



Assessment of Risks and Safety Culture at Alyeska's Valdez Marine Terminal

April 2023

Assessment conducted on behalf of the Prince William Sound
Regional Citizens' Advisory Council

Billie Pirner Garde | Clifford & Garde, LLP | Washington, D.C.

The views and opinions contained herein are those of the author and do not necessarily represent those of the PWSRCAC

ACKNOWLEDGMENT

This Report is prepared for the Prince William Sound Regional Citizens' Advisory Council (PWSRCAC or the Council). During the assessment and preparation of the report, Dan Lawn, a former inspector of the Alaska Department of Environmental Conservation (ADEC), died.

Dan Lawn was a consummate, dedicated, and courageous public servant who cared deeply about Prince William Sound. He was the first regulator on the scene of the Exxon Valdez oil spill in 1989. The spill and its aftermath changed Dan's life forever – he suffered retaliation, and he survived. He suffered personal tragedy and loss, and he survived.

His story of the spill was told through the movie, "*DEAD AHEAD: The Exxon Valdez Disaster*," 1992. He also became a target of the 1992 Alyeska Wackenhut "spy" caper, which was the subject of several Congressional hearings and a lawsuit. I was honored to represent him in that lawsuit and to count him as a friend for the rest of his life.

He never stopped believing that people, and Alyeska, could do better in protecting people and the environment while moving oil. When former Alyeska President Bob Malone reached out to Dan and Stan Stephens, one of the early PWSRCAC Presidents, for help in improving Alyeska's Safety Culture, Dan was the first to offer his assistance and urged the rest of us to do so.

Dan wanted me to do this work, and I hope he, and Stan, would approve.

Billie Pirner Garde
April 2023

TABLE OF CONTENTS

Executive Summary.....	1
Recommendations.....	7
Introduction	9
Background.....	11

ASSESSMENT 14

I. Safety Culture..... 14

A. The History of Alyeska’s Leadership 14

B. The Future of Alyeska’s Leadership21

C. Safety Culture – What is it?22

D. Survey Results and Findings27

1. The 2019 Open Work Environment Survey (Dittman Research)27

2. The 2021 Safety Culture Survey (Monarch).....27

3. 2022 (Summer) Open Work Environment Survey (Dittman Research).....29

4. Observations of Chairman Sumwalt (Ret.).....30

E. Lack of a Reporting, Learning Culture.....31

F. A Trusted Alternative for Employees to Raise Concerns33

1. ECP Policy and Procedures34

2. Leadership Commitment34

3. Qualifications and Competence34

4. Internal Department Metrics, Communications34

5. Review of ECP Investigation Files and Employee Concern Resolution35

6. Program Credibility35

G. Ineffective Controls and Oversight36

H. The Importance of Executive Leadership Behaviors38

II. Process Safety Management 40

A. The Valdez Marine Terminal Facilities and Operations40

B. Regulatory History of Process Safety Management.....44

C. PSM at the Valdez Marine Terminal44

1. Audits and Oversight are Inadequate.....45

2. Process Safety Management Program Audits48

a. 2018 PSM Audit of the VMT49

b. 2020 PSM Audit of the VMT50

CLOSER LOOK: Vapor Recovery Safety System Compromised and Ignored..... 52

- 3. Other Examples of VMT Unresolved Safety Issues 56
- 4. PSM Deficiencies Identified by AKOSH 60
 - a. AKOSH Inspection Number 1449721 – February 25, 2020 60
 - 1. Confined Space Issue - Violation of PSM Requirement
29 CFR 1910.146(d)(2), 190.146(d)(3)(iii), and 190.146(d)(3)(vi)..... 61
 - 2. Electrical Equipment Violations of PSM 29 CFR 1910.303(b)(2)
and 1910.305 (g)(1)(iv)(C)..... 63
 - 3. Other PSM Violations..... 63
 - b. AKOSH Inspection Number 1449993 - May 26, 2020 64
- III. Human Factors..... 65**
 - A. Human Factor Regulations and Requirements 65**
 - B. Alyeska Human Factors Issues 66**
 - 1. “Normalization of Deviance” Risk 67
 - 2. Loss of Institutional Knowledge 68
 - 3. Impact of Budget Process 68
 - 4. Apathy/Fear of Retaliation 69
- IV. Regulatory Oversight 71**
 - A. Regulatory Oversight of Alyeska/VMT 72**
 - 1. The Joint Pipeline Office 75
 - 2. The Bureau of Land Management 76
 - 3. Federal and State OSHA 77
 - a. The Role of Employees in the Identification of Non-Compliance..... 78
 - b. VMT AKOSH Inspections and Violations 80
 - c. The Effect of Contested Violations 81
 - 4. Alaska Department of Environmental Conservation 83
 - 5. The Federal Environmental Protection Agency 84
 - 6. PHMSA Regulatory Authority and Enforcement Actions 85
 - B. Alyeska’s Regulatory Compliance Program..... 87**
- CLOSER LOOK: Snow Removal and Tank Damage Spring, 2022 89***
- V. Conclusions..... 104**
- VI. LIST OF ACRONYMS 106**
- Attachment: 1995 GAO Report: TRANS-ALASKA PIPELINE -
Actions to Improve Safety Are Under Way 111**

EXECUTIVE SUMMARY

The purpose of this assessment was to reach a determination, based on the information recently raised to the Prince William Sound Regional Citizens' Advisory Council (PWSRCAC or the Council) and gathered through this assessment, on whether there is a current level of unacceptable safety risk to the Valdez Marine Terminal (VMT), its workforce, the community of Valdez, and the environment. The information gathered is, admittedly, incomplete. Yet, the information reviewed supports a well-founded concern that the current state of VMT operations, maintenance, and management present a real risk of a serious accident or incident in the near future. As reported in recent Alyeska Pipeline Service Company (Alyeska) survey data, it is notable that a significant percentage of their workforce has agreed. The recommendations contained herein support in-depth assessments of the processes, as actually implemented by Alyeska, to safely operate and maintain the VMT, while managing the risks inherent in its activities.

As described in this assessment, PWSRCAC is engaging in a due diligence exercise of seeking an evaluation of employee concerns and relevant information provided to it, to determine if it should, or must, take further action in accordance with its mission and the Oil Pollution Act of 1990 (OPA 90) mandate to provide advice necessary to protect people, the community, and the environment at and around the terminal, from the consequences of a tragic accident.

Safety Culture

Based on this assessment, it appears that Alyeska's current Safety Culture and Open Work Environment (OWE) is compromised. Alyeska's OWE appears to only be an artifact of its past. While some of the OWE program and Safety Culture components remain (i.e., policy commitments, an Employee Concerns Program (ECP), and regular employee surveys), these were unable to prevent the decline in culture over the past several years. The decline was the most significant at the VMT, where survey results confirm it is far below industry benchmarks. As an example, the numerous surveys are not even measuring to a consistent set of Safety Culture characteristics. Alyeska's Compliance and Ethics program should have identified the collapse of the Quality and Audit programs, which Alyeska's management system relies upon to maintain compliance.

According to Concerned Individuals (CIs), the management practice has been to minimize or eliminate procedures that were put into place as a consequence of past accidents or events, and were a corrective action or commitment in response to that incident or industry best practice. This practice, eliminating known or potential risks from procedural requirements without following a robust Management of Change (MOC) process, increases risks to the company, the community, and the environment. In fact, some CIs with historical knowledge of Alyeska also believe this

management practice violates the commitments made by the Owners to the U.S. Congress years ago in the Trans Alaska Pipeline System (TAPS) Improvement Plan.

A significant percentage of the workforce believes that a serious incident is imminent, according to Alyeska survey data. It appears that the key element of Safety Culture – a commitment to safety as the overriding priority – has been replaced with a business focus on budget, which has strained resources and compliance. As one CI said, “we are as safe as the budget allows.” Safety Culture and the OWE concepts and programs need to be refreshed, funded, and have full support by company leadership and Owners.

As is noted in the leadership review sections of this assessment, the ability to maintain, improve, or destroy an organization’s Safety Culture starts at the top. While some past presidents made strides to increase safety and compliance and ensure adequate resources were available to do so, the leadership of the company over the past several years has eroded Alyeska’s culture in a variety of ways. Without a long-term, stable leader to set expectations for an ethical and compliant culture, insist on an open work environment, demonstrate and expect respectful behaviors towards others, and ensure adequate resources to make safety the overriding priority, there cannot be any sustainable change. The current Interim President, Betsy Haines, brings a deep understanding of the difficulty and importance of culture change, organizational stability, a solid technical understanding of the pipeline and VMT operational issues, and the importance of trust and respect with the workforce. It is hoped that her replacement will encompass similar characteristics.

In the Owners’ consideration for the next leader of Alyeska, there must be an emphasis placed on the need to rebuild trust in its leadership and a willingness to provide adequate resources to TAPS to rebuild its culture and infrastructure. Most importantly, the next leader must be willing to *listen to the workforce*, who have been critical in keeping the VMT and the pipeline safe in the face of tremendous challenges and be their champion.

Process Safety Management Issues

Process Safety Management (PSM) standards, requirements, and best practices are the foundation for establishing safe operations in high-risk industries. Leadership and its commitment to the principles of PSM for the applicable systems and processes are a key component to Alyeska and the VMT’s Safety Culture. Best industry practices, based on PSM standards, also contribute to safe operations. Unfortunately, most of the incidents reviewed, or information provided by CIs, during this assessment were examples in which the PSM requirements were either skipped, ignored, or – apparently – willfully not complied with.

Some of the safety concerns clearly required VMT management’s prompt intervention, which did not happen in a timely fashion. This led to employee concerns being raised outside the company. Employees who did raise safety concerns reported being the subject of retaliation. Others reported that raising concerns was futile because “nothing would happen anyway” with issues left unresolved, and buried, within the Alyeska corrective action program (i.e., Management Action and Commitments (MAC) process).

Most CIs interviewed raised some level of concern about the backlog of deferred maintenance, aged and outdated equipment, obsolete equipment without replacement parts, and the level of safety risk to the VMT from these problems. Further budget cuts are anticipated and CIs do not know how a further reduced budget will possibly provide adequate funding for even minimal necessary maintenance, much less the backlog of deferred work and replacements.

Based on the information reviewed, PSM at the VMT is not a timely and effective risk prevention system. Safety is essentially being provided by the actions of employees who know the VMT systems well enough to prevent complete collapse of aging systems and infrastructure, deferred maintenance, obsolescence, defeated/suppressed and unreliable safety systems, and other processes discussed herein. While the employees have kept the VMT safe, they are unable to provide systemic prevention of system failures, for which the PSM System was designed.

PSM is a regulatory requirement and this report focuses heavily on information regarding those systems and processes which require compliance with PSM requirements, and that Alyeska has agreed to follow. The information reviewed, including findings by the Alaska Department of Occupational Safety and Health (AKOSH), confirms that Alyeska is not managing the VMT in accordance with compliance requirements and best industry practices, thus, increasing safety risks to the workforce, the public, and the environment. It is recommended that a full PSM audit be conducted by independent experts to determine the extent of PSM failures, the priority for upgrading programs and processes, and make specific recommendations on upgrading the PSM processes along with the timeline to do so.

Human Factors Consideration

Systems are maintained and operated by people, and accidents are the result of a breakdown in the “human/machine” interface (HMI). The loss of personal institutional knowledge of the people leaving Alyeska, without adequate transition planning, creates a significant risk to safe system operations. The issue of defeated or suppressed safety systems, aging equipment, deferred maintenance, and obsolescence requires fully informed operators and personnel, and a system for ensuring knowledge transfer – whether at the end of a shift or at the end of a career. While Alyeska seems to acknowledge this, it has not provided adequate time, processes or resources to ensure it happens.

The issues of staffing, fatigue management, and the impact of the collapsed Safety Culture in various departments all create serious risks – without adequate personnel to do realistic timely and effective risk assessment. Other issues, such as the impact of fear of retaliation and apathy, training issues, the lack of a simulator at the VMT, and inadequate quality oversight, all require attention and resources. These are all human factors that go far beyond traditional “slip and fall” personal safety management. Human factor failures were a noteworthy component of the Exxon Valdez disaster, as well as other incidents over the years. Yet, there does not seem to be an advocate for timely assessing human factor risks presented throughout the VMT. This issue needs to be better understood by PWSRCAC to meet its obligation of oversight of Alyeska’s risks to the public and environment from its VMT operations.

Regulatory Oversight

There has been a steady, on-going, and continuing deterioration of oversight and enforcement capabilities in Prince William Sound. Research shows current regulatory oversight over Alyeska, in particular at the VMT, by the various state and federal agencies, is inadequate to compensate for the reductions in resources and safety commitments at Alyeska.

As a result of the 1989 Exxon Valdez oil spill and the quality assurance/quality control (QA/QC) breakdown of TAPS, regulators formed a Joint Pipeline Office (JPO) to collaborate on the oversight of TAPS and spill prevention and response. As discussed in this report, the role of the JPO has seriously diminished. AKOSH conducted a serious PSM investigation in 2019 and has now become, essentially, reactive to only imminent safety concerns or accidents; specifically, with respect to PSM requirements or guidelines. The federal Pipeline and Hazardous Materials Safety Administration (PHMSA) is providing limited oversight at the VMT, but none at the Vapor Recovery facility. The Alaska Department of Environmental Conservation (ADEC), the agency with primary authority for protection of the air and water under state and federal regulations and permits, is facing significant budget cuts that, even according to the State of Alaska Governor's Office, reduce capability for response services without additional funding. Without the coordination previously provided by the JPO, state and federal oversight is limited, fragmented, and does not provide the critical overall view of the status of risks to the VMT – to the public and to each other.

Companies that have a high functioning Safety Culture welcome regulatory oversight – and any outside findings and observations. The information is viewed as providing opportunities to improve its safety performance. Companies that do not have a mature Safety Culture view the work of regulatory agencies, auditors, and oversight of any type as invasive and a burden, with a bias toward denial of facts, lack of ownership or responsibility, and a culture of challenging any such findings.

In my opinion, based on the information gathered during this assessment, and my experience in evaluating corporate cultures, Alyeska no longer has a viable Safety Culture.

The safety and compliance of VMT is indeterminate.

Virtually every CI interviewed repeated some version of the sentiment/policy position expressed by the former President of Alyeska – and other leaders – that “if a violation has not been identified by a regulator, it isn't a violation.” Management has displayed defensiveness and deniability that there are problems. External investigations and their consequences are increasing. In the absence of a strong corporate Safety Culture, the role of regulators becomes critical for protecting public health, safety, and the environment. But enforcement usually happens only after an incident or accident has already happened and people have gotten hurt, or worse.

As predicted 30 years ago by the General Accounting Office (now the Government Accountability Office or GAO), lowered throughput of oil, reduced Alyeska budgets, and serious cut backs in State of Alaska and federal funding for the Bureau of Land Management (BLM) and other state

and federal agencies, have all contributed to reduced oversight activities and presence. The consequences of reduced oversight have, generally, never been favorable for the Alaska public and its environment.

Employees are the first, last, and best defense against accidents and incidents. Every single investigation into serious explosions or accidents conducted by the U.S. Chemical Safety and Hazard Investigation Board (also known as the Chemical Safety Board) (CSB), National Transportation Safety Board (NTSB), National Aeronautics and Space Administration (NASA), or the GAO cited in this report recognize that employees initially identified the likelihood and the cause of the accident before it happened, and were ignored, their concerns disregarded, and no effective corrective action was taken. Alyeska employees should not have to be the eyes and ears for the regulators.

While it is beyond the scope of this assessment to do a full review of the current state of each agency's oversight authority and resources, given the increased importance of Alaska crude oil in the current unstable energy industry and the negative impact any interruption in the flow of that oil would have, it is strongly recommended that a federal GAO audit be conducted. This request would have to be through the Alaska Congressional Delegation and/or the appropriate Congressional oversight committees, which would be in a much better position to determine the current adequacy and effectiveness of the present regulatory oversight of the VMT.

Conclusion

Alyeska has faced challenges from the beginning of its operations. At times, there have been catastrophic incidents and accidents. Other “near misses” have occurred that narrowly avoided serious tragedies. The Exxon Valdez oil spill in 1989, and Alyeska’s failure to perform effective response capability, changed the industry and Alaska forever. It should have changed Alyeska’s respect for the dangers inherent in its operations as well. Unfortunately, the current situation reveals that changes in the organization – resources, quality and audit, maintenance and system upgrades, operational integrity and compliance – have suffered significantly under more recent corporate management. At the same time, regulatory oversight at the VMT has also diminished.

The people that participated in this assessment all care deeply about the safe operation of the VMT, and the protection of their colleagues, the community, and the environment. Their care and concerns are legitimate and based on the significant challenges to Alyeska over the past few years – in leadership, budget, re-organizations, downsizing, and safety system degradation. It is the commitment of the employees themselves that continues to be the last line of defense for the VMT and a credit to their individual and collective integrity. However, there is only so much that the workforce can do without the necessary resources and support to maintain equipment and perform necessary maintenance before the risks become reality.

Inadequate resources and budget pressures run through all of the issues addressed throughout this report. It is the underlying tension to each of the specific issues, the staffing concerns, the reduction in inspections and audits, aging equipment, excessive deferred maintenance and backlogs, the loss of institutional knowledge and inability to attract qualified replacement personnel, and all the other challenges – including inadequate preparation for snow removal during the winter of 2021-2022.

There is no substantive information in this report regarding safety or process safety issues that is not already available to Alyeska. The failure of the company to act on the information it has is one of the primary weaknesses identified by this assessment. The inability of Alyeska’s own internal Quality and Audit functions to identify the failure of these systems because of inadequate resources, and the failure of the Compliance and Ethics function to ensure the Quality and Audit functions have sufficient resources and independence to do their job, is a serious problem that needs to be addressed immediately. Without doing so, Alyeska is not meeting the public’s expectation that it keeps its often-repeated promises of reform and commitment to safety and integrity.

It is my conclusion, given the insights from this assessment, that there currently is no reasonable assurance that the VMT is operating safely and in compliance with its regulatory requirements.

RECOMMENDATIONS

The following recommendations are made to the PWSRCAC Board of Directors for their consideration to help (1) ensure the safety and environmental integrity of the VMT, its employees, and the community of Valdez; and (2) protect the integrity of Prince William Sound. These recommendations also reflect concern for the potential consequences of any major event, given the ramifications of any disruption of Alyeska's ability to meet its obligation to safely load oil tankers at the VMT.

1. Recommend that the PWSRCAC request Congress to initiate a GAO audit to determine the adequacy of present regulatory oversight of Alyeska's VMT operations by federal agencies with responsibility over the VMT, including compliance with the Federal Grant of Right-of-Way and Stipulations, and the State Lease. The audit should also:
 - identify any gaps in regulatory oversight created by the changes in recent years within federal agency responsibilities;
 - determine if the TAPS Improvement Plan, submitted to Congress in 1994 following the 1993 Oversight Committee hearings, and the Updated Plan in 1997, remains a commitment to Congress with expected conformance;
 - encompass a detailed review of the Alyeska Quality and Audit departments, their independence, resources, effectiveness, and reliability; and,
 - consider legislation that requires Agency coordination at the VMT.

(VMT operational integrity is particularly important now because an incident or accident could interrupt the flow of oil from the Alaska North Slope, thus endangering U.S. energy supplies.)

2. Recommend that the PWSRCAC request the federal Occupational Safety and Health Administration (OSHA) conduct or commission a full independent audit of applicable VMT systems for compliance with PSM. This audit should have a particular emphasis on the PSM elements of Process Hazard Analysis, Compliance with Standards, Hazard Identification and Risk Analysis, Management of Change (MOC), Audits, and the adequacy of the Quality Assurance/Quality Control (QA/QC) programs.
3. Recommend that the PWSRCAC request Alyeska and the TAPS Owners to commission an independent full assessment of the Alyeska safety management systems against the American Petroleum Institute (API) Pipeline Safety Management System 1173, and identify any gaps between the current program capabilities and a compliant program. Once the audit is completed and recommendations are made, the recommendations should address a specific timeline for actual completion of the necessary changes to ensure safe operations. To be meaningful, Alyeska must agree to actually take action to respond to any findings and provide the resources to do so.¹

¹ Ensure that any assessment include a review of the current Alyeska Audit, Compliance, Risk Assessment, and QA/QC departments, and their procedures and processes, to ensure that these departments have sufficient resources, authority, independence, reporting structure, and historical knowledge, to provide meaningful oversight on all maintenance and operations activities at the VMT, as contemplated by API 1173.

4. Recommend to Alyeska and the TAPS Owners that they commission an immediate independent audit to be conducted of all deferred maintenance at the VMT, including any deferred work listed on all backlog lists. This audit should determine if the risk ranking of deferred maintenance is consistent with all compliance requirements. It should also review any requested or required formal Process Hazard Analyses and Work Orders requesting the same. Finally, the audit should determine if the risk rankings of identified issues are being inappropriately downgraded, such that there is an inadequate process for managing the reality of hazards between initial identification and repair or replacement.
5. Recommend to Alyeska that it provide mandatory training for all supervisory and management personnel on their responsibilities to promote a strong safety culture, uphold a compliance culture, and to not tolerate harassment, intimidation, retaliation, or discrimination (HIRD). (This training should also be a mandatory part of new manager orientation and be provided on at least a biennial basis to all managers.)
6. Consider the establishment of a PWSRCAC Human Factors advisory committee to advise the Council on the status of the risks to operations and maintenance of the VMT created by Human Factor risks, as recognized by PSM requirements and industry experts, such as the loss of institutional knowledge, staffing, transition issues, fatigue, training, and Safety Culture issues.²
7. Consider the establishment of an appropriate CI protocol for PWSRCAC for the handling of any employee concerns it may receive from concerned VMT employees or contractors in the future.

² Pursuant to the implementing of regulations, the OPA 90, Section 5002(d)(6)(C), (F)(ii), and (G) the Council clearly has the authority to “create additional committees ... as necessary to carry out the above functions...” In 1994, the Council had a Human Factors subcommittee to study the Human Factors that contribute to maritime accidents in Alaska waters. New risks are presenting themselves which require similar study and recommendations regarding Human Factors that contribute to process safety accidents.

INTRODUCTION



I bring to this assessment 30 years of work on Alyeska Pipeline Service Company issues and personal experience across a range of energy industries in Safety Culture, retaliation against employees who raise concerns, the Alaska oil and gas industry, and unique knowledge and understanding of TAPS, including the VMT. Former Alyeska President Robert Malone hired me and a consulting company to assist with the development of an OWE and the recovery of the Alyeska Safety Culture; as well as to provide training, conduct work environment surveys, investigate employee concerns, assist with the oversight and re-development of the ECP, and provide advice and assistance. I engaged in these activities from 1995 through 2007. During my years with Alyeska, I frequently did work in Valdez, came to know many of the employees and leaders during that time, and consider Prince William Sound one of the most beautiful places on earth.

In 2003, I was also hired to provide similar services to BP Alaska. Following the 2007 North Slope oil spills, I became the Deputy Ombudsman for BP America's Ombudsman program. In that role, I spent most of my time on Alaska matters, receiving and investigating hundreds of employee concerns through 2016, reviewing Safety Culture issues, and providing regular oversight and advice on BP's responsiveness to employee concerns to its leadership teams.

Prior to, and in addition to, work within the Alaska oil and gas industry, I have represented workers throughout the nuclear industry since 1986, as well as represented citizens in connection with licensing challenges on safety issues and Safety Culture issues brought before the Nuclear Regulatory Commission (NRC) and the Department of Energy (DOE) complex. I have served on numerous independent Safety Culture oversight committees, advisory committees, boards, and similar processes. I serve as a Board Member of the National Association of Employee Concerns Professionals (NAECP) and have served on the Department of Labor's Whistleblower Advisory Committee.

Beginning in May 2022, I conducted this assessment through a review of historical material, information provided to PWSRCAC and me, as well as interviews of current and former Alyeska employees, contractors, and other concerned individuals. I discussed some issues with regulators and obtained agency documents through the Alaska Public Records Act, A.S. 40.25.100 – 40.25.295. I attempted, as best as possible, to determine the current status of the specific issues discussed in this report, but recognize that there will be updated information regarding some of the issues included in the report.

Given the protocol of this assessment, I was not able to completely “investigate” the employee concerns or observations shared with me. To do so would have required open access to responsible employees and managers, as well as access to all relevant Alyeska documents. I did not have that open access. However, I attempted wherever possible to have more than one source of information for what is included in this assessment.

I use the term “CIs” throughout this report, to refer to Concerned Individuals. This term refers to people who contacted me, and those that I reached out to, who agreed to be interviewed about information that would help me to understand important facts. It is used generally throughout the report, and incorporates current employees, former employees (retired, resigned, or terminated), and current and former contractors. It is important to appreciate that not all CIs contacted me because of safety concerns; but all those who agreed to provide information had some degree of concern about the status of the situation at the VMT specifically, or Alyeska generally.

It is my commitment to those who spoke and provided information to me, on the condition that I protect their identities, to do so.

I have done my best to write this assessment in a way that does not inadvertently disclose identifying information and have advised all those I interviewed of their rights to be protected from retaliation, by law and by Alyeska policy. In doing so, I have not included either the number of people that I talked to or the departments that they work or worked for. I understand that the absence of this information is a weakness in the report, but have determined that it is in the best interest of protecting the confidentiality of those who entrusted me with their information and concerns.

The master version of the assessment, which I will maintain, contains the specific references to the sources of information, interview notes, and documents relied upon in this assessment. It is my sincere hope and expectation that Alyeska personnel will not undertake any effort to identify those who participated in this assessment or take any action to retaliate against those who participated, or who are suspected of participating. They were all doing the right thing to protect the rest of us, and Alyeska, from the consequences of a failed safety culture and risks inherent to Alyeska’s business.

Billie Pirner Garde
April 2023

Disclaimer: The opinions expressed in this PWSRCAC-commissioned report are my own, and are not necessarily those of PWSRCAC, nor have they been influenced by anyone at PWSRCAC.

BACKGROUND

At 4:30 a.m. on February 25, 2022, an obvious vapor leak from a tank vent was discovered on oil storage tank 13 at the VMT. After it was discovered, the technician contacted the Power Vapor Control Room Operator (CRO) to bring tank pressure to atmospheric to temporarily stop the leak. It was impossible to access the vent in question because of the excessive snow on the tank roof. Thereafter, a snow removal crew was dispatched to begin snow removal to allow for access to the damaged and leaking vent.

Over the next month, damaged and leaking vents were discovered at 12 of the 14 crude oil storage tanks in the East Tank Farm, as crews worked to remove the heavy snow load from the top of the oil storage tanks. Several workers were injured during the snow removal process.

On March 18, 2022, VMT Operations Engineering finally issued Operating Risk Recommendations “to minimize general risk to the system and risks to crews removing snow from tanks...”

Employee concerns about the reduction of snow removal capability had been raised internally to Alyeska and VMT management previously, but no timely or effective action was taken in response. Alyeska was also cited by ADEC in February 2020 for failing to remove snow in front of an Emergency Exit door. On March 24, 2022, the Anchorage Daily News published an article entitled “Snow pileup damages Alaska pipeline company’s massive Valdez oil tanks” detailing numerous employee concerns about the ongoing snow removal operation, tank venting, and risks. At the same time, employees raised imminent safety concerns about the snow removal process and increased risks to the PWSRCAC with a request for assistance.



Alyeska East Tank Farm, March 2022

PWSRCAC, after a preliminary review of the concerns, realized that there was a potential imminent risk of an incident that could result in serious injury or loss of life for the snow removal crews, as well as a credible risk that uncontrolled vapor releases and “sparking” (i.e., ignition sources) could result in a serious explosion or fire and/or could result in a spill. PWSRCAC then raised these concerns in a March 28, 2022 letter to Alyeska, which also identified other troubling aspects of management of the VMT.

Thereafter, PWSRCAC commissioned a special project to assess the employee concerns raised and others which had come to their attention and provide an independent perspective. This project included 1) reviewing all information provided to PWSRCAC staff regarding VMT safety and Safety Culture concerns, as well as other documentation gathered during the assessment; and 2) conducting interviews of people with knowledge or concerns about VMT compliance and safety matters.

Based on the information reviewed, regulatory requirements and industry best practices, lessons learned from industry experiences, and perspectives of others regarding the findings, I prepared this Assessment. As noted in the Introduction, I brought with me to this assignment a 30-year history with Alyeska, in a variety of capacities; as well as 25 years in Safety Culture assessments, reviews, and investigations in the energy sector – from nuclear, to oil and gas, to the DOE weapons complex. I prepared this Report of my findings, observations, and recommendations for the PWSRCAC Board’s consideration. I have agreed to assist the Board in any communication about the report and recommendations, as determined by the Board.³

³ This report will be used by the Council to discuss, consider, and to serve as a basis for advising Alyeska regarding specific system integrity concerns (i.e., preventive maintenance, staffing, safety, compliance, worker health and safety, Safety Culture and human factor considerations) which present a risk to VMT operations and maintenance, and potential harm to the environment.

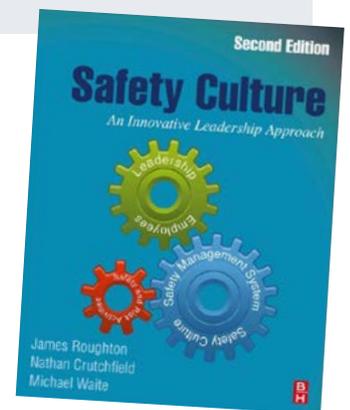


ASSESSMENT

The following assessment is the result of the review of materials gathered; interviews of CIs or others with knowledge and experience about VMT operations, maintenance, quality and audit programs, PSM, regulatory compliance, and various risk assessment and hazard review analysis processes; and Alyeska's OWE and Safety Culture.⁴ The conclusions and opinions are my own, and do not reflect those of the PWSRCAC; unless I have specifically referenced or quoted the opinions or statements of others.

I. Safety Culture

Safety Culture is defined as a group of characteristics and attitudes within an organization that establish, as an overriding priority, that issues affecting safety receive the attention their significance warrants. Organizations committed to safety must develop a culture that promotes effective safety management systems, including process safety. An organization's Safety Culture is determined by the quality of its written safety management programs (e.g., operating procedures, written policies, and the quality of implementing those programs by individuals in the organizations, ranging from top-level management, operators, and field personnel).



Maintaining, improving, or destroying an organization's Safety Culture starts with leadership.

A. The History of Alyeska's Leadership

Alyeska's present Safety Culture is the end result of a rich, controversial, and storied history. The construction of the pipeline was a world-famous feat, and a point of pride for the workforce and the State of Alaska. While there were many quality and construction issues raised over the course of the construction, and a tragic fatal explosion and fire at Pump Station 8 during start-up in July 1977, the pipeline was regarded as a huge success and engineering wonder. TAPS became Alaska's biggest employer and brought tens of thousands of young people to Alaska to be part of the project. Many stayed in Alaska and became the backbone of the Alaska economy. They became experts in pipeline operations, engineers who tackled unsolvable problems with ingenuity and hard work, and a dedicated maintenance workforce. Alyeska employees were proud of the company and excited to be a part of this endeavor.

⁴ It should be noted that for all specific technical or safety concerns that were raised or used as examples, I ensured that the issue had been previously raised within Alyeska's systems, processes, or alternative avenues. To the best of my ability to determine, the original issue has been identified to Alyeska management. It has been raised in this Assessment because of dissatisfaction with the lack of timely or effective corrective action, or as an example of a procedure or compliance violation, safety risk, or inappropriate behaviors or conduct.

The first twelve years of the pipeline operations was relatively uneventful, while tackling unique engineering challenges to respond to unanticipated events and keep oil flowing in an arctic environment. The workforce remained stable as engineers, technicians, operators, and leaders learned the subtleties of operating the pipeline safely in such challenging conditions. However, there were several high-profile quality control issues raised to Congress, including allegations of falsified weld records, which resulted in a Congressional investigation and hearing, subsequent GAO audits of the adequacy of oversight of TAPS, and Alyeska commitments to make changes. But there was also denial about the true risks of operation of the pipeline, a defensiveness to allegations of safety issues, and a growing complacency of its responsibilities to be prepared for the unthinkable.



Exxon Valdez clean up, 1989

Then the unthinkable happened. In March 1989, the Exxon Valdez ran aground in Prince William Sound, spilling an estimated 10.8 million gallons of crude oil. The spill became an environmental catastrophe, a visual horror of soiled beaches, of dead and dying wildlife, and exhausted citizens cleaning up spilled oil with buckets and paper towels. The spill broke the hearts of Alaskans and people everywhere, and gravely damaged the spirit of TAPS.

Factually, Alyeska’s failure to be prepared to meet its obligations contributed, in part, to the extent of the environmental damage caused by the Exxon Valdez spill. Among other failures, oil spill response equipment was buried under snow and inaccessible.⁵ The inability to timely deploy equipment meant that the spill essentially was uncontained for a significant amount of time. While this was only one weakness of many that were exposed by the spill and its aftermath, these lessons learned should never be ignored in current staffing and VMT management.⁶

⁵ The State of Alaska’s report on the Exxon Valdez oil spill found that Alyeska’s efforts to respond was 14 hours and 24 minutes after Alyeska received notice of the spill, and was hampered by the facts that the single flat-deck barge designated for spill response was damaged and unloaded at the time of the spill; that clean up and response equipment, which had been unloaded from the damaged barge, was buried under several feet of snow; and only one Alyeska crew member was qualified to operate a forklift needed to move the equipment and materials to the barge, as well as to operate the crane used to lift them onto its deck. “[H]ence he was forced to shuttle back and forth” (SPILL: The Wreck of the Exxon Valdez. Alaska Oil Spill Commission Final Report, State of Alaska, February 1990, pp. 17-18).

⁶ Snow removal should have remained a top risk consideration for Alyeska, and the failure to recognize the significance of adequate snow removal as its contribution to the 2022 tank vent damage is akin to the “normalization of deviance” attitude that led to catastrophic consequences for NASA in the loss of two space shuttles and their crews. It is also indicative of the loss of institutional and historical knowledge of current personnel considering budget and staffing cuts today.

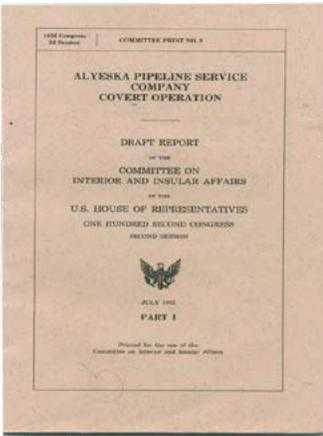
Another result of the Exxon Valdez spill was the formation of the Regional Citizens' Advisory Council under Section 5002 Terminal and Tanker Oversight and Monitoring of the Oil Pollution Act of 1990, (33 U.S.C. Chapter 40). This established an advisory role and citizen oversight function for VMT operations, currently satisfied by PWSRCAC.

Not surprisingly, the spill was followed by numerous government investigations by state and federal agencies, Congress, and followed shortly thereafter by criminal investigations by the Department of Justice (DOJ) on behalf of the Environmental Protection Agency (EPA). There was substantial, non-stop media coverage. There were civil lawsuits filed for damages by the State of Alaska, the United States, multiple Prince William Sound communities, Alaska Native corporations, small and large industries reliant upon the Sound for fishing and recreation, and impacted individuals. The President of Alyeska at the time of the spill, George Nelson, a BP/Sohio loanee to Alyeska, resigned in the wake of the spill litigation and controversy. He was replaced by James Hermiller, also a BP/Sohio loanee. (A "loanee" meant that the employee stayed on the payroll and benefit plans of the parent owner company, while on loan to Alyeska. This relationship may also be referred to as Owner employees.)

In 1991, Alyeska employees in Valdez began raising concerns about VMT maintenance and operations through Alyeska critic, citizen activist, and former independent oil broker, Charles "Chuck" Hamel to the EPA, Congress, other regulators, and the media. These allegations received serious attention by Congressional oversight committees, government agencies, and the media. Then there was the publication of criticisms of the Alyeska Oil Spill Contingency Plan and the release of confidential Alyeska documents, in a Scottish documentary about the similarities between the VMT and Sullom Voe, a Scottish oil terminal. BP, from its London-based headquarters, directed Alyeska to "stop the (information) leaks. At the February 1990 Owners' meetings, the Owner representatives expressed concerns over the leaks.⁷ Alyeska then hired its security contractor, Wackenhut's Special Investigations Division (SID), to ferret out those employees who were "leaking" documents to Hamel.



⁷ See, Report on the Committee on Interior and Insular Affairs of the U.S. House of Representatives, ALYESKA PIPELINE SERVICE COMPANY COVERT OPERATION, Part I, July 1992, p. 8.



What followed was a shocking assault on the privacy and legal rights of Alyeska's critics and employees, an "outrageous attempt to silence its environmental critics using covert spying techniques..."⁸ Wackenhut invaded the workspace of Alyeska employees it considered suspect or disloyal to see if they were in contact with Hamel, then they collected Hamel's personal trash in Alexandria, Virginia, to find evidence of contacts from employees. Wackenhut illegally bought phone records of Hamel, suspect employees, and even members of Congress with oversight responsibility of Alyeska to try and find connections; the SID agents came to Valdez to try and entice Alyeska employees to provide safety concerns for money and identify allegedly disloyal employees; and, finally, it established a fake environmental organization to try and entrap Hamel into revealing

the names of its "leaking" employees, in exchange for cash. All of the actions taken by Wackenhut were communicated daily to Alyeska management.

The operation came to light in 1992, when one of the Wackenhut "spies" tipped off Hamel, leading to Congressional investigations and hearings, extensive media coverage, and lawsuits.⁹ When exposed, Alyeska took out full page ads of apology in local and national newspapers. Alyeska employees learned of the covert operation through media coverage, Congressional hearings, and courtroom activity. Shortly after this all came to light, the President of Alyeska, James Hermiller, who approved and oversaw the covert operation, resigned. The litigation cases were eventually settled.

Meanwhile, in 1992-1993, Alyeska fired or laid off five quality control inspectors who had raised thousands of substantial concerns along the pipeline and at the VMT to management. These concerns identified a complete quality control breakdown in numerous areas of TAPS, including the VMT, and resulted in multiple independent and government audits of the entire pipeline, leading to even more safety and compliance issues being identified. The termination of the inspectors led to whistleblower retaliation lawsuits, more Congressional investigations and hearings, and substantial negative media coverage.

VOL. XLVI, NO. 342 538 PAGES

Wackenhut team spied on Valdez

Pair looked at files, dug through trash

By RICHARD MAUER
Daily News reporter

VALDEZ — The classified ad. in the Valdez Vanguard of April 4, 1990, was simple, to the point and totally deceptive. It was the Alyeska spy operation brought home to Alaska.

"The Ecolit Group is interviewing citizens of Valdez regarding the oil spill and other issues pertinent to the protection of our environment," read the announcement, wedged between an ad on how to beat a urine drug test and a divorce notice.

"A staff researcher will be conducting interviews at the Westmark Valdez the

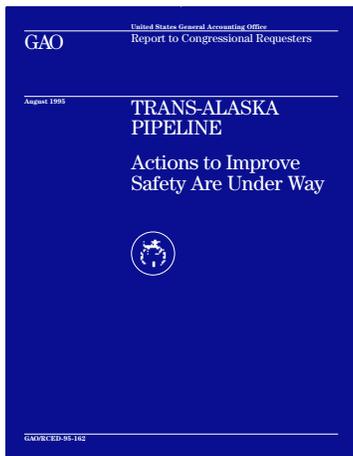
week of April 2, 1990. Please contact Mr. Gary Crep for a confidential appointment if you would like to discuss environmental issues, Terminal operations, or the way oil companies are handling the present state of affairs."

There was, in fact, nothing "confidential" about this operation. When Crep and Rick Lund arrived at the Westmark on April 2, 1990, on behalf of the Alyeska Pipeline Service Co., they were carrying a bag full of secret electronic gear to record anyone with gripes about Alyeska.

⁸ Id., p. 90.

⁹ Id.

Oversight of the pipeline remained a constant concern to the U.S. House of Representatives Oversight Committee. As stated in the 1995 General Accounting Office (now known as the Government Accountability Office or GAO) Report:



"[TAPS], operated by [Alyeska] transports nearly 20 percent of the nation's domestically produced oil and has operated for nearly 20 years without a major oil spill. However, throughout the pipeline's years of construction and operation, problems with the condition of the pipeline, the quality assurance program of its operation, and the effectiveness of the government's monitoring efforts have been reported. These problems have resulted in continued oversight by the Congress. For example, hearings held by the Subcommittee on Oversight and Investigations, House Committee on Energy and Commerce, in July 1993 raised concerns about the ability of the pipeline to continue to operate safely and of its federal and state regulators to ensure that it does. A study commissioned by the Department of the Interior's Bureau of Land Management (the Bureau) in August 1993

to assess Alyeska's management and operation of the pipeline identified 22 categories of substantial – and potentially threatening – deficiencies. Other audits of the pipeline in recent years have identified additional deficiencies. In total, more than 4,900 deficiencies have been identified."

(1995 GAO Report, "Trans-Alaska Pipeline – Actions to Improve Safety Are Under Way," at p. 2.)

In response to the Congressional hearings and investigations, and as a reorganization of Alyeska management, the Alyeska Owners made significant commitments to revise its Vision, Mission, and Goals, make changes to the management and decision-making structure of the company, and address accountability. It outlined its commitments in the TAPS Improvement Plan.¹⁰ The TAPS Improvement Plan committed to improving the independence and capacity of its quality and audit functions, endorsing compliance culture across the company, adopting PSM for applicable system and processes throughout the company, and changing its culture to a "participative management" style. The principal objectives of the TAPS Improvement Plan were: (1) to ensure operational integrity and compliance with all laws and regulations; (2) to increase operational efficiency of TAPS; and (3) to implement fundamental management system and process changes.

In September 1996, the Alaska Forum for Environmental Responsibility (AFER) issued a Status Report of the trans-Alaska pipeline, prepared by Richard Fineberg.¹¹ Chapter 9 of that report focused on the problems and issues about the VMT Vapor Recovery System that had resulted in leaks, pipe breaks, incidents, and events, and thousands of identified but unrepaired electrical issues. Following the disclosures at the Congressional hearings, through the whistleblower lawsuits and other incidents and events, the Alyeska President at the time, David Pritchard, a BP Owner loanee, resigned.

¹⁰ See, the Trans-Alaska Pipeline System (TAPS) Improvement Plan, February 15, 1994; and testimony of Richard Olver, CEO of BP Exploration, at the second 1993 hearing on TAPS, pp. 196-199.

¹¹ PIPELINE IN PERIL: A Status Report on the Trans-Alaska Pipeline, by Richard Fineberg, September 1996.

In 1996, Bob Malone, a BP Owner loanee, became the President of Alyeska, with a commitment to make organizational culture change a priority. He established an OWE that promoted employees raising concerns and expanded the role and independence of the ECP. He stated that his goal was to “drive discrimination and retaliation” out of the organization. A TAPS Improvement Plan Update was issued in August 1997 which confirmed that the Quality Assurance Program procedures had been developed and implemented incorporating the relevant findings of the BLM Audit and other audit findings, that a tracking matrix had been developed and was being implemented to track compliance commitments, and that an audit and surveillance process was in place. The update advised that the JPO had approved the Quality Program and auditing process.¹²

Malone frequently met with employees to discuss their concerns, and repeatedly told them that their job was to run the company safely and in compliance with all the rules, and that his job was to make sure they had the resources they needed to do so. He told them if they could not do the job safely and in compliance, it was their job to tell him. He made this commitment in an era when oil prices had dropped to \$9.00 a barrel.

He met with Congressional members and investigators regarding his commitment to establishing a new culture and work environment. After several years of active management of Alyeska, he was promoted to President of BP Shipping.

Malone’s successor, David Wight, a BP Loanee, continued the commitment to an OWE over the next several years. During this time, Alyeska underwent a significant reorganization and downsizing activity, but had a relatively stable time operationally for several years. Morale continued to grow, with good Safety Culture survey results and a strong ECP. While some operational issues and staffing concerns developed throughout his tenure, these issues did not result in either Congressional investigations or litigation. Wight retired in 2005.

Kevin Hostler, also a BP loanee, became the next President of Alyeska. Although he committed to continuing Alyeska’s OWE, he also managed the company in a manner that was perceived by some employees as undermining that objective. By 2007, his behaviors and actions became the subject of criticism reflected in the annual OWE survey. Fear of retaliation increased throughout the company. In 2010, an anonymous letter was sent to the BP Ombudsman’s office with serious allegations regarding Hostler’s leadership decisions and behaviors. The issues were independently investigated. Hostler retired in September 2010.

