

SECTION VIII: Contingency Plan Implementation

1. Agency Jurisdiction:

Oil spill contingency plans (Cplans) are required by Federal regulations and State statutes as well as the Grant and Lease of Right of Way for TAPS. ADEC has the authority to approve Oil Discharge Prevention and Contingency Plans under State statutes pertaining to oil and hazardous substances pollution control, AS 46.04.030, Oil Discharge Prevention and Contingency Plans. State regulations requiring and governing the contents of Cplans are addressed under 18 AAC 75.400 through 18 AAC 75.495.

BLM administers the Federal Agreement and Grant of Right of Way for TAPS, which requires that APSC annually submit the Cplan for review and approval. DOT-OPS has facility response plan requirements found in 49 CFR Part 194 for on shore oil pipelines. By agreement between DOT-OPS and EPA, EPA jurisdiction associated with a facility response plan is limited to non-transportation related bulk oil storage (i.e., turbine fuel tanks).

2. Background:

Under Alaska law, a contingency plan is called an Oil Discharge Prevention and Contingency Plan because it includes actions to prevent an oil spill and, in the event of a spill, provides for a level of pre-planning and preparedness to be able to effectively respond. The oil spill plan is a legally binding contract between the state and the plan holder wherein certain resources, personnel and commensurate levels of training are committed. All Cplans approved by the State of Alaska must contain four sections. The Response Action Plan section is intended to be the operational document used during a response. It contains an emergency action plan to guide first responders as well as descriptions of response strategies for the plan holder's resources. The Prevention Plan section describes the measures in place to prevent or reduce the risk of spills from the operation. The Supplemental Information section contains supporting information and detail necessary to determine the plan's compliance with state requirements. The Best Available Technology (BAT) section requires that the plan demonstrate the use of best available technology using specific criteria listed in the regulations.

The TAPS Cplan contains cross-references meeting the approval criteria for the response plans for DOT-OPS and EPA. BLM's review of the plan is based on the criteria presented in Stipulation 2.14 of the Federal Agreement and Grant of Right of Way for TAPS. These criteria are relatively broad, and therefore, the plan format as described in State regulations is used for the basis of the review.

To compile this chapter of the Joint After-Action Report, documentation from the response was compared to the Cplan. Two questions were asked: 1) was the Cplan satisfactorily implemented as currently written; and 2) can portions of the plan be amended to more accurately reflect the response or to incorporate lessons learned to improve any of the four sections of the plan? The issues discussed in this section address the topics of the other sections of this report. A brief review of the specific contingency plan requirements for each topic is provided as well as a general description of the current Cplan contents. Only the most significant portions of the plan having to do with this response are addressed in this report. In addition, recommendations are included in this report that identify portions of the plan that may be amended to more accurately

reflect the response or to incorporate lessons learned to improve any of the four sections of the plan.

The review of Cplan implementation is in accordance with the Trans-Alaska Pipeline System, Pipeline Oil Discharge Prevention and Contingency Plan Ed 3, Rev 4, November 2000. Effective November 30, 2001, a new revision of the plan was approved with some text changes. This approval acknowledged that this after-action report may identify recommended plan improvements.

3. Observations and Recommendations:

A. Incident Command System

Cplan Requirements: The regulations under 18 AAC 75.425(e)(3)(C) require that the plan contain a description of the command system to be used in response to a discharge and that the command system be compatible with the state's response structure outlined in the state master plan (i.e., the Federal/State Unified Plan) prepared under AS 46.04.200.

Under 49 CFR Part 194, the response plan must demonstrate consistency with the National Contingency Plan and Area Contingency Plans.

APSC's ICS organization is described in Section 2.3 of the Cplan. The structure, duties and commitment for adequate numbers of personnel to sustain an adequate response is given in this section.

Observation: Overall, the requirements of the Cplan regarding ICS were implemented during this response. Although some recommendations are provided in the ICS section of this report such as to structure a "go team" early in the response, these are incident-specific and do not warrant amendments to the Cplan.

Recommendation: None related to Cplan implementation.

B. TAPS Leak Detection

Cplan Requirements: In accordance with the requirements of the Best Available Technology section of the plan, a case-by-case analysis and review is required under 18 AAC 75.425(e)(4)(A)(iv). This portion of the regulation states that "for a crude oil transmission pipeline contingency plan: leak detection, monitoring, and operating requirements for crude oil pipelines that include prompt leak detection as required by 18 AAC 75.055(a)."

