Photo by NASA Earth Observatory, April 4, 2009

Evaluation of the 2009 Drift River Oil Terminal Coordination & Response with a Review of the Cook Inlet RCAC's Role in Oil Spill Response

Commissioned by the Cook Inlet RCAC

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June 2010

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LIST OF ACRONYMS/ABBREVIATIONS

ADEC	Alaska Department of Environmental Conservation
AIMS	Alaska Incident Management System
AVO	Alaska Volcano Observatory
C-Plan	Contingency Plan (State)
CIPL	Cook Inlet Pipe Line Company
DROT	Drift River Oil Terminal
EPA	Environmental Protection Agency
FRP	Facility Response Plan (Federal)
FOSC	Federal On-Scene Coordinator
ICP	Incident Command Post
ICS	Incident Command System
IMT	Incident Management Team
KVERT	Kamchatka Volcanic Eruption Response Team
MTSA	Maritime Transportation Security Act
NCP	National Contingency Plan
NIMS	National Incident Management System
OPA90	Oil Pollution Act of 1990
PROPS	Prevention, Response, Operations & Safety Committee
RCAC	Regional Citizens Advisory Council
RP	Responsible Party
RSC	Regional Stakeholder Committee
SOSC	State On-Scene Coordinator
SSI	Sensitive Security Information
USCG	United States Coast Guard
USGS	United States Geological Survey

INTRODUCTION

Cook Inlet is a large, elongated body of water oriented in a southwest-northeast direction in Southcentral Alaska. It is approximately 150 miles long, and its width ranges from about 10 miles between the East and West Forelands, toward the north, to approximately 80 miles between the Kenai Peninsula and the mouth of the McNeil River in Kamishak Bay, toward the south.[1] The Inlet experiences the fourth largest tidal fluctuation in the world, frequently exceeding twenty-five feet, with tidal current velocities as fast as 5 knots.[2] Tidal flats are a dominant coastal feature along Cook Inlet, although marshes, rocky shores, sand and gravel beaches, and wave-cut platforms are also quite common. Cook Inlet is shadowed by six strato-volcanoes, of which, historical activity has been recorded for four: Augustine, Illiamna, Redoubt and Spurr.

The oil industry is quite active in the Cook Inlet region. Most activities are concentrated in the East Forelands area, between Kenai and Nikiski, and along Trading Bay, between West Foreland and North Foreland. Offshore platforms are also located in Trading Bay and in the upper portions of Cook Inlet. Several submerged pipelines cross the Inlet in this area as well. Refined products are stored in tank farms in Anchorage and other areas of Cook Inlet. The area includes onshore and offshore crude oil production facilities, major crude oil and non-crude oil storage, and terminal facilities in Anchorage, Nikiski, and Redoubt Bay.[3] Mt. Redoubt provides an impressive backdrop to the Drift River Oil Terminal (DROT) with an elevation of 10,197 feet. According to the Alaska Volcano Observatory (AVO) records, Mt. Redoubt erupted in 1902, 1933, 1966, 1989 and 2009.

Photo taken by Ed Marker, USGC-AVO, October 15, 2009

[1] Cook Inlet Subarea Contingency Plan, Section E-Background, 2004, Page E-11
[2] Tidal Energy. Ocean Energy Council, Retrieved 2008-11-11
[3] Cook Inlet Subarea Contingency Plan, Section E-Background, 2004, Page E-11

Twenty years have passed since the 1989-90 Mt. Redoubt eruption and emergency response to the DROT managed by the Cook Inlet Pipe Line Company (CIPL). During the 1989-90 events, the Cook Inlet Regional Citizens Advisory Council (Cook Inlet RCAC) was coming into existence legislatively as an organization under the Oil Pollution Act of 1990 (OPA90). Over the past twenty years, Cook Inlet RCAC has evolved and matured into a citizen-based organization that partners with local, state, and federal agencies, as well as citizens, and the crude oil industry to improve oil spill prevention measures and response capabilities. During the past two decades, laws were enacted requiring government agencies and industry to embrace the use of the Incident Command System (ICS) for responding to potential and actual emergencies. In addition, emergency response planning and preparedness requirements were bolstered with the goal of achieving rapid and coordinated response actions by all entities. The concept of a "Unified Command" was introduced, and has been practiced during exercises and implemented for natural disasters and oil and hazardous substance incidents that have occurred in the Cook Inlet region. The Cook Inlet RCAC staffers have been engaged during these emergency responses, and have been accepted by government and industry as having a role in the ICS.

PURPOSE

Periodically, it is healthy to review and evaluate the effectiveness of the Unified Command and Cook Inlet RCAC's role and responsibilities during an emergency response in order to insure staff and the Board have a clear understanding of their obligation in the ICS, as well as to the public. A comprehensive review was conducted of the Unified Command and Cook Inlet RCAC roles in the ICS associated with the 2009 Mt. Redoubt and DROT response, by conducting interviews with key personnel, reviewing publically-available documents, and obtaining documents from organizations willing to share. This review and evaluation includes:

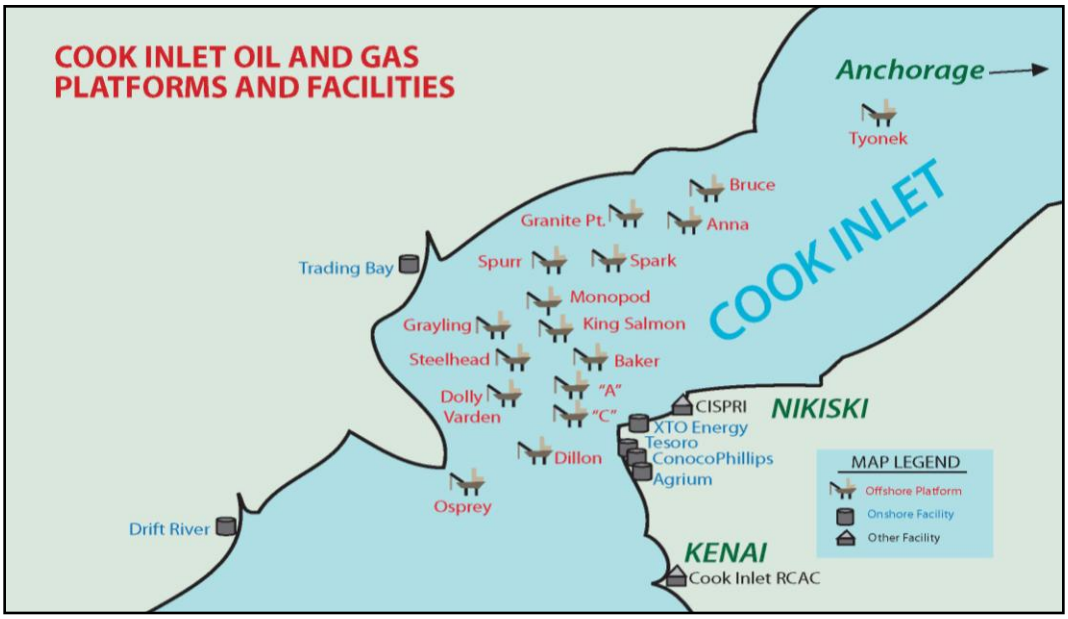
- A review and summary of the 1989-90 Mt. Redoubt eruption and response to the DROT facility to compare industry and agency actions between the two events, as well as document improvements made to the facility prior to the 2009 eruption
- A timeline of events for the 2009 Mt. Redoubt eruption and response to index actions taken by industry, agencies and the Cook Inlet RCAC.
- A review and evaluation of actions and reactions of the Unified Command members as individual members and as a cohesive group throughout the event.
- A review of the Cook Inlet RCAC's actions and reactions throughout the event; and
- Recommendations for improvements to the Cook Inlet RCAC and Unified Command.

BACKGROUND

Drift River Oil Terminal

At the end of 1965, Union, Marathon, Texaco, Superior, and Mobil had discovered new oil and gas fields in Cook Inlet. Middle Ground Shoal was producing oil, and production of gas from north Cook Inlet and oil from Granite Point was about to begin. Construction of six more offshore platforms was in the planning stages.[4] To begin oil moving to refineries, the 42-mile, 20-inch pipeline was built in 1966 along the west side of the Inlet from Granite Point to a marine terminal at Drift River. The DROT, which has crude oil storage capacity in excess of 1 million barrels, receives crude oil from the pipeline into storage for subsequent delivery to tankers berthed at the Christy Lee Platform. Most of the crude is delivered into the local refinery market.[5]

CIPL, a Delaware corporation, owns the Cook Inlet pipeline and terminal assets; current owners are Union Oil Company of California, a wholly owned subsidiary of Chevron Corporation (50%), and Pacific Energy Resources (50%). CIPL is authorized per the Regulatory Commission of Alaska to operate the assets under its filed tariff conditions. Chevron Pipe Line Company operates the facilities.[6] The following illustrates the general location of oil and gas platforms and facilities in the Cook Inlet region.[7]



Map by Cook Inlet RCAC. Map not to scale

[4] Crude Dreams: A Personal History of Oil & Politics in Alaska, Jack Roderick, 1997
[5] http://www.chevron-pipeline.com/cookinlet.asp
[6] http://www.chevron-pipeline.com/cookinlet.asp
[7] http://www.circac.org/joolmla/index.php

1989-90 Mt. Redoubt Eruption & Drift River Oil Terminal Incident

On December 14, 1989, less than 24-hours after seismic activity began, Mt. Redoubt exploded, beginning a four-month eruptive phase that included 23 major explosive events. Collateral effects included ash fall over a wide area as well as flooding of Drift River. On January 2, 1990, two powerful explosions sent the largest debris flow of the eruption phase down Drift River and flooded the DROT, as high as 29.5 inches in some buildings. Though the oil storage tanks remained intact, the electrical generation system, and therefore the means to empty the oil storage tanks, was damaged. At the time, there was over 900,000 barrels of oil, nearly four times more than the *T/V Exxon Valdez* oil spill, stored at the facility. On January 5, 1990, the Alaska Department of Environmental Conservation's (ADEC) Commissioner issued a nineteen point Emergency Order that dictated how CIPL, the operator of the terminal, was to proceed. The Emergency Order required CIPL to gather and act on environmental and engineering data regarding the location and assets of CIPL at the DROT to mitigate possible impacts, along with the plans for oil spill response and a restart of operations. This information was used to mitigate the 1989-90 events.

Mt. Redoubt Eruption, Photograph by R. Clucas, April 21, 1990

The facility was shut down pending repair and implementation of a plan to reduce the inventory down to 200,000 barrels. A response management team (pre-National Incident Command System) comprised of ADEC, CIPL, and the U.S. Coast

Guard (USCG) was convened and several long and short-term plans were discussed. Among them were:

1) Strengthening the dike surrounding the facility, using only the safest oil storage tanks at the DROT facility;
2) Direct mainline pumping into tankers at the Drift River offshore loading dock from the rigs and storage tanks at Trading Bay and Granite Point;
3) Relocation of the oil terminal.

The problem for industry in 1989-90 was the role the DROT played in the Cook Inlet oil production system. Cook Inlet oil production had been declining for years prior to the shutdown. Geology experts warned that the longer the field was shutdown, the greater the possibility that it could cause as much as a 30% reduction in oil production because of damage to the capillary action in oil-bearing formations. The oil could be shipped much faster than produced. Although a tanker could typically be loaded in one day, it could take as long as eleven days to load using the direct line method. It was not considered financially or operationally feasible or safe to leave a tanker tied to the loading dock for that long a period, especially in winter when Cook Inlet was full of, tide and wind driven pan ice. Relocating the facility was not a consideration and there is no documentation available to evaluate why this option was not considered.

When resolving issues during this incident, some communication and authority problems existed. At first, the USCG agreed with a compromise deal between CIPL and ADEC that would allow short-term storage at the DROT to speed tanker loading. In January 1990, after another eruption, the USCG reversed itself and ordered a halt to loading from the offshore loading dock, which it had authority over, citing the risk of a tank breach at the tank farm, which it did not have authority over. A compromise was finally reached that allowed very limited oil storage at the terminal and tanker loading on a case-by-case basis.

Environmental impacts from the *T/V Exxon Valdez* disaster, which had happened only months before, most likely influenced the state's decision to issue an Emergency Order, as did the economic impact on the region's industry payroll worth $50 million a year and $2 million a month in tax revenue to the state. The shutdown lasted three months. The total cost of the damage to the terminal and subsequent shutdown was not discovered for this report, nor is it known whether the three-month shutdown had a deleterious effect on production or the overall recovery of the Cook Inlet field, as was feared.