Following Hostler’s retirement, Tom Barrett became the first non-Owner loanee President of Alyeska. Barrett brought with him decades of U.S. Coast Guard experience, much of it in Alaska, having retired in 2004 as the Vice Commandant of the Coast Guard. His tenure as President of Alyeska, from 2010 to 2020, was relatively uneventful. Barrett retired in 2020, and was the longest serving of Alyeska’s top executives. Barrett’s background as a regulator also differentiated him from his oil industry predecessors. Senior Executive at PHMSA. He brought stability to the organization

¹² See, TAPS Improvement Plan Update, issued August 1997.

and a good relationship with regulators. OWE continued as a policy throughout his tenure. Although there was, as there usually are, some controversies regarding his staff and style, there were no major incidents, accidents, or scandals under his tenure. He retired in 2020.

Barrett was replaced with Brigham McCown, also as a direct Alyeska employee. Like Barrett, he had military experience and a regulatory background with PHMSA. Unlike Barrett, his tenure was short – two years - and rocky. Almost from the beginning he alienated Alyeska’s leadership and members of the management team. Numerous complaints about McCown’s actions, behaviors, and management style were raised in a variety of venues, surveys, employee complaints, and litigation. These behaviors drove a drop in morale, the departure of many senior Alyeska personnel with decades of experience, and the influx of people with little historical and institutional knowledge of Alyeska or oil and gas experience. Survey results reported a stunning increase in fear of retaliation and a drop in trust of supervisors’ ability to resolve employee concerns.

Following McCown’s abrupt resignation in January 2022, there have been two interim Presidents. The first, Danika Yeager, stepped up from her role as Vice President of Operations and Maintenance for seven months. She resigned in July 2022 to take another industry position outside of Alaska. Hillary Schaeffer stepped into the Vice President position, vacated by Ms. Yeager. She ensured continuity of in-depth understanding of Alyeska systems and challenges. (Ms. Schaeffer’s commitment to assist with a smooth transition has been significant. She has a solid reputation among most people as approachable and respectful, and understands the operations of the pipeline and the VMT.)

Ms. Yeager was followed by the return of former Alyeska executive Betsy Haines, who has agreed to fill the position until the Owners select a new leader for the organization. Both Ms. Schaeffer and Ms. Haines recognize the cultural challenges that Alyeska is facing, reiterated to the workforce employees’ rights to raise concerns without fear of reprisal, and have kept Alyeska operating safely. Both brought with them important institutional knowledge of Alyeska operations and issues.

In particular, Ms. Haines – who was mentored early in her Alyeska career by Bob Malone – brings a deep understanding of the difficulty and importance of culture change, organizational stability, a solid technical understanding of the pipeline and VMT operational issues, and the importance of trust and respect with the workforce. It is my observation that, while she has stated that her role is transitional, she has the right skill set to do so successfully. Her agreement to return for this difficult transitional assignment is a testament to her commitment to Alyeska, its workforce, and its safe operations.

B. The Future of Alyeska's Leadership

"Leaders create culture. It is their responsibility to change it. Top administrators must take responsibility for risk, failure, and safety by remaining alert to the effects their decisions have on the system. Leaders are responsible for establishing the conditions that lead to their subordinates' success or failures."¹³



2005 BP Texas City Refinery Explosion

There have been numerous national and international disasters that were caused by choices of leadership, in particular decisions that put schedule, cost saving and/or increased revenues above safety. The loss of the Space Shuttle Columbia was laid at the feet of "the White House, Congress, and NASA" by "creating resource and schedule strains that compromised the principles of high-risk technology organizations." The explosion at Texas City Refinery was blamed, in significant part, on BP for not "providing adequate resources to prevent major accidents and impairing process safety performance."¹⁴ Virtually every serious accident investigation confirms that the tension between cost on the one hand, and compliance and safety on the other hand contributed to the event.



2003 Columbia Shuttle Accident

Sufficient resources will be key to Alyeska's ability to ensure that all of its processes, particularly the VMT and its operations, are able to operate safely, and to take the necessary steps to improve its culture.

The Owners are in the process of choosing a new leader for the organization. The choice is critical to the future of Alyeska.

Without a long-term, stable leader to set expectations for an ethical and compliant culture, insist on an open work environment, demonstrate and expect respectful behaviors towards others, and ensure adequate resources to make safety the overriding priority, there cannot be any sustainable change.

The key to recovering Alyeska's culture and ensuring safe and compliant operations will be the selection of a leader with the right skill set to manage a complex company, an aging TAPS and VMT, with the commitment and support from the Owners of adequate resources necessary to address

¹³ 2003 Report of the Columbia Accident Investigation Board, Chapter 8, History as Cause: Columbia and Challenger, at p. 203.

¹⁴ March 2007 Investigation Report, BP Texas City Refinery Explosion and Fire at p. 205.

the significant backlog of deferred maintenance, replace aging equipment, and to rebuild the internal oversight capability of Alyeska. This includes the resources to actually make the changes necessary to upgrade the VMT systems.

I believe one of the requirements of good leadership is the ability to listen - really listen - to those in your organization. An effective leader is very good at listening, and it's difficult to listen when you are talking.

— John Wooden —

The new leader of Alyeska needs to rebuild the trust of the organization in its leadership. That will include ensuring that the ECP is seen as a credible, safe, and independent alternative avenue for raising concerns, with a review of the current operations of the Disciplinary Review Board process in ensuring fairness and consistency in discipline while protecting people and the organization from the consequences of the fear of retaliation. External candidates will need to understand the history and role of these functions within Alyeska's OWE and its Safety Culture, which is unique.

Most importantly, the next leader must be willing to *listen to the workforce*. They have been critical at keeping the VMT and the pipeline safe in the face of tremendous challenges.

C. Safety Culture – What is it?

There are two aspects of Safety Culture I reviewed as part of this assessment. The first was an attempt to understand what Alyeska defines its own Safety Culture as, and what its Safety Culture goals are. The second was to understand what Alyeska's employees said in response to various surveys.

As to the first issue, **fundamentally, Alyeska does not have a consistent definition or policy about what its organizational Safety Culture actually is.**¹⁵ In order to determine the state of Alyeska's Safety Culture, it is critical to understand what the characteristics or values of importance to the organization are; what is the desired end-state; and where does the company stand in comparison to those goals. For example, hypothetically:

COMPANY GOAL:	CURRENT STATUS:	DICHOTOMY:
100% of employees are willing to raise safety concerns without fear of reprisal.	76% of employees are willing to raise safety concerns without fear of reprisal.	24% of employees are afraid to raise safety concerns.

This example provides a straightforward goal, the results of a survey measuring that goal, and the identified dichotomy. Once a company understands the dichotomy between its present state and

¹⁵ The Center for Chemical Process Safety (CCPS) defines Safety Culture as “the combination of group values and behaviors that determines the manner in which process safety is managed” (CCPS, 2007). An organization's Safety Culture is the combination of attributes, characteristics, and behaviors that reflect how an organization operates, by default. Measuring culture has become an important tool of understanding the actual status of how well a company reflects its values. That requires a measurement of those specific values or traits.

its goals, a company can then develop the appropriate actions needed to improve that area of weakness. This is not the present state of Alyeska's survey work or tools.

This has not always been the case. In the past, Alyeska had a definition of the characteristics and metrics that had been identified by its leadership team, which was used to measure the Alyeska OWE and Safety Culture. In 2007 those characteristics were: Leadership at Every Level, Continuous Improvement, Consistent Accountability, and Barrier Free Issue Reporting (See, Alyeska OWE Policy, 2007). Then OWE surveys measured the workforce's views on these characteristics every 18 months to two years, allowing sufficient time for understanding the results, sharing them with the workforce, developing improvement plans, taking actions in those areas that needed improvement or attention, and then giving time for the culture to respond to these changes.

According to information available to me, following the 2007 survey that I completed for Alyeska, it conducted some form of an OWE survey in 2010, 2012, 2014, 2016, 2017, and 2019.¹⁶ The results of these surveys are generally available to the workforce. It also conducted surveys in 2021 and 2022 by different contractors.

The problem is that there is no consistency about what characteristics the more current survey tools are actually measuring. Each contractor has used different characteristics, thus creating a virtual fruit basket of comparisons. But none measures any company-defined goals or values.

I have gone through the recent surveys and identified the values or attributes that were measured, demonstrating that these surveys all are relatively random tools of marginal value for any comparison purposes of Alyeska's work environment to actual company objectives.

First, a "Safety Culture" survey was conducted by a contractor, Monarch, to measure "Safety Culture Maturity" in 2021. It measured a set of values that were identified by the contractor, not Alyeska. Those values were:

- 1) commitment
- 2) accountability
- 3) priorities
- 4) competency
- 5) communications
- 6) supportive resources
- 7) hazard awareness
- 8) reporting and investigation

¹⁶ There was a survey conducted by Dittman Research in 2019; however, it does not appear that the full results of that survey were released to the workforce at the time. Some CIs interviewed believe that the release of those survey details was prohibited by management because it was "so bad." I was not able to verify or discount that belief. For whatever reason there were no survey results published or available to the workforce. (This is in contradiction to the ECP Manual, ECP-333, Rev 0, Section 9.3, "The overall results of the survey should be shared with the TAPS workforce," p. 25.) However, the 2019 survey results are included in the analysis charts prepared by Dittman Research, and attached to the fall 2022 survey that has been made available to the workforce. And, indeed, in 2019 virtually every response declined, some significantly (OWE Survey Results and Tracking, pp. 11-23).

The “Safety Culture” survey was done in spring of 2022, facilitated by contractor ISNet. This survey tool was followed up with personal visits to Alyeska by a Safety Culture contractor, Robert Sumwalt, the retired Chairman of the NTSB, in late 2021 and the spring of 2022.

Second, Alyeska also had “Open Work Environment” surveys done by a local contractor, Dittman Research, which conducted similar surveys in 2017, 2019, and the summer of 2022.

The OWE survey measured employee perceptions in yet different categories. Those categories were:

- 1) job satisfaction
- 2) internal relationships
- 3) external relationships
- 4) safety
- 5) environmental stewardship
- 6) issue reporting
- 7) consistent accountability
- 8) continuous improvement
- 9) future focus

Third, to add even more confusion, Alyeska’s Code of Conduct defines “Safety Culture” as a commitment to industrial/personal safety:

“Everything we do respects the responsibility we have been given to protect our people, our neighbors and TAPS. Alyeska is committed to providing a safe workplace for all TAPS workers. It is the expectation that every TAPS worker understands our Safety Culture, their role, and that they are empowered to make the workplace safe by mitigating risks inherent in the industrial activities undertaken in an arctic environment.”

(Alyeska 2021 Code of Conduct, p. 15.) (This definition, and the graphics, are generally about industrial/personal safety; and while very important, are confusing when compared to other definitions used throughout the company for Safety Culture in a broader sense.)

Fourth, in May 2022, a different set of “Culture Characteristics” was used at the TAPS Strategic Planning Session, May 11, 2022. Those identified were:

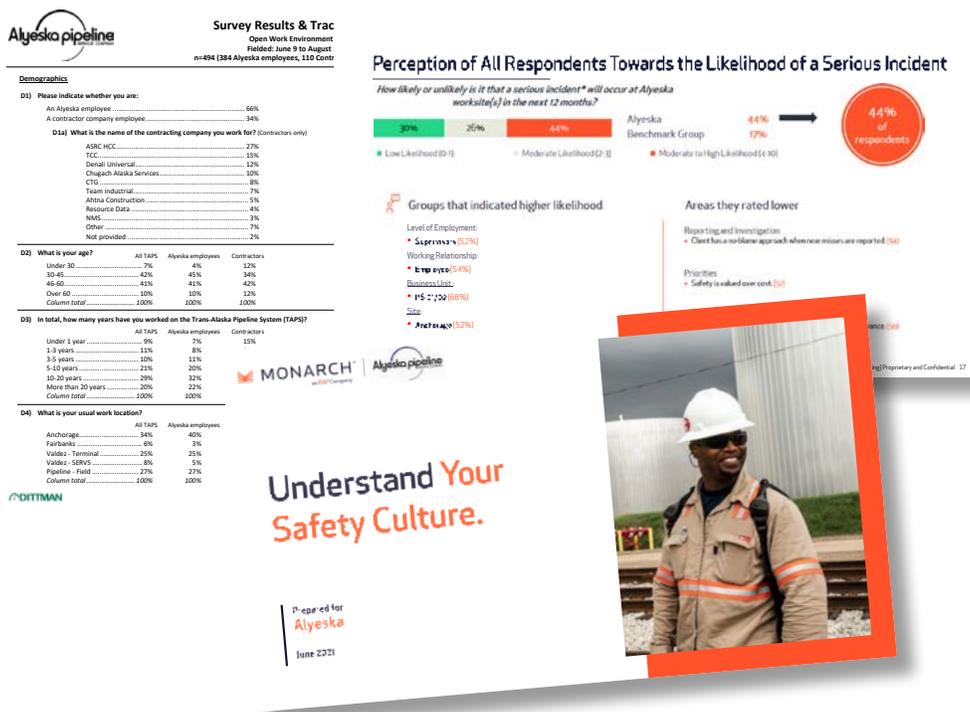
- **Act with Discipline** – We all commit to high standards and consistency to our work on TAPS;
- **System View** – We all take action and make decisions considering the risk and/or impact on the success of the total system;
- **Make Sound Decisions** – We all make timely decisions with the right people, the right data, the right processes, and the right focus;
- **Learn, Improve, Innovate** – We all seek to learn from our experiences, overcome challenges, and enhance the way we do business; and
- **Speak Up, Step Up** – We all spot opportunities, share ideas and concerns, and take action on solutions.

Unfortunately, these five recently identified cultural characteristics do not use the words “safety,” “ethics,” or “compliance” at all; nor do they include anything about how people will be treated, the word “respect,” or anything about inclusion, diversity, or intolerance for retaliation or discrimination. There are no measurable, achievable, specific goals, nor are there any metrics identified to measure progress toward such goals.

Finally, Alyeska’s ECP also has its own definition of Safety Culture:

“An organization’s values and behaviors – modeled by its leaders and internalized by its members – that serve to make safety the overriding priority. In broad terms, Safety Culture refers to organizational concepts, including programs, human resources, and human performance, that foster an environment that recognizes the significance of and responds to safety issues.”

(Employee Concerns Program Manual, ECP-333, Appendix A: Definitions & Acronyms, p. 30.)



Improving corporate culture is a journey. The lack of an Alyeska-specific set of Safety Culture characteristics with identifiable metrics and achievable goals, is a problem. It is simply not possible for a company to collectively work together to make improvement without having achievable goals, the entire workforce knowing what the goals are, what the current status of the organization is under each characteristic/goal, and what actions it is going to take to reach the goal. **Alyeska’s current Safety Culture appears to have lost its way.**

OBSERVATION:

Alyeska does not have its own definition of Safety Culture, supported by a written policy, endorsed by leadership, and communicated to the organization. The company needs to define what Safety Culture means for it, whether that means adopting an industry-standard or defining its own Safety Culture attributes, and setting up metrics for each attribute. (Alyeska has recently established a Safety Culture Leadership team, which may consider this observation.) Once attributes are identified, best industry practice would be to communicate those attributes with the workforce, including the metrics, and do a baseline survey to those attributes at some future point after the workforce has had time to adjust to new leadership. (If attributes are adopted from some of the recent survey work, it might be possible to utilize the information already collected.) After the baseline is established, the findings should be evaluated, an action plan developed, and an accountable executive should be assigned to be responsible to ensure that corrective actions are actually implemented.

D. Survey Results and Findings

While all information from employees is valuable, the status of the survey work done at Alyeska over the past several years is confusing to interpret, at best. The second aspect of the Safety Culture information I reviewed was the actual information collected from employees. As identified above, there have been several surveys or assessments of the Alyeska culture in the past three years. I have analyzed and compared the material available regarding each of these surveys, and included relevant observations from each, with anecdotal information provided to me, as well the documentation provided regarding safety and management issues. (Chairman Sumwalt's information appears to have been informally collected and not reported out to the workforce; as such, it is difficult to consider.)

1. The 2019 Open Work Environment Survey (Dittman Research)

In 2019, there was a survey performed by Dittman Research, with the results to only two questions reported in a one-page Corporate Communication to managers and supervisors in July 2020. The communication about the 2019 work environment survey reported a stunning drop in scores regarding trust and fear of retaliation:

“One category in the OWE survey is Issue Reporting, in this category employees gave their lowest rating to these two statements:

1. Supervisor resolves issues.
2. I can report without fear of HIRD.

Reactions to those statements also showed the greatest rating decline from the 2017 survey, including a 4.1% rating decline for ‘I can report concerns without fear of HIRD.’”

Unlike years before and after this survey, the actual survey results were not published to the workforce – only the single page of information referenced above to management. (The numerical results from the Dittman 2019 survey are now available in the 2020 survey analysis charts.)

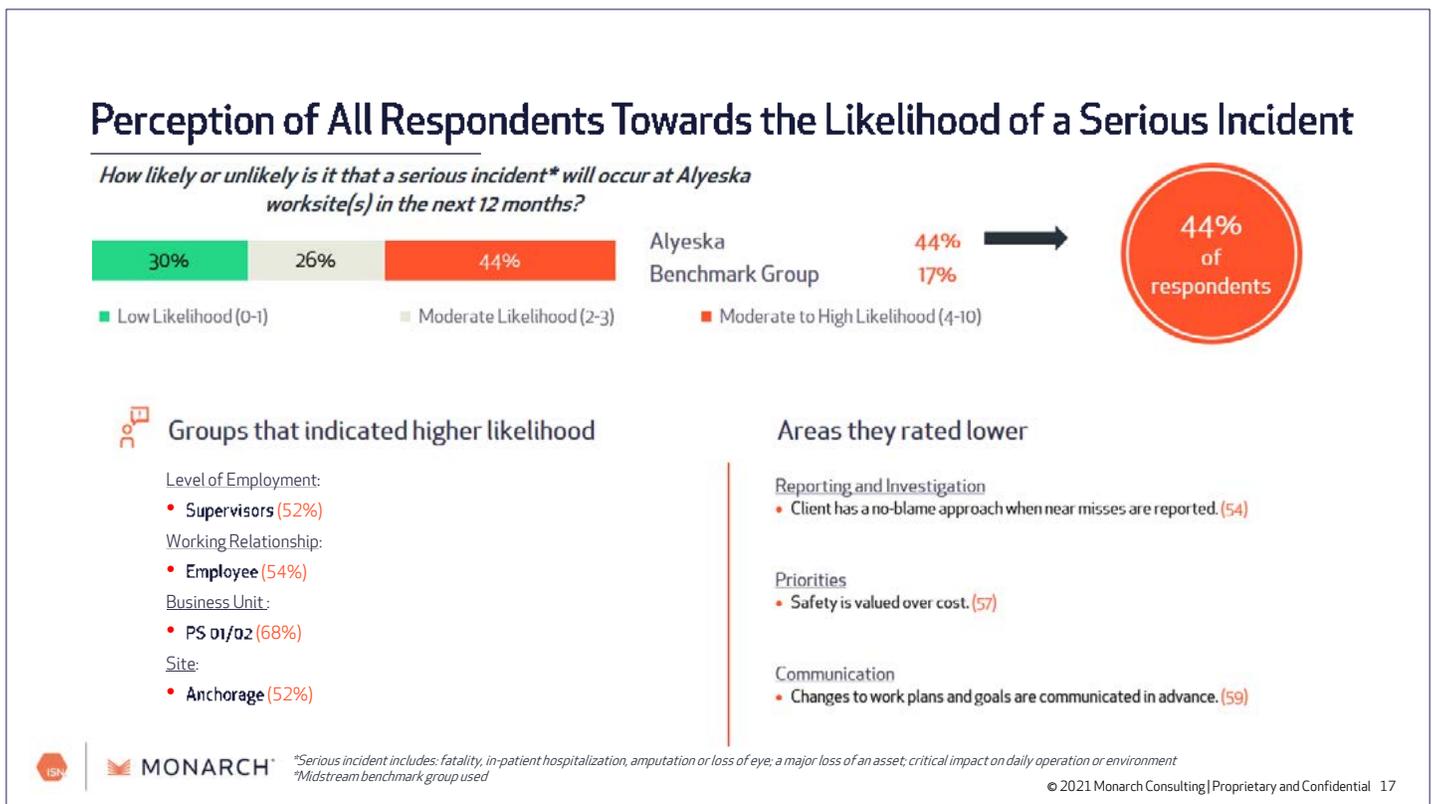
2. The 2021 Safety Culture Survey (Monarch)

In Spring 2021, there was a Safety Culture survey performed by Monarch, a contractor, who administered a standardized safety survey aligned with API 1173 (Safety Management System practice), with the results published to the workforce in June 2021. It compared results to similar industries.

This survey used “50+ questions across 8 Safety Culture values.” Survey responses were collected from April 13 – May 10, 2021, from 455 Alyeska respondents. Monarch’s “big picture” of the Overall “Safety Maturity” was rated 74, below their Midstream Benchmark of 80.¹⁷ The “Summary of Insights for Alyeska” reported that Alyeska had strengths in the areas of “Commitment,” “Competency,” and “Hazard Awareness,” while the identified focus areas (i.e., areas in need of improvement) were “Accountability,” “Communications” and “Reporting and Investigations.”

The most troubling response in this survey was that 44% of the respondents indicated a belief that a moderate to high likelihood of a Significant Incident or Fatality (SIF) would occur.¹⁸ That is compared to a benchmark average of 17%. Even Alyeska’s best ratings from this survey are below the Midstream Benchmark. For the bottom-rated questions, the worst company ratings were those related to the process for identifying and documenting hazards “being difficult,” and that there is a culture of blame when “near misses” are reported.

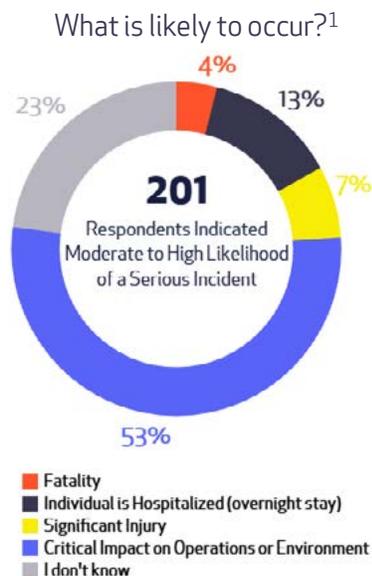
Notably the Monarch survey did not ask a question about fear of retaliation or some version of the question “if employees would raise a concern if they had one, and if not, why not.”



¹⁷ Monarch benchmarked Alyeska’s safety culture scores against other “midstream” oil & gas facilities, that transport, process, store and market oil, natural gas and natural gas liquids.

¹⁸ This is an important observation. The CSB investigation of the 2005 Texas City Refinery explosion found that a survey conducted the year before the accident noted that workers believed that a key risk was that “Texas City would kill someone.” Another key safety risk at Texas City that had been identified before the accident was that “the site was not reporting all incidents in fear of the consequences.” PSM gaps that had been identified also included “funding and compliance” and deficiency in the quality and consistency of the PSM action items...” CSB BP Texas City Report, at p. 173.

Serious Incident Risk Profile



Why is it likely to occur?²

"With the **constant need to reduce headcount for budget reasons** there is a point where the organization is stretched to the max and when that occurs the chances for near misses or misses will increase." (*Employee*)

"In my multiple decades on TAPS, **I have never seen morale so low**. Low morale segues into low or poor performance." (*Contractor*)

"Field personnel are being encouraged to do more with less and to put a significant **emphasis on getting the job done cheaper and faster**. This is being translated to instances of skirting the edges of legality and incurring regulatory penalties." (*Employee*)

Aging infrastructure and **continuous budget cuts coupled with reorg's** that leave APSC employees scrambling for available jobs that they are not necessarily trained for or educated in is concerning. (*Contractor*)



1. In your opinion, select the serious incident type that you believe is most likely to occur at [Hiring Client] worksite(s).
 2. Please provide any additional details, such as why the incident is likely to occur, specific body or operational areas that may be impacted, or suggestions on how [Hiring Client] can mitigate the risk of a serious incident occurring.

3. 2022 (Summer) Open Work Environment Survey (Dittman Research)

The 2022 (Summer/Dittman) OWE survey, which was conducted from June 9 – August 3, 2022, included 494 participants. The full results were shared with the workforce in late October 2022. The survey reported areas of strength about issue reporting, environmental stewardship, and safety; also, that "there was a strong sense of pride and mutual respect among TAPS workers."

It reported Focus Areas that garnered the lowest results in the areas of TAPS' future strategy, preparation of future leaders, and "about one-third questioned whether Alyeska is hiring the right people who reflect company values..."

The survey summary reports that "employees overwhelmingly said they can report concerns without fear of HIRD..." However, it also states that "[w]hile 72 percent said they can report concerns without fear of HIRD, 11 percent disagreed or strongly disagreed..." The KYP quotes Betsy Haines as saying "Personally, I was pleased to see high ratings when employees were asked if they felt free to raise concerns..." (KYP # 22-026: TAPS Open Work Environment survey results, October 27, 2022) (emphasis added).

It is unclear what "high rating" Ms. Haines is referring to regarding whether employees "felt free to raise concerns..." If it is the 72% identified in the above question, that is not a good rating. (Nuclear plants have been shut down by their regulator when the answer to that question was as high as

92%, and now regularly initiate some form of increased oversight and enforcement action at 80%).¹⁹ She also recognized that there was a decline across many of the attributes, even if the results were relatively good.

The actual survey questions and answers, which were provided to the workforce, report that only 46% of all respondents “strongly agree,” and 26% “agree,” that they “can report concerns without fear of HIRD.” Similarly, only 49% of all respondents “strongly agree,” and 30% agree, that their supervisor “effectively resolves reported issues and concerns” (October 27, 2022 OWE Survey Results, pp. 6-7, Questions 29 and 30).

Another example, set out in the summary graph below, reflects the extremely low ratings given by respondents to the future of Alyeska. In particular, across the board, there was an unacceptable rating on the question of whether Alyeska “retains existing personnel who reflect our values and perform with professional excellence.”

Future Focus

Alyeska uses the right strategies to position the company for the future.	3.67	3.57	3.88
Alyeska is addressing critical issues created by declining throughput (e.g. low flow) to ensure long-term TAPS operations.	3.99	3.98	4.00
Alyeska educates the public and stakeholders about the challenges to TAPS.	3.85	3.79	3.97
Leaders of Alyeska prepare employees to be future leaders.	N/A	3.37	N/A
Alyeska applies enterprise risk management methods to identify and reduce uncertainties and system risks.	3.95	3.87	4.11
Alyeska hires people who reflect our values and perform with professional excellence.	3.79	3.83	3.70
Alyeska retains existing personnel who reflect our values and perform with professional excellence.	3.46	3.33	3.72

4. Observations of Chairman Sumwalt (Ret.)

The observations of Mr. Sumwalt apparently were reassuring to him and to Alyeska regarding the Alyeska Safety Culture he observed during his visit to Alaska in late fall 2021, and again in March 2022. Without an understanding of his work, it is difficult to measure it as compared to the data from employees themselves as communicated through surveys, and is not included here.

The survey results reviewed for this assessment contained additional information from employees and contractors, from all Alyeska locations, that should be seriously considered and incorporated into an action plan consistent with new goals.

¹⁹ October 24, 1996 NRC Enforcement Action Letter (EA-96-439) and “Order Requiring Independent Third-Party Implementation of Resolution of Millstone Station Employees’ Safety Concerns.” See presentation by LL Jarriel, NRC Agency Allegation Advisor, entitled “Chilled Work Environment Concerns,” presented to the National Association of Employee Concerns Professionals in September 2019.

As noted above, it is my recommendation that Alyeska refresh its OWE and Safety Culture work, as it has stated it will do, through its new Safety Culture Leadership Team. This could be accomplished by first identifying a clear set of consistent Safety Culture characteristics and metrics - consistent with PSM; second, developing a set of achievable goals for each characteristic; third, identifying from all available objective metrics and subjective perceptions where the organization is on each characteristic; and, fourth, developing a plan to address any weaknesses and areas in need of improvement.²⁰ This will require the full endorsement, and support, of the new leadership team in order to be successful.

E. Lack of a Reporting, Learning Culture

CIs interviewed stated that Alyeska has, over the past several years, continued to minimize the identification of non-compliances or violations of requirements, and modify procedures to eliminate procedural requirements. This is apparently being done, at times, without the use of the MOC process, or any other process, to ensure an understanding of the purpose of the requirement in the first place. This erosion has allegedly been going on for some time. It is a concern to some CIs that the minimizing or elimination of the use of the MOC process and compliance controls will erode the ability of Alyeska to avoid an accident or incident.

According to concerned CIs, the management “directive” has been to minimize or eliminate procedures that were put into place as a consequence of some accident or event, and were a corrective action or commitment in response to that incident or industry best practice.

Instead, they report that the current management philosophy is that internal procedures should only exist for a specific regulated item, requirement, or code. The concern was raised by most of the CIs interviewed from different perspectives.

CIs were concerned that this practice eliminated any need to understand why a particular requirement or process/procedure is in place in the first place. Other concerns are that this management strategy and policy ignores the General Duty clause of both OSHA and under the Clean Air Act (CAA).

²⁰ Based on information available to me, it appears that the OWE survey data was only presented system wide, instead of analyzed by department or down to the supervisor level. A number of the survey results provide the data through some demographics, but not to the department/supervisor level. The failure to do so is a wasted opportunity to understand the work environment. For example, a really negative HIRD score may not be reflective of the entire company, but a single or few departments. Also, undeniably, there will be groups that have a very good work environment, with good leaders, and a favorable daily experience. It is important to understand the results at the lowest possible organizational level in order to know where to invest important resources and where to make changes. The OWE Survey data may have been presented to management by department, but if so, I have no evidence of that process.

Contrary to the Dittman OWE survey, the Monarch 2021 Safety Culture survey does report data out by business unit, and in some cases, departments. A review of that data is particularly troubling for Valdez operations which reports in at the lowest level in every category. (The Ship Escort Response Vessel System (SERVS) is not included in that and was reported out at very high perception levels in almost every category) (See, “Understand Your Safety Culture,” Monarch study, June 2021).

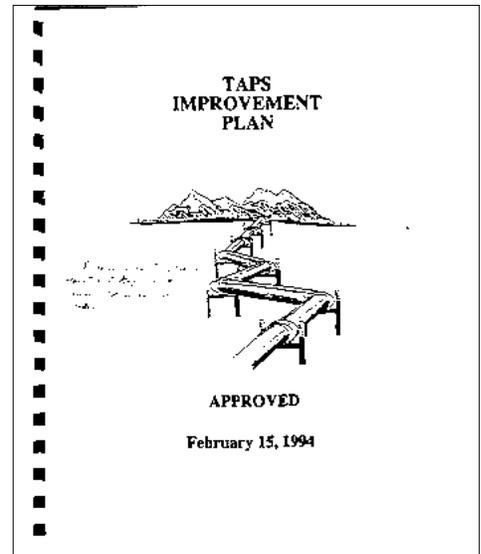
The EPA General Duty Clause states:

Under the Clean Air Act Section 112 (1), the General Duty Clause states: “the owners and operators of stationary sources producing, processing, handling or storing such substances [i.e., a chemical in 40 CFR part 68 or any other extremely hazardous substances] have a general duty [in the same manner and to the same extent as the general duty clause in the Occupational Safety and Health Act (OSHA)] to identify hazards which may result from (such) releases using appropriate hazard assessment techniques, to design and maintain a safe facility taking such steps as are necessary to prevent releases, and to minimize the consequences of accidental releases which do occur.

The General Duty Clause, in short, requires employers to protect the workforce, the public, and the environment from all known or anticipated hazards, even if there is not a specific rule or regulation applicable to that risk.

This practice, eliminating known or potential risks from procedural requirements without following a robust MOC process, increases risks to the company, the community, and the environment.

Some CIs, with historical knowledge of Alyeska, also believe this management/compliance policy violates the commitments made by the Owners to Congress years ago.²¹ CIs expressed the concern that this strategy undermines real safety, as well as Alyeska’s previous commitments. CIs suggest that a review of the procedural changes over the past year will demonstrate that procedures are being edited to the minimum regulatory requirements, without any understanding of why the procedural requirement was established in the first place.



²¹ It is unclear, from available information, whether the TAPS Improvement Plan commitments remain in place, whether the present Owners ever communicated with Congress and/or the regulators that they are no longer complying with its commitments or have made significant changes, or what the actual status of the promises made about Alyeska’s management in that original, and updated, document are at this point.

OBSERVATION:

One CI cited to the 1986 explosion of the Challenger space shuttle which could be traced back, in part, to a change in purchase order requirements for “O Rings” that downgraded the temperature parameters in purchase order requirements in order to save money. The downgrade was justified on an assumed – but incorrect – belief that Florida would not require the additional cost of sub-zero parameters for O-rings as part of a “cut the budget” direction from NASA. Here, the CI cited that as an example of the risks to VMT safety from the same philosophy being applied to changes to procedural requirements, deferral of equipment repairs, and other changes without adequate application of the MOC process, and an understanding of why the requirement was imposed in the first place. I often use that example in Safety Culture training because it is reflective of the unintended consequences of the combination of budget cuts, the loss of institutional knowledge, the elimination of quality review of material certification changes, and other process changes that line up in unexpected ways. In hindsight it is always obvious; but in foresight it rarely is.

F. A Trusted Alternative for Employees to Raise Concerns

The existence of a credible alternative avenue for employees to take concerns on compliance, ethics, and safety is critical for Alyeska. This assessment probed the current program to understand, as best as possible, whether the current ECP fulfills that role.

A normal industry audit of an ECP involves a review of the organizations’ policies and procedures, a determination of the commitment and support of the program from leadership, the qualifications of the ECP personnel, a review of internal department metrics, communications, and a review of ECP investigation files, employee concern resolutions, and whether there have been effective corrective actions.

The DOJ, when reviewing the efficacy of a corporation’s confidential reporting structure and investigation process, reviews the effectiveness of the alternative reporting mechanism. It reviews whether the program conducts properly scoped investigations by qualified personnel, independence, the investigation response, the existence of metrics for monitoring outcome and accountability for response to any findings or recommendations, among other elements (DOJ

Guidance, Evaluation of Corporate Compliance Programs, Sect. D. Confidential Reporting Structure and Investigation Process, pp. 6-7).

Importantly, any assessment also involves a review of the Program's credibility by the workforce – usually reported in employee surveys. This assessment was able to review some of those elements, as noted below.

1. ECP Policy and Procedures

The ECP policies and procedures are excellent. The ECP Manual, Rev 0 (December 3, 2019) uses “best in industry” standards for its procedural management and controls, the guidance for conducting investigations, maintaining records, protecting confidentiality, and the “desk top guide” for intake, interviews, confidentiality, collecting information and analyzing it. It has specific metrics to assess the indicators for work environment, and a process for evaluating the existence of a “chilled work environment” and/or a “hostile work environment.”

2. Leadership Commitment

Programmatically, there seems to be full support for the ECP. Its assessment and metrics are reported to the leadership team on a quarterly basis. It appears in all the other procedures that set out the compliance and ethics framework of the company and appears integrated into the organization. Historically, it was born in the aftermath of whistleblower concerns and company-wide environment of retaliation and chaos of the early 1990s. (There were over 800 open ECP concerns when Bob Malone took over as President.)

The future of the ECP will depend on the new leadership team allowing the ECP to function independently, and to speak the truth about findings.

3. Qualifications and Competence

There are two long-term ECP Representatives that staff the program. This assessor is familiar with both representatives. Both have attended the ECP national industry conferences, training, and workshops in the past. They both have strong professional experience in security and law enforcement before their current ECP position, and have familiarity with how to conduct investigations. They also have significant experience with Alyeska. They are competent and qualified for their positions. CIs expressed different opinions about and levels of trust in each investigator, the amount of communication received, and a concern about a bias towards management, but did not challenge the competence or qualifications of either.

4. Internal Department Metrics, Communications

There was insufficient information available to review these topics.

5. Review of ECP Investigation Files and Employee Concern Resolution

These areas were beyond the scope of this assessment and could not have been completed without access to and review of information not available. It is not clear whether the program has had an independent audit or program review of its files and concern resolution.

6. Program Credibility

Notwithstanding the positive observations about the program procedures and processes, it is really only as good as the employees believe it is and their willingness to use it.

The ECP received a mixed review from the random CIs interviewed. Some reported that they perceived the program as fair and competent. Others described the ECP representatives as “professional.” Some reported the program as providing important data to management. Others did not trust the ECP at all, based largely on the reporting relationship to the Legal Department as an indicator of a lack of independence.

There were also concerns raised about the strong relationship between Human Resources (HR) and the ECP on issues of HIRD, reporting examples where the ECP allegedly relied completely on HR’s original decisions. This was also raised as a reason for not trusting the ECP.

The reporting structure to the Legal Department does not meet best practices for ECPs. Since employee concerns are generally about compliance violations, safety risks, relationship issues, and retaliation/discrimination, the reporting relationship to the Legal Department is problematic. Employees understandably know that the Legal Department is obligated to defend the company against any complaints – whether compliance, HIRD, or regulatory action. Therefore, those CIs that discussed this concern do not view the ECP as having the autonomy needed to reach conclusions that may be in opposition to Alyeska’s perceived legal best interest.

In fact, the organization structure for the Compliance and Ethics program shows that there is a direct reporting line of the ECP to the General Counsel. There is no dotted line to management or operations, or a direct line to the Company President. This creates an impression that it is not a viable independent alternative for obtaining timely and effective response to safety or HIRD concerns but only alerts the Legal department of concerns or findings (ACP-303, Compliance and Ethics Program, p. 3).

One CI had the following observation on this issue:

“[names of ECP Coordinators] are respected professionals but their hands are tied when they identify circumstances that require correction, or action. They’re not included in consequence decisions nor have authority to do anything except report their findings.”²²

²²This seems to be a generally correct interpretation of the ECP procedure, which excludes ECP from any formal involvement in decision-making (See, Section 4.3, “Determine Corrective Actions”).

The ECP credibility was not measured directly in any of the survey data available for this assessment. It is also unclear if the ECP seeks and reviews “customer satisfaction” information when it closes a case. However, no assessment of program credibility with the workforce generally, or ECP users specifically, was available to determine whether workers view it as an effective avenue.

There is one question in the 2022 OWE survey that measures the preferred method respondents would use to report issues and concerns (i.e., Q 31). In that question, the ECP is combined with the Business Practice Office, Human Resources, and IMPACT. The response, from all respondents, was that only 4% of the respondents identified one of those avenues as the preferred method. But it is impossible to distinguish between the four functions to know what department was being identified as a potential avenue.

Therefore, it is impossible on the basis of either comments provided or the survey information available, to determine the credibility or effectiveness of the ECP in the eyes of the workforce. The fact that some CIs felt the need to take their concerns to the PWSRCAC and share them in this assessment raises the question of its efficacy. This issue should be measured in future surveys.

G. Ineffective Controls and Oversight

A healthy Safety Culture relies on controls and oversight to ensure compliance with all requirements for safe and compliant operations. There were numerous examples from VMT operations and maintenance that demonstrate this is not the present situation.

An example of the impact of a degraded Safety Culture was also provided about a Security Audit of the tanker trucks’ compliance with requirements that drivers receive the normal required terminal security and safety training that all employees and contractors have. The Audit revealed the failure to comply with the requirement and that it was a repeat finding.

Yet, executive leadership, including one of the Vice Presidents, was allegedly “outraged” that it was written up as an Audit finding and stated that the procedure would just be eliminated. This solution was challenged by pointing out that the requirement was implemented for a reason, and that the current requirement was that tankers full of fuel should be driven by drivers trained in the VMT locations, safety precautions, and emergency response processes and alarms before being allowed to drive on the site. Further, it was argued that, according to procedures, if a procedure was going to be eliminated, that change needed to go through the MOC process. As described by one CI “there was a reason that the procedure was put in place, and it should not simply be eliminated because we have decided not to comply.”

This Audit meeting and incident were well known among many of the CIs, who reported that the experience was intimidating, unprofessional, and upsetting to those involved and others who heard about it. It was alleged to have impacted the willingness of other senior leaders to speak up. It seems unlikely that the behaviors were not known to the entire Executive Leadership Team (ELT). However, no action was taken to change the dynamic or mitigate the harm caused by the incident or the policy.

Other examples were provided that raise serious questions about the impact of these behaviors on the organization and system integrity.

An employee concern was raised about the failure to conduct a required, and important, inspection. In challenging the finding, former President McCown is alleged to have intimidated those who raised and reported the concern. In the face of being told it was a regulatory requirement, McCown was alleged to have said that “if it hasn’t been found by the regulators, it doesn’t exist.”

In 2021 an audit identified that Alyeska was using plastic buckets to transfer ignitable liquids, which is a violation of OSHA, IFC, and NFLA requirements, as well as a violation of Alyeska’s own procedures. President McCown’s reaction to the finding was to be dismissive and reactionary, downplaying the significance of the violations, and resistant to making any findings. It is alleged to have taken Owner intervention to initiate immediate corrective action – which was taken. (See, Safety Bulletin 2021-A-002.)

A! SAFETY ALERT: IGNITABLE LIQUIDS TRANSFER

TFX ELEMENT 4: SAFEGUARDS



Issue

- A recent internal audit identified that ignitable liquids are being transferred on TAPS using plastic buckets.
- A system-wide review by the Safety Team has determined this to be a systemic issue requiring immediate corrective action.



Facts

- ▲ OSHA, IFC, and NFPA prohibit the use of plastic buckets for ignitable liquids transfer.
- ▲ SA-38 Section 3.8 prohibits the use of plastic buckets for ignitable liquid transfer through the grounding and bonding requirements.
- ▲ All containers used to transfer ignitable liquids must be bonded and grounded; plastic buckets cannot be grounded nor bonded as they are non-conductive.
- ▲ Plastic buckets pose a flash fire hazard when used to transfer ignitable liquids.

These incidents raise the issue of Alyeska’s commitment to its Corporate Compliance and Ethics (C&E) Program. The C&E Program, ACP-303, establishes “a framework for ethical responsibilities and legal compliance by all TAPS workers.” The C&E Program states that there is sufficient autonomy to determine whether the Alyeska Auditing Program is

reasonably designed and implemented in a manner that provides management and directors with timely and accurate information sufficient to allow them to “reach an informed decision regarding the organization’s compliance with the law” (U.S. DOJ, Criminal Division, “Compliance and Ethics Procedure, Revision Summary,” Updated June 2020, Sect. B. Autonomy and Resources, at p. 11).

This meeting is just one example, of many, in which behaviors of the executive team members failed to prevent bad behaviors of leadership and allowed the conduct to erode the Safety Culture to a level that is inconsistent with the expectation of the public, the regulators, and the law. This failure to act was evident to the workforce. It raises the question of why the Alyeska C&E Program was not effective in taking proactive actions to address the situation.

It also appears that the C&E Program itself, the foundation of Alyeska's defense in any criminal prosecution, is no longer the subject of any audit on its effectiveness, or simply "a paper program." Revision 3 of the C&E Program procedure, changed requirements for audits of the program itself from a mandatory audit every five years to only on a "risk-based determination of need." The current revision of the program does not mention a program audit at all. This is inconsistent with the expectations by the DOJ, which specifically states that "prosecutors should consider whether the company has engaged in meaningful efforts to review its compliance program and ensure that it is not stale" (See, Section II, Is the Corporation's Compliance Program Adequately Resourced and Empowered to Function Effectively?, p. 9; Section III, A. "Does the Compliance Program Work in Practice?", p. 15).

H. The Importance of Executive Leadership Behaviors

Unfortunately, the CIs interviewed in this assessment report that the most recent former President often exhibited inappropriate and disrespectful behaviors (i.e., "he was a bully"). CIs provided numerous examples of Mr. McCown engaging in intimidating behaviors toward his immediate staff and others, often while they were trying to make presentations to the leadership team. He is reported by CIs to have challenged reports by subject matter experts and company leaders reporting on issues and concerns, directed people not to document reports of identified problems or issues, humiliated some professionals by challenging their qualifications, directed employees to do things that violated procedures, and generally abused his position and authority.

