposed Compliance Order by: 1) completing a new hydrotest of the North Pole Metering facility to a pressure of 1751 psi and setting the Maximum Operating Pressure (MOP) at 1400 psi; 2) finalizing red-lined drawings for the meter skid; and 3) repairing the North Pole Metering fences.

The Alaska Department of Labor and Workforce Development issued a Citation and Notification of Penalty dated August 28, 2000 notifying APSC of one violation of the Occupational Safety and Health Act of 1970. There were no National Electrical Code (NEC) or other ADOL safety violations found by the investigation team. Other issues, determined by the investigation team to be within the jurisdiction of the Alaska Department of Commerce (ADOC) and the Alaska State Fire Marshal's office have been forwarded appropriately for their action.

## 6.0 Conclusions

### 6.1 APSC Program Effectiveness

#### 6.1.1 PM-2001 Compliance

The APSC program measured as a result of construction oversight was the engineering process associated with TAPS modifications, as defined in the TAPS Engineering Manual, PM-2001. Compliance with PM-2001 was considered by JPO to be the most significant measure of APSC's commitment to configuration management, closure of AAI 1955, and adherence to Grant/Lease requirements. An effective configuration management program

contains many elements, but JPO chose to measure the most basic: the ability to identify documents affected by a modification and to complete their revision in a timely fashion.

JPO selected a representative sample of 26 projects. For various reasons, a final sample set of 16 projects was measured, resulting in 7 determinations of non-compliance. The consideration of additional evidence improved APSC's performance, largely due to the ability to demonstrate the identification of affected documentation. The remaining deficiencies primarily involved the timeliness of the revision process.

The timeliness of revising drawings and documents might appear to be an insignificant issue since any changes are reflected on the facility copy, referred to as a "redline". The "redline" version of any document is available to the operators and maintainers of the pipeline at the facility. The master document copy, referred to as a "blueprint", resides in the document control centers located in Fairbanks and Valdez. The significance of maintaining current and accurate master documents is that the facility personnel (who have access to the most current and accurate "redline" versions) are not the only users of the drawings and documents. Design engineers, for example, use master drawings to develop modifications. Using master drawings, which do not accurately reflect the existing system, could result in modification designs, which compromise the integrity and safety of the pipeline.

APSC was able to demonstrate that affected documentation was identified for most of these projects. The completeness of the identification process, however, is difficult to verify. APSC currently has the ability to link equipment to drawings through the use of the Technical Document and Drawing Index (TDDI) database, so it is possible to confirm that the appropriate drawings were selected. There is no equivalent database, however, which links equipment to the numerous other associated documents such as Standard Operating Procedures, Standard Maintenance Procedures, datasheets, vendor documents, etc. The accuracy and currency of these procedures have integrity, safety, and environmental consequences. The identification of these documents is accomplished, for each project, by utilizing the combined knowledge of various subject matter experts, design engineers, asset managers, and facility personnel. Since this process is by nature subjective, it is not possible for APSC to assure JPO of completeness.

The results of measuring the current manual process presented in this report are of concern for the following reasons: 1) it was difficult to obtain evidence that affected documentation was identified; 2) nearly one-half of the projects in the sample set were deficient; and 3) there is no method of verifying that the affected documents necessary to operate and maintain the pipeline safely and within environmental constraints were identified. This provides insufficient justification for closure of AAI 1955.

The evidence and conclusions presented in this report, however, are from projects implemented in 1999. APSC has spent a considerable amount of time and money on efforts to improve the efficiency of this process in the interim and is currently conducting internal audits associated with closure of AAI 1955. JPO plans to select another representative sample of projects to measure as a part of the verification process necessary to consider closure of AAI 1955.

JPO finds APSC's document management practices to be inconsistent with the requirements of Stipulation 1.18.3 of the Federal Grant of Right-of-Way, due to the inability to evidence the consistent maintenance of current and accurate records associated with construction activities.

JPO also finds APSC's management of operations and maintenance information to be inconsistent with the requirements of Stipulation 1.21, Conduct of Operations.

Many of the APSC personnel interviewed indicated that operation of the pipeline with inadequate resources contributes greatly to the inability to successfully manage documentation. While JPO cannot consider individual opinions as evidence of non-compliance, the quantity of APSC personnel sharing that opinion, coupled with the evidence of documentation mismanagement, is cause for concern.

#### 6.1.2 APSC Program of Self-Assessment

The APSC Audit group has conducted a number of investigations and published reports on management of change that are self-critical. While this level of honesty is commendable, the only result has been an annual crop of self-critical assessments, dating back to 1994. The root cause of these problems remains unsolved. While the auditors have done their job, it is of no avail if APSC does not respond to identified problems effectively. Until APSC develops a corporate-wide, disciplined approach to the management of information, JPO will continue to delay closure of AAI 1955.

