



AKDOT&PF Dalton Highway Flood - After Action Review

July 9th, 2015

1. Incident Description

Flooding of the section of the Dalton highway south of Deadhorse began in mid-March 2015 when overflow from the Sagavanirktok (Sag) River began spilling onto the highway. River aufeis accumulated in the bottom of the shallow and braided river and pushed the flowing water to the top, though temperatures in the area remained below freezing.

Initially, the water overflow caused intermittent road and lane closures and the Dalton Highway was eventually shutdown in early April for seven days between Miles 395-405. Alaska Department of Transportation and Public Facilities (DOT&PF) and contractor crews battled the overflow by creating an extensive system of trenches to divert water away from the highway and by creating and continually reinforcing snow berms along the road.

This initial overflow incident resulted in the first of two disaster declarations by Gov. Walker regarding the winter/spring flooding.

On May 22, 2015 the arrival of spring break up on the North Slope brought another round of flooding, this time on a larger scale than the area had ever seen. Water washed out several sections of the highway and inundated Deadhorse and surrounding areas. With this Gov. Walker proclaimed a second disaster declaration which included the entire North Slope Borough and the Dalton Highway.

Throughout the two-and-a-half month response effort, DOT&PF collaborated with industry representatives and stakeholders as part of the Unified Incident Command (UIC) to respond to the disaster and successfully reopen the Dalton Highway. Engaged stakeholders included; the Alaska Trucking Association, BP Alaska, ConocoPhillips, ExxonMobil, ENI Petroleum, the North Slope Borough, Lynden Transport, Carlisle, Peak Oilfield Services, Alyeska Pipeline Service Company and others.

2. Continuous Improvement

The Dalton Highway was reopened on June 5th, 2015 after an 18-day closure. The response required coordination on many fronts including communications, logistics, procurement of materials and emergency response tactics.

DOT&PF's desire to continue to improve their response to any incident prompted a request to conduct an After Action Review (AAR) of the Dalton Highway Flood response. An AAR was conducted on July 9th, 2015 and was facilitated by ConocoPhillips Continuous Improvement Specialists. Invitations to participate in the AAR were sent to individuals with the DOT&PF who participated in the response. In addition to the DOT&PF personnel, individuals from the AK Trucking Association, Alaska Clean Seas, BP, Brice Construction, ConocoPhillips, Cruz Construction, DMVA Emergency Management, ExxonMobil, Lynden, Alyeska Pipeline Service Company, UAF and WorleyParsons were invited to participate in the AAR.

The AAR focused on 5 themes: Communication, Internal/External Coordination, Logistics, Emergency Response/Unified Incident Command and Procurement. Participants were asked to provide feedback on three questions.

- What actions had a positive outcome and should be replicated in future responses?
- What actions produced a negative outcome and should be avoided in future responses?
- What actions could be improved to be more efficient or effective?

A summary of the responses collected during the AAR are shared below.

3. Actions for Replication

The following activities performed during the incident resulted in positive outcomes and should be considered for replication in future DOT responses:

Communication

- The UIC utilized a variety of communication methods for disseminating information to a dispersed group of Stakeholders. Incident details, response information, photos and videos were communicated via Facebook, Flickr, Webpages, portable roadside message boards, e-mails and Town Hall meetings.
- Public Information Officers who are experienced in communicating with the media were on site early and acted as a central point of contact for communications with the media and others. Review of official communications by the UIC prior to being shared with the media was considered a best practice to ensure consistency in the information being released.
- The remote location of the flood in Northern Alaska along the Dalton Highway presented challenges for communicating information. Conducting Town Hall meetings and presenting Situational Reports (SITREP) at regularly established times helped set expectations with Stakeholders when they would receive updated incident information. Each SITREP identified the timing for the preceding SITREP. The Incident Commander invited stakeholders to assist in providing and disseminating information regarding the incident to other affected parties.