These behaviors, demonstrated at leadership meetings, poisoned the senior leadership team and demoralized staff. Some individuals reportedly refused to participate in meetings with Mr. McCown because they anticipated that he would humiliate and embarrass them. Eventually briefings of accountable executives were moved to being presented in the Owners meetings, believed to be so the Leadership Team executives could answer questions without having to endure the harangue by the former President. Numerous CIs alleged that Mr. McCown disapproved of and expressed disdain for corporate policies and activities that support and/or promote inclusion and diversity.

Many senior leaders shared the belief that Mr. McCown abused his authority as President. Examples include insisting that he was actually the head of departments such as Fire Protection and Security; and even though he was not professionally or procedurally qualified under TAPS procedures, he insisted that he was authorized to take actions or give direction to those departments as if he was. He is alleged to have asserted that, as a qualified pilot, and President, he should be authorized to fly the company helicopter. He is alleged to have claimed that he had the authority to make or change internal procedures about those departments outside of any process. He cancelled the

regular “safety and culture minute” at meetings²³ and responsive “safety stand-downs,” framing them as a “waste of time.” When advised that he could not take some action because of existing rules or procedures, he would apparently assert to his staff that he could exercise his authority to waive requirements or modify them as he pleased because he was “the President.” He is alleged to have rejected the years of advice and experience of TAPS staff, and portended to be an expert on, essentially, everything.

According to CIs interviewed, the impact of Mr. McCown’s behaviors on the organization was significant. Some senior employees with decades of experience left the company rather than endure his behavior. In some cases, managers are alleged to have mimicked his abusive manners towards their own employees, because they believed it had become acceptable conduct. Others simply complied with his instructions, even when they knew it was against policies.

Mr. McCown’s resignation was almost universally reported to have been a relief to the organization. However, most of those interviewed were disappointed in the lack of honest communication about the basis for his “resignation.” CIs stated that it was well known that immediately after Mr. McCown’s employment ended,” and his security access had been denied, he attempted to re-enter the building. Based on these circumstances, employees assume his “resignation” was actually a termination, but do not know why he was terminated. The lack of transparency is problematic.

Many CIs believe that the Owners were advised of Mr. McCown’s behaviors, the impact on the organization, and supported his conduct – or at least condoned it through lack of action to address the behaviors. There is a common belief that, until he engaged in some form of misconduct that went a step too far, his management behaviors neither concerned nor offended them.²⁴

In the absence of facts, the perceptions regarding Mr. McCown’s unplanned and hasty departure have created a wide range of opinions and beliefs about why he left and further eroded trust in the Owners.

While Mr. McCown is no longer employed by Alyeska, as the title of this section suggests, his tenure has had a lingering impact on the company culture. It also has impacted employee perceptions associated with the Owners’ handling of the situation. There are lessons that must be learned from this situation and hopefully considered in the selection of a new president, as well as in the expectations of the Owners regarding how they conduct themselves and their relations with Alyeska staff. As has been noted already in this assessment, maintaining, improving, or destroying an organization’s Safety Culture starts with leadership.

²³ It should be noted that the current C&E Program, ACP-303, still takes credit for these events in Section 4.4, Internal Compliance and Ethics Communications and Awareness, p. 7.

²⁴ Other forms of misconduct were identified, but are not included in this report. It is unknown whether any misconduct allegations were ever investigated.

II. Process Safety Management

The VMT, and most of its processes, are high-hazard operations. Helping to ensure the safe operations of the VMT, including the safe transportation of crude oil out of Prince William Sound, is the mission of PWSRCAC.

PWSRCAC does not have the authority to directly audit compliance with PSM requirements at the VMT and must rely upon Alyeska to comply with regulatory requirements and internal procedures to achieve safe operations. As described earlier in this assessment:

PWSRCAC is engaging in a due diligence exercise of seeking an evaluation of employee concerns and relevant information provided to it, to determine if it should, or must, take further action in accordance with its mission and OPA 90 mandate to provide advice necessary to protect people, the community, and the environment at and around the terminal, from the consequences of a tragic accident.

Understanding the framework for assessing those risks requires an understanding of PSM and how its requirements are designed to prevent disasters in high-risk industries. It also requires an understanding of whether Alyeska is complying with PSM requirements, and other regulations, in order to determine what advice PWSRCAC should provide.

A. The Valdez Marine Terminal Facilities and Operations

The following brief summary of the VMT and its activities and processes are included for those unfamiliar with its important facilities and tasks:



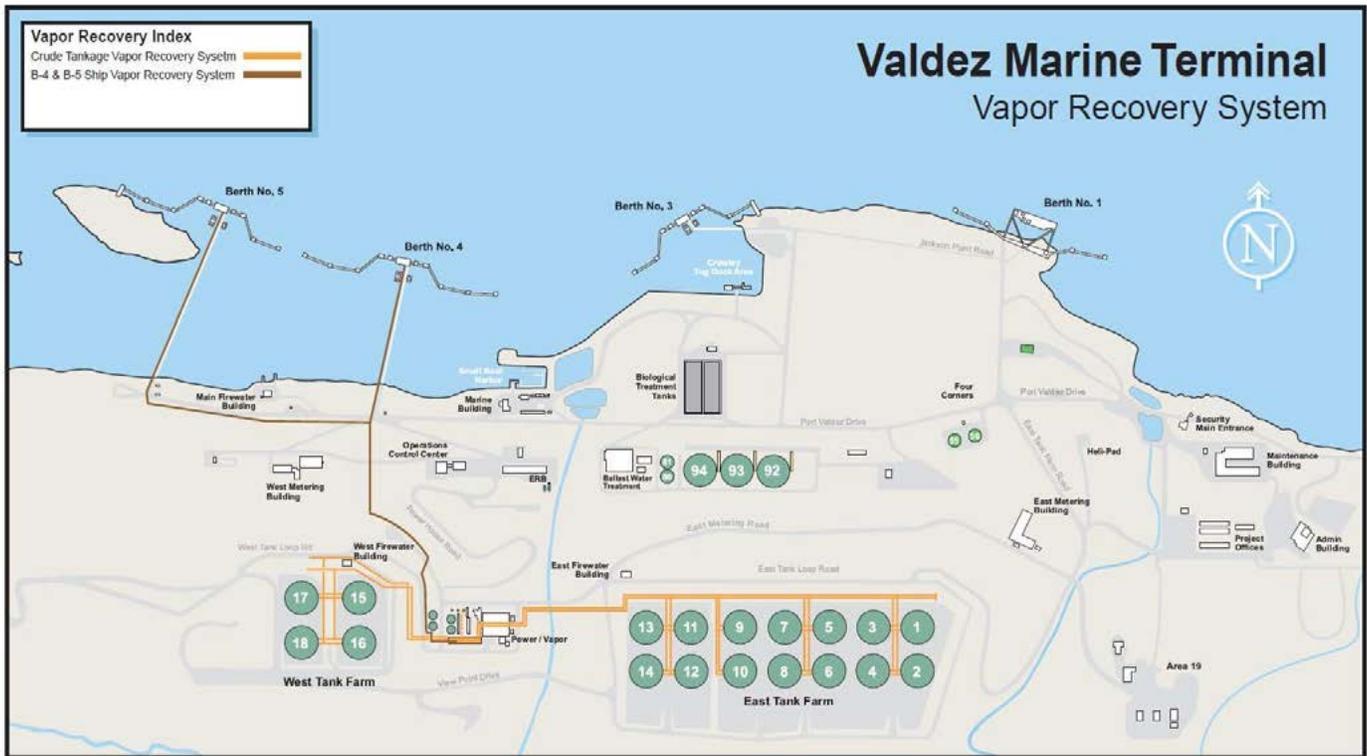
Valdez Marine Terminal

The Valdez Marine Terminal (VMT)

VMT is at the southern end of the trans-Alaska pipeline itself, where the crude oil ends its 800-mile journey from the North Slope of Alaska, to the ice-free port of Valdez. Across the bay from the City of Valdez and situated on 1,000 acres on the southern shore of the Port of Valdez, it is where tankers are loaded and then head out of Prince William Sound to refineries along the West Coast and Asia.

The terminal consists of offices, warehouses, maintenance facilities, and crude oil storage tanks, as well as docks and loading berths. The

facility was designed to load tankers and provide temporary storage capacity to increase reliability and allow North Slope production to operate without impact from marine transport system delays. According to Alyeska, the VMT “cost approximately \$1.4 billion to construct and stretches in elevation from sea level to 660 feet up the forested and often snowy Valdez mountainside” (See, Alyeska’s website www.alyeska-pipeline.com/valdez-marine-terminal/). The VMT has its own emergency and fire response team, and through the Power Vapor Facility, creates its own power. The VMT today operates two loading berths, with 14 crude oil storage tanks in service and a working inventory capacity of 6.6 million barrels of crude oil.



The Oil Storage Tanks

The VMT has 18 crude oil storage tanks, “14 of which are available for use. Each tank has a capacity of approximately 510,000 barrels, features a conical fixed roof, and is supported by 61 interior columns. The storage tanks are paired within containment dikes that hold 110 percent of the volume of both tanks, which accounts for water and snow accumulation” (Id.). The tanks provide temporary storage capacity for incoming crude oil. Important to this report and the 2022 issues regarding the tank damage from snow and ice, the tanks also provide for the collection and management of hydrocarbon vapors that off-gas from crude oil stored in the tanks. This important activity is the responsibility of the Power Vapor Facility.



The VMT Power Vapor Facility

As the power-generation facility on the VMT, the Power Vapor’s primary facilities include three steam boilers. These are reported to have the output of 175,000 pounds/hour at 600 psi at 750° F. The facility manages vapors from the tank farm and tanker loading activities. The two loading berths - Berths 4 and 5 - are both directly connected to Power Vapor. The plant can produce at least 50% of power requirements for the VMT from the vapor system.

The Storage Tank Vapor Recovery System (STVRS) for the crude oil storage tanks was part of the original design and construction of the VMT. The STVRS controls crude tank vapors by either supplying or collecting tank vapor as necessary and using excess gas for power generation. The system was upgraded in 1981 to incorporate vapor balancing between tanks, resulting in a substantial reduction in air emissions. By spring 1998, a new Tank Vapor Control System, required by law, was commissioned to control crude vapors from tankers to the atmosphere as they are loaded.

Crude Oil Loading

Tanker loading at the terminal supports about 20 tankers a month, at present. Alyeska does not own the tankers, but conducts all tanker loading. The tankers that take on the crude oil at the VMT are owned by shipping companies who contract with the North Slope producers to carry crude oil to market. “The entire berthing and loading process takes about a day to complete, and the largest tankers carry up to 2 million barrels of oil” (Id.).



VMT Ballast Water Treatment

Tankers carry ballast on the way to the VMT. Ballast is water taken on by a tanker to stabilize the ship when it is not carrying crude oil. Today, many tankers have separate tanks for water and cargo, but some still carry ballast and crude oil in the same compartment. The Ballast Water Treatment (BWT) plant was designed to process any ballast water contaminated with oil.

This water treatment plant treats around 9 million barrels of water a year. Approximately 35% of that is ballast from tankers, which is water taken on by tankers to stabilize the ship when empty. The rest is a combination of industrial wastewater generated from operations and storm run-off collected from process areas around the VMT. Water is treated through a series of settling tanks, Dissolved Air Flotation Units, air strippers, thermal oxidizers and biological treatment tanks before it is safe to discharge into Port Valdez. Each year, the plant collects approximately 75,000 barrels of recovered crude and returns it to the system for loading onto tankers (Id.).

Valdez Snow Challenges

Alyeska’s web page described the snow challenge as follows:

“Valdez is often referenced to [sic] as ‘Snow town, USA;’ the snowiest town in America. While that means Valdez employees and their families get to enjoy all forms of winter recreating, it also translates into a significant effort to keep the VMT running throughout the winter, when storms can dump as much as three feet of snow in a day! Loaders and other heavy equipment clear miles of roads around the VMT all winter, and crews are on site to manually remove snow from tank tops and other process areas where machinery is not permitted. Snow on top of the crude oil tanks presents significant interference with the management of venting the vapors, and is a key target of the snow removal process, requiring special attention and processes”.



The failure to manage snow removal and tank venting processes, and the resultant damage to the tanks and uncontrolled venting of hydrocarbons to the environment, is the initiating event to this report.

B. Regulatory History of Process Safety Management

In 1990, the U.S. Congress responded to catastrophic accidents in chemical facilities and refineries in the United States and around the world, by requiring both OSHA and the EPA to issue new requirements to prevent such accidents.²⁵

In 1992, OSHA and the EPA issued new regulations that applied generally to low-probability, but high-consequence industries,²⁶ including TAPS. OSHA's regulation, "Process Safety Management of Highly Hazardous Chemicals," (29 CFR 1910.1190) (PSM Standard) became effective in May 1992. The requirements apply to management systems, the identity and control of hazards, and preventing "catastrophic releases of highly hazardous chemicals" (Id.).

The EPA issued a Risk Management Plan (RMP) rule that became effective in 1996. Because crude oil vapors are not EPA regulated flammable substances and are used as a fuel to produce steam at the terminal, the VMT is not covered by the EPA's risk management program rule. Nonetheless, many of the CAA requirements, set forth in the controlling CAA permit, are based in a compliance risk-assessment process.²⁷

C. PSM at the Valdez Marine Terminal

The VMT is regulated by a collection of environmental protection, process safety, and worker (or industrial) safety regulations and requirements. These requirements have evolved over time, both in response to changing state and federal laws and policies, as well as in response to events and incidents in Alaska and elsewhere.

The principal guiding regulation designed to ensure safe management and operation of important systems and processes at the VMT is the federal PSM regulations. PSM requirements and guidance

²⁵ The new regulations followed the 1984 toxic release in Bhopal, India, that killed thousands and the 1989 explosion at the Phillips refinery in Pasadena, Texas, that killed 23 and injured 130 people, along with other accidents. The failure to comply with Process Safety requirements, along with the lack of a safety culture, were key contributors to these and subsequent incidents such as the 1989 Olympic Pipeline explosion that killed 3, and injured dozens; the 2005 BP Texas City Refinery explosion and fire, that killed 15 and injured 180 employees; the 2010 BP Deepwater Horizon explosion and oil leak in the Gulf of Mexico; and numerous other accidents and incidents in the chemical and oil refinery industries. Reports on accidents conducted by the U.S. Chemical Safety Board can be accessed at their website: www.csb.gov.

²⁶ OSHA defines this as incidents that "occur relatively infrequently, but when they do occur, the injuries and fatalities that result can be catastrophic" (OSHA, 1990).

²⁷ OSHA is in the process of rulemaking and updating and revising the PSM requirements. According to OSHA, even though PSM standards are recognized as being effective in improving process safety, and "protecting workers from many of the hazards associated with uncontrolled release of highly hazardous chemicals, major incidents have continued to occur. Examples of such incidents include toxic chemical releases, runaway chemical reactions, major fires, and devastating explosions, all of which can injure or kill workers" (See, October 12, 2022 OSHA Process Safety Management Stakeholder Meeting).

are set forth in OSHA's "Process Safety Management" manual OSHA 3132 and its companion OSHA 3133 "Guidelines for Compliance."²⁸

The term "process" refers to an activity, including the use, storage, manufacturing, handling, or the on-site movement of a legally identified threshold quantity of a highly hazardous chemical (HHC). This includes flammable liquids and gases. The specific portions of the Vapor Recovery System at the VMT that are subject to PSM regulatory requirements are set out in Section 3.10.1.1, SA-38, Ed. 7, Rev. 3 (July 3, 2019.) According to the audit documentation, Alyeska has chosen to apply its PSM program throughout the VMT.

Leadership and its commitment to the principals of PSM are the foundation of Alyeska and the VMT's Safety Culture. Unfortunately, most of the incidents reviewed, or information provided by CIs, were examples in which the applicable PSM requirements were either skipped, ignored, or – apparently – willfully not complied with.

Some of the safety concerns clearly required VMT management's prompt intervention, which did not happen in a timely fashion. This led to employee concerns being raised outside the company. Employees who did raise safety concerns reported being the subject of retaliation. Others reported that raising concerns was futile, because "nothing would happen anyway" with issues left unresolved, and buried, within the Alyeska corrective action program (i.e., MAC process).

As discussed above, both fear of retaliation and apathy contribute to a degraded Safety Culture and increased risk of an incident or accident. I have included a number of specific examples and issues below. (It should be noted that the examples used are illustrative, not comprehensive.)

1. Audits and Oversight are Inadequate

Alyeska is responsible for compliance with all controlling federal and state regulations and requirements, and to any of the promises or commitments it has made in response to various findings, enforcement actions, confirmatory orders, or similar obligation.

As discussed below, the external oversight by regulators appears woefully inadequate at this point. Alyeska issues its own internal procedures or processes to implement compliance requirements.²⁹ These procedures are usually written by company engineers and subject matter experts, and are supposed to incorporate all of the compliance requirements and commitments made by Alyeska to ensure safe operations, as well as protection of people and the environment.

²⁸ In analyzing the significance of many of the PSM related concerns raised by CIs, and preparing this report, I reviewed a number of OSHA directives, including the "Petroleum Refinery Process Safety Management of Highly Hazardous Chemicals – Compliance Guidelines and Enforcement Procedures" (CPL 02-02-045 (Revised) (September 13, 1994) , "Petroleum Refinery Process Safety Management National Emphasis Program," CPL 03-00-010 (August 18, 2009) and "PSM Covered Chemical Facilities National Emphasis Program," CPL-03-00-021 (January 7, 2017); as well as industry standards and publications.

²⁹ See, Alyeska Compliance and Ethics Program, ACP-303, Rev. 1, Jan. 2021, Section 6, "Auditing, Monitoring, and Reporting Non-compliance" that identifies the various company processes and programs that the company has adopted to ensure compliance with all regulatory requirements.

In order to ensure that Alyeska follows its own procedures, and thus complies with controlling requirements, it is supposed to have a robust QA/QC department to ensure work is done in compliance with all PSM or procedural requirements, internal audits are conducted of applicable programs and processes to identify violations or failure to comply, and opportunities are provided to learn from those findings and ensure that timely and effective corrective actions are taken for the findings.

In the past, audits of compliance activities and programs have, generally, been the responsibility of the Quality Assurance Department and/or the Environmental, and Compliance, and Risk Departments. In the early 1990s PSM requirements had not been fully developed or implemented. The QA/QC department was the principal compliance arm of the company. Over the years, Environmental, Compliance, and Risk functions became integral to ensuring safety and compliance. Those departments have now been essentially gutted of experienced staff and had resources reduced to the point that effective compliance with quality requirements is viewed as impossible by many of the CIs interviewed.³⁰

All but one of the quality inspection staff with historical, in-depth, experience of quality requirements is gone, largely as a result of the reduction of the size and budget of the department.

The auditing function should provide a company with insight into the strength or weakness of its programs to ensure safety, as well as compliance with procedural requirements and controlling regulations, and identify risks and violations with the program. However, that insight is only valuable if the findings from audits are accepted, viewed as a learning opportunity, and acted on with timely and effective corrective actions.

One such situation is the issue of suppression of Control Room Alarm Management. According to documentation reviewed in the assessment, some alarms have been defeated since commission. For example, Incident 32206, identified as a High-Level Value Event (HLVE), was written on August 3, 2020, when it was discovered that a deviation alarm had been suppressed since commission. As noted by the Control Room Operator (CRO), “[t]hese deviation alarms were created in response to a misaligned valve of the 90’s tank that froze pressure indication on the online pressure transmitter... The alarm function is to alert operations to an excessive deviation between the A/B/C pressure

³⁰ In 1995, the GAO investigation reported that, in response to findings that the quality program was dysfunctional and inadequate, Alyeska upgraded its Quality organization. It fortified its independence from operations and engineering, reporting to leadership. It combined the audits and surveillance group with the inspections service group into a single organization. At that time, there were 31 staff in the Quality department, 14 in Audits and Surveillance, 11 in Quality Services, and 6 in management and administration. In addition, there were 18 other staff performing quality functions, for a total staff of 49. (That did not include the additional 37 personnel that were assigned to unique special projects related to quality functions. (GAO Report, at 34-35).)

According to interviews conducted for this survey, today the audit and surveillance department has been reduced to, essentially, 3 people. Several CIs believe that the current organization makes conformance with API 1173, the Pipeline Safety Management System, impossible. The Quality Group has only one person (another is out on long-term disability). The remaining person has deep knowledge of the quality organization and is highly respected; but cannot possibly perform the required functions of a quality organization alone. There is also a concern expressed that the quarterly and annual review of the Regulatory Compliance Information have been cancelled. If an unfortunate incident or accident occurs, the failure of Alyeska to have an effective quality organization will surely be considered a contributing cause. New people added in the future should become familiar with previous QA/QC breakdowns and commitments.

transmitters on TK-93 and TK-94.” This situation should have generated a risk assessment almost immediately; but, not until seven weeks later, on September 23, 2020, was the review generated (HLVE ID 87451). This incident raises a number of questions, not the least of which is why the situation was allowed to remain unaddressed for an unknown period of time before finally being identified as an HLVE.

The issue of defeated/suppressed/inhibited alarms remains a significant and serious issue in the Power Vapor (PV) facility. According to CIs and documentation reviewed, a team of Automation Engineers, operators and others apparently spent a substantial amount of time recently attempting to identify a possible fix to this problem; however, it remains unresolved and no action has – or apparently can – be taken because of the patchwork approach to software upgrades. This situation is an even greater risk because of the lack of any meaningful process for formal notification of which alarms have been defeated or turned off. (While verbal turnovers may be the intended “notice,” it is an inadequate process, ineffective, and appears to be a PSM violation.)

For example, as reported in the July 2021 Incident 32938 Report:

“During control room rounds on the morning of 7/10/21 it was observed that multiple Priority 1 alarms were still inhibited after the equipment had been in service for some time. These alarms were as follows:

VOLT REG COMMON TROUBLE;
VR XFMR GROUND DETECT;
VR XFMR SUDDEN PRESSURE;
VR UNDERVOLTAGE;
VR XFMR OIL HIGH TEMP

There is no standard at Power Vapor for tracking of communicating shelved/ Suppressed/inhibited alarms. This is an ongoing issue and the concern has been raised before.

Alarms referenced above were uninhibited. This equipment is critical and control room operators must have full visibility if something were to malfunction. The supervisor was present for the conversation and assured the team this would being [sic] addressed (tracked) via eLogger (electronic turnover).”

(Incident Report 32923, July 21, 2021.)

As recently as the week of December 6, 2022, a disabled alarm (audible tones) was discovered in the BWT control room. In that case, certain actions were not generating any sound when alarms were received. As stated in the Hazard Recognition document of the issue, “not having audible alarms to alert the control room operator could lead to high priority alarms being missed, that could cause operational upsets due to a delay in response time” (Hazard Recognition 93242). Disabled alarms should not be routinely “discovered,” but known to all operators. (See, SA-38, Edition 7, Rev. 17, Section 3.14.1.1 Electronic Bypasses and Physical Jumpers (February 21, 2022).)

The issues of defeated/suppressed safety systems, such as alarms, still appears to remain a routine, accepted risk, without any active programmatic mitigation measures. Clearly, there are numerous contributing causes to the delay, deferrals, failure to follow through, or failure to take corrective actions on identified mechanical or system integrity concerns. However, the “bow wave” of the backlog on these issues is not sustainable. An audit of the Bypassed, Damaged or Inoperable Safety Devices, and required or prudent compensatory measures should be undertaken.

2. Process Safety Management Program Audits

The OSHA Process Safety Management Standards includes 14 elements, which together constitute a Process Safety Management system.

OSHA states that “the key provision of PSM is process hazard analysis (PHA), a careful review of what could go wrong and what safeguards must be implemented to prevent releases of hazardous chemicals” (OSHA 3132, 2000 (Revised), p. 5).

The PSM Standard states that PHA shall be performed by a team with expertise in engineering and process operations, and that there “shall” be a system to promptly address the team’s findings and recommendations; assure the recommendations are resolved in a timely manner and that the resolution is documented; document the actions to be taken; complete actions as soon as possible; develop a written schedule of when these actions are to be completed; [and] communicate the actions to operating, maintenance, and other employees whose work assignments are in the process and who may be affected by the recommendation or actions (29 CFR 1910.119(e)) (emphasis added).

The key to compliance with this standard is actually addressing (i.e., fixing or eliminating) the hazard, not simply putting the issue on a list or some form of identification to be addressed at some time in the future. Changing the current paradigm will require funding and resources to fix the identified deficiencies.

In order to determine whether a company has an effective PSM system, it is required to be audited at least every three years. Alyeska has had only three PSM Audits since 2011, generally meeting minimum PSM requirements. Following the 2011 PSM Audit, other audits were conducted on Alyeska’s compliance with the PSM program requirements in 2014, 2017 (issued in January 2018), and again in 2020.³¹

In some cases, findings from 2011 persist over a decade later. I have incorporated into this assessment additional information that highlights the importance of Alyeska fully embracing audit findings and resolving them in a timely manner. Instead, what has been reported is that too often

³¹ OSHA Requirements 29 CFR 1910.119, Process Safety Management of Highly Hazardous Chemicals, require a PSM Audit at least every three years. The 2018 PSM audit was done in October – November 2017, and the Audit Report issued in January, 2018. The 2020 audit work was done in August – September 2020, and the Audit Report issued in December 2020.

Alyeska management has approached findings with denials, or a “check the box” minimalistic approach - often “closing paper to paper,” without taking any meaningful corrective action.

The assessment includes a review of the 2018 and 2020 PSM Audits, addressed below:

a. 2018 PSM Audit of the VMT

In January 2018, a “Compliance Audit of the Process Safety Management Program at Alyeska Pipeline Service Company’s Valdez Marine Terminal in Valdez, Alaska” was issued. The Audit was conducted between October-November 2017, by an audit team that was led by a third-party consulting company, ABSG Consulting, a process safety engineering firm, and included several members of the VMT staff.

The 2018 audit included OSHA’s PSM standards as set forth in 29 CFR 1910.119, which incorporates 29 CFR 1910.38(a) Emergency Action Plans, 29 CFR 1910.165 Employee Alarm Systems, 29 CFR 1910.252(a) – Welding, Cutting, and Brazing/Fire Prevention and Protection Requirements, and 29 CFR 1910.120(a), (p), and (q) Hazardous Waste Operations and Emergency Response. The audit team reviewed documentation going back to the date of the prior November 2014 audit and other records that are mandated by regulation to be retained, regardless of their dates.

The 2018 audit identified 18 findings as “potential noncompliance with the terminal’s written procedures and/or with regulatory requirements.”³² The Audit Team identified several repeat findings from previous audits that, literally, had not been acted on for years. In some cases, audit findings first identified in the 2011 PSM audit were still unresolved as of 2017.³³

The failure to respond in a timely and effective manner to all the 2011, 2014 and 2017 PSM Audit findings is troubling. It is reflective of either a broken tracking and trending process, a lack of respect for compliance and process safety, and/or intentional disregard for responding to Audit findings at all.

Subject Matter Experts, interviewed during the assessment, report that the auditing process itself was a specific target of the former president. They describe that “each finding became a struggle between the findings of audits and the executive management team.” This situation included audit findings of non-compliance and increased risks at the VMT and along the pipeline.

³² According to the 2018 Report, “Findings” were identified where (1) The design or implementation of the terminal’s PSM program does not satisfy the minimum requirements of the PSM regulations, or (2) the implementation of the terminal’s PSM program does not satisfy the VMT and/or Alyeska Pipeline requirements that are based on the PSM regulation (e.g., an activity required by the mechanical integrity program was not accomplished on the schedule established by the VMT or Alyeska Pipeline). (Report, at 4.)

³³ 2018 Compliance Audit Finding CA-1, noted that the VMT never certified that “the 2011 compliance audit report fulfilled the requirements of the standard” (i.e., that the audits were conducted within the three-year requirement interval). More troubling is that the MAC item tracking this deficiency, MAC Item # 15541, was still open as of the time of the 2018 audit. And CA-2, noted that several 2014 audit items were still open or were “closed prematurely or incorrectly.”

b. 2020 PSM Audit of the VMT

The 2020 PSM Audit was conducted by only four internal Alyeska employees, as opposed to the team of 13, led by an external expert that conducted the 2017 review. Of those four, only one had any experience with the VMT processes and that person was not an operator. Yet, even this smaller team identified 32 findings,³⁴ eight of which (25%) were repeat findings (30% of the PSM Sections audited had findings identified).³⁵

According to interviews and documents reviewed, a 2020-2021 audit of the PV facility found numerous cases where maintenance on safety-significant equipment has continually been deferred. There have also been confirmed OSHA violations and repeat PSM findings. The 2020 PV Audit was described by people with first-hand knowledge as “not pretty” and that PV is “a disaster waiting to happen.” As noted elsewhere in this report, a significant concern raised repeatedly, is that the Quality and Audit departments and organization “has been decimated.”³⁶

The first finding of the 2020 PSM Audit (PHA-1) was that no action had been taken on the 2018 previously identified PSM Audit item on facility siting and human factors. On September 27, 2021, the Audit progress and closure update comments contained the following statement:

[T]his [finding PHA-1] applies directly to Regulatory-required (PSM-covered) systems. The PSM covered area within TAPS is the Vapor Recovery System (VRS) located at the VMT... PSM covered areas require a siting study with consequences considered in the HAZOP as needed to minimize the probability of a credible event... (emphasis added)

(2020 PSM Audit, Attachment 3, at 1.)

Yet, as described above, no Hazards and Operability (HAZOP) assessment was performed at the time of the 2020 PSM Audit, or in response to the identification of a credible risk event from the Vapor Recovery Control Room operator in November 2021 which is addressed in the Closer Look

³⁴ It is interesting to point out that the 2020 audit specifically notes that, although no one from the Legal Department was on the Audit Team, that “[f]inal determinations as to whether noncompliance with regulatory requirements exist are made by the Legal Department,” and that “Findings were identified for issues where [t]he design or implementation of the PSM program may not satisfy the minimum requirements of the PSM regulation, as ultimately decided by Legal ...” There is no written identification of what involvement the Legal Department had in the Audit Report in agreeing or rejecting any “finding” made. Presumably, in the Audit papers, there should be a chronology of any findings made by the Audit Team that were edited or rejected by the Legal Department. There is no similar role played by the Legal Department mentioned in the 2017 audit.

³⁵ See, page 2 of 3 of Attachment 2 to the Triennial PSM Compliance Audit #20-08 time of the 2018 audit.

³⁶ CIs interviewed for this assessment made disturbing observations and concerns about the erosion of the risk management controls over the past several years, citing numerous examples in support of their concern that “the Alyeska Management System (AMS) process has been gutted.” (The interview revealed that an assessment conducted against API 1173 Pipeline Safety Management Systems disclosed numerous gaps in management controls. This should have triggered a complete Quality Assurance review but did not.)

below. As of September 2022, this hazard analysis had still not been completed. Alyeska uses the term “closed” to reflect that a deficiency has been documented within Alyeska’s various problem identification systems, mainly MAC. It uses the term “completed” when work has actually been done.³⁷

The findings of the 2020 PSM Audit are concerning. Some of the repeat findings are listed below:

Finding	Brief Description/Repeat Status (from 2018 or longer)
EP-1	No written employee participation plan ³⁸
PSI-2	Lack of safe upper and lower design limits (Repeat and addressed above)
OP-7	Lack annual energy isolation assessments
OP-8	Lack annual confined space permit reviews
PSSR- ³⁹	PSSRs not completed per MOC process
PSSR-3	Recordkeeping inadequate for training on changes
MI-3	Internal pressure vessel inspections not completed
MOC-1	Recordkeeping inadequate for training on changes
CA-1	Unresolved previous audit findings

Since all of the findings are now reported “closed,” I reviewed the closure explanations included in the Audit Report to determine which of the items are actually completed by virtue of work actually being done, versus which items were closed simply to the creation of some other documentation (i.e., referred to as “closing paper to paper”). Based on the matrix in Attachment 3 to the Audit, almost all of the items were reportedly “closed” by simply documenting the item in the MAC system. Yet, few items are reported as being “completed” in MAC, or having any actual work being performed in response to the finding.

³⁷ It is noteworthy to mention that AKOSH did conduct an inspection of this issue in late 2019 in response to employee concerns. AKOSH conducted an inspection at Vapor Recovery in December 2019, and concluded that the “Management of Change Process was not being performed adequately in relation to the Power Vapor Recovery Process at the [VMT]” and that citations were issued to Alyeska as a result.

³⁸ This is not identified as a Repeat Finding, but it is not clear on the basis of the report if there had been an employee participation plan and it was eliminated between 2018 and 2020, or there never had been one, but the previous audit team apparently did not look at it.

³⁹ Pre-Start Up Safety Review (PSSR).

CLOSER LOOK: Vapor Recovery Safety System Compromised and Ignored



The following is an example of Alyeska’s failure to address Process Safety Risks and is provided, in detail, as a cautionary tale. It is both a tribute to the Alyeska employees trying to do the right thing and an exposé of the failed management response.

Background

The 2018 PSM Audit Team identified as a Finding (PHA-1) that the 2016 Occupational Hazard Analysis (OHA) revalidation report has “only a brief statement regarding review of the terminal facility siting study and contains no documentation that human factors were addressed...” The 2018 Audit team made specific recommendations to take such actions, and even provided industry literature on “Revalidating Process Hazard Analyses” (2018 Report, Page A-13). However, no action was apparently taken in response to that finding.

The 2020 PSM audit team review of the 2018 previous PSM findings determined that “no action” had yet been taken, or was identifiable to the Auditors, on this issue. Nonetheless, Alyeska closed this finding on September 27, 2021, to a “promise” to take some unidentified action, by some unidentified time in the future. The Task Action column in the 2020 audit states:

The assigned SubTask actions will be completed to address the issues. Specific actions completed to resolve the issues will be documented in the MAC closure comments and/or supporting attachments (emphasis added).

(#20-08 Triennial PSM Compliance Audit, 20-08, Finding 1, pg.1.)

The importance of the failure of Alyeska to perform a Human Factors analysis is not just about paper requirements. Facility siting and the failure to do a human-factors hazard assessment were significant contributing causes to the 2005 Texas City BP refinery explosion, which resulted in the death of 15 people, injuries to over 180 people, and the catastrophic destruction of the facility. The accident also led to significant regulatory action, Congressional oversight, and civil and criminal liability for BP.⁴⁰

⁴⁰ Investigative findings regarding the 2005 BP Texas City accident confirmed that there had been warnings from the workforce about safety and process safety violations that had not been addressed. Any similar event at the VMT would interrupt the flow of oil, cause significant damage to the facility, and has the potential to kill or injure dozens of terminal workers. However, no action was taken to actually fix the identified violations in response to the 2020 Audit.

Control Room Safety Compromised

Two months after the finding was closed, in November 2021, an Alyeska CRO at PV prepared Hazard Recognition Report, Number 88097, on the “Reduction in CRO’s Staffing at PV on Nights.” The Hazard Recognition identified a “compromised safety system” in the PV facility, as a result of the reduction of night time staff to a single CRO. A year later, the concern remained open.

The Hazard Recognition document contains a detailed description of the concern and provided important supporting back up information. The Operator clearly described the risk and process violations, including the risks of inadequate staff and training:

Due to the change of minimum staffing at Power Vapor from two Control Room Operators (CRO) on days and nights, down to one CRO on nights, I believe the human factor of our safety system is compromised. This reduction in control room operators did not undergo a formal PS MOC. ...The PV Operators are the first line of defense against accident prevention (emphasis added).

The CRO then describes an event that had just occurred a few days before the Operator wrote the Hazard Recognition:

Most recently on 11/9/2021 an inadequately staffed night shift (4 operators) was presented with a system failure and was unable to respond effectively. The sole CRO was forced to divert attention from managing the process, to communication with the terminal by announcing an “all clear” to clear the tank farm, managing an injured worker by summoning emergency services, and communicating with OCC [Operational Control Center]. These additional duties of the control room are normally handled by the second control room operator. Instead of being able to return the incinerators to operating status, the team decided due to personnel shortages and safety issues to keep the facility at a hold point and await the oncoming day shift. This caused the tank farm to vent over a longer period” (emphasis added).⁴¹

The Operator provided supporting information, and referred to similar risks in the Incinerator Flashback Protection System.

Other issues raised by the Operator included flawed sensors over the alarm point to cause a trip; stress caused on the sole CRO because Alyeska does not have simulator training for VMT CROs; the inability for a sole CRO to take breaks; and no specific fatigue guidelines have been established for operators at PV, even with no scheduled or possible breaks for a single night shift operator.

⁴¹ The employee attached and referenced the following industry documents, (1) Contract Research Report 348/2001 HSE: Assessing the Safety of Staffing Arrangements for Process Operations in the Chemical and Allied Industries (2) Desaulniers D R, Stress in the Control Room: Effects and Solutions, IEEE 6th Annual Human Factors Meeting, IEEE, 1997.

Hazard Recognition: 88097

Short Description: Reduction in CRO's staffing at PV on nights **Status:** Open
Type of Observation: Hazard Recognition
Responsible Location/Dept : Valdez : VMT - Power Vapor : VMT Operations

General *

Observed By:
Date of Observation: (mm/dd/yyyy) 11/19/2021
Target Date : (mm/dd/yyyy) 5/18/2022
Primary Company Involved: APSC
Description of Observation: Due to the change of minimum staffing at Power Vapor from two Control Room Operators (CRO) on days and nights down to one CRO on nights, I believe the human factor of our safety system is compromised.
Recommendation: This reduction in control room operators did not undergo a formal PSMOC. Recommend a HAZOP assessment or similar risk assessment of the reduced staffing arrangement at power vapor.
Priority: 5
(1.High --> 5.Low) 

The November 2021 HAZOP request concluded that this situation is “a single point failure for Alyeska, because the failure of either the Powerhouse or Vapor Recovery System would lead to a pipeline shut down and the inability to load ships” (Id.). The employee (name redacted) included industry literature and references to his/her request.⁴²

Notwithstanding the serious and significant issues identified in the request for a HAZOP assessment, as of November 2022, no action had yet been taken, apparently because other activities have “taken priority” for the small, almost non-existent, risk assessment team. As far as can be verified, no PHA on human factors has been completed for the PV staff reduction concern yet.

This issue provides meaningful insight into how the Alyeska VMT process for assessment of risks is unreliable. It is also demonstrative of the failure of Alyeska management to take timely and effective corrective action in response to internal findings of the PSM audit process itself, and, it reveals the failure of Alyeska VMT management to respond to legitimate employee safety concerns.

⁴² The employee attached and referenced the following industry documents, (1) Contract Research Report 348/2001 HSE: Assessing the Safety of Staffing Arrangements for Process Operations in the Chemical and Allied Industries (2) Desaulniers D R, Stress in the Control Room: Effects and Solutions, IEEE 6th Annual Human Factors Meeting, IEEE, 1997.

OBSERVATION:

Risk Assessment or Hazard Analysis is not simply a paperwork exercise. An issue of operator distraction during the 1998 Bellingham Pipeline explosion had tragic consequences.⁴³ In 2013, a train in Lac-Megantic, Quebec, Canada, carrying 73 cars of Bakken crude oil, which had not been properly secured, derailed - rolling downhill from where it had been parked for the night. One of the contributing causes was the reduction of staff to a single engineer who was so tired when he left the train, that he failed to correctly secure the brakes after a small fire had interrupted his normal routine. The train exploded at 1 a.m., with a .6-mile blast radius, killing 47 people, injuring hundreds, and destroying the entire downtown of the city. Numerous other examples could be referenced where single point failure modes, lining up with other process safety failures, resulted in devastating accidents.

These tragedies were avoidable.

Incidents such as these are usually the result of risks that had been identified by company employees closest to those risks and ignored by management that does not understand them, brushes them off under the mistaken and dangerous assumption that the employee is simply lazy, or the risk is not real.

In the case example provided, the CRO was only asking for a risk assessment to be performed on a significant staff reduction with obvious safety impacts. Procedurally, the assessment was required to have been conducted in the first place, as part of the MOC process (AMS-036 Management of Change, Rev. 8, 6/23/20). Yet, at Alyeska, a year after the serious safety risk had been identified internally and over 10 years since a PSM audit originally identified a failure of Alyeska to have a Hazard Assessment of the PV facility, no apparent action has yet been completed.

⁴³ A distraction at the Olympic Pipeline control room occurred when the Supervisory Control and Data Acquisition (SCADA) system for that pipeline became unstable during an update. "A few minutes after the new records were entered into the system, the SCADA computer began to generate error messages to the historical data base." At that point the system administrator should have notified his supervisor and the controllers that the computer was acting abnormally; instead, he left the computer room and did not return for about 15 minutes. Thus, he did not notify the accident controller, or the control room supervisor (remotely located).

This loss of 15 minutes and the erratic system interruptions were too much distraction to sort through and other important opportunities were missed in the attempt to locate and stop the leak of fuel. Upon his return the SCADA problems became more pronounced over the next 20 minutes, and then completely non-responsive. This period of non-responsiveness coincided with the rupture of the pipeline at about 3:28.

The ignition of the fuel vapors caused the death of three young people and millions of dollars in property damage, the bankruptcy of the Olympic Pipeline company, and the prosecution of three pipeline employees - including the Control Room Operator (See, generally, "Pipeline Accident Report: Pipeline Rupture and Subsequent Fire in Bellingham," Washington, June 19, 1999, National Transportation Safety Board). At the sentencing the federal judge told the defendants they needed to "change the corporate culture of putting profits before safety" ("Officials Sentenced in Pipeline Blast," Associated Press, June 19, 2003).

3. Other Examples of VMT Unresolved Safety Issues

Some of the other findings, which are illustrative of a Process Safety breakdown and of concern to CIs are:

Safe Operating Process Parameters

The 2018 PSM Audit finding identified the VMT had not developed and documented the safe upper and lower limits for the various process parameters,⁴⁴ as required by 29 CFR 1910.119(d)(2) (PSI-2, pg. A-8 of the 2018 Report). This was a repeat finding from the 2014 compliance audit, which had not been addressed or resolved since that time.

The 2018 Audit Report recommended that Alyeska “[c]onsider expanding the current information in the operating manual and Piping & Instrumentation Diagrams (P&IDs) to include the safe upper and lower limits for critical process parameters, along with operating limits to provide all the required information, as well as a more complete reference” (Id.).

The 2020 Audit Report found that this issue had still not been addressed, so had been unresolved since at least 2011 (December 10, 2020 Triennial PSM Compliance Audit Findings and Recommendations #20-08, Attachment 2, PSI-2, “Lack of safe upper and lower limits (design)”).

When the 2020 findings were reported to management, all of the findings (except PSI-2 and 3) had an identified and accountable manager assigned for resolution; however, as of the date of the 2020 Final Audit Report, there was still no accountable manager identified for this repeat finding. Over a year later, on January 12, 2022, VMT Operations Engineering reported that “[d]ata sheets and drawings have been reviewed and information verified with VMT Power Vapor Operations. Safe operating and design limits have been added to Table 10-18 in TV-18; and that “PI&D’s have been updated with accurate design parameters” (Id.) In other words, the 2011 PSM Audit finding had finally been completed.

Security/Safety Risks (Truck Drivers)

A Security Audit in 2020-2021 found that tanker trucks were coming into the terminal, but the drivers were not trained in procedural controls or emergency response. This was a repeat procedural violation, which was responded to by senior management by saying to “just eliminate” the procedure. This decision and action, without any procedural review to determine the risk of deleting the procedure, was reported as presenting a serious risk to the VMT.

8260 Flash-back Protection System

In April 2021, an event occurred in the Incinerator Flashback Protection System initiating a shutdown of vapor gas to the incinerators. According to the Incident Report, operating parameters were in an acceptable range, except for incinerator header pressure that was lower than normal (Incident 32746, Night Shift, April 23, 2021, 10:15 PM). As stated in the report, “[t]wenty minutes after

⁴⁴ The “safe upper and lower limits refer to equipment design limits, not quality-related operating limits. Sometimes these values are referred to as design limits (e.g., design pressure, design temperature)” (Center for Chemical Process Safety).

reset, the flashback system initiated a second trip for same...” However, “[d]ue to system initiating a close of gas to the incinerators, the gas pressure was already climbing to the unit. The control room operator managed VMT vapor using experience and knowledge while unit was tripped, and kept a tank vent from occurring. These actions occurred for both initiated trips.” A Work Order was then created, WO#211008412. The work order recommended that a “new alarm needs to be integrated to give proper response/mitigation time before shutdown occurs to prevent unnecessary trips of vapor system that could lead to tank venting” (Id.).⁴⁵

No action was taken in response to the work order at that time. On June 16 and 17, 2021, the same incident occurred again, but this time no work order was written, apparently because one was already in the system (Incident Report 32882, dated June 17, 2021, and 32887, dated June 18, 2021). Of course, the failure to document the repeat June 16-17 system failures is wrong, because it fails to report a system failure. It is also a violation of PSM and Alyeska’s procedures. This is particularly true for events that are rated as “highest priority” issues, as this event was.

