

## IAP Cover Sheet

Incident Name:

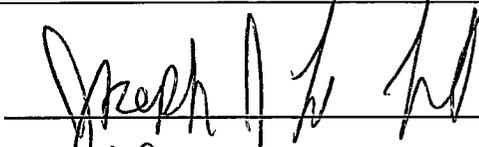
Drift River Terminal Flooding

Operational Period to be covered by IAP:

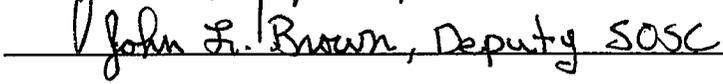
Period 4 (3/29/2009 16:00 - 3/30/2009 16:00)

Approved by:

Joe LoSciuto\* FOSC :



Gary Folley SOSC :



RPIC :

# Incident Action Plan

Volcanic eruption/flooding. Mount Redoubt initially erupted at 10:38 PM on March 22, 2009, followed by several other eruptions. The resultant lahars (or volcanic mudflows) caused extensive flooding at the Drift River Terminal. However, no oil or hazardous substance releases have been reported at this time.

\* Cdr. Joe LoSciuto of the US Coast Guard (FOSC for the Terminal & Maritime)

Drift River Oil Terminal.

Picture Date: March 28, 2009

Image Creator: Russell, Steve;

Image courtesy of ADEC.

Caption: View of the northwest corner of the tertiary containment.



Prepared By:

Prepared Date/Time:

3/29/2009 13:05

IAP Cover Sheet

Printed: 3/29/2009 14:37

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## Incident Details

<b>Incident:</b> Drift River Terminal Flooding	<b>Prepared By:</b> Kalyan, Mala <b>at</b> 3/26/2009 12:55
<b>Period:</b> Period 1 (3/26/2009 16:00 - 3/27/2009 16:00)	<b>Version Name:</b> Default

**Incident Name:** Drift River Terminal Flooding

**Incident Number:** 09239908201

**Drill:**

**Incident Date/Time:** 3/22/2009 22:38

**Time Zone:** Alaska-Hawaii Daylight Time

**Organizational Structure Type:** Oil Spill

**Affected Asset Type:** Facility

**Affected Asset:**

**Location:** Drift River Terminal, West Side Cook Inlet

**Latitude:** 60.60000000

**Longitude:** -152.18333333

**Person Reporting Incident:** None

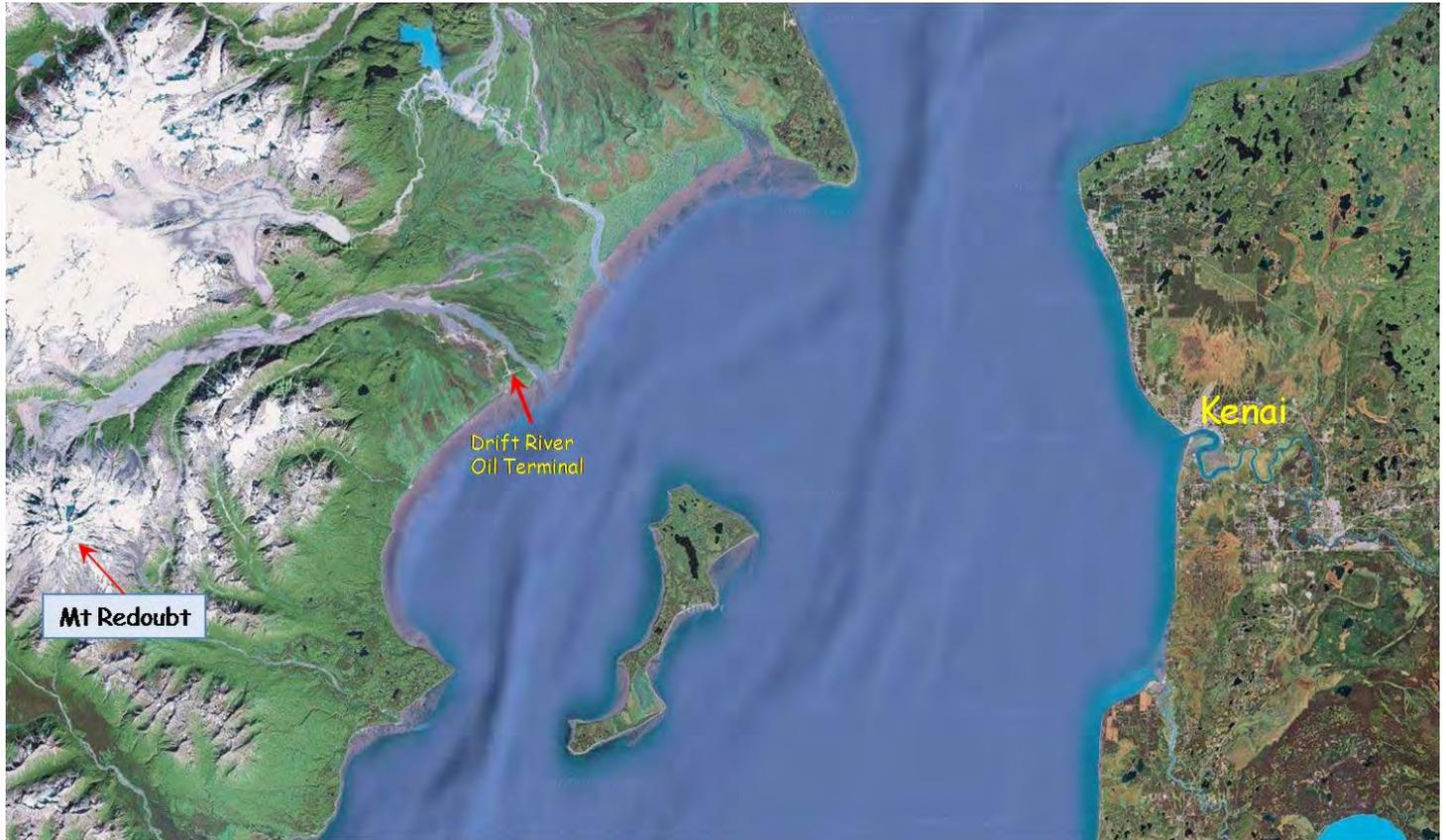
**Person Contact Number(s):**

**Incident Description:** Mt. Redoubt initially erupted on March 22, 2009 at 10:38 PM, and continues to erupt with associated lahars and ashfall. The tank farm at the Drift River Terminal is composed on seven tanks, of which two are operation with each containing 74,000 barrels of crude oil. For an up-to-date assessment of the situation, please review the latest DEC Situation Report (Sitrep) posted at the following website:

<http://www.dec.state.ak.us/spar/perp/drot>

# ICS 201-1 - Incident Briefing Map/Sketch

<b>Incident:</b> Drift River Terminal Flooding	<b>Prepared By:</b> Petit, Bob	<b>at</b> 3/29/2009 12:55
<b>Period:</b> Period 4 (3/29/2009 16:00 - 3/30/2009 16:00)	<b>Version Name:</b> 3/27/2009 14:01	



**ICS 202 - General Response Objectives**

**Incident:** Drift River Terminal Flooding      **Prepared By:** Section, Planning      **at** 3/29/2009 14:35

**Period:** Period 4 (3/29/2009 16:00 - 3/30/2009 16:00)      **Version Name:** March 29, 2009

**Overall and Strategic Objectives**

	<b>Assigned To</b>	<b>Status</b>
Ensure the safety of citizens and response personnel. Address the risk posed by actual/potential ashfall to responders. Develop plans for increased monitoring of lahars thru placement of additional instrumentation by AVO.		
<ul style="list-style-type: none"> <li>Coordinate with AVO for notification of volcanic eruptions, lahar and flood warnings, plus any potential implications to changes in hydrological conditions.</li> </ul>		
Prevent the release of oil, hazardous materials, and refuse/terminal debris to the environment.		
<ul style="list-style-type: none"> <li>Identify spill response resources available (CISPRI, NAVSUPSALV, CIPL, and Chevron) - status, deployment times, and location.</li> </ul>		
<ul style="list-style-type: none"> <li>Continue to determine and update information on Resources at Risk.</li> </ul>		
Conduct a risk-based decision process prior to movement of any crude oil product to and from the facility.		
<ul style="list-style-type: none"> <li>Monitor the risk to the Drift River Terminal, tanks, pipelines, and cargo transfer facility.</li> </ul>		
<ul style="list-style-type: none"> <li>Identify oil storage capacity and inventory management of facilities.</li> </ul>		
<ul style="list-style-type: none"> <li>Coordinate and participate in Overflights. Ash plume and flight safety conditions will be monitored at all times.</li> </ul>		
Identify regulatory requirements for facility restart of operations.		
<ul style="list-style-type: none"> <li>Monitor plans and timeframe for effecting repairs necessary for resumption of operations.</li> </ul>		
Identify and maintain stakeholder communications and engagement.		

**Operational Period Command Emphasis (Safety Message, Priorities, Key Decisions/Directions)**

**Approved By**

: \_\_\_\_\_

## ICS 204 - Assignment List

**Incident:** Drift River Terminal Flooding **Prepared By:** Iwamoto, Larry **at** 3/29/2009 12:55

**Period:** Period 4 (3/29/2009 16:00 - 3/30/2009 16:00) **Branch:** Lahar & Flood Forecast and Planning

**Division/Group/Staging:** Lahar & Flood Forecast and Planning

### Operations Personnel

Title	Name	Affiliation	Contact Number(s)
Operations Section Chief	Steve Russell		
Director - Flood Forecast and Planr	Bob Swenson	DNR, Director DGGS	451-5001
Division/Group Supervisor/STAM			
		Army Corps of Engineers	
		Cook Inlet Pipeline	
		AVO-DNR	
		USGS	
		NWS River Flood Foreca	

### Assignments

Assess the threat of lahars and flooding to the DROT and associated pipelines. Specific areas of focus are as follows:

1. Lahar and flood predictions
2. Lahar and flood warning system
3. Floodplain risk assessment
4. Geologic Hazards
5. Lahar and/or flood impacts on terminal facility
6. Tertiary Containment Integrity

### Special Instructions for Division / Group

Conduct overflights of the area specifically to determine the extent of lahars and flooding. Compile the reports and forecasts from other groups, including operational overflight photos, DNR-AVO data, NWS weather and river flood forecasts, Army Corps of Engineers risk assessments, and USGS hydrological information.