Public involvement was limited to a few public meetings and the press. Environmental organizations monitored and reported on the decisions made by the agencies and industry. Citizen Advisory Councils like the Cook Inlet RCAC came into existence because of provisions in the OPA90, too late to have any role during the 1989-90 Mt. Redoubt eruption.

The 1990 lahar damage to the DROT drove CIPL to spend more than $18 million on improvements.[8] These safety improvements included the construction of a 2-mile long berm around the terminal, along with two diversionary dikes on the Drift River. CIPL also directionally drilled the mainline 20" pipeline at the Montana Bill Creek and Drift River crossing to reduce any chance of damage during a flood, as well as emergency flood protection at the DROT.[9] These volcano protection measures influenced planning and emergency response decisions made in 2009.[10]

Industry Oil Spill Prevention & Response Contingency Plan Requirements

As a Nation, the lessons learned from catastrophic events, such as the attacks on September 11, 2001 and Hurricane Katrina in 2005, demonstrated the need to reemphasize continuity of operations as a good business practice into day-to-day planning in order to reduce vulnerability. Continuity, responsibilities, and planning are not intended to be separate and compartmentalized functions. They must be fully integrated into all aspects of an organization's daily operation. Organizations need leaders, staff, communications, and facilities to perform their essential functions, in addition to well-thought-out and detailed plans regarding those resources. Planning must include all of the requirements and procedures needed to perform essential functions. Readiness is the ability of an organization to respond to an incident. While readiness is a function of planning and training, it is ultimately the responsibility of leadership to ensure an organization, through normal procedures or with a continuity plan, can perform its essential functions before, during, and after an incident.

The OPA90, the National Oil and Hazardous Substance Pollution Contingency Plan (NCP), the Emergency Planning and Community Right-to-Know Act, and Alaska statutes and regulations require the development of oil and hazardous substance spill response plans by industry for facilities and regulated vessels, as well as government plans.

Under the Clean Water Act, as amended by OPA90, certain facilities that store and use oil are required to prepare and submit Facility Response Plans (FRP) to the U.S. Environmental Protection Agency (EPA) for approval. An FRP is intended to demonstrate a facility's preparedness to respond to a worst-case discharge. The requirement to develop an FRP applies to facilities that have a storage capacity greater than 42,000 gallons and that transfer oil over water to and from vessels. An oil spill from the facility may also pose a significant and substantial harm to the environment, into or on navigable waters and adjoining shorelines.[11] The USCG also has regulatory authority when a facility is classified as a marine terminal, which is the case with the DROT. A memorandum of understanding between the EPA and USCG Seventeenth District establishes the emergency response boundaries for USCG

[8] Memo to Cook Inlet RCAC from CIPL Company, April 7, 2010
[9] Memo to Cook Inlet RCAC Board from CIPL, February 9, 2009
[10] Memo to Cook Inlet RCAC from ADEC, April 6, 2010
[11] http://www.epa.gov/oem/docs/oil/cfr/0703 40cfr112.pdf

and EPA Federal On-Scene Coordinators for response to oil discharges and hazardous substance releases.

The oil industry in Alaska also prepares oil discharge prevention and contingency plans (C-Plans) to meet state requirements. A C-Plan submitted to the State is reviewed to ensure compliance, and is subsequently approved by the ADEC. Spill response incident management procedures are an integral part of these C-Plans. Industry C-Plan holders are also required to implement a response system compatible with the ICS, as part of their response plan. In addition to the response plan, and as a result of the 1989-90 Mt. Redoubt and DROT incident, the 2007 CIPL C-Plan contains a general section that discussed potential operational and site-specific conditions regarding natural hazards that have and could affect their facility.

Federal & State Incident Management System

The concept of an Incident Management System (IMT), or commonly referred to as an Incident Command System (ICS), was developed more than thirty-five years ago in the aftermath of a devastating wildfire in California, and is often referred to as the adopted model for oil and hazardous substance spill response. The original ICS was more than an emergency management structure as it included standardized ordering systems and a governing body, which oversaw changes and modifications, training, qualifications, callout, and many other features. These standard elements have not been fully addressed as part of an ICS for oil and hazardous substance spill response.

Federal directives[12] and State law[13] require the use of the ICS by their agencies as the emergency response system for oil and hazardous substance spill response. The NCP further governs management of responses to oil and hazardous substance releases. The USCG's adoption of the National Incident Management (NIMS) ICS occurred in February 1996, six years after the 1989-90 Mt. Redoubt eruption period.[14]

A major difference in spill response operations is the government oversight role, which is a key element in any Responsible Party (RP) led incident. Typically, natural disaster response operations do not include a responsible party and is government led. There are unique aspects of oil and hazardous substance spill response that necessitated modification of the original ICS in order to meet the desired objectives. In 1996, certain parties interested in oil and hazardous substance spill response formed a Task Force to develop an ICS that took into account these unique needs, while adhering as much as possible to the original system. In October 1998, the Alaska Incident Management System (AIMS) workgroup was created which included representatives from federal and state

[12] Homeland Security Presidential Directive (HSPD) 5
[13] AS 46.04.200(b)(2)
[14] USCG Memo to CIRCAC, April 7, 2010

agencies, as well as representatives from the oil industry and spill cooperatives. The result of this *ad hoc* workgroup was the publication of the AIMS guide.

Following Hurricane Katrina, the Federal Emergency Management Agency embraced and memorialized the use of the NIMS, which is defined as, "a set of principles that provides a systematic, proactive approach guiding government agencies at all levels, nongovernmental organizations, and the private sector to work seamlessly to prevent, protect against, respond to, recover from, and mitigate the effects of incidents, regardless of cause, size, location, or complexity, in order to reduce the loss of life or property and harm to the environment."[15]

Consistent with organizational principles, the ICS and IMT are functional, modular and hierarchical in nature. The IMT is designed to expand and contract based on the situation. The concepts of operation presented in the AIMS Guide are designed to be applied to spill incidents, regardless of nature, severity, or location. Although these concepts are flexible in nature, acceptance and application of the concepts are viewed as a critical success factor in the ability to control, organize, and manage incident response operations.

The goal of incident response operations is the restoration of normal operations while minimizing impacts to people, property, and the environment. In order to achieve this goal, incident response organization personnel must be able to move from a reactive to a proactive mode of operation by establishing and maintaining command and control over the situation in a cooperative and coordinated effort. For emergency response operations, this objective is addressed by observing standard procedures that allow response personnel to rapidly and efficiently determine and communicate effectively about:

- The problem;
- Its potential, and
- What is being done to address the problem and its potential.[16]

The IMT performs four key tasks that directly impact the organization and management of incident response operations. Upon activation, the IMT assumes command over incident operations by establishing a Unified Command. The spill response community in Alaska views the Unified Command as a structure that is created at the time of an incident to bring together the "Incident Commander" of each major organization involved in response operations. In Alaska, the members of the Unified Command are usually the Federal On-Scene Coordinator (FOSC), the State On-Scene Coordinator (SOSC), and the Responsible Party (RP) Incident Commander. The role of the FOSC and SOSC is to fulfill their legal responsibilities (i.e., to direct and/or monitor response operations), while allowing the RP or Industry to manage emergency response operations.

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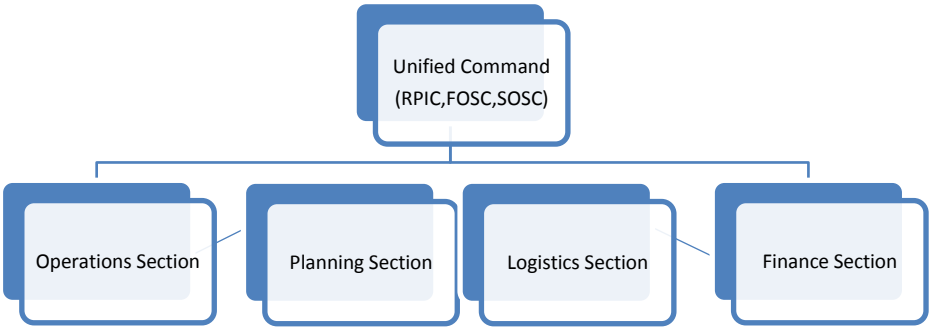
[15] http://www.fema.gov/emergency/nims/Glossary.shtm#N

[16] Alaska Incident Management System Guide for Oil and Hazardous Substance Response, November 2002, Revision 1, Page 1-3

Five major functions have been identified that serve as the foundation of the incident response organization or IMT. They are Command, Operations, Planning, Logistics and Finance/Administration. The following diagram represents the basic organization of an IMT and the table describes the primary responsibility of each section.



SECTION	RESPONSIBILITY[17]
OPERATIONS	Responsible for managing all response operations directly applicable to the incident. The Chief supervises operations, organizational elements, and directs its execution.
PLANNING	Responsible for managing the collection, evaluation, display, and dissemination of operational information about an incident.
LOGISITICS	Responsible for managing the acquisition of equipment, personnel, materials and supplies needed to carry out response operations.
FINANCE	Responsible for managing the imposition of strict financial control procedures, providing cost analysis and accounting.

In mobilization of the IMT, one factor that should be considered by the Unified Command is incident potential. Incident potential also figures in the formulation of strategic objectives. Primary factors are:[18]

☐ Hazards present at the incident scene are likely to grow in intensity;

☐ The source is under control or, if not, how long will it take to bring it under control;

☐ Significant and potential prolonged impact to affected and surrounding facilities and operations;

[17] Alaska Incident Management System Guide, Nov. 2002, Page A-5&6
[18] Alaska Incident Management System Guide for Oil and Hazardous Substance Response, November 2002, Revision 1

☐ Discharged material is not contained, or if not, how long will it take to bring it under control.

Regional Citizens Advisory Councils

Two Regional Citizens Advisory Councils (RCAC) have been established in Alaska: the Cook Inlet RCAC and the Prince William Sound RCAC. Both RCACs are independent, non-profit organizations created by the OPA90. In general, the RCACs monitor and advise on oil industry programs related to spill prevention and response, tanker/facility safety, and environmental impact assessments. The OPA90 specifically indentifies the membership, terms and duties of the RCACs as well as the creation of two committees within each organization. The committees are:

☐ Committee for Terminal and Oil Tanker Operations and Environmental Monitoring and,

☐ Committee for Oil Spill Prevention, Safety, and Emergency Response

The Committee for Oil Spill Prevention, Safety, and Emergency Response or "Oil Spill Committee" is created to review and assess measures designed to prevent oil spills and the planning and preparedness for responding to, containing, cleaning up, and mitigating the impacts of oil spills.[19] With respect to the Cook Inlet RCAC, the terminal facilities, offshore facilities, or crude oil tanker owners and operators enter into a contract to fund the organization on an annual basis and the USCG annually certifies that the organization is fulfilling its obligation stipulated in OPA90.

RCAC's Emergency Response Role as Identified in Government Documents

The term Regional Stakeholder Committee (RSC) was developed in the AIMS Guide to denote the group of stakeholders who may have a vested interest in a spill event. An RSC may be activated for significant incidents to advise the Unified Command and provide recommendations or comments on incident priorities, objectives, and community concerns. For spills affecting the Cook Inlet Subarea,[20] Cook Inlet RCAC may be called upon to assume the role of the RSC until the Unified Command formally seats one.[21] This same role has been identified for the Prince William Sound RCAC in the Prince William Sound Subarea Contingency Plan. RSC membership may vary from incident to incident and from phase to phase. The composition of the RSC may include community emergency coordinators,

[19] Oil Pollution Act of 1990, Sec 5002(d)(3)(f)
[20] Cook Inlet Subarea Plan, Part Two, Emergency Response, Page A-12
[21] Alaska Incident Management System Guide for Oil and Hazardous Substance Response, November 2002, Revision 1

landowners, leaseholders, Native organizations, non-profit and volunteer organizations, and special interest groups affected by a spill.[22]

RSCs do not play a direct role in setting incident priorities or allocating resources, however, the RSC can advise the Unified Command and provide recommendations or comments on incident priorities, objectives, and the incident action plan.[23] The RSC is not directly involved in tactical operations, though some of its members may be. A chairperson elected by the RSC members will facilitate each committee meeting. The Liaison Officer, a member of the Command staff, coordinates Stakeholder Committee activities. RSC discussions are documented and their recommendations and dissenting opinions are communicated to the Unified Command through the Liaison Officer.[24]

During a spill response,[25] RCAC personnel may monitor on-water activities and observe and verify spill response and cleanup efforts.[26] The RCACs inform local community members and other concerned groups about response activities, as well as provide information on local concerns and priorities to the Unified Command in order to facilitate operation decisions.[27] The customary response of an RCAC is to provide local knowledge and technical expertise within the ICS structure (e.g., as part of the Operations and Planning Sections, and the Joint Information Center).

