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Project:

Assessment of Fire Protection Assets at VMT

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Final B

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1.0 INTRODUCTION

Haines Fire & Risk Consulting (HFRC) was contracted to conduct a fire protection assessment for the Prince William Sound Regional Citizens' Advisory Council (PWSRCAC) in accordance with their Request for Proposal entitled, "*Fire Protection Assets at VMT (No. 554.12.01)*".

The purpose of this assessment is to verify the ability of the fire protection assets at the Valdez Marine Terminal (VMT) to control and extinguish fires to prevent and/or minimize pollution of the Prince William Sound. The fire protection assets at the VMT include fixed fire detection and suppression systems, a fire brigade operated by the Alyeska Pipeline Service Company (Alyeska) and the City of Valdez Fire Department (VFD).

The scope of this assessment was limited to onsite emergencies at the VMT and encompassed all operations between the inlets of the metering stations and the outboard flange of the ship loading arms.

The principal engineer and manager of this assessment was Stephen W. Haines, P.E.

2.0 EXECUTIVE SUMMARY

The VMT and VFD are reasonably well equipped to address fires that may pose a risk to the Prince William Sound. However, there are some underlying fundamental issues that may hinder these organizations should they need to work together on the fire ground:

- There appears to be no mutual agreement, written or understood, that truly defines or provides guidance as to how these organizations will work together on the fire ground.
- There is effectively no cross training between these organizations. This is especially true in regards to those VFD volunteers that are not employed at the VMT.

These issues appear to be a source of some visible animosity between the two organizations and should be addressed through the cooperative development of a suitable mutual aid agreement and training program. Improving the training of the VFD will not only require a suitable training program, but also a means of providing local, hands on training in flammable liquids firefighting. This is a complicated issue that will probably require all of the interested parties, including the PWSRCAC, to advocate for the needed permitting and funding.

Most of the other observations and recommendations included in this report are maintenance oriented or involve incremental improvements to the capabilities of both organizations. These include:

- Alyeska should review the need for secondary water supplies (fixed, semi-fixed or improvised) to Berths 4 and 5.
- Alyeska should verify that its processes/procedures provide unplanned fire protection system impairments the same level of attention, notification and tracking as planned impairments.
- Alyeska should consult with Insituform to see how the previously installed replacement rings have performed in similar applications.
- Alyeska should evaluate its older pumpers to verify that they remain dependable and functional from the perspective of system/component technologies.

- Alyeska should evaluate whether additional protection is needed for the power and control cables serving the elevated monitors on Berths 4 and 5.
- The City of Valdez should reestablish hazardous material technician training within the VFD if it is to continue providing this level of service.
- The City of Valdez should establish a foam concentrate testing program to assure that the foam stocks of the VFD remain suitable for use.

3.0 APPROACH TO ASSESSMENT

3.1 Initial Visit

HFRC visited Valdez, Alaska on July 17 - 19, 2012. During this time HFRC completed the following:

- July 17, 2012 - An informal kickoff meeting was held with available PWSRCAC personnel to solicit their input on concerns and observations related to the relationships between and operations of the Valdez Fire Department (VFD) and Alyeska. HFRC then made its initial visit to the VMT to attend a kickoff meeting with their stakeholders, review assembled documentation and complete a survey of the facility's fixed fire protection assets. HFRC primarily met with:
    - Sean Wisner, Alyeska Fire Chief / Health and Safety Specialist
    - Barry Roberts, Alyeska Liaison to PWSRCAC
- July 18, 2012 - Kick off meeting with Captain Mike Weber of the Valdez Fire Department (VFD) to review assembled documentation and complete a tour of Station 1 (Headquarters) and foam stocks at the airport. A visit to Station 3 (Robe River Subdivision), closest station to the VMT, had to be delayed as Captain Weber was tied up with an emergency in the afternoon. A brief discussion was also held with George Keeney, VFD Fire Chief during HFRC's visit to Station 1.
- July 19, 2012 - Second visit to the VMT to complete documentation review, interview emergency response employees and to survey the facilities portable and mobile firefighting assets. In addition to Chief Wisner and Mr. Roberts, HFRC met with Peter Bellino, Alyeska Fire Systems Engineer.

  Chief Keeney met with HFRC and provided tours of VFD Stations 3 and 4.

3.2 Follow Up and Report Preparation

Immediately following the visit to Valdez, HFRC issued an interim report documenting its progress and additional documentation information needs. A summary of the documentation requested and the status of each request follows:

- Alyeska was asked to provide the following information and documentation:
    - Procedures describing the reporting process used when fire protection systems are incidentally found to be non-functional.

      Note: It was noted during the visit that Alyeska appeared to have a sound system of notification, tracking and recording for planned maintenance and repair events involving the impairment of fire protections systems. However, HFRC is uncertain how this occurs when an unexpected impairment is found.

Status: A copy of the West Metering Operator Duties, OMS-4.61, was provided to demonstrate some of the terminal's reporting procedures.

- Manufacturer reports/data on performance of Insituform liner rings in similar service.

  Status: No further information provided.

- Risk assessments or other review documentation related to the permanent disconnection of the fire suppression systems on Berths 4 and 5 from the terminal's main fire water system. In addition, copies of the approval from the State of Alaska Fire Marshal's Office or United States Coast Guard were also requested.

  Status: Copies of correspondence between VMT and the State Fire Marshal's Office were provided along with their internal risk reviews.

- A status report on the Berth 4 upgrades and documentation on restoration of the protective covers on cable trays to elevated monitors. In addition, documentation was requested about the protection and potential for fire exposure for the cables located near the berth's containment curb.

  Status: No further information provided.

- Clarification on policies for Alyeska employee participation at fires attended as a VFD member onsite and at offsite mutual aid responses.

  Status: No further information provided. However, a copy of the Terminal Fire Brigade's Organizational Statement, O-7.01.02 was provided during the closeout meeting with VMT staff.

- Data on the average longevity of terminal employees in general would be helpful in assessing the success of the brigade in retaining members.

  Status: No further information provided. However, a verbal report on a tentative review of the site's statistics was provided during the closeout meeting with Alyeska staff.

- The Valdez Fire Department was asked to provide the following information and documentation:
  - Statistics on longevity of career and volunteer members.

    Status: No further information provided. However, the VFD fire chief provided some speculation on these figures during HFRC's visit.

  - Foam solution flow ratings of the foam systems on VFD Engines 2 and 4 (Do they match pump capacity?)

    Status: No further information provided.

All of the documentation requests outlined above are now considered closed with any remaining uncertainties addressed under Sections 4, *Observations* or Section 5, *Recommendations*.

4.0 OBSERVATIONS

4.1 Valdez Marine Terminal

HFRC found Alyeska's at the VMT and the corporate representatives of Alyeska to be very cooperative throughout the site visit. Overall HFRC was impressed with the level of fire protection provided at the terminal, its fire response resources and the condition of its fire protection infrastructure. Items of particular note included:

- The manipulation of fire suppression system valves and fire water divisional valves is controlled through a car seal inspection program and terminal car seal procedures. This includes quarterly car seal audits. In additional all fire water divisional valves are physically operated and inspected to assure proper operation annually.
- Planned fire suppression system impairments, short and long term, are managed through the terminal's Safe Operating Committee (SOC) process. This process is similar to the Management of Change (MOC) procedures used in the process industry and is facilitated through written procedures and checklists. In addition:
    - A well defined notification procedure is in place for notifying terminal personnel and fire brigade members of planned fire protection system impairments. This procedure includes Operations Control Center (OCC) notifications, State Fire Marshal's Office notifications and radio announcements within the terminal.
    - The fire team uses a central board at VMT's on-site fire station to track fire system impairments that it is aware of.
- Inspection of the foam system spiders within the oil storage tanks continues, as evidenced by the need for the Fire Chief to participate in an internal inspection on the morning of July 18th. Verbal reports from VMT personnel indicate the spider flushing program has been successful in preventing sludge from accumulating within the spiders.
- All foam systems are inspected and tested for proportioning accuracy by a third party annually.
- Alyeska's onsite fire response resources, a full-time fire team and volunteer fire brigade, are well organized and manned. These resources are commensurate with those typically found at process facilities in the lower 48 and exceed those found at similar facilities elsewhere. This includes:
    - Personnel trained and certified to undertake advanced exterior firefighting and interior firefighting operations. This includes periodic training, a percentage of all members each year, at Texas A&M.

        Note: While Alyeska's training program is well defined some gaps in attendance and follow through were noted. These gaps may be of concern from a regulatory perspective, but probably have little effect on the overall capabilities of the VMT's fire response resources.
    - Typical manning levels of 10 - 13 Alyeska personnel on site at any given time with an additional 10 - 15 available on call back. These figures include both fire team and fire brigade members.
    - The average tenure of the terminal's fire response personnel was estimated at 7.6 years overall, 5.1 years for fire team members and 8.9 years for fire brigade members. This was based on a

roster review completed by the fire chief at the time of HFRC's visit. These tenure levels exceed the average for volunteer firefighters (4 years) as reported by the International Association of Fire Chiefs (IAFC) in their March, 2004 report titled, "*A Call for Action, The Blue Ribbon Report - Preserving and Improving the Future of the Volunteer Fire Service"*.