Finally, in October 2021, the Work Order was addressed when engineers caught up to the issue and discovered that Preventive Maintenance had not been done for over a year, without cleaning or replacing filters.⁴⁶

Deferred Maintenance Issues

Most CIs interviewed raised some level of concern about the backlog of deferred maintenance, equipment that needed parts, and the level of safety risk to the VMT from deferred maintenance. Some believe the current situation is “criminal” and others are demoralized that VMT has been allowed to deteriorate to this extent.

Further budget cuts are anticipated and CIs do not know how a further reduced budget will possibly provide adequate funding for even minimal necessary maintenance, much less the backlog of deferred work and replacements.

Generally, Alyeska’s process is simple enough. When maintenance, repair, or replacement is needed, the issue is written up on a work order or scheduled through a preventative maintenance process. If it is deferred, there should be an engineering justification and a risk assessment. If it is reactive to a problem, the next step is to have the technician or operator write a work order request and send it to be reviewed by engineering for review and approval, then it would be given a priority

⁴⁵ It should be noted that Operation Procedure PVR-20.17, CRO Actions to Minimize Emissions during Abnormal Operations, do not permit “seat-of-the-pants” substitutions for procedural compliance.

⁴⁶ The filter protects the compressors in the vapor recovery system from grit and foreign objects. If not cleaned or serviced regularly they will cause the compressors to be unable to sustain the proper system pressures. That’s why there is a regular preventative maintenance (PM) to service the filters. The real question remaining from this incident is why wasn’t the lack of performing the PMs for eight months not picked up earlier? This is especially true with the compressors continuing to shut down.

This example presents two obvious problems. First, there no longer appears to be an effective system for flagging out the PM backlog and assigning adequate resources to address it. Secondly, it appears that the engineering work order system is even further backlogged and not being addressed effectively.



Duct Tape is used to seal this off from a Class 1 Division 2 classified area instead of a proper sealant. AKOSH Inspection Report 1449721.015.

score, and sent to Anchorage for approval or deferral. (There are variations of this depending on the process or equipment, but this is generally the course of action at this time.)

According to knowledgeable CIs, there was a tremendous backlog of deferred maintenance before the pandemic, but during the pandemic the backlog increased substantially to a “bow wave” of work that is presenting serious risks to safety at the VMT. Various planned projects and equipment inspections were also deferred due to cost constraints.

It was suggested by knowledgeable personnel that in order to make any objective determination of the scale of the deferred work, 2017 is recognized as the last year with a normal year workload to compare the current backlog to. However, while backlogged work increases, Alyeska is not following its processes and procedures to manage backlogged items, work, and equipment overdue

for maintenance and repairs. The CIs state that it will take very competent “digging” through Work Orders, Work Requests, Risk Assessment Requests for PHAs, to truly understand the breadth of deferred or cancelled work, and what is “open.” The records stored on Alyeska’s internal computer system, i.e., the H-Log, must also be reviewed to understand the breadth of overdue maintenance and repairs and the risks created by that backlog.

Another example under this category is obsolescence (i.e., the increasing lack of spare parts for aging systems that are no longer available). Procedures require keeping at least enough spare parts in stock to avoid safety issues. However, CIs report that requirement is increasingly being met by simply harvesting parts from other equipment when necessary. This often creates a “fire drill” of looking for what equipment can be harvested for parts, in the middle of an event. For example, I was told that there is a procedural requirement, TV-18-P, to have spare parts for incinerators; but apparently there currently are none available. Spare parts are routinely scavenged from the Out of Service (OOS) incinerator to “limp along.”

The cause of the situation at the VMT was attributed to a combination of factors. Those include budget-driven decisions by persons in Anchorage that did not appreciate the risks inherent in the delays or deferrals, the lack of institutional knowledge or understanding of the risks by new personnel with little to no Alyeska experience, and the hesitancy of personnel to push back on budget-driven decision makers.

Numerous examples were provided regarding the current state of the VMT Boilers, Incinerators, Turbines, Gas Compressors, Relief Pallets, Nitrogen Skids, breakers, and all other forms of mechanical equipment at the VMT that require maintenance and repairs. Details exist within the backlogged work order requests and Preventative Maintenance System records.

Unfortunately, CIs believe that any prioritization or risk assessment process has completely collapsed at this point. The risk assessment process is simply not sufficient, or staffed, to adequately manage the tremendous backlog, or keep track of any meaningful increasing risks while an issue sits on a list from years ago. This situation is untenable.

Inadequate MOC or Accountability for process change communications

The PSM requirements and Alyeska procedures require some type of a formalized record of communications when systems or processes are changed, and communication of those changes are critical to operators or technicians. According to CIs, there is no controlled, or reliable, process to ensure such communications happen. Critical information is apparently often communicated via email regarding automation and process changes that operators rely on to safely operate the facility and manage upset conditions. With the high turnover rate for automation engineers, it can be hard, if not impossible, to find and recall the emails/information if needed, let alone stay ahead of it.

3.2 Ineffective and Insufficient Communication Among Operations Personnel

Two critical miscommunications occurred among operations personnel on March 23, 2005, that led to the delay in sending liquid raffinate to storage: 1) the instructions for routing raffinate products to storage tanks were not communicated from Texas City management and supervisors to operators; and 2) the condition of the unit – specifically, the degree to which the unit was filled with liquid raffinate – was not clearly communicated from night shift to day shift.⁶⁸ These lapses in communication were the result of BP management’s lack of emphasis on the importance of communication. BP had no policy for effective shift communication,⁶⁹ nor did it enforce formal shift turnover or require logbook/procedural records to ensure communication was clearly and appropriately disseminated among operating crews.⁷⁰

⁶⁸ Miscommunication occurred regarding startup of the unit altogether. During a shift directors’ meeting on the morning of the incident, the state of the ISOM unit was discussed. Day Supervisor B was told that he would not be able to startup because the storage tanks that received raffinate from the splitter tower were believed to be full. The Shift Director said that the meeting ended with the understanding that the raffinate section would not be started up.

⁶⁹ BP Texas City’s Learning & Development Services department produced a training document, “Safe Ups and Downs for Refinery and Chemical Units” which states: “The importance of communications between shifts and between individuals must be emphasized [during startup]. Each shift must clearly understand what has been done on prior shifts and what is expected of it. Some overlap of supervisor between shifts can improve communications and continuity of work” (p.24). This good advice was not enforced through plant procedures or practice, nor was additional (experienced) supervision made available during startup.

⁷⁰ BP’s Grangemouth refinery in the U.K. conducted a study to assess shift turnover communication at its facility and, as a result, created a policy to improve operation staff communication (Appendix J). BP Texas City management did not appear to learn from the lessons of the Grangemouth study.

The process is, literally, that operators or technicians must review numerous emails to figure out if they need to know something in order to operate safely, work on a system, respond to an event, or be aware of ongoing work or engineering activity. This appears to be a PSM violation and presents a worrisome risk to some of the CIs.

The MOC process itself does not appear it is being used as intended - this at a time when the MOC is most needed to ensure that change to any process or procedure is understood by new personnel to a task.

CSB BP Texas City Report, at p. 79.

4. PSM Deficiencies Identified by AKOSH

In December 2019, AKOSH conducted an inspection at the VMT in response to a complaint of numerous PSM requirement violations. There were two inspection reports issued from this inspection as follows.

a. AKOSH Inspection Number 1449721 – February 25, 2020



The first inspection report, AKOSH Inspection Number 1449721, addresses mainly worker safety practices. AKOSH confirmed many of the concerns, identified additional violations, issued citations, and took enforcement actions. The inspection was conducted from December 3–6, 2019, with a follow up in February 2020 to review abatement of the identified issues. Alyeska paid the fines on all of these citations⁴⁸ and abated them pursuant to the direction to do so.

The citations issued are examples of Alyeska's failure to comply with worker safety protection. The substantiated allegations also confirm that the concerned employees were correct, and, but for the notice to AKOSH, the issues would not have been addressed. These issues included:

- Multiple machines that did not have proper guarding on them;
- Building exits blocked or not appropriately marked, some with unmarked flammable materials stored nearby;
- Blocked electrical boxes, electrical outlets, weather/vapor boxes covered with duct tape, extension cords daisy chained together and running under doors, some electrical disconnect not being available, and other electrical issues identified in the report;
- Inadequately blocked or labeled fire extinguishers;
- PV had numerous unprotected sides and edges in upper catwalks, presenting fall hazards for employees conducting inspection rounds;
- Fall hazards throughout PV and several other facilities, and
- Inadequate Lock Out/Tag Out locking systems.

In addition, the AKOSH inspection identified a confined space issue incident that had occurred in September 2019 in which an inspector became trapped in a confined space (tank) and was only able to escape through a manway that was left open to run welding equipment through.

⁴⁸ Alyeska and AKOSH entered into an informal settlement agreement, which negotiated a reduction in the size of the penalties and removed five of the "other than serious" citations.

1. Confined Space Issue - Violation of PSM Requirement 29 CFR 1910.146(d)(2), 190.146(d)(3)(iii), and 190.146(d)(3)(vi)

The confined space incident occurred on September 3, 2019. Cleaning and maintenance work was being performed by a contractor work crew in Tank 8 at the VMT East Tank Farm. A TEAM Industrial Inspector (contractor) was also in the tank performing inspection services. An air horn was sounded twice to notify the tank occupants to exit for lunch. The work crew exited the tank, and the entry log was reviewed to ensure everyone was signed out. The confined space attendant (CSA) for the work crew then turned out the lights, secured the manway with a wire cage (called a "critter" cage, used to keep animals out), and left for lunch.

The Inspector, who was wearing personal protection equipment, including ear plugs, did not hear the air horns and remained in the tank after the space was secured and lights turned off. The Inspector then used his headlamp and attempted to exit the tank but found the entrance blocked with a critter cage. He attempted but was unable to remove the cage. He then discovered another manway that had been left open to allow welding leads to enter the tank. After an Alyeska initial investigation found an Actual Severity Level of V (highest possible) with a Potential Severity Level III (moderate severity), the Near Loss Investigation was closed on September 16, 2019.

Because the first Alyeska investigation team failed to update the potential severity level prior to closure, a second investigation team was assembled to revalidate the initial investigation. The second investigation team concluded the Inspector had been incorrectly logged out of the confined space when he remained in the tank. It also found that the Inspector had not been briefed on the site-specific safety hazards, or the exit protocol for Tank 8.

The AKOSH citation of this incident is based on the review of an Alyeska November 7, 2019 "Near Loss Incident No. 31566" Report regarding the confined space incident at the VMT, described above.



The AKOSH Violation Worksheet for Inspection No. 1449721, for Citation No. 2 (all items on Citation No. 2 are classified as “other than serious”), Item 6, described the violation as:

Employees are exposed to a trapped in hazard due to the employer’s failure to ensure that a confined space permit program identifies and evaluates the hazards of permit spaces before employees enter them. This was found during an AKOSH inspection when it was learned that an employee had been trapped in a confined space. Alyeska Pipeline Service Company did an internal Near Loss investigation and found that the employee had been trapped inside the confined space due to the loud nature of the work being performed in the space and not being able to hear the evacuation signal. A failure to evaluate the nature of the work to be done and the best way of communicating with the confined space entry team is the result of this near loss incident.

The same Citation No. 2, Item 7, described the violation as:

Employees are exposed to a trapped in and accountability hazard due to the employer’s failure to ensure the confined space permit program develop and implement the means, procedures, and practices necessary for isolating the permit space. This was found during an AKOSH inspection when it was learned that an employee had been trapped in a confined space. Alyeska Pipeline Service Company did a Near Loss Incident investigation and found that the employee that was trapped in the confined space had escaped through an unobstructed manway that was not secured. This indicates that the confined space had not been isolated.

The same Citation No. 2, Item 8, described the violation as:

Employees are exposed to a trapped in hazard due to the employer’s failure to ensure that the permit space program has developed and implemented means, procedures, and practices that verify the conditions in the permit space are acceptable for entry throughout the duration of an authorized entry. This was found during an AKOSH inspection where we learned that an employee had been trapped in a permit-required confined space. Alyeska Pipeline Service Company did a Near Loss Incident investigation of the incident. One of the findings of this incident was that the noisy environment of the confined space made it impossible for the employee to hear the evacuation signal. Therefore, the conditions were not verified as acceptable for means of communication with the employees throughout the duration of the authorized entry.

Although this was described as a Near Loss Incident, this “confined space” violation was assigned a “minimal” severity due to the low likelihood an injury would occur.

2. Electrical Equipment Violations of PSM 29 CFR 1910.303(b)(2) and 1910.305 (g)(1)(iv)(C)

The most serious violations included electrical equipment that had not been installed or used in accordance with instructions, presenting a high hazard of fire, explosion, and arc sparking hazard. The inspectors identified wall outlets, an O'Brien box, and electrical junction boxes installed in dangerous situations and locations. The O'Brien box was installed on top of a bulk propane tank 1 below the BWT building. The outlets, found covered with duct tape,⁴⁹ were in the PV facility.

According to the categorization information, AKOSH categorized this as a high-risk issue, pointing out that all of these are in Class 1, Division 2 areas. This means that if a spark or power surge from electricity came in contact with a flammable vapor, it could cause a fire or explosion that could cause death or permanent disability. The probability of an incident was described as "greater" because of the lack of integrity in these electrical items in such a high hazard area and being in plain sight, [AKOSH] was unsure of the integrity of other electrical items and "this could be the cause of a future disaster."

An additional "serious" violation was identified with respect to the wiring methods being used with flexible cords and cables in a room that is used on a regular basis to take ballast water samples. That room is classified as a Class 1 Division 2 work area (i.e., flammable vapors are exposed to the open environment). The cords were daisy-chained and run under a rolled doorway, and along a vapor pipeline to a fire hydrant pump that has a heat blanket wrapped around it to keep it from freezing. "This creates an opportunity for highly explosive vapor to be ignited if the flexible cord was to be damaged and sparked" (Id., page 84).

3. Other PSM Violations

There were five findings from the February 25, 2020 Inspection Report that were identified as "serious," two of which had a high severity level with the potential for death or permanent disability. This included an identified violation of the exit doors in the warehouse building and office trailer outside the east metering area being blocked or mislabeled. AKOSH found that exits were blocked by snow or not able to be opened wide enough to allow people to escape a highly dangerous building in the event of an emergency. This was identified as a violation of PSM Requirement 29 CFR 1910.36(g)(2).



⁴⁹ AKOSH inspectors were told that the duct tape had been installed to "ensure the employees were not charging their phones during break time" (Inspection Report, and page 76 of the Alaska Public Records Act materials.)

OBSERVATION:

The AKOSH inspection substantiated most of the CIs' concerns about Alyeska safety violations and risks. Legal protections against retaliation does not require that employees prove they were correct about the substance of their safety concerns to be entitled to protected against adverse action for doing so. However, there was underlying, negative commentary directed against employees for raising concerns, inferring that the concerns were invalid and/or that there were ulterior motives for raising concerns. This attitude will "chill" others from doing so, and should be addressed by Alyeska management – it is not enough to just protect one employee from being terminated. An OWE means that there is a work environment in which all employees feel free to raise concerns, and do so.

b. AKOSH Inspection Number 1449993 - May 26, 2020

AKOSH's inspection of December 3-6, 2019, also generated by employee concerns, and also resulted in the issuance of a second inspection report. This report was issued May 26, 2020. In it AKOSH issued 38 citations, 31 of which were categorized as "serious." Specifically, the citations principally address PSM violations involving HHC. The citations included employee exposures to some of these chemicals, as well as asbestos, refractory ceramic fibers, and sodium hydroxide. Additional citations were issued for inadequate medical services, respiratory protection, noise exposure, and hazard communications to employees.

On June 18, 2020, Alyeska contested, in its entirety, all of these violations and penalties. Most, but not all, of the violations were abated by Alyeska. Nonetheless, the appeal of these citations and penalties is pending.⁵⁰

In sum, as set out on pages 44-45 of this report, Alyeska is required to follow and implement PSM standards and regulations for certain aspects of its operations. These regulations exist to protect employees and the community, from the risks created by high hazard industries. The May 26, 2020 AKOSH inspection at the VMT confirmed that Alyeska was not in compliance with PSM requirements. In some cases, Alyeska abated the violations. However, as to the majority of serious violations identified by AKOSH, Alyeska has denied the violations and appealed both the findings and the penalties.

⁵⁰ It is noteworthy that Alyeska's appeal of these inspection findings remains unresolved. The State of Alaska, on behalf of the DOL even had to file a Petition/Application against Alyeska for assistance with its Agency action, resulting in a Show Cause Order to Alyeska regarding "why Respondent [Alyeska] should not be held in Contempt of Court." According to Court records the case remains pending. *State of Alaska, Dept. of Labor & Workforce Develop. v. Alyeska Pipeline Service Company*, Alaska Circuit Court, Case No. 3AN-21-08576CI.

III. Human Factors

“All accidents ... result from human error. This is because humans govern and accomplish all the activities necessary to control the risk of accidents.”⁵¹ Recent major accidents have highlighted the need to focus on human factors. The CSB cites human factor deficiencies as one of the main contributors of the catastrophic accident at the BP Texas City Refinery in March 2005.

Human factors include lack of control of worker fatigue, poor human-machine interface design, poor communication by radio/phone, out-of-date and inaccurate operating procedures, and poor communications between workers at shift turnover. The CSB has cited similar causes for many other accidents, and has urged industry and the US OSHA to pay much more attention to human factors. See, Reference 1: “Human Factors Elements Missing from Process Safety Management (PSM),” by William Bridges & Revonda Tew, Process Improvement Institute, Inc. (PII), 2010; and Reference 3: “Human Factors in Process Safety and Risk Management: Needs for Models, Tools and Techniques,” by Paul Baybutt, Primatech, Inc.

A. Human Factor Regulations and Requirements

Recent government regulations and industry recommended practices have focused on human factors in process industries. Pertinent regulations to certain facilities and processes at the VMT include:

- OSHA Process Safety Management (PSM), standard CFR 1910.119
- The EPA Risk Management Plan (RMP), 40 CFR Part 68 (as described earlier)

These regulations and recommended practices require human factors be considered as part of conducting a process hazards analysis for covered facilities. However, it is the consensus of industry experts that no explanation is provided about what is meant by human factors. OSHA, EPA, and the former federal Mineral Management Service (MMS) have provided some clarifications, but there is no consensus in the process industries on what constitutes human factors (See, Reference 2, “The Human Factor in Process Safety Management,” in *Chemical Engineering Transactions*, Vol. 26, 279-284, 2012). (This paper provides excellent approaches to consider in understanding and minimizing human factor failures.)

⁵¹ 99% of accidental losses (except for natural disasters) begin with a human error. This is supported by data from more than 1,500 investigations according to the Center for Chemical Process Safety, American Institute for Chemical Engineers, “Guidelines for Investigating Chemical Process Incidents,” 2003. OSHA agrees. See, Reference 1.

B. Alyeska Human Factors Issues

Alyeska is obligated to identify those human factors that could impact safe operations and design, and manage those processes to ensure that the person-to-person, and person-to-machine interfaces are effectively considered for all situations to identify decision-making points and processes.

Information provided throughout this assessment includes that many of the same factors exist at the VMT. This assessment already includes examples of human factor issues that impact safe operations as follows:

- inadequate staffing;
- inadequate training and no simulator control room;
- the loss of institutional knowledge with inadequate transition periods;
- poorly controlled communications regarding defeated/bypassed/suppressed safety systems;
- fatigue from over-work and impossible workload;
- diminished attention to safety importance (i.e., cancelling safety standdown and pre-meeting safety/culture minute);
- failure to follow established procedures and the MOC process; and
- pockets of excessive stress and demoralization as a result of the situation.

Many examples have already been included throughout this assessment, and more could be provided from the materials reviewed. Besides those already addressed, a few additional issues and examples are provided below. These are demonstrative of the importance of considering the role of human factors in assuring safety.

Section 8. Human Factors.

8.1 PSM-Covered Facilities (Regulatory Required)

VMT Vapor Recovery System is a process safety management (PSM)-covered area and subject to PSM regulation. 29 CFR 1910.119, Process Safety Management of Highly Hazardous Chemicals covers PSM requirements. (e)(3) stipulates that the process hazard analysis shall address, (vi) human factors.

Human factors are considered in application of mitigations (safeguards and independent protection levels) as part of the analysis. For example, consideration of location of personnel and control rooms, efficacy of rounds, and time for operator response. A Human Factors Checklist shall be applied with the PHA to augment the analysis. The checklist will not produce ranked risk. If the use of the checklist determines that identified factors negate the effectiveness of an identified mitigation that and the resulting risk will be identified with the PHA worksheet scenarios.

8.2 Facilities Covered by PH-150

The human factors checklist will be applied for other covered systems to augment the PHA as described for the PSM-covered area. It is not mandatory for these non-PSM areas.

Alyeska Pipeline Service Company | Process Hazard Analysis Method HAZOP-LOPA, page 21.

1. “Normalization of Deviance” Risk

A troubling example of the demonstrative disregard of human factor issues already at play at the VMT is contained within Incident 32206, from August 3, 2020, when an operator at the PV Control Room “discovered” that several deviation alarms – installed in response to a misaligned valve on the 90s tanks that froze pressure indication for the online pressure transmitter – had been suppressed since commissioned.

An investigation identified as contributing causes the lack of adequate procedures or work processes and, more importantly, “In the past did not follow procedures or acceptable practices and no incident occurred” (Incident 32206, Investigation ID 22989). As far as can be determined, no action was taken on this identified cause. The problem of suppressed/defeated/overridden alarm problem also continues to exist throughout the VMT.

Anyone who follows the fundamentals of Safety Culture, PSM, Human Factors, and Lessons Learned from accidents, will know that this is, exactly, one of the main root causes of the loss of the Challenger Space Shuttle and many other accidents.

Otherwise known as the “normalization of deviance,” it is the attitude of some or part of the organization that since they have “gotten away” time and time again with a violation of the procedure, and nothing bad happened, that ignoring requirements becomes acceptable.⁵² This practice then becomes the way “of doing things around here.”

In other words, the culture of the organization.

When this attitude takes priority over procedural compliance, all the written procedures, processes, and programs that Alyeska has in place to ensure safety and compliance with requirements becomes unreliable - left to the whims of each manager, supervisor, or employee to make an on-the-spot determination of what risks they, individually, will tolerate. In reality this risk is actually shared by everyone within the virtual or actual “blast zone” or risk created by that work activity.



The Cost of Silence: Normalization of Deviance and Groupthink

Presentation at Senior Management VTS Meeting, NASA, 11/3/2014

⁵² Diane Vaughn, “The Challenger Launch Decision: Risky Technology, Culture, and Deviance at NASA” (Chicago, University of Chicago Press, 1996).

2. Loss of Institutional Knowledge

Throughout this assessment a repeated theme was the concern of the tremendous loss of the amount of knowledge and experience with the departure, through resignation and retirement, of the backbone of Alyeska operations and maintenance personnel. Senior leaders at the VMT that left, took with them collectively hundreds of years of engineering and operational knowledge and experience.

This has included John Fannin, Robert Roundtree, Laura Meadors, Dave Heimke, Rod Hanson, Curtis Nuttall, Lorena Hegdahl, Dave Roberts, John Baldridge, Scott Hicks, Tom Stokes, virtually the entire Quality group, and Betsy Haines until her fortuitous return. While the retirement and loss of one generation is the inevitable course of events for all multi-generational companies and processes, it has also been a contributing factor to many serious accidents, including the loss of the Columbia,⁵³ the BP Texas City Refinery explosion,⁵⁴ and many others.

CIs believe that there is no effective planning or mitigation for transition from a long-term employee to new staff replacements, and that the Company should have a better planning process that prioritizes the amount of time and resources available for longer transition of high value knowledge with employees such as maintenance personnel and engineers.

While some believe that many Alyeska managers recognize the problems and understand the risks, they believe that the Owners are simply unwilling to provide the necessary funds to be able to either retain critical employees, hire high quality replacements with substantial experience, or provide funds for adequate planning for inevitable retirements.

3. Impact of Budget Process

CIs with knowledge of the budget decision-making process blame the current “top down” of Anchorage-based funding decisions for the current state of the VMT. They describe a process in which funding projects that are critical to safety required “shouting matches” and “threats to quit” to get some things funded. They assert that Anchorage budget leadership “doesn’t have a clue” about either regulatory or permit requirements, or what it takes to maintain safety and integrity of the VMT or the pipeline.

In seeking to understand why the budget process was not effective in securing funds for critical work, there was a consistent description of a lack of understanding of the VMT and its risks.

They state that due to the leadership “center of power” being in Anchorage, the lack of familiarity of leaders with the terminal risks and operations, and the absence of a local champion, issues from the VMT are not getting properly prioritized.

⁵³ Columbia Accident Investigation Report, Chapter 7: “The Accident’s Organizational Causes,” at p. 178.

⁵⁴ CSB BP Texas City Investigation Report, at pp. 3-5, 6.

There was almost universal disgust about the process, and the concern that the impact of the “bow wave” of deferred maintenance would “blow up – literally – in their face.”

The most troubling aspect of these conversations was that CIs were just resigned to the reality that there would be an incident or accident in the near future; and that is the only thing would precipitate reform – “you can only do so much, for so long, with nothing.”

None of the CIs I talked to complained of inadequate pay, benefits, or working conditions (other than reduced staffing issues) for themselves, but the universal fear that “something bad” was inevitable to happen and harm others and the Company.

4. Apathy/Fear of Retaliation

Alyeska has a clear written policy against retaliation for people who suffer an adverse action as a result of their engagement in legally protected activities. Betsy Haines and the leadership team, issued a bulletin upon her arrival as Interim President, reaffirming that “Speaking Up Is Our Legacy.” It stated, in relevant part, “Everyone is free to report issues without fear of reprisals.”

However, Alyeska continues to have complaints of retaliation. There are a number of open complaints of retaliation in various stages of the formal external complaint process or litigation. Two of those are from the VMT. Information from allegedly “aggressive litigation tactics” being used by Alyeska was reported to me through this assessment and, as is the case for any similar situation, those tactics have become known by the Alyeska/VMT workforce. People keep in touch with each other and follow what happens to their colleagues going through such processes. That is particularly true for the Valdez community.

It is beyond the scope of this assessment to delve into the facts of those cases; however, I did receive comments – both positive and negative – about employees who raised safety and retaliation concerns. Some CIs admired the “courage” of workers to keep fighting, and others interviewed did not understand the reason the workers had done so, and questioned their motives.

There was little follow-up information in the fall 2022 OWE survey about the reason for fear of retaliation and the employee comments or themes were not made available for review. (The survey respondents’ comments may have provided more insight to Alyeska Leadership into the basis for this rating.)

No one interviewed during this assessment was aware of any recent HIRD training provided to management personnel at the VMT on managing protected employees, and how to do so legally and still maintain an OWE.

The apathy issue is actually harder to address and will require even more work by Alyeska.

Based on a review of numerous documents and procedures, it is clear to me that most workers are utilizing the MAC system and Work Order process and all the tools within it, to make sure that issues of concern, safety, and non-compliance are raised in internal systems. That is very good. However, the management response to the issues that I was able to review is dismal – untimely, ineffective, and little to no employee feedback on the status of the concerns. It is described as the “black hole” or “where concerns go to die.”⁵⁵

My experience with these situations is that it portends that employees are already falling into a silo – either they don’t care at all about non-compliance issues and won’t report anything; they care enough to use an internal system to document a serious issue, but will not advocate for it (either because of the fear of doing so and being targeted for layoff or accused of trumped-up reasons for termination); or, they have given up entirely on the company and will only raise their concerns externally, if at all. Changing the choice paradigm is critical to changing the culture.



⁵⁵ In the situation at the Davis-Besse Nuclear Plant, where a football-sized hole was discovered in the reactor head as a result of boric acid corrosion, system engineers and others had identified the potential for this problem in over 27 different corrective action documents over ten years. Management continued to defer the work because of cost and scheduling priorities. (See, Minnema; “Leadership and Oversight in Safety Culture: Lessons Learned from Davis-Besse,” Proceedings of the American Nuclear Society of Meeting, 2007; and, “Using Leading Indicators to Avoid Major Accidents,” Statement of the Honorable Jesse Hill Roberson, Vice Chair of the U.S. Defense Nuclear Facilities Safety Board at the U.S. Chemical Safety Board’s Public Hearing on Deepwater Horizon, July 23-24, 2012.)

IV. Regulatory Oversight

In 1991, following a series of employee disclosures about falsified weld records and corrosion issues along the pipeline, the GAO issued a report finding that there was inadequate regulatory oversight of Alyeska's operations. The report was highly critical of the failure of the regulators to exercise any meaningful oversight.⁵⁶ GAO reported that the federal BLM (or the Bureau) told GAO investigators that they "were not regulators." Instead, they reported that "they largely relied on Alyeska to police itself" (1995, GAO Report, at 45). The 1991 evaluation of the regulatory oversight concluded that the multiple state and federal agencies with authority over Alyeska were reactive in their operations and had failed to identify or prevent the quality assurance/quality control breakdowns identified in 1991.

After multiple additional whistleblower disclosures in 1992-1993, and further congressional hearings in 1993 and 1994, the GAO reviewed the status of the regulators' roles again. This time, it found that BLM had expanded its role, assumed responsibility for oversight, increased its staff, opened an office, and was "refocusing their effort on preventing problems and improving quality" (Id., at 3). However, the GAO's assessment of the long-term sustainability of the success of the changes in regulatory oversight was prescient:

Alyeska has the primary responsibility for ensuring that the pipeline operates in a safe, environmentally responsible manner. The key to its success depends on how well it can create and sustain a commitment to quality through its organization. The [JPO] Office's funding is provided largely by Alyeska, which will be under continuing pressure to reduce its costs as the flow of oil through the pipeline decreases. In addition, the Office will also be under pressure to reduce its government staffing levels. Either or both situations could adversely affect the Office's ability to maintain adequate oversight (emphasis added).

(Id., at 6.)

The past has become prologue.

There has been a steady, on-going, and continuing deterioration of oversight and enforcement capabilities in Prince William Sound. The resources available to provide active oversight and intervention have decreased.

More recently, concerns about this were brought to the attention of the Alaska Congressional Delegation in August 2020 by PWSRCAC (August 14, 2020 Letter from PWSRCAC to Senators Lisa Murkowski and Dan Sullivan, and the late Congressman Don Young). A letter was received from Senator Murkowski stating she appreciated the information, but no action has yet been initiated to in response to these concerns to the best of our knowledge.

⁵⁶ Trans-Alaska Pipeline: "Regulators Have Not Ensured That Government Requirements Are Being Met" (GAO/RCEED-91-89, July 19, 1991).

In the August 2020 letter, PWSRCAC identified a variety of factors that increased the concern that Alyeska was not receiving sufficient regulatory oversight to ensure continued safe operations and outlined the deteriorating regulatory attention and capabilities.

While many of the PWSRCAC's original concerns expressed in 2020 remain the same, some important aspects of VMT operations have changed. First, while Alyeska did add back the VMT Manager position, the current Manager does not live in Valdez. Second, the risks and impact of COVID have lessened with more experience and vaccines. Regulators should now be able to resume their normal inspection and audit activities. Third, in light of record-breaking oil profits in 2022 and the demand – and thus cost – for oil dramatically increasing since 2021, much needed funds should be available for deferred maintenance and repairs; upgrades to aging equipment; and increased staffing in understaffed departments. This should include the compliance, audits, and QA/QC departments, and improved training. Finally, Alyeska ownership has changed. Hilcorp, through its subsidiary, Harvest Alaska, LLC is now the principal owner of TAPS (49%).

A. Regulatory Oversight of Alyeska/VMT

Safety cannot be regulated into a company. Regulatory agencies can, in effect, only conduct inspections and take enforcement actions against companies, including Alyeska, for violations. But enforcement usually happens only after an incident or accident has already happened and people have gotten hurt, the environment negatively impacted, or worse.

Companies that have a high functioning Safety Culture welcome regulatory oversight – and any outside findings and observations.

The information identified in inspections is viewed as providing opportunities to improve its safety performance. Companies that do not have a mature Safety Culture view the work of regulatory agencies, auditors, and oversight of any type as invasive and a burden, with a bias toward denial of facts, lack of ownership or responsibility, and a culture of challenging any such findings. The International Association of Oil & Gas Producers describe this attitude as a “Pathological” Safety Culture, characterized with comments such as “The lawyers said it was okay,” “Of course we have incidents – it’s a dangerous business,” and “Punish the person who had the accident.”⁵⁷

⁵⁷ See, the International Association of Oil & Gas Producers, Safety Culture Ladder.

The Safety Culture Ladder



The nuclear industry has a similar Safety Culture assessment tool, referred to as “Stages of Organizational Decline.” It describes the “Danger” stage as “several potentially serious events occur. Management and/or employees reject criticism from audits/regulatory as biased. Oversight is afraid to confront management which often leads to the lowest level, described as “collapse.” This is characterized as “government/regulator intervention with special evaluations/investigations.” “Management is overwhelmed. Potential for major/costly improvement.”

In my opinion, based on the information gathered during this assessment, and my experience in evaluating corporate cultures, Alyeska no longer has a healthy Safety Culture. Virtually every CI interviewed repeated some version of the sentiment/policy position expressed by the former President of Alyeska – and other leaders – that “if a violation has not been identified by a regulator, it isn’t a violation.”

When a company culture is unhealthy, management displays defensiveness and deniability that there are problems. Management is overwhelmed. External investigations and their consequences are increasing. The company’s processes and procedures are no longer respected and followed as required.

Unfortunately, the consequences of this type of cultural collapse has manifested itself at the VMT. Examples of serious Process Safety issues, equipment failures, and procedural violations and other issues are contained within this report. Others are identifiable on regulator websites. However,

notwithstanding all of the information that had been provided to Alyeska itself before any external regulators intervened, no meaningful actions were taken by the VMT or Alyeska leadership. It is not surprising that the concerns were then raised to state and federal agencies, and others.

In the absence of a strong corporate Safety Culture, the role of regulators becomes critical for protecting public health, safety, and the environment.

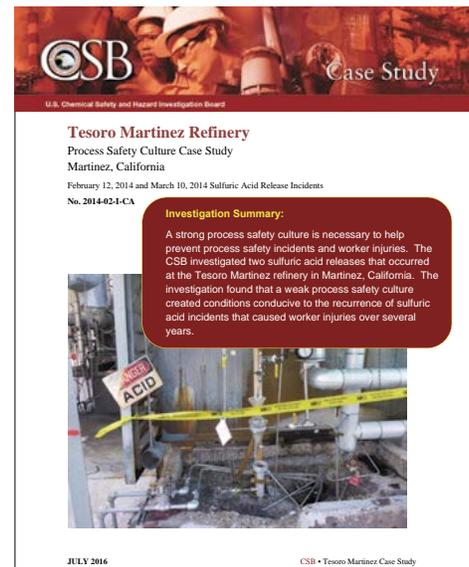
In this assessment, I looked at the role of regulators with oversight responsibility of the VMT and the role currently played in proactively ensuring safe operations.

It should be noted that the degree to which regulators exercise their authority over facilities is always considered in accident investigations and provides guidance to this review. Such investigations study the role of the regulator(s) in identifying (or missing) the causes of the accident and look for factors that could have changed the unfortunate outcome. Many of those studies identify the absence of regulatory oversight as a key contributing cause to serious process safety failures and accidents.⁵⁸

I have reviewed below some, but not all, of the regulators with responsibility over Alyeska’s safe operations and compliance with regulatory requirements.

“A strong safety culture is necessary to help prevent process safety incidents, including worker injuries from sulfuric acid releases.”

2016 CSB – Tesoro Martinez Refinery Case Study



⁵⁸ The link to the CSB is: <https://www.csb.gov/investigations/>. The link to the NTSB is: <https://www.nts.gov/investigations/Pages/Investigations.aspx>.

See, also, the GAO report on the role that the NRC’s lack of regulatory oversight, assumptions that the company would perform deferred maintenance, and the overload of work for the agency that contributed to the Agency’s complete failure to identify a significant safety risk (i.e., near- miss and almost certain meltdown), had a random contractor not identified the issue at the Davis-Besse nuclear plant in Ohio, in 2003 (GAO Report Nuclear Regulation: “NRC Needs to More Aggressively and Comprehensively Resolve Issues Related to the Davis-Besse Nuclear Power Plant’s Shutdown,” GAO 04-415, May 2004).

1. The Joint Pipeline Office



In 1990, in the wake of the Exxon Valdez accident, and after 1990 disclosures regarding quality problems along the pipeline, including the alleged falsification of welding x-rays, the federal BLM under the Department of the Interior and the Alaska Department of Natural Resources (ADNR), along with other state and federal agencies, created the JPO to increase oversight of and better coordinate the numerous, and often duplicative, federal and state regulatory efforts.⁵⁹ As noted above, the regulators acknowledged that their role had become reactive to events, incidents, whistleblowers, and other external disclosures, instead of preventing accidents or incidents.⁶⁰

In 1993, following the disclosure of thousands of regulatory violations, safety issues, and the termination of Alyeska whistleblowers who exposed these issues, the late Congressman John Dingell asked the GAO to “determine whether regulators are taking action to improve regulatory oversight of the pipeline...”⁶¹ In response to his request to the 1991 GAO report and the 1992 whistleblower disclosures of thousands of flaws in numerous locations and the 1993 Congressional hearings, the JPO (and contingent agency personnel) staffed up, occupied a joint office, and played an active role in Alyeska oversight. For years it operated as the principal coordinator to ensure Alyeska was subject to smart regulatory oversight, in compliance with requirements, and operated safely.

After the important work coordinated by JPO in the past, the office appears to be mostly dissolved, including no longer having an actual joint office. In 2022, PWSRCAC confirmed through BLM that the JPO had become simply a coordinator with each agency operating independently of one another and jointly under certain instances related to compliance with the Right of Way for TAPS (See the following section on the Bureau of Land Management).

⁵⁹ The 13 agencies that were contained under the JPO umbrella were the ADNR [co-lead], ADEC, Alaska Department of Fish and Game (ADF&G), AK DOL/Alaska Department of Transportation/Public Facilities, Alaska Department of Public Safety/Division of Government Coordination/State Fire Marshalls office; and the federal BLM [co-lead], U.S. Department of Transportation/Office of Pipeline Safety, EPA, Minerals and Management Service, Coast Guard, and the Army Corps of Engineers (JPO 1999/2000 Annual Report, p. 46).

⁶⁰ JPO acknowledged that TAPS oversight had been lax during the 1980s in a 1994 report to Congress (JPO, Activities of the Joint Pipeline Office in Response to the Subcommittee on Oversight Investigations, April 1994, Introduction).

⁶¹ See, Attachment 1, GAO Report: “TRANS-ALASKA PIPELINE: Actions to Improve Safety Are Under Way,” GAO/RCED 95-162, August 1995. This report is included for those readers who want to understand the depth of the issues and problems that existed at Alyeska over 20 years ago, and the commitments that were made by Alyeska and the Owners to Congress and regulatory agencies of changes it would take to improve its performance and compliance record and ensure safe operations. As can be noted by reviewing this report, the problems now being raised by CIs, both current and former employees and contractors, in many ways mirror the same issues and experiences that resulted in the failures of the early 1990s.

2. The Bureau of Land Management



The BLM is the principal pipeline “landlord” and has the authority and responsibility in the Federal Grant of Right-Of-Way, and has the responsibility for assurance of compliance with the controlling Grant and Stipulations. BLM appoints the Authorized Officer, who has singular authority to issue permits, approve procedures, enforce provisions of the Grant and Stipulations, and shut down the pipeline, if necessary, to ensure safety of people, facilities and the environment. The TAPS Owners must fund the activities of the BLM that are directly associated with oversight of the Grant and Stipulations. Likewise, the Office of the State Pipeline Coordinator must be funded by the Owners.

The disjointed nature of regulatory authority of the various agencies providing oversight over different aspects of Alyeska contributed, in significant part, to the failure of regulators to identify the conditions that led to the significant problems across the pipeline and VMT in 1989-1993 timeframe.

In the 2003 time-frame, the State of Alaska and the federal government started to make significant changes in the way in which they regulated TAPS, and in particular the VMT. These changes were explained in letters from the State of Alaska to PWSRCAC in December 2003, and further detailed in May 2004. Thereafter, regulatory oversight appears to have remained relatively static until around 2010.

PWSRCAC probed the issue of diminished oversight in 2019. Their review noted that while, at that time, the JPO continued to operate in concept, it no longer included an actual office. Around 2009 or 2010, a division appeared to have arisen among JPO agencies and BLM left the joint office. The reasons for that division are currently unknown. Currently, staff dedicated to working with the JPO work out of their respective agency’s offices. In 2019, despite no centralized office, JPO agencies still continued to meet. At that time, BLM officials informed PWSRCAC about JPO meetings that occurred. JPO officials and Alyeska met at least monthly for a “Hot Topics” meeting to discuss high priority topics. Following the “Hot Topics” meetings, JPO managers met without Alyeska to discuss their course of action.

At this point, while agencies continued to meet periodically, it is questionable if the overall work of JPO is leading to the proactive, systematic, comprehensive, and coordinated regulation of the VMT and TAPS. For example, JPO’s Comprehensive Monitoring Program, created in response to the finding that JPO needed to become a proactive regulator, appears to have been completely abandoned.

A significant reorganization occurred at the BLM in 2018-2019. In a 2019 meeting between the BLM and PWSRCAC, the issue of staffing and resources was raised. At that time, PWSRCAC pointed out that the BLM staff dedicated to TAPS oversight had declined from 38 full time employees in 1995, to 25 full time equivalent (FTE) positions, and then down to 16.5 in 2018. In 2019, the number of

cost reimbursable FTE positions that support the federal focus on regulatory oversight of Alyeska, including the VMT, dropped to five FTE positions, with federal funds only covering one-half of those.

This reduction was done with no public notice, or public input, as noted by the Public Employees for Environmental Responsibility (PEER) February 4, 2019 Press Release, "BLM Cuts Engineering Oversight of Aging Trans-Alaska Pipeline."

In January 2022, a representative of BLM confirmed that the previous JPO has now become simply a coordinator, and each agency operates independent of one another and jointly under certain instances related to compliance with the (Right of Way) for TAPS.

The consequences of the loss of clear JPO leadership by the BLM, over the many agencies that have some responsibility for Alyeska regulation and oversight is undetermined.

As predicted 30 years ago by the GAO, lowered throughput of oil, reduced Alyeska budgets, and serious cut backs in State of Alaska and federal funding for BLM and other state and federal agencies, have all contributed to reduced oversight activities and presence. The consequences of reduced oversight have, generally, never been favorable for the Alaska public and its environment.

A thorough assessment of the risks to Alaska's people and the environment caused by the reduction of resources to provide adequate JPO leadership and oversight of the VMT and TAPS should be conducted by the GAO. It is the primary recommendation from this Assessment. The GAO has the background, resources, and expertise to evaluate the impact and make recommendations for necessary oversight capability to ensure the safety of the public and the environment.

3. Federal and State OSHA

As described in more detail above, the development of PSM standards and regulations over the past several decades should improve corporate safety management. The key regulators with authority over PSM are the state and federal Occupational Safety and Health departments, (AKOSH and federal OSHA). The relationship between the state and federal agencies is, essentially, that Alaska has primary responsibility under both sets of regulations and that federal OSHA relies upon and defers to the state agency in almost all circumstances.

AKOSH has responsibility for protecting worker health and safety throughout the State of Alaska, in very small work environments to very large employers – including Alyeska.



State of Alaska
Department of Labor and Workforce Development
Division of Labor Standards and Safety

Effective November 9, 2018
AKOSH PD 19-06

AKOSH Field Operations Manual (FOM)

Executive Summary

This directive constitutes AKOSH's general enforcement policies and procedures manual for use by the AKOSH personnel in conducting inspections, issuing citations and proposing penalties. This directive has been amended to formally update policy. Substantive changes include the following:

The following significant changes were made:

- Extensive Changes to Chapter 6, "Penalties and Debt Collection":
 - New background information on Alaska's new statutory maximum and minimum penalties
 - Penalties that will be adjusted yearly were removed. Numbers were replaced with references to the AKOSH Penalties Supplement
 - Numerous minimum penalties were adjusted to match federal minimums
 - Penalty adjustment methods were changed to match federal methods
 - Changed penalty reductions from summation to serially applied
 - Re-ordered penalty reduction types to match order in which they are applied
 - Added quick-fix penalty reductions
- Minor formatting and language adjustments throughout document.