Cook Inlet RCAC Emergency Response Policy and Approach

Cook Inlet RCAC has developed and adopted a five-year strategic plan, which identifies the organization's program priorities to address the implementation and completion of tasks and mandates outlined in OPA90. The strategic plan establishes priorities and is used by each Committee as a tool to guide the organization's annual work plan. The Prevention, Response, Operations & Safety Committee (PROPS) satisfies the committee requirement identified in OPA90 as the "Oil Spill Committee". The primary focus of the PROPS Committee is related to work plan development, as well as projects and studies designed to provide recommendations for minimizing oil spill risk in Cook Inlet. The secondary focus of the Committee is to review and monitor spill response efforts and the use of the best available technology. The Committee formulates advice and recommendations for the Board of Directors. Committee members and staff work together to advance projects and

[22] Alaska Incident Management System Guide for Oil and Hazardous Substance Response, November 2002, Revision 1, page A-7
[23] Alaska Incident Management System Guide for Oil and Hazardous Substance Response, November 2002, Revision 1, page A-7
[24] Alaska Incident Management System Guide for Oil and Hazardous Substance Response, November 2002, Revision 1, page A-7
[25] Alaska Incident Management System Guide for Oil and Hazardous Substance Response, November 2002, Revision 1, page A-7
[26] Cook Inlet Subarea Contingency Plan, Section A, 2004, Page A-13
[27] Cook Inlet Subarea Contingency Plan, Section A, 2004, Page A-13

facilitate communications among citizens, regulatory groups, special interest groups, and industry.[28]

A component of the PROPS and managed by Cook Inlet RCAC staff is the Prevention and Response Program. The Program exists within the Cook Inlet RCAC Strategic Plan, 2008-2013 and the purpose of this program is to, "develop oil spill and response projects and studies to minimize the risk of oil discharge into Cook Inlet by providing a basis for recommendations to enhance prevention and response activities and facilitate communication between citizens, regulatory groups, special interest, and industry."[29] In 1993, the Cook Inlet RCAC Board of Directors developed an internal policy for personnel on oil spill notification procedures. This procedure has been reviewed frequently since it was originally developed, and amended as necessary. The policy articulates when and how staff will notify Council and Committee members of an oil spill or a potential of an oil spill in Cook Inlet. All significant (20 gallons of oil or more) and/or chronic oil spills in Cook Inlet shall be reported, as soon as possible, to the President of Cook Inlet RCAC and the Executive Director if not already notified.[30] The policy does not describe staff roles and responsibilities during an emergency response. The Executive Director is essentially delegated the authority to report to the command center with staff.[31] The policy is clear that staff will not be exposed to hazardous substances or situations and no unbudgeted expenses may be incurred.

Cook Inlet RCAC staff routinely attends and participates in oil spill exercises; drills and training sponsored by industry and government agencies. The Executive Director assigns RCAC staff to a position within the IMT. RCAC staff integrates with government and industry representative and provides information on local priorities and concerns.

Prince William Sound RCAC Emergency Response Policy and Approach

In contrast to the Cook Inlet RCAC, the Prince William Sound RCAC has developed an Incident Response Plan for its organization through their Oil Spill Response Operation Program. The Prince William Sound RCAC Incident Response Plan provides guidelines for the Council to respond during an oil spill or another incident involving oil transportation in the Sound.[32] The Incident Response Plan is designed to be a guidance tool. The plan includes a communication plan with notification instructions, directions and control of the organization and staff. The organization and assignment of responsibilities include position checklists, which

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[28]http://www.circac.org/joomla/index.php?option=come_content&view=article&id=7&Itemid=15

[29] Cook Inlet Regional Citizens Advisory Council Strategic Plan: 2008-2013, page 12

[30] Cook Inlet Regional Citizens Advisory Council Personnel Policy #23, Adopted and amended on October 2, 2006

[31] Cook Inlet Regional Citizens Advisory Council Personnel Policy #23, Adopted and amended on October 2, 2006

[32] http://www.pwsrcac.org/projects/OSPRops/emergresp.html

generally follow the ICS structure. A resource and approved expert list is also included in the plan.

The purpose is to outline a single comprehensive plan, which describes a response structure that works within the framework of the Council's mission and mandate, and to provide timely, useful, and accurate information to the public and stakeholders. Although, the Prince William Sound RCAC's Incident Response Plan is designed to align with, and fit within the Incident Command System mandates, it emphasizes a structure independent and autonomous from the Unified Command's Incident Management Team.

Comparison on Efficacy of the RCACs

The following table illustrates the differences and similarities between the two RCACs.

	Government Plan	Internal Documents	Incident Mgmt System
Cook Inlet RCAC	Cook Inlet Subarea Contingency Plan; Alaska Incident Management System Guide identifies roles and expectations.	Personnel Policy #23 for Spill Notification	Integrated into the overall Incident Management Team
Prince William Sound RCAC	Prince William Sound Subarea Contingency Plan; Alaska Incident management System guide identifies roles and expectations.	Incident Response Plan	Primarily independent of the Incident Management Team and autonomous

By integrating into the ICS, Cook Inlet RCAC staff is able to address any dissenting issues early and throughout a response. Integration also allows for the collection of real-time information, which can subsequently be communicated to Board and Committee members. Based on interviews conducted with industry and government representatives, the integration approach has added value during a response and built respect and trust between all parties.

Alaska Volcano Observatory

The Alaska Volcano Observatory (AVO) is a joint program of the United States Geological Survey (USGC), the Geophysical Institute of the University of Alaska Fairbanks, and the State of Alaska Division of Geological and Geophysical Surveys. AVO was formed in 1988 to monitor and study Alaska's hazardous volcanoes, to predict and record eruptive activity, and to mitigate volcanic hazards

to life and property.[33] AVO scientists played a pivotal role in communicating activity and changes throughout the 2009 Mt. Redoubt and DROT incident. The USGS Volcano Hazards Program has adopted an alert-notification system nationwide for characterizing the level of unrest and eruptive activity at volcanoes.[34] The standardized USGS alert-notification system for volcanic activity was designed to be useful to people on the ground and to those in aviation. AVO maintains close communication links with other critical agencies such as the National Weather Service and the Federal Aviation Administration during eruptions and when volcanic activity triggers conditions of heightened concern. There are two parts to the alert-notification system: a four-tiered Volcano Alert level and a four-tiered Aviation Color Code, which was originally developed by the Kamchatka Volcanic Eruption Response Team (KVERT). Definitions of the color reflect KVERT's interpretation of the behavior of a volcano. The following table represents the Aviation Color Code used by the Federal Aviation Administration to provide notice to airmen and the KVERT[35]/USGS Volcanic Alert Level.

Aviation Color Code	Volcano Alert Levels	Description of Volcano's Behavior
GREEN	NORMAL	No eruption. Volcano is in quiet "dormant" state.
YELLOW	ADVISORY	An eruption is possible in the next few weeks and may occur with little or no additional warning. Small earthquakes detected locally and/or increased levels of volcanic gas emissions.
ORANGE	WATCH	Explosive eruption is possible within a few days and may occur with little or no warning. Ash plume(s) not expected to reach 25,000 feet above sea level. Increased number of local earthquakes. Extrusion of a lava dome or lava flows (non-explosive eruption) may be occurring.
RED	WARNING	Major explosive eruption is expected within 24-hours. Large ash plume(s) expected to reach at least 25,000 feet above sea level. Strong earthquake activity detected even at distant monitoring stations. Explosive eruption may be in progress.

2009 Mt. Redoubt Eruption and Drift River Oil Terminal Incident

A detailed timeline for this incident was developed based on publically available records. In order to create a complete timeline primarily for actions taken prior to the formation of a Unified Command, individual interviews were conducted with key players and a meeting was conducted on April 22, 2010, which included members of the USCG, ADEC, CIPL, Chevron and Cook Inlet RCAC staff. The timeline

[33] http://www.avo.alaska.edu/about/index.php
[34] http://volcanoes.usgs.gov/activity/alertsystem
[35] http://www.kscnet.ru/ivs/kvert/color_eng.php

includes the date, brief description of the event, agency/organization response action and reference documents that provide additional details for the specific days when volcanic activity levels changed or actions were taken by involved agencies/organizations. The timeline can be found in Appendix A of this document.

All of the agencies/organizations involved with this incident have mandated responsibilities that have been memorialized in emergency plans, policies and procedures. The following table summarizes the primary planning documents used by each entity.

	Emergency Plans, Polices, and Procedures	Date Approved
Cook Inlet RCAC	Personnel Policy #23	February 6, 1993 Revised October 2, 2006
ADEC	Unified Plan: Alaska Federal and State Plan for Response to Oil & Hazardous Substance Discharges & Releases	Change 3, January 2010
	Cook Inlet Subarea Plan	Change 1, May 2004
USCG	National Contingency Plan	1994
	Unified Plan: Alaska Federal and State Plan for Response to Oil & Hazardous Substance Discharges & Releases	Change 3, January 2010
	Cook Inlet Subarea Plan	Change 1, May 2004
CIPL	Cook Inlet Pipeline Company Oil Discharge Prevention and Contingency Plan Drift River Facility	November, 9 2007

During the late fall/early winter of 2008, Mt. Redoubt began waking up after a long period of dormancy. In December, communication between AVO and CIPL began with the first increase in seismic activity.[36] CIPL immediately established four fully staffed operational teams to deal with the technical and logistical issues posed by the eruption.[37] These teams, based in Houston, worked seven days a week and up to fourteen hours a day, to anticipate and solve the full range of safety and environmental issues threatening the facility and surrounding area.[38] Concerns these teams addressed included:

- How to safely remove oil from the tanks to prevent a possible rupture and catastrophic oil spill in Cook Inlet;

[36] Personal communication with CIPL/Chevron, February 25, 2010
[37] CIPL Memo to CIRCAC, April 7, 2010
[38] CIPL Memo to CIRCAC, April 7, 2010

- Once emptied, how to keep tanks from becoming buoyant and damaging piping or being pushed out into the Inlet during a potential flooding incident;
- How to prevent ballast water added to the tanks from expanding as it froze over the winter, potentially rupturing valves and flanges, and threatening tank integrity;
- How to ultimately clean the tanks and remediate contaminated water they contained; and,
- How best to bring the facility back on line to transport crude oil for delivery into tankers at the Christy Lee platform.[39]

In addition, CIPL was developing a public communication plan, hired local communications assistance and developed a stakeholder database.[40]

In mid-January, the unsettling behavior of Mt. Redoubt began to increase. At that time, Cook Inlet RCAC staff gathered information from all parties: CIPL, USCG, AVO and ADEC to forward to the Board members. The agencies/organizations began reviewing documents from the 1989-90 incident, learning about the modifications made to the DROT and understanding the safety issues associated with a potential eruption of Mt. Redoubt. Through recommendations to the above parties, Cook Inlet RCAC Executive Director began facilitating discussions to draw down the crude oil inventory at the DROT. [41] At that time, an "informal" Unified Command was established and updates provided on an as-needed-basis between the parties. By January 29th, volcanic activity had increased markedly. AVO increased the Aviation Color Code to Orange and the Volcano Alert Level to Watch. Based on available monitoring data, AVO determined that an eruption similar to the 1989-90 events was the probable outcome and could occur within days or weeks.