#### 6.1.3 APSC Construction Program

This report has leveled some criticism at APSC for their document management practices. It therefore needs to be said that the construction program for TAPS is far broader in scope than the issues presented here. Document management practices were chosen as focus of oversight for this construction year as they dovetailed with closure of AAI 1955. Management of construction on TAPS is a multi-faceted and far-reaching enterprise, which relies on the expertise and professionalism of literally hundreds of APSC and contract employees. JPO oversight of project implementation resulted in few findings outside of the configuration management arena, and that is due to the high level of competence and integrity of the project personnel at APSC.

#### 6.1.4 APSC Supplier Evaluation Processes

Grant section 9 and Lease sections 16b and 16c mandate that APSC have an approved internal quality assurance plan designed to assure JPO that APSC will ensure the integrity, maintenance, and operation of TAPS.

- APSC could not demonstrate that surveys and field inspections of their contractors' and subcontractors' facilities were consistently conducted.
- APSC's internal quality program does not mandate surveys and field inspections of their contractors and subcontractors. (JPO does note, however, that APSC's internal quality

program does provide, as an option and not as a requirement, instructions for on-site survey of suppliers' facilities to verify that quality manuals/procedures or processes/practices are adequately implemented.)

## 6.2 Consequences of Delayed or Cancelled Projects

The JPO's interest in the effectiveness of APSC's construction program extends beyond the programmatic. The state and federal agencies responsible for regulating the pipeline require assurance that the TAPS system is being maintained in a fashion which ensures integrity, worker safety, and protection of the environment. APSC must demonstrate that this public asset has been maintained adequately. Any assessment, therefore, of the effectiveness of the construction program must question whether delayed maintenance is decreasing the safety and reliability of the pipeline system.

The need for unplanned and unexpected expenditures will always arise after the planned and budgeted work for any construction season has been decided upon. JPO has observed, however, that unplanned work does not result in an increase in the maintenance budget; but rather, a decrease in planned work. In other words, APSC delays or cancels planned projects to cover the expense of emergencies.

APSC managed over 150 major construction projects in 1999 and JPO selected, with an emphasis on integrity, environmental, and safety issues, a representative sample of 26 for oversight. Of the 26 projects selected, 5 were not implemented; nearly 20% of the representative sample. To determine the extent of condition, JPO requested the total number of projects, planned and funded, but not implemented, for construction years 1997, 1998, and 1999. This information was requested twice; first in May, 2000<sup>10</sup> and then again in June, 2000.<sup>11</sup> A response was received in October and JPO is currently analyzing the submitted data. JPO finds APSC's non-responsiveness to be inconsistent with the requirements of Stipulation 1.3 - Authorized Officer.

The practice of delaying necessary maintenance (projects which make it through the onerous budgeting process at APSC are rarely unnecessary) on an aging pipeline concerns JPO. This concern is one of the motivations for BLM's planned systems integrity review (see 1999/2000 Maintenance CMP). If critical system performance is found to have degraded outside functional parameters (Design Basis and regulatory requirements), determinations of non-compliance to Stipulation 1.18.1 may be made.

## 6.3 Grant/Lease Compliance

As a result of construction oversight, JPO has determined that APSC is not complying with certain sections and stipulations of the Federal Grant of Right-of-Way and State Right-of-Way Lease specific to individual systems or programs. They are as follows:

### 6.3.1 Section 9 of the Grant and Section 16 of the Lease - Construction Plans and Quality Assurance Program

JPO finds that APSC's quality program controls, established to determine suppliers' capability for providing items and services that assure the integrity, maintenance, and safe operation of TAPS, are inadequate. In accordance with the Grant language, the Authorized

Officer will evaluate adequacy of APSC corrective action prior to revoking quality program approval.

6.3.2 Stipulation 1.18 - Surveillance and Maintenance

JPO finds that APSC was unable to demonstrate that the pipeline bridge inspection program adequately ensures that identified maintenance deficiencies are corrected.

JPO finds that APSC was unable to demonstrate that complete and up-to-date records on construction activities are maintained.

6.3.3 Stipulation 1.21 - Conduct of Operations

JPO finds that APSC was unable to demonstrate that the chosen strategy for Y2K compliance will ensure the safety and integrity of the pipeline system.

JPO finds that APSC is unable to demonstrate effective management of information necessary to safely operate and maintain the pipeline.

6.3.4 Stipulation 3.2.1.1 -Pipeline System Standards

USDOT finds APSC out of compliance with 49 CFR, Sections 192.317 and 195.703, as they have not fulfilled all the requirements of the USDOT Compliance Order, CPF 59502. This Order requires APSC to take all practicable steps to protect the Fuel Gas Line and associated appurtenances from future detrimental movement and external forces. APSC has not complied with Stipulation 3.2.1.1 until the requirements of the Order are performed and this situation is corrected.

6.3.5 Stipulation 3.9.1 - Construction and Operation

JPO finds APSC is not in compliance with Stipulation 3.9 until the FGL Corrective Action Program has been completed to the satisfaction of JPO and USDOT/OPS.

*The following additional information is available upon request:*

*Appendix A- Sections and Stipulations of the Grant of Right of Way Measured as a Result of Construction Oversight*

*Appendix B- Bibliography of JPO Reports Generated by Construction Oversight*

*Appendix C – Construction Photos*