Its authority and responsibilities are set out in its Field Operations Manual Program Directives, PD 21-02, effective January 28, 2021 (https://labor.alaska.gov/lss/program_directives.htm).

A review of the program itself, information obtained under the Alaska Public Records Act, and discussions with agency officials, confirms that currently AKOSH is primarily in a reactive mode. It responds to complaints of imminent safety concerns, as well as to fires, accidents, and explosions that harm more than one employee, and other non-imminent complaints about potential safety violations in a prioritized manner. Its handbook shows that the first three categories of inspection priorities are all reactive, leaving little time for anything else (See, Field Operations Manual, Chapter 2, Table 2-1, Inspection Priorities, page 2-3.)

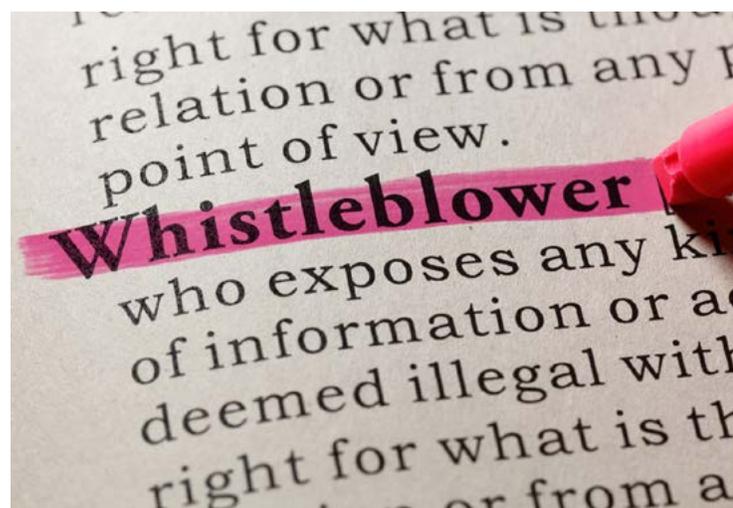
The regulatory program relies upon the principle that employers will operate in compliance with all safety rules, requirements, and processes, as well as respecting the General Duty clause of both OSHA, EPA, and other requirements.

a. The Role of Employees in the Identification of Non-Compliance

As explained above and set out more fully in the AKOSH Field Manual, there are virtually no regular or routine inspections being performed by the agency. Regulatory involvement requires a formal complaint by a knowledgeable employee or a serious accident and/or injury to trigger inspections by AKOSH at this time. If AKOSH has time, after these activities are addressed, it may perform regular inspections.

This situation means that employee complaints are a critical component of the regulatory framework. State and federal OSHA regulations ensure that each employee can, in fact, become “a mini regulator” to ensure safety on the issues and facts in their specific areas of expertise. While OSHA relies on companies to be compliant, it must also rely on employees to raise safety or compliance concerns.

For employees who are aware of safety or compliance violations, this often creates a dilemma of whether to raise the concern and risk losing their job or to remain silent and put the safety of others in jeopardy. To encourage participation by employees, both federal and state OSHA regulations have legal protections against retaliation for any employee cooperating or participating with an OSHA investigation.⁶² These whistleblower protections are applicable to virtually every employee or contractor that works for Alyeska, at the VMT, or along the pipeline.



⁶² See, generally, OSHA Fact Sheet, “Whistleblower Laws Enforced by OSHA”: <https://www.osha.gov/sites/default/files/publications/OSHA3638.pdf>.

The law protects any employee who has suffered adverse action (i.e., termination, demotion, change of duties or responsibilities, negative performance evaluations, or being subjected to a hostile work environment), if that adverse action is the result of raising concerns about potential violations of safety or environmental regulations or internal procedures implementing those regulations.

Alyeska has a “no retaliation” policy prohibiting retaliation against employees who raise concerns. The ECP has the correct framework to investigate retaliation. However, according to the limited survey data available and the anecdotal information reviewed during this assessment, there remains a fear of retaliation. This must be changed.

OBSERVATION:

During the course of this assessment the motives of the employees believed to be raising concerns were questioned by others contacted during the AKOSH inspection. There was a general disdain expressed and accusations made that employees raising safety concerns had ulterior motives, were “disgruntled,” or not competent on the issues of concern. It is clear that there is a significant misunderstanding about the laws prohibiting retaliation. The purpose of whistleblower protection is to ensure that other workers will not fear that, if they have a concern, they too will be attacked and criticized. Thus, the law does not require the employee to prove their motives are pure. In fact, case law specifically prohibits an inquiry or assessment of the motive of a whistleblower for raising concerns.⁶³ Employers are expected to ensure that employees feel safe to raise concerns without fear of retaliation. Alyeska’s written policies are committed to that outcome, and Interim Presidents Yeager and Haines both restated it, but it is unclear that any proactive measures are being taken to mitigate the harm already done. In fact, recent communications regarding the ongoing EPA and ADEC investigations currently in progress in relation to the tank vent damage situation have heightened the issue of a “chilling effect” to raising concerns within the Alyeska workforce again.

⁶³ *The Secretary of Labor in Guttman v. Passaic Valley Sewerage Commissioners*, completely rejected a finding of a lower-level judge regarding the employee’s motivation for blowing the whistle, holding that “it is not complainant’s underlying motive” for “reporting violations” that “must be established or considered.” Whistleblower laws protects an employee’s conduct “notwithstanding his motives” for blowing the whistle. This holding was affirmed by the U.S. Court of Appeals for the 3rd Circuit, *85-WPC-2, D&O of SOL* (March 13, 1992), *aff’d.*, 992 F.2d 474 (3rd Cir. 1993). See also, *Oliver v. Hydro-Vac Services, Inc.*, 91-SWD-1, D&O of Remand by SOL, at 9 (Nov. 1, 1995); *Nichols v. Gordon Trucking, Inc.*, 97-STA-2, D&O of ARB, at 1 (July 17, 1997) (“A complainant’s motivation in making safety complaints has no bearing on whether the complaints are protected”); and *Reid v. Scientech, Inc.*, 99-ERA-20, at 1314 (Jan. 28, 2000).

b. VMT AKOSH Inspections and Violations

AKOSH received employee concerns in early 2019 regarding violation of PSM requirements and safety concerns at the VMT, raising the risks of accident, injury, and environmental damage. As a result, and in response thereto, AKOSH performed a PSM audit and inspection at the VMT in December 2019. The inspection confirmed serious violations of OSHA PSM requirements and regulations at the VMT. It issued two inspection reports as a result of the inspection.⁶⁴

AKOSH Inspection Report 1449721 and Citations were issued February 25, 2020, against Alyeska confirming five (5) serious violations of PSM requirements and ten (10) other than serious violations. Initial penalties were assessed against Alyeska in the amount of \$64,416.00. Alyeska and AKOSH entered into an informal settlement of the issues, resulting in a reduction in assessed penalties to \$27,281.00 and five (5) of the other than serious violations were deleted. Alyeska paid the fines in March and April 2020, and abated the violations.

Other employee concerns, as well as programmed inspection items, were addressed in a separate AKOSH Inspection Report 1449993 and Citations were also issued against Alyeska on May 26, 2020, for 43 violations of various safety requirements, 22 of which were violations of PSM standards and 38 of which were designated by AKOSH as “serious.”⁶⁵ Enforcement action was initiated on 31 violations with initial penalties being assessed in excess of \$404,000.00.⁶⁶ Alyeska has contested all of the violations and penalties from Inspection Report 1449993 in their entirety.

⁶⁴ AKOSH implements the PSM program oversight for the federal OSHA office as well as the state OSH requirements. The Inspection Report numbers are used by both AKOSH and OSHA and are identified on the federal OSHA web site data base, identified as Alyeska Pipeline for the “Establishment”.

⁶⁵ Determining whether a violation is considered “serious” depends on a determination of four factors. The first three factors address whether there is a substantial probability that death or serious physical harm could result from an accident/incident or exposure relating to the violative condition. The probability that an incident or illness will occur is not to be considered in determining whether a violation is serious, but is considered in determining the relative gravity of the violation. The fourth factor addresses whether the employer knew or could have known of the violative condition (AK Field Operations Manual Program Directives, PD 21-02; Section IV, B, pp. 4-7).

⁶⁶ OSHA Inspection 1449993.015, provides details of the various violations confirmed by OSHA, https://www.osha.gov/ords/imis/establishment.inspection_detail?id=1449993.015.

c. The Effect of Contested Violations

Employees have continued to raise issues to AKOSH. But, according to the agency's process, it cannot investigate these issues while similar issues are being contested by Alyeska.⁶⁷

Thus, Alyeska's decision to appeal the May 2020 findings has effectively stymied AKOSH from being able to do anything other than wait for an accident or incident which would then provide it the authority to conduct further inspections into similar issues.

This is a serious situation. If employee concerns about PSM violations and risks are not credibly investigated internally by Alyeska, and AKOSH cannot investigate any additional PSM concerns (subject to the contested case) because Alyeska has contested the earlier findings – no one is ensuring that these risks are being addressed.

The AK Field Operations Manual, cited above, makes it clear that it can conduct inspections, regardless of the status of a contested case, in the event of an incident or accident, but that is cold comfort to those who may be impacted and/or worried about oversight and safety.

The 2019-2020 AKOSH inspections discussed herein were done in response to employee concerns raised on safety and PSM issues at the VMT. Many of the substantiated, serious violations are also programmatic in nature, such as the confirmed, serious violation of "Inadequate Preventive Maintenance Procedures regarding the power vapor operations at the VMT" (See, Inspection Report OSHA Inspection 1449993). Yet, it appears that AKOSH procedures prohibit further inspections on new examples of "inadequate preventive maintenance at VMT" until the original violations run the entire course of contested litigation - appeal, mediation, an evidentiary hearing before a 3-person Board (during which Alyeska would be entitled to discovery of all the information supplied to AKOSH by Alyeska employees, per Chapter 13, Section VIII Discovery A-C), and any further appeals through the Alaska Superior Court (Id., at 10).

⁶⁷ According to the AKOSH Field Operations Manual Program Directives, PD 21-02, effective January 28, 2021, Chapter II Section IV. C "The Effect of Contest": "If an employer has contested a citation and/or a penalty from a previous inspection at a specific worksite, and the case is still pending before the Review Board, the following guidelines apply to additional inspections of the employer at the worksite:

1. If the employer has contested the penalty only, the inspection will be scheduled as if there were no contest;
2. If the employer has contested the citation itself or any items therein, then programmed and unprogrammed inspections may be scheduled, but all issues under contest will be excluded from the inspection, unless a potential imminent danger is involved."

See, also, pp. 2-3, regarding exceptions to Follow Up Inspections:

"[W]hen a citation is currently under contest, a follow-up inspection will not be scheduled regarding the contested items. If the employer contests the proposed penalty but not the underlying citation, a follow up inspection normally should not be conducted unless the violations are considered high-gravity and the supervisor decides that a follow up inspection is necessary. If a follow up inspection is conducted at establishments involve in proceedings before the Occupational Safety and Health Review Board, the CSHO will explain the follow up inspection will not involve matters before the Review Board" (emphasis added).

Here, Alyeska appealed the 2020 citations in their entirety, and that appeal is pending. Similar issues raised by employees since May 2020 remain "open" at AKOSH, but apparently must await adjudication of the contested findings.

OBSERVATION:

The concern from the perspective of this assessor is that the burden for identifying safety concerns and compliance issues is falling on the shoulders of Alyeska employees. However, depending on what survey data is considered, at least a quarter of the survey respondents believe that raising a concern will lead to retaliation. This “chilling effect” is unacceptable in industries, such as Alyeska, that have a low probability of a serious accident, but if it happens the results could be catastrophic. The additional warning from the workforce in at least two of the last four surveys also indicates that there was a very strong belief that such an incident was imminent within the next year.

Employees are the first, last, and best defense against accidents and incidents.

Every single investigation into serious explosions or accidents conducted by the CSB, NTSB, NASA, or the GAO cited in this report recognize that employees initially identified the likelihood and the cause of the accident before it happened, and were ignored, their concerns disregarded, and no effective corrective action was taken.

When employees stop raising issues, either because of fear of retaliation or they see that raising concerns to their supervisors does not produce any action, they face a difficult choice. Most employees will stop at the chain-of-command, believing that they have done their duty by raising the issue to those people in positions to take action. Others believe that they must use their knowledge to protect others and take their concerns to someone that they believe will provide timely and effective responses.

Alyeska employees should not have to be the eyes and ears for the regulators. Given the situation presented in this assessment, it is recommended that a federal GAO assessment be conducted to determine if the regulatory framework over Alyeska should be improved.

Alyeska is already regularly operating with defeated safety systems, delayed maintenance, failure to replace or repair aging equipment, inadequate or non-existent parts for repairing downed and obsolete equipment, and practices that operate outside of PSM required safety parameters. In addition, it continues other activities that were considered serious violations by AKOSH, which Alyeska is contesting.

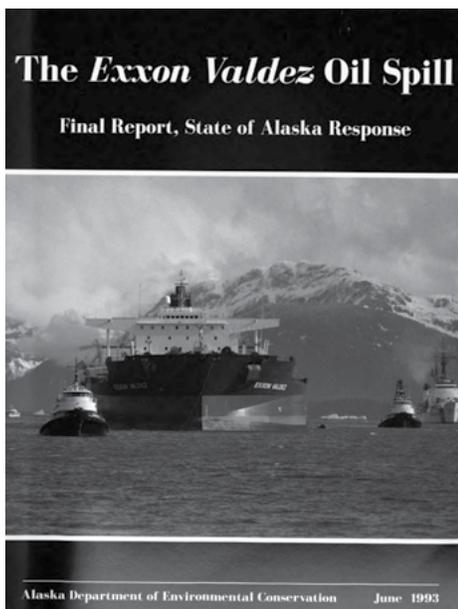
There can be no reasonable assurance that regulators will be able to prevent the inevitable outcome of programmatic PSM failures – even when employees provide additional complaints, information, and examples of such violations to Alyeska and regulators.

This unacceptable situation is the foundation of my recommendation to PWSRCAC to seek a full independent PSM audit of the VMT practices be commissioned by the Owners/Alyeska. An independent PSM audit, with open access to all documented hazards, non-compliances, and work deferral justifications should provide an accurate picture of the current state of the VMT facilities.

4. Alaska Department of Environmental Conservation

The Alaska Department of Environmental Conservation (ADEC) is the lead agency for pollution control over Alaska’s air, lands, and waters. ADEC works with both the U.S. Coast Guard and the EPA.

Under the federal CAA and the Clear Water Act (CWA), ADEC is the state agency designated with the primary authority and responsibility to ensure Alyeska’s compliance with the terms and conditions of the various permits issued to them. In the event of an oil spill, ADEC also has the responsibility to manage state response operations, work with federal agencies, and integrate the needs of other state and local agencies in state and federal activities.



In the June 1993 Final Report of the Exxon Valdez oil spill by the ADEC, then Commissioner John Sandor stated his belief that “[o]ne of the most vital lessons is that prevention is the key to the problem of oil spills, and that [A]DEC has re-dedicated itself to the principle that it is much easier, more cost-effective, and environmentally safer to prevent spills than to clean them up.” That observation still applies to all aspects of the environmental costs of an uncontrolled incident at the VMT.

Unfortunately, it appears there has been a significant reduction in ADEC resources, engineering and technical support, and experience level of staff. This is especially concerning given their oversight responsibilities for perhaps, the most complex facility in the state.

By way of example, at the time of the Exxon Valdez spill, ADEC had 296 employees overall.⁶⁸

According to the Governor’s recent budget reports available for review, the ADEC staff in the Spill Prevention and Response Division is now somewhere around 105 – 123 people. However, the actual dedicated staff to the work of the Spill Prevention and Response Division has been reduced to an uncertain number, since the reorganization actions have distributed duties among other staff.

In short, it was not possible to do a quantitative assessment of ADEC staffing because the inspection duties have been distributed differently. However, adequate resources must be available to ensure that Alyeska maintains its commitments to spill prevention and response.

⁶⁸“The Exxon Valdez Oil Spill, Final Report, State of Alaska Response,” prepared by the ADEC, June, 1993; “At the time of the spill, [A]DEC had 296 employees overall.” Section, DEC duties and management structure, p. 21.

This assessment did not review either Alyeska's Oil Discharge Prevention and Contingency Plans, or ADEC and Alyeska's preparedness to respond to a spill. There were no employee concerns regarding this topic from any of the CIs interviewed.

With respect to the role of the ADEC's ability to perform adequate oversight under the CAA and CWA, there were some CI concerns raised about the lack of oversight presence on the VMT prior to the tank damage and venting issues in February and March 2022. CIs report that there was no visible presence of the ADEC in reviewing or monitoring Alyeska's ability to meet its CAA and CWA compliance requirements. If ADEC did conduct limited oversight, the CIs were unaware of it.

ADEC's involvement in the recent and ongoing oversight of the 2022 snow removal/venting incident will provide valuable insight into the state agency's ability to support the EPA in these actions.

5. The Federal Environmental Protection Agency

The VMT operates under a variety of environmental permits issued by the federal EPA. These include a major emission source CAA permit, a CWA permit, and a Resource Conservation and Recovery Act (RCRA) permit.



The CAA and CWA permits set forth the terms and conditions for monitoring and measurement of emissions from terminal operations – including the Vapor Recovery System. The RCRA permit provides direction on the handling and processing of hazardous waste. Under the regulatory framework for monitoring and ensuring compliance with these regulations, the State (i.e., ADEC) has the primary responsibility for enforcement.

The regulatory records show that the EPA/ADEC conducted 15 monitoring activities in the last five years, with the last compliance activity reported in September 2021. Violations were identified in only one CAA noncompliance during the 3rd Quarter of 2021.

The CAA requirements are intrinsic to PV operations and equipment. Under the CAA, there are no exemptions allowed for exceeding any permit requirements. Failing to maintain or replace equipment necessary for compliance with the terms and conditions of the permit is a serious violation of the CAA.⁶⁹ This related issue, aging PV equipment, was a significant concern voiced by CIs.

Under the CWA, violations were found in seven of the last 12 quarters, the latest being in the 3rd quarter of 2021. The three violations from the 3rd quarter of 2021 involved 1) numeric effluent

⁶⁹The current CAA permit is expired, but still applies while Alyeska and the EPA/ADEC negotiate a new permit.

violation; 2) a management practice violation for failure to develop/enforcement standards; and 3) a management practice violation for improper Operations and Maintenance.

Under the RCRA permits, the EPA reports that there were multiple reported violations - one of universal waste-small quantity handlers, three incidents of issues with the generators, one involving preparedness, prevention and emergency procedures; and one regarding used oil – generators. Four of the cited violations identified during the third quarter continued into the fourth quarter.

It is not clear whether there were any EPA/ADEC normal monitoring activities in 2022, or if the EPA public website has simply not updated the information. In any event, both the EPA and ADEC are now heavily involved in the investigation of the issues surrounding the damage to the tanks in the East Tank Farm from excessive snow load in the Spring of 2022 and uncontrolled venting from those tanks during the incident.

It is apparent that the EPA and ADEC are taking the incident seriously, and heightened scrutiny and monitoring can be expected.

6. PHMSA Regulatory Authority and Enforcement Actions

PHMSA has regulatory authority over much of the pipeline itself, and indirectly over certain operational aspects of the VMT.⁷⁰ It has issued two “warning letters” (discussed below) to Alyeska for violations of PHMSA requirements in recent years.⁷¹

On April 14, 2021, PHMSA sent a warning letter confirming that training records for control room operators “were incomplete and failed to demonstrate that control room team training and exercises included both controllers and other individuals, defined by the operator, who would reasonably be expected to operationally collaborate with controllers (control room personnel) during normal, abnormal or emergency situations.” Fines for this violation could have been \$222,504 per violation, per day if the violation persists. No fine was issued, and PHMSA directed Alyeska to correct the item identified in the letter. It is not clear that Alyeska conducted an internal “extent of condition” audit or any other form of internal assessment of the extent of the issues that resulted in the warning letter.⁷²



⁷⁰ PHMSA authority starts at Pump Station 1 to the relief lines through East Metering to Break Out Tank 1 and 3 at the VMT, and ends at Valve-972, the battery limit valve for the VMT.

⁷¹ While PHMSA mainly governs the pipeline, it has jurisdiction over the Anchorage based Operations Control Center, which operates much of the terminal activities, remotely, from Anchorage, and thus does impact the VMT safety and operations.

⁷² See, PHMSA, Alyeska Pipeline Service Co. Federal Enforcement Case 5-2021-016WL, April 14, 2021.

The second PHMSA letter, issued on January 25, 2019, dealt with the failure to conduct a mandatory corrosion inspection on a Check Valve between Fairbanks and Pump Station 9. The issue is beyond the scope of this assessment but has been communicated to Alyeska.⁷³

These two examples were provided by CIs as examples of inadequate regulatory authority over Alyeska, and the impact of weak regulation on the organization's culture and attitude towards regulatory authority. As stated with an earlier reference to the pipeline in this assessment, it is understood that this issue falls outside of PWSRCAC's mission area, its contract with Alyeska, and the scope of this assessment. However, this situation is included for the reasons noted above and was raised to me as an issue of concern.

PHMSA has regulatory authority over Control Room Management (§195.446(a)). The requirements state that, "If an operator has more than one control room, then separate inspections are necessary." The PV Control Room is the subject of a significant number of issues. Yet, it appears that no federal regulatory body, including PHMSA, is exercising any regulatory authority over the PV Control Room operations and practices to ensure safe operations. Likewise, the same situation appears to apply to the Ballast Water Treatment facility control room.

Since the PV Control Room has the ability, and in some cases obligation, to have a direct impact on pipeline reliability, it is unclear why it remains outside of PHMSA's jurisdiction. PV controls a significant portion of activities that could present a safety risk to the workforce, the public and the environment in and around the Valdez terminal; and a significant incident at PV could result in shutting down the pipeline.

It is not clear what, if any, agency actually has regulatory authority over PV operations and maintenance, or its Control Room operations. Clarification of applicable regulations of the PV facility to the public and the workforce would be useful to provide explanations and assurances on these concerns.

⁷³See, PHMSA, Alyeska Pipeline Service Co. Federal Enforcement Case 5-2019-50005W, January 25, 2019.

B. Alyeska's Regulatory Compliance Program

Inadequate regulatory oversight of the VMT specifically, and Alyeska more generally, has been the subject of Congressional oversight from the beginning of construction. Each time there was a significant accident, incident, or oil spill there has been a congressional hearing, followed by a GAO Report recommending increased state and federal oversight.⁷⁴

During the lifetime of TAPS there have been serious tragedies and process safety accidents across many industries, including the oil and gas industries. The investigations into the causes of those accidents led to the development of new regulations, increased industry standards and higher expectations regarding the operation and management of high-risk industries. Since 1977, industry and professional organizations have developed a much deeper respect for the importance of Safety Culture, employee concerns, and the importance of compliance and respect for the risks inherent in the dangerous tasks undertaken by a company. Serious accidents, international media coverage, litigation, criminal charges, and public outcry have raised expectations for a higher commitment to safety and Safety Culture.

For a while, Alyeska embraced these changes, and its Safety Culture, compliance, and the regulatory framework evolved. Based on this assessment those advances seem to have degraded back to where it started in many ways.

Numerous other state and federal agencies have regulatory authority over Alyeska and the operations at the VMT. Many of these agencies have changed dramatically over the past 20 years, and so have many regulations. This report does not attempt to list or review all agencies or the changes to the regulatory framework each exercise. However, to the extent that the presence of regulatory oversight at the VMT is diminished, it increases the responsibility of employees to be vigilant, and of Alyeska management to ensure zealous compliance with regulations and industry standards, and to respect the risks and changes inherent in its operations.

The manner in which Alyeska states that it will meet its compliance obligations is set forth in the Alyeska's Compliance and Ethics Program, ACP-303. This procedure clearly sets out those expectations and outlines the various Alyeska programs to achieve it. But it is unclear whether the program itself is effective. It does not appear to be current or have been audited.⁷⁵ There is no indication how the Compliance program is actually being assessed for its own effectiveness, which is questionable (See, Compliance and Ethics Procedure, Section 6, "Auditing, Monitoring, and Reporting Non-Compliance").

⁷⁴ Trans-Alaska Oil Pipeline – Progress of Construction Through November 1975 (GAO/REC-76-69, Feb. 17, 1976) and Trans-Alaska Oil Pipeline – Information on Construction, Technical, and Environmental Matters Through Spring 1977 (GAO/EMD-77-44, August 23, 1977); as well as the 1991 and 1995 GAO Reports referred to earlier in this report.

⁷⁵ For example, the Compliance and Ethics program takes credit for its long-standing "'Safety and Culture Minute' prior to starting company meetings" as part of its Internal Compliance and Ethics Awareness Communications, Section 4.4; however, CIs report that those meetings were eliminated by the former President, and that item should have been removed from the procedure because it was no longer accurate.

Should Alyeska want or need to avail itself of the existence of a formal Compliance and Ethics Program under the Department of Justice’s Sentencing Guidelines, it would have to be able to establish that the Compliance and Ethics program was actually effective.⁷⁶ Based on this assessment, it does not appear to be. If it was, many of the issues contained herein would have been avoided, already been addressed, or under active internal review.

By way of example, it has been reported that the EPA is deeply involved in reviewing potential violations of the CAA in connection with the February-March 2022 snow load damage and uncontrolled venting at the VMT East Tank Farm. Assuming that the incident reaches potential criminal exposure, Alyeska would likely want to avail itself of its Compliance and Ethics Program as a mitigating factor against enhanced prosecution considerations. However, it does not appear that the Alyeska Compliance and Ethics Program provided any identification of the risks to safety or compliance created by the excessive budget cuts and procedural violations at the VMT that may have led to the 2022 snow load damage.

An effective compliance program, whether managed out of the legal department or not, would have identified the system integrity risks inherent from the budget cutting, the behaviors and actions of the previous president that so damaged the culture, immediately responded to survey findings of fears of retaliation, and ensured that the Quality and Risk Assessment processes are funded, independent, valued, and functional. None of those things appear to be happening at Alyeska.

**U.S. Department of Justice
Criminal Division
Evaluation of Corporate Compliance Programs
(Updated June 2020)**

Introduction

The “Principles of Federal Prosecution of Business Organizations” in the Justice Manual describe specific factors that prosecutors should consider in conducting an investigation of a corporation, determining whether to bring charges, and negotiating plea or other agreements. JM 9-28.300. These factors include “the adequacy and effectiveness of the corporation’s compliance program at the time of the offense, as well as at the time of a charging decision” and the corporation’s remedial efforts “to implement an adequate and effective corporate compliance program or to improve an existing one.” JM 9-28.300 (citing JM 9-28.800 and JM 9-28.1000). Additionally, the United States Sentencing Guidelines advise that consideration be

As the Justice Manual notes, there are three fundamental questions a prosecutor should ask:

1. *“Is the corporation’s compliance program well designed?”*
2. *“Is the program being applied earnestly and in good faith?” In other words, is the program adequately resourced and empowered to function effectively?”*
3. *“Does the corporation’s compliance program work” in practice?”*

See JM 9-28.800.

⁷⁶The “Principles of Federal Prosecution of Business Organizations” in the Department of Justice Manual describes specific factors that prosecutors should consider in conducting an investigation of a corporation and determining whether to bring charges, negotiating plea, or other agreements, and considering corporate liability (JM 9-28.300. See, “U.S. Department of Justice, Criminal Division Evaluation of Corporate Compliance Programs” (Updated June 2020) (“DOJ Evaluation”), <https://www.justice.gov/criminal-fraud/page/file/937501/download>).

CLOSER LOOK: Snow Removal and Tank Damage Spring, 2022



Alyeska experienced a serious near-miss situation, as well as a PSM system failure, when snow fall during the 2021-2022 winter season was allowed to excessively build up on top of the tanks in the East Tank Farm. The snow was not removed, did not melt, and ultimately damaged or destroyed vapor vent valves on 12 of the 14 tanks. The recognition of the damage resulted in confusion, miscommunication, failure to follow Alyeska processes for documentation or risk assessment, and numerous other issues. Some aspects of the incident are covered here, although ongoing regulator investigations will ultimately provide a much more in-depth review and action.

The Valdez Winter of 2021-2022

The winter of 2021-2022 in the City of Valdez, Alaska, was a relatively normal snowfall year for Valdez.

According to the Natural Resources Conservation Service, National Water and Climate Center, the snowfall in the winter of 2021/2022 in Valdez, Alaska, was the third highest since the winter of 2011/2012. The Center maintains the “Sugarloaf Mountain SNOTEL” weather station approximately 2.5 miles down the road from the Valdez Marine Terminal, at an elevation of 550 feet above sea level (for reference, the crude oil storage tanks at the terminal sit at about 400 feet above sea level). According to the Sugarloaf Mountain SNOTEL data, the winter of 2011/2012 topped out at 128 inches of snow, while the winter of 2012/2013 reached a maximum of 119 inches. In the winter of 2021/2022, the maximum snow depth in Valdez reached 107 inches on March 6, 2022, when Alyeska was in the midst of responding to the damaged vents in the East Tank Farm.

The history of inadequate resources to manage snow removal at the VMT is well documented. According to those with first-hand knowledge of this problem, management of “snow removal on the tanks has been an issue since day one.” In the past snow would build up on tanks with relatively cool crude oil that had been in storage for several days and then, when the tank was emptied to ships and refilled with hot crude from the pipeline, the whole slab of snow would slide off at once. This would cause damaged vents and pallet valves, damaged piping, damaged equipment on the ground, and some seriously scary near misses for personnel working near the tanks. From 1985 through 1988 Alyeska had “a rigorous monitoring and removal program.” Obviously, it did not in the winter of 2022.

The Snow Load Damage to the East Tank Farm 2022

It is not entirely clear to the public about what damage was actually caused by snow on top of the tanks in the East Tank Farm, when it happened, and why it was allowed to happen. It appears that the excessive, unremoved snow load prohibited any meaningful inspections for some period of time. It is not clear when roof top inspections were no longer possible, and when serious damage to the tank vent pallets and other appurtenances began. It is also unclear why the numerous Alyeska processes in place to detect and prevent such damage failed, and it came down to the tank farmer/ technician smelling vapors to identify a problem.

The VMT Tank Farm Manual VOP/0500 Rev. 5 (01/28/21) procedures for inspections of the VMT Crude East Tank Farm require that operators in the tank farm perform rounds every shift. The task involves “providing verification of proper and safe operation of the numerous systems, including the vapor collection system, as well as leak detection and repair” (Section 1, p. 1-1). The procedure addresses the safety requirement for accessing the tops of the tanks (Section 8 Routine In-Service Tank Inspection). According to the procedure, API Specification 653, and state regulations (all identified in the Manual), tanks are to be inspected at least monthly. The Manual also includes requirements for inspection of piping, vents, and valves for vapor control (Section 8.3.2.1).⁷⁷

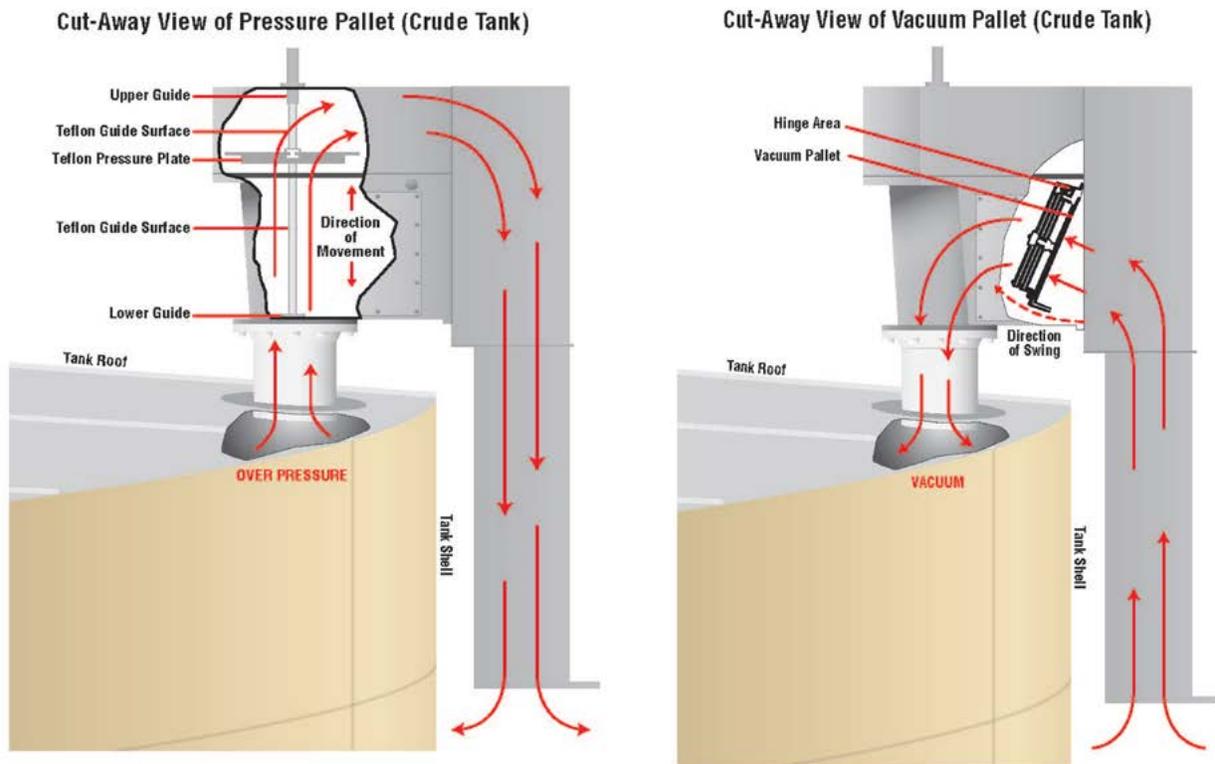
As described in the Manual, “[a]ll tanks are equipped with the necessary equipment to relieve excess pressure or eliminate vacuum conditions. This is to prevent exceeding design pressures within a tank, which could compromise the tank’s integrity.” Specifically, “[d]ue to the characteristics of crude oil, the VMT crude oil storage tanks were designed to be closed to the atmosphere and used as a vapor recovery system. The VMT Vapor Recovery System is used to control tank pressures.” “Should the Vapor Recovery System fail or become overwhelmed, each unit is equipped with either 10 or 11 [pressure vacuum vents]. These vents and their numbering are shown in Figure 92, East Tank Farm Vacuum Vent Valve Tag Numbering... These pressure /vacuum vents are considered pressure safety valves and are tagged accordingly” (Figure 8-34 Crude Tank Vapor Piping).

As shown in the figures on the next page, the pressure safety valve, or pallet, operates as both an over pressure vent and a vacuum vent valve.⁷⁸

⁷⁷ Section 8.6.3: Inspection, requires that the inspection be documented on Form 10041, including the results of the roof top inspection of “access structures used along the way. Note any problems with the tank roof (as applicable) and inspect any appurtenance attached to the roof or tank top.” The procedures also request that Operators include any photos of unsatisfactory items.

⁷⁸ The PSM requirements described earlier in this assessment are specifically applicable to the following portions of the Vapor Recovery System at the VMT:

- (a) The process piping, equipment, and appurtenances in the vapor recovery plant area,
- (b) The high and low-pressure vapor piping and associated valving to and within the VMT tank farm up to the point of connection at the crude tanks.
- (c) The vapor space in the oil storage tanks at the East Tank Farm and BWT Tanks 93 and 94.
- (d) The portion of the marine tanker vapor control system on the compressor side of the U.S. Coast Guard isolation valves for [Berth 4 and 5], including process piping, valving and various appurtenances.



Sometime in the early winter of 2022, many of these vent valves became inoperable because of damage from the snow load and some were sheared off entirely.

According to the Manual, roof deck inspections in winter may be limited due to snow load. The Manual requires that “[t]hese conditions must be documented.” Specifically, the Manual requires:

“Roof vents: Should be inspected from the roof and the ground for obstruction and/or damage that could prevent proper operation. The crude tank vents also have a support bracket that connects the trunk and shell that should be inspected for damage from snow load.”

(Section 8.5.8, Condition of Roof Deck).

Notwithstanding the requirements for daily inspections of the tanks for any abnormal conditions, including at least monthly inspections of the roofs of the tanks, there does not appear to have been any regular inspections of the tank roofs for damage or the identification of excessive snow load making the vent pallets inaccessible. It is unknown at this time if there were any documents created that identified the excessive snow load and the interference it was causing with regular inspections.

The Discovery of Leaks

At 0430 on February 25, 2022, a VMT technician smelled vapors. Eight minutes later he notified the PV Control Room and asked the CRO to bring the tank pressure to “atmospheric to temporarily stop the leak.” Someone then filled out VMT VRS Leak Detection and Repair (LDAR) Field Report, Form 10435 Rev. 8, recording a suspected vapor leak at VMT Tank 13 from Pressure Vent 54-PSV-1032B. This also is recorded on the Daily Incident Report as Incident Number 33456.⁷⁹ The LDAR form is checked that it was an obvious leak and not the result of corrosion. The leak was allegedly verified by a Forward Looking InfraRed (FLIR) camera, but it is not identified when that happened.⁸⁰



The next day, on February 26 at 1030 (so before the LDAR from February 25 was entered into the system, and perhaps, before it was communicated to other operators), during Tank rounds, an Oil Movements and Storage (OM&S) Operator discovered two other leaking tank vent valves on the north side of Tank 10. This was identified on the Daily Incident Reports as Number 33459. The handrail to Tank 10 was also damaged by snow, which was identified on LDAR 89178.

According to the February 26, 2022 LDAR 33468, no attempt was made at the time to stop or repair the leak, because it was “inaccessible due to the excessive snow load.” However, a Priority 1 WO, Number 221007381, was initiated for “snow removal to allow for access to the vent in question.”⁸¹ A supervisor is identified in the “Printed Name” section of the LDAR, although he was not the technician that found the leak, nor did he sign the form. The technician that identified the leak, did not sign the form either. The manager signed the form as the Responsible Supervisor [Ref 001]. He also entered the Incident into the IMPACT system, but not for two more days, at 1330 on February 26. Based on the Work Order it appears that it took two full days to access the damaged vent, recording the work was completed on February 28, 2022.

Two days later on February 28, 2022 at 1330, Alyeska prepared its Daily Incident Report, and recorded Incident Number 33468, stating that “[w]hile doing rounds tank farmer found multiple leaking vent valves.” The February 28, 2022 Daily Incident Report 33468 reports that Heavy Snow Load is affecting Tank Valves.

Two days later on February 28, 2022 at 1330, Alyeska prepared its Daily Incident Report, and recorded Incident Number 33468, stating that “[w]hile doing rounds tank farmer found multiple leaking vent valves.” The February 28, 2022 Daily Incident Report 33468 reports that Heavy Snow Load is affecting Tank Valves.

⁷⁹ Alyeska Maintenance Work Order (WO) 221007381, contradicts the dates in the Incident Report, identifying the scheduled repairs on leaking vent valve 54-PSV-1032B to be completed by 2/22/2022 – three days before the issue was apparently discovered. The WO states work was actually completed on 2/28/2022.

⁸⁰ Incident Report 33456 identified the immediate action as “Notified PV of leaking vent valve and had them put a slight negative pressure on the tank until snow could be removed to provide access to the vent valve for troubleshooting and repair. Dispatched snow removal crew to perform snow removal and safe access to the vent valve.

⁸¹ In fact, the Work Order is to repair the vacuum vent on Tank 13 that was found to be leaking and the only reference to the snow issue was the scope of work required “HCC snow removal.”

There are no Atmospheric Monitoring Logs available for February 25 through March 6. Logs provided to AKDOL do not show any testing done on Tank 13 or Tank 10 between February 25 and March 6. Beginning on March 6, 2022 one employee, with a unique badge number, began conducting monitoring tests. On March 7, 2022, on Tank 14, top West side, the log describes the following incident:

“Roughly 4-5 feet from vent opening while clear ice and snow from vent opening with shovel. Snow removal crew. Wind North. All MX4 meters have over ranged on the LEL. VOCs were extremely high and the benzene levels went past 40. Crew was evacuated from the top of TK 14 and mustered on PDC road. Operations was contacted at this time. Operations put a negative draw on the tank and dispatched a maintenance team to plug the pallet flange opening.”

There are no log entries for March 8-15, when monitoring begins in earnest. Several events of high VOCs and benzene were identified, with workers evacuated or told to don PPE.

Also, on March 7, 2022, Tank 6 was identified as having snow load damage and identified as Incident 33483. Tank 6 was identified as having snow load damage and identified as Incident 33483. The Incident Report describes the incident as:

“Due to snow conditions on TK-6-PSV-10125H vent was sheared off the tank causing the tank to be open to the atmosphere, additional snow damage included bent handrails.”

(Incident Report 33483, at 1.)

Finally, the immediate action taken in response to the Tank 6 damage displayed more urgency. The immediate actions taken in response to the discovery of this damage was identified within hours, as:

“Closed off all access to area, notified PV that tank is open to atmosphere and pressure is unstable, notified environment to make agency notifications. Requested PV to adjust tanks pressures to minimize venting. Reviewed status of tank and conduit with Ops Eng. Requested snow removal crews to gain access to tank vents so we can make temporary repairs and try to prevent additional snow damage to more vents.”

(Incident Report, Id.)

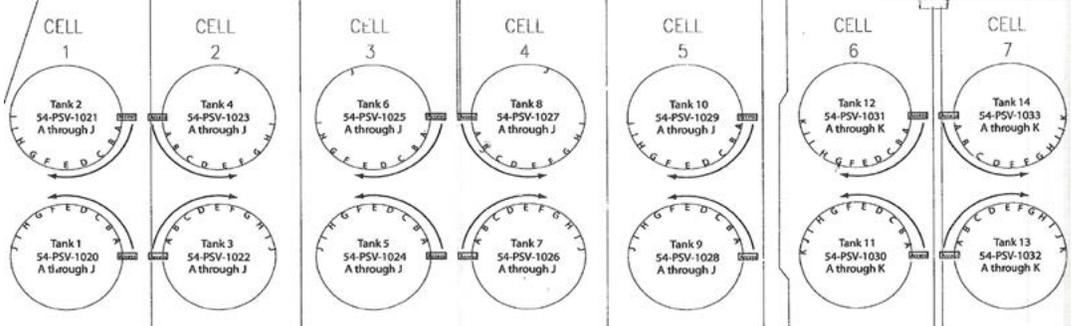
On March 8, 2022, Alyeska notified PWSRCAC of the situation regarding the sheared off and leaking vents. PWSRCAC was told regulators were advised of the situation on March 5, 2022.