### Tactical Objective

Conduct overflights of the area specifically to determine the extent of lahars and flooding. Compile the reports and forecasts from other groups, including operational overflight photos, DNR-AVO data, NWS weather and river flood forecasts, Army Corps of Engineers risk assessments, and USGS hydrological information.

**Reviewed By Signatures - (PSC):**

**(OSC):**

## ICS 204 - Assignment List

**Incident:** Drift River Terminal Flooding

**Prepared By:** Brown, John

**at** 3/29/2009 12:55

**Period:** Period 4 (3/29/2009 16:00 - 3/30/2009 16:00)

**Branch:** Planning/ Environmental

**Division/Group/Staging:** Planning/ Environmental

### Operations Personnel

Title	Name	Affiliation	Contact Number(s)
Environmental Unit Leader	Mala Kalyan	ADEC	269-7435
	Young Ha	ADEC	
Environmental Unit	Gayle Martin	Department of Fish and C	
Environmental Unit	Clark Cox	ADNR	
	Dave McMahan	ADNR SHPO	
	Richard Vanderhoek	ADNR SHPO	
	Shannon Miller	ADNR	

### Assignments

Determine resources at risk, including wildlife, sensitive habitats, historical properties, and private property.

### Location of Work

Anchorage

**Reviewed By Signatures - (PSC):**

**(OSC):**

## ICS 204 - Assignment List

**Incident:** Drift River Terminal Flooding      **Prepared By:** Section, Planning      **at** 3/29/2009 14:22

**Period:** Period 4 (3/29/2009 16:00 - 3/30/2009 16:00)      **Branch:** Production Inventory Management

**Division/Group/Staging:** Production Inventory Management

### Operations Personnel

Title	Name	Affiliation	Contact Number(s)
Planning Section Chief	Larry Iwamoto	ADEC	
Technical Specialist (T/S)	Shannon Dewandel	ADEC	
		USCG	
		CIPL	
		DNR	
		PHSMA	
		AOGCC	

### Assignments

- > Work with Cook Inlet Pipeline, USCG, DNR, PHMSA, and AOGCC to determine oil inventory at the Drift River Terminal Facility, which includes all tanks and pipelines.
  
- > Determine operational alternatives and corresponding tank inventory levels until threat is eliminated (including alternative storage possibilities, potential for reverse flow to up-stream storage, water-ballasting oil tanks versus using oil to stabilize tanks).
  
- > Assess potential up-stream effects to production wells in the event that oil platforms are shut-in, including
  - What increased risks are there for spills from these platforms?
  - What are the potential effects to the oil resevoirs and recovery?
  - What are the risks for partial or permanent loss of production?

### Location of Work

Anchorage

### Special Equipment / Supplies Needed for Assignment

None at this time

### Special Site-Specific Safety Considerations

All field work will require appropriate PPE.

**Reviewed By Signatures - (PSC):**

**(OSC):**

## ICS 204 - Assignment List

**Incident:** Drift River Terminal Flooding

**Prepared By:** Brown, John

**at** 3/29/2009 12:55

**Period:** Period 4 (3/29/2009 16:00 - 3/30/2009 16:00)

**Branch:** Operations/ Situation Overflights

**Division/Group/Staging:** Operations/ Situation Overflights

### Operations Personnel

Title	Name	Affiliation	Contact Number(s)
Operations Section Chief	Steve Russell	ADEC	(907-262-5210 ext 222
Air Support Group	Neil Huddleston	ADEC	

### Assignments

Participate in facility overflights

### Special Instructions for Division / Group

Use digital video and cameras to document overflight information.

### Tactical Objective

Monitor and coordinate overflight information.

### Location of Work

Anchorage/ Soldotna

### Special Equipment / Supplies Needed for Assignment

Digital video camera and regular digital camera

### Special Site-Specific Safety Considerations

Monitor reports of volcanic eruptions; no flight if there is any chance of encountering ash while flying.

**Reviewed By Signatures - (PSC):**

**(OSC):**

## ICS 204 - Assignment List

<b>Incident:</b> Drift River Terminal Flooding	<b>Prepared By:</b> Brown, John <b>at</b> 3/29/2009 14:20
<b>Period:</b> Period 4 (3/29/2009 16:00 - 3/30/2009 16:00)	<b>Branch:</b> Planning/ Spill Response & Resources Availal
<b>Division/Group/Staging:</b> Planning/ Spill Response & Resources Availal	

### Operations Personnel

Title	Name	Affiliation	Contact Number(s)
Operations Section Chief	Steve Russell	ADEC	(907-262-5210 ext 222
		USCG	
		CIPL	
		CISPRI	
		EPA	
		Navy SUPSALV	

### Assignments

- > Identify possible spill scenarios in light of current conditions.
- > Identify spill response resources available at CISPRI, Cook Inlet Pipeline, Chevron, Navy SUPSALV.
  - Determine status
  - Deployment times, and locations
- > Identify Geographic Response Strategies that can be activated to protect sensitive areas that may be impacted by a crude oil release from the terminal area.
- > Identify response tactics and resources that would be used to contain and recover oil in the event of a crude oil release.
- > Identify non-mechanical response tactics and resources that could be used in the event of a crude oil release.
- > Identify predeployment tactics that could enhance response times and capabilities.
- > Identify potential safety-related issues to personnel and response equipment in the event of ash fallout

### Special Instructions for Division / Group

None

### Tactical Objective

Verify which immediate response resources are available, as well as location and availability of vessels and large response equipment in Cook Inlet area.

### Location of Work

Soldotna

### Special Equipment / Supplies Needed for Assignment

None

**Reviewed By Signatures - (PSC):**

**(OSC):**

## ICS 204 - Assignment List

<b>Incident:</b> Drift River Terminal Flooding	<b>Prepared By:</b> Brown, John <b>at</b> 3/29/2009 14:18
<b>Period:</b> Period 4 (3/29/2009 16:00 - 3/30/2009 16:00)	<b>Branch:</b> Planning/ Facility Status & Restart Contingenc
<b>Division/Group/Staging:</b> Planning/ Facility Status & Restart Contingenc	

### Operations Personnel

Title	Name	Affiliation	Contact Number(s)
Planning Section Chief	Larry Iwamoto	ADEC	
Facility/ Regulator Requirement As	Shannon DeWandel	ADEC	
		CIPL	
		USCG	
		PHSMA	
		EPA	

### Assignments

Identify all actions and regulatory requirements for a restart of facility operations. Should include Cook Inlet Pipeline, PHMSA, USCG, EPA and State of Alaska requirements prior to start-up commencing.

- >Develop a comprehensive safety plan.
- >Continue mud and debris removal.
- >Conduct integrity check. Identify any damage and repairs needed to:
  - Tertiary dike and secondary containment
  - Pipelines to loading berth
  - Crude oil transmission pipeline
  - Pumping System
  - Tanks
  - Support infrastructure, safe haven, roads, airstrip, helicopter pad, hangar, other buildings
- >Identify a repair schedule, if needed.
- >Ensure that all agency permits and approvals have been met.
- >Coordinate schedule with facility restaffing, port operations and tanker schedules.