- Alyeska has clearly defined rules for engagement that establish its operational goals on the fire grounds and set limits on emergency responder exposure to hazardous environments where there is no life at risk.

  Note: These rules of engagement seem to be a major point of contention between the management of the VFD and Alyeska. This is likely due to the fact that very few municipal fire departments have such clearly defined rules of engagement and is magnified by the fact that when they do they are often loosely applied, whereas Alyeska management appears to follow theirs to the letter (more so than most industrial organizations).

- The emergency isolation and shutdown systems at the berths were close to state of the art. This is an important feature with respect to preventing (reducing release size), controlling and extinguishing fires that may directly threaten the sound.
- The terminal has developed a site specific design for fire hydrants to better address the climate, corrosion and operating pressures that were affecting the reliability of the general use hydrants it has previously used. These new hydrants are being installed as the existing hydrants require replacement or significant repairs.

  Note: This is a voluntary, non-code required upgrade. Given the number (redundancy) of fire hydrants at the VMT this phased in approach is considered acceptable.

There were several concerns identified, as well:

- The redundant water supplies to Berths 4 and 5 have been removed from service. While HFRC was initially concerned about the fundamentals of this decision it is clear that:
  - The redundant water supplies were not included in the original design of the terminal and were added in the 1980's to protect business continuity (all four berths were heavily utilized at the time). This is no longer a concern under the terminal's current throughput levels.
  - A formal risk assessment was completed with the State Fire Marshal's Office taking no exceptions to it.
  - The berths have some redundant fire suppression resources as the area is served by an unusually large number of fire equipped tug boats.

  Therefore, the decision seems to be fundamentally sound from the risk management and regulatory perspectives. However, removal of the redundant water supplies could limit the ability of the terminal's fire team/brigade to affect rescues, isolate secondary leaks and to mop-up (complete fire extinguishment) in the event of a major fire/explosion. The primary concern in this regard is that the dock fire pumps are about 100 ft from the base of the loading arms, which could make them susceptible to mechanical damage and/or electrical power loss during a major event. This is compounded by the fact that the nearest secondary water sources for the berths is limited to:
  - A water supply manifold located opposite of their pump houses and immediately adjacent to the dock operator's shelter.

  - A single fire hydrant at the base of Berth 4's approach. This hydrant is located along a narrow single lane roadway approximately 1,600 - 1,800 ft from the base of Berth 5's approach.

- It appears that the reporting of unplanned fire protection impairments is highly dependent upon the individual discovering the issue and that there are no set procedures to initiate the same notification and tracking systems used for planned impairments. The only reference HFRC has seen about the reporting unplanned impairments is a note in the duties of the West Metering Operator (OMS-4.61).
- The terminal's confidence in the replacement rings (Titanium) of the Insituform lining system of the fire mains is based solely on the lack of external evidence indicating that a failure is impending or has occurred. This is problematic in that a failure of a ring during a major fire could result in liner delamination and the obstruction of fire mains, fire suppression systems or firefighting appliances.

  Note: The initial failure was only discovered because a corroded ring collapsed and happened to fall across a valve seat, which prevented the valve from closing properly.

- The elevated monitors on Berths 4 and 5 may fail early in a fire because some of their power and control cables, which appear to have no integral fire rating:
  - Pass within close proximity to the containment curb at the base of the loading arms. As such, they may be subject to flame, convective heat and/or radiant heat damage in the event of a pool fire in the containment curb or nearby jet fire.
  - Face the loading arms as they travel up the tower in open cable trays (East Tower, Berth 4). As such, they may be subject to flame, convective heat and/or radiant heat damage in the event of a pool fire in the containment curb or nearby jet fire.

    Note: Berth 4 was undergoing repair and refurbishment at the time of HFRC's visit. It could not be determined if the tray covers had been missing prior to the project activities or had been removed to accommodate the project work.

- Two of the terminal's pumpers are in excess of 25 years old. At this age issues with technology obsolescence, mechanical and electrical system dependability, and spare parts availability often develop.

  Note: Obsolescence not only affects the suitability of the vehicle for service. It often leads to training difficulties because personnel must be trained simultaneously on both the modern and old equipment.

4.2 Valdez Fire Department

HFRC found the VFD to be very accommodating and was able to meet with Chief Keeney who had recently come off of a personal leave. Overall HFRC was impressed with the organization, manning and equipment of this fire department. While this fire department is equipped and trains as a traditional municipal fire and EMS department it should be able to offer considerable support to the VMT if needed. The department is well funded for a small, predominantly rural community with an operating budget of approx. $405 per capita[1]. Items of particular note include:

[1] Budget per capita based on a 2012 approved operating budget of $1,611,343 and a population of 3,976 (http://www.city-data.com/city/Valdez-Alaska.html). As compared to per capita fire department spending in Boston, MA of $492 and San Francisco, CA of $316 as reported by the Boston Globe in 2009 (http://www.boston.com/news/local/massachusetts/articles/2009/03/30/boston_spends_most_on_firefighters_in_us/). It is unknown if the Boston Globe figures include capital improvements.

- The majority of the department's members are certified to Firefighter I (or higher) and as hazmat operations level personnel (qualified to perform defensive operations at hazmat incidents).
- The department is developing a shipboard firefighting capability and has developed an equipment (portable pump with fixed monitors) storage and use agreement with a contract marine salvage company.
- The department is equipped with radios that are compatible with those of the VMT. Both organizations can operate on the Alaska Mobile Land Radio System (ALMR) and have several common talk-around channels (allowing direct radio to radio communication without a repeater).
- The average tenure of fire department personnel was roughly estimated (no documentation) at 8 - 9 years by Chief Keeney. This figure excludes Coast Guardsmen, who are typically stationed in Valdez for only a few years. This tenure level exceeds the average for volunteer firefighters (4 years) as reported by the International Association of Fire Chiefs (IAFC) in their March, 2004 report titled, "*A Call for Action, The Blue Ribbon Report - Preserving and Improving the Future of the Volunteer Fire Service"*. Chief Keeney cited changes to the state retirement plan as negatively affecting tenure over the past 5 - 6 years.
- The department's newest pumpers are equipped with industrial grade foam proportioning systems and 250 gallon foam concentrate tanks (3% concentrate). These trucks are equipped with 1-1/2, 2-1/2 and 5 in. foam outlets and 1,200 gpm foam-water monitors (self educting nozzles). The foam proportioning capacity of the proportioning systems has not been confirmed.
- The fire department maintains a 3,850 gallon cache of foam concentrate (in 275 gallon totes) at the airport where a forklift is generally available to load it onto trailers. This foam was donated to the fire department by Alyeska when it removed Berth 3 from service.

The primary concern from the perspective of responding to fires at the VMT (or responding to other releases that may affect the sound) is training. Based on discussions with the VFD and Alyeska:

- The VFD developed then housed a regional hazardous materials response team with technician level trained personnel up to a few years ago. As a result of state budget reductions the certifications of most, if not all of these technicians have been allowed to expire. The trailers and their associated equipment are still in service with the VFD.
- The VFD as an organization has not been to the VMT for site orientation, fire training or a drill in several years. The primary reason given for this is that the department cannot afford the cost of covering stations while personnel and apparatus are at the VMT (The VMT is 15 miles from downtown Valdez).
- There is no practical way of developing or maintaining the hydrocarbon firefighting skills of the department's members since the VMT took its flammable liquid training props out of service in response to environmental regulatory changes.
- The department is equipped to take offensive (hazmat technician) actions in response to hazardous materials releases, but is not maintaining the training levels needed to safely and legally perform them. This training is readily available through numerous governmental and private training entities.
- The VFD has sent 0 - 4 members per year to Alyeska's annual firefighting school at Texas A&M. When personnel do go they are typically from the paid staff. The primary reasons given for this were:

  - Budget constraints.
  - Very few volunteers are able/willing to take unpaid leave from work or use vacation time to attend these schools.

- It appears VFD members may not understand or appreciate Alyeska's regulated security procedures and personal protective equipment requirements at the VMT. This observation is based on descriptions of a recent VFD response to the VMT (to transport an injured worker who fell from a tank).

  Note: Even if Alyeska is partially responsible for not fully informing the VFD of its requirements, these issues would have arisen during training if it were occurring and hopefully been worked out prior to the incident. Neither the security nor PPE requirements have changed all that much in the past 3 - 5 years.

- The VFD's foam concentrate stocks at the airport are not properly labeled are not being tested on a regular basis to assure that they remain suitable for use.