18 AAC 75.055(a) states: "A crude oil transmission pipeline must be equipped with a leak detection system capable of promptly detecting a leak, including (1) if technically feasible, the continuous capability to detect a daily discharge equal to not more than one percent of daily throughput; (2) flow verification through an accounting method, at least once every 24 hours;"

Under 49 CFR Part 194, the response plan must list spill detection procedures. Additionally, Stipulation 2.14.2 of the Federal Agreement and Grant of Right of Way for TAPS requires that the Cplan include provisions for spill detection.

The Cplan describes the leak detection systems in place on TAPS under Section 3.1.8.3. A description is given of both means of leak detection: visual observations and three on-line leak detection methods. Section 4.2.13 of the plan gives a BAT analysis of the leak detection system and states that the transient volume balance (TVB) system for TAPS is BAT with detection thresholds of 115 bph in tight-line and 163 bph in slack-line conditions.

(1) Visual Leak Detection

Observation: A security surveillance flight detected the leak. Security surveillance flights are additional to the regular aerial surveillance schedule.

Recommendation: Alaska law and hence the Cplan only requires weekly aerial surveillance. State regulations are the most stringent regarding the frequency of aerial surveillance. No actions are required regarding Cplan implementation.

(2) On Line Leak Detection

Observations: Analysis made after the incident regarding the on-line leak detection systems did not correspond to the Cplan text because the limitations of the system are not thoroughly described. The system met the regulatory required sensitivity based on the average behavior of the system. The passage of a cleaning pig through the Pump Station 6 to Pump Station 7 pipeline segment reduced the TVB's effective sensitivity to below that as indicated in the Cplan. The BAT analysis in the plan indicates that TVB is BAT. However, under the circumstances of October 4, 2001, only the LVB system would have detected the leak within 4 to 10 hours.

Recommendations: Portions of Section 3.1.8.3 of the Cplan having to do with describing leak detection will require revision to more thoroughly describe the TAPS leak detection system. The text changes should delineate specifications and limitations of the systems more completely. Information such as when and for what percentage of time alarms are suppressed should be added. Also, more specific information about leak detection thresholds and the time required to detect a leak should be included.

The BAT section of the plan regarding leak detection, Section 4.2.13, will need to be re-written to more accurately show that leak detection for TAPS relies on the concurrent use of the LVB and TVB systems, and the deviation alarms. This is not a change in the systems, but rather a better description of the current capabilities.

APSC has a Pipeline Leak Detection Improvement Project underway to improve leak detection capabilities. (See Section III for further details). It is anticipated that this project will reduce the limitations of the systems. As changes in TAPS leak detection are made, corresponding updates to the Cplan text will be necessary.

C. Source Control

Cplan Requirements: ADEC regulations at 18 AAC 75.055(b) require that the operator be able to stop the incoming flow of oil (shut down the pipeline) within one hour of detecting a discharge. ADEC interprets this to mean oil entering TAPS at Pump Station 1. ADEC also requires source control be addressed in the contingency plan [18 AAC 75.425(e)(1)(F)(i)]. These source control procedures “to stop the discharge at its source and prevent further spread,” must also meet ADEC’s best available technology review requirements [18 AAC 75.425(e)(4)(A)(i)].

DOT-OPS regulates source control strategies under 40 CFR Part 195. BLM administers Stipulation 2.14 of the Federal Agreement and Grant of Right of Way which includes “immediate corrective action including Oil Spill Control.”

The Cplan under Section 1.7.2, Procedures to Stop the Discharge, discusses pipeline shutdown and temporary patching/repair/isolation. Under shutdown, a summary of flow stoppage and valve closure on the pipeline system is given. A short description is also included that may be used under some conditions to reduce the amount of oil spilled by keeping certain valves open or shut or by continuing to operate downstream pump stations. Under temporary patching/repair/isolation is a list of clamps and sleeves for emergency patching or repair that can be used to stop a leak.

The BAT Section of the plan states that isolation valves and temporary patching/repair are considered BAT. Current methods using the mainline valves are given in the BAT analysis table. Under Temporary Patching/Repair, a description of the method includes “Repair leaking pipe with a temporary sleeve or clamp. This includes mechanical flange leak clamps, buckle sleeves, and bullet hole clamps.” Also included is a short discussion of the 48” hydraulically operated pipeline clamp, considered an alternative method. A properly installed sleeve is given as the preferred method to repair damaged pipe.

(1) Pipeline Shutdown

Observation: Pipeline shutdown was implemented as described in the Cplan.

Recommendation: None related to Cplan implementation.