### Location of Work

Anchorage

### Special Environmental Considerations

Coordination with all State Trustee Agencies, Coast Guard, EPA, and Federal DOT

### Special Site-Specific Safety Considerations

None at this time

**Reviewed By Signatures - (PSC):**

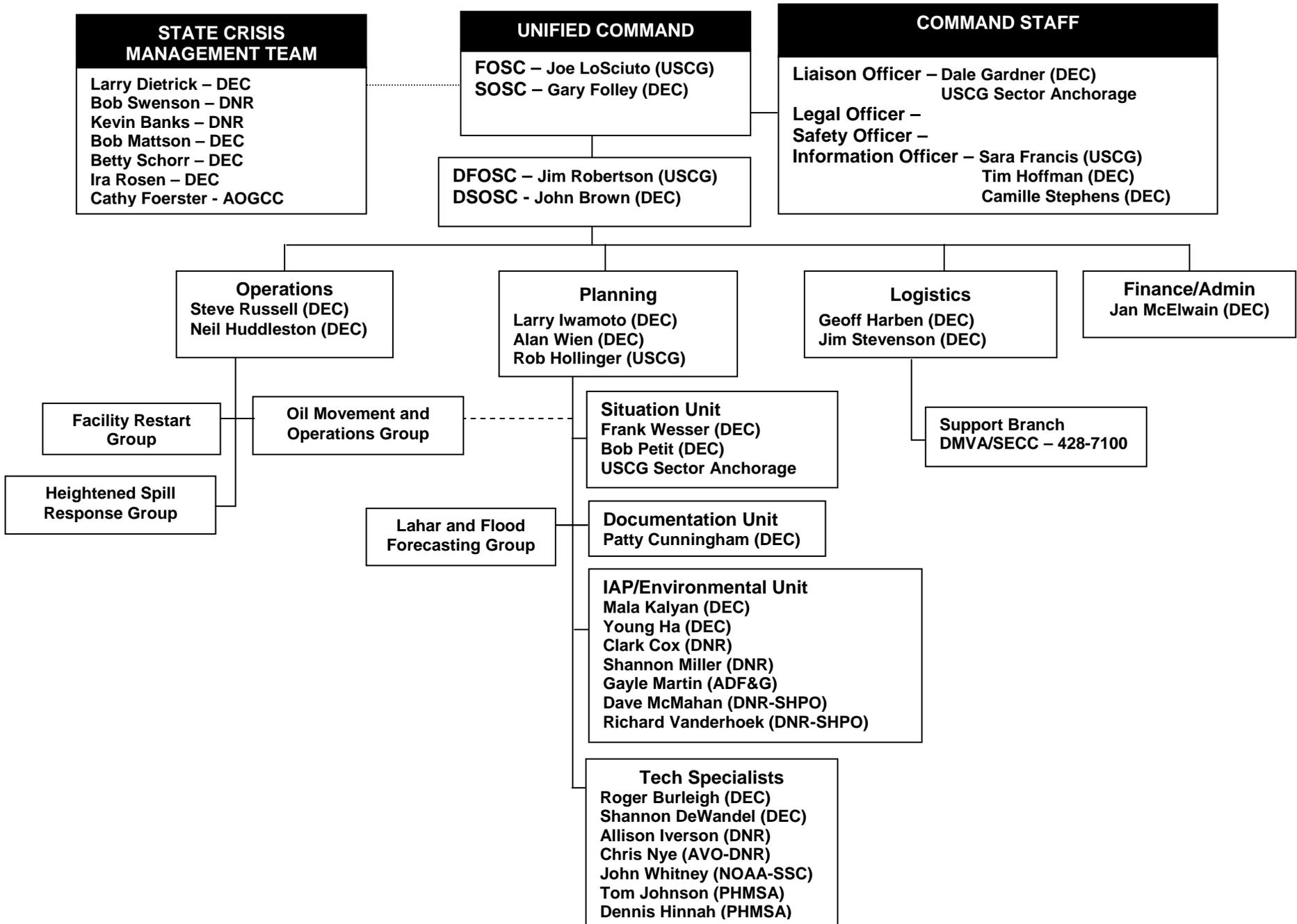
**(OSC):**

## ICS 205 Communications Plan – Contact Information

<b>MT REDOUBT ERUPTION (DRIFT RIVER TERMINAL) – FEDERAL/STATE IMT/CMT CONTACT LIST (March 29, 2009)</b>				
<b>Name</b>	<b>Agency</b>	<b>Position/Area of Expertise/Function</b>	<b>Email Address</b>	<b>Phone</b>
Anne Besser	USCG Sector Anchorage	USCG Situation Unit	<a href="mailto:Anne.E.Besser@uscg.mil">Anne.E.Besser@uscg.mil</a>	271-6700
John Brown	DEC-PERP	Deputy SOSC	<a href="mailto:John.Brown@alaska.gov">John.Brown@alaska.gov</a>	269-7688
Matt Carr	EPA	FOSC (Inland)	<a href="mailto:Carr.matthew@epa.gov">Carr.matthew@epa.gov</a>	271-3616
Clark Cox	DNR	Environmental Unit	<a href="mailto:Clark.cox@alaska.gov">Clark.cox@alaska.gov</a>	269-8565
Cathy Foerster	DOA-AOGCC	Agency Representative	<a href="mailto:Cathy.foerster@alaska.gov">Cathy.foerster@alaska.gov</a>	793-1221
Gary Folley	DEC-PERP	SOSC	<a href="mailto:Gary.Folley@alaska.gov">Gary.Folley@alaska.gov</a>	262-5210, X234
Sara Francis	USCG Sector Anchorage	PIO-JIC	<a href="mailto:Sara.G.Francis@uscg.mil">Sara.G.Francis@uscg.mil</a>	271-6700
Dale Gardner	DEC-PERP	Liaison	<a href="mailto:Dale.gardner@alaska.gov">Dale.gardner@alaska.gov</a>	269-7682
Young Ha	DEC-PERP	IAP/Environmental Unit	<a href="mailto:Young.ha@alaska.gov">Young.ha@alaska.gov</a>	269-3064
Mark Hamilton	USCG Sector Anchorage	FOSC Sector Anchorage	<a href="mailto:Mark.H.Hamilton@uscg.mil">Mark.H.Hamilton@uscg.mil</a>	271-6700
Geoff Harben	DEC-PERP	Logistics Section Chief	<a href="mailto:Geoff.harben@alaska.gov">Geoff.harben@alaska.gov</a>	465-5234
Tim Hoffman	DEC-Water	PIO-JIC	<a href="mailto:Timothy.hoffman@alaska.gov">Timothy.hoffman@alaska.gov</a>	269-0598
Rob Hollinger	USCG Sector Anchorage		<a href="mailto:Rob.E.Hollinger@uscg.mil">Rob.E.Hollinger@uscg.mil</a>	271-6700
Neil Huddleston	DEC-PERP	Operations	<a href="mailto:Neil.huddleston@alaska.gov">Neil.huddleston@alaska.gov</a>	269-7542
Larry Iwamoto	DEC-PERP	State Planning Section Chief	<a href="mailto:Larry.iwamoto@alaska.gov">Larry.iwamoto@alaska.gov</a>	269-7683
Mala Kalyan	DEC-PERP	IAP/Environmental Unit Leader	<a href="mailto:Mala.kalyan@alaska.gov">Mala.kalyan@alaska.gov</a>	269-7435
Joe LoSciuto	USCG Sector Anchorage	Deputy FOSC	<a href="mailto:Joseph.J.LoSciuto@uscg.mil">Joseph.J.LoSciuto@uscg.mil</a>	271-6700
Gayle Martin	ADF&G	Environmental Unit	<a href="mailto:Gayle.martin@alaska.gov">Gayle.martin@alaska.gov</a>	267-2541
Dave McMahan	DNR SHPO	Environmental Unit	<a href="mailto:Dave.mcmahan@alaska.gov">Dave.mcmahan@alaska.gov</a>	269-8723
Shannon Miller	DNR	Environmental Unit	<a href="mailto:Shannon.miller@alaska.gov">Shannon.miller@alaska.gov</a>	269-8555
Mike Franklin	USCG MSD Kenai			
Stephen Pearson	USCG Sector Anchorage		<a href="mailto:Steven.T.Pearson@uscg.mil">Steven.T.Pearson@uscg.mil</a>	271-6700
Bob Petit	DEC-PERP	Situation Unit Leader	<a href="mailto:Robert.petit@alaska.gov">Robert.petit@alaska.gov</a>	262-5210, X236
Jim Robertson	USCG	Deputy FOSC	<a href="mailto:James.B.Robertson@uscg.mil">James.B.Robertson@uscg.mil</a>	271-6700
Weld Royal	DEC-CO	Public Information Officer	<a href="mailto:Weld.royal@alaska.gov">Weld.royal@alaska.gov</a>	465-5009

<b>MT REDOUBT ERUPTION (DRIFT RIVER TERMINAL) – FEDERAL/STATE IMT/CMT CONTACT LIST (March 29, 2009)</b>				
Steve Russell	DEC-PERP	Operations Section Chief	<a href="mailto:Steve.russell@alaska.gov">Steve.russell@alaska.gov</a>	262-5210, X222
Dave Simonds	USCG Sector Anchorage	USCG Liaison	<a href="mailto:david.d.simonds@uscg.mil">david.d.simonds@uscg.mil</a>	271-6700
Camille Stephens	DEC-PERP	JIC Website	<a href="mailto:Camille.stephens@alaska.gov">Camille.stephens@alaska.gov</a>	465-5242
Jim Stevenson	DEC-PERP	Logistics	<a href="mailto:Jim.stevenson@alaska.gov">Jim.stevenson@alaska.gov</a>	344-7380
Richard Vanderhoek	DNR SHPO	Environmental Unit	<a href="mailto:Richard.vanderhoek@alaska.gov">Richard.vanderhoek@alaska.gov</a>	269-8728
Frank Wesser	DEC-PERP	Situation Unit	<a href="mailto:Frank.wesser@alaska.gov">Frank.wesser@alaska.gov</a>	269-3062
John Whitney	NOAA	Scientific Support Coordinator	<a href="mailto:John.whitney@noaa.gov">John.whitney@noaa.gov</a>	271-3139
Alan Wien	DEC-PERP	Dpty Planning Section Chief/Liaison	<a href="mailto:Alan.wien@alaska.gov">Alan.wien@alaska.gov</a>	376-1865
<b>Technical Specialists</b>				
Roger Burleigh	DEC-IPP	Tech Specialist-Engineering	<a href="mailto:Roger.burleigh@alaska.gov">Roger.burleigh@alaska.gov</a>	269-7538
Shannon DeWandel	DEC-IPP	Tech Specialist – C-Plans	<a href="mailto:Shannon.dewandel@alaska.gov">Shannon.dewandel@alaska.gov</a>	269-7541
Dennis Hinnah	PHMSA	Tech Specialist – Federal C-plans	<a href="mailto:Dennis.hinnah@dot.gov">Dennis.hinnah@dot.gov</a>	271-4937/
Allison Iversen	DNR-PSIO	Tech Specialist	<a href="mailto:allison.iversen@alaska.gov">allison.iversen@alaska.gov</a>	269-8806
Tom Johnson	PHSMA	Primary contact	<a href="mailto:Donald.t.johnson@dot.gov">Donald.t.johnson@dot.gov</a>	271-4934
Chris Nye	DNR	Div of Geological and Geophysical Surveys	<a href="mailto:cnye@giseis.alaska.edu">cnye@giseis.alaska.edu</a>	474-7430
<b>STATE CMT</b>				
Larry Dietrick	DEC-SPAR (Director)	CMT Lead	<a href="mailto:Larry.dietrick@alaska.gov">Larry.dietrick@alaska.gov</a>	465-5255
Bob Mattson	DEC PERP	DEC CMT – Response Advisor	<a href="mailto:Bob.mattson@alaska.gov">Bob.mattson@alaska.gov</a>	465-5349
Kevin Banks	DNR-DOG (Director)	Director, Div of Oil and Gas	<a href="mailto:Kevin.banks@alaska.gov">Kevin.banks@alaska.gov</a>	269-8781
Ira Rosen	DEC-IPP	Alaska Risk Assessment	<a href="mailto:Ira.rosen@alaska.gov">Ira.rosen@alaska.gov</a>	465-6219
Betty Schorr	DEC-IPP	DEC CMT – C-Plan Advisor	<a href="mailto:betty.schorr@alaska.gov">betty.schorr@alaska.gov</a>	269-7566
Bob Swenson	DNR-DGGS (Director)	Div of Geological and Geophysical Surveys	<a href="mailto:Bob.swenson@alaska.gov">Bob.swenson@alaska.gov</a>	451-5001

# Drift River Terminal – Potential Spill Incident Federal/State Incident Management Team/Crisis Management Team



## ICS 206 - Medical Plan

**Incident:** Drift River Terminal Flooding      **Prepared By:** Section, Planning      **at** 3/29/2009 12:55

**Period:** Period 4 (3/29/2009 16:00 - 3/30/2009 16:00)      **Version Name:** March 28, 2009

### Medical Aid Stations

Name	Location	Paramedics (On-Site)	Phone	Radio
AK Air National Guard	Anchorage, AK	Yes	907-428-7230	
Fairweather Inc.	Anchorage, AK	Yes	907-258-3446	

### Transportation (Ground and/or Air Ambulances Services)

Name	Location	Paramedics	Phone	Radio
Providence Life Flight	Anchorage, AK		907-243-5433	
Security Aviation	Anchorage, AK	No	(907) 248-2677	N

### Hospitals

Name	Location	Helipad	Burn Center	Phone	Radio
Alaska Native Medical Center	Anchorage, AK			(907) 563-2662	
Alaska Regional Hospital	Anchorage, AK	Yes	No	(907) 276-1130/175	
Providence Alaska Medical Center	Anchorage, AK	Yes	Yes	(907) 562-2211	
South Peninsula Hospital	Homer, AK			(907) 235-8101	
Central Peninsula General Hospital	Soldotna, AK			(907) 262-4404 (24	
Peninsula Medical Center	Kenai, AK			907-262-9341	

### Special Medical Emergency Procedures

In the Kenai Borough ( 911) can be used for contacting and mobilization of local police, Alaska State Troopers, Fire, or Ambulance.