Internal & External Coordination

- The incident response was a collaborative effort between the DOT&PF and industry. The UIC invited smaller stakeholders as well as the major stakeholders to share ideas and information regarding the incident.
- Partnering with Alaska Trucking Association during the incident was extremely beneficial in coordinating activities and sharing of information with truck drivers impacted by the flooding.
- The UIC utilized the local residents of the North Slope for their knowledge of the area and for assistance with the response.
- Gathering information was vital to the response effort. Communicating with various agencies (i.e. NOAA) throughout the response was essential for having the most up to date information for the UIC.

Logistics

- During the incident, the North Slope operations still required the transport of crucial supplies and equipment during the road closure. The use of Galbriath and Fairbanks International Airports for Herc operations reduced transit times for delivery of supplies.
- The Deadhorse Aviation Center provided a convenient and easily accessible conference room for the UIC.
- Understanding the scope of the flooding patterns was crucial to planning the response. The rental of helicopters provided the means for a visual view of the flooding area which proved to be extremely beneficial.
- Early procurement of available supplies and staging of material in Deadhorse was effective in having immediate access to necessary supplies. (i.e. pipe, pumps, sandbags, supersaks)
- Obtaining hydrology expertise from NOAA, USGS, UAF, and private consultants was important in managing the flooding. The UIC reached out to a broad range of federal, state and private sources for information and expertise.
- Communication with Alyeska Pipeline Service Company was highlighted as an activity which should be replicated for any incident which occurs in close proximity to the Trans-Alaska Pipeline System.
- For future incidents, conducting an AAR of the incident should be replicated to identify opportunities for improvement.

Emergency Response/Unified Incident Command

- Conducting SITREP meetings twice a day and widely distributing meeting transcript including photos and videos was essential for sharing of incident information. Daily Town Hall meetings were held where industry representatives, truck drivers, and service companies could attend in person and receive incident updates and make inquiries.
- Designating a Liaison Officer as the single point of contact for the UIC. The Liaison Officer was also responsible for coordinating and prioritizing which vehicles were allowed first access once the road was open.
- Participants involved in the UIC were willing and able to leave positional rank outside of the UIC and assume assigned UIC roles. Setting up the UIC organizational structure, identifying supporting and supported roles, lines of communication and roles and responsibilities for each function is critical to effective UIC operation.
- The UIC was engaged and willing to listen to industry and trucking experts for advice on tactics for addressing the flooding and road repair.
- Location of the Incident Management Team (IMT) near the flooded area allowed for more efficient response and site control.
- Establishing the UIC with the right level of participation, right engagement with stakeholders, and commitment of personnel at the right time was essential to the success of the UIC.

Procurement

- Establishing a single point of contact in the UIC for contractors and field personnel to communicate procurement needs.

- Daily meetings were utilized to help identify materials needed for the response. DOT&PF, Oil industry operators and industry provided readily available materials from their own supply to support the incident response.
- Procuring materials, equipment and supplies early in the incident ensured response to the flooding was not delayed.
- The working relationship between the government, industry, and contractors in procurement of materials, equipment and supplies was based on trust and having a common goal of repairing and opening the Dalton Highway.
- Protocol for communication with contractors was established and followed. Government personnel direct to primary contractors and the primary contractors communicated with their sub-contractors.

4. Actions to Avoid

The following activities performed during the incident were identified those which should be avoided in future DOT responses:

Communication

- Avoid communicating overly optimistic repair forecasts to stakeholders affected by the incident. Communicate facts regarding the response and avoid speculating on dates or times.

Internal & External Coordination

- Lodging on the North Slope is very limited and during the early summer most industry camps are at a maximum capacity. Prior to the UIC being established, there was a duplication of efforts by DOT&PF and by industry attempting to secure lodging for personnel. Once the UIC was established, coordination of identifying and securing available lodging was performed by the UIC.

Logistics

- Avoid inconsistent communications by defining methods and resources for sharing information broadly.