4.3 Common

There is no formal mutual aid agreement, contract or Memorandum of Understanding (MOU) between Alyeska and the City of Valdez. A significant controversy seems to revolve around the terminal fire team/brigade's rules for engagement and how it applies to VFD firefighters who are also Alyeska Fire team/brigade members when (i.e. they are both VFD volunteers and also paid employees of Alyeska):

- The VFD responds to incidents at the VMT and undertakes interior structural firefighting or shipboard firefighting operations.
- Alyeska responds offsite to offer mutual aid assistance to the VFD.

This is causing considerable confusion and concern as the VFD is fully under the impression that these common members will be stripped from its ranks anytime they share the fire grounds with Alyeska. Yet Alyeska states that the decision as to who these common personnel would work under at a fire is at the discretion of the members themselves, except during their designated working hours.

Note: This affects 6 - 14 VFD volunteer members.

Some of this confusion is also linked to the differences in the insurance and financial benefits offered by both parties and how they interpret the Fair Labor Standards Act as it applies to volunteer firefighters in the State of Alaska

Another common issue is that there is some underlying animosity between the emergency response organizations of the VMT and City of Valdez. While HFRC does not know or understand the politics or personal issues behind this, one does not have to scratch far below the surface to see it and surmise how it is affecting the ability of the organizations to function together.

5.0 RECOMMENDATIONS

The following recommendations are offered for consideration to approve the ability of the VMT's emergency response resources (Alyeska and VFD) to effectively deal with fire that may pose a hazard to the Prince William Sound. Recommendations 12-001 and 12-002 should be considered the most important, as they form the basis for success in any joint emergency response effort by the VFD and Alyeska. The other recommendations have not been prioritized.

12-001 Common, Mutual Aid Contract or MOU: Alyeska and City of Valdez should consider the need for a mutually developed and agreed upon contract/agreement to better define how the VFD and Alyeska's Fire Team/Brigade will cooperate and function together off and on the terminal. This agreement should address, as a minimum:

- Rules of engagement for interior firefighting and other higher risk operations.
- Define how VFD members will be handled when Alyeska's Fire Team/Brigade and VFD are operating together.
- Incident command structures.
- Develop clear scopes and limits of operation for both organizations.
- PPE and security requirements/procedures for operations on the VMT.
- Financial restitution for expenses, particularly for expended firefighting supplies.

This agreement should address operations on and off the terminal.

Comments: The establishment of a mutual aid agreement is often a critical aspect of any corporate/municipal relationship for emergency response services as:

- The nuances of the Fair Labor Standard Act, insurance rules/regulations, etc... need to be figured out and incorporated into the agreement for the protection of the personnel who are members of both organizations.
- It smoothes out incident command issues. It is not enough to just state that a unified command structure will be used. This can still result in conflicts (off and on the fire grounds) as each organization brings different skill sets, experience and expertise to the table. Another common source of conflict is that one of the parties (most often the municipal fire department) may be legally obligated/recognized as being responsible for incident command.
- The legal protections against liability are vastly different between a municipal and corporate entity. As such, neither can expect the other to function exactly as they do. This is particularly important where Alyeska's Fire Team/Brigade may provide assistance to the VFD on a third party's property.
- There can be large differences in how occupational safety regulations are applied (and enforced!) to municipal and industrial entities that need to be accounted for.
- There are federal security requirements involved with responses to the VMT.
- There are cost recovery issues that need to be addressed. This is particularly important for responses involving VMT assistance on third party properties.
- The differences between the structures and manning of these organizations make it impossible to apply a "one size fits all" approach to training (e.g.., it is impractical to expect a

VFD volunteer to give up work or vacation time to attend training in TX).

A well thought out agreement that is mutually developed and agreed to, assuming all parties go into the process constructively, can significantly improve the probability of success on the fire grounds. While the establishment of an agreement may not alleviate all the visible animosity between these emergency response organizations, it should at least improve their ability to successfully operate together.

12-002 Common, VFD and Joint Training: The current training philosophies of the two emergency response organizations need to change in order to assure that each is ready and able to properly support the other in a time of need. More specifically:

- The organizations need to provide flammable liquids firefighting and VMT orientation training (initial and refresher) to the VFD's personnel in formats and times that are conducive to both its career and volunteer staff (emphasis on volunteer staff).
- The training should reflect the incident command structure and scopes/imitations on operation of each organization that are established in the mutual aid agreement of 12-001.
- The VFD needs to figure out how to staff at least orientation training visits (for non-VMT employees, as a minimum) to the site while maintaining coverage elsewhere.
- The ability to provide local, hands-on flammable liquids firefighting training needs to be researched and provided, if at all feasible.

Comments: This appears to be an area where both emergency response organizations have locked their horns and can't/won't consider changes or accommodations in their systems and are insisting that the other must comply with theirs. As a result, very little cross training is occurring. This is particularly true for those VFD volunteers who are not Alyeska Fire Team/Brigade members or employees.

It is clear that the VMT is a critical asset to the City of Valdez as it appears to generate a very large proportion of it tax revenues based on HFRC's estimates[2]. As such, it may be in the best interest of all the parties concerned, including the PWSRCAC, to advocate for a solution to these training issues. This solution should include a viable, local means of providing the VFD with a reasonable level of training in flammable liquids firefighting on a regular basis.

12-003 Alyeska, Secondary Water Supplies for Berths 4 and 5: Additional risk assessments, fire protection reviews and/or emergency response preplans should be completed to determine how secondary water supplies (fixed, semi-fixed or improvised) will be established to support rescue and firefighting operations if the on-dock fire pumps and fire water systems should be damaged at the onset of an incident.

Comments: Some type of secondary water supply (fixed, semi-fixed or improvised) should be considered to assure that rescue (as a minimum) can be affected under reasonably foreseeable fire conditions.

[2] All the following was collected from the City of Valdez website. It appears that a total of $37,800,000 in property tax revenues are generated from the site based on approx. $1.9 million in total assessed value (multiple owners) originating at the site and a reported millage rate of 20. This according to the approved 2012 budget this figure, if correct, would account for about 85% of the town's expected $44.2 million general fund revenues.

12-004 Alyeska, Impairment Management and Notification Procedures: The maintenance and inspection programs and safety system impairment procedures should be reviewed and modified to assure that unplanned fire protection system impairments are treated the same as planned impairments.

Comments: This recommendation applies to impairments discovered incidental to other operations or during system inspections and testing.

12-005 Alyeska, Insituform liner rings: Consider the need to back up the terminal's subjective opinion on how the titanium replacement rings are fairing with data from the manufacturer (Insituform).

Comments: HFRC does not believe the need for confirmation warrants the expense and risk of digging up or entering the piping to complete an internal inspection. However, these rings have been in service for a significant amount of time and were probably used elsewhere. As such, there is a good chance that the manufacturer can report on their experience with other similar applications.

12-006 Alyeska, Elevated Monitors on Berths 4 & 5: Evaluate the need to provide additional protection for any foam-water monitor power or control cabling that may be subjected to flame contact, radiant heat or convective heats from fires within the berth containment curb or emanating from the berth loading arms or piping.

Comments: This review should consider any cabling that is non-fire rated and within 50 ft of the containment curb.

12-007 Alyeska, Fire Apparatus Planning: Evaluate the maintenance and service records of the older fire apparatus to verify that they are not affecting the terminal's ability to meet its apparatus availability requirements/goals. Potential system/component obsolescence should also be considered to assure that the vehicles can still be used effectively and do not pose an operational risk (i.e., increased potential for operator error) that cannot be effectively managed through training or upgrades.

Comments: HFRC does not believe that vehicle age is a valid factor in establishing replacement schedules, although it can be used as a rough guide. Final replacement decisions should be based on historical and foreseeable levels of dependability and on obsolescence.

12-008 VFD, Hazardous Materials Technician Training: If the VFD is to retain an offensive hazardous material response capability the training and certifications of its hazmat technicians should be brought up to date and retained.

Comments: HFRC is uncertain if this is within the scope of its assessment as it does not have a clear understanding of whether this type of service (direct or secondary) could be expected of the VFD during an incident on the VMT.

This is a prime example of where the mutual aid agreement recommended in 12-001could be of benefit to both organizations.

12-009 VFD, Foam Concentrate Testing: All foam concentrates that are not stored in the manufacturer's original shipping container should be tested annually in accordance with NFPA 11, *Standard for Low-, Medium-, and High-Expansion Foam*.

Comments: Most foam concentrate manufacturers will warranty their product for 25 years provided it is kept sealed in its original container. Once the concentrate is removed from the original container or if any evidence of the container being compromised (physical damage, not stored as recommended, etc...) arises samples should be pulled and tested annually.

This applies to the foam concentrate in apparatus foam cells, as well as storage containers.