On February 6th, Cook Inlet RCAC organized a Director information briefing with the CIPL, ADEC, USCG, EPA, and Kenai Peninsula Borough Office of Emergency Management. The goal of the briefing was to gather information and obtain a better understanding of the improvements made to the DROT, and to get assurance that the oil inventory at the facility would be kept to a minimum. Citing Federal Trade Commission and Maritime Transportation Security Act confidentiality requirements, CIPL's Security Plan, designated as sensitive security information (SSI), precluded them from divulging the actual amount of oil at the terminal to the Cook Inlet RCAC. CIPL did share information on the percentage of oil capacity being occupied in both active storage tanks. Information regarding the actual quantity of oil at DROT was shared with the USCG and ADEC representative and they were required by law to keep the information confidential because of the SSI designation. Questions continued to be raised about the validity of the reason for not providing the actual oil inventory volumes, based on the fact that similar information is

[39] CIPL Memo to CIRCAC, April 7, 2010
[40] CIPL Memo to CIRCAC, April 7, 2010
[41] Mount Redoubt/Drift River Oil terminal Timeline-CIRCAC staff activity report, April 25, 2009

routinely provided to the Prince William Sound RCAC in regards to inventory levels at the Valdez Oil Terminal. Over-flights conducted by AVO personnel on February 6th, revealed increased water discharge from the lower Drift glacier into Drift River. In addition, AVO reported that CO^2 levels several times greater than those observed the previous autumn had been measured.[42]

On February 9th, CIPL sent a written status report to the Cook Inlet RCAC Board informing them that CIPL had taken extensive steps to protect their employees and contractors and of actions taken to safely secure their operations at the DROT to protect the environment.[43] Non-essential personnel were removed from the DROT and CIPL had been conducting drills with the remaining crew to ensure a safe shutdown of the terminal and minimize any environmental impacts.[44] With heightened concerns of an imminent eruption, the USCG tracked marine traffic movement throughout Cook Inlet, monitored the volume of oil stored at the DROT, examined alternative operating procedures, and issued notice to mariners regarding the potential for ash fall.[45]

On March 15th, there was a release of steam and ash that reached 15,000 feet,[46] followed by two major explosive events on March 22nd. The result of the latter explosive events were pyroclastic flows and associated lahars that flooded Drift River, which contacted the tertiary containment dike at DROT and pushed along the containment and around the end onto the runway area, and around the hangar and storage area covering it with several feet of mud and debris. On March 23rd, the ADEC and the USCG conducted over-flights of the area and each agency issued their first Situation/Pollution Report. The following day, March 25th, the first formal meeting of State/Federal Joint Command was held in the form of a teleconference. During the teleconference a general agreement was reached to create a government response management framework; the current situation and possible fate of DROT was discussed. A State/Federal Joint Command is a structure where the government leads the response and planning activities without a responsible party, or with limited involvement from the responsible party. The State/Federal government essentially integrates their personnel and resources into an Incident Management Team.

Two more large eruptions also occurred on March 25th. The following day, a very large eruption sent ash and steam to 65,000 feet, according to the National Weather Service.[47] The Alaska Volcano Observatory (AVO) raised the Aviation Color Code to RED and the Volcano Alert Level to WARNING. On March 27th, a FLASH FLOOD WARNING was issued for Drift River. The President of Tesoro Maritime

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[42] DMVA/DHS&EM Situation Report, February 6, 2009
[43] CIPL Memo to the CIRCAC Board, February 9, 2009
[44] CIPL Memo to the CIRCAC Board, February 9, 2009
[45] USCG Memo to CIRCAC, April 7, 2010
[46] DMVA/DHS&EM Situation Report, March 16, 2009
[47] DMVA/DHS&EM Situation Report 09-085

Company announced his company's willingness to bring a tanker to Cook Inlet to begin drawing down the crude oil inventories at DROT.

Drift River Oil Terminal, Photograph taken by AVO personnel, March 23, 2009

On March 31, 2009, an Incident Command Post (ICP) was activated at the Sheraton Hotel in Anchorage. A Unified Command consisting of the USCG, ADEC, and CIPL Incident Commander was formally established and unified response objectives. The primary objectives were to ensure the protection of citizens and response personnel and the environment. Cook Inlet RCAC personnel were imbedded in the Unified Command's incident management team. One Task Force and three workgroups were established within the management structure to develop tactical plans with the goal of accomplishing incident assignments. The Task Force/workgroups were:

- ☐ Lahar & Flooding Forecasting
- ☐ Spill Response
- ☐ DROT Debris Removal & Terminal Repair
- ☐ Facility Restart & Oil Movement

Additional industry resources and personnel from Chevron's worldwide response team, as well as contract personnel were integrated into the incident management team and daily Incident Action Plans were generated.[48]

Limited members of the public were publically criticizing the Unified Command for not placing the objective of protecting the environment higher than operational continuity of the DROT[49,50], when in fact the Unified Command's objectives were to:

- Ensure safety of citizens and response personnel;
- Maximize the protection of the environment;
- Maximize the protection of the Drift River Facility Assets;
- Manage a coordinated response through the Unified Command;
- Keep stakeholders (internal & external) and the public informed of response activities;
- Ensure safe drawdown of tank capacity; and,
- Develop a Long-term plan for continued Cook Inlet oil production.[51]

On April 1, the FOSC issued a Captain of the Port (COTP) Order to ten different Cook Inlet petroleum-based operators informing them of the significant safety hazardous associated with the Mt. Redoubt eruption and release of volcanic ash. The COTP Order directed the operators to suspend all ongoing and future petroleum product transfers taking place over the water during ash fall advisory. Normal operations were allowed to continue if there was no ash fall advisory.[52]

The Unified Command objectives changed following the eruption of Mt. Redoubt on April 4th. Since the safety of personnel at the DROT was the primary concern, CIPL decided to shut down the DROT indefinitely. As a result of that decision, the development of a long-term plan for continued Cook Inlet oil production was no longer an objective. With that in mind, the decision was made to completely draw down the DROT crude oil tanks and then demobilize the crews from the facility.[53]

On April 6, the *T/V Seabulk Arctic* completed the transfer of approximately 60% of the crude oil from the two tanks in service at the DROT facility. In prior days leading up to the transfer operation the issue of using freshwater and/or seawater to ballast the tanks was discussed by the Facility Restart and Oil Movement workgroup. Due to the lack of available freshwater, both operational tanks were

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[48]http://www.dec.state.ak.us/spar/perp/response/sum_fy09/090324201/090324201_index.htm

[49] Personal communication with USCG, March 9, 2010

[50] ADEC Memo to CIRCAC, April 6, 2010

[51] ADEC Memo to CIRCAC, April 6, 2010

[52] USCG COTP Order 21-09, Cook Inlet Pipeline/Drift River and other operators, April 1, 2009

[53] ADEC Memo to CIRCAC, April 6, 2010

ballasted with seawater. This was a precautionary action to keep the tanks from floating, if a significant flood should occur at the facility. During the evening, all CIPL crew were safely evacuated from the DROT facility and the Christy Lee loading platform.

On April 7, the USCG Captain of the Port or FOSC issued an Administrative Order to CIPL. The FOSC determined that an imminent and substantial endangerment to the public health and welfare or to the environment existed because of a threatened spill of oil or other hazardous substances from a vessel or facility.[54] The Administrative Order established six actions to be taken:

1. Continue emergency response efforts in accordance with the direction of the Unified Command;
2. By April 14, 2009, install a system to provide immediate notification of damage done to the facility tank farm as a result of volcanic activity or natural events related to a volcanic eruption;
3. Continue to meet all of the requirements stipulated in 33 CFR 154 with regards to personnel training requirements, drills, exercises, maintenance, etc.;
4. Develop and submit for approval a "restart plan";
5. The "restart plan" shall include a testing proposal of water stored in the tanks for any contamination;
6. Prior to any transfer operation a "transfer plan" must be submitted and approved, which includes a proposal for disposal of the water stored in the tanks.[55]

The ICP was deactivated on April 7th and response personnel were placed on standby. The Cook Inlet RCAC hosted and facilitated a town hall meeting in Kenai on April 7th, and the Unified Command briefed the public on the DROT situation. Approximately 80 people attended, including people who called in on the telephone.[56] The Unified Command continued to meet on a weekly basis to discuss the situation and determine whether additional actions would be necessary.[57] As time passed and Mt. Redoubt's behavior settled down, the Unified Command met on a monthly or periodic basis since actions being implemented by CIPL were primarily operational.

On August 4, 2009, the *T/V Mississippi Voyager*, under contract to Chevron Shipping, arrived at the Christy Lee Platform to load oil from the tanks at the DROT facility, and replace the seawater ballast in the storage tanks with freshwater the tanker had loaded from the Columbia river. On August 7, 2009, CIPL completed

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[54] USCG Administrative Order FIN#KEND5005, April 7, 2009
[55] USCG Administrative Order FIN#KEND5005, April 7, 2009
[56] http://www.dec.state.ak.us/spar/perp/response/sum_fy09/090324201_meeting_April7.htm
[57] http://www.dec.state.ak.us/spar/perp/response/sum_fy09/090324201/sitrep/090324201_sr_15.pdf

removal of oil and water from tanks 1, 2, and 3. Removal of all oil and water was not feasible due to current operating limitations. Tanks 1 and 2 were taken out of service and flanged off after a feasible amount of oil and water was removed.[58] On August 6, 2009, the COTP Order 21-09 issued to CIPL on April 1st was rescinded, allowing CIPL to conduct normal operations.[59]

On August 24th, Cook Inlet RCAC hosted and facilitated a second public meeting in Kenai so that the Unified Command to answer questions and discuss the status of the DROT and plans for facility restart. The Cook Inlet RCAC Executive Director also provided an update to the public on his organization's activities associated with this incident response. A total of twenty-three public members attended the meeting, nineteen in Kenai and four in Homer, AK.

Evaluation of the 2009 Response and Coordination

There are a number of differences between the response in 1989-90 and 2009. Legislation on the state and federal level, spurred by the *T/V Exxon Valdez* disaster, put in place regulations that helped build a framework for dealing with emergency preparedness, prevention, and response issues and clarified the government's regulatory authority. The Cook Inlet RCAC came into being. The ICS was adopted and had been in use by the state and federal government, as well as industry, for years prior to the 2009 Mt. Redoubt eruption.

Approximately 30-days into the 1989-90 eruptive phase of Mt. Redoubt, the ADEC Commissioner issued an Emergency Order to CIPL. The purpose of the Emergency Order was to cause the operator to take emergency steps to deal with an imminent threat. Under the Emergency Order, the Commissioner was able to demand actions that were not otherwise specified in statute or regulations to mitigate a threat.[60] Weaknesses that had been identified concerning the DROT facility and the lack of an in-place response mechanism were addressed. Protective dikes around the entire facility, as well as around each tank that was found to be inadequate in 1989-90 were strengthened.

As soon as the mountain woke up in 2008-2009, the Cook Inlet RCAC Executive Director began taking action, and stayed focused and involved to encourage action such as organizing and scheduling briefings with the "informal" Unified Command and recommending the increased frequency of tanker loading to reduce the risk of an oil spill at the DROT. Per their mandate, Cook Inlet RCAC staff attended all meetings, and gathered and disseminated as much publically available information as possible to the Cook Inlet RCAC Board and Committee members, as well as the public.

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[58] http://www.dec.state.ak.us/spar/perp/response/sum_fy09/090324201/siterep/09324201_sr_21.pdf

[59] USCG COTP Order 21-09 Rescission, August 6, 2009

[60] ADEC memo to CIRCAC, April 6, 2010

The inability to openly share information between all agencies/organizations about the amount of oil in the facility tanks exposed a new issue. The Maritime Transportation Security Act (MTSA) was passed in 2002, following the September 11th attack on the Nation. The MTSA requires industry to submit a Security Plan for Coast Guard approval. The plans are considered to contain security sensitive information (SSI) and are classified as such by the USCG. Due to CIPL's Security Plan being designated as SSI, they could not divulge the oil storage volume to the public, and the USCG was placed in a position where they could not release the information. Industry can submit a waiver to the USCG with a justification or rationale for not having the plan or a portion of the plan considered SSI.[61] CIPL did submit a waiver to the USCG on November 24, 2008, requesting removal of the SSI designation. The USCG Headquarters denied CIPL's request on April 15, 2009.