(2) Pressure Reduction

Observations: Procedures described in the plan such as holding certain valves open to attempt to back flow oil to an upstream pump station were implemented during this response. The back flow of oil at Check Valve 50 resulted in the movement of the pipeline at the check valve and tripped anchors (See Section IV of this report).

Because of the location of the bullet hole, other techniques were necessary to reduce pressure at the valve. There is currently no mention of the Pump Around Skid that was mobilized at the site and used to reduce the pressure to allow for the application of the clamps.

Recommendations: Section 1.7.2 of the Cplan should be amended to describe in more detail the considerations and possible consequences should the option to backflow oil to an upstream pump station be taken. The Cplan under this same section should also be amended to include information about the Pump Around Skid as a method of pressure reduction related to source control. Other parts of the plan should identify the personnel required to implement the skid and the appropriate training required.



Figure VIII-1: Alyeska's Pump Around Skid in Operation

(3) Stopping the Leak (Temporary Patch or Plug)

Observations: Certain clamps as listed in the Cplan under Section 1.7.2.2 were not used in the response due to worker safety considerations regarding manual installation of the clamp in a hazardous environment. The description given for the clamps in the Cplan text does not include the safety limitations of applying the devices in an uncontrolled vapor environment. The pipeline Hydraulic Clamp that was used to seal the leak is described in the Cplan as a new, prototype clamp, and its use is considered an alternative method. A number of repair clamps described in the plan were mobilized to the site and prepared for installation. The Team Hydraulic clamp, several Plidco sleeve clamps, and several bullet clamps were on site and available for use once the personnel hazard was reduced. Any of these clamps could have effectively sealed the hole in the pipe to stop the flow of oil. Subsequently, a simple device to plug and repair the hole was used – a TOR plug. This was selected for its simplicity, ease of installation, and reduction of potential long-term pipeline integrity and maintenance issues.

Although the BAT Section of the plan gives “properly installed sleeve” as the preferred method to repair damaged pipe, this is regarded generally as a permanent repair practice, rather than a source control device.

Recommendations: The Cplan should be modified to more accurately reflect the limitations of applying the clamps in a vapor environment. Information on the pipeline Hydraulic Clamp needs to be updated to reflect the testing which has occurred and its capabilities. The training section should be reviewed and corresponding changes should be made to include training having to do with clamp application and the mitigation of hazards imposed by a crude oil spill. Portions of the Cplan must be reviewed to assure that mobilization and response times take into account appropriate source control methods. The BAT Section for temporary patching and repair should be reviewed in light of the lessons learned from this incident. Plan text that now addresses permanent repairs should be reviewed to address methods that specifically relate to source control.

D. Safety

Cplan Requirements: The response action plan must include information on safety. The requirements under 18 AAC 75.425(e)(1)(C) call for a description of the steps necessary to develop an incident-specific safety plan for conducting a response, based on applicable safety standards. The required plan contents under 18 AAC 75.425(e)(3)(D) call for a description of the realistic maximum response operating limitations that might be encountered at the facility or operation and, based on environmental and safety considerations, an analysis of the frequency and duration, expressed as a percentage of time, of limitations that would render mechanical and other response methods ineffective.

AKOSH uses the requirements under 29 CFR 1910.120(q) to evaluate the emergency response.

Section 1.4 of the Cplan describes initial actions to ensure the safety of responders, the duties of the safety officer, an example of the Site Safety and Control Analysis form, ICS response actions, hydrocarbon vapor testing, and fire prevention and control.

Section 2.4 of the Cplan describes Realistic Maximum Response Operating Limitations (RMROL) which include environmental factors that affect response and prevention activities. The section also lists RMROL compensating measures.

Section 2.8 of the Cplan describes APSC's oil spill training and exercise programs. Required training for various employees is given in this section.

Observations: In general, safety requirements of the Cplan were met.

One exception had to do with respirator fit testing, whereby the fit test records of one Baseline crew employee could not be provided. Fit tests are given to employees through APSC course OSCP/04, Personnel Safety at Oil Spill Site. According to the OSCP training matrix, this course is scheduled to be taught yearly to many employees including Baseline crews.

Another exception was that no evidence could be provided to indicate that two repair crew employees received 24-hour HAZWOPER Hazardous Materials Technician training or annual refresher training prior to working on the spill.

Because of the hazardous conditions at this spill, most notably an explosive atmosphere and extreme fire hazard, a multitude of precautions were exercised in order to prevent an explosion or a fire. This resulted in source control efforts taking longer than expected. Although the Cplan lists environmental factors that may preclude response activities, such as daylight hours, temperature or wind, no discussion is given regarding factors which may contribute to a high risk of explosion or fire that may in turn preclude a response for safety reasons.