APPENDIX A
ALYESKA PIPELINE
TERMINAL OPERATING PROCEDURE
VALDEZ MARINE TERMINAL

Title: Terminal Fire Brigade Organization

Number: O-7.01.02
Revision: 17

Page: 1 of 9
Effective Date: 6/26/12

Approval:
Joe T. Kuchin, Business Strategy Manager, for Scott A. Hicks, Director, Valdez Operations
Applicable to:
VMT Personnel

Purpose

To provide guidance concerning accountabilities to be met and procedures to be performed by Alyeska Valdez Marine Terminal Fire Brigade members in carrying out their mission of protecting life, the environment, and property in the event of fire or other emergencies at Terminal facilities. This Operating Procedure will ensure the fire brigade is organized, equipped, and trained commensurate with those duties and functions that members are expected to perform.

Accountable Resources

- Terminal O&M Managers
- Terminal O&M Supervisor and Lead Operators
- Corporate Fire, Safety, and Industrial Hygiene
- Contract Fire Fighters

Definitions

Fire Suppression Levels of Response

- **On-Scene Unified Command:** On-Scene Unified Command consists of the Fire Chief, Fire Captain, effected area Supervisor, Lead Operator and the City of Valdez Fire Department.
- **Incipient:** Offensive or defensive fire fighting performed inside or outside an enclosed structure or building when the severity of the fire is in the early stage and has not developed beyond that which can be extinguished wearing normal work clothes, using portable fire extinguishers and handlines flowing not more than 125 gallons per minute. A fire is considered to be beyond the incipient stage when the use of thermal protective clothing or self-contained breathing apparatus (SCBA) is required or a fire brigade member is required to crawl on the ground or the floor to stay below smoke and heat.
- **Advanced Exterior:** Offensive or defensive fire fighting performed outside an enclosed structure when the fire is beyond the incipient stage. Advanced exterior fire fighting often requires fire brigade members contain, control, and extinguish exterior fires involving site-specific hazards, such as flammable and combustible liquid spills or leaks, propane gas releases, and electrical hazards. This technique usually is performed using handlines flowing up to 300 gallons per minute, master streams, or similar devices for the manual application of specialized agents. Protective clothing is required. The use of self-contained breathing apparatus may be required, as well as the use of apparatus to supply handlines and/or master stream services.
- **Interior Fire Fighting:** Offensive or defensive fire suppression, rescue, or both, inside a building or enclosed structure that is involved in a fire situation beyond the incipient stage. Protective clothing and use of self-contained breathing apparatus will be required, as well as the use of fire brigade apparatus to supply handlines and/or master streams.

Responsibilities

Terminal Fire Chief

- Establishes, reviews, and maintains a written fire brigade organizational statement, as required by Code of Federal Regulations *29 CFR 1910.156*.
- Maintain an active roster of brigade response members and assignments.
- Provide technical assistance and support to ensure the requirements set forth in this procedure continue to be met.
- Evaluate site-specific hazards, conduct pre-incident planning, and develop, organize, deliver, evaluate, and track fire brigade training.
- Develop initial and annual refresher training plan.
- Conduct initial and annual fire brigade training.
- Maintain list of required fire response apparatus and equipment, including maintenance/readiness status.
- Plan and conduct a program of "exercises" or "drills" to assure and confirm preparedness.
- Establish On-scene Unified Command for fire emergencies with operations personnel.

Contract Fire Fighters

- Assist Operations and Maintenance personnel in maintaining the Terminal fire water system and the fire brigade apparatus.
- Assist Fire Chiefs with the training program.
- Serve as members of the fire brigade.
- Establish On-scene Unified Command for fire emergencies with operations personnel.

Terminal O&M Managers

- Establish lines of authority to accomplish organizational statement components.
- Support performance-based training programs.
- Ensure sufficient personnel are available for assignment to the fire brigade.
- Establish On-scene Unified Command for fire emergencies with Fire Chief and/or contract fire fighters.

Terminal O&M Supervisors and Lead Operators

- Support performance-based training programs.
- Ensure sufficient personnel are available for assignment to the fire brigade.
- Establish On-scene Unified Command for fire emergencies with Fire Chief and/or contract fire fighters.

Fire Incident Safety Officer

- In accordance with NFPA 1521:
  - Assist with Firefighter accountability
  - Be present during all live burn exercises
  - Establish safety zones

Fire Brigade Members

- It is the fire brigade members responsibility to participate in weekly training at least once per quarter, or fire brigade events unless off shift or excused by their supervisor or chief.
- Brigade members are responsible to maintain their bunker gear and personal fire fighting equipment in a ready state.
- Maintain proficiency and skills through required training and exercises.

Procedure

VMT Fire Brigade Mission

The mission of the VMT Fire Brigade is to provide protection for (in order of priority) the lives and safety of personnel, the environment, and TAPS property.

With a few exceptions, field employees are expected to maintain proficiency to participate as Incipient Level fire responders. The goal of an incipient level response is to attack any fire in the early stages to prevent it from increasing in size or spreading to other areas. Responders shall not put themselves at risk and shall not respond beyond the level to which they have been trained.

For fires beyond the incipient level, and at the discretion of the On-scene Unified Command, Alyeska may turn to trained Advanced Exterior brigade members. These personnel are trained in advanced tactics and strategies as well as how to properly use specialized fire-fighting apparatus. They are trained in the use of self-contained breathing apparatus and fire fighter PPE. The goal of an Advanced Exterior level response is to protect responders and other employees from personal harm, limit the damage to the environment, and contain the fire to the structure or facilities involved (protect other TAPS assets). Once those objectives are met, Advanced Exterior responders may attack the fire to extinguish it from outside, but they may not enter a structure or facility for any interior fire control measures.

As a precautionary measure, Alyeska also trains responders to the Interior Fire Fighting level. These employees are trained to the same level as Advanced Exterior brigade members, but are also trained to perform search and rescue and interior fire control functions. The purpose of Alyeska's VMT Interior Fire Fighting response will only be for the purposes of search and rescue. Alyeska does not intend to subject its fire brigade members to the risks associated with interior fire fighting beyond incipient unless it is in support of personnel rescue. If there are no personnel inside the structure to be rescued, brigade members will fall back to an Advanced Exterior response level.

In the event of a fire on a vessel at berth, the United States Coast Guard (USCG) Port Captain has jurisdiction; however, Alyeska may assist the vessel. The assistance would be limited to advanced exterior level operations. At no time will any member of the Fire Brigade enter into any room, space or part of the

vessel above, below, or at deck level. At no time would any assistance expose Fire Brigade members to products of combustion, smoke or heat that would exceed the furnished level of personal protective equipment, (PPE).

Fire fighter (FiFi) vessels are required by Alyeska to remain in port when loading tankers to assist in firefighting activities. Other assistance provided by the Fire Brigade members include: fire extinguisher, hose, nozzles, foam concentrate, breathing apparatus, manning of cooling lines and possible manning of fire foam lines.

At all times the VMT Fire Brigade would remain under the immediate direction and control of the Alyeska On-scene Unified Command.

Organization

1. The Terminal Fire Brigade will be composed of personnel trained as fire responders.
2. In the event of an emergency, assigned brigade members will leave their normal duties and assume the duties of the fire brigade. Exception: If the emergency or upset condition occurs in fire brigade member's normal day to day O&M area, source control or other operation or maintenance duties may preclude fire brigade responsibilities.
3. Fire brigade members will be classified according to operational needs and physical fitness by the Fire Chief and O&M Managers as Incipient, Advanced Exterior, or Interior fire fighters.
4. The On-scene Unified Command, will determine appropriate tactics and strategy for fire situations based on scenario, resources and risk/benefit.
5. The number of available fire brigade members responding to an emergency will vary with specific minimum responses, depending upon location, nature, size, and time of emergency. Minimum fire response levels are:

    a. Incipient - Two fire brigade members trained to Incipient Level.

    b. Advanced Exterior - Four fire brigade members trained to Advanced Exterior or Interior Level.

Note: Minimum response levels required to comply with OSHA's "two personnel in, two personnel out" regulation for potential immediately dangerous to life or health (IDLH) incidents.

    c. Interior fire - Four fire brigade members trained to Interior Level.

Note: Minimum response levels required to comply with OSHA's "two personnel in, two personnel out" regulation for potential IDLH incidents.