## ICS 208 - Site Safety Plan

<b>Incident:</b> Drift River Terminal Flooding	<b>Prepared By:</b> Kalyan, Mala <span style="float: right;"><b>at</b> 3/29/2009 16:47</span>
<b>Period:</b> Period 4 (3/29/2009 16:00 - 3/30/2009 16:00)	<b>Version Name:</b> 3/28/09

**Applies To Site:** Drift River Terminal

**Products:** Volcanic Ash, Crude Oil (Attach MSDS)

### SITE CHARACTERIZATION

<b>Water:</b> Cook Inlet	<b>Wave Direction:</b> Southwest
<b>Wave Height:</b> 5 ft	<b>Current Direction:</b>
<b>Current Speed:</b>	<b>Use:</b> Industrial
<b>Land:</b> Brushland	<b>Temp:</b> Mid 30s Fahrenheit
<b>Weather:</b> Snowy	<b>Wind Direction:</b> Northeast
<b>Wind Speed:</b> knots	

**Pathways for Dispersion:** Air

#### Site Hazards

- |   |   |   |
|---|---|---|
| <input checked="" type="checkbox"/> Boat safety           | <input type="checkbox"/> Fire, explosion, in-situ burning | <input type="checkbox"/> Pump hose                          |
| <input type="checkbox"/> Chemical hazards                 | <input type="checkbox"/> Heat stress                      | <input checked="" type="checkbox"/> Slips, trips, and falls |
| <input type="checkbox"/> Cold Stress                      | <input checked="" type="checkbox"/> Helicopter operations | <input type="checkbox"/> Steam and hot water                |
| <input type="checkbox"/> Confined Spaces                  | <input type="checkbox"/> Lifting                          | <input type="checkbox"/> Trenching/Excavation               |
| <input type="checkbox"/> Drum handling                    | <input type="checkbox"/> Motor vehicles                   | <input type="checkbox"/> UV Radiation                       |
| <input type="checkbox"/> Equipment operations             | <input checked="" type="checkbox"/> Noise                 | <input type="checkbox"/> Visibility                         |
| <input checked="" type="checkbox"/> Electrical operations | <input type="checkbox"/> Overhead/buried utilities        | <input checked="" type="checkbox"/> Weather                 |
| <input type="checkbox"/> Fatigue                          | <input type="checkbox"/> Plants/wildlife                  | <input type="checkbox"/> Work near water                    |
| <input checked="" type="checkbox"/> Other<br>Volcanic Ash | <input type="checkbox"/> Other                            | <input checked="" type="checkbox"/> Other                   |

#### Air Monitoring

**%O2:** NA                      **%LEL:** NA                      **ppm Benzene:** NA  
**ppm H2S:**                       **Other (Specify):** Volcanic As Particles

### CONTROL MEASURES

#### Engineering Controls

- |  |  |   |
|--|--|---|
| <input type="checkbox"/> Source of release secured | <input checked="" type="checkbox"/> Valve(s) closed    | <input type="checkbox"/> Energy sources locked/tagged out |
| <input checked="" type="checkbox"/> Site secured   | <input checked="" type="checkbox"/> Facility shut down | <input type="checkbox"/> Other                            |

#### Personal Protective Equipment

- |   |   |
|---|---|
| <input type="checkbox"/> Impervious suit                      | <input checked="" type="checkbox"/> Respirators         |
| <input type="checkbox"/> Inner gloves                         | <input checked="" type="checkbox"/> Eye protection      |
| <input checked="" type="checkbox"/> Outer gloves              | <input checked="" type="checkbox"/> Personal floatation |
| <input checked="" type="checkbox"/> Flame resistance clothing | <input checked="" type="checkbox"/> Boots               |
| <input checked="" type="checkbox"/> Hard hats                 | <input type="checkbox"/> Other                          |

#### Additional Control Measures

- Decontamination stations established
- Sanitation facilities provided
- Illumination provided
- Medical surveillance provided

## ICS 208 - Site Safety Plan

**Incident:** Drift River Terminal Flooding      **Prepared By:** Kalyan, Mala      **at** 3/29/2009 16:47

**Period:** Period 4 (3/29/2009 16:00 - 3/30/2009 16:00)      **Version Name:** 3/28/09

### WORK PLAN

- |  |                                       |                                     |                                   |   |
|--|---------------------------------------|-------------------------------------|-----------------------------------|---|
| <input type="checkbox"/> Booming   | <input type="checkbox"/> Skimming     | <input type="checkbox"/> Vac trucks | <input type="checkbox"/> Pumping  | <input type="checkbox"/> Excavation               |
| <input type="checkbox"/> Heavy equipment                                     | <input type="checkbox"/> Sorbent pads | <input type="checkbox"/> Patching   | <input type="checkbox"/> Hot work | <input type="checkbox"/> Appropriate permits user |
| <input checked="" type="checkbox"/> Other Assessment of Drift River Facility |                                       |                                     |                                   |   |

### TRAINING

- Verified site workers trained per regulations

### ORGANIZATION

<u>Title</u>	<u>Name</u>	<u>Telephone/Radio</u>
Incident Commander:		
Deputy Incident Commander:		
Safety Officer:		
Public Affairs Officer:		
Other:		

### EMERGENCY PLAN

- |  |                       |
|--|-----------------------|
| <input checked="" type="checkbox"/> Alarm system       | Horn or Siren on Site |
| <input checked="" type="checkbox"/> Evacuation plan    |                       |
| <input checked="" type="checkbox"/> First aid location |                       |

#### Notified

- |  |                                    |                 |
|--|------------------------------------|-----------------|
| <input type="checkbox"/> Hospital                  | Central Peninsula Hospital         | Phone: 262-4404 |
| <input type="checkbox"/> Ambulance                 | Kenai Peninsula Emergency Services | Phone: 911      |
| <input type="checkbox"/> Air ambulance             | Kenai Peninsula Emergency Services | Phone: 911      |
| <input type="checkbox"/> Fire                      | Kenai Peninsula Emergency Services | Phone: 911      |
| <input type="checkbox"/> Law enforcement           | Alaska State Troopers              | Phone: 911      |
| <input type="checkbox"/> Emergency response/rescue | USCG Sector Anchorage              | Phone: 271-6700 |

### PRE-ENTRY BRIEFING

- Initial briefing prepared for each site

### Attachments / Appendices

Aircraft Travel

Safe Work Practices for Working in Volcanic Ash

Safe Work Practices for Boats

Personnel Tracking System

## Aircraft Travel:

The following safety guidelines are intended for SPAR personnel that are passengers in light aircraft. SPAR employees piloting aircraft must adhere to all FAA regulations and the flight safety manual used by the Alaska Department of Public Safety.

### I GENERAL

This section contains information that describes the proper attire for winter and summer flying, survival kits, forced landings, and passenger/pilot relationships.

#### A. Safety Rules

Most of the procedures listed below apply to SPAR employees flying in small planes or helicopters. Dry suits must be worn on all helicopter flights over water. Mustang suits or float coats should be worn on flights over water in small fixed-wing aircraft.

Seatbelts and shoulder harnesses (if so equipped) must be worn snugly on all flights.

Passengers should not move about the aircraft without permission of the pilot.

4. Passengers should pay close attention to all pre-flight safety briefings given by the pilot(s).
5. Passengers should wear clothing appropriate to the current climatic conditions - during winter months thermal underwear and suitable cold weather outer clothing should be worn. Spare clothing should be taken.
6. Care must be taken when leaving aircraft as ground/aircraft surfaces can be slippery - when deplaning a float plane, the water depth may be deceiving.
7. Supervisors must insure the pilot is given a briefing on the mission so he/she can prepare a concise flight plan.
8. No person shall leave an aircraft until given approval by the pilot (no person should exit or board a fixed-wing aircraft until the propeller has stopped).
9. Hearing protection should be worn on all aircraft.
10. If forced to land on water, passengers should remain inside the aircraft unless it begins to sink or tip. Take emergency kits and life rafts when exiting the aircraft.
11. Know the location and use of fire extinguishers and emergency equipment and kits (including the emergency locator transmitter (ELT) and how to activate it), and the location of all exits.
12. Passengers have the right to reject a flight that they feel is unsafe. Employees should have the training and knowledge to assess aviation weather information and make an informed "go/no-go" decision. (Also see "Icing and Small Aircraft" below.)
13. Passengers who feel that they have been put in danger during a flight should contact the local FAA Flight Standards District Office (FSDO) to discuss the matter. This could save someone's life. This is particularly important if, during a flight in a single-engine commercial aircraft, the plane entered the clouds, a situation prohibited for most single-engine commercial operations.
14. Special considerations: Helicopter
  - a. Do not approach a helicopter until given approval by the pilot.
  - b. Always approach a helicopter in crouched position.
  - c. Don't walk up slope when under the arc of the rotor.
  - d. Approach a helicopter from the front (45' angle), always in full view of the pilot.
  - e. REMAIN CLEAR OF THE REAR OF THE HELICOPTER. NEVER WALK NEAR OR UNDER THE TAIL BOOM OR TAIL ROTOR.
  - f. Do not carry any objects above head level when entering/leaving a helicopter.
  - g. Remove hats and secure glasses and other loose objects when entering/leaving a helicopter.

## ATTACHMENT: SAFE WORK PRACTICES FOR BOATS

### ATTACHMENT: SAFE WORK PRACTICES FOR BOATS

Ensure that all boats and operators comply with the appropriate state and federal regulations. In addition to the items discussed below, certain types of vessels will require such items as USCG approved fire extinguishers, backfire flame control, powered ventilation, sound signaling devices (different from emergency signals), navigation lights/signals, pollution placards, and marine sanitation devices.