Even though the CIPL C-Plan and government response plans were in place, a Unified Command was not convened until after the March 31st eruption. This was despite requests to convene from individuals in the USCG and ADEC.[62] CIPL was reluctant to participate early in a formal Unified Command since there was no active oil spill, only an imminent threat.[63] According to CIPL, corporate standards come into play when establishing a formal Unified Command.[64] Based on interviews with industry, USCG and ADEC personnel, an "informal" Unified Command was established in mid-January. ADEC, USCG and CIPL had meetings and conducted site visits to discuss facility operations, and to determine mitigating strategies in advance of the eruption.[65] Members of the "informal" Unified Command were aware of the past eruption and its impact, and also of the significant subsequent hardening of the facility following the previous eruption to prevent damage to the facility.[66] Based on interviews with industry personnel, CIPL did begin taking some preparatory action in late-December when notified by AVO of the increased volcanic activity.[67] The position of CIPL related to not classifying the Mt. Redoubt eruption as an "incident" did not prevent the USCG from being fully engaged by monitoring vessel traffic, directing increased tanker visits, and daily tracking volumes of oil stored at the DROT.[68] The ADEC was also carefully monitoring conditions from the beginning, had notified the Department of Law to draft an Emergency Order well before the formal Unified Command was activated and also obtained information about the volume of stored oil. [69] The USCG and ADEC had been providing updates

[61] Personal communication with USCG MSD Kenai personnel, March 15, 2010
[62] Personal communication with USCG and ADEC representatives
[63] Personal communication with ADEC, USCG, EPA representatives
[64] CIPL/Chevron statement, April 22, 2010
[65] USCG memo to CIRCAC, April 7, 2010
[66] USCG memo to CIRCAC, April 7, 2010
[67] Personal communication with CIPL/Chevron, February 25, 2010
[68] USCG memo to CIRCAC, April 7, 2010
[69] ADEC memo to CIRCAC, April 6, 2010

to individuals and other agencies prior to the establishment of a formal Unified Command.[70]

A State/Federal Joint Command was established on March 25th and found to have limited effectiveness without industry's participation.[71] The communication links between industry and within ADEC and USCG were cumbersome and time consuming.[72] Agency and industry personnel were working independently and the need existed to coordinate efforts by establishing an Incident Command Post (ICP) in Anchorage at the Sheraton Hotel. On March 31st, the ICP was established and a formal Unified Command recognized.

Once a formal Unified Command was established, personnel assigned to the IMT were able to work more efficiently in a cooperative and coordinated manner using common terminology and procedures that facilitated team building and communications within the response organization. The Unified Command organized and managed the response operation by established objectives. Strategic plans for tactics were developed, necessary resources identified, and the tactics were implemented successfully. The benefit of having a formal Unified Command using the ICS was that industry and government became functional. Communicating information to the public became transparent with the use of a Unified Command website, posting of daily situation reports, incident action plans, press releases, fact sheets and other public information releases. As described in the Cook Inlet Subarea Plan and AIMS guide, the Cook Inlet RCAC fulfilled its roles and responsibilities as the Regional Stakeholder Committee. The Executive Director and staff hosted and facilitated two town hall meetings. Cook Inlet RCAC staff imbedded themselves in the IMT, providing necessary local insight and information for the development of response options and plans. The organization worked cooperatively, to the limit of its legislated authority, to be as useful as possible and bring the emergency to a successful conclusion.

The ADEC advised CIPL to amend their 2007 state approved C-Plan. This amendment was driven by the various agencies' need to know exactly how CIPL would react in the case of future volcanic activity near or impacting the DROT, and to achieve accuracy for response planning purposes.[73] The Cook Inlet RCAC sent a letter to the state requesting the C-Plan amendment undergo public review, however, the ADEC determined the amendment was minor and did not warrant public review since the changes to the C-Plan would not increase the risk of a release or the response planning standard of the facility. In addition to the general section of the C-Plan that discussed potential operational and site-specific

[70] Personal communication with ADEC, February 11, 2010; Personal communication with USCG, March 9, 2010
[71] Personal communication with ADEC, February 11, 2010
[72] Personal communication with ADEC, February 11, 2010
[73] ADEC memo to CIRCAC, April 6, 2010

conditions regarding natural hazards, the plan now contains volcanic alert information and the actions that would be taken at the DROT.

Recommendations

1. Ramping up a Unified Command and Incident Management Team. The indicators for activating a Unified Command are not always clear. Certain types of natural hazard events in Alaska may not require that a Unified Command be utilized simply because of the remote location, and lack of threat to people, property and the environment. The predictability of knowing whether a volcano will erupt is typically based on the type of volcano, eruption history and observations made by scientists. Disaster alert-systems have been developed on a global level for floods, earthquakes, tsunamis and tropical cyclones/hurricanes, and are used as a tool to facilitate response coordination. Limited guidance and no actual oil spillage may have contributed to the indecisiveness regarding activating a formal Unified Command during the 2009 Mt. Redoubt and DROT incident. Referring to the initial coordination efforts as "informal" minimized the need to communicate preparedness actions and assurance to the public. The fact that the Cook Inlet RCAC organized a briefing session in February to gather and communicate information to their constituents should have been an indicator that the public was interested in knowing what was being done to prevent an oil spill at the DROT. A formal Unified Command is not necessary to convey a message of assurance; since meetings were occurring between the USCG, ADEC and CIPL existing tools such as a press release or situation report could have been used to keep the public informed.

As discussed earlier, the KVERT uses a color-coded classification, and definitions of the color reflect KVERT's interpretations of the behavior of the volcano.[74] Definitions are listed below followed by general descriptions of typical activity associated with each color. The author has added a third column to the KVERT classification scheme to provide guidance on when to begin communication and organize emergency response efforts. Risk management is the process to identify, control, and minimize the impact of uncertain events. The ICS provides a structure to manage the risk and is designed to expand or contract given available information and circumstance. The system is intended to be flexible. Government response organizations may want to consider reviewing classification schemes developed for natural hazard events (i.e. hurricanes), and adapt them as guidance on when to ramp-up the response organization. The Cook Inlet RCAC may want to consider recommending to ADEC, USCG, and EPA this guidance be discussed, reviewed and incorporated into the government response planning documents. The figure below was developed based on a discussion with USCG personnel involved in the 2009 DROT incident.

[74] http://www.kscnet.ru/ivs/kver/color_eng.php

Color Code	Description of Volcano Behavior	Response Actions
GREEN	No eruption anticipated. Volcano is in quiet, "dormant" state.	**No action necessary.**
YELLOW	An eruption is possible in the next few weeks and may occur with little or no additional warning. Small earthquakes detected locally and/or increased levels of volcanic gas emissions.	**Establish a Unified Command and Communication Schedule. Identify members of the Incident Management Team.**
ORANGE	Explosive eruption is possible within a few days and may occur with little or no warning. Ash plume(s) not expected to reach 25,000 feet above sea level. Increased number of local earthquakes. Extrusion of a lava dome or lava flows (non-explosive eruption) may be occurring.	**Establish an Incident Command Post and mobilize an Incident Management Team.**
RED	Major explosive eruption expected within 24 hours. Large ash plume(s) expected to reach at least 25,000 feet above sea level. Strong earthquake activity detected even at distant monitoring stations. Explosive eruption may be in progress.	**Evaluate resource needs and expand the size of the IMT as the situation warrants.**

2. Industry providing relevant information to the Cook Inlet RCAC.

Gathering basic information to understand the problem, its potential, and what is being done to address the problem and its potential is essential for establishing response objectives. In early February, the Cook Inlet RCAC Executive Director organized a meeting with CIPL, Chevron, ADEC, EPA, Kenai Peninsula Borough Office of Emergency Management, and the USCG to gather infrastructure information. The amount of oil stored at the DROT, and which tanks were storing the oil, was a key piece of information in understanding the risk posed by the DROT. Industry shared this information with members of the Unified Command but could not divulge the actual number to the Cook Inlet RCAC, claiming confidentiality. Instead, the percentages of oil stored were given at less than 50% capacity of the two active tanks. The Cook Inlet RCAC staff discovered that this type of information is shared with the Prince William Sound RCAC by Alyeska Pipeline Service, being a provision in the original funding contract between the two organizations. In order to avoid this situation in the future, the Cook Inlet RCAC should work to identify which oil companies are required to submit Security Plans with sensitive security information (SSI) and establish a memorandum of understanding with each operator. The memorandum of understanding should focus on providing "need to know information" when an imminent or substantial threat exists at each facility. The SSI designation clearly prohibits industry from sharing information with the public. Operators that do not have the SSI designation are allowed to share information with the public.

3. Emergency Response Guidance to Cook Inlet RCAC Staff. Government planning documents have defined the expected role of the Cook Inlet RCAC and staff during an oil or hazardous substance spills response. It is clear that the Executive Director and staff understood their responsibilities and met or exceeded them during the Mount Redoubt and DROT incident by scheduling, organizing, and facilitating meetings, in addition to documenting actions and decisions. The Cook Inlet RCAC was proactive and provided the necessary leadership until a Unified Command was formally established. The current staff brings a wealth of expertise and experience. Industry and agency representatives respect and trust Cook Inlet RCAC staff judgment.

Currently, internal guidance from the Board to staff is in the form of a personnel policy for oil spill notifications procedures. The Board should review this policy to determine if its expectations of staff are sufficiently delineated, or if additional guidance should be considered to ensure that the mandates of the Cook Inlet RCAC are met recognizing the size of the organization is relatively small, compared to the number of staff that the Prince William Sound RCAC has to draw from. Therefore, any future recommended changes or additions to Cook Inlet RCAC's roles and responsibilities should be in the form of general incident response guidance rather than through a formal policy or plan. Guidance should:

- Recognize the use of the incident response system,
- Identify potential roles of staff within an incident management team,
- Outline integration into the overall incident management organization, and
- Describe general internal or organizational responsibilities.

Recognition should be given to budget and staffing limitations and the requirement for the Executive Director to have flexibility in deploying staff during different incidents. Based on interviews with industry and agency representatives, it is clear that they support and welcome the integration of Cook Inlet RCAC staff into the overall IMT. Memorializing the integrated approach in guidance may be the simplest and most effective option the Board should consider.

4. Cook Inlet RCAC Incident Communications Review. At present, the only incident communication criterion written into policy is found in personnel Policy #23 Oil Spill Notification Procedures. In short, staff is only required to inform the Board and Committees of a spill in the amount of 20 gallons or greater within 24-hours of being notified. The policy then grants the Executive Director the discretion of determining if staff needs to report to the command center – without incurring any unbudgeted expenses. It should be noted that there are no policies or procedures written or documented that directs staff once they are at the command center.

Under the current communication system, all information (including incidents and spills) is passed from the Cook Inlet RCAC staff to the Board (or Committee) and then from the Board to the Member Groups or Municipalities. Again, it should be noted that this practice has not been written into policy. In this system, it is the responsibility of the Board to communicate to their constituency

any information provided by staff. Since there are a number of Member Groups and municipalities (a total of 36) this system provides staff with a single point of contact (especially for public interest groups) and removes the burden of contacting each Member Group. In the same vain, incoming information/questions from member Groups are funneled to the Board and onto staff. Again reducing the number of contacts staff must manage. Unfortunately, if a Board member does not or is not able to communicate with their respective Member Groups, information does not get passed along and member groups are not properly informed.

The Cook Inlet RCAC Board should consider developing an alternative communication system for incidents and spills. Staff suggests a simple alternative system. Under this system, staff will send an initial email at the beginning of an incident/spill to the Board, Committees and the Member Groups. Within the email will be a link to a page on the Cook Inlet RCAC website dedicated to the incident/spill along with instructions to Committee members and Member groups to continue checking the page for updates and information. The Board will receive the same information, but will continue to receive emails throughout the event. This system ensures that all parties will be informed of the event by Cook Inlet RCAC staff and ensuring them that staff will be involved. Member Groups will be responsible for keeping updated through the website and will not have to rely on their Board representatives. By posting updates on the website, staff can also tie-in Cook Inlet RCAC projects that are utilized directly or indirectly by the IMT during the response.

A downside of this alternative communication system is that it has the potential to create an overload of questions for staff, if Member Groups respond to the original email with questions. To avoid the overload, the need for Member Groups to channel questions to their Board representative should be stressed. However, the problem with unresponsive Board members comes back into play. While no system is perfect, the Board should consider whether fielding questions directly from Member Groups creates an undue burden on staff and if so, whether using this system more important than answering Member Group questions.