Fire-Suppression Equipment

Fire trucks and other pieces of fire-suppression equipment will be maintained at the Terminal to provide fire-suppression capabilities to facilities that do not have fixed suppression systems, for exposure protection, and water and foam backup in the event of a fixed system failure, according to *49 CFR 195.430.*

Training

1. The Terminal Fire Training Program will provide direction and training for fire response. Members of the fire brigade will receive training as designated in Attachment 1, Required Initial Training. and Attachment 2, Annual Refresher Training Plan. Training will ensure competency commensurate with he duties and functions fire brigade members will be expected to perform at their designated levels. Training will include classroom instruction and hands-on training to maintain fire brigade members' familiarity with site-specific equipment, systems, and operating procedures. Fire brigade training will provide members with the skills and knowledge to react to emergency situations in a proficient and safe manner.
2. The fire brigade has finite resources and training that limit its capabilities. These limitations will be emphasized in training, and must be recognized by fire brigade members to ensure they do not overextend themselves or operate in an unsafe manner.
3. Training and records of training will conform with AMS-016, *Records Management Process* and LR-230 *Appendices, Training and Development Process Appendices.*
4. Interior and Exterior level fire brigade members shall receive training quarterly.
5. Live fire training for Interior and Exterior fire brigade members will be conducted in accordance with Government Letter Number 04-039-CHC.

END OF PROCEDURE

References

- *ASME/ANSI B 31.4*
- *Code of Federal Regulations (CFR)*
  - *29 CFR 1910, "OSHA"*
  - *29 CFR 1910 Subpart G (94-98), "Occupational Health and Environmental Control"*
  - *29 CFR 1910 Subpart I (134 & 138), "Respiratory Protection" and Hand Protection"*
  - *29 CFR 1910 Subpart L (156), "Fire Brigades"*
  - *49 CFR 195, "Transportation of Hazardous Liquids by Pipeline"*
  - *49 CFR 195 Subpart F (430), "Firefighting Equipment"*
- NFPA 600
- NFPA 1521
- AMS-016, Rec*ords Management Process*
- LR-230 Appendices, *Training and Development Process Appendices*

Attachments

- Attachment 1: Required Initial Training
- Attachment 2: Required Refresher Training
- Attachment 3: Organizational Chart

Records

Records	
Structured OJT Rosters	All records generated as a result of this document will be retained in accordance with *CW-200, Records Retention Schedule* located in the TAPS Document System.

Revision History

Revision	Date	Revision Summary
17	6/26/12	Scheduled Full Review. Document Owner changed to Scott A. Hicks, Director Valdez Operations. No other changes needed. An SOC Checklist was filled out. An SOC is not required for the procedure.
16	7/1/11	Scheduled Full Review. Updated reference to *LR-230-6 to LR-230 Appendices*. Document Owner changed from Kathy Zinn to Joseph T. Kuchin, Acting Senior Director, Valdez Operations.
15	5/19/10	Scheduled Full Review. Updated title of Terminal Director to Senior Director, Valdez Operations.
14	6/8/09	Scheduled review. Revise Attachments 1 and 2 with revised headings; add classes FTP/047 and EVAL/001.
13	6/24/08	Scheduled review. Improvements and clarifications made. Update Mgr. name to K. Zinn.
12	2/22/06	Added: On scene unified command steps, added sub sections for Terminal O&M Supervisors / Lead Operators and Fire Incident Safety Officer. Also added Attachment 3, “Org Chart.”
11	8/31/05	Update included tanker vessel fire response and added additional fire brigade members responsibilities.
10	6/28/05	Annual review. Changes deleted QA-36-1 and PIP 17.1 added AMS-016, also updated the training course IDs. Updated Reference section by adding regulations that use this procedure as method of compliance. Records section changed to reflect Records Retention Schedule.
9	6/14/04	Scheduled review. Changes made to correct and improve.

Attachment 1. Required Initial Training

JR-3035, Fire Fighter-Incipient

FTV051/011	Roles and Responsibilities
FTV051/021	Fire Behavior (Incipient)
FTV051/061	Portable Fire Extinguishers
FTV051/131	Fixed Systems Awareness
FTV/047	Fire Watch Training
FTV/045	SERVS Fire Watch Training

JR-3034, Fire Fighter-Exterior (in addition to the above courses)

FTV051/022	Fire Behavior (Exterior)
FTV051/041	Fire Fighter Safety and PPE
FTV051/042	Self-Contained Breathing Apparatus (SCBA)
FTV051/071	Hose Nozzles and Appliances
FTV051/072	Fire Streams
FTV051/091	Tactics and Strategies (Exterior)
FTV051/093	Fire Control (Exterior)
FTV051/132	Fixed Systems (Exterior)
FTV051/161A/B	Fire Drills Semi Annual
FTV051/163A/B/C/D	Quarterly Fire Training

JR-3036, Fire Fighter-Interior (in addition to the above courses)

FTV051/023	Fire Behavior (Interior)
FTV051/043	Search and Rescue
FTV051/092	Tactics and Strategies (Interior)
FTV051/094	Fire Control (Interior)

Attachment 2. Required Refresher Training

JR-3035, Fire Fighter-Incipient

FTV052/011	Roles and Responsibilities
FTV052/021	Incipient Fire Behavior
FTV052/061	Portable Fire Extinguishers
FTV052/131	Fixed Systems Awareness Incipient
FTV/047	Fire Watch Training
FTV/045+	SERVS Fire Watch Training

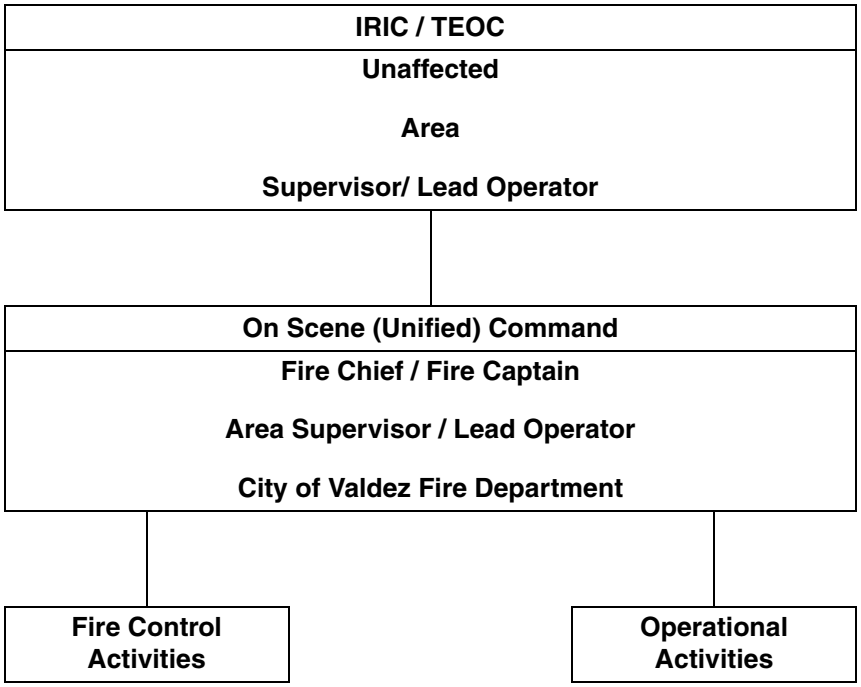
JR-3034, Fire Fighter-Exterior (in addition to the above courses)

FTV052/022	Fire Behavior (Exterior)
FTV052/041	Fire Fighter Safety and PPE
FTV052/071	Hose Nozzles and Appliances
FTV052/072	Fire Streams
FTV052/091	Tactics and Strategies (Exterior)
FTV052/093	Fire Control (Exterior)
FTV052/132	Fixed Systems (Exterior)
FTV052/042	Self-Contained Breathing Apparatus
FTV051/161A/B	Fire Drills Semi Annual
FTV051/163A/B/C/D	Quarterly Fire Training
FTV051/164	External Training - Live Fire (Bi-Annual)
EVAL/001	Fire Fighter Physical Fitness Evaluation-Annual

JR-3036, Fire Fighter-Interior (in addition to the above courses)

FTV052/023	Fire Behavior (Interior)
FTV052/043	Search and Rescue
FTV052/092	Tactics and Strategies (Interior)
FTV052/094	Fire Control (Interior)

Attachment 3. Organizational Chart



Alyeska pipeline SERVICE COMPANY

SOC Decision Checklist

General Information:			
Name: SEAN D WISNER	Badge: 184187	Contact No: 7324	Date: 6/11/12
Document/Procedure #: O-7.01.02	Title: Terminal Fire Brigade Organization		Revision #: 17

Decision Checklist

Ignoring risk mitigation measures: if the answer to any of the following questions is "yes," an SOC review is required. **DO NOT** take credit for mitigations you've put in the procedure when considering the potential consequences on this form.