1. Boat operators must familiarize themselves and passengers with safety features and equipment on their boats.
2. Boats must be operated by qualified individuals.
3. Life jackets, work vests, cold water immersion suits, or other appropriate USCG approved Personal Floatation Devices (PFDs) must be worn by personnel in boats.
  - a. Use of cold water immersion suits is particularly critical under conditions of cold stress.
  - b. Types of PFDs:
    - Type I Off-shore life jacket provides the most buoyancy. It is effective for all waters and intended specifically for open, rough, or remote waters where rescue may be delayed.
    - Type II Near-shore buoyancy vests are intended for calm, inland water, or where there is a good chance of quick rescue.
    - Type III Floatation aids are good for calm, inland water, or where there is a good chance of quick rescue. Examples: float coats, fishing vests, and ski vests.
    - Type IV These are throwable devices, not intended to be worn or to replace those that are worn.
    - Type V Special Use. These are intended for specific activities (according to the conditions on the labels). Some examples: deck suits, cold water immersion suits, work vests, and hybrid PFDs below.
    - Type VI Hybrid Inflatables. These PFDs contain a small amount of inherent buoyancy and an inflatable chamber. Performance equals that of a Type I, II, or III PFD (as noted on the label) when inflated.
4. Boats should generally not be operated for oil recovery after sunset. If this is required or poses minimal risk, areas of operation should be carefully prescribed, and individual boat operators should maintain a communication schedule with a shore base. Each boat should be fully equipped with appropriate running lights and emergency signaling devices, and personnel onboard should be wearing emergency night signaling devices.
5. Distress signals (three or more for day and three or more for night) should be carried on board all vessels. These devices may be required by regulation. They may be stored on board or issued to individuals. If stored on board, they should be in a sealed, watertight, orange container marked "DISTRESS SIGNALS".
  - a. USCG-approved pyrotechnic visual distress signals include red flares (hand-held or aerial), range smoke (hand-held or floating), and launchers (for aerial red meteors or parachute flares). Pyrotechnic devices should not be used near flammable product spills.
  - b. Non-pyrotechnic distress signals are not approved individually, but must meet certain requirements. They should be in serviceable condition, readily accessible, and certified by the manufacturer as complying with USCG requirements. These devices include orange distress flags, and electric distress lights.
  - c. Distress flags are day signals only. They must be at least 3x3 feet with a black square and ball on an orange background.
    - i. Electric distress lights are for night use only. These devices automatically flash the international SOS code (...- -...) so a flashlight IS NOT considered a distress signal. Under inland navigation rules, a high intensity strobe light is considered a distress signal.
    - ii. It is illegal to display visual distress signals on the water, except when assistance is required.
6. Boat operators must keep their supervisors informed of their area of operations, especially when they change their work area (if plans call for a boat to move to another location during a shift, the operator should advise the supervisor of his actual time of departure).
7. Boat operators should never anchor their boats by the stern. This is typically the lowest point on the boat due to design and/or loading, and is often squared off, making it vulnerable to swamping.
8. Portable fuel tanks should be filled outside of the boat. All sources of ignition in the area of fueling (e.g., engines,

*Material Safety Data Sheet*  
**BENTONITE USA - Product No: 1763**  
*volcanic ash*  
**NATURAL SOURCE**

Liberty Natural Home		Terms & Definitions	
Info	Identification		
FEMA No			
CAS No.	70131-50-9.		
Chemical Name			
Health	Hazardous.		
Flammability	Will ignite if overheated.		
Reactivity	Stable and not reative with water.		
Info	Fire, Explosion & Reactivity		
Flash Point	N/A		
Extinguishing Media	FOG-Yes   CO2-Yes   FOAM-Yes   DRY-Yes		
Dot Classification			
Stability	STABLE		
NFPA Classification			
Fire Fighting	SMOTHER TO EXCLUDE AIR. DO NOT USE WATER. CLASS B FORE PROCEDURES. FIREFIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APARATUS.		
Unusual Fire Hazard	KEEP AWAY FROM HEAT, SPARKS, AND OPEN FLAME.		
Hazardous Combustable Decomposition Products			
Info	Physical Data		
Color & Odor	Cream Powder		
Boiling Point	N/A		
Melting Point	APPROX. 1450 C		
Vapor Pressure	N/A		
Vapor Density	N/A		
Water Solubility	INSOLUBLE, FORMS COLLOIDAL SUSPENSION		
Info	Protection Data		
Respiratory	Mechanical exhaust required. In confined or poorly ventilated areas, the use of an appropriate respiratory protection may be required.		

Ventilation	
Skin	Compatible chemical-resistant gloves are recommended. Wash contaminated gloves before reuse
Eye	Chemical safety goggles are recommended. Wash contaminated goggles before reuse.
Other	Avoid inhalation and contact with skin and eyes. Good personal hygiene practices should be used. Wash after any contact, before breaks and meals, and at the end of the work period. Safety shower and eye bath recommended.
Info	Occupational Exposure Limit
Threshold Limit	N/A
OSHA Permissible Limit	N/A
Carcinogen	NO
NTP Limit	N/A
IARC Limit	N/A
OSHA Limit	N/A
Carcinogen Notes	
Info	Health Hazards
Material Type	
Health Hazard	Causes respiratory tract irritation. May cause digestive tract irritation. Irritant. Hygroscopic. The toxicological properties of this material have not been fully investigated. Causes eye and skin irritation.
Primary Entry Routes	INHALATION-SKIN-EYE
Health Hazard Notes	
Info	Emergency First Aid
Inhalation	REMOVE PERSON TO VENTILATED AREA. IF SYMPTOMS PERSIST SEEK-MEDICAL ATTENTION.
Eye Contact	REMOVE CONTACTS IMMEDIATELY. FLUSH WITH WATER FOR AT LEAST 15-MINUTES. IF IRRITATION PERSISTS, SEEK A PHYSICIAN.
Skin Contact	WASH AFFECTED AREA WITH COPIOUS AMOUNTS OF SOAP AND WATER. CALL- A DOCTOR IF IRRITATION DEVELOPES. COMPLETELY DECONTAMINATE- CLOTHING, SHOES, AND LEATHER GOODS BEFORE RE-USE OR DISCARD.
Ingestion	IF SWALLOWED, RINSE MOUTH WITH WATER (ONLY IF PERSON IS CONSCIOUS).-OBTAIN MEDICAL ADVICE.
First Aid Notes	
Info	Spill, Leakage & Disposal Procedures

Spill Procedures	VACUUM OR SWEEP UP MATERIAL AND PLACE INTO A SUITABLE DISPOSAL CONTAINER. CLEAN UP SPILLS IMMEDIATELY, OBSERVING PRECAUTIONS IN THE PROTECTIVE EQUIPMENT SECTION. AVOID GENERATING DUSTY CONDITIONS
Waste Disposal	--INCINERATE OR DISPOSE IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL-REGULATIONS.
Info	Handling & Shipping Procedures
Handling & Shipping Procedures	1. Measures should be taken to prevent materials from being splashed into the eyes or on the skin. Wear eye shields and protective clothing. Smoking should not be permitted in work areas. 2. Provide suitable air extraction ventilation in the work areas. Vapors may form explosive mixtures with air. Keep material away from sources of ignition (e.g. hot surfaces, sparks, flame and static discharges. 3. To be stored in tightly sealed and preferably full containers in cool, dry and ventilated area. Protect from heat/overheating and light sources and Keep in glass, suitable plastic, aluminum or lacquer-lined containers.
Info	SARA 313 Chemical Breakdown
SARA Chemical Name	
SARA Concentration	

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[Home Page](#)

MATERIAL SAFETY DATA SHEET  
 CHEMICAL ID: 025150 MSDS ID: 025150  
 PRODUCT NAME: Crude Oils, Sweet

CRUDE OILS, SWEET

Material Safety Data Sheet

October 31, 1997

PHILLIPS 66 COMPANY  
 A Division of Phillips Petroleum Company  
 Bartlesville, Oklahoma 74004

PHONE NUMBERS  
 Emergency: (918) 661-8118  
 General MSDS Information: (918) 661-8327  
 For Additional MSDSs: (918) 661-5952

A. PRODUCT IDENTIFICATION

Synonyms: Separator Crude; Field Crude  
 Chemical Name: Mixture  
 Chemical Family: Hydrocarbons  
 Chemical Formula: Mixture  
 CAS Reg. No.: 8002-05-9  
 Product No.: Not Established

Product and/or Components Entered on EPA's TSCA Inventory: YES

This product has been commercially introduced into U.S. commerce, and is listed in the Toxic Substances Control Act (TSCA) Inventory of Chemicals in Commerce; hence, it is subject to all applicable provisions and restrictions under TSCA 40 CFR, section 721 and 723.250.

B. HAZARDOUS COMPONENTS

Ingredients	CAS Number	% By Wt.	OSHA PEL	ACGIH TLV
n-Butane and lighter Gasoline, including	NA	0-7.7	800 ppm*	800 ppm*
Toluene	8006-61-9	10.8-80	300 ppm	300 ppm
Ethyl Benzene	108-88-3	< 10	100 ppm	100 ppm
p-Xylene	100-41-4	< 2	100 ppm	100 ppm
m-Xylene	106-42-3	< 3	100 ppm	100 ppm
o-Xylene	108-38-3	< 6	100 ppm	100 ppm
1,2,4-Trimethyl Benzene	95-47-6	< 3	100 ppm	100 ppm
Kerosene	95-63-6	< 3	25 ppm	25 ppm
Gas Oil	8008-20-6	3.9-23.4	NE	NE
Topped Crude	Various	5.8-35.6	NE	NE
Benzene	Various	5.6-61.8	NE	NE
PNA (Polynuclear Aromatics)	71-43-2	0-1.0	1 ppm**	10 ppm
Hydrogen Sulfide	Various	0.3-4.1	0.2 mg/m3***	0.2 mg/m3***
	7783-06-4	< 0.9	10 ppm	10 ppm

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MATERIAL SAFETY DATA SHEET  
CHEMICAL ID: 025150 MSDS ID: 025150  
PRODUCT NAME: Crude Oils, Sweet

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\* For n-Butane  
\*\* Operations exempted by the Benzene Standard, 24 CFR 1910.1028, will  
have a 10 ppm 8 hour TWA.  
\*\*\* As coal tar pitch volatiles  
-----

C. PERSONAL PROTECTION INFORMATION

Ventilation: Use adequate ventilation to control below recommended exposure levels. Monitoring of hydrogen sulfide air concentrations should be maintained.