On March 10, 2022, Alyeska identified four tank valves that had completely broken off. Incident Report 33495 records the finding that “excessive snow on the roof of tank 4 calved off at the edge tearing off vac vent valve “I” with it.”; Incident Report 33496 records that Tank 2 Vacuum Vent “H” was found broken off; and Incident Report 33497 records finding that Tank 10 Vacuum Vent “H” was broken off because of excessive snow calving. Alyeska determined there had been significant damage to 12 of 14 tanks in the East Tank Farm as a result of the heavy snow load, but that

EAST TANK FARM VACUUM VENT ASSESSMENT

Conducted on 03/11/22 & 03/12/22 by Brian Huey & Eric Scheidt

Tank 2	Snow Cover	Tilt	Tank 4	Snow Cover	Tilt	Tank 6	Snow Cover	Tilt	Tank 8	Snow Cover	Tilt	Tank 10	Snow Cover	Tilt	Tank 12	Snow Cover	Tilt	Tank 14	Snow Cover	Tilt
A	None (no trunk)	None	A	Engulfed	Severe	A	Engulfed	Slight	A	Engulfed	Slight	A	Above Top	Slight	A	Above Top	Slight	A	Engulfed	Severe
B	None trunk broke	Slight	B	Engulfed	Severe	B	None	None	B	Engulfed	Slight	B	Engulfed	Slight	B	Above Top	None	B	Above Top	None
C	Engulfed	Unknown	C	Engulfed	Severe	C	Engulfed	Severe	C	Above Top	None	C	Engulfed	Severe	C	Engulfed	Slight	C	Engulfed	Slight
D	Engulfed	Severe	D	Engulfed	Severe	D	Engulfed	Slight	D	Above Top	None	D	Engulfed	Severe	D	Engulfed	None	D	Engulfed	Slight
E	Engulfed	Unknown	E	Engulfed	Slight	E	Engulfed	Unknown	E	Engulfed	None	E	Engulfed	Slight	E	Engulfed	Slight	E	Above Top	Slight
F	Engulfed	Severe	F	Engulfed	Severe	F	Engulfed	Slight	F	Engulfed	None	F	Engulfed	Slight	F	Engulfed	Slight	F	Engulfed	Severe
G	Above Top	Severe	G	Above Top	Slight	G	Engulfed	Severe	G	Engulfed	Slight	G	Engulfed	Severe	G	Engulfed	Severe	G	Above Top	Slight
H	broke off		H	Engulfed	Slight	H	None - Plugged		H	Engulfed	Slight	H	Broken Off	Severe	H	Above Top	Slight	H	Blinded	
I	Engulfed	Severe	I	Broken Off	Severe	I	Engulfed	Severe	I	Engulfed	Severe	I	Engulfed	Severe	I	Engulfed	Severe	I	Engulfed	Severe
J	Engulfed	None	J	Below Top	None	J	None	None	J	Engulfed	Severe	J	Engulfed	Slight	J	Engulfed	None	J	Engulfed	Slight
															K	Engulfed	Unknown	K	Engulfed	Slight



Snow Status:

None
Below Top
Above Top
Engulfed
Broken Off

Tilt Status:

None
Slight
Unknown
Severe

Leaking Vents

Tank 1	Snow Cover	Tilt	Tank 3	Snow Cover	Tilt	Tank 5	Snow Cover	Tilt	Tank 7	Snow Cover	Tilt	Tank 9	Snow Cover	Tilt	Tank 11	Snow Cover	Tilt	Tank 13	Snow Cover	Tilt
A	Engulfed	Severe	A	Engulfed	None	A	Engulfed	Slight	A	Above Top	None	A	Engulfed	None	A	Above Top	Slight	A	Engulfed	Slight
B	Engulfed	Severe	B	Engulfed	None	B	Engulfed	Slight	B	Above Top	Slight	B	Above Top	None	B	Engulfed	Severe	B	None	None
C	Engulfed	Severe	C	Engulfed	None	C	Below Top	None	C	Above Top	Slight	C	Engulfed	Severe	C	Engulfed	Slight	C	Above Top	None
D	Engulfed	Unknown	D	Engulfed	Slight	D	Engulfed	Severe	D	Above Top	None	D	Engulfed	None	D	Engulfed	Slight	D	Engulfed	Slight
E	Engulfed	Unknown	E	Engulfed	Severe	E	Engulfed	Slight	E	Above Top	None	E	Engulfed	Slight	E	Engulfed	Slight	E	Above Top	Slight
F	Engulfed	Unknown	F	Engulfed	Severe	F	Engulfed	Unknown	F	Engulfed	Slight	F	Engulfed	Unknown	F	Engulfed	Severe	F	Engulfed	None
G	Engulfed	Unknown	G	Engulfed	Severe	G	Engulfed	Severe	G	Engulfed	Slight	G	Above Top	Slight	G	Above Top	None	G	Engulfed	None
H	Above Top	Severe	H	Engulfed	Severe	H	Below Top	None	H	Above Top	Slight	H	Engulfed	Severe	H	Engulfed	Severe	H	Above Top	None
I	Engulfed	Slight	I	Engulfed	Slight	I	Above Top	Slight	I	Engulfed	Unknown	I	Engulfed	Severe	I	Above Top	Slight	I	Engulfed	Unknown
J	Engulfed	Slight	J	Engulfed	Severe	J	Below Top	None	J	Engulfed	Slight	J	Above Top	None	J	Engulfed	Severe	J	Engulfed	Slight
												K	Engulfed	Slight	K	Above Top	Slight	K	Above Top	Slight

there was no idea of when the damage had occurred, or to what extent, because the tanks were inaccessible due to the accumulated snow.

On March 18, 2022 Operations Engineering finally issued Operating Risk Recommendations, VMT Recovery, and provided process operating recommendations to “minimize general risk to the system and risk to crews removing snow from tanks...”

The Collapse of Process

Disorder and confusion apparently followed the identification of multiple damaged or missing pallets. Alyeska’s various systems, processes, procedures, guidelines, checklists, and other control mechanisms either were not utilized at all, were used interchangeably, or were used inconsistently across people, shifts, and departments.

A June 6, 2022 letter from Alyeska to Mr. Williamson, Chief of Enforcement, at the Alaska Department of Labor (AKDOL) in response to a request for information confirms that processes collapsed in the face of numerous challenges. The AK DOL asked for “completed checklists regarding the MOC General Checklist Operating a VMT Crude Tank with reduced relieve pallets from 2/22/22 to 3/22/22 regarding the VMT crude tanks” (Alyeska Government Letter No. 49775, p. 3) Alyeska only created one MOC for the entire situation. The AK DOL asked for the PSSRs associated with MOCs for the same period, but Alyeska stated that no PSSRs were required, stating “This was a response to an abnormal condition. This was not a modification to equipment of process.”

Alyeska took that position in response to seven specific requests for the documentation that should have been prepared, such as Inspection Checklists, Bills of Materials/Critical Spares, Mechanical

Catalog Record (Form 3119) and (Form 0245), Informal Maintenance Analysis (Form 1071), the Process Safety Checklist (PSC) Checklist (Form 10345). In other words, none of the documentation that is required to be prepared to manage Alyeska work was filled out, because the snow damage and the crisis it caused was considered an “abnormal condition.”

Snow in Valdez is not an “abnormal condition.”

Another document, the Alyeska response to a request for Completed Forms 10089 [Operations Control Center (OCC) Field Maintenance/Equipment Out of Service Log] for 2/22/22 to 3/22/22 does its best to explain, but is illustrative of the process disarray:

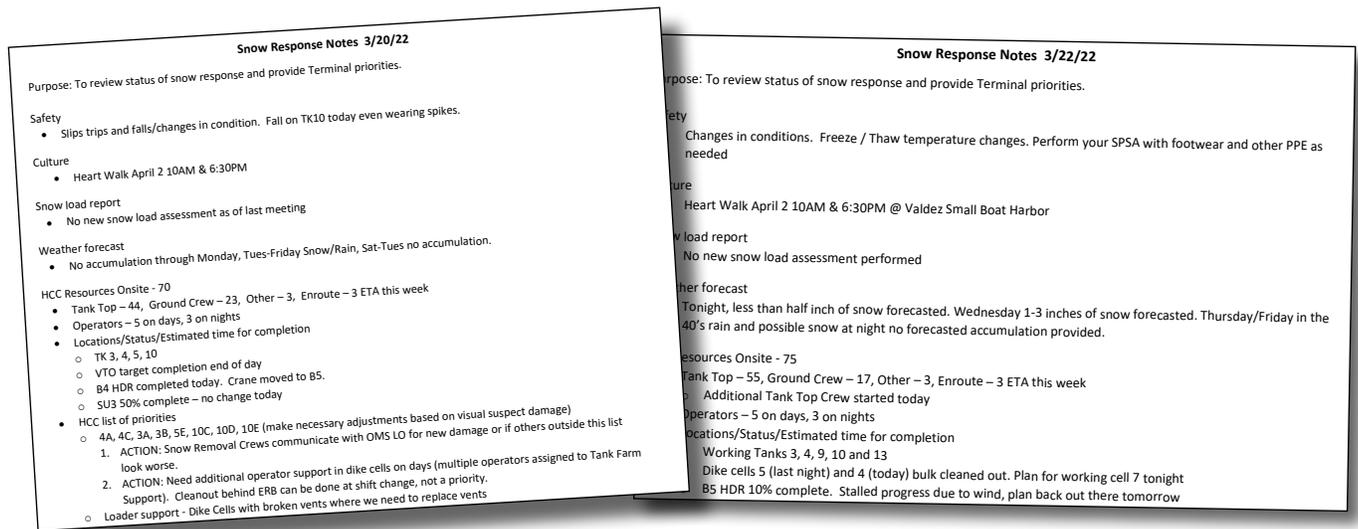
“The timeframe from February 22 – March 22, 2022 was unique in that the VMT tanks contained crude oil, and could be controlled remotely. Tanks were administratively classified as unavailable for use by OCC because of snow removal activity, compromised pressure protection caused by snow load, or maintenance activities related to tank vent inspection and repair. While not required by Alyeska process because the tanks were not formally out of service, tank availability was documented by OCC using Form 10089 in many, but not all, cases from February 22-March 22, 2022 based on the OCC Controller’s discretion and preference. Logs showing use of these forms are attached. Note that in some cases the OCC Controller updated Log ID 22443, as opposed to creating a new log...

While some OCC Controllers chose to use Form 10089 for documentation purposes, OCC used other mechanisms to track tank availability including normal communication and permitting of work between OCC, VMT Operations, VMT Maintenance and Power Vapor in accordance with standard Alyeska processes and procedures. These communications were also supplemented with shift turnover briefings, daily communication meetings, and on-going dialogue with OCC leadership, Operations Engineering and Site Engineering. Other mechanisms to identify, monitor, and track tank availability used by OCC Controllers during this time included a Human Machine Interface (HMI) Tank Out of Service Indication ... [a]nother mechanism was Alyeska’s internal SharePoint site, which was monitored and updated daily to reflect most current information related to the status of the tank vents and tank availability for use by OCC.”

(Alyeska June 20, 2022 Letter to the AK DOL, GL 49845, p.1-2.)

Alyeska was also asked for any notes regarding the Snow Response, and provided prepared notes, beginning March 20, 2022. (Apparently there are no prepared notes for anything between February 22 through March 20, 2022.) The prepared notes confirm that even at that time the situation was only moderately under control. On March 20, 21, 22, and 27 snow was still shearing off vent valves, they were still looking for more people or staff (for snow removal). (See, Snow notes of March 20, 2022.)

In other words, based on the information reviewed, Alyeska had no consistent and documented process control over information or communications regarding who was doing what, and the status and availability of tanks. Operators were confused about what tanks were actually available to use



to load from and what tanks were out of service or unavailable for use. Communications between PV and OCC were inconsistent and incomplete. Heavy equipment was being used and blocking access to roads and other equipment, drones were flying over the site to collect information. Contract snow removal crews ranged from 88 down to 75 into April, 2022. A former Alyeska environmental expert was brought in to determine the “official discovery time from the VMT Ops” (March 20, 2022 Snow Response Notes). All of these issues were violations of various PSM or other regulatory requirements, or company policies written to prevent exactly this type of frenzied situation, in which decisions and actions are driven by inaccurate or incomplete information.

The actual chronology of the events regarding the discovery of the extensive damage to the tank vent pallets, the extent of the damage, and Alyeska’s immediate reaction to the discovery is still not clear from publicly available documents.⁸² And, as indicated in response to the AK DOL’s request for documents, several categories of documents are characterized as either never created or no longer available. For example, in response to a request for completed Operator checklists, Alyeska states that “signed versions are not required or retained” (Alyeska June 13, 2020 Letter to AK DOL, GL Letter 49820). It is also unclear whether Alyeska has provided all pictures and notes taken during daily walkdowns by Operators or Tank Farm personnel, snow crews, or others, or provided the complete daily “VMT Snow Watch Page” prepared by Alyeska, or all text and email communications between all members of the workforce, in response to the AK DOL’s request for this information.

Alyeska stated in its April 7, 2022 letter to the AK DOL that it “reduced tank pressures to eliminate continued emissions.” It also stated that “tanks found to be leaking were initially removed from active service in an abundance of caution.” Alyeska stated that snow crews were dispatched to gain access to the damaged and/or sheared off vents for assessment and repairs. While it is not clear what the actual dates of these actions were, Alyeska claims it also had a safety team perform atmospheric monitoring of the East Tank Farm at some point (See, April 7, 2022 Alyeska Pipeline letter to William Williamson, Alaska Department of Labor Standards and Safety, GL No. 492866). The review and assessment of these tests and actions are unknown, and beyond the scope of this assessment to determine.

⁸² According to the Alyeska Snow Response notes, Alyeska conducted a TAP Root investigation of the situation during March-April, 2022. That investigation is not yet publicly available.

However, based on the information that is available, the situation appears to have been uncontrolled disorder of conflicting information and uncontrolled activities, confusing communications, and the lack of any reliable records to determine what was actually happening at any given point in time. This situation created its own risks far beyond those contemplated by orderly PSM, and will require its own assessment by Alyeska and regulators to determine why the processes broke down and what risks were increased by the failure to follow PSM requirements.

Worker Safety Incidents

Not surprisingly, there were also worker safety issues connected with the snow removal activities. The workers sent to the top of the tanks for removal of the snow initially did not wear any respiratory protection and thus were exposed to any leaking crude oil vapors. The picture below shows snow removal workers on the top of one of the tanks in early March 2022. While they have ropes on for fall protection, they have nothing to protect them from breathing any toxic tank vapors that may have been present. It is notable that several tank vents in this picture have been completely sheared off, meaning there could have been continual venting to the atmosphere of vapors. It is not known if anyone was checking the atmospheric conditions on all tanks during the first few weeks of snow removal. Eventually the contract snow removal workers had their own MX4 gas meters, and periodic atmospheric testing was performed by either contract or Alyeska Safety. Some CIs expressed concern about potential exposures, others did not.



There were also “slips and falls” of the snow removal team members. On March 4, 2022, there was a safety standdown because of “injuries and incidents.” Yet, incidents continued. On March 9, an employee lost traction on top of the tanks while removing snow; on March 10 another slip and fall was recorded for a worker removing snow off of Tank 6.

By the end of March, workers asked about their “Right to Know” the results from air monitoring that had been performed. According to the notes, the workers were told that “they can ask if they want to know” (Snow Notes for March 28, 2022). There is no indication in the notes if any workers ever asked for more information, or if any was provided.

OBSERVATION:

The new revision of the Snow Removal Plan specifies that snow removal workers should wear “spikies” to prevent slips and falls on the ice. During the event there were concerns raised that the use of “spikies” could present a “sparking” risk in the event of snow removal of a damaged or sheared off vent that could be allowing combustible vapors to be emitted from the tank. This issue is not addressed in the new procedure, but should be, since it is a remote possibility – but a possibility that requires consideration during job planning.

The risk of exposure should also be affirmatively addressed, with the identification of what the hazard is, when it becomes a safety issue, and how it will be managed or measured.

The Decision to Continue Operations

During early March, the Operations Engineering Department conducted a risk assessment of whether the VRS should continue to be operated. On March 18, 2022, Operations Engineering issued a MOC assessment recommending that the VRS could continue to be operated and that snow removal work could continue at the same time, within certain specified parameters such as the following.

“In the presence of rooftop work:

- atmospheric pressure should be maintained to a very slight negative and oxygen concentration should continue to be monitored;
- do not increase pressure above 0.3 on potentially compromised tanks.”

Other conditions were identified, including:

- [increase pressure control of the tanks to the slight positive, as practical to maintain protection of personnel];
- maintain recycle movement of vapor through the tanks to prevent the tank from going stagnant and accumulation of a potential oxygen slug within the tank that can enter the LP (Low Pressure Header);
- prior to loading from crude storage tanks with more than 4 suspect [tank vent] pallets the specific potential for increased risks should be examined and approval received from the Directors.

(March 18, 2022 Operating Risk Recommendations, VMT Vapor Recovery, Rev. 1, File number MOD_2_2022_36.)

On March 31, 2022, Alyeska and PWSRCAC staff had a meeting to discuss the concerns about the condition and build-up of oxygen inside the tanks. During the meeting, Alyeska confirmed that 12 of the 14 tanks had been damaged by excessive snow load and that 11 vent nozzles had been sheared off completely.

Snow removal from the tank tops was finally reported to the workforce as completed on April 7, 2022 (KYP #22-009, Crews Complete Tank Top Snow Removal).

On April 19, 2022, PWSRCAC followed up on the March 31 meeting with a formal request to Alyeska for documentation to better assess the situation, especially the potential buildup of oxygen within the damaged tanks. As of August 19, 2022, Alyeska had not provided the requested information, but some was obtained from AKOSH.

With the AKOSH provided information, PWSRCAC's subject matter expert at Taku Engineering was able to perform an initial analysis of how much oxygen may have built up in the tanks and identify some recommendations for Alyeska to consider. On September 14, 2022, Alyeska responded to Taku Engineering's initial oxygen concentration analysis and tank vent damage related recommendations. On September 20, 2022, there was a subject matter expert meeting between the Council, Taku, and Alyeska that resolved the Council's April 2022 information request. However, after that meeting the Council requested additional information from Alyeska, which has not been received to date and the issue of potentially high oxygen concentrations in the tanks currently remains unresolved.

This assessment does not attempt to determine when the vent pallets were actually sheared off, the volume of vapors that were or may have been vented to the atmosphere over what period of time, whether any workers were actually exposed to benzene or other vapors, or how multiple processes failed to prevent this significant incident or why they were not used to manage it. It also does not address the issues of the estimates of oxygen concentration in the headspace of impacted tanks to understand if a flammable or explosive atmosphere may have developed or occurred. Regulators will look at these issues with much more rigor than this assessment is able to. However, I have included in this "Closer Look" a review of several likely contributing causes for consideration.

Likely Contributing Causes

Alyeska has conducted its own TAP Root Analysis of the entire event which, if performed in accordance with the process, should produce a detailed chronology of the causes – contributing and ultimately, the root cause. From my perspective, that analysis should focus on several contributing causes. First, history as cause,⁸³ or a failure to heed lessons learned from previous situations, should be identified as one of the historical origins of the snow load damage events of 2022.

⁸³ See, 2003 Report of the Columbia Accident Investigation Board, Chapter 8, "History as Cause: Columbia and Challenger," p.203.

The last time that Alyeska faced a similar snow removal crisis at the VMT was the winter of 2011/2012. Yet, in spite of the many similarities, Alyeska found itself in much the same position it had then. In short, it had not taken effective corrective action to the first event, since the situation was repeated. A decade earlier, in January 2012, continuous snowfall created a high-risk situation at the terminal. On January 10, 2012, Alyeska issued a Corporate Communication "TAPS team tackles snow removal on Valdez Marine Terminal," which stated, in relevant part:

"Snow removal is central to winter business in Valdez, a town fabled for epic weather. For Alyeska, operator of the Trans Alaska Pipeline System, snow removal is an expanding responsibility. Once, warm oil in the Terminal's massive crude tanks caused snow to melt off roofs. But with today's declining throughput, oil moves slower and is colder on reaching Valdez, and this winter Alyeska is managing unprecedented snow loads."



For instance, in 1999, the oil reaching the VMT was 82 degrees. Now it is cooler and does not melt the snow.

Second, inadequate resources (i.e., the budget to maintain adequate snow removal personnel) were a contributing cause. There just were not enough people to keep up with normal snow removal activities. According to the 2012 communication, at that time (January 2012) Houston Contracting Company had about 50 employees on the job removing snow. Several weeks later on January 31, 2012, the BLM wrote to Alyeska regarding its concerns about VMT snow removal, and whether Alyeska was complying with the requirements for snow load and snow removal at the facility set out in the Oil Spill Contingency Plan, the Emergency Contingency Action Plan, the Snow Removal Plan, and the Surveillance Procedure for Snow Load Determinations. (The BLM noted that roof snow loads had been removed from the Emergency Contingency Action Plan in 2001, and were no longer in the procedure.)

In responding to the BLM at that time, Alyeska took credit for having a full-time snow removal crew of 31, with 10 people dedicated to tank top snow removal, in spite of the fact that they were unable to keep up.

Alyeska also pushed back against BLM's request for specific snow load criteria and removal plans, and explained the situation as an anomaly that resulted in Alyeska not being able to "ramp up the crew fast enough to stay ahead of the snow pack" (March 12, 2012 Letter, GL 25394, from Tom Barrett, Alyeska, to US Department of Interior, pp. 1-2). Later that year, Alyeska committed to the BLM that it had conducted a "Lessons Learned" session on snow removal following the 2011-2012 snow removal season and made several changes to the Snow Removal Plan. (In fact, it essentially only added Section 9 to the Snow Removal Plan.)

Ten years later in 2022, those lessons from 2012 appear to have been forgotten, and apparently none of the people involved in the response to the 2011-2012 snow season issues are still with Alyeska making decisions about the need for keeping the snow off the tanks and the risks of not doing so. There were inadequate people to meet the normal demands for snow removal. Reportedly, budget decisions about funding an adequate contingency of snow removal workers were being made in Anchorage, and pleas from Valdez and its primary snow removal contractor were ignored. CIs report that this risk was communicated to the budget decision-makers to no avail.

The lack of qualified and available personnel for snow removal was never solved by the promises made in 2012 to the BLM. At the time in February 2022 that the first leaks were identified, Houston Contract Company was apparently having trouble keeping even one snow removal crew. According to a CI familiar with the situation, the contract project manager reported in late February 2022 that the tank farms were looking “pretty ugly” and that bringing new people on took 3-4 weeks, at least. There was no enforced requirement for a minimum size crew or availability. Thus, keeping the snow off the crude oil tank roofs was not a high priority according to the Plan itself, or according to any risk assessment budgeting process.

Lack of Adequate Controlling Processes

Another contributing cause would be the weaknesses in the controls or quality review of the Snow Removal Plan for the 2021-2022 winter which still had the Section 9 for Snow Load Determination that was added after 2012.⁸⁴ However, that Section 9 was neither mandatory, nor useful, and did nothing to prevent the repeat of the 2011-2012 problems and its more serious consequences this past season. (It should be noted that the issues of 2011-2012 dealt more with a concern for the integrity of the tanks, as opposed to a concern about damage to the tank pallet vents or other equipment on the roofs from excessive snow load.)

Nor was the Plan upgraded to address other promises made to BLM in 2012. Those statements, contained in letters, did not rise to the level of regulatory commitments and thus were not tracked in any Alyeska compliance program requirements, or apparently by the BLM. With the end of internal Surveillance Department activity and the lack of a surveillance requirement by Alyeska, the issue was not prioritized for Alyeska’s budget process decision-makers. Since the primary responsibility for snow removal is with the contractor, which does not have access to the Alyeska budget process outside of its bidding for the work itself, there was little advocacy for the snow removal crews. As evidenced by what happened in 2022, it does not appear that the budget issue is resolved in the new procedures either. The contractor is still providing the snow removal, based on its bid, which may have been inadequate and based on future “guesstimating” of the snow season, and against continued shrinking budgets needed for other repair and maintenance work.

⁸⁴ A CI reports that in 2012 there was a two-foot snow build up for the tank roofs used as a “rule of thumb” for snow removal. The 2012 Alyeska letters to the BLM resist any specified snow pack depth and rely on a more nuanced assessment of snow pack, weight, and texture to make an engineering determination. The new procedure, Rev. 18, sets 20 inches as a general trigger for tank roof snow removal.

Alyeska has now issued Rev. 18 to VT-470, the Snow Removal Plan, which includes major changes to the plan addressing many of the issues identified from the events of the winter of 2021-2022. It sets a triggering working depth for tank depth snow removal at 20 inches (Rev. 18, at Section 2.4). Importantly, it also now includes sections specifically on Snow Removal Planning and Resources, identifying minimum numbers of on-site personnel and back-up crews, a section on snow load determinations, and a detailed plan on snow removal for each tank. These are all good changes, and the plan is much better. Whether sufficient funding will be available to follow the plan will be the critical question regarding Alyeska's commitment.

Probably the most important change to the new procedure is the requirement to have an annual "lessons learned" review of the winter to capture any recommendations and modifications recognized from the use of the new procedure and incorporate them into continuous improvement for the future.

The Budget Process

The proverbial elephant in the room is, of course, the lack of available resources to maintain adequate snow removal crews during the Valdez winter. What was the decision-making process that allowed this situation to happen? The tension created between the Owners drive to reduce expenses, often with arbitrary cuts of 10% or 15%, is cited by every single senior person, past or present, that participated in this assessment. That has been the case at Alyeska until there is an incident, or event, that puts TAPS at risk. This process leads to unsustainable strain on the system – both people and equipment.

As part of any internal Alyeska review, or external reviews by regulators, there should be an in depth understanding of the budget process that led to the decision to eliminate sufficient resources. What did VMT identify for its project snow removal budget? What was approved? How was that decision made, and by who? Until there is detailed accountability for the decision making there is no way to ensure this situation does not happen again with aging equipment or other aging infrastructure.

Alyeska employees are very aware of both the actual and the compliance risks faced by the current situation. In one November, 2021 email, an Alyeska SME states:

"In fact, failing to maintain or replace equipment as needed to minimize [CAA] permit violations is a clear violation of the CAA which could result in agency enforcement and potential CAA civil penalties...Unfortunately aging equipment brings liability to the company and does not provide any protection from enforcement (quite the opposite in fact)."

Cancellation of Project Z717

Another missed opportunity to have identified and responded to the damage to the tank pallets was the cancellation of the FLIR Camera Towers project. The project was proposed to build four towers to provide a Line of Sight to the vents on top of the tanks at the VMT. Relevant to this issue, the project proposed a 100-foot tower at the south-east corner of the East Tank Farm to provide a line of sight to the East Tank Farm vents, and then install FLIR cameras to be used to monitor the tops of the tanks. Project Z717 FEL2 also included towers with FLIR cameras around the ballast water tanks. Had the project been completed, there is a strong probability that the damage to the vents would have been identified much earlier in the process.

Unfortunately, the project was cancelled or shelved. A CI reports that at a meeting in 2017 to discuss the project, one Alyeska manager is reported to have said “we know our pallets leak, now we want to put cameras out there and get ourselves in trouble?” or words to that effect. At least one CI believes that had this project been completed and cameras been installed, Alyeska would have had early warning signs that the tank vent pallets were being compromised, initiating an earlier, more aggressive response. It is difficult to disagree with that assessment. However, the project was cancelled, and detection of the leaking vents was initially based on a technician’s sense of smell.

Alaska News

Snow pileup damages Alaska pipeline company’s massive Valdez oil tanks

By Nathaniel Herz, Elizabeth Harball
Updated: March 24, 2022
Published: March 24, 2022



Crews work on tank top snow removal on Tanks 12 and 14 in the East Tank Farm in Valdez on March 16, 2022. (Photo provided by Alyeska Pipeline Service Co.)

The company that operates the trans-Alaska pipeline has called in backup crews to contend with massive amounts of snow piled on top of its oil storage tanks in Valdez, which has damaged infrastructure and vented petroleum vapors to the environment in what state regulators say are violations of the Clean Air Act.

Full article:

<https://www.adn.com/alaska-news/2022/03/24/snow-pileup-damages-alaska-pipeline-companys-massive-valdez-oil-tanks/>

V. Conclusions

Alyeska has faced challenges from the beginning of its operations. At times, there have been catastrophic incidents and accidents. Other “near misses” have occurred that narrowly avoided serious tragedies. The Exxon Valdez oil spill in 1989 and Alyeska’s failure to perform an effective response changed the industry and Alaska forever. These events should have changed Alyeska’s respect for the dangers inherent in its operations forever, as well. It appears that is not case.

The organization is stretched with aging and obsolete equipment, obsolete and missing spare parts to maintain the infrastructure, and inadequate Audit and Quality function, an apparently non-functional Compliance and Ethics Program, a seriously degraded Safety Culture, a hollowed-out OWE, a deficient PSM process, and inadequate VMT resources. It has suffered significantly under more recent corporate management. At the same time, regulatory oversight at the VMT has diminished, allowing the deterioration to occur.

The people that participated in this assessment all care deeply about the safe operation of the VMT, and the protection of their colleagues, the community, and the environment. Their care and concerns are legitimate and based on first-hand knowledge of the significant challenges to Alyeska over the past few years – in leadership, budget, re-organizations, downsizing, and safety system degradation. Alyeska’s employees continue to be its last line of defense – but that line is breaking, in part. We know that any organization is “only as strong as its weakest link.” There is only so much that the workforce can do without the necessary resources and support to maintain equipment and perform necessary maintenance before the risks become reality.

There is no substantive information in this report regarding safety or process safety issues that is not already available to Alyeska. The failure of the company to act on the information it already has is one of the primary weaknesses identified by this assessment.

Alyeska is no longer delivering on its promises of reform and commitment to Safety Culture and an OWE. While the surveys certainly show the work environment at Alyeska is good for some employees, it is a stressful work environment for many others who are unable to do the job that they know is required for the safe operation of the terminal.

A review of all the information evaluated in this assessment confirms that the processes to provide early warnings of system and equipment failures are not functioning as intended. Specific concerns are reported to have been entered into the Alyeska MAC system, or raised in other ways, in accordance with Alyeska processes and procedures or employees’ rights to raise concerns. Yet it appears that timely and effective corrective actions are not being taken to address the issues in a time frame consistent with their significance. The backlog of deferred maintenance is unsustainable, and the risk assessment process is so delayed as to be ineffective. No doubt if something goes awry it will already be in the queue for consideration of the risk and what action to take – but too late to avoid the outcome.

The report does not, and could not, contain all examples provided in support of the concerns regarding the safety of the VMT. It is beyond the time and scope of this assessment to evaluate the safety significance or risk from each example.

It is my conclusion, given the insights from this assessment, that there currently is no reasonable assurance that the VMT is properly maintained or operated safely and in compliance with applicable regulatory requirements.

Again, the conclusions and opinions contained in this assessment are mine and do not reflect the influence or opinions of the PWSRCAC. The assessment is provided to the PWSRCAC Board of Directors for its consideration of what advice and recommendations, under its charter, are appropriate to provide to industry, regulators, elected officials, and the public to fulfill its mission of protecting the Exxon Valdez impacted region, including the people, communities, economies, and environment, from the consequences of an incident or accident.

VI. LIST OF ACRONYMS

AFER	Alaska Forum for Environmental Responsibility
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
AK DOL	Alaska Department of Labor
AKOSH	Alaska Occupational Safety and Health
AMS	Alyeska Management System
API	American Petroleum Institute
BLM	U.S. Bureau of Land Management
BWT	Ballast Water Treatment
C&E	Compliance and Ethics
CAA	Clean Air Act
CSA	Confined Space Attendant
CWA	Clean Water Act
CCPS	Center for Chemical Process Safety
CI	Concerned Individual
CRO	Control Room Operator
CSB	U.S. Chemical Safety and Hazard Investigation Board
DOE	U.S. Department of Energy
DOJ	U.S. Department of Justice
DOL	U.S. Department of Labor
DOT	U.S. Department of Transportation
ECP	Employee Concerns Program
ELT	Alyeska Executive Leadership Team
EPA	U.S. Environmental Protection Agency
FLIR	Forward Looking Infrared
FTE	Full-Time Equivalent
GAO	Government Accountability Office aka General Accounting Office)

HAZOP	Hazards and Operability
HHC	Highly Hazardous Chemicals
HIRD	Harassment, Intimidation, Retaliation, Discrimination
HLVE	High-Level Value Event
HMI	Human Machine Interface
JPO	Joint Pipeline Office
KYP	Keeping You Posted (Alyeska Internal Communication)
LDAR	Leak Detection and Repair
LP	Low Pressure Header
MAC	Management Action and Commitments
MMS	U.S. Mineral Management Service (former)
MOC	Management of Change
NAECP	National Association of Employee Concerns Professionals
NASA	National Aeronautics and Space Administration
NRC	U.S. Nuclear Regulatory Commission
NTSB	U.S. National Transportation Safety Board
NWS	National Weather Service
OCC	Operations Control Center
OHA	Occupational Hazard Analysis
OMSS	Oil Movements and Storage
OOS	Out of Service
OSHA	U.S. Occupational Safety and Health Administration
OWE	Open Work Environment
P&ID	Piping and Instrumentation Diagram
PEER	Public Employees for Environmental Responsibility
PHA	Process Hazard Analysis
PHMSA	U.S. Pipeline and Hazardous Materials Safety Administration
PM	Preventative Maintenance
PSC	Process Safety Checklist

PSM	Process Safety Management
PSSR	Pre-startup Safety Review
PV	Power Vapor
PWSRCAC	Prince William Sound Regional Citizens' Advisory Council
QA/QC	Quality Assurance/Quality Control
RCA	Regulatory Compliance Authority
RCRA	Resource Conservation and Recovery Act
RMP	Risk Management Plan
SCADA	Supervisory Control and Data Acquisition
SERVS	Ship Escort Response Vessel System
SID	Wackenhut's Special Investigations Division
SIF	Signification Incident or Fatality
STVRS	Storage Tank Vapor Recovery System
TAPS	Trans Alaska Pipeline System
VMT	Valdez Marine Terminal
VRS	Vapor Recovery System
WO	Work Order



April 2023

Assessment conducted on behalf of the Prince William Sound
Regional Citizens' Advisory Council

Billie Pirner Garde | Clifford & Garde, LLP | Washington, D.C.

**The following attachment is the August 1995
United States General Accounting Office
Report to Congressional Requesters**

TRANS-ALASKA PIPELINE

Actions to Improve Safety Are Under Way

August 1995

TRANS-ALASKA PIPELINE

Actions to Improve Safety Are Under Way





United States
General Accounting Office
Washington, D.C. 20548

**Resources, Community, and
Economic Development Division**

B-261176

August 1, 1995

The Honorable Don Young
Chairman, Committee on Resources
House of Representatives

The Honorable John D. Dingell
House of Representatives

This report is in response to a February 23, 1994, request from Representative Dingell, former Chairman of the Subcommittee on Oversight and Investigations, House Committee on Energy and Commerce. Subsequent to this request, Representative Young, Chairman of the House Resources Committee, assumed oversight jurisdiction for the Trans-Alaska Pipeline System (TAPS). On March 28, 1995, Chairman Young joined in this request. The report provides information on the progress made in correcting deficiencies in the operations, maintenance, and oversight of the Trans-Alaska Pipeline System.

As agreed with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 15 days from the date of this letter. At that time, we will send copies to the Joint Pipeline Office and its members made up of representatives from federal agencies and the State of Alaska; the Secretaries of the Interior and Transportation; the Administrator, Environmental Protection Agency; the Director, Bureau of Land Management; the President, Alyeska Pipeline Service Company; the Chairman, TAPS Owners Committee; and the Director, Office of Management and Budget. We will also make copies available to others on request.

Please call me at (202) 512-7756 if you or your staff have any questions. Major contributors to this report are listed in appendix IV.

A handwritten signature in black ink that reads 'James Duffus III'. The signature is written in a cursive style with a large 'J' and 'D'.

James Duffus III
Director, Natural Resources
Management Issues

Executive Summary

Purpose

The Trans-Alaska Pipeline System (TAPS), operated by the Alyeska Pipeline Service Company (Alyeska), transports nearly 20 percent of the nation's domestically produced oil and has operated for nearly 20 years without a major oil spill. However, throughout the pipeline's years of construction and operation, problems with the condition of the pipeline, the quality assurance program of its operator, and the effectiveness of the government's monitoring efforts have been reported. These problems have resulted in continued oversight by the Congress. For example, hearings held by the Subcommittee on Oversight and Investigations, House Committee on Energy and Commerce, in July 1993 raised concerns about the ability of the pipeline to continue to operate safely and of its federal and state regulators to ensure that it does. A study commissioned by the Department of the Interior's Bureau of Land Management (the Bureau) in August 1993 to assess Alyeska's management and operation of the pipeline identified 22 categories of substantial—and potentially threatening—deficiencies. Other audits of the pipeline in recent years have identified additional deficiencies. In total, more than 4,900 deficiencies have been identified.

Representative John D. Dingell and the Chairman, House Committee on Resources, asked GAO to (1) assess Alyeska's progress in correcting these deficiencies; (2) specifically, determine whether the corrective actions planned for three areas of deficiencies—electrical systems, quality, and preventive maintenance—will address the deficiencies; (3) determine whether regulators are taking action to improve regulatory oversight of the pipeline; and (4) identify the root causes of the deficiencies.

Background

The 800-mile pipeline travels over federal, state, and private lands. Alyeska operates the pipeline for seven owner companies. Six federal agencies—principally the Bureau—and six state agencies—principally the Alaska Department of Natural Resources—provide oversight. In 1990, the Bureau and the Alaska Department of Natural Resources created the Joint Pipeline Office (the Office) to better coordinate federal and state regulatory efforts. The Office's budget is funded primarily by the Bureau and the Alaska Department of Natural Resources. However, Alyeska is required to reimburse the Bureau for all reasonable costs related to overseeing the pipeline and, by agreement, began in 1990 to reimburse the state for part of its costs. Staff are provided by the Bureau, other federal agencies, and several state agencies. Alyeska's budget is funded by the seven oil companies that own the pipeline.

In addition to the Bureau-commissioned study that identified 22 categories of deficiencies (these were subdivided into 208 specific deficiencies requiring corrective action), TAPS' owners hired an independent consulting firm in September 1993 to provide a comprehensive, independent assessment of the pipeline's operations. The firm identified an additional 4,200 deficiencies. Other audits undertaken in recent years have identified as many as 500 additional deficiencies. Alyeska has set up a system to track the correction of all 4,920 deficiencies. Less than 2 percent of the deficiencies dealt with structures, systems, and components that prevent or mitigate the consequences of an accident or natural event that could cause significant harm to the public or to the environment.

Results in Brief

Alyeska has made progress in resolving the deficiencies, but it is taking longer than originally planned. In February 1995, Alyeska estimated that it would be able to correct 85 to 90 percent of the deficiencies by December 1995 and nearly all of the rest by the end of 1996. By the end of April 1995, Alyeska had corrected about 62 percent of the 4,920 identified deficiencies.

For the three categories of deficiencies that GAO focused on—electrical integrity, quality, and preventive maintenance—Alyeska has taken substantive actions that, if carried through to completion, appear to be adequate to correct the problems. Alyeska has corrected most electrical problems, focused management attention on the quality program and revised the quality program's organization and procedures, and is overhauling its maintenance program.

Although the Office's actions are not complete, GAO believes that the Office is making a concerted effort to improve its oversight. In addition, in July 1993 the Director of the Bureau affirmed both its authority as the lead agency within the Office and its responsibility for providing comprehensive oversight. Subsequently, the Office increased its staff and reorganized to strengthen its focus on monitoring Alyeska.

According to the Bureau's study and a study commissioned by the Office, the operating philosophies of both Alyeska and the Office—to react to problems rather than conduct active, quality-based programs aimed at prevention and early detection—were the underlying causes of the deficiencies identified. Alyeska and the Office are now refocusing their efforts on preventing problems and improving quality. However, because much work remains to be accomplished, the full effectiveness of Alyeska's

and the Office's actions cannot be assessed in the short term. Alyeska has the primary responsibility for ensuring that the pipeline operates in a safe, environmentally responsible manner. The key to its success depends on how well it can create and sustain a commitment to quality throughout its organization. The Office's success depends on having adequate staffing and funds over the long term. The Office's funding is provided largely by Alyeska, which will be under continuing pressure to reduce its costs as the flow of oil through the pipeline decreases. In addition, the Office will also be under pressure to reduce its government staffing levels. Either or both situations could adversely affect the Office's ability to maintain adequate oversight.

Principal Findings

Alyeska Makes Progress, but Correcting Deficiencies Is Slower Than Planned

By the end of April 1995, Alyeska had corrected about 62 percent (3,030) of the 4,920 deficiencies identified. Among the 208 items from the Bureau's study, Alyeska had corrected 95 (46 percent). While Alyeska has made progress in correcting the deficiencies, its progress has been slower than planned. Alyeska initially anticipated having about 3,000 deficiencies and had planned to close them all by December 1994. As of February 1995, Alyeska estimated closing 85 percent of the deficiencies by the end of 1995 and nearly all of the rest by the end of 1996. Alyeska said that progress has been slower than anticipated because (1) more deficiencies were identified than anticipated—4,920 rather than 3,000; (2) the amount of additional training required to implement some of the corrective actions was greater than anticipated; and (3) the estimated completion date of December 1994 was too optimistic.

Progress in Specific Areas Has Been Substantial

From the 22 broad categories of deficiencies identified in the Bureau's study, GAO focused on electrical integrity, quality, and maintenance. The study reported that deficiencies in the electrical hardware—power cables and grounding, among other things—posed the greatest threats of any hardware deficiencies to the health and safety of the public and the environment. In response, by December 1994 Alyeska had completed an inspection of the pipeline that identified about 49,000 electrical deficiencies. By the end of April 1995, it had fixed nearly all of them. In addition, it has initiated 20 studies of broad-based electrical problems. The Bureau's study also reported that Alyeska's quality program was

dysfunctional. In response, in May 1994 Alyeska set as a key company expectation the development of an effective quality program; revised its quality procedures, which the Office conditionally approved in May 1995; and began developing a system to identify and ensure compliance with all regulations. In addition, Alyeska is undergoing a series of revisions in the organizational structure of its quality program; the first revision occurred in early 1994, and the most recent is scheduled for July 1995. The study further reported that Alyeska's maintenance program did not provide a basis for learning from past performance in order to prevent problems from recurring. Alyeska is developing a maintenance management system, which it plans to complete in November 1995, to gather, track, and provide a basis for analyzing maintenance histories to improve the efficiency and effectiveness of its maintenance program.

The Office Has Acted to Improve Its Oversight

The July 1993 hearings and the Bureau's study highlighted the need to improve the Office's monitoring of the pipeline. In response, the Director of the Bureau asserted at the hearings that the Bureau would invoke its authority as the lead agency in the Office to oversee the pipeline. In April 1994, the Office selected an independent consulting firm to assess its monitoring and inspection program. In June 1994, the consultant recommended that the Office reorganize to improve its oversight and change its philosophy to be an active regulator using an effective quality program to monitor the full range of Alyeska's activities. By April 1995, the Office had expanded its staff and completed its reorganization.

Alyeska and the Office Are Taking Steps to Correct Causes of Problems

The studies conducted for the Bureau and the Office have pointed to a common underlying cause for the problems identified—Alyeska and the Office both operated on the philosophy of reacting to problems rather than providing effective quality programs to minimize the chances that problems would occur. The Bureau's study considered Alyeska's management philosophy as one of the most significant problems identified, and the Office's study found that the Office needed to substantially transform its oversight philosophy.

Alyeska and the Office have taken steps to change their management approach. In May 1994, Alyeska established a company policy that set objectives for a more open and quality-oriented organization. It subsequently developed tools for achieving those objectives. These tools include management training to encourage teamwork, a program for responding to employees' concerns, an improved quality program, and

requirements for a new maintenance program. For its part, the Office now speaks of itself as a regulator and has changed its operating philosophy to focus on prevention, increased its staff, and reorganized to implement the new monitoring program.

Alyeska has the primary responsibility for ensuring that the pipeline operates in a safe, environmentally responsible manner. The success of its efforts will depend on its ability to establish a new philosophy throughout the entire organization and its ability to complete and fully implement its plans and actions, such as those to improve its quality and maintenance programs and its program for responding to employees' concerns. The Office's effectiveness depends not only on the actions under way to improve its oversight, but also on its ability to continue these actions in the future. Its progress, however, could be affected over the long term because (1) the Office's funding comes largely from Alyeska and Alyeska will be under continuing pressure to reduce its costs as the oil flow through the pipeline decreases and (2) staffing comes from the Bureau and other federal and state agencies and staff levels throughout the government are being reduced.

Recommendations

GAO is making no recommendations.

Agency Comments

GAO provided copies of a draft of this report to Alyeska and the Joint Pipeline Office and met with the President of Alyeska, officials from the TAPS owner companies, and officials of the Office, including the Bureau's Authorized Officer and Alaska's State Pipeline Coordinator. These officials agreed with GAO's assessment of their efforts to correct audit deficiencies and improve regulatory oversight. The President of Alyeska commented that the draft report was an objective, professional assessment of the work by TAPS' owners, Alyeska, and the Office to respond to various audit findings. Alyeska's written comments are presented in appendix III. Officials of the Office stated that the draft was fair and impartial and captured both the successes achieved and the challenges remaining for both Alyeska and the Office. Also, in view of the work remaining and the concern for continued secure funding, the officials of the Office believe that periodic, comprehensive oversight from an independent source is critical to ensure that the Office and Alyeska continue their improvement efforts.