GENERAL HIGH CONSEQUENCE ACTIVITIES	Yes	No
1. Is there a reasonable potential for **a fatality, one or more serious irreversible injury(s), or for multiple reversible injuries**?	☐	☑
2. Is there a reasonable potential for **100 barrels or more of oil to be spilled**?	☐	☑
3. Is there a reasonable potential for a **spill of more than 10 barrels of oil to a priority area** (*ocean, streams/rivers, wetlands, etc.*)?	☐	☑
4. Is there a reasonable potential for a **release of hazardous substance requiring extensive cleanup or long term** (*4 weeks or more*) **damage**.	☐	☑
5. Is there a reasonable potential to **shut-down the pipeline throughput for 12 hours or more, or delay loading of a ship for 4 days or more**?	☐	☑

SPECIFIC ACTIVITIES AT LOWER CONSEQUENCE THRESHOLD

A. Are you performing any of the activities listed in lines 6 through 14 where there is a reasonable potential for any of the following consequences:

- Cause **multiple first-aid injuries, one or more reversible injuries** (*recordable or DAFWC*), **one or more irreversible injuries, a fatality,** or
- **Spill 10 barrels of oil** or more, or
- Cause **prolonged environmental damage**, or
- Cause a **reportable permit exceedence, self disclosure, or an enforcement action** such as a notice of violation (specific quantities listed in EN-43), or
- Cause **extensive clean-up and remediation**, or
- **Shutdown the pipeline for 3 hours** or more, or
- **Shut down ship loading for 3 days** or more.

	Yes	No
6. Are you working on **control system hardware or software** (FCU's, SCP's, PS LANs, Routers, SIPPS, SCADA Downloads, etc.) where there is a potential consequence listed in row A above?	☐	☑
7. Are you **Bypassing control, communication, or protective safety systems** (MOS by OCC, or other locally initiated bypass control mechanisms) to accommodate damaged or inoperable safety devices or to accommodate critical Pipeline or VMT activities where there is a potential consequence listed in row A above?	☐	☑
	Yes	No

Alyeska pipeline SERVICE COMPANY

SOC Decision Checklist

8. Are you working on **power generation/distribution systems including back-up power** systems where there is a potential consequence listed in row **A** above?	☐	☑
9. Are you working on **ARTS, OCC control system communications, local emergency communication system, Turin, or other System wide communications network** where there is a potential consequence listed in row **A** above?	☐	☑
10. Are you **welding, cutting or pressure testing crude, Fuel Gas Line, or Vapor Recovery pipe that contains flammable or Immediately Dangerous to Life & Health (IDLH) concentrations of hazardous materials** where there is a potential consequence listed in row **A** above?	☐	☑
11. Are you performing a Hot-Tap on the mainline, pump station or VMT equipment **that contains flammable or Immediately Dangerous to Life & Health (IDLH) concentrations of hazardous materials** where there is a potential consequence listed in row **A** above?	☐	☑
12. Are you performing a **sleeve repair on the mainline, Fuel Gas Line, or Vapor Recovery Lines** where there is a potential consequence listed in row **A** above?	☐	☑
13. Are you working on **Fire Systems** tied to Special Command initiators or with Cause and Effect (C&E) commands that have the potential to immediately impact throughput or system integrity at a consequence listed in row **A** above?	☐	☑
14. Are you performing any activity that will **open process equipment (piping, tanks, pumps, sumps, etc) that may release a flammable or combustible vapor** that may be ignited (i.e. potential for **flash fire?**) and cause any of the potential consequence listed in row **A** above?	☐	☑
Other General Criteria		
15. Does this activity involve **bypassing or significantly reducing a protective system or human action** that may respond to an event (i.e. Layer of Protection) in a manner that would result in a risk level 1 or 2 in accordance with the Alyeska Risk Tolerance Framework? Refer to *AMS-017-01, Risk Assessment Procedure*, Appendix B.	☐	☑
16. Does the Accountable **Manager/Director require an SOC for this work scope**? Specify the consequences of concern below.	☐	☑

Specific Items Explanation &/or General Comments:

☒	SOC is **NOT** required for this procedure	Sean Winton		6/11/12
☐	SOC **is** required for this procedure	Supervisor Name (Print)	Signature (e-mail approval may be attached or kept as record)	Date

APPENDIX B
VALDEZ FIRE DEPARTMENT
REPORT COMMENTS

Kuckertz, Thomas

From: George Keeney <gkeeney@ci.valdez.ak.us>
Sent: Saturday, October 20, 2012 8:46 AM
To: Kuckertz, Thomas
Subject: RE: Draft Final from Haines Fire and Risk Consulting
Attachments: Haines Fire Risk - Response 10-20-12.docx

Tom Kuckertz,
I have reviewed the document from your consultant.
I have drafted the response to the report. I being the AHJ will push to correct the items I can.
Funding is always an issue.
Chief Keeney

From: Kuckertz, Thomas [mailto:kuckertz@pwsrcac.org]
Sent: Thursday, October 11, 2012 10:55 AM
To: George Keeney
Cc: Schantz, Donna; Swanson, Mark A
Subject: Draft Final from Haines Fire and Risk Consulting

George,

Haines Fire and Risk Consulting has provided PWSRCAC with a draft final report of their efforts in support of PWSRCAC's project for "Fire Protection Assets at VMT."

PWSRCAC greatly appreciates the cooperation provided by the City of Valdez and the Valdez Fire Department in assisting PWSRCAC's contractor to develop the report.

This report has undergone an internal review by Mark Swanson, Donna Schantz, Anna Carey, and me and one round of revisions have been made. The revised report is attached.

Note that the footnote on page 10 is still in need of revision.

Please distribute as appropriate within the City of Valdez and upon City of Valdez review provide comments to Anna or me.

Again, thanks for your and VFD's help on this important PWSRCAC project,

Tom

Thomas H. Kuckertz, Ph.D., P.E.
Prince William Sound Regional Citizens' Advisory Council
3709 Spenard Road, Suite 100
Anchorage, AK 99503

Office: 907-273-6238
Home: 907-222-2700

Cell: 907-255-4611

Tom Kuckertz

RE: RCAC Report on "Assessment of Fire Protection Assets at VMT"

On reviewing the draft report you submitted, the Valdez Fire Department has the following comments:

The VFD will respond to all emergencies in our city limits. The fire chief by statute is the **Authority Having Jurisdiction (AHJ).** Within that statute, I as the fire chief or my designee will be the IC at all fire/EMS/Hazmat incidents when called upon to respond. We do work as a unified command with agencies or industries if the agency has a command/incident management team established.

We do have well motivated volunteer and career personnel. Taking into account the size and scope of a fire event at the terminal, our primary mission will be life safety, followed by property conservation. Our ability to provide adequate numbers of personnel to conduct operations may again be affected by numbers of injuries and size of the fire.

Texas A&M has been and continues to be an excellent opportunity bringing together both terminal and municipal personnel practicing fighting large industrial fires. Although the two-day training is valuable, this is a considerable burden on our travel and training budget.

Marine Fires at the terminal are another issue. Alyeska's previous fire chief has stated their policy is to not board tankers to fight fires. It's our understanding that if we have off-duty VMT volunteer firefighters on board our apparatus, that as soon as they come onto the terminal then their status reverted back to on-duty and they will follow VMT Policy.
In your report you have stated on pages 3 and 5 that the policies Alyeska has set up are followed to the letter. That is what I have to follow as I am told we are **not to have the fire brigade members in any IDLH situation** (Cannot put them in smoke or fire areas).

On page 6 you have that the **Alyeska engine (pumper) is 25 years old and should be replaced**. We currently have one reserve engine at 31 years old. Taking delivery of the next apparatus in spring of 2013 will replace a water tender. Engines 12 & 14 are the next oldest at 17 years.

Alyeska fire apparatus are tested, well maintained and are usually on a **replacement schedule**. If the maintenance is an issue then they will replace the unit when needed. With little actual use compared to a very busy fire department in the lower 48 I would agree the age is an issue.

Page 7 of your report shows that we have reduced the **Hazmat Technician level** response and at this time we are being directed by city management and Council that we will provide service at the Operation level and maintain enough equipment in order to make life saving efforts. Money is becoming tight and with few requests to maintain a level A Technician capability, the city has asked us to reduce to a defensive operation level. Money and budgets are an issue we

all are facing not only here but in the entire nation. Also, when you look at hazmat responses we have not been called to Alyeska for a hazmat response. They do have many hazmat chemicals to be concerned with, but their safety program keeps their risk level low concerning spills and containment.

ALMR programmed radios are provided by the Valdez Fire Department and have been maintained by our personnel, supporting the communications needs of both the VFD and Alyeska Fire Brigade.

Funding issues do limit our training together. Our overtime budget for the past few years has been reduced. Even the quarterly drills have been reduced to biannual drills last year and this year we are down to only one drill for the year. The VMT donated several props to the VFD when they removed them from their facility. At this time the VFD has plans to build a similar training ground at the facility we currently use. We still need this project to be developed from the list of capital projects the city council funds.

Alyeska Training at Texas A&M will be dropped this year due to funding restraints. To be able to send two firefighters at a time to Texas A&M for a two day class and spend five days with travel and class it is very expensive. It is one cost the council will have to weigh in on to allow us to continue or stop. (Page 7 bottom item)

MOU 12-001: does need to be in place and would assist our responses when we arrive at the facility. As the AHJ for the community, once we're called we will act accordingly and together will conquer all emergencies no matter what size or complexity.