Respiratory Protection: For concentrations exceeding the recommended exposure level, use NIOSH/MSHA approved air purifying respirator. In case of spill or leak resulting in unknown concentration, use NIOSH/MSHA approved supplied air respirator. If conditions immediately dangerous to life or health (IDLH) exist, use NIOSH/MSHA approved self-contained breathing apparatus (SCBA).

Eye Protection: Use safety glasses with side shields.

Skin Protection: Wear polyvinyl alcohol or Buna-N gloves. Use full-body, long sleeved garments to prevent excessive skin contact.

NOTE: Personal protection information shown in Section C is based upon general information as to normal uses and conditions. Where special or unusual uses or conditions exist, it is suggested that the expert assistance of an industrial hygienist or other qualified professional be sought.

D. HANDLING AND STORAGE PRECAUTIONS

Do not get in eyes, on skin, or on clothing. Do not swallow, may be aspirated into lungs. Do not breathe vapor or mist. May be fatal. Wear protective equipment and/or garments described in Section C if exposure conditions warrant. Wash thoroughly after handling. Immediately remove and launder contaminated clothing before reuse. Use only with adequate ventilation.

Store in well-ventilated area away from sources of ignition. Bond and ground during liquid transfer. Provide means of controlling leaks and spills. Keep containers closed.

-----  
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MATERIAL SAFETY DATA SHEET  
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PRODUCT NAME: Crude Oils, Sweet

-----  
E. REACTIVITY DATA

Stability: Stable  
Conditions to Avoid: Not Applicable  
Incompatibility (Materials to Avoid): Oxygen and strong oxidizing agents  
Hazardous Polymerization: Will Not Occur  
Conditions to Avoid: Not Applicable  
Hazardous Decomposition Products: Carbon and sulfur oxides and hydrogen sulfide formed when burned.

F. HEALTH HAZARD DATA

RECOMMENDED EXPOSURE LIMITS:

See Section B.

ACUTE EFFECTS OF OVEREXPOSURE:

Eye: May cause irritation of the eyes.  
Skin: Prolonged contact may result in dermal irritation.  
Inhalation: May cause irritation to the nose, throat and upper respiratory tract. Headache, nausea, weakness, sedation, unconsciousness and chemical pneumonitis are possible with high vapor concentrations.  
Ingestion: May cause gastrointestinal upset, nausea, vomiting and narcosis. May be aspirated into the lungs if swallowed resulting in pulmonary edema and chemical pneumonitis.

-----  
SUBCHRONIC AND CHRONIC EFFECTS OF OVEREXPOSURE:

Skin painting studies in mice have indicated a moderate carcinogenic potential for crude oil.

Benzene has been designated as a carcinogen by NTP, IARC, and OSHA. Benzene may produce blood changes which include reduced platelets, reduced red blood cells, reduced white blood cells, aplastic anemia, leukemia and erythroleukemia. Fetal death has been produced in laboratory animals. Chromosome changes were produced in humans and mutation changes occurred in cells of other organisms.

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MATERIAL SAFETY DATA SHEET  
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PNA's are designated carcinogens by IARC, NTP and OSHA. Kidney and lung tumors have been reported in animals and man with repeated PNA exposures. Stillbirths, mutagenesis and liver damage have been reported in laboratory animals exposed to PNA's.

OTHER HEALTH EFFECTS:

Sublethal concentrations of crude oil have been shown to be reversibly toxic to marine organisms.

Hydrogen sulfide may accumulate in concentrations sufficient to produce mucous membrane irritation, pulmonary edema, or even respiratory arrest. The odor of hydrogen sulfide may not be recognized after prolonged inhalation due to paralysis of the sense of smell. Effects from inhaling the fumes may lead to chronic bronchitis, respiratory irritation, increased loss of pulmonary function, and tearing of the eyes.

HEALTH HAZARD CATEGORIES:

	Animal	Human		Animal	Human
Known Carcinogen	<u>X</u>	<u>X</u>	Toxic	<u>X</u>	---
Suspect Carcinogen	---	---	Corrosive	---	---
Mutagen	<u>X</u>	---	Irritant	---	---
Teratogen	<u>X</u>	---	Target Organ Toxin	<u>X</u>	<u>X</u>
Allergic Sensitizer	---	---	Specify -		
Highly Toxic	---	---	Lungs-Aspiration Hazard;		
			Blood Toxin; Reproductive &		
			Liver Toxin-Animal; Kidney		
			& Lung Toxin; Nerve Toxin		

FIRST AID AND EMERGENCY PROCEDURES:

Eye: Flush eyes with running water for at least fifteen minutes. If irritation develops, seek medical attention.

Skin: Wash with soap and water. If irritation develops, seek medical attention.

Inhalation: Promptly remove from exposure. If breathing becomes shallow, give oxygen. If breathing ceases, administer artificial respiration followed by oxygen. If illness or adverse symptoms develop, seek medical attention.

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MATERIAL SAFETY DATA SHEET  
CHEMICAL ID: 025150 MSDS ID: 025150  
PRODUCT NAME: Crude Oils, Sweet

-----  
Ingestion: Do not induce vomiting. Seek immediate medical attention.

Note to Physician: Gastric lavage using a cuffed endotracheal tube may be performed at your discretion.

G. PHYSICAL DATA

-----  
Appearance: Tan to black liquid  
Odor: Mild to Pungent  
Boiling Point: IBP is 0F; EP is 1100F (-18 to 593C)  
Vapor Pressure: Range 1 to 10 Reid Vapor Pressure  
Vapor Density (Air = 1): 2.1 is typical  
Solubility in Water: Slight  
Specific Gravity (H2O = 1): 0.8 to 1; 0.86 is typical  
Percent Volatile by Volume: <1 to 50; 15-25 is typical  
Evaporation Rate (Butyl Acetate = 1): <1  
Viscosity: Not Established  
-----

H. FIRE AND EXPLOSION DATA

Flash Point (Method Used): <100F to >300F (<38C to >149C)(Estimated)  
Flammable Limits (% by Volume in Air): LEL - Not Established  
UEL - Not Established

Fire Extinguishing Media: Dry chemical, foam or carbon dioxide (CO2)

Special Fire Fighting Procedures: Evacuate area of all unnecessary personnel. Wear appropriate safety equipment for fire conditions including NIOSH/MSHA approved self-contained breathing apparatus (SCBA). Water fog or spray may be used to cool exposed equipment and containers. Shut off source if possible.

Fire and Explosion Hazards: Carbon oxides, hydrogen sulfide, and sulfur oxides formed when burned. Highly flammable vapors which are heavier than air may accumulate in low areas and/or spread along ground away from handling site. Flash back along vapor trail is possible.

I. SPILL, LEAK AND DISPOSAL PROCEDURES

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MATERIAL SAFETY DATA SHEET  
CHEMICAL ID: 025150 MSDS ID: 025150  
PRODUCT NAME: Crude Oils, Sweet

-----  
Precautions Required if Material is Released or Spilled:

Evacuate area of all unnecessary personnel. Wear protective equipment and/or garments described in Section C if exposure conditions warrant. Shut off source, if possible and contain spill. Protect from ignition. Keep out of water sources and sewers. Absorb in a dry, inert material (sand, clay, etc). Transfer to disposal drums using non-sparking equipment.

Waste Disposal (Insure Conformity with all Applicable Disposal Regulations):  
Incinerate or place in permitted waste management facility.

-----  
J. DOT TRANSPORTATION

Shipping Name: Petroleum crude oil  
Hazard Class: 3  
ID Number: UN 1267  
Packing Group: I  
Marking: Petroleum crude oil, , UN 1267  
Label: Flammable liquid  
Placard: Flammable/1267  
Hazardous Substance/RQ: Not Applicable  
Shipping Description: Petroleum crude oil, , 3, UN 1267, PG I  
Packaging References: 49 CFR 173., 173.201, 173.243

K. RCRA CLASSIFICATION - UNADULTERATED PRODUCT AS A WASTE

Ignitable (D001)

Prior to disposal, consult your environmental contact to determine if the TCLP (Toxicity Characteristic Leaching Procedure, EPA Test Method 1311) is required. Reference 40 CFR Part 261.

L. PROTECTION REQUIRED FOR WORK ON CONTAMINATED EQUIPMENT

Contact immediate supervisor for specific instructions before work is initiated. Wear protective equipment and/or garments described in Section C if exposure conditions warrant.

-----  
M. HAZARD CLASSIFICATION

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MATERIAL SAFETY DATA SHEET  
CHEMICAL ID: 025150 MSDS ID: 025150  
PRODUCT NAME: Crude Oils, Sweet

-----  
X This product meets the following hazard definition(s) as defined by the Occupational Safety and Health Hazard Communication Standard (29 CFR Section 1910.1200):

<u>X</u> Combustible Liquid	___ Flammable Aerosol	___ Oxidizer
___ Compressed Gas	___ Explosive	___ Pyrophoric
___ Flammable Gas	<u>X</u> Health Hazard (Section F)	___ Unstable
<u>X</u> Flammable Liquid	___ Organic Peroxide	___ Water Reactive
___ Flammable Solid		

\_\_\_ Based on information presently available, this product does not meet any of the hazard definitions of 29 CFR Section 1910.1200.

N. ADDITIONAL COMMENTS

SARA 313

This product contains the following chemical or chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. (See Section B).

Benzene  
Toluene  
Ethylbenzene  
p-Xylene  
m-Xylene  
o-Xylene  
1,2,4-Trimethylbenzene

NFPA 704 Hazard Codes - - - - - Signals

Health	: 1	Least - 0
Flammability:	3	Slight - 1
Reactivity	: 0	Moderate - 2
Special Haz.:	-	High - 3
		Extreme - 4

-----  
-----  
Phillips Petroleum Company (references to Phillips Petroleum Company or Phillips includes its divisions, affiliates and subsidiaries) believes that the information contained herein (including data and statements) is accurate as of the date hereof. NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED,

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MATERIAL SAFETY DATA SHEET  
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IS MADE AS CONCERNS THE INFORMATION HEREIN PROVIDED. The information provided herein relates only to the specific product designated and may not be valid where such product is used in combination with any other materials or in any process. Further, since the conditions and methods of use of the product and information referred to herein are beyond the control of Phillips, Phillips expressly disclaims any and all liability as to any results obtained or arising from any use of the product or such information. No statement made herein shall be construed as a permission or recommendation for the use of any product in a manner that might infringe existing patents.