Contents

Executive Summary		2
Chapter 1		12
Introduction	TAPS' Operations	12
	Many State and Federal Agencies Share Regulatory Responsibility	13
	Studies Have Identified Pervasive, Persistent Problems With TAPS' Operations and Oversight	15
	While Correcting Deficiencies, Alyeska Conducted Normal Operations and Maintenance During 1994	18
	Objectives, Scope, and Methodology	18
	Agency Comments	20
Chapter 2		22
Alyeska Has Made Progress in Resolving TAPS' Deficiencies, but Progress Is Slower Than Planned	Alyeska Established a Data Base to Monitor Progress on Resolution of 4,920 Audit Items	22
	Alyeska Made Progress Completing Action Items	24
	Progress Was Slower Than Expected, but Most Costly Items Are Near Completion	25
	Alyeska Has Taken Steps to Better Manage Closure of Action Items	27
	Conclusions	28
Chapter 3		29
Alyeska Is Making Progress in Correcting Electrical, Quality, and Preventive Maintenance Deficiencies	Integrity of Electrical Systems Has Received Considerable Attention	29
	Approach to Quality Program Is Being Revised	31
	Alyeska Is Upgrading Its Maintenance Program	38
	Conclusions	41
Chapter 4		42
TAPS' Regulators Have Taken Steps to Improve Oversight	Earlier Regulatory Problems Demonstrated a Need for a More Coordinated Approach	42
	QTC Audit, Other Studies Showed Increased Oversight Had Not Been Sufficient	43
	JPO Has Taken Additional Steps to Improve Oversight	44

	Conclusions	47
Chapter 5		48
Resolving Past	Alyeska Is Taking Actions to Improve Operations	48
Problems Requires	JPO Is Changing Its Role	51
Addressing	Conclusions	51
Underlying Causes		
and Staying the		
Course to		
Improvement		
Appendixes	Appendix I: Special Studies	54
	Appendix II: Special Studies on Grounding, Inspection of Control Centers, and Power Switching Systems	55
	Appendix III: Comments From the Alyeska Pipeline Service Company	58
	Appendix IV: Major Contributors to This Report	59
Tables	Table 1.1: Federal and State Agencies With Significant Jurisdiction Over TAPS	14
	Table 2.1: Priority Levels for Action Items in the ACT Data Base	23
	Table 2.2: Status of Action Items as of the End of April 1995	24
	Table 2.3: Status of QTC's Action Items as of the End of April 1995	25
	Table 2.4: Status of "Key Item" List as of the End of April 1995	28
	Table 4.1: Organization and Activities of JPO's Operations Branch	46

Abbreviations

ACT	Audit Compliance Tracking
ADL	Arthur D. Little, Inc.
ADNR	Alaska Department of Natural Resources
AIMS	Alyeska Integrity Management System
AKOSH	Alaska Occupational Safety and Health
ANSC	AKOSH/NEC Safety Compliance Program
ARCS	Alyeska Regulatory Compliance System
BLM	Bureau of Land Management
CAP	Corrective Action Plan
CMP	Comprehensive Monitoring Program
DOI	Department of the Interior
DOT	Department of Transportation
EPA	Environmental Protection Agency
GAO	U.S. General Accounting Office
IMMS	Integrated Maintenance Management System
JPO	Joint Pipeline Office
NEC	National Electrical Code
PDC	Power Distribution Center
PS	pump station
QTC	Quality Technology Company
SCADA	Supervisory Control and Data Acquisition
TAPS	Trans-Alaska Pipeline System
VMT	Valdez Marine Terminal

Introduction

The Trans-Alaska Pipeline System (TAPS) is the primary transportation link for 20 percent of the nation's domestically produced oil. For nearly 20 years, TAPS, which was built between 1974 and 1977 to meet specific environmental and technical requirements for arctic conditions, has transported more than 10 billion barrels of crude oil without a major spill.

Because of its importance to ensuring the continuity of the domestic oil supply, TAPS and the federal and state agencies responsible for monitoring it have received attention from the Congress throughout the pipeline's years of construction and operation. While the pipeline was under construction, we reviewed the status of pipeline construction and the effectiveness of federal and state monitoring efforts.¹ These and subsequent reports,² as well as congressional hearings, publicized recurring problems with the condition of the pipeline, the quality assurance program of its operator, and the effectiveness of government monitoring efforts. More recently, congressional hearings in 1993 highlighted numerous potential deviations from federal and state standards. A 1993 study of TAPS, commissioned by the Department of the Interior's Bureau of Land Management (BLM), concluded that the pipeline had deficiencies that, if left uncorrected, could pose serious safety risks for workers and potentially cause a pipeline failure. These findings, together with those from other reviews of TAPS, have focused even more attention on the pipeline's condition.

TAPS' Operations

TAPS carries almost 1.6 million barrels of oil per day, down from 2 million barrels a day in 1990, across some of the most rugged terrain in the world. The 48-inch diameter pipeline transports oil 800 miles from Prudhoe Bay, north of the Arctic Circle, to the ice-free port of Valdez on Prince William Sound. The pipeline crosses 3 mountain ranges, more than 800 rivers and streams, 3 known seismic faults, and hundreds of miles of permafrost (permanently frozen soil).

¹Trans-Alaska Oil Pipeline—Progress of Construction Through November 1975 (GAO/RED-76-69, Feb. 17, 1976) and Trans-Alaska Oil Pipeline—Information on Construction, Technical, and Environmental Matters Through Spring 1977 (GAO/EMD-77-44, Aug. 23, 1977).

²Trans-Alaska Oil Pipeline Operations: More Federal Monitoring Needed (GAO/EMD-81-11, Jan. 6, 1981) and Trans-Alaska Pipeline: Regulators Have Not Ensured That Government Requirements Are Being Met (GAO/RCED-91-89, July 19, 1991).

The Alyeska Pipeline Service Company (Alyeska) operates the pipeline for the seven companies that own it³ and is responsible for meeting the various regulatory requirements for TAPS. The owner companies fund Alyeska's budget, which they approve, and Alyeska has its own permanent staff, although a significant number of its upper-level managers are on loan for limited time periods from the owner companies.

Many State and Federal Agencies Share Regulatory Responsibility

The laws, requirements, and regulations intended to ensure TAPS' operational safety, oil spill response, and environmental protection call for monitoring and enforcement by a number of federal and state agencies. The federal government has administrative responsibility for 401 miles of the pipeline's right-of-way, while the state administers 353 miles, including the Valdez terminal, where oil is loaded on tanker ships for transport to refineries. Specific operating requirements are contained in federal grant and state right-of-way lease agreements and in additional federal and state regulations and laws. Of the remaining 46 miles of pipeline, 26 miles are administered jointly by federal and state authorities, and 20 miles are owned by private landholders.

Six federal and six state agencies have significant jurisdiction over some aspect of the pipeline's operation or the land on which it is located (see table 1.1 for a list of agencies and the nature of their jurisdiction). The five with primary authority are the Department of the Interior's Bureau of Land Management, which is charged with enforcing the federal right-of-way agreement on federal lands; the Alaska Department of Natural Resources (ADNR), which enforces the state's right-of-way agreement on state-owned lands and the federal agreement on certain state-owned lands; the Department of Transportation's Office of Pipeline Safety, which is responsible for overseeing the operational safety of the entire pipeline under the Hazardous Liquid Pipeline Safety Act; and the Environmental Protection Agency (EPA) and the Alaska Department of Environmental Conservation, which are responsible for enforcing environmental regulations along the pipeline and at the terminal. EPA is also the federal On-Scene Coordinator for responding to on-shore oil spills. Interior's responsibilities and authorities are the most comprehensive and broadest in scope of any of TAPS' regulators—covering operational safety and environmental protection issues.

³The seven owner companies are Amerada Hess Pipeline Corporation; ARCO Transportation Alaska, Inc.; BP Pipelines (Alaska), Inc.; Exxon Pipeline Company; Mobil Alaska Pipeline Company; Phillips Alaska Pipeline Corporation; and Unocal Pipe Line Company.

**Chapter 1
Introduction**

Table 1.1: Federal and State Agencies With Significant Jurisdiction Over TAPS

Agency	Nature of jurisdiction
Federal	
Bureau of Land Management, Department of the Interior (DOI)	By delegation of the Secretary of the Interior, BLM's Alaska Office has primary authority for administration of the right-of-way agreement on federal lands.
Office of Pipeline Safety, Department of Transportation (DOT)	Monitors pipeline operations for compliance with federal safety standards and for assurance that remedial actions for spills and accidents are adequate for the pipeline system.
Environmental Protection Agency	Responsible for ensuring that the pipeline system complies with several environmental laws, including the Clean Air Act and Clean Water Act.
Fish and Wildlife Service, DOI	Responsible for national wildlife refuges; provides expertise to BLM on matters affecting fish and wildlife conservation and habitats.
Coast Guard, DOT	Responsible for issuing permits for bridges over navigable waterways and for various activities of the oil tankers at Valdez terminal.
Army Corps of Engineers	Responsible for issuing permits for wetlands, construction in navigable waters, and coordination with Army installations through which the pipeline passes.
State of Alaska	
Department of Natural Resources	Primarily responsible for administering the right-of-way agreements on state lands.
Department of Fish and Game	Responsible for protecting fish and game on state lands.
Department of Environmental Conservation	With EPA, responsible for ensuring compliance with applicable environmental laws; also responsible for reviewing pipeline contingency plans.
Department of Transportation and Public Facilities	Responsible for issuing permits for construction on state operated airports and highway rights of way; also responsible for issuing permits for vehicles operating on the northern portion of haul road.
Department of Labor	Responsible for compliance with various building codes and for worker safety for the pipeline system.
Office of Management and Budget, Division of Governmental Coordination	Responsible for coordination of federal and state authorizations inside the Coastal Zone.

In 1990, BLM and ADNR established the Joint Pipeline Office (JPO) to better coordinate federal and state regulatory efforts. This office has since become the focal point for overseeing TAPS. Begun with a small staff from the two agencies, JPO had grown to an authorized staff of 84 in April 1995 with staff assigned or on loan from 8 of the 12 agencies with significant oversight responsibility for TAPS.⁴ BLM and ADNR are jointly responsible for JPO's operations. However, in July 1993, the then-director of BLM testified, in response to whistleblowers' complaints and other investigations that reported lax regulation practices for pipeline workers' health and safety, that "Whenever and wherever needed, BLM, as lead agency, will assume the responsibility of ensuring that the mandate of the JPO is carried out fully." Subsequently, the Executive Council was formed and it has taken the lead

⁴The four agencies with no representatives at JPO are the Coast Guard, the Fish and Wildlife Service, the Army Corps of Engineers, and the Alaska Department of Transportation and Public Facilities.

in providing focused policy guidance to JPO.⁵ JPO is organized into two branches, Operations and Administration; the Operations Branch is responsible for ensuring that TAPS is operated in compliance with requirements.

Studies Have Identified Pervasive, Persistent Problems With TAPS' Operations and Oversight

Since about 1990, TAPS' operations have been the subject of many separate audits and studies. Most have focused on a single facility or one operational segment, but several have taken a more systemwide approach. The range of problems they identified was broad. Some deficiencies were considered serious in that they have potential for causing severe safety and environmental impacts. Other deficiencies were of a less serious nature: For example, the studies

- criticized Alyeska for being reactive and not focused on building in quality;
- identified systemic hardware problems that raise questions about the integrity of the TAPS electrical system; and
- identified hundreds of specific items, such as not having developed procedures for the qualification of inspection personnel.

Quality Technology Company Study Highlighted Broad, Systemwide Deficiencies

In response to concerns raised by whistleblowers, safety issues identified by congressional staff, and concerns for how JPO was regulating TAPS, the Subcommittee on Oversight and Investigations, House Committee on Energy and Commerce, held hearings in July 1993. The hearings highlighted a number of potential problems with TAPS. At these hearings, the Director of BLM acknowledged the problems and told the Subcommittee that BLM, which has primary authority for administering the right-of-way agreement on federal lands, was going to take charge and make sure that the problems were corrected. Subsequently, BLM began a program designed to identify and resolve such problems. As part of the effort, BLM in August 1993 contracted with Quality Technology Company (QTC), an independent consulting firm, to investigate the physical condition of TAPS and the management of operations provided by Alyeska and its contractors. QTC conducted a 6-week on-site review that included visits to the Valdez terminal and three of the pipeline's pump stations.

QTC's final report, issued in November 1993, was highly critical of Alyeska's management of the pipeline and pointed out that some glaring deficiencies were present in Alyeska's management and the condition of TAPS'

⁵The Executive Council consists of representatives from each of the federal and state agencies listed in table 1.1 except for the Fish and Wildlife Service.

equipment. QTC identified 22 broadly scoped deficiencies, which were further grouped into three classes according to their potential threat to the safe operation of the pipeline or to the safety of the public and the environment:

- Six deficiencies were considered most threatening because of their potential for causing severe impacts, including death or an oil spill. These deficiencies included a lack of management focus on anticipating and correcting potential problems, a “dysfunctional” quality management program, and massive electrical code violations.
- Nine deficiencies presented moderate threats because of their potential for causing impacts, including severe injury or an oil spill. Examples included the lack of accurate drawings describing the pipeline’s safety system and an inadequate safety inspection program at the Valdez terminal.
- Seven deficiencies fell in the lowest class of threats because their potential impacts were limited to such effects as loss of work time due to injuries or loss of oil. An example was the lack of a maintenance program that develops trends for predicting untimely equipment failures.

Many Other Owner- and Regulator-Sponsored Studies Found Specific Deficiencies at Certain Locations

While the QTC study addressed conditions on a broad, systemwide basis, many other studies have addressed narrower aspects of TAPS’ operations, such as corrosion of pipeline welds, leak detection, or solid waste management. Since 1990, Alyeska and its regulators have conducted or contracted for more than 40 such studies. Together, they have identified about 500 action items.

On September 9, 1993, the TAPS owners contracted with Arthur D. Little, Inc. (ADL), an independent consulting firm, to provide a comprehensive independent assessment of TAPS’ operations. Unlike the studies described so far, this one involved a detailed, facility-by-facility review of the entire pipeline and its attendant systems. The assessments were conducted by teams led by ADL personnel and composed of experts from five of the companies that own TAPS and from ADL. The assessments focused on compliance with the requirements and management systems relating to operational integrity. The result of the 9-month review was a list of more than 4,200 site-specific deficiencies, issued in two reports (December 1993 and July 1994). The following are examples of the kinds of deficiencies the study identified:

- At pump station 4, the fire alarm system was not in full working order. It did not provide an immediate sitewide alarm that was audible/visible in all areas of the pump station.
- At the main equipment maintenance facility in Fairbanks, Alyeska and contractor employees working with hazardous materials lacked specific hazard training, and the chemical inventory lists were out of date.
- Alyeska's quality assurance and inspection process did not have a management system defining responsibilities sufficiently to avoid duplication or omission of critical tasks.

Studies Also Showed Problems With Federal and State Regulatory Efforts

In 1991, we reported that federal and state monitoring agencies had not effectively overseen TAPS' operations. BLM officials told us at that time that JPO was not a regulator. Instead, the agencies relied on Alyeska to police itself. We noted that, for example, the regulators did not systematically or independently assess Alyeska's corrosion or leak detection systems, nor did they require that Alyeska demonstrate that it could respond adequately to a large-scale pipeline oil spill. We concluded that absent effective monitoring, the regulators could not ensure the safe operation of TAPS. We also reported that regulatory efforts had been hampered by a lack of coordination between the various agencies. We concluded that the recent establishment of JPO was a positive step but that its success was potentially hindered unless leadership, firm commitments from all regulatory agencies, and secure funding sources were in place.

In 1994, a study by Booz-Allen & Hamilton, an independent consulting firm, concluded that weaknesses in regulatory activity were still present. The study found that JPO was not effectively addressing the prevention of pipeline hazards. More effective oversight, the study concluded, could have precluded many of the problems that QTC had found in its review of Alyeska's operations. Specifically, the study recommended that JPO increase its monitoring of Alyeska's quality, operations, and maintenance programs—areas of concern that we had reported on since 1976.

While Correcting Deficiencies, Alyeska Conducted Normal Operations and Maintenance During 1994

Alyeska was confronted with the tasks of continuing to operate and maintain the pipeline, while at the same time correcting thousands of deficiencies identified in audits conducted for it, its owners, and various government agencies. During 1994, Alyeska continued to transport almost 1.6 million barrels of oil per day through the pipeline, conduct normal maintenance, and carry out numerous projects to upgrade the pipeline system. Alyeska estimates that in 1994, it spent about \$81 million on upgrades in three broad areas. About \$23.7 million was devoted to programs aimed at ensuring that Alyeska's operations did not adversely affect the environment through spills or air emissions. About \$34.6 million was devoted to improving the protection of the pipeline's integrity through enhanced corrosion prevention and detection. About \$20.2 million was devoted to improving Alyeska's ability to respond to emergencies related to tanker transport.

During 1994, Alyeska also reorganized the company from a centralized, functionally structured organization to an organization in which more of the responsibilities are now decentralized to "business units." The purpose of the reorganization was to provide the business units with increased control over the resources they need to operate and to provide greater accountability for operations. The four business units are the Northern Business Unit, comprising pump stations 1 through 4; the Southern Business Unit, comprising pump stations 5 through 12; the Valdez Terminal Business Unit; and the Ship Escort Vessel System Response Business Unit.

Objectives, Scope, and Methodology

On February 23, 1994, the former Chairman, Subcommittee on Oversight and Investigations, House Committee on Energy and Commerce, asked us to review Alyeska's progress in addressing problems that QTC had identified with TAPS. On March 28, 1995, the current Chairman, House Committee on Resources, which now has oversight jurisdiction for TAPS, became a joint requester to this review. Specifically, we

- assessed Alyeska's progress in resolving deficiencies identified by the QTC study;
- determined whether Alyeska's planned actions for three areas of deficiency—electrical integrity, quality, and maintenance—will address these deficiencies;
- determined whether regulators are taking action to improve regulatory oversight of the pipeline; and
- identified the root causes of the deficiencies.

To address the first objective, we reviewed Alyeska's periodic reports, through the end of April 1995, on the status of actions taken to correct the QTC-identified deficiencies. Because Alyeska and its regulators incorporated the results of a number of other reviews besides QTC's into the data base of action items, we expanded our review to report Alyeska's progress in correcting deficiencies identified by these studies as well. To assess the reliability of Alyeska's reports, we (1) reviewed the procedures that Alyeska's quality assurance staff uses to monitor corrective actions and the documents certifying completion of various steps in the process, (2) reviewed JPO's procedures for verifying corrective actions and the documents certifying completion of various steps in the process, (3) accompanied JPO inspectors on field visits to observe inspections as they were being made, and (4) performed on-site reviews of a number of the reported corrections. However, because the number of action items was so extensive and because many of the actions taken were still under way, we did not systematically verify the accuracy of Alyeska's entire list of corrections. Chapter 2 contains our findings on Alyeska's progress in resolving identified deficiencies.

To address the second objective, we interviewed regulators, Alyeska personnel, consultants, and QTC's lead auditor; reviewed Alyeska's documentation of actions completed, under way, and planned; and traveled to various sites along the pipeline to observe conditions for ourselves. We conducted on-site work at the Valdez terminal, two pump stations, and several field locations and observed from the air about 100 miles of the pipeline's 800-mile length. In addition, specifically in regard to the deficiency area of electrical integrity, a GAO electrical engineer accompanied us on a detailed tour of the Valdez terminal. We received briefings on the electrical problems at the terminal and on the steps being taken to correct them and reviewed selected electrical studies and discussed their methodologies and results with contractor and Alyeska staff. Chapter 3 contains our findings on Alyeska's actions in three areas of deficiency identified by the QTC study.

To address the third objective, we reviewed prior GAO reports, the 1994 Booz-Allen study of JPO, and actions JPO and its member agencies were taking in response. We met with JPO managers and staff and with representatives of consulting firms employed by JPO or its member agencies to supplement its oversight work. We reviewed examples of JPO's actions in overseeing the resolution of action items. We reviewed JPO's

plans, procedures, and other documents. Chapter 4 contains our findings on this objective.

To address the fourth objective, we reviewed past studies of TAPS to determine the root causes of problems that these studies had identified. We also interviewed regulators, Alyeska officials, and owner company officials to obtain their opinions about root causes. We then reviewed the actions that Alyeska and its regulators had taken or were taking to address root-cause issues. Our work included interviews with Alyeska and JPO managers as well as with field staff to determine whether corrective actions were being carried out. Chapter 5 contains our findings.

Besides our on-site field work at Valdez and along the pipeline, we conducted work at state and federal agencies in Anchorage and Alyeska's offices in Anchorage and Fairbanks. We conducted our field work between March 1994 and April 1995 in accordance with generally accepted government auditing standards.

Agency Comments

We provided copies of a draft of this report to Alyeska and JPO. We met with the President of Alyeska and officials of JPO, including BLM's Authorized Officer and Alaska's State Pipeline Coordinator. These officials agreed with GAO's assessment of their efforts to correct audit deficiencies and improve regulatory oversight. The President of Alyeska and the Chairman of the TAPS Owners Committee commented that the draft report was an objective, professional assessment of the work by the TAPS owners, Alyeska, and JPO to respond to various audit findings. The President added that while the draft report accurately described the organizational structure for Alyeska's quality program at the time of our work, Alyeska is in the process of making some additional organizational changes. We have revised our draft report to describe Alyeska's planned changes to its quality program. Alyeska also provided detailed comments to clarify the draft, and where appropriate, we made changes to the report. In addition, Alyeska provided written comments. (See app. III.)

The JPO officials stated that the draft was fair and impartial and accurately captured both the successes achieved and the challenges remaining for both Alyeska and JPO. They fully concurred that secure funding for JPO and Alyeska is vital to ensuring the continued safe operation of the pipeline. While they believe that Alyeska has made many positive changes thus far, they believe the work ahead in implementing the plans will be much more difficult. Consequently, they believe that periodic, comprehensive

Chapter 1
Introduction

oversight from an independent source is critical to ensure that JPO and Alyeska continue their improvement efforts. The officials also provided suggestions to clarify the draft report, and where appropriate, we incorporated their suggestions into the report.

Alyeska Has Made Progress in Resolving TAPS' Deficiencies, but Progress Is Slower Than Planned

Alyeska has made substantial progress toward resolving the deficiencies. However, during this period, Alyeska's target for correcting all of the deficiencies slipped from December 1994 to 1996; a small number of items will extend beyond 1996. The completion dates slipped for a variety of reasons, including a larger than expected number of deficiencies, the complexity of many of the corrections, and Alyeska's overly optimistic estimation of the time needed to make corrections. Alyeska is taking actions to ensure that the remaining deficiencies are corrected on a priority basis and that JPO can track progress.

Alyeska Established a Data Base to Monitor Progress on Resolution of 4,920 Audit Items

To determine what work needed to be done to correct the audit deficiencies, Alyeska reviewed the results of more than 40 audits and studies of the various TAPS components. It translated the deficiencies identified in these audits and studies into a total of 4,920 action items. Alyeska established a data base for tracking all of these items and a system for planning, conducting, and approving the work.

List of Action Items Grew Over Time

By April 1994, Alyeska had identified about 1,700 action items stemming from deficiencies identified in the various TAPS audits and studies. These action items came from three sources—the first phase of the ADL study, which had been completed in December 1993; the QTC audit; and previous audits done primarily for Alyeska or its regulators. For the action items identified by April 1994, the first-phase interim report from ADL produced the most items—1,128 (subsequently expanded to 1,132). Alyeska translated the 22 overall deficiencies identified in the QTC study into 187 (subsequently expanded to 208) action items, and the findings of the various other audits and studies identified about 380 items (subsequently expanded to about 500). The second phase of the ADL study, completed in July 1994, led to an additional 3,100 action items. With these and with additional findings from other audits, the action items reached a total of 4,920.

Alyeska and JPO Developed a System for Tracking and Resolving Deficiencies

In January 1994, to keep track of the action items, Alyeska and JPO developed the Audit Compliance Tracking (ACT) data base and procedure, which was essentially in place in March 1994. In developing this data base, Alyeska and JPO also agreed to a process for identifying and resolving the action items. This process can be summarized in three main steps: identifying and setting priorities for the action items, preparing and approving corrective action plans, and preparing, reviewing, and verifying

**Chapter 2
Alyeska Has Made Progress in Resolving
TAPS' Deficiencies, but Progress Is Slower
Than Planned**

the closure packages for the work done to correct the deficiency. Reports generated from this data base provide JPO with updated information on Alyeska's progress in correcting the deficiencies, and JPO summarizes this information in its annual report to congressional oversight committees.

**Identifying and Setting
Priorities for Action Items**

Under the process agreed to by Alyeska and JPO, Alyeska's Integrity and Compliance Division⁶ was responsible for reviewing all internal and external audits and assessment reports to identify the action items, assigning the responsibility for the corrective action, and entering the action items into the data base. In doing so, the division also set priorities for the action items on the basis of the potential impact of items on the pipeline's integrity. The priority system contains four levels, as shown in table 2.1. Alyeska's quality assurance office and JPO reviewed and approved the priority level for each action item.

Table 2.1: Priority Levels for Action Items in the ACT Data Base

Priority level	Description	Examples
1	Structures, systems, and components which prevent or mitigate the consequences of an accident or natural event which could cause significant harm or damage	Mainline pipe, gate and check valves, selected bridges, and quality manual updates and operating procedures for level-1 components
2	Items that do not meet the definition of a level-1 item but are necessary for compliance with safety regulations and for reliably transporting oil	Power generation systems, fire detection and suppression systems, and preventive maintenance program
3	Structures, systems, and components that by themselves would have minimal impact on safety and oil transport but to which Alyeska elects to apply selected quality program elements	Steam distribution, container labeling, and security procedures
4	Structures, systems, and components not designated in any of the other levels and for which the application of normal industry practices result in acceptable quality	Personnel living quarters, automotive equipment, and housekeeping items

**Preparing, Reviewing, and
Approving Corrective
Action Plans**

The action item process called for the Alyeska unit responsible for each action item to prepare a corrective action plan (CAP) describing how a deficiency would be fixed if the item was a priority level-1 or -2 item or a priority level-3 or -4 item requiring 40 or more hours of labor. Before corrective action can begin on priority level-1 and -2 items, the CAPs go to Alyeska's quality assurance staff and JPO for review and approval. After November 1994, Alyeska and JPO agreed that level-3 and -4 CAPs do not need a review by JPO.

⁶Alyeska's plans called for dissolving the Integrity and Compliance Division during June 1995 and transferring its responsibilities to other parts of the organization.

**Preparing, Reviewing, and
Verifying Closure Packages**

When the Alyeska unit responsible for the action item has corrected the deficiency, it prepares a closure package containing the applicable procedures and drawings documenting how the item was corrected. Each closure package is reviewed and verified by Alyeska, JPO, or both. Alyeska's quality assurance unit verifies closure packages for all priority level-1, -2, and -3 items, and Alyeska's contract compliance unit or the unit responsible for making the correction verifies the closure packages for level-4 items. JPO also verifies all level-1 closure packages and a minimum 20-percent sample of level-2 packages.

**Alyeska Made
Progress Completing
Action Items**

By the end of April 1995, Alyeska reported that it had completed work on 3,030 of the 4,920 action items—about 62 percent (see table 2.2). It had also developed a CAP for a number of other action items—primarily level-1 and -2 items—that had not yet been closed. In all, Alyeska had approved 2,242—about 97 percent—of the 2,320 CAPs delivered for review. JPO had approved 2,126 of those.⁷

**Table 2.2: Status of Action Items as of
the End of April 1995**

Priority level	Total items in ACT data base	Items closed	
		Number	Percent
1	95	32	34
2	2,132	1,023	48
3	2,105	1,469	70
4	588	506	86
Total	4,920	3,030	62

As table 2.2 shows, Alyeska had closed a higher percentage of items at priority levels 3 and 4 than at priority levels 1 and 2. Alyeska officials told us that because they initially anticipated closing all action items by December 1994, they did not use the priority levels as a basis for determining which work should be done first. Some priority level-1 items have been closed, such as the possible problem of natural gas liquids being mixed in with the crude oil in the pipeline—a situation that could lead to a safety problem at pump station one—and the redesign of a control system that used fuses to protect against electrical current surges (a design restricted under the National Electric Code). Many others, however, remain open. For example, the ADL study found that Alyeska had no risk management system in place at the terminal to (1) identify key equipment and facilities' hazards; (2) assess the consequences and probabilities of

⁷Level-3 and -4 items may not require a CAP.

**Chapter 2
Alyeska Has Made Progress in Resolving
TAPS' Deficiencies, but Progress Is Slower
Than Planned**

occurrence; and (3) evaluate possible prevention and mitigation measures. According to Alyeska officials, the TAPS owners have approved an overall policy for such a risk management system, and it will be tested in pilot programs. Full implementation is scheduled for November 1995; training is to be completed in the first part of 1996.

In connection with the 208 QTC items that we focused on, as of the end of April 1995, Alyeska had resolved 95 items, and CAPS were approved for 166 of the 180 items requiring CAPS.

Table 2.3: Status of QTC's Action Items as of the End of April 1995

Priority level	Total items in ACT data base	Items with corrective action plan				Items closed by Alyeska	
		Number requiring CAP	Number with approved CAP	Percent	Number	Percent	
1	43	42	36	86	12	28	
2	82	80	76	95	40	49	
3	62	51	50	98	30	48	
4	21	7	4	57	13	62	
Total	208	180	166	92	95	46	

Examples of closed level-1 and -2 items include better monitoring of emissions volumes from tanker vents during filling at the Valdez terminal and improved maintenance procedures for a diesel engine that was not being properly maintained. Most level-1 items remain open. For example, a contractor is producing drawings of the current configuration of various facilities in a multiphase project. Approximately 40 percent of the drawings to be produced in the initial phase have been provided to Alyeska; the remainder are to be received by the end of July 1995.

Progress Was Slower Than Expected, but Most Costly Items Are Near Completion

In the spring of 1994, Alyeska anticipated having to close about 3,000 action items. On that basis, it projected that it would complete action on and close all items by December 1994. The final total of action items, however, was considerably higher than expected. In January 1995, Alyeska had revised the planned completion date. Alyeska's plan, as of February, calls for closing 85 to 90 percent of the 4,920 items by December 1995 and closing the remaining items by the end of 1996, except for a very small number of items generally associated with the Vapor Recovery Project at the terminal (a program to recover hazardous vapors from the oil tankers) and the Tank Cathodic Protection program (a corrosion prevention

Chapter 2
Alyeska Has Made Progress in Resolving
TAPS' Deficiencies, but Progress Is Slower
Than Planned

program for oil storage tanks). Completion of these will extend beyond 1996.

The two most expensive projects are those involving correcting electrical deficiencies, known as the AKOSH/NEC⁸ Safety Compliance Program (ANSC) project, and efforts to update the drawings to match the equipment in place, known as the As-Built project. These two projects, which account for 70 percent of the projected costs to resolve the deficiencies, are near completion. Alyeska spent almost \$133 million on the ANSC project in 1993 and 1994 and plans to spend an additional \$41 million to complete it by August 1995. Alyeska also spent over \$22 million on the multiphase As-Built project in 1994 and plans to spend an additional \$15 million to complete the current phase by June 1995. The next most costly project authorized for 1994 and 1995 was related to correcting problems with the trays carrying electrical cables. Correcting these problems is expected to cost \$5 million at the pump stations; additional expenditures will be necessary at the Valdez Marine Terminal.

In total, Alyeska reported that it spent about \$222 million on corrective actions in 1994 and expects to spend an additional \$72.5 million in 1995. Alyeska's Vice President responsible for the corrective action process estimated that an additional \$5 million to \$7 million will be spent in 1996 on corrective actions. He also said that beginning in 1996, the costs for the corrective actions to address major items will be included in the pipeline's operating budget and not identified separately.

One problem that affected Alyeska's ability to meet the initial goal of closing all action items by December 1994 was the unexpected number of items added to the data base after the goal was set. The additions occurred because the number of action items identified in the second phase of the ADL study was more than double what Alyeska had expected. Phase two of the study identified 3,100 items, over 70 percent of the entire ACT data base. Alyeska received the Phase II report identifying these items in July, less than 6 months before its original deadline for completing the corrective actions.

⁸AKOSH stands for the Alaska Occupational Safety and Health standards, which are Alaska's standards that apply to electrical safety and health matters for existing facilities. NEC stands for the National Electrical Code, which applies to new structures or to modifications of older structures. The ANSC project developed and used inspection criteria based on these two standards. JPO approved these criteria. Inspectors used these criteria to identify items that did not conform to these standards, and nonconforming items were corrected by the project.

Despite these increases, our work indicates that Alyeska closed fewer than expected deficiencies because many high priority items proved to be more difficult to correct than Alyeska had anticipated and involved lengthy work programs that are being actively pursued. For example, many items in the quality assurance, preventive maintenance, and electrical integrity areas cannot be resolved until a variety of subissues are resolved. As chapter 3 explains in more detail, successful resolution of the 47 action items related to electrical integrity requires making close to 32,000 specific corrections throughout the entire pipeline system, as well as fixing thousands of electrical housekeeping items and completing a variety of specialized engineering studies assessing additional potential risks. The additional training required to implement some of the corrective actions was greater than anticipated, according to Alyeska managers.

Alyeska Has Taken Steps to Better Manage Closure of Action Items

When it became apparent that the December 1994 goal could not be met, Alyeska took several steps to provide a clearer focus on how it was progressing on priority items. Two of these steps are particularly important: the development of a “key items” list and a work scheduling system.

Key Item List

In May 1994, according to Alyeska officials, and at JPO’s request, Alyeska created a key item list to track those items that Alyeska and JPO regard as most important. The purpose of the list was to provide a more viable method of tracking progress on the most important and most costly items and to ensure that the work on lower priority items is not depriving higher priority items of resources. At the end of April 1995, the list included 229 items, as follows:

- All 95 items assigned a level-1 priority (43 of these items were identified by QTC).
- All 82 level-2 priorities identified by QTC, plus 52 other level-2 priorities that have an estimated cost of \$2 million or more to correct.

As of the end of April 1995, Alyeska had completed the corrective actions and its Quality Assurance group had approved those actions for 76 of these key items, or about 33 percent (see table 2.4). Alyeska had developed CAPS for all of the 224 items requiring CAPS, and JPO had approved 179 of these CAPS. Five items did not require CAPS—four of them are closed.

Table 2.4: Status of "Key Item" List as of the End of April 1995

Priority level	Total key items in list	Items with corrective action plan			Items closed	
		Number requiring CAP	Number with CAP developed	Number with CAP approved by JPO	Number	Percent
1	95	94	94	73	29	31
2	134	130	130	106	47	35
Total	229	224	224	179	76	33

Operations Impact Plan

Alyeska has also developed an Operations Impact Plan to select and manage the work that involves field resources. According to Alyeska officials, the primary purposes of this plan are (1) to set priorities for work that requires field technicians' time and (2) to schedule work according to its priority and the amount of technicians' time available. This plan represents an important change in approach because it moves away from Alyeska's earlier approach of attempting to correct all deficiencies concurrently without considering priorities.

According to Alyeska officials, the five items with the highest priority will be worked on first during 1995: (1) preparing for compliance with title V air quality regulations, (2) developing a maintenance management system, (3) enhancing the local and wide-area communications facilities, (4) resolving electrical integrity problems, and (5) developing a quality assurance program. These items are expected to be completed by December 1995. Further down in the rankings are such matters as developing a technician training and advancement program based on tested performance and an information management system that will provide the operations organization with on-line access to various information, such as equipment drawings.

Conclusions

While Alyeska's success in resolving the action items has been slower than originally anticipated, the company has made substantial progress. When Alyeska anticipated that everything could be quickly corrected, it essentially tried to do everything at once, without considering the significance of the problem. Now that its schedule has been extended, Alyeska is trying to match priorities with available resources so that higher priority items are corrected first.

Alyeska Is Making Progress in Correcting Electrical, Quality, and Preventive Maintenance Deficiencies

We analyzed three areas in which QTC identified substantial deficiencies—the integrity of electrical systems, the quality program, and Alyeska’s approach to preventive and predictive maintenance. QTC had concluded that problems in these areas presented potential threats to the safety of the public and the environment. Our objective was to examine Alyeska’s actions in these areas to determine whether the planned actions will address the problems QTC identified.

Although the implementation of corrective measures in all three areas is not yet complete, Alyeska is making progress in correcting these deficiencies. The actions taken and planned, if fully carried out, appear adequate to address the problems that were identified.

Integrity of Electrical Systems Has Received Considerable Attention

QTC reported that the pipeline’s electrical systems constituted “the greatest hardware threat to the health and safety of the public and the environment/ecosystem.” As evidence, QTC pointed to the numerous electric code violations, such as improper grounding, already identified in other inspections. Other violations raised questions about the ability of the supports for cable trays that carry cables to various locations around the terminal and the ability of the pipeline to withstand earthquakes. Alyeska had begun an inspection to identify and correct electrical problems, but QTC found that Alyeska’s inspection program was not adequate to ensure that all electrical problems on the pipeline would be identified and adequately resolved. QTC concluded that a more broadly scoped effort was needed. In response, Alyeska developed a two-part process to assess the electrical systems of the pipeline: a detailed inspection and a series of studies of broad-based issues.

Detailed Inspections Showed Thousands of Site-Specific Deficiencies

In response to QTC’s findings, Alyeska revised the inspection process and inspected the entire pipeline for electrical safety problems. It developed the ANSC project to ensure that inspection criteria were established, inspections were conducted in an organized fashion, nonconformances were documented, corrective actions were approved in advance, corrective actions were taken, and the completed work was checked. Alyeska folded this new program into an inspection process that had already started at the Valdez terminal and pump stations, before QTC began its review. The resulting inspection covered the pipeline, including the

terminal, the pipeline's pump stations,⁹ and ancillary facilities. The inspection was completed in December 1994.

The ANSC inspection identified about 32,000 individual items that did not conform to the project's inspection criteria. To keep track of these nonconforming items, Alyeska created an extensive document control procedure and a data base system that is separate from the ACT data base. Like the ACT data base, this system tracks the items and classifies them according to priority. About 4 percent of the items were top priorities—that is, they were considered critical to the workers' safety or the pipeline's integrity and were not backed up by another system. Like the ACT data base, this system also breaks the deficiency identification and correction process into a series of steps so that progress in completing work can be tracked. Once identified, the deficiencies are validated by engineers. Progress is tracked through such steps as the development of corrective action plans, review and approval of those plans by JPO, implementation of corrective action, and approval as necessary by Alyeska's quality control inspectors and JPO's inspectors.

In addition to the almost 32,000 nonconforming items, Alyeska's systemwide approach also identified about 17,000 electrical-related "housekeeping" items that could largely be fixed on the spot, like replacing missing screws in cover plates or tightening grounding connections. These items were identified and fixed by teams of electricians in advance of the inspection, and others were fixed by electricians who accompanied the inspectors. Alyeska also developed a tracking system to ensure that these items were fixed.

About 26,000 Identified Deficiencies Have Been Corrected

Early in the inspection process, Alyeska estimated that it would be able to correct all of the action items by December 1994. However, the inspections themselves took until December to complete. As of the end of April 1995, Alyeska reported having corrected 19,182 items on the pipeline and 6,940 at the terminal, or about 82 percent of the total. Alyeska also reported that as of January 1995, all of the 17,000 housekeeping items had been fixed.

Alyeska's president said the company's initial estimate for completing the action items in the ACT data base, including ANSC, had been too optimistic. In October 1994, Alyeska revised the target for completing all items to

⁹Pump Station 7 and the Pump Station 8 Topping Plant were not inspected because they are being evaluated for potential shutdown.

December 1995. However, in March 1995 the company estimated that, weather conditions permitting, it would complete the ANSC project by August 1, 1995.

Special Engineering Studies Are Under Way

In addition to the inspections, Alyeska is conducting 20 special engineering studies related primarily to electrical issues. Alyeska initiated the studies as part of the ANSC project to determine the best engineering solution to major issues. The need for special studies is one indication of the complexity of many of the electrical problems. (These studies are listed in app. I.) Eleven of these studies have been completed, and completion is imminent for most of the remaining studies. While completing the studies will close some items, in other cases the studies may identify the need for additional actions, and completing those actions may take some time. For example, the study of the cable trays' structural integrity will likely be completed in May 1995, but the draft identified the need for modifications at both pump stations and the terminal. The schedules for the completion of all related construction work are not yet available. We reviewed three of the studies related to grounding, inspection of motor control centers, and power switching systems to determine whether the studies accurately assessed the problems and whether the recommended actions will address the problems. We believe that the studies accurately assessed the problems and that the actions in progress and planned should correct the problems identified. (These studies and our conclusions are discussed in app. II.)

Approach to Quality Program Is Being Revised

The right-of-way agreement requires that Alyeska have a comprehensive quality program to protect the safety of workers, the public, and the environment. Alyeska's quality program has been the subject of criticism at various times since the pipeline's initial construction. In its November 1993 study, QTC reported that Alyeska's quality program was dysfunctional and was thus incapable of ensuring that TAPS had been constructed and could operate efficiently and safely. In January 1994, QTC provided recommendations on how Alyeska should revise its quality program. Alyeska is revising its program to correct the deficiencies QTC identified. However, for a small number of items, JPO has agreed that Alyeska can take a different approach than the one recommended in QTC's January 1994 report. Completing the corrective actions will take longer than planned.

Problems With Alyeska's Quality Program Have Been Reported Since Initial Construction

Alyeska's problems with its quality program have been long-standing. During the early phases of TAPS' construction, we reported a variety of problems with how Alyeska was implementing its quality program. For example, in 1976 we reported that TAPS' construction was about 22 percent completed before Alyeska obtained final approval for its quality program.¹⁰

During this phase of construction, Alyeska's quality program was not consistently correcting violations of the stipulations to which Alyeska had agreed. Federal and state monitors, rather than Alyeska's quality program staff, were requiring the correction of nonconforming work.

Although improvements were made in July 1975 to correct the problems we identified, we identified similar problems in the 1976 construction season. After construction was completed in 1977, Alyeska continued to have problems with its quality program. QTC described the program, as it existed from about 1980 to 1990, as woefully inadequate.

After the Exxon Valdez oil spill in 1989 and other problems, Alyeska began to upgrade portions of its quality program, but these efforts again proved insufficient. Staffing was increased from 11 in 1990 to about 34 in 1993, and Alyeska began revising the documents directing its quality program. Alyeska issued a revised quality program manual in October 1992 and a quality standards manual in September 1993. Despite these steps, the implementation of a quality program was still fragmented.

QTC reported that Alyeska's quality program was dysfunctional. Specifically, according to QTC, Alyeska's management had a reactive mindset and did not support its quality program. In addition, QTC concluded that the program lacked the organizational authority and independence to protect public health and safety, could not show that Alyeska met basic commitments to the regulatory requirements set out and agreed to in its quality program manual, and lacked the key components needed for a quality program to function.

Alyeska Is Correcting Its Quality Problems

Alyeska has since taken or is in the process of taking a number of steps to change the quality program from top to bottom. These steps have included ways to clearly establish management's support for an effective quality program; reorganize the quality program to increase its authority, independence, and resources; provide a system for documenting compliance with regulatory requirements; develop essential components

¹⁰Trans-Alaska Oil Pipeline—Progress of Construction Through November 1975 (GAO/RED-76-69, Feb. 17, 1976).

of a quality program; and put procedures in place to make the program work.

New System for Establishing Management's Support for Quality

In 1994, Alyeska established the Alyeska Integrity Management System (AIMS) to provide an overall framework for ensuring the integrity of the pipeline and terminal—no accidents, no leaks, no compliance violations, and reliable, cost-effective operations. A key part of AIMS establishes management's commitment to Alyeska's quality program. Focusing this attention is an important aspect of changing Alyeska's mindset in connection with a quality program. Reporting that Alyeska's mindset was not focused on prevention, QTC was concerned with the lack of focus on prevention through strategic planning, adequate procedures, and compliance with regulatory requirements that would be brought about by an effective quality program. AIMS appears to have the kind of structure needed for greater emphasis on quality. AIMS has two components. The first is a set of 69 expectations grouped into 13 elements which describe what is expected of Alyeska in order to ensure the integrity of its operations. One element establishes a quality program as an expectation. Specifically, it states,

“A comprehensive quality program is crucial to assure management and the public that the Alyeska Pipeline Service Company is operating with integrity (i.e. in a manner that is safe, environmentally sound, and reliable) and in compliance with all regulatory, legal and Company requirements.”