Joint Training: 12-002 the VFD will strive to set up and prioritize the tours not only of Alyeska but Petro Star Refinery also. These two industrial facilities are of significant importance and high risk/ low probability and our members will become familiar with their processes and facilities. Security issues have been pointed out and must be addressed. In the near future our Valdez Fire Department members will have identification cards for access and will be able to produce them at the gate.

Respectfully submitted,
George R Keeney
Fire Chief/Emergency Manager
City of Valdez

APPENDIX C
STATE OF ALASKA
DIVISION OF FIRE AND LIFE SAFETY
LETTER OF NOVEMBER 19, 200

State of Alaska
Department of Public Safety
Division of Fire and Life Safety

Sean Parnell, Governor
Joseph A. Masters, Commissioner

November 19, 2009

Government Letter: 19349
ASPC File: 2.08
ADL: 63574
Section/Stipulation: 1.20.1

Mr. Joseph Robertson
Compliance Officer
Alyeska Pipeline Service Company
P.O. Box 196660 MS 502
Anchorage, AK 99519-6660

Info Only ☐ Commitment ☒
GL No: 19815 Action No:
RI: D.Knutson
RS: D.Knutson
Commit Date: 12/4/09

Reference: Berth 4 and 5 Redundant Fire Lines

Dear Mr. Robertson:
It has come to our attention that a leak has been detected in both Berth-4 and Berth-5 Redundant System Valves. These are the wet/dry valves located on shore that supplies both berth 4 and 5 redundant lines. ASPC will be removing both of the valves and blinding the redundant line to both berths this week to stop the offshore line from leaking. The lines that are being taken out of service are redundant to the dedicated Berth Fire Protection System. The plan is to remove them from service indefinitely.

Please take what emergency action is necessary to protect the system. However, the State Fire Marshal will not approve the long term plan of action pending submission of a drawing laying out the both the active and redundant lines on the Berth 4 & 5 and an explanation of why the lines are no longer operationally needed, we would assume there was good reason for their initial installation. The engineering summation of the long term plan may or may not be acceptable to the State Fire Marshal pending review of the information submitted.

Please submit the required drawings ASAP to this office for review. If you have any questions feel free to call me at 907-257-1389.

BAS DOT LAW SEC ENV HSEQ
EXC PL VMT SRV SR HR Other
Received
NOV 19 2009
Kathie Harvey
Compliance Mgr.
FIRE ROW PRJ ENG DC ACTG
P Belino
S. LaMatta

Sincerely,

John H. Cawthon
JPO/SFMO Liaison
Alaska Division of Fire and Life safety
(907)257-1389

CC: Dave Tyler, SFMO
Mike Thompson, DNR
Jerry Brossia, BLM
Peter Belino, ASPC

5700 E. Tudor Road – Anchorage, AK 99507 – Voice (907) 257-1389 – Fax (907) 269-0102

Doug Knutson, ASPC
Brian Beauvais, ASPC

Alyeska pipeline SERVICE COMPANY

P.O Box 196660 ANCHORAGE, ALASKA 99519-6660 TELEPHONE (907) 787-8700

March 02, 2010

Government Letter No.: 20571
APSC File No.: 2.08

Office of the Alaska State Fire Marshal
Department of Public Safety
Division of Fire Prevention
411 W. 4th Ave
Anchorage, AK 99501

Attention: John Cawthon, Trans-Alaska Pipeline Fire Safety Specialist

Subject: Request for Information, VMT Redundant Firewater Line to Berths

Dear Mr. Cawthon,

Alyeska plans to conduct a risk assessment on the removal of the redundant fire water line to the Berths on March 9 and 10. This will identify the issues related to the proposal and make recommendations based on the assessment. A report documenting the assessment and recommendations will be generated and should be available by April 15. Completing the recommendations will take longer. At this time Alyeska does not have a date for completing recommendations since we do not know what they are.

Please address responses to this correspondence to:

Mr. Joseph Robertson
Compliance Officer
Alyeska Pipeline Service Company
P.O. Box 196660, MS 502
Anchorage, AK 99519-6660

If you have any questions or comments regarding this information, please contact Douglas Knutson, APSC Fire and Gas Engineering at 907-787-8109.

Respectfully submitted,

Douglas J. Knutson
Senior Discipline Electrical Engineer

DJK/SA/bg

Attachment: None

cc:	J. P. Roberson	(hard copy)	MS 502
	L. O. Meadors	(hard copy)	MS 765
	R. G. Rountree	(hard copy)	MS 777
	JPO Records Center	(hard & electronic copy)	MS 600
	D. Knutson	(electronic copy)	MS 534

Alyeska pipeline SERVICE COMPANY

P.O Box 196660 ANCHORAGE, ALASKA 99519-6660 TELEPHONE (907) 787-8700

April 30, 2010

Government Letter No.: 20909
APSC File No.: 2.08

Office of the Alaska State Fire Marshal
Department of Public Safety
Division of Fire Prevention
411 W. 4th Ave
Anchorage, AK 99501

Attention: John Cawthon, Trans-Alaska Pipeline Fire Safety Specialist

Subject: Response to Berth 4 and 5 Redundant Fire Lines Letter, dated 11/19/09

Dear Mr. Cawthon,

Alyeska has completed the risk assessment related to the redundant firewater lines for Valdez Marine Terminal Berths 4 and 5. It is attached.

The redundant fire water lines were not part of the original Terminal design. They were installed in the 1980's when pipeline throughput was near its maximum. The event that drove the installation of the redundant lines was the failure of a berth fire pump which took quite a while to fix. During this time the berth was not operated. The unavailability of the berth due the failure of the fire pump impacted loading because the berth was critical to meeting loading needs during that period of high throughput. The redundant line was installed to eliminate the need to remove a berth from operation when the primary berth fire pump was not functional. The decision to install the redundant lines was based on these factors.

Current and future projected throughput provides for less than one tanker visit per day to the Terminal. Berths 4 and 5 are the remaining operating loading berths. This essentially means that there is routinely a back-up berth and the need for redundant fire water lines is no longer present. This same berth redundancy today also provides us with flexibility in conducting maintenance, including the fire systems. Therefore, the redundant lines do not provide the same operational nor fire protection benefit they were designed and operated for. Additionally, it is likely that the monitor nozzles would be partially obscured with rust particles if we were to use the redundant lines today.

Alyeska has therefore decided to abandon the redundant lines and instead focus on stocking replacement parts for the berth fire pump and foam systems. The intent is to minimize berth down time should a fire pump fail.

Please address responses to this correspondence to:

Mr. Joseph Robertson
Compliance Officer
Alyeska Pipeline Service Company
P.O. Box 196660, MS 502
Anchorage, AK 99519-6660

If you have any questions or comments regarding this decision or require additional information, please contact Douglas Knutson, APSC Fire and Gas Engineering at 907-787-8109.

Respectfully submitted,

Doug Knutson

Douglas J. Knutson
Senior Discipline Electrical Engineer

DJK/SA/bg

Attachment: Redundant Fire Water Risk Analysis

cc:	J. P. Roberson	(hard copy)	MS 502
	K. Zinn	(hard copy)	MS 830
	L. Meadors	(electronic copy)	MS 830
	JPO Records Center	(hard & electronic copy)	MS 600
	D. Knutson	(electronic copy)	MS 534

Redundant Fire Water Risk Analysis

Problem Statement
The redundant firewater system is not available on Berth 4 due to maintenance issues. The unlined carbon steel piping has experience significant internal corrosion. This team met to review the risks associated with the continued use, the decommissioning or replacement of the redundant firewater piping.

Methodology
The Alyeska Risk Management Procedure AMS-017-01 was used as the basis for this evaluation of the options being considered. A team of knowledgeable and experienced personnel were assembled to review the options, assess the risk of each and make recommendations.

Results:
We analyzed several different scenarios and recorded the following three scenarios:
Scenario #1: It was assumed that a fire occurred on a tanker alongside a berth and the berth firewater pump failed and the redundant firewater system had been decommissioned.
Scenario #2: It was assumed that a fire occurred on a tanker alongside a berth and the firewater pump failed and the existing redundant system was used.
Scenario #3: It was assumed that during normal operations the berth firewater pump failed and the redundant firewater system had been decommissioned. Under current policy the berth would not be used for loading vessels until fire protection is reinstated.

Scenario #1 Risk Rank 3 Low Priority, Acceptable Risk
Scenario #2 Risk Rank 3 Low Priority, Acceptable Risk
Scenario #3 Risk Rank 3 Low Priority, Acceptable Risk

The risk of a berth outage with the redundant firewater system in its current condition is roughly equivalent to no redundant system at all. The economic benefit of a replacement redundant firewater system does not justify the cost of replacement. The loss of the additional capabilities of a fully functional redundant firewater system is considered an acceptable risk.
This team recommends maintaining an appropriate level of spare parts stocking to minimize any berth outage due to the failure of the fire water pump.