5. Cook Inlet RCAC's power to encourage and motivate action. The OPA90 clearly states the mission and responsibility of the Cook Inlet RCAC. The organization is intended to monitor industry and government's actions to ensure both entities are meeting their obligation to prevent and promote environmentally safe oil transportation operations in the region. The Cook Inlet RCAC is responsible for making sure complacency does not set in with industry and government, manifesting inactivity that becomes a detriment and threat to the system and environment. Although the Cook Inlet RCAC does not have the regulatory authority to promote and encourage action by industry and the government, they do have the power of the Board, Committee members, and citizens within the region to motivate action. Industry and government were slow to recognize the need to communicate their actions to the public. The only public information available were AVO's alert notifications, which were included in the Alaska Department of Military & Veterans

Affairs, Division of Homeland Security-Emergency Management Office situation reports. These situation reports did not convey the actions being taken by members of the "informal" Unified Command, which leading some to the conclusion that perhaps nothing is being done. The Cook Inlet RCAC Board should consider developing an evaluation criterion for determining whether industry and government are communicating and responding adequately to potential and real incidents. Using an adequacy evaluation criterion will assist in building a consensus position with the Board on whether they need to motivate action from industry and government. The message and power of citizens certainly compels action to those that may not recognize the issues and concerns.

6. Key response agencies need to prepare "After-Action" reports following significant events. Although not a regulatory requirement, it is common for agencies and organizations to conduct individual, internal "lessons-learned" or "after-action" reports following an incident. These individual reports are used to collect facts on what went right and where improvements are needed for a future response. Joint "after-action" incident reports that involve the key response agencies, industry and organizations have become less common. The Trans-Alaska Pipeline Milepost 400 After-Action Report, February 2002, is the most current report that is publically available. Although the 2009 Mt. Redoubt and DROT incident did not result in a loss of life or oil spill, the unique and complex issues and decisions have now been captured due to the Cook Inlet RCAC's involvement. There is no set procedure or standard for developing an "after-action" report, yet there are plenty of models to draw from such as the General Accounting Office procedures, USCG Incident Specific Preparedness Review procedures or past "after-action" reports. These can be modified to create a framework for conducting formal "after-action" reports. The agencies involved in natural disaster and/or oil spill response activities should consider identifying triggers that would lead to conducting an "after-action" review of an incident, and the framework to do so.

The table on the following page summarizes key recommendations from this report and the organizations with the responsibility to consider reviewing, discussing and considering each recommendation.

Recommendations	Cook Inlet RCAC	ADEC	USCG	EPA	Industry
Ramping up a Unified Command and Incident Management Team		Adopt criteria to form UC	Adopt criteria to form UC	Adopt criteria to form UC	
Industry providing relevant information to the Cook Inlet RCAC	MOU with industry to share information				MOU with Cook Inlet RCAC to share information
Emergency Response Guidance to Cook Inlet RCAC staff.	Memorialize current response procedures				
Cook Inlet RCAC Incident Communications Review	Update internal incident communication procedures				
Cook Inlet RCAC's power to encourage and motivate action	Develop criterion for determining whether industry and government are responding adequately to a potential and real incident				
Key response agencies need to prepare "After-action" reports following significant events		Research acceptable criteria, triggers and format for an After Action Report	Research acceptable criteria, triggers and format for an After Action Report	Research acceptable criteria, triggers and format for an After Action Report	

APPENDIX A

Date	Event	Agency/Organization Activity	Reference Document
Late fall/early winter 2008	Volcanic activity at Mount Redoubt began	**AVO** **CIPL** **ADEC** **USCG** **COOK INLET RCAC**	
January 25, 2009		**AVO** **CIPL** **ADEC** **USCG** **COOK INLET RCAC**: Staff followed the Local Emergency Planning Committee (LEPC), and the Alaska Volcano Observatory (AVO) activities and reports and monitored the volcano's status. Staff maintained contact with the Alaska Department of Environmental Conservation (ADEC), United States Coast Guard (USCG) and Cook Inlet Pipeline (CIPL) and monitored their activities. Staff responded to requests from Council members and gathered specific information about the Drift River Oil Terminal (DROT) facility activities and plans through requests to CIPL and various agencies. Through recommendations to the agencies and CIPL, the Executive Director worked to facilitate the drawdown of crude oil inventories at the CIPL facility.	Mount Redoubt/Drift River Oil Terminal Timeline-CIRCAC Staff Activity Report (April 25, 2009)
January 29,2009	**Redoubt Volcano** Volcano Alert Level: WATCH Current Aviation Color Code: ORANGE **Summary of Current Unrest** Since last fall, the Alaska Volcano Observatory (AVO) has detected increasing volcanic unrest at Redoubt	**AVO:** Issued a summary of Mount Redoubt activity. **CIPL** **ADEC** **USCG** **Cook Inlet RCAC**	Alaska Division of Homeland Security and Emergency Management (DHS&EM) Daily Situation report See full report for volcano history

	Volcano. Starting on Friday, January 23, the level of seismic activity increased markedly and on Sunday AVO raised the Aviation Color Code to ORANGE and the Volcano Alert Level to WATCH. On the basis of all available monitoring data AVO regards that an eruption similar to or smaller than the one that occurred in 1989-90 is the most probable outcome. We expect such an eruption to occur within days to weeks.		and Alaska Volcano Observatory (AVO) evaluations and predictions
February 6, 2009	Volcanic activity at Mount Redoubt continues	**AVO** **CIPL**: Participated in Cook Inlet RCAC Briefing **ADEC:** Participated in Cook Inlet RCAC Briefing **USCG:** Participated in Cook Inlet RCAC Briefing **COOK INLET RCAC:** Organized a briefing for the Council from CIPL, Chevron, the USCG, the ADEC, and other regulatory agencies. The purpose of the briefing was to provide the Council with a better understanding of the protective improvements CIPL had made to the facility and to assure that the oil reserves would be kept to a minimum. Clarification: During the meeting, CIPL would not provide actual amounts of oil stored in tanks 1 and 2 at the facility. It was pointed out that the Prince William Sound Regional Citizen's Advisory Council (Prince William Sound RCAC) receives a daily update on the amounts of oil stored at the Valdez Oil Terminal. This privilege, which allows Prince William Sound RCAC, to receive information under normal circumstances is a provision stipulated in Prince William Sound RCAC's original funding contract (available at www.pwsrcac.org). Unfortunately,	Mount Redoubt/Drift River Oil Terminal Timeline-CIRCAC Staff Activity Report (April 25, 2009)

		Cook Inlet RCAC does not enjoy this privilege, as it is not in the funding agreement and not information normally made public.	
February 6, 2009	Increase in flooding threat to the Drift River facility Clear web camera images currently show no activity at the volcano. Observers on overflights during the past week reported intermittent steam plumes from the area of the 1989-90 lava dome, continued melting of the upper Drift glacier, and increased water discharge along the lower Drift glacier and into the Drift River. Airborne gas measurements on January 31 and February 2 recorded levels of the magmatic gas CO2 several times greater than the value recorded on November 2, 2008. Alaska Volcano Observatory/USGS Volcanic Activity Notice	**AVO** **CIPL** **ADEC** **USCG** **COOK INLET RCAC**	DHS&EM Situation report
February 9, 2009	Volcanic activity at Mount Redoubt continued	**AVO** **CIPL:** Sent a memo to the CIRCAC and its Board as a follow-up to the February 6 briefing. **ADEC** **USCG** **COOK INLET RCAC**	CIPL memo to CIRCAC, Feb. 9, 2009
February 7-March 21, 2009	Volcanic activity at Mount Redoubt continued	**AVO:** The AVO increased the level of concern and alert level to Orange/Watch on 15 March 2009 due to Mount Redoubt's increased seismic activity.	Mount Redoubt/Drift River Oil Terminal Timeline-CIRCAC Staff Activity Report (April 25, 2009)

		CIPL **ADEC** **USCG** **COOK INLET RCAC:** Staff continued to respond to requests from Council members to gather specific information about facility activities and plans through requests for information to CIPL and regulatory agencies. Staff continued to follow the AVO activities and reports to monitor the volcano's status. Staff continued to maintain contact with the ADEC, USCG, and CIPL to monitor their activities.	
March 16,2009	Increased volcanic activity, change in status. Seismic activity at Mount Redoubt has declined following yesterday's four-hour-long increase that accompanied emission of a steam and ash plume, which rose up to 15,000 ft. above sea level. A minor ash fall was produced within the crater and on the upper south flank.	**AVO:** Resumed 24 hour per day staffing. **CIPL** **ADEC** **USCG** **COOK INLET RCAC**	DHS&EM Situation report
March 22, 2009	Two major explosive events caused pyroclastic flows with associated lahars to flow down the Drift River valley. These lahars stripped vast quantities of mud, ice, rubble and other debris from the landscape and carried them out of the confines of the valley. The first mudflow inundated Drift River, filling in the river's basin, causing the floodwaters and mud to flow southwest through Rust Slough, contacting, and	**AVO** **CIPL** **ADEC** **USCG** **COOK INLET RCAC:** Staff provided Council and Committees with an update on the situation. By working closely with Tesoro Vessel Managers the Executive Director assisted in the development of a plan to have a tanker available to receive the crude oil stored at the facility.	Mount Redoubt/Drift River Oil Terminal Timeline-CIRCAC Staff Activity Report (April 25, 2009) See also DHS&EM Situation report March 23, 2009

	flowing along the tertiary containment around the DROT. Once past the tertiary containment, some of the mudflow pushed along the runway area and around the hangar and storage. These areas were covered with several feet of mud and debris.		
March 23, 2009		**AVO** **CIPL** **ADEC & USCG:** Conducted an over-flight at 7:30 PM to determine any potential threat to the tank farm and related facilities at the DROT. **COOK INLET RCAC**	ADEC sitrep # 1 March 24, 2009
March 25, 2009	Volcanic eruptions occurred again today at 5:12 AM and 10:17 AM. CIPL personnel were expected to be on site this morning; however they were unable to access the facility due to blizzard conditions.	**AVO:** Teleconference **CIPL:** Teleconference **ADEC:** Teleconference **USCG:** Teleconference **TELECONFERENCE:** On March 25 at 2:00 PM, a teleconference was held between ADEC, Coast Guard Sector Anchorage, CIPL, the Alaska Volcano Observatory, the U.S. Pipeline and Hazardous Materials Safety Administration, the Alaska Department of Natural Resources, and several other federal and state agencies. A general agreement was reached to create a management framework to maintain an active dialogue and provide timely and comprehensive information on the on-going status of repair and restoration issues at the DROT. This framework will offer the agencies the opportunity to raise significant issues and concerns in a timely manner. Other issues discussed were the potential for additional mudflows from future eruptions,	

		pipeline integrity, the need to conduct soundings of the tanker loading platform area to ensure the depth and ocean bottom had not changed significantly from the mudflows, and CIPL's plans for future damage assessment and facility repair. **COOK INLET RCAC**	
March 26, 2009	**Mount Redoubt Volcano** Current Aviation Color Code: **RED** Current Volcano Alert Level: **WARNING** A large eruption of Mount Redoubt volcano occurred at 09:24 AKDT this morning. National Weather Service reports the cloud height to be at least 65,000 ft. above sea level and pilot reports indicated a plume height of 60,000 ft. Since this event, a few smaller events have occurred but these did not generate plumes above about 20,000 ft.	**AVO** **CIPL** **ADEC** **USCG** **COOK INLET RCAC**	DHS & EM sitrep 09-085
March 27, 2009	ADEC over-flight of the DROT, ADEC Capt. Tim Plummer, President of Tesoro Maritime Company, announced Tesoro's willingness to bring a tanker to Cook Inlet to draw down the crude oil inventories at DROT.	**AVO** **CIPL** **ADEC:** Provided the Council with a briefing describing and showing the improvements made at DROT following the 1989-90 eruption and an update on the current structural integrity of the terminal following the 2009 lahars. **USCG** **COOK INLET RCAC**: Executive Director provided an update to the Council on staff's efforts to collect information during the Redoubt/DROT situation and work with CIPL, Tesoro, and regulatory agencies to keep the	Mount Redoubt/Drift River Oil Terminal Timeline-CIRCAC Staff Activity Report (April 25, 2009)

		inventories at DROT to a minimum.	
March 27, 2009	An eruption of Mount Redoubt volcano occurred at approximately 8:40 AM AKDT. National Weather Service reports the cloud height to be approximately 50,000 ft. above sea level based on radar. Volcanic cloud height 32,000 ASL confirmed by NWS Radar. Mudflows in the Drift River valley are possible. AVO is monitoring the situation closely, the observatory is staffed 24/7. **Flash Flood Warning** Flash flood warning for Drift River until 2:45 PM AKDT due to Mount Redoubt Volcano eruption. This eruption can cause melting snow and ice on the mountain and result in high water and flash flooding along the Drift River valley draining from the mountain.	**AVO** **CIPL** **ADEC** **USCG** **COOK INLET RCAC**	DHS & EM sitrep 09-086
March 28, 2009	ADEC conducted an over flight of DROT	**AVO** **CIPL** **ADEC:** Over-flight of DROT **USCG** **COOK INLET RCAC:** Staff provided Council and Committees with updates on the situation.	Mount Redoubt/Drift River Oil Terminal Timeline-CIRCAC Staff Activity Report (April 25, 2009)
March 29, 2009	As of 10:30 PM March 28, 2009 the AVO reported that yesterday's 3:29 PM eruption appeared to generate several lahars.	**AVO:** Reported a series of small earthquakes and low-level ash plumes occurred early this morning. **CIPL** **ADEC:** Reported that CIPL would be participating in locating a joint Incident Command Post for the IMT; to facilitate FOSC,	ADEC sitrep # 6 March 29,2009