Emergency Response/Unified Incident Command

- Dalton Highway is used by personal residents of the North Slope as well as industry. For future responses, consider how to conduct site control prioritization for personal resident traffic.
- For future incidents, avoid having multiple IMT's, which are not coordinated in their efforts.
- The UIC participants should avoid taking direction from others outside of the UIC. Direction given outside of the UIC diverts resources and energy away from the response.

Procurement

- Avoid defining too narrow of a scope of work in contracts. Broadening the scope of work allows for contractor flexibility in addressing changing circumstances.
- Avoid keeping maintenance and operations under the State control too long before asking for assistance from others involved in the response.

5. Actions for Improvement

The following activities performed during the incident were identified as those, which have an opportunity for improvement. An improvement in the identified learnings would improve the effectiveness or efficiency of the activity:

Communication

- The content of the SITREP could be improved by including additional details in the opening communications. Providing details such as; weather, equip-type, height of the floodwaters, number of personnel and equipment would improve the quality of the information being provided.
- Communications with external stakeholders could be improved by identifying stakeholders earlier in the event. It was identified during the incident that not all legislators received the same incident information which was provided to the Governor.
- E-mails which include photos or videos should consider system size limitations (6MB at the time of this incident) to ensure delivery to most recipients.
- Establish SITREP communications with self-subscribe functionality, which allows individuals to subscribe and unsubscribe for e-mail updates.
- Use of Weigh Stations along the Dalton Highway as a means for communicating with truckers would help disseminate information regarding the condition of the highway.
- Develop an organizational chart template for key positions required for UIC. The organizational chart can be updated as individuals are assigned to UIC roles. Organizational charts should be shared internally with the DOT&PF to increase awareness of personnel engagement in the incident.
- Sharing press releases regarding an incident internally with all DOT&PF personnel would ensure DOT&PF personnel are made aware of information provided to the media.

Internal & External Coordination

- The process for applying and obtaining access and work permits from the Department of Natural Resources is streamlined once the Governor announces a Disaster Declaration for an incident. However, the process for obtaining a permit outside of an emergency declaration could be improved to be more efficient.
- Improve the coordination with the FAA to include regular updates as the Deadhorse Airport could have been effected by the flood event. Internally, improve communications and coordination with the regional aviation staff.
- Communication and coordination with public utilities could be improved by engaging with affected utilities earlier in the response.
- Conveying a broader picture of the goals and objectives of the response to the field personnel would be beneficial in aligning the crews. Also, seeking input from the field crews could provide useful information for the UIC.

Logistics

- Future desire is to enable the use of drones for capturing images and videos of an event to view areas which are not easily accessible.
- Planning and scheduling of DOT&PF manpower could be more effective in avoiding fatigue of resources.
- The State of Alaska's radio system (AK Land Mobile Radio) was not compatible with the Dalton Highway Radio System. The UIC should determine which radio system would be most effective for use in future incidents and ensure there are an adequate number of radios available for use. Also, identification of a backup communication system in the event of a failure of the primary system.
- Preparing "Go Kits" for DOT&PF personnel would be an improvement to ensure personnel on or off duty have the appropriate contact lists and process documentation to setup the UIC for any incident type.
- The DOT&PF could consider having stockpiles of material available in the event of an incident. This would allow for initial repairs while additional material is procured.
- Consider using studies and research for better predictability of a reoccurring incident in high risk areas. Stream gauges could be used to measure water flow and water levels in high risk areas.