Crude Oils, Sweet (US025150)

\*\*\* END OF MATERIAL SAFETY DATA SHEET FOR: Crude Oils, Sweet

\*\*\*

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## ICS 224 - Environmental Unit Summary

**Incident:** Drift River Terminal Flooding      **Prepared By:** Ha, Young      **at** 3/29/2009 15:13  
**Period:** Period 4 (3/29/2009 16:00 - 3/30/2009 16:00)      **Version Name:** 3/27/2009 14:15

### Area Environmental Data

Land status map is now available from ADNR. The map status map is attached and is titled Drift River. Following is more detailed description of the map's content (Provided by ADNR):

Orange spotted areas - Redoubt Bay Critical Habitat Area  
Blue areas just across the river - Cook Inlet Pipeline Company (CIPC) land  
Purple adjacent areas - Leased to CIPC by the state  
Vertical blue striped area - Leased to CIPC by the Kenai Peninsula Borough  
Red area - federal public land order issued in 1960 revoking the bombing and gunnery range of the area

ADFG provided the summary of Resources at Risk on March 26, 2009 and an updated version on March 27, 2009. The updated version is included as ICS 232.

NOAA provided Resources at Risk analysis on March 28, 2009 and is included as an attachment to ICS 232.

### Priorities for Mitigating Environment and Cultural Impacts

Following is a list of Geographical Response Strategies within 10 miles of the Drift River Terminal. The link to the GRS is also included.

Little Jack Slough GRS - <http://www.dec.state.ak.us/spar/perp/grs/ci/cic/cic14littlejackslough.pdf>  
Drift River GRS - <http://www.dec.state.ak.us/spar/perp/grs/ci/cic/cic15driftriver.pdf>  
Big River GRS - <http://www.dec.state.ak.us/spar/perp/grs/ci/cic/cic16bigriver.pdf>  
Kustatan River GRS - <http://www.dec.state.ak.us/spar/perp/grs/ci/cic/cic17kustatanriver.pdf>  
Swamp Creek GRS - <http://www.dec.state.ak.us/spar/perp/grs/ci/cic/cic20swampcreek.pdf>

### Wildlife Assessments and Rehabilitation

No impacts to wildlife has been observed to date.

### Permits (Dispersants, Burning, and/or Other

No permits are required at this time.

### Waste Management

No Waste Management Plan is required at this time.

### Other Environmental Concerns

### Logistical Support Needs

## RESOURCES AT RISK SUMMARY

Substitute ICS 232-OS form

1. Incident Name: Drift River Facility Flooding
2. Operational Period: from March 27, 2009, 1:00 pm, until revised
3. Environmentally-Sensitive Areas and Wildlife Issues

Site No.	Priority	Site Name / Physical Location	Site Issues
1	HIGH	Redoubt Bay Critical Habitat Area, located north of the Drift River Facility (see attached map)	<ul style="list-style-type: none"> <li>• Waterfowl concentrations in spring and fall, throughout the critical habitat area, and south to Harriet Point, inclusive of the Drift River Facility.</li> <li>• Waterfowl molting concentrations, throughout the critical habitat area, and south to Katchin Creek, inclusive of the Drift River Facility.</li> <li>• Anadromous fish in streams and lakes, including in Drift River</li> <li>• Shorebird concentrations in spring and fall, throughout the critical habitat area, and south, inclusive of the Drift River Facility.</li> <li>• Harbor seal haulout concentrations, at least 1 site within the critical habitat area.</li> <li>• Brown bear concentrations in summer and fall, throughout the critical habitat area, and south, inclusive of the Drift River Facility.</li> <li>• Black bear concentrations in spring, throughout the critical habitat area, and south, inclusive of the Drift River Facility.</li> <li>• Beluga whale feeding in nearshore waters.</li> </ul>
2	HIGH	Kalgin Island and Kalgin Island Critical Habitat Area, located southeast of the Drift River Facility in Cook Inlet	<ul style="list-style-type: none"> <li>• Harbor seal haulout concentrations, at least two sites</li> <li>• Streams and lakes with anadromous fish</li> <li>• Waterfowl concentrations in spring and fall</li> </ul>

3	HIGH	Trading Bay State Game Refuge, located north of Redoubt Bay Critical Habitat Area	<ul style="list-style-type: none"> <li>• Waterfowl concentrations in spring, along the coast and up to three miles inland</li> <li>• Waterfowl concentrations in fall, throughout the refuge.</li> <li>• Waterfowl concentrations during molting, throughout the refuge.</li> <li>• Bear concentrations in spring, throughout the refuge</li> <li>• Streams and lakes with anadromous fish</li> <li>• Shorebird concentrations in spring and fall, throughout the refuge.</li> <li>• Beluga whales feeding in nearshore waters.</li> <li>• Seabird concentrations, McArthur Flats.</li> </ul>
4	HIGH	Clam Gulch Critical Habitat Area, located across Cook Inlet from the Drift River Facility to the east	<ul style="list-style-type: none"> <li>• Waterfowl concentrations in spring, in area between Clam Gulch and Kasilof.</li> <li>• Waterfowl concentrations in fall, in area north and west of Kasilof.</li> <li>• Waterfowl concentrations in winter, near Cape Starichkof</li> <li>• Streams and lakes with anadromous fish</li> <li>• Razor clam concentrations, along coast from Cape Kasilof south to Cape Starichkof.</li> <li>• Seabird concentrations near mouth of Kasilof River.</li> </ul>
5	HIGH	Mouth of the Kenai River, located across Cook Inlet from the Drift River Facility to the east	<ul style="list-style-type: none"> <li>• Waterfowl concentrations in spring and summer</li> <li>• Beluga whale concentrations in spring, summer and fall, at the mouth of the Kenai River and in the marine environment outside of the mouth.</li> <li>• Anadromous fish streams.</li> <li>• Shorebird concentrations in spring at the mouth of the Kenai River.</li> <li>• Seabird colonies are found at the mouth of the Kenai River.</li> </ul>

## Narrative

Other most environmentally sensitive areas in Cook Inlet, further from the Drift River Facility, but still situated in the path of a potential oil spill include:

- Barren Islands
- Chinik Head to Silver Beach (Kamishak Bay)
- Susitna Flats and Susitna Flats State Game Refuge
- Anchorage Flats and Anchorage Coastal Wildlife Refuge
- Goose Bay State Game Refuge
- Palmer Hay Flats State Game Refuge
- Kachemak Bay Critical Habitat Area and Fox River Critical Habitat Area

A map showing environmentally sensitive areas for spring (April – May) can be found at: <http://www.asgdc.state.ak.us/maps/cplans/cook/PDFS/SPRING.PDF>

Individual maps of most environmentally sensitive areas for Cook Inlet can be accessed at:

<http://www.asgdc.state.ak.us/maps/cplans/subareas.html#cook>

4. Archaeo-cultural and Socio-economic issues: Archaeo-cultural issues are being reported upon by ADNR. The following subsistence and personal use harvest information has been supplied by ADF&G – Subsistence Division.

Site No.	Priority	Site Name / Physical Location	Site Issues
1	HIGH	Cook Inlet	<ul style="list-style-type: none"><li>• Non-commercial, personal use net fisheries for salmon.</li><li>• Subsistence set gill net salmon fisheries in Tyonek Subdistrict, around Seldovia, and in the Port Graham and Koyuktoluk subdistricts.</li><li>• Significant marine subsistence fisheries (halibut, rockfish, cod) around Seldovia, and in the Port Graham and Koyuktoluk subdistricts.</li><li>• Marine mammal hunting for harbor seals, sea lions, and sea otters takes place in lower Cook Inlet.</li><li>• Subsistence bird hunting, lower Cook Inlet.</li><li>• Very significant subsistence harvests of marine invertebrates in areas outside the nonsubsistence areas of lower Cook Inlet.</li><li>• Significant personal use fisheries for clams.</li></ul>

Prepared by: Gayle Martin, ADF&G – Habitat, on March 27, 2009 at 1:00 pm.

## **NOAA Resources at Risk Summary (March 26, 2009)**

### **Resources at Risk for the Drift River Tank Farm, Cook Inlet, AK**

#### **I. Incident Information**

This report was prepared at 1000 EST on 26 March 2009. Mt. Redoubt, located approximately 100 nm SW of Anchorage on the West Side of Cook Inlet erupted 5 times on 23 March 2009. These eruptions caused lahars, extensive flooding, and mud flows around the Drift River Tank Farm, where oil from the Cook Inlet fields is temporarily stored prior to shipping out aboard tankers. Currently, two of the four active tanks have 74,000 bbls of crude oil apiece. This report covers resources potentially at risk from the present time to 30 days from now.

#### **II. Geographic Region Covered**

The area covered by this report includes the Drift River, Rust Slough, and environs in Redoubt Bay, Cook Inlet. This area does not necessarily correspond to actual or potential oil locations. Consult other Hotline reports for oil location information.

#### **III. Expected Behavior of the Spilled Material**

Cook Inlet, Drift River Terminal Crude (API 34.1) is a light to medium weight crude oil. This product may coat the intertidal environment, as well as wildlife on the water surface. The product may also result in water column and benthic impacts if mixed into the water column, or if it strands in large amounts in shallow, sheltered areas. While the focus of this report is on resource impacts resulting from a crude oil release, the likelihood is that impacts would be unpredictable due the dynamic nature of a volcanic eruption and subsequent natural disasters, such as floods, mudslides, etc. If oil is released, chances are that it would be mixed with mud, water, debris (e.g., mud, gravel, trees, etc.), and potentially in very large volumes.

#### **IV. Shoreline Resources at Risk**

The shoreline along the Drift River, Rust Slough, and Redoubt Bay is predominantly extensive marsh. There are large exposed tidal flats extending 2 or more nm offshore of the Drift River in Redoubt Bay. There are pockets of sand/gravel beaches at the Drift River mouth and elsewhere along the coast. The tidal range is approximately 23 feet.

The most sensitive habitats in the area are coastal and riparian marshes, which are often highly productive, serving as important wildlife habitat for migratory and nesting birds, and nursery areas for fish and shellfish. The marsh vegetation is likely under a period of winter senescence (vegetation growth is dormant); therefore, the key concern at this time of year is if the lighter fractions of the oil penetrate into the marsh sediments and any wrack/litter. Lighter fractions of the oil may be acutely toxic to wetland vegetation, especially if oil penetrates into the sediments. Where wetland sediments are muddy and soft, it is important to prevent excessive disturbance and further mixing of oil into the substrate by foot traffic during cleanup activities, as this could

result in more severe and long-term impacts to the marshes. If large volumes of mud, water, and debris are introduced into the marshes, along with oil, damages to the habitat and associated species would be extensive.