		SOSC and CIPL unified command coordination and incident action planning for the DROT flooding incident. Also, a Joint Information Center (JIC) will be organized for unified information dissemination. **USCG** **COOK INLET RCAC**	
March 31,2009	**Flood Warning** Flood warning is extended for Drift River until 5:00 PM today. Mount Redoubt remains active and volcanic eruptions from Mount Redoubt will continue to cause flooding of the Drift River drainage area. Water and mud from melting ice will flood the river with each eruption.	**AVO:** Maintains 24/7 operations **UC (CIPL, ADEC, USCG):** establishes Command Center in Anchorage. **COOK INLET RCAC**	DHS & EM sitrep 09-090
April 1, 2009		**AVO** **UC (CIPL, ADEC, USCG):** The FOSC issued a Captain of the Port (COTP) Order to ten different Cook Inlet petroleum-based operators informing them of the significant safety hazardous associated with the Mount Redoubt eruption and release of volcanic ash. The COTP Order directed the operators to suspend all ongoing and future petroleum product transfers taking place over the water during ash fall advisory. Normal operations were allowed to continue if there was no ash fall advisory. **COOK INLET RCAC**	USCG COTP Order 21-09, Cook Inlet Pipeline/Drift River and other operators, April 1, 2009
April 4, 2009	Mount Redoubt experienced an explosive event greater in magnitude compared to previous explosions. The crew at DROT was evacuated with no	**AVO:** Maintains 24/7 operations **UC (CIPL, ADEC, USCG):** Decide to suspend operations at the DROT until volcanic activity at Mount Redoubt subsided.	Mount Redoubt/Drift River Oil Terminal Timeline-CIRCAC Staff Activity Report (April 25, 2009)

	injuries reported.	**COOK INLET RCAC:** Staff provided Council and Committees with an update on the situation. **CISPRI**: Barges start relocating to Redoubt and Nikiski Bays.	
April 5, 2009	The Tank Vessel (T/V) *Seabulk Arctic* arrived at the Christy Lee platform to begin draw down operations. The envisioned operation reduced the oil levels in the two active storage tanks. After modifications to the facility, ballast water was added to each tank to maintain their structural integrity. Initially, the quantities of fresh water needed for this operation were not immediately available, so the decision was made to use seawater.	**AVO:** Maintains 24/7 operations. **UC (CIPL, ADEC, USCG):** Authorized plans to draw down oil storage by 60 percent. **COOK INLET RCAC:** Staff provided Council and Committees with an update on the situation.	Mount Redoubt/Drift River Oil Terminal Timeline-CIRCAC Staff Activity Report (April 25, 2009)
April 6, 2009		**AVO:** Maintains 24/7 operations. **UC (CIPL, ADEC, USCG):** Held a press conference at the AVO to provide an update on the progress of the draw down operation. The T/V *Seabulk Arctic* arrived and commenced draw down of crude oil. About 60 percent of the 6.2 million gallons (148,000 barrels) of the stored oil in tanks 1 and 2 at the DROT was removed and replaced with seawater. **COOK INLET RCAC:** Staff provided Council and Committees with an update on the situation.	Mount Redoubt/Drift River Oil Terminal Timeline-CIRCAC Staff Activity Report (April 25, 2009)
April 7, 2009	Community Meeting held in Kenai with a teleconference link to Homer and Anchorage.	**AVO:** Representatives reported on the status of DROT and Mount Redoubt and answered questions for attendees and teleconference participants. **UC (CIPL, ADEC, USCG):** Representatives	Mount Redoubt/Drift River Oil Terminal Timeline-CIRCAC Staff Activity Report (April 25, 2009)

		reported on the status of DROT and Mount Redoubt and to answer questions for attendees and teleconference participants. **COOK INLET RCAC:** Hosted the community meeting. Staff was on hand at the Kenai and Homer meeting locations to assist in the facilitation of the meeting.	
April 7, 2009	The Alaska Earthquake Information Center located a light earthquake that occurred on Tuesday, April 7th at 12:12 PM AKDT in the Cook Inlet region of Alaska. This earthquake had a preliminary magnitude of 4.6 and was located at a depth of about 15 miles (25 km). The magnitude and location may change slightly as additional data are received and processed.	**AVO:** Maintains 24/7 operations **UC (CIPL, ADEC, USCG)** **COOK INLET RCAC**	DHS & EM sitrep 09-097
April 9, 2009	The eruption of Mount Redoubt continues. Seismic and satellite data over the past day indicate continued lava dome growth. Satellite and web camera images have been obscured by clouds, but no significant ash emissions visible in radar. A satellite image from yesterday afternoon showed a continuous sulfur dioxide gas plume extending for more than 600 miles from volcano.	**AVO**: Maintains 24/7 operations **UC (CIPL, ADEC, USCG)** **COOK INLET RCAC**	DHS & EM sitrep 09-099
April 17, 2009		**AVO**: Maintains 24/7 operations **UC (CIPL, ADEC, USCG):** Prioritized the complete removal of the crude oil and water from the two active storage tanks at the	ADEC sitrep #16,

		terminal due to the long-term threat of volcanic mudflows and other flooding resulting from eruptions of Mount Redoubt. Because of ongoing personnel safety concerns associated with facility re-entry and the logistical challenges involved in removing the remaining oil and water, an estimated completion date cannot be provided. **COOK INLET RCAC**	
April 21, 2009		**AVO:** Maintains 24/7 operations. **UC (CIPL, ADEC, USCG):** Approved plans to remove additional crude oil from operational tanks 1 and 2 at the DROT. The objective of the operation was to remove as much of the crude oil, seawater, and tank-bottom substances from the tanks as possible with facility pumps and equipment. **COOK INLET RCAC:** Staff provided Council and Committees with an update on the situation.	Mount Redoubt/Drift River Oil Terminal Timeline-CIRCAC Staff Activity Report (April 25, 2009)
April 28, 2009	Crude oil and ballast seawater was offloaded to the T/V *Mississippi Voyager*, while moored at the Christy Lee Platform. The tanker was hired by the upstream oil producers though Chevron Shipping Company. Upon arrival in Homer an ADEC inspector boarded the tanker and attended the vessel to the Christy Lee Platform. The tanker was accompanied by the tug *Vigilant* while at the facility. The T/V *Mississippi Voyager* loaded freshwater ballast from the Columbia River prior to its transit from the West	**AVO:** Maintains 24/7 operations. **UC (CIPL, ADEC, USCG)** **COOK INLET RCAC:** Staff provided Council and Committees with an update on the situation.	Mount Redoubt/Drift River Oil Terminal Timeline-CIRCAC Staff Activity Report (April 25, 2009)

coast. Personnel at the DROT prepared the facility for the tanker transfer operations. Facility transfer systems were tested prior to transfer operations to insure the system's integrity. When pumping of tanks 1 and 2 was completed and the tanks were drawn down to the lowest levels possible, freshwater ballast from the T/V was pumped to the storage tanks to provide the necessary ballast.

Repairs and cleanup of the facility continued, CIPL personnel cleared a portion of the existing runway to land fixed-wing aircraft (about 3,000 ft.); fixed-wing aircraft carry fuel for the generators and other facility equipment. Three video cameras with Ethernet connectivity were installed at the facility to enable real-time monitoring of the tank farm and its tertiary containment system, with two additional cameras placed at the Christy Lee Platform.

CISPRI oil spill response equipment continued to be positioned to respond to an oil spill from the DROT. Central Cook Inlet response equipment remained in position to assist the oil platforms and loading facilities in Nikiski or Anchorage. Response equipment in the central and lower Cook Inlet could respond from either direction in a timely manner.

The USCG's safety advisory for vessel

	traffic within Cook Inlet remained in effect. The safety advisory covered all Cook Inlet water between the area south of the East Foreland and north of Anchor Point. Temporary flight restrictions remained in effect for all aircraft within a 2 nautical mile radius and 4,000 feet above-sea-level, of the DROT and facilities until further notice.		
April 30, 2009	CIPL reported that the potential threat posed by the stored oil at the DROT had been reduced to approximately 7 percent of the initial 6.2 million gallons. The T/V *Mississippi Voyager* completed loading of oil and water from the terminal's tanks, transferring freshwater ballast back to the facility, and departed for a refinery in Hawaii at 6:30 a.m. At least 5,040,000 gallons (120,000 barrels) of freshwater was pumped back to the tanks from the *Mississippi Voyager* to ensure the tanks would not become buoyant in the event of a flood. Redoubt Volcano continued to produce emissions of steam, volcanic gases and minor amounts of ash, according to the AVO. There were no oil spills and no injuries during the operations at Drift River.	**AVO:** Maintains 24/7 operations. **UC (CIPL, ADEC, USCG):** Continue monitoring the facility and reviewing the situation on a weekly basis until information from AVO indicated the volcano has entered a dormant period. **COOK INLET RCAC:** Staff provided Council and Committees with an update on the situation.	Mount Redoubt/Drift River Oil Terminal Timeline-CIRCAC Staff Activity Report (April 25, 2009)
May 6, 2009	Following additional measurements and confirmation by a third party it was	**AVO:** Maintains 24/7 operations. **UC (CIPL, ADEC, USCG)**	Mount Redoubt/Drift River Oil Terminal Timeline-CIRCAC Staff

	determined that approximately 841,860 gallons (20,040 barrels) of crude oil remained in the tanks at DROT following the April 30 draw down. This amount was about 13 percent of the original 6.2 million gallons (148,000 barrels). The original figure provided immediately after the April 30 draw down was an estimate based on the volumes in the tanks prior to the operation. Time was required following the transfer operation to allow the oily water mix in the tanks to settle providing for more accurate measurements.	**COOK INLET RCAC:** Staff provided Council and Committees with an update on the situation.	Activity Report (April 25, 2009)
May 20, 2009	Cook Inlet RCAC Prevention, Response, Operations, and Safety committee meeting was held at the Kenai office.	**AVO:** Maintains 24/7 operations. **UC (CIPL, ADEC, USCG)** **COOK INLET RCAC:** Staff presented a summary of the DROT event and the staff's actions prior to and during the incident. The committee moved to evaluate the event and the response garnered by the Unified Command.	Mount Redoubt/Drift River Oil Terminal Timeline-CIRCAC Staff Activity Report (April 25, 2009)
May 29, 2009	Cook Inlet RCAC Quarterly meeting was held in Kenai. Attended the meeting to provide a debriefing on the status of Mount Redoubt and the DROT and to provide insight on the future operational plans for the facility.	**AVO:** Attended the meeting to provide a debriefing on the status of Mount Redoubt and the DROT and to provide insight on the future operational plans for the facility. **UC (CIPL, ADEC, USCG):** Attended the meeting to provide a debriefing on the status of Mount Redoubt and the DROT and to provide insight on the future operational plans for the facility. **COOK INLET RCAC:** Prior to the meeting Cook Inlet RCAC president and staff worked to move the meeting from Kodiak to Kenai in light of the	Mount Redoubt/Drift River Oil Terminal Timeline-CIRCAC Staff Activity Report (April 25, 2009)

		current status of DROT. Staff presented a breakdown of RCAC's role during spill/event and a summary of the staff's actions to date. Council passed a motion to send a letter to ADEC that requests the C-plan process be opened and the plan (CIPL Oil Discharge Prevention and Contingency Plan) reviewed for possible amendments. Council also requested and moved to conduct an evaluation of the event and a critical review of Cook Inlet RCAC's role during spills/incidents.	
June 30, 2009	Seismic, satellite, gas, and deformation observations over the past weeks indicate that growth of the lava dome at Redoubt has significantly slowed, if not stopped, and therefore it is possible that the current eruptive activity has ended. However, it is unknown if this represents the end of the 2009 eruption of Mount Redoubt or if the activity has only paused temporarily and might resume in the next months. The large lava dome located at the north side of the summit crater, and extending down the Drift Glacier Gorge, still presents a hazard. It is possible that this large mass of fresh lava is unstable and could fail with little or no warning, leading to significant ash production and possible lahars in the Drift River valley.	**AVO:** Lowered the Aviation Color Code to Yellow and the Alert Level to Advisory at Mount Redoubt. **UC (CIPL, ADEC, USCG)** **COOK INLET RCAC**	Mount Redoubt/Drift River Oil Terminal Timeline-CIRCAC Staff Activity Report (April 25, 2009)
July 9, 2009		**AVO:** Stands down from 24/7 staffing of its operations center.	Mount Redoubt/Drift River Oil Terminal Timeline-CIRCAC Staff