The most significant benefit that was provided by the redundant firewater system that will be lost by decommissioning is the ability to run all four berth firewater monitors simultaneously, the ability to supply more fire foam solution from onshore reserves and additional hose connection points along the berth causeway. A typical fire foam application would only involve the use of the up-wind tower monitor thus only three of the four monitors are used normally.

Attendees
Doug Knutson, Fire System Engineer
Peter Bellino, Fire System Engineer
Ron Falvey, Fire Team Captain
Laura Meadors, Operations Manager
Doug Fleming, Operations Advisor
Mark Stephens, Maintenance Program Coordinator
Robert Rountree, Facilitator, VMT Engineer

Operating Context

Antidotal History:

At some point in the 1980's there was a failure of berth firewater pump which resulted in the firewater system being out of service for an extended period of time. It was considered to be unacceptable to load tankers without the firewater system. A pumper fire truck was stationed at the head of the berth and fire hose run the length of the causeway to connect into the firewater system to provide temporary firewater capability.

This was at the time of 2 million barrel a day throughput and all four berths were required to be in continuous operation. Hence the decision was made to install a redundant firewater line to tie into the shore side firewater system to provide future protection against tanker loading delays due to a lack of the berth firewater system. (Originally Berth 4) The installation of the redundant firewater system was completed in 1988 or 1989.

Current Operating Context:

Pipeline throughput is currently around 700,000 barrels per day. Tanker loading averages about 1 per day but the scheduling of tankers is difficult. The VMT loads on berths 4 and 5 only.

Berth Firewater System Description:

The offshore fire protection system consists of separate fire control systems for each of the berths. Each separate system consists of redundant, normally dry firewater lines located on the berth causeway and tied into the onshore 30-inch fire main. An electric motor-driven pump supplies seawater to a foam proportioning skid and to a 10-inch foam header. The foam header supplies four foam monitors and an international ship/shore connection. Two of the monitors provide protection for the berth while the other two monitors provide coverage for a moored vessel.

Both the firewater pump and foam proportioning skid are housed in the pump building on each berth. The firewater supply pump is a 300-hp electric motor driven vertical turbine pump rated at 2,000 gpm at a discharge pressure of 125 psig. The foam concentrate is stored in a 2,600-gallon heat traced storage tank. Outside supply and return lines to the foam tank, the liquid pressure sensing lines, and water actuated valves and gages are also heat traced. The capacity of the foam solution storage tank provides for 43 minutes of foam delivery at 2,000 gpm and 3% concentration.

Berth 4 and 5 have a 2,000 gpm electric firewater pump and foam proportioning system.

- Manually activated system foams the berth and/or tanker.
- Fire connections available for use by fire tugs or fire trucks.
- 2,600-gallon foam storage tank of NF AFFF.
- 1,000 gpm remote control ship monitors, 500 gpm oscillating berth monitors, handlines, ship-to-shore connections and fire extinguishers.
- Redundant fire water system with foam injection capabilities to the berths.

The berth fire protection systems have the capacity to operate any of the following combinations of monitors:

- Either ship monitor and both berth monitors
- Both ship monitors
- Both berth monitors

Tug Fire Fighting Capabilities:

Alyeska has a contract with Crowley for six tugs. Five of these tugs are categorized as fire tugs. The sixth tug has fire fighting capability. Alyeska does not contract with Crowley for firefighting. The five fire tugs provide tanker escort services and may or may not be in port at any given time. Crowley maintains a docking assist tug at the Terminal under contract to the Terminal and the tankers. These tugs are outfitted with high volume firewater pump(s), foam concentrate tank(s), and controllable elevated monitor(s).

Although the Crowley fire tugs have fire fighting capability, Crowley is not contracted as a fire fighting organization. Currently when a tanker is alongside a berth, a conventional tug with lesser fire fighting capability is required to be available for monitoring. This was originally a temporary mitigative measure in response to an outage of the berth firewater system and was not intended to be a permanent solution.

Current Operating Status of the Redundant Firewater System:

The isolation wet/dry valve on both the berth 4 and 5 redundant firewater lines leak by. The isolation rupture discs have been removed. As a result, the saltwater from the onshore firewater system leaks into the unlined carbon-steel redundant firewater piping. This results in internal corrosion which has been known to foul the berth monitors if not periodically flushed out. The Berth 5 redundant firewater piping has experienced as much as 25% wall loss. Berth 4 piping has experienced up to 40% wall loss. The berth 4 piping is still capable of handling up to 985 psi before bursting; hence this wall loss does not affect the pressure capability of the system.

Scale within the redundant piping has been known to cause blockage of the firewater monitors, effectively compromising the fire suppression capabilities. To minimize these effects the redundant piping is flushed twice a year. Such flushing would not be safe in a fire fighting situation.

Current Maintenance Activities for the Berth Firewater System:

- The berth firewater pump intakes are inspected and cleaned annually by divers.
- The berth firewater pumps are run monthly.
- The berth firewater pumps are flow tested annually.
- The redundant firewater piping is flushed twice a year.

Hypothetical Incident Scenario # 1

Scenario Description: A significant fire occurs at a ships manifold while the tanker is alongside the berth. The redundant firewater system has been decommissioned. The Berth Operator attempts to start the Berth fire foam system and the Berth Firewater Pump fails.

Key Considerations: Loading would be stopped immediately upon any indication of a fire at the ship's manifold, removing the pressure and fuel source. Assume that tugs will be available to provide firewater deluge as needed and requested by the tanker. Alyeska may make a request to have the Tanker removed from the Berth.

Consequence Level:

	Health and Safety	Environment	Financial / Business	Operations Interruption	Legal / Regulatory
Level	C	A	B	B	A

Frequency Level:

Level	7

Risk Ranking:

3

Potential Preventative Measures: (Reduction in likelihood)
Frequency Level: No preventative measures identified
Final Risk Ranking:

Potential Mitigative Measures: (Reduction in severity)
Frequency Level: No mitigative measures identified
Final Risk Ranking:

Follow up Actions:

Hypothetical Incident Scenario # 2

Scenario Description: The existing redundant firewater system is in-service and a significant fire occurs at a ships manifold while the tanker is alongside the berth. The Berth Operator attempts to start the Berth fire foam system and the Berth Firewater Pump fails. After an assessment of the fire situation, the redundant firewater system is brought on line. Corrosion debris from the redundant piping is carried through the system causing blockage of the deck and tower monitor nozzles and disrupting the spray pattern of the fire foam.

Key Considerations: Loading would be stopped immediately removing the pressure and fuel source. Existing redundant firewater system has significant internal corrosion and in previous tests of the redundant firewater system rust and debris has caused significant blockage of deck monitors.

Consequence Level:

	Health and Safety	Environment	Financial / Business	Operations Interruption	Legal / Regulatory
Level	C	A	B	B	A

Frequency Level:

Level	7

Risk Ranking:

3

Potential Preventative Measures: (Reduction in likelihood)
Evaluate installing a strainer basket on the redundant firewater system to catch debris. Some debris may pass and still plug the nozzles or the strainer itself could become plugged.
Frequency Level: 7 The possibility of blockage caused by the redundant firewater system drops from 1/1 to 1/10. However this is still a frequency level of 7
Final Risk Ranking: 3

Potential Mitigative Measures: (Reduction in severity)
Frequency Level: No mitigative measures identified.
Final Risk Ranking:

Follow up Actions:

Hypothetical Incident Scenario # 3

Scenario Description: Under normal operations with no tanker alongside the berth firewater pump fails and the redundant firewater system has been decommissioned. The Berth would be out of service for tanker loading until the firewater pump could be repaired or replaced and returned to service, or another means of fire protection system is identified and put into service.

Key Considerations: Normal tank farm inventory requires one Berth to be in service. A high tank farm inventory level requires two Berths to be in service to get caught up. The worst case may require pipeline proration until the Berth could be returned to service. This is assuming no spare pump is in stock. Work activities on the berth requiring fire response capabilities would be impacted. Replacement pump could take up to 3 months to acquire.

Consequence Level:

	Health and Safety	Environment	Financial / Business	Operations Interruption	Legal / Regulatory
Level	E	E	C	E	E

Frequency Level:

Level	4

Risk Ranking:

3

Potential Preventative Measures: (Reduction in likelihood)
Frequency Level: No preventative measures identified.
Final Risk Ranking:

Potential Mitigative Measures: (Reduction in severity)

1. Evaluate plans for providing firewater protection through the use of firewater trucks and personnel.
2. Evaluate stocking of spare parts and pump, driver, shafts, etc.

Consequence Level: D
Final Risk Ranking: 3

Follow up Actions:

Evaluate stocking of spare parts and pump, driver, shafts, etc. Work request 40001747 was initiated for this evaluation.