Emergency Response/Unified Incident Command

- Establish DOT&PF ICS Training and conduct table top drills and exercises. Conducting formal, reoccurring and in-person drills ensures DOT&PF personnel have the awareness of the process and protocol to initially respond to any incident. Consider establishing DOT&PF/ICS "Go-Teams" for other regions in the training program.
- Identifying and recognizing trigger points for a potential incident is key for an effective response. Proactively identifying the triggers for reoccurrence of incident allows for more effective monitoring of high risk areas. A number of activities were identified which could have taken place earlier in the response, such as;
 - Deployment of an Incident Commander to the response site
 - Commitment of overhead
 - Establishment of 1-800 number for information on the incident
 - Earlier commitment of State Emergency Management support
- Evaluate the need for law enforcement presence during the incident. The flooding of the highway and the ultimate road closure invoked a stressful situation. Early use of law enforcement personnel trained to handle engagement with individuals impacted by a stressful situation would have been more appropriate than DOT&PF highway flaggers engaging with the public.
- The UIC could be improved by adding more administrative staff for documentation tasks. The UIC was also limited on the number of printers available for use and personnel trained on providing printer support.

Procurement

- Develop a plan to keep gravel pits available until fully depleted. The closure of gravel pits prior to depletion hinders the ability to obtain gravel and respond quickly to an event. Use of new gravel pits during a response requires new permits and environmental clearance which delays the ability to respond.
- Early in an incident, begin the process of identifying and procuring auxiliary resources (i.e. Lidar mapping technology, environmental resources, and imagery tools). Identify existing contracts where resources can be utilized in an emergency. Information obtained from the use of auxiliary resources should be shared with stakeholders.
- Identify Storm Water Pollution Prevention Plan (SWPPP) requirements in all solicitation to potential Emergency Response contractors. Identify the terms for working within grace periods for State Permits during an incident.
- Consider starting the process for procurement and supplies early by holding a pre-solicitation conference with all potential suppliers.
- Involve the incident Construction Manager in site visits, staffing decisions, and team communications throughout the incident response.

Summary

Overall the Unified Incident Response to the Dalton Highway flood events proved to be incredibly successful under extremely difficult and complex conditions. The Dalton Highway is a highway of national significance and the closure of this highway has impacts well beyond the North Slope and Alaska. Faced with these impacts and the challenges provided by the harsh arctic environment, the DOT&PF, State of Alaska, North Slope Borough, and the oil industry came together as one to combat the impacts of this natural disaster. While there are areas of the response which can and will be improved upon, it is important to state that overall, this response was a model for other government entities and industries to follow in the future.

The complexities of the arctic and the multitude of impacted stakeholders did not deter those involved in the response. Everyone involved is to be commended for their outstanding efforts. The partnership between the State of Alaska and industry during this phenomenal event was essential. As Governor Walker stated in his April 14, 2015 press release: "I am so grateful for the dedicated men and women who have been working 24 hours a day to re-open this vital economic corridor." Working in harsh conditions on the North Slope is taxing on even the strongest individuals. The commitment of the Dalton Unified Incident Command and private contractors to work in this environment is to be commended."

6. After Action Review Participants

Participant	Company
Thompson, Aves	AK Trucking Association
Adamczak, Dan	AKDOT & PF
Bailey, Meadow	AKDOT & PF
Hess, Betsy	AKDOT & PF
Lund, Michael	AKDOT & PF
McGroaty, Steve	AKDOT & PF
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Monteleone, Dan	AKDOT & PF
Potter, Steve	AKDOT & PF
Sakalaskas, Jason	AKDOT & PF
Stutzke, Jeff	AKDOT & PF
Bunch, Bill	AKDOT & PF
Coffey, Mike	AKDOT & PF
Luiken, Marc	AKDOT & PF
Lloyd, Bark	Alaska Clean Seas
Rodriguez, Rick	BP
Trivette, Marcus	Brice Constructions
Green, Tim	ConocoPhillips
Romberg, Barry	ConocoPhillips
Barnhart, Kevin	Cruz Construction
Shelley, Aaron	Cruz Construction
Roberts, Mark	DMVA - Emergency Management
Wong, Gilbert	ExxonMobil
Barndt, Bob	Lynden
Morris, Mike	Lynden
Toniolo, Horacio	UAF Hydrologist
Martinez, Bobby	WorleyParsons