		UC (CIPL, ADEC, USCG) **COOK INLET RCAC** **AVO**	Activity Report (April 25, 2009)
July 10, 2009	Cook Inlet RCAC received the Situation Report from the ADEC for the DROT Coordination. According to the report, the UC approved plans to remove as much oil (approximately 20,040 barrels) and ballast water from the tanks at the DROT facility as possible. The ballast water in the DROT tanks posed an integrity risk due to wintertime freezing. The expected date of the transfer operation was late July or early August 2009 (ultimately August 4th, 2009), depending on scheduling of a tank vessel to receive the oil and water. Prior to arrival of the tank vessel, submersible pumps were used to skim as much crude oil as possible and the remaining ballast water from Tanks 1 and 2 for consolidation in Tank 3. The goal was to leave no more than six inches of residual fluids and oil sludge in each tank. Tanks 1 and 2 were to be taken out of service and isolated by removing the valves that connect these tanks to the DROT facility piping. Upon arrival of the tank vessel at the Christy Lee Platform, the water and oil consolidated in Tank 3 was to be pumped to the ship until suction was lost. During this process, facility piping was drained of water, and then crude oil from Tank 3 was used to fill the emptied DROT pipelines. Tank 3 remained in	**UC (CIPL, ADEC, USCG):** Approved plans to remove as much oil (approximately 20,040 barrels) and ballast water from the tanks at the DROT facility as possible. **COOK INLET RCAC:** Staff provided Council and Committees with an update on the situation.	Mount Redoubt/Drift River Oil Terminal Timeline-CIRCAC Staff Activity Report (April 25, 2009)

	service in order to provide necessary emergency overpressure protection for future operations. The final cleaning of Tanks 1 and 2 to remove the remaining 6 inches (estimated) of residual liquids and oil sludge was not expected to commence until next year due to the threat of ash clouds and flooding posed by Mount Redoubt -safety considerations preclude deployment of the tank-cleaning crews. CIPL, in conjunction with Chevron and the upstream producers, reported that they were considering options for future operations of the facility. Resumption of operations depended on the operator verifying that the proposed actions are in compliance with all state and federal regulatory requirements. ADEC's Industry Preparedness Program (IPP) worked with CIPL to review the Oil Discharge Prevention and Contingency Plan for the DROT to verify where changes need to be made to achieve compliance with state contingency plan regulatory requirements prior to resumption of pipeline operations. Under the current long-term planning cycle, the UC would meet bi-weekly to review situation updates and determine if any additional incident management staffing and support was needed.		
July 13, 2009	CIPL planned to transport oil stored at the upstream facilities through their 42-	**AVO** **UC (CIPL, ADEC, USCG):** CIPL announced the	Mount Redoubt/Drift River Oil Terminal Timeline-CIRCAC Staff

	mile long pipeline for direct delivery to a tanker moored at the Christy Lee platform. Crude oil storage operations at the DROT will remain suspended; the modified procedure, called "tight lining", was designed to bypass the storage tanks on the DROT. Pumps and metering systems at the facility were replaced to allow flow rates to be increased and enable the efficient transfer of oil directly to tankers. Prior to start up, the plan was submitted to the ADEC to determine if the plan changes CIPL'S response capability at the terminal.	DROT restart would take place sometime in mid August. **COOK INLET RCAC:** Staff provided Council and Committees with an update on the situation. Cook Inlet RCAC Executive Director arranged a second public meeting with the Unified Command to answer questions, and discuss the status of the DROT and plans for restart.	Activity Report (April 25, 2009)
August 4, 2009	The T/V *Overseas Boston*, under contract to Tesoro, arrived at the Christy Lee Platform to load oil and ballast water from the tanks at the DROT facility. The Unified Command decided to "stand down" following the completion of the oil and ballast water offloading to the T/V *Overseas Boston*. Regulatory oversight of the DROT facility transitioned back to normal agency functions. ADEC reports that a minor amendment was approved to the CIPL Oil Discharge Prevention and Contingency Plan for the DROT. ADEC determined that the amendment did not diminish CIPL's ability to respond to an oil discharge and therefore, did not warrant a full review.	**AVO** **UC (CIPL, ADEC, USCG):** ADEC reported that a minor amendment was approved to the CIPL Oil Discharge Prevention and Contingency Plan for the DROT. ADEC determined that the amendment did not diminish CIPL's ability to respond to an oil discharge and therefore, did not warrant a full review. **COOK INLET RCAC:** Staff provided Council and Committees with an update on the situation.	Mount Redoubt/Drift River Oil Terminal Timeline-CIRCAC Staff Activity Report (April 25, 2009)

August 6, 2009		**AVO** **CIPL** **ADEC** **USCG:** The COTP Order 21-09 issued to CIPL on April 1st was rescinded allowing CIPL to conduct normal operations. **COOK INLET RCAC**	USCG COTP Order 21-09 Rescission, August 6, 2009
August 7, 2009	Oil and ballast water removal operations were completed. Some of the oil and water mixture remained. According to the ADEC Situation Report, "Removal of all oil and water was not feasible due to current operating conditions. Tanks 1 and 2 were taken out of service and blind flanged after feasible amount(s) of oil and water was removed. Currently, tanks 1 and 2 each contain 1,396 bbls of oil and 4,636 bbls of water. Tank 3 was pumped down to 999 bbls of oil." The T/V *Overseas Boston* also loaded crude oil from Granite Point and Trading Bay in the direct transfer tight line configuration. After departing from the Christy Lee Platform, the T/V *Overseas Boston* proceeded to the Tesoro Refinery in Nikiski to offload the crude oil. The oil and ballast water removed from the tanks went to Emerald Services in Washington State.	**AVO** **CIPL** **USCG** **COOK INLET RCAC:** Staff provided Council and Committees with an update on the situation.	Mount Redoubt/Drift River Oil Terminal Timeline-CIRCAC Staff Activity Report (April 25, 2009)
August 24, 2009	Community Meeting held in Kenai with a teleconference link to Homer and Anchorage.	**AVO** **CIPL:** Representatives reported on the status of DROT and Mount Redoubt and answered	Mount Redoubt/Drift River Oil Terminal Timeline-CIRCAC Staff Activity Report (April 25, 2009)

	questions for attendees and teleconference participants. **ADEC:** Representatives reported on the status of DROT and Mount Redoubt, and to answer questions for attendees and teleconference participants. **USCG:** Representatives reported on the status of DROT and Mount Redoubt, and to answer questions for attendees and teleconference participants. **COOK INLET RCAC:** Hosted a second public meeting. The Executive Director updated the public on Cook Inlet RCAC's activities during the situation.	

APPENDIX B

Note: Prior to the release of this evaluation, each member of the Unified Command was given an opportunity to read and comment on the report. Cook Inlet Pipe Line Company provided comments; the United States Coast Guard and the Alaska Department of Environmental Conservation did not.

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June 7, 2010

Michael Munger
Executive Director
Cook Inlet RCAC
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Dear Mike,

Thank you for listening to our concerns and incorporating our comments in this second draft of the "Evaluation of the 2009 Drift River Oil Terminal Coordination & Response with a Review of the Cook Inlet RCAC's Role in Oil Spill Response." The final report incorporates most of our comments and we believe it much more accurately and objectively reflects what actually occurred. Thank you.

We do want to point out that there never was an incident, only the threat of one, and that the investment made after the 1989-90 eruption, along with the extensive planning and drilling by our personnel, paid off. Not a drop of oil spilled and no one was hurt. This is a success story by any objective measurement.

We do believe the report underplays the extensive preparations undertaken by Cook Inlet Pipe Line Company (CIPL) and Chevron Pipe Line Company as the operator. These went well beyond the statement on page 26: "Based on interviews with industry personnel, CIPL began taking preparatory actions in late December when notified by AVO of the increased volcanic activity."

In reality, our preparations included:

- Determining the minimum level to be maintained in the tanks to ensure negative buoyancy.
- Developing operating procedures to maintain minimum inventories necessary to ensure negative buoyancy.
- Refreshing procedures to ensure a safe shutdown.
- Developing procedures to ensure the safety of all employees should an eruption occur – and repeatedly drilling these procedures.

- Refreshing the safe haven and other emergency facilities to make sure there were enough fuel, food and water on hand.

- Supporting Alaska Volcanic Observatory (AVO) trips to monitor the volcano, including providing the fuel for such trips.

- Reviewing all dikes and protective facilities to make sure they were in good shape and would function as planned during an emergency.

- Positioning heavy equipment to protect it from flooding.

We also wish to point out that CIPL took the initiative to establish procedures to minimize inventory while maintaining negative buoyancy; this initiative was undertaken by CIPL, not CIRCAC, as stated on page 20.

The State/Federal Joint Command described on page 21 is puzzlement to us. As the report points out, CIPL had been working very cooperatively with state and federal entities and it makes no sense that they would suddenly decide to form a response framework that did not include CIPL. The Responsible Party plays a critical role in a UC.

Please allow me to point out that the Coast Guard ICS organization structure incorporates a Unified Command structure that includes the predesignated Federal On-Scene Coordinator (FOSC), as well as the predesignated State Incident Commander representing the State of Alaska (SOSC). It is this Unified Command structure that is responsible for the overall management of the incident, with the FOSC retaining ultimate authority under the issuance of the "Notice of Federal Interest" administrative order discussed on page 24. This order is commonly referred to as a "NOFI," and ultimately was rescinded in August after CIPL, as the responsible party, successfully met all Mt Redoubt UC organizational objectives.

Also to be clear, Unified Command directed the Joint Information Center (JIC) to organize and fund the first and second town hall meetings. CIRCAC was asked to act as host of both events.

The Unified Command was actually activated on March 30th, not the 31st as stated on page 22. It also is our recollection that the U.S. Coast Guard directed Tesoro to bring a ship in after CIPL elected to draw down the oil and replace it with water to ensure maintenance of negative buoyancy.

There is a discussion on page 25 about how CIRCAC disseminated information to its board and the public. CIPL would like to emphasize that all documents that originate within the UC system must be reviewed and sanctioned by the UC before they are released publicly.

- This need was evidenced by the unauthorized release by Alaska Department of Environmental Conservation (ADEC) of private cell phone numbers thereby causing unneeded disruption to the flow of communication as the parties worked to manage the imminent threat.

- Both the federal and state OSC agency liaisons within the UC structure provide information to affeoted federal and state agencies. It should be noted that we did witness a need to increase the familiarly of the Incident Management System (ICS) among both federal and state agencies.

The chart on page 29 recommends establishing a UC at the color Code Yellow level. We respectfully disagree, and believe Code Orange is a more appropriate level to first evaluate the need for a UC and then, if necessary, establish a UC and set up an incident command post. We do agree that Code Yellow should set off a flurry of communications that include meeting with key parties, engaging stakeholders and keeping people informed of the situation. We did all that last year, sending out our first informational update on February 9 and issuing daily updates by March 23 when volcanic activity was upgraded to Code Red.

Thank you again for your efforts to accurately document this response. CIPL believes CIRCAC fulfills an important function in the region and we are always impressed by the professionalism of you and your staff.

Sincerely,

Rodney Ficken
Vice President, CIPL