The quality element includes four expectations:

- A comprehensive, documented quality program is understood and complied with by employees.
- The effectiveness of the quality program is periodically and objectively assessed and the program is continuously improved.
- Corrective and preventive actions are identified, documented, implemented, and tracked to completion.
- Systems are established to identify, evaluate, and resolve the quality concerns of employees and contractors.

The second component provides a defined process for periodic evaluations of the extent to which the expectations are being met. The process provides for three levels of assessment—self- assessments, at least annually, by the local organization to ensure regulatory, legal, and company policy compliance; functional assessments, at 2- or 3-year

intervals, by qualified company personnel to assess key areas of AIMS, especially relating to compliance; and independent assessments by skilled company personnel or outside experts to assess compliance with AIMS. Independent assessments will begin in 1996 and will cover the entire company every 3 years, one-third at a time. The first round of self-assessments was completed in November 1994. The AIMS Coordination Leader told us that in the first round of assessments, the various units averaged about 1.5 out of a possible 4. He added that as a result of the assessments, each of the 23 units assessed developed an improvement plan to address the most significant action items identified in the assessments. In total, the plans cover about 500 items. The plans call for completing action on these items by the end of 1995. In turn, the employee incentive program ties employees' compensation to completing these plans in 1995.

Reorganization for Greater Authority and Independence

QTC reported that Alyeska's quality assurance group, which conducted audits and surveillance, reported to the Vice President of Administration, who had no prior experience in any phase of a quality assurance program. In addition, the Quality Services group, which provided inspection services for pipeline and terminal operations, reported to the Vice President of Engineering and Projects and thus, according to QTC, lacked the independence and the required freedom to document conditions adverse to quality. Nationally and internationally recognized guidance on the development of quality organizations emphasizes the importance of these organizations having the organizational authority, responsibility, and freedom to (1) identify problems affecting quality, (2) report problems and recommend corrective actions, (3) control processing until nonconforming conditions are corrected, and (4) verify corrective actions.¹¹ In response to QTC's finding, in early 1994 Alyeska reorganized its quality program. It combined the audits and surveillance group and the inspections services group into a single organization, the Quality Department, headed by the Quality Department Manager. Alyeska also relocated the department under a newly created Vice President for Quality, Environment and Safety, who, organizationally, is on the same level as the Vice President for Operations.

In June 1995, about 31 staff were in the Quality Department, about 14 in Audits and Surveillance, 11 in Quality Services, and 6 in Management and

¹¹International Standard: Quality Management and Quality Assurance Standards-Guidelines for Selection and Use (ISO 9000), International Organization for Standardization, 1987, and Specifications for Quality Programs: API Specification Q1 (SPEC Q1), Second Edition, Jan. 1, 1988, American Petroleum Institute.

Administrative Support. In addition, 18 other staff perform quality functions, including nine quality generalists assigned to the business units. The 1995 quality staffing level of 49 represents an increase of 15 from the 1993 staffing level of 34. The staff resources devoted to the quality program are temporarily augmented by about 37 staff who are dedicated to short-term projects and will be phased out in 1995 as projects wrap up.

After we had completed our field work, on June 1, 1995, the President of Alyeska advised us that Alyeska plans to further revise the organization of its quality program. The program's reorganization will take place in two stages. First, beginning in July 1995, the position of Vice President for Quality, Environment, and Safety, will be abolished. The environment and safety functions will be assigned to another Vice President. The quality program, with the exception of audit and surveillance, will be assigned to a newly created Operations System Integrity Department under the Vice President for Operations. The audit and surveillance function will be transferred to the Vice President for Business Practices, who is also responsible for Alyeska's audit function and the Employee Concerns Program. Alyeska officials believe that placing the audit and surveillance function in a separate group from Operations will enable it to retain its independence to report on conditions that may be adverse to quality.

The inspection function will be reassigned from Quality, Environment, and Safety to the Operations System Integrity Department within the Operations group and eventually reassigned to the Maintenance and Modification Department within Operations and the Business Units during the second stage of reorganization. Although this reassignment will once again have the inspection function under the persons responsible for transporting oil and maintaining the pipeline—the Vice President for Operations and the Business Unit Leaders—Alyeska officials believe that the quality program will be better received and evolve into a continuous improvement mode more quickly if the personnel responsible for operating the pipeline take ownership of the quality program rather than have a separate unit outside of Operations attempt to instill quality in the way Operations personnel do their work.

According to Alyeska officials, steps are being taken to ensure that the inspection function will continue to be effective. In the proposed reorganization, the inspection function and the project management/facility operations functions will remain on separate reporting paths within Operations. In addition, the Operations System Integrity Manager is establishing quality councils, and inspectors will be

invited to participate in the councils along with Alyeska employees. These councils are being established to provide a forum for front-line workers to provide input for improvements in the quality program or to raise issues or problems involving quality. In addition, the officials told us that the Ombudsman Program and the soon-to-be-implemented Employee Concerns Program, which are located outside of Operations, will provide a relief valve in the event that quality-related issues are not being appropriately handled by line organizations. Alyeska plans to review and benchmark these changes against other companies and industries late in 1995 to ensure that this is the most effective approach. In our opinion, the effectiveness of these changes will become clearer over time.

Process for Identifying and Ensuring Compliance With Regulations Is Being Established

QTC also found that the TAPS project failed to ensure compliance with agreements, codes, standards, and government regulations because Alyeska failed to fully identify its regulatory requirements and incorporate those requirements into operating and maintenance implementing procedures. QTC noted that this failure by Alyeska to implement its own policy of regulatory compliance dates back to the original issuance of the Quality Assurance Manual, Revision 0, dated June 7, 1977.

In response to QTC's finding, Alyeska is establishing the Alyeska Regulatory Compliance System (ARCS) to help ensure that commitments, such as the requirement to comply with the federal and state right-of-way agreements, and affected documents, such as the procedures for implementing the agreement, are identified and updated in a timely fashion. The system will contain each requirement, such as a law or regulation, interpret its specific relevance to Alyeska, link it to a principal implementing procedure, identify the organization responsible for implementing the procedure, identify implementing documents such as maintenance procedures, and specify any training requirements.

In October 1994, Alyeska created the Information Management Service Unit to implement this tracking system and several related programs. The requirements were divided into eight subject areas, including environment, and fire safety and industrial hygiene. The process of identifying the regulatory requirements has been completed for six of the eight subject areas in the tracking system. The Service Unit plans to partially implement ARCS in the fourth quarter of 1995 for the six areas. Alyeska plans to fully implement the tracking system around December 1996. At that time, it is expected that the required data will have been developed for the remaining two areas—Oil Spill Contingency Planning and Codes and

Standards—and that safe maintenance procedures will have been completed.

Development of Program Components Previously Absent or Not Working

QTC reported that program components key to an effective quality program were either not functioning or were missing altogether. The document control process had broken down to the extent that no assurance could be made that approved drawings accurately reflected the equipment in place or its operation. Neither was there a master list of structures, systems, and components that should be included in a quality program or documentation indicating the importance of the equipment to the pipeline's integrity. In addition, cause and corrective action programs were not in place to learn from malfunctions and maintenance histories.

Alyeska is correcting these deficiencies. It is

- developing a master equipment list to identify the structures, systems, and components to be included in the TAPS quality program and developing a procedure for documenting and controlling the list;
- developing a document establishing the importance of various equipment to ensure the integrity of TAPS and thus the extent to which elements of the quality program apply to the equipment;
- developing a risk-based cause and corrective action program that will use maintenance histories to improve future reliability; and
- updating the “as-built” documentation to ensure that drawings of all TAPS’ structures, systems, and components reflect current configurations, performing a limited functional check to ensure that the selected equipment operates as provided in specifications, and developing implementing procedures to ensure that the documentation and conditions of TAPS’ equipment and facilities remain current and consistent.

Creation of Policies and Procedures

QTC reported that Alyeska’s quality program, as described in various quality manuals, has been inadequate as a total approach to quality and reported that the manuals, as defined, have not been implemented. QTC’s Phase 2 report identified actions for Alyeska to consider in developing its revised quality program. Alyeska considered and incorporated almost all of these actions, and in May 1995, JPO conditionally approved Alyeska’s revised program. The Quality Program Manual establishes Alyeska’s overall quality program and policies. The implementing procedures address various areas, including ones that QTC identified as lacking: the Regulatory Compliance Matrix, Master Equipment List, Trend Analysis,

and Causal Factor (root cause) Analysis. After a period of orientation and training, the revised quality program will go into effect on June 15, 1995 for all new work.

Some Obstacles Remain in Efforts to Improve the Quality Program

As with other areas, the actions required to improve the quality program have proven to be more difficult than Alyeska originally expected. Thus, a fully implemented quality program will not be completed until at least December 1996, although key components are in place now, and others are expected to be put into place during the latter half of 1995. Alyeska's response to QTC's recommendation for a regulatory compliance system is one example in which progress is slower than anticipated. Although Alyeska's 1994 plans called for implementing the Alyeska Regulatory Compliance System in the first quarter of 1995, completion of the system will be implemented in stages. The system will be partially implemented in the fourth quarter of 1995, when time is available at the terminal and pump stations to provide needed training and when the communications upgrade, called the wide-area network, which will enhance computer communications between field operations and Anchorage, is completed. Full implementation of ARCS is scheduled to be completed in December 1996 when two subject areas—Oil Spill Contingency Planning and Codes and Standards—have developed needed information and when the maintenance organization completes its program for developing the required procedures for maintaining equipment to required standards.

Alyeska Is Upgrading Its Maintenance Program

The maintenance designed to keep plant and equipment in good operating condition is generally achieved by identifying all of the structures, systems, and components requiring maintenance (a master equipment list) and developing schedules and criteria for when maintenance is to be performed. QTC found that Alyeska's program for maintaining the pipeline's components (such as the pipe, pumps, valves, and electrical equipment) lacked a comprehensive approach for analyzing and "trending" the condition of this equipment or for using such information as a means of establishing a maintenance program that is predictive in nature.¹² Alyeska had no master equipment list and no implementing procedures for a comprehensive maintenance program. QTC found that Alyeska's individual maintenance procedures lacked clarity, specificity, and technical validity.

¹²Maintenance takes three main forms—corrective, preventive, and predictive. Corrective maintenance involves repairing or replacing a component when it fails; preventive maintenance involves servicing the component on a regular basis, such as the amount of calendar time or hours of operation that have transpired. Predictive maintenance is similar to preventive maintenance except that it develops maintenance schedules based on equipment condition rather than calendar time or hours of operation.

For example, the procedures did not specifically call for the types of parts/materials/tools to be used in a procedure; called for incorrect parts/materials/tools to be used; or called for incomplete/inadequate/inaccurate steps to perform preventive maintenance.

Alyeska Is Correcting
Maintenance
Problems—Completion
Not Likely Until 1996

Alyeska has taken and plans to take a number of steps, such as developing the master equipment list discussed under the quality program, to correct the maintenance program deficiencies identified by QTC. It has also begun developing a revised maintenance program that will include the results of its corrective actions. Together, the actions, when completed, should provide a basis for improving maintenance and for creating a predictive maintenance program that can better focus maintenance resources where they are (1) most needed to ensure safety and pipeline integrity and (2) most cost-effective. The completion of all necessary steps is not likely until at least mid-1996 at the earliest.

Master Equipment List and
Related Information

Alyeska is developing a master equipment list to identify equipment needing maintenance and an integrity list that will relate the importance of this equipment to the integrity of the pipeline. The quality program requires greater focus on the equipment that is more critical to the safety and integrity of the pipeline. The equipment list is being developed as part of the as-built project and functional-check processes described in the earlier section on quality. The integrity list for the level-I items was completed in November 1994, and the list is scheduled to be completed for the level-II, level-III, and nonintegrity items in the fourth quarter of 1995. The initial as-built project for the 12,000 to 14,000 most critical drawings is scheduled to be completed in June 1995; a supplemental project for 5,000 to 6,000 less critical drawings is scheduled for completion in June 1996. The functional check out project is associated with the as-built project and is also a two-phase project. Each phase will be completed before the corresponding phase of the as-built program. The master equipment list is scheduled to be completed about the end of 1995.

Information System for
Analyzing Maintenance
Histories

Alyeska is developing an Integrated Maintenance Management System (IMMS) to enable it to track and learn from the maintenance histories of key equipment throughout the pipeline. The information derived from maintenance histories can provide a basis for improved reliability and, possibly, reduced maintenance costs. A basic element of the system is a

software system (called PassPort) that will allow Alyeska to collect and analyze maintenance histories on key equipment. The first stage of this system, the automated work order system, began testing at a pump station in spring 1995 and will come on line during the third quarter of 1995. Alyeska is also upgrading its wide-area network communications link between the pipeline's facilities to allow the system to acquire and track maintenance histories from the equipment at the terminal and the pump stations. The computer-supported maintenance system and the related communications upgrade will provide a basis for tracking the histories of all integrity-related equipment on the pipeline. Alyeska's plans call for completing the upgraded communications system in November 1995.

Alyeska describes the maintenance system it is developing as a risk-based maintenance program which provides for (1) learning from maintenance experience that is collected and tracked in the PassPort data base and (2) using predictive maintenance procedures to improve reliability and reduce costs. Without such a program, resources could be inefficiently used to maintain equipment whose failure will have little impact on operations or for which preventive maintenance is not economical. Instead, it would be more cost-effective to operate this equipment until it fails and then replace it. On the other hand, inadequate maintenance could be performed on equipment where the likelihood of failure and/or the consequence of failure warrant more extensive maintenance, according to Alyeska maintenance officials. In a risk-based maintenance program, maintenance is performed on a schedule determined by both the consequences of failure and the likelihood of failure. The risk assessment element is scheduled to be implemented in late 1995 and early 1996 as training is provided. Predictive maintenance requires (1) the determination of conditions, such as increasing vibration, temperature, or wear, that will indicate when maintenance is needed in time to prevent equipment failure and (2) a monitoring program to identify those predetermined conditions. The PassPort system will help identify the conditions that call for maintenance, and the risk analysis will identify the equipment important enough to make monitoring worth the cost.

New Procedures for Supporting Maintenance

Alyeska is developing maintenance procedures, called safe operating and safe maintenance procedures, describing how to prepare equipment for maintenance and how to perform maintenance on pipeline equipment. The completion of this program has stretched into 1996 because Alyeska is developing the criteria for identifying which equipment needs to have maintenance procedures developed. The contractor had developed over

600 procedures at a pump station and the terminal before the project was put on hold. The contractor, as directed, was developing procedures for items at equipment locations that are identified by tag number. While the tag numbers are unique, the equipment with the tag numbers is not. Thus, this method resulted in many duplicate procedures being written for the same equipment. A different system, based on component identification and a judgmental determination of importance, is being developed. The new approach will reduce the number of procedures that have to be developed and updated as equipment changes are made over time. The completion of this process is now scheduled for 1996.

Conclusions

Alyeska is taking steps that when completed and fully implemented, should correct the problems QTC identified with electrical integrity, quality, and maintenance. However, the process for all three is taking longer than planned. Alyeska's efforts in these areas have been affected by the complexity and breadth of the work to be done. Considerable time will be needed before the degree of success of the effort can fully be assessed. The need for additional time to fully assess progress is particularly true for the quality program, which is undergoing continuous reorganization. In addition, once the corrective measures are addressed, implementing them over the long term will require a continuing commitment of resources, as discussed in the next chapter.

TAPS' Regulators Have Taken Steps to Improve Oversight

Effective oversight is a key component of ensuring safe pipeline operations. Although federal and state regulators made substantial attempts after 1990 to better coordinate their efforts, significant problems with regulatory effectiveness were still being pointed out by outside reviews as recently as 1994. The Joint Pipeline Office is addressing these problems. For example, it has strengthened JPO's regulatory staff, and JPO is in the process of reorganizing its monitoring program to address prior limitations. These developments are encouraging signs that the regulatory program is continuing to improve.

Earlier Regulatory Problems Demonstrated a Need for a More Coordinated Approach

In a 1991 review of TAPS oversight,¹³ we concluded that the existing form of oversight did not provide for effective monitoring of TAPS' operations. The five principal federal and state regulatory agencies did not have a systematic, disciplined, and coordinated approach for regulating TAPS.¹⁴ In fact, BLM officials told us they were not regulators. Instead, they largely relied on Alyeska to police itself.

We also found that the Exxon Valdez oil spill and the discovery of corrosion in the pipeline in 1989 had been an impetus for the regulators to reevaluate their roles. This reexamination led to a 1990 decision to develop JPO. We concluded that the establishment of JPO was a positive step toward better regulation.

During the next several years, the regulatory agencies gradually increased their participation in JPO. When we issued our 1991 report, 6 of the 12 agencies with significant jurisdiction over TAPS' operations had agreed to participate in JPO. By 1994, 11 of the 12 agencies had signed an agreement to support JPO and to work cooperatively to protect public safety, the environment, and the integrity of TAPS.¹⁵ Similarly, they increased the staffing committed to JPO from a skeletal staff to 57 employees by 1993.

¹³Trans-Alaska Pipeline: Regulators Have Not Ensured That Government Requirements Are Being Met (GAO/RCED-91-89, July 19, 1991).

¹⁴BLM, EPA, the Department of Transportation's Office of Pipeline Safety, and the Alaska Departments of Natural Resources and Environmental Conservation.

¹⁵The U.S. Fish and Wildlife Service declined to sign the agreement, stating that it was unable to make a significant new commitment of time and resources to JPO.

QTC Audit, Other Studies Showed Increased Oversight Had Not Been Sufficient

Hearings held in July 1993 by the Subcommittee on Oversight and Investigations, House Committee on Energy and Commerce, provided indications to BLM that JPO's efforts to regulate TAPS to date were not adequate and that further action was needed to improve JPO's regulatory oversight of TAPS. In response to these hearings, the Director of BLM clarified BLM's authority in relation to the other TAPS regulators. He testified that BLM not only would exercise its authority over federal lands but, as lead agency of JPO, would invoke its authority consistent with the TAPS Authorization Act to carry out thorough pipeline oversight.

One of BLM's first actions was to contract with QTC. The 1993 QTC report provided a stark picture demonstrating that Alyeska and its regulators still had a considerable distance to go in ensuring the integrity of the pipeline's operations. Although the QTC report did not directly address how effectively regulators were doing their jobs, QTC's findings demonstrated that JPO's efforts to date had not been sufficient to identify major problems and ensure their correction.

In response, JPO, in early 1994, selected Booz-Allen & Hamilton, an independent consulting firm, to assess its monitoring and inspection program. In its June 1994 final report on a comprehensive monitoring program for JPO, Booz-Allen concluded that JPO was not effectively addressing the prevention of pipeline hazards. The report stated that closely monitoring Alyeska's maintenance, quality assurance, and configuration management¹⁶ could have precluded most of the findings in QTC's audit.

Booz-Allen concluded that for JPO to be successful in meeting its responsibility for TAPS oversight, it needed a new model for monitoring TAPS. This model would place more emphasis on identifying potential hazards and addressing them rather than waiting to detect and mitigate hazards that had already occurred. (In placing greater emphasis on prevention, however, regulatory activities would still address the monitoring of compliance and emergency response.) Booz-Allen found that JPO needed to make several changes to shift to such a model:

- Monitoring risk management in nine major TAPS' process areas—quality assurance, safety, configuration management, operations, maintenance, risk determination, environmental protection, project design, and project

¹⁶Configuration management is the process for assuring agreement between the design requirements for hardware, the hardware in place, and the documentation for the hardware.

performance. JPO officials said that in the past, they had focused only on the latter three areas.

- Performing the monitoring work in a multidisciplinary team organized under a single director.
- Collecting far more information than in the past, structuring it for management decision-making and action, and making it available for outside audits, interests, and inquiries.

JPO Has Taken Additional Steps to Improve Oversight

Our most recent work indicates that JPO is making an effort to improve its oversight. Since our earlier work, JPO has changed and now recognizes its regulatory function. In addition, JPO has

- expanded its staff, supplemented by contractors, to handle oversight responsibilities;
- established a project group to monitor Alyeska's response to the QTC findings; and
- begun to reorganize and carry out other steps needed to implement the Booz-Allen model for comprehensive monitoring.

Funding and Staffing Have Increased

Funding levels for JPO's operations increased from about \$3.5 million in 1993 to more than \$5 million for fiscal year 1995.¹⁷ Under the agreements authorizing the pipeline, Alyeska is obligated to pay BLM's costs for oversight activities related to TAPS. In 1995, BLM estimates its portion of these costs will be \$3.5 million. (Although JPO's operations are primarily focused on TAPS, it does monitor other pipelines in Alaska and conduct other related activities, such as reviewing and issuing permits for pipelines being considered for construction.) In addition, from February 1994 through March 1995, Alyeska paid \$9.2 million for TAPS-related activities by JPO consultants and other associated contract costs; by June 1995, Alyeska's payments for these costs will reach \$12 million.

In addition, Alyeska agreed in September 1990 to pay a portion of ADNR's costs for monitoring TAPS. In 1995, Alyeska will contribute up to \$800,000 of the expected \$1 million for monitoring TAPS. JPO officials advised us that the state provides a ceiling on how much ADNR can spend, provided it raises the money through agreements, such as the agreement it has with Alyeska. Other sources of funds come from other agreements. For

¹⁷JPO officials stated that this amount does not include funding supplied by EPA, the Office of Pipeline Safety, and the Alaska Department of Environmental Conservation for the staff at JPO. These agencies' costs are not included in the costs reported to us by JPO. Also, the federal fiscal year ends on September 30 and the state fiscal year ends on June 30.

example, ADNRC also receives money from rents on rights-of-way from owners of common carrier pipelines and sales of gravel from the rights-of-way. It expects to raise \$335,000 in rents and \$100,000 from gravel sales in 1995. ADNRC's authorized ceiling for 1995 is \$1.7 million, but it will raise only about \$1.3 million through its various agreements. Thus, its budgeted spending for JPO activities in 1995 will be about \$1.3 million.

Under these increased funding levels, overall staffing at JPO has grown from 57 positions in 1993 to 84 positions as of April 1995. Although JPO officials told us the staffing level was not adequate, the additional support it needs is being provided by contractors, such as Stone and Webster Engineering Corporation, an independent engineering consultant firm. JPO officials said that since Alyeska has not established all of its programs, such as maintenance, JPO did not know if its noncontractor staffing level was sufficient to address its regulatory responsibilities in the future. JPO will assign five Stone and Webster employees to its Operations Branch for audit item resolution through December 1995.

JPO's Special Monitoring of Deficiency Items Is Taking Place

Consistent with its more active monitoring role, JPO in 1994 established a project group to oversee Alyeska's correction of action items. These staff members perform such functions as approving priorities for action items, coordinating the review effort, reviewing special studies, and approving corrective action plans. To supplement this staff, JPO is working with Stone & Webster. JPO used about 45 Stone & Webster staff for such tasks as reviewing corrective action plans, verifying corrective action on-the-ground, maintaining a computer data base for tracking audit action items, and performing special investigations. JPO has also hired another engineering consultant to monitor how Alyeska closes the electrical deficiencies in the ANSC project. While the former staff of the project group still spends the majority of their time on audit items, JPO has integrated them into its new organization described below.

JPO Is Reorganizing to Implement New Comprehensive Monitoring Program

Shortly after receiving Booz-Allen's recommendations for a new monitoring model for TAPS, JPO began to reorganize to put the model into effect. The Booz-Allen study called for establishing a centralized monitoring office with four oversight groups: quality assurance, pipeline surveillance, engineering and projects, and right-of-way administration. Each of the four groups is in the process of developing detailed monitoring programs that are based on the consultant's recommendations. Table 4.1 shows each office's size, primary role, and activities to date.

**Chapter 4
TAPS' Regulators Have Taken Steps to
Improve Oversight**

Table 4.1: Organization and Activities of JPO's Operations Branch

Group	Number of positions	Primary role	Main activities to date
Pipeline Surveillance	8	Provide primary oversight of pipeline; ensure environmental protection	Initial emphasis includes assessments of TAPS' operations and maintenance, surveillance of projects, support of JPO's oil spill contingency efforts, and permitting for Alaska's Department of Fish and Game
Right-of-Way	10	Manage and administer documents, leases, authorizations, and permits that apply to federal and state rights-of-way	Work plans for 1995-96 show the top priority is issuing authorizations for pipeline work consistent with the grant/lease and federal/state laws and regulations
Engineering	6	Ensure that design, construction, operation, and other activities adhere to quality program's requirements and minimize risks	Identified 19 activities for monitoring, including shut-down events and maintenance procedures and manuals; review corrective action plans on the 4,920 identified deficiencies
Quality Assurance	6	Ensure that quality assurance programs and practices are effectively planned and executed	Developed a work plan for 1995 (includes reviews of Alyeska's quality, records management, and training programs)

Because much of this effort is still far from complete, it is too early to determine whether it will be successful. However, JPO is currently conducting assessments and surveillance activities under the Comprehensive Monitoring Program (CMP). Significant program reviews, which aggregate observations from JPO's assessments and surveillance and factor in input from employees' concerns, audit items' progress, and Alyeska's own quality reviews, will be completed through 1996; the initial emphasis will be on quality, operations, and maintenance. Configuration management and safety, two additional CMP focus areas, are currently undergoing review by JPO; reports are due by the end of 1995. JPO expects program reviews of significant depth to be completed under CMP by the end of 1996.

Besides the 31 positions in the operations branch, JPO has 29 other staff positions that are primarily involved in monitoring other activities, such as other pipelines, but who also assist in monitoring TAPS.¹⁸ Of these, 26 are with the Alaska Department of Environmental Conservation, 1 is with

¹⁸The remaining 24 staff are in administration, management, and special projects.

DOT's Office of Pipeline Safety, and 1 is with EPA. These three agencies, while locating their staff at JPO, have elected to retain final responsibility for carrying out their regulatory functions. The one remaining agency is the Alaska Office of Management and Budget, Division of Governmental Coordination, which coordinates coastal consistency reviews; it has one staff member at JPO.

Conclusions

Like Alyeska, JPO is in the process of changing its approach to ensuring the safe operation of TAPS. At this point, it is difficult to provide an assessment of how successful JPO has been. Taken together, however, the efforts set in motion over the past 2 years demonstrate that JPO is making a concerted effort to improve.

JPO's ultimate success, like Alyeska's, depends partly on ensuring that its changes are fundamental enough not only to resolve existing problems with TAPS, but also to keep them from recurring. In the following chapter, we address the challenges that JPO and Alyeska face in this area.

Resolving Past Problems Requires Addressing Underlying Causes and Staying the Course to Improvement

Audits and studies of TAPS have pointed to a common underlying cause for past problems: Both Alyeska and JPO had an operating philosophy based heavily on reacting to problems rather than on ensuring quality and minimizing the chance that problems would occur. The QTC study called Alyeska management's mindset "the greatest non-hardware-related imminent threat" to the pipeline, and the Booz-Allen study found that JPO needed to substantially transform its mindset in connection with oversight. Without fundamentally changing the approach to quality and prevention, which is the key to correcting past problems, JPO cannot ensure that problems will not happen again. Alyeska and JPO have developed policies that reflect this change, and both organizations have taken steps to incorporate these changes into their day-to-day work. For Alyeska, the success of this effort may depend on its ability to establish a new mindset throughout the entire organization. For JPO, the main challenge may be maintaining a stable resource base—funding and staff—over the long term for its redefined operations.

Alyeska and JPO are partway through an ambitious attempt to resolve problems with the operation and oversight of TAPS. Their progress shows reason for cautious optimism on the basis of the substantial amount of work completed. However, tackling some tasks is proving to be more complex, time-consuming, and difficult than initially expected, and the real key to improved operation will be the implementation of many of these actions over the long term.

Alyeska Is Taking Actions to Improve Operations

QTC took issue with Alyeska's approach to support TAPS' operations both at mid- and upper-management levels. Mid-level managers, QTC said, failed to recognize regulatory requirements, did not develop procedures on how to implement those requirements, and did not provide the equipment, resources, and trained personnel required to carry out procedures. Upper management, QTC said,

"not only failed to prevent or correct these mid-level management failures, but also has failed even to recognize the need to do so. Upper management has demonstrated a tolerance for negative practices, such as harassment and intimidation of quality control inspectors and others, and has failed to take affirmative actions needed to establish the integrity of the operation."

Alyeska does not dispute QTC's characterization of past practices by some managers and supervisors. In an April 1994 briefing describing the organizational problems outlined in the QTC report, Alyeska's human

resources department concluded that the company's culture was typified by emphasizing oil transportation above all else. In addition, Alyeska was hiding problems and taking a "shoot-the-messenger" approach when problems were surfaced. It also maintained adversarial relations with regulators, pipeline owners, and contractors. Alyeska is taking steps to change the company mindset, but the changes will take some time to complete and will be difficult to implement.

**Changes in Owner
Companies' Approaches to
Establishing Alyeska's
Accountability**

Part of the change in mindset has come as a result of actions taken by Alyeska's seven owner companies. In the past, according to owner company executives with whom we spoke, Alyeska's accountability was somewhat blurred by the working relationship between Alyeska and the owner companies. The Owners Committee, which oversaw Alyeska's operations through quarterly meetings, was supplemented with 11 subcommittees covering such matters as law, budget, audit, accounting, and tax. These subcommittees were often heavily involved in management decisions. As a result, the executives said, Alyeska's accountability may have become less clear.

Beginning in the fourth quarter of 1993, Alyeska and the owner companies took action to clarify expectations. An expectations manual was created, specifying which areas were Alyeska's autonomous responsibility, which authorities require owner notification but are delegated to Alyeska, and which areas the owner companies reserved for themselves. With the exception of the audit subcommittee, the subcommittee structure was dissolved and replaced by an approach in which joint task forces were created to deal with specific issues as they developed. The owners created a performance management contract that specified the actions and standards to which Alyeska management would be held. Among other things, this contract calls for completing action on at least 85 percent of the action items in the ACT data base by the end of 1995. According to three owner company presidents representing the Owners Committee, the committee reviews progress on the contract each quarter and supplements this review with monthly meetings with Alyeska management.

**Changes in Alyeska's
Operating Policies and
Attitudes**

Alyeska's top management has a new policy for corporate behavior that encourages an open and more quality-oriented approach to operations. For example, on October 17, 1994, Alyeska's president wrote a memorandum to all staff that reemphasized the objectives of the new policy. Alyeska revised and supplemented its \$2.5 million baseline training

program to support the transition to its new organizational culture. It spent an additional \$2.6 million in 1994, and plans to spend an additional \$2 million in both 1995 and 1996 for additional training. Alyeska has developed and administered training aimed at eliminating actions that employees perceived as intimidating or preventing them from expressing their concerns. Alyeska provided training to discourage intimidation and encourage open communication to about 85 percent of its employees. It also provided training, which is aimed in part at assessing and improving the extent to which supervisors promote teamwork and treat employees' concerns fairly, to about 90 percent of those supervising three or more people. Efforts are also under way to improve and enhance an employee concerns program by making it more accessible, more reliable, and more trusted by employees.

According to Alyeska officials, these and other actions are intended to build a new culture in which employees feel safe in taking appropriate action, inflexibility or inaction is not accepted, and people take pride in their work. In addition, Alyeska has surveyed employees to measure their attitudes and degree of satisfaction and plans to conduct other follow-on surveys. A survey conducted in March and April 1994 by an outside consulting firm covering 1,225 employees disclosed that the majority of the Alyeska employees responding felt that they are encouraged to report bad news as well as good news. However, 25 percent believed that bad news would not be received positively and that retribution or no corrective action was likely. Another survey, conducted in June 1994 for Alyeska by a contractor, indicated that some of the 200 contract employees surveyed feared they would be fired if they identified problems. The results of these surveys suggest that a complete changeover in Alyeska's culture and employees' attitudes may take additional time and effort.

Greater Stability and Accountability in Management Positions

Another way in which Alyeska is attempting to change its mindset is to create more stability—and therefore more accountability—in the ranks of upper management. Alyeska's upper-level management positions have traditionally been filled by managers loaned from the owner companies for short periods—usually 2 years. This situation has contributed to frequent turnover in senior positions and an emphasis on short-term production goals, according to JPO officials. Alyeska's owner companies have made several commitments to change the loaned-executive policy in the past year. First, they adopted a policy of reducing the number of loaned executives by 50 percent from 1993 levels by the end of 1997. Second, they

called for filling positions with the best qualified person whether the person was employed by an owner company, Alyeska itself, or an outside source. Third, in those cases in which positions were to be filled by loaned executives, they called for lengthening the time of the assignment to at least 3 years.

Development of New Quality and Maintenance Programs

At the level of day-to-day operations, the changes are reflected by the new quality and maintenance programs. Alyeska's senior management believes that these new systems can provide processes and procedures that will outlive management turnover and bring more long-term stability and accountability. As we discussed in chapter 3, Alyeska's efforts to implement these systems, if carried through to completion, do appear substantive enough to bring about significant improvement.

Recent Events Show Changing the Mindset Will Be a Gradual Process

These actions notwithstanding, it will take some time to change Alyeska's culture. For example, in the summer of 1994 there were at least three instances when Alyeska supervisors or managers tried to hide problems or punish employees for reporting "bad news." However, in each case, when Alyeska's top management was made aware of the incident, it took action to resolve the problem identified by the employee and, where appropriate, followed up with counseling and/or disciplinary action for the supervisor.

JPO Is Changing Its Role

As discussed in chapter 4, past studies have pointed to the need for JPO to change its regulatory role substantially. JPO is attempting to change its philosophy, organization, and monitoring techniques. Its goal is to be a more sophisticated and technically trained regulatory/compliance organization capable of independently reviewing and analyzing TAPS' plans, design, and systems. JPO's operating philosophy is intended to be one of quality management, which emphasizes preventing rather than reacting to problems through closer study and knowledge of TAPS' systems and processes.

Conclusions

As discussed throughout the report, as we completed our work, Alyeska and JPO were still in the process of taking action to correct deficiencies and improve performance. We remain encouraged by the level of effort expended so far by Alyeska and JPO to remove the underlying causes of problems with the operation and oversight of TAPS. If the actions under way are completed and fully implemented, we believe they will provide a

basis not only for fixing TAPS' current problems, but also for helping to ensure that they will not recur. However, because much work remains to be accomplished, the full effectiveness of Alyeska's and JPO's actions cannot be assessed in the short term and will be largely dependent on the following:

- Resolving the 4,920 action items in the ACT data base. Progress reports generated from the ACT data base provide JPO with updated information on Alyeska's progress. In turn, JPO has summarized Alyeska's progress in its annual report. These annual reports are required to be provided to congressional oversight committees. Information from the ACT data base and the annual report can provide those responsible for overseeing TAPS with the data needed to assess what progress is being made.
- Alyeska's following through on its commitment to implement quality and maintenance programs. Alyeska has the primary responsibility for ensuring that the pipeline operates in a safe, environmentally responsible manner. The actions planned by Alyeska to improve its quality and maintenance programs, if implemented, will help ensure that this improvement occurs. The key to this effort is for Alyeska to create and sustain a commitment to quality throughout its organization.
- Long-term support for JPO's oversight responsibilities. Strong, effective oversight of TAPS by JPO is critical for verifying that Alyeska and the owners fulfill their responsibility to resolve all TAPS' deficiencies as quickly and effectively as possible and, more importantly, for assuring the public over the long term that Alyeska operates the pipeline in a manner that meets the right-of-way requirements for a safe, environmentally responsible operation. JPO's ability to provide effective regulatory oversight will depend on having adequate funds and staff. The funding from Alyeska provides nearly the total foundation for JPO's effectiveness. As for JPO's staffing, BLM provides almost 45 percent of the staff positions; nearly all of the remainder comes from the state. Over the long term, as pipeline throughput decreases, Alyeska is likely to experience increasing pressure to reduce its costs, and BLM officials told us that downsizing at Interior eventually may put pressure on JPO's staffing levels as well. The impact of these pressures on JPO's budget and staff can affect JPO's ability to be an effective regulator.

Special Studies

Study number	Title
A1	Outdoor Cable Tray Study (VMT) ^a
A2	Conduit Supports (VMT)
A3	Operations Control Center Upgrade (VMT)
A4	Power House Cable Trays (VMT)
A5	Cable Tray in Pump Station Control Room (PS) ^b
A6	Weeping (Rockbestos) Cables
A7	Fire Water Pump House (VMT Berths 1 & 3) and PDC ^c -7 (VMT)
A8	Grounding, Phase I and Phase II (VMT)
A9	PDC-14 Work Space Clearance (VMT)
A10	Scanner System Study (Transferred to Control and Telecommunications Long Range Plan—SCADA ^d Study)
A11A	Motor Control Center Verification (PS)
A11B	Motor Control Center Verification (VMT)
A12	Communication and Control System Evaluation (Transferred to Long Range Plan SCADA Study)
A13	Seismic Study of Cable Tray System (Transferred to Specialized Seismic Study No. 3)
A14	Switching Procedure
A15	Heat Tracing at Berth #3 of VMT (Maintenance Issue—Transferred to APSC Operations)
A16	Control System Evaluation at Pump Stations (Transferred to Long Range Plan SCADA Study)
A17	Data Base Study for VMT (to help Operations only—study is completed)
A18	Power Distribution Center Underfloor and Water Seal
A19	Grounding at Pump Stations
A20	Turbine Room—High Temperature PS 1 Through 12

^aVMT—Valdez Marine Terminal.

^bPS—Pump Station.

^cPDC—Power Distribution Center.

^dSCADA—Supervisory Control And Data Acquisition.

Special Studies on Grounding, Inspection of Control Centers, and Power Switching Systems

Relying on the expertise of our staff electrical engineer, we reviewed three of the special engineering studies—grounding, inspection of motor control centers, and power switching systems—their conclusions, and their recommendations to determine whether the studies accurately assessed the problems and whether the recommended actions will address the problems. We selected these studies because they covered (1) large numbers of specific problems and (2) areas identified by various inspectors and whistleblowers. The studies covered the electrical grounding of the terminal's power distribution system, studies by nationally recognized testing laboratories on the components in various control centers, and the system for switching power on or off at various facilities.

Grounding

The grounding system protects workers from electric shock hazards in case of electrical malfunctions. The study assessed whether the system's design was adequate and whether the system was maintained to meet design requirements. Alyeska's principal electrical contractor, Fluor Daniel, relied on previous studies as well as its own review of the grounding system. Its study included visual inspections of the system as well as measurements of current flow to ensure the integrity of ground paths. We reviewed Fluor Daniel's methodology and its study. We also visually inspected parts of the system, reviewed various electrical requirements, and discussed the system with the electrical contractor's lead engineers and with other electrical experts.

Fluor concluded that the original design and construction of the terminal grounding system was good and provided adequate safety against electric shock that might be caused by fault conditions in the power distribution system. Fluor Daniel concluded that the condition of the electrical distribution system, including the grounding system, had degraded since original construction was completed in 1977. One comment in another study, which Fluor used in its evaluation, is particularly relevant. It said that additional maintenance will be required as the electrical system ages to ensure a continued level of performance. Alyeska, however, does not have a maintenance or operating philosophy to address the aging electrical power distribution system. In response to the condition of the grounding system and the lack of a maintenance program to maintain the system, the Fluor study recommended that the condition of the grounding system be restored to a safe and effective condition and that a maintenance program be designed to ensure the system's effectiveness.

The study also recommended that several additional assessments be completed. Alyeska completed these assessments and is performing repairs as part of the ANSC project to return the grounding system to its approved design. The engineering design needed to upgrade the terminal's grounding system is completed, and construction, now in progress, is scheduled to be completed by August 1, 1995. Fluor Daniel's assessment appears to reasonably characterize the condition of the terminal's grounding system and the steps Alyeska is taking to respond to the problems identified. Alyeska maintenance officials also told us they are revising their maintenance program to ensure that the grounding system's integrity is maintained. They said the preventive maintenance procedures that will cover the grounding system are scheduled to be issued in the second quarter of 1995.

Inspection of Motor Control Centers

While the electrical installation was inspected by electrical inspectors using AKOSH criteria as a standard, the control devices that supply power have also been inspected by two nationally recognized testing laboratories—one for the terminal and one for the pipeline. Alyeska used testing laboratories because few of these units had nationally recognized testing laboratory certifications. The two laboratories inspected the units, put labels on those that met requirements, and identified corrective actions needed on others. After the corrective actions are taken, the laboratories will reinspect to ensure that corrective actions were appropriately taken. The study's approach appears reasonable for identifying the electrical deficiencies in these facilities. Once repairs are made and labels have been placed by the testing laboratories, the deficiencies will be corrected. The engineering design needed to correct areas that could not be labeled after the initial inspection is completed. The construction required by the design is now under way and targeted for completion on July 31, 1995, at the pump stations and at the terminal.

Power Switching Systems

This study reviewed the processes at the terminal for turning off or on, power to equipment that is in a building remote from the building where the on/off switch is located. The study reviewed electrical code requirements and existing conditions and developed procedures for bringing power switching procedures in line with code requirements. These procedures provide for notices that power switching is at a remote location and for plaques to be located (1) near the equipment showing where the power can be switched off and (2) near the switch to show the location of the equipment being controlled. We also reviewed code

Appendix II
Special Studies on Grounding, Inspection of
Control Centers, and Power Switching
Systems

requirements, observed field equipment with power switching at remote locations, and reviewed proposed fixes. The planned corrective actions, if properly implemented, should bring the switching procedures into compliance with electrical code requirements. At the time of our review, the placards were being purchased and maintenance procedures were being written.

Comments From the Alyeska Pipeline Service Company

Alyeska pipeline
SERVICE COMPANY

1835 SOUTH BRAGAW STREET ANCHORAGE, ALASKA 99512 TELEPHONE (907) 278-1611, FAX 285-8611, TELEX 265-8439

June 1, 1995

Letter No: 95-2976-G

Mr. Charles Bowsher
Comptroller General
United States
General Accounting Office
Washington, D.C. 20548

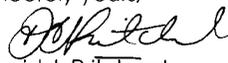
Dear Mr. Bowsher:

The GAO report is an objective professional assessment of the work by the TAPS Owners, Alyeska Pipeline Service Company and the Joint Pipeline Office to respond to recent government, internal and Owner audits and to create tools that will be used to prevent future problems by improving operations, maintenance and quality systems. Operating statistics for 1994 and 1995 confirm that while necessary changes are being made, the pipeline continues to operate with an exceptional and continuously improving performance record.

The TAPS Owners' and Alyeska will fulfill our commitment to Congress and the public to resolve all deficiencies in TAPS and to transport oil across Alaska safely, reliably, in compliance with all applicable laws and regulations and without harming the environment. We will achieve these goals cost effectively in a manner that contributes to a long operating life for the pipeline system. We are pleased that the GAO recognized our long history of operating TAPS without a major spill. It is a record we are proud of and intend to achieve over the life of the system.

We also appreciate the GAO's recognition of the progress we have made responding to the audits and the propriety of the direction we have set.

Sincerely yours,


David J. Pritchard
President and CEO
Alyeska Pipeline Service Company


Bob Malone
Chairman
TAPS Owners Committee

cc. Mr. John Anderson, Associate Director, GAO
Mr. James Duffus III, Director, Natural Resources Management Issues,
GAO

Major Contributors to This Report

Resources,
Community, and
Economic
Development
Division, Washington,
D.C.

Emi Nakamura
Duane G. Fitzgerald
Robert E. Cronin

Office of the General
Counsel

Stanley G. Feinstein

Seattle Regional
Office

Sterling Leibenguth
William Hanson
Hugo W. Wolter
Stanley G. Stenersen

Ordering Information

The first copy of each GAO report and testimony is free. Additional copies are \$2 each. Orders should be sent to the following address, accompanied by a check or money order made out to the Superintendent of Documents, when necessary. Orders for 100 or more copies to be mailed to a single address are discounted 25 percent.

Orders by mail:

U.S. General Accounting Office
P.O. Box 6015
Gaithersburg, MD 20884-6015

or visit:

Room 1100
700 4th St. NW (corner of 4th and G Sts. NW)
U.S. General Accounting Office
Washington, DC

Orders may also be placed by calling (202) 512-6000 or by using fax number (301) 258-4066, or TDD (301) 413-0006.

Each day, GAO issues a list of newly available reports and testimony. To receive facsimile copies of the daily list or any list from the past 30 days, please call (301) 258-4097 using a touchtone phone. A recorded menu will provide information on how to obtain these lists.

**United States
General Accounting Office
Washington, D.C. 20548-0001**

**Bulk Mail
Postage & Fees Paid
GAO
Permit No. G100**

**Official Business
Penalty for Private Use \$300**

Address Correction Requested