Recommendations: Section 1.4 of the plan, which discusses site safety, the role of the Unified Command, and fire prevention and control may require updating to reflect the recommendation in this report that APSC and the agencies examine fire suppression capabilities of APSC for future events.

Section 2.4 of the Cplan should be reviewed and revised to address Realistic Maximum Response Operating Limits and compensating measures having to do with explosive atmospheres, extreme fire hazards, and response personnel safety. Information should be included in the plan to more realistically describe how portions of a response may be delayed by responder safety issues. Other portions of the plan should be reviewed to ensure that threats to responder safety are realistically described, such as in the plan scenarios.

The training matrix in the plan under Section 2.8 was not completely enforced for two individuals. Training must be kept up to date and records of employees should be reviewed annually for currency.

E. Containment and Cleanup

Cplan Requirements: The regulation under 18 AAC 75.425(e)(1)(F) requires the Cplan to provide a description of the discharge containment, control, and cleanup actions to be taken to conduct and maintain an effective response. The plan should include a description of the actions to be taken to contain and control the spilled oil and to recover the contained or controlled oil. Procedures and methods to exclude oil from environmentally sensitive areas and areas of public concern are also included. Department approval criteria under 18 AAC 75.445(d) contain requirements for response strategies including adequate personnel, equipment and strategies to meet the response planning standard.

Under 49 CFR Part 194, the response plan must list response activities and response resources, personnel and equipment.

Multiple sections of the Cplan contain information related to containment and cleanup actions. The Response Action Plan (Section 1) contains information on response strategies such as communications, protection of environmentally sensitive areas, containment and control strategies and recovery strategies.

Observations: Overall, the Cplan was implemented for containment and control actions as part of the MP 400 response. Resources and personnel were mobilized in a timely fashion. Oil containment and control strategies were successful and oil was kept from reaching nearby river drainages, thereby protecting environmentally sensitive areas. Oil recovery strategies were also satisfactorily implemented.

The Cplan identifies containment site, CS 6-31A, located at the Unnamed Creek confluence with the Tolovana River, two and a half miles southwest of the pipeline. This containment site was not immediately activated as control actions were thought to be occurring successfully closer to the pipeline. However, if oil had escaped on land containment and entered Shorty Creek, it could have reached the Tolovana River. (See ICS Section, B. Operations Section, page I-3.)

Recommendations: The Cplan does not address the system that was ultimately used to track the volume of oil recovered i.e., use of a recovered oil-filtering skid with a metering system. Amending the plan to include the various techniques that may be useful to estimate oil recovery could prove useful for quantifying important aspects of the response such as temporary storage and ultimate disposition of recovered oil. The regulations under 18 AAC 75.425(e)(1)(F)(ix) require procedures and plans for estimating the amount of oil recovered.

The tactic used during the MP 400 spill to pool and collect oil by use of trenches is broadly referred to in Section 1.7.6.6.1 of the plan, Containment and Exclusion Techniques, where trenches for containing the flow of oil through a subsurface layer is discussed. However the specific technique used during this response is not discussed or illustrated. Considering the success of this technique and the number of areas crossed by TAPS where this on-land technique may be applied, this would be a useful addition to tactics manuals.

Some personnel have suggested that the Cplan should more specifically identify/list required permits. In addition, it is possible that pre-identifying certain permits during the planning process would speed up actions taken during the response. Section 1.7.9 of the Cplan discusses recovered oil transfer, storage and disposal. This section refers to APSC's EN-43-2, waste management manual for handling requirements for wastes generated from a spill. Specific permits required during a response are discussed in the scenarios, and identifying specialized permits is listed as one of the Planning Section Chief's duties in the current version of the Cplan. Although regulations require that permits be pre-identified in the plan for only non-mechanical response information, it may be useful to list the many permits that are already in place. In addition, identifying and investigating the pre-authorization for certain key permits may be a worthwhile plan improvement.

F. Return to Service

Cplan Requirements: The Cplan requires pipeline system repairs to be completed in accordance with regulatory requirements and approved methods. The pipeline restart must be conducted in accordance with methods and practices that prevent system damage and oil spills.

Observations: The repair plan was developed and implemented in accordance with regulatory requirements. JPO staff personnel had an opportunity to review the repair plan prior to execution.

The pipeline restart was conducted in accordance with system operating procedures and witnessed by a JPO representative.

Recommendation: Continue current practices.

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