Tidal flats are also sensitive habitats. Biological utilization of tidal flats is often high, and organisms that are buried in the sediments will likely be severely impacted. Oil usually does not penetrate into the sediments of tidal flats, because they are tightly packed and heavily water-saturated, but rather, oil will cover portions of the flats at low tide, and then be re-floated at high tide. Organisms living in the flats may be smothered during low tide.

Oil may penetrate into mixed sand and gravel beaches. This oil is difficult to remove and may become a source of chronic sheening. On mixed sand and gravel beaches oil may form a band of oil or a greasy stain on the substrate, especially along the high-tide line. Heavier accumulations could penetrate into the sediments. Lighter oils tend to penetrate deeper than heavy oils, and penetration is greatest in coarse, well-sorted sediments. Along exposed, high-energy areas, surface contamination may be quickly removed, while in low-energy areas, sheens may be released during high tide.

## **V. Biological Resources at Risk**

### **Birds**

While bird use of the area is likely limited in late winter, many migratory species arrive in spring (April-May). The Redoubt Bay Critical Habitat Area (268 square miles of wetlands and riparian habitat) provides spring resting and feeding habitat for hundreds of thousands of waterfowl on their way to northern nesting grounds. It is well known as the largest nesting area for the Tule white-fronted goose in the world. It is also heavily used for nesting by other geese and swan species (e.g., cackling Canada goose, Taverner's Canada goose, lesser Canada goose, snow goose, and tundra and trumpeter swans). Diving and dabbling ducks arriving in the spring for summer breeding (tens of thousands) may include: pintail, mallard, green-winged teal, northern shoveler, canvasback, lesser scaup, bufflehead, redhead, gadwall, American wigeon, and common eider. Shorebirds utilizing the area during spring migration include: yellowlegs, snipe, godwits, whimbrels, sandpipers, plovers, dunlin, and phalaropes. Sandhill cranes (a few nesting pairs), ravens, and gulls may be present in spring. There is a bald eagle nest along the Drift River.

Waterfowl are usually at high risk during oil spills because they spend a lot of time on the water surface and in wetlands. Gulls and shorebirds can also be severely impacted by oil. Direct oiling of birds reduces the buoyancy, water repellency, and insulation provided by feathers, and may result in death by drowning or hypothermia. Preening of oiled feathers may also result in ingestion of oil resulting in irritation, sickness, or death. Oil brought back to the nests by adult birds may kill or injure eggs and young birds.

### **Fish**

Coho salmon run up the Drift River in the summer and fall. Eggs hatch in early spring and embryos may be present in gravel until they emerge in May and June where they occupy shallow stream margins. Coho, pink, and sockeye salmon and Dolly Varden may be present in Rust Slough and Cannery Creek. Pink fry swim out of the gravel and migrate downstream in late

winter or spring. Sockeye fry also emerge in early spring and move to rearing areas. Dolly Varden eggs hatch in March with emergence in April or May followed by rearing in streams.

Larval and juvenile fish are especially sensitive because they inhabit shallow waters, are less mobile, and are more sensitive to oil toxicity. Eggs and fry would be impacted by large additions of sediment, debris, etc. into the sloughs and rivers.

### **Invertebrates**

Extensive razor clam beds occur off of Rust Slough and Cannery Creek. The largest razor clam fishery in Alaska occurs on the eastern beaches of Cook Inlet, which is on the opposite bank of the area of present concern. Most razor clam digging occurs from April through September (peak in early summer), and there is no limit on west side Cook Inlet beaches. Razor clams may be smothered by the crude oil and tainting from lighter fractions of the oil may be a concern. A large influx of sediment (mud) onto shellfish beds would cause smothering of the organisms.

### **Marine Mammals**

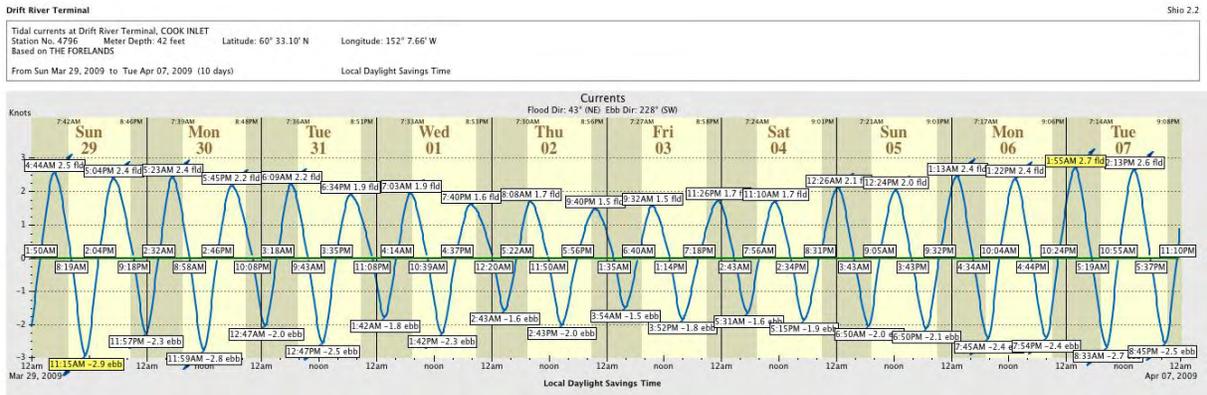
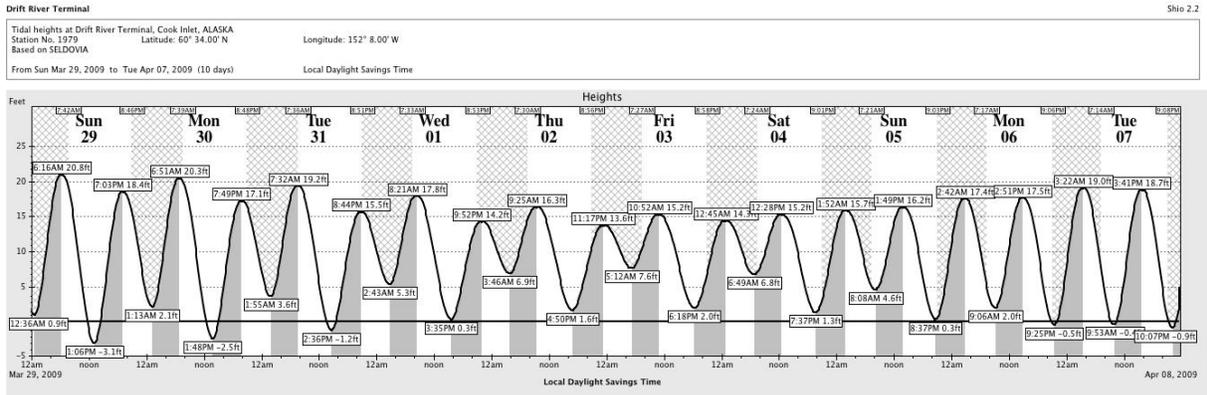
Harbor seals, killer whales, harbor porpoises, beluga whales, and Dall's porpoise are present in Redoubt Bay. Haul-outs, rookeries, and concentration areas for seals and whales occur in Cook Inlet, but fall outside the immediate area of concern at the present time.

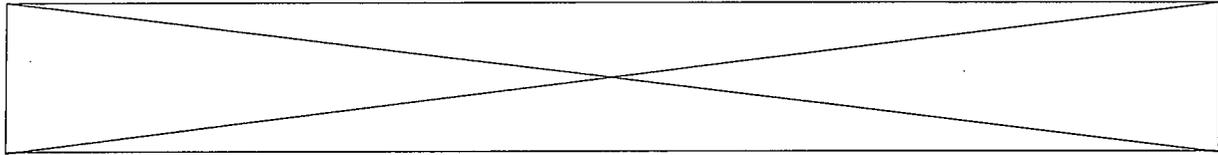
## **VI. Human-Use Resources at Risk**

The Redoubt Bay Critical Habitat Area (managed by ADF&G) occurs along the west side of Cook Inlet including Rust and Cannery Creeks and Drift River. Facilities in the area include: Drift River Terminal and Christy Lee Loading Facility.

## Drift River Terminal Tide Information (March 29- April 7, 2009)

Date	Day	Time	Height	Time	Height	Time	Height	Time	Height
03/29/2009	Sun	12:36AM LDT	0.9 L	06:15AM LDT	20.8 H	01:06PM LDT	-3.1 L	07:03PM LDT	18.5 H
03/30/2009	Mon	01:13AM LDT	2.1 L	06:51AM LDT	20.3 H	01:48PM LDT	-2.5 L	07:49PM LDT	17.1 H
03/31/2009	Tue	01:55AM LDT	3.7 L	07:31AM LDT	19.3 H	02:36PM LDT	-1.2 L	08:43PM LDT	15.6 H
04/01/2009	Wed	02:43AM LDT	5.3 L	08:21AM LDT	17.8 H	03:35PM LDT	0.4 L	09:52PM LDT	14.1 H
04/02/2009	Thu	03:46AM LDT	6.8 L	09:25AM LDT	16.3 H	04:50PM LDT	1.7 L	11:17PM LDT	13.6 H
04/03/2009	Fri	05:12AM LDT	7.7 L	10:52AM LDT	15.2 H	06:18PM LDT	2.0 L		
04/04/2009	Sat	12:45AM LDT	14.2 H	06:49AM LDT	6.7 L	12:28PM LDT	15.2 H	07:37PM LDT	1.3 L
04/05/2009	Sun	01:52AM LDT	15.8 H	08:08AM LDT	4.6 L	01:49PM LDT	16.3 H	08:37PM LDT	0.4 L
04/06/2009	Mon	02:41AM LDT	17.4 H	09:06AM LDT	2.0 L	02:51PM LDT	17.6 H	09:25PM LDT	-0.5 L
04/07/2009	Tue	03:22AM LDT	19.0 H	09:53AM LDT	-0.4 L	03:41PM LDT	18.7 H	10:07PM LDT	-0.8 L





**Drift River, Alaska**

Add to My Favorites - [LOCAL](#) [RSS](#)

Local Time: 1:21 PM AKDT (GMT -08) — [Set My Timezone](#)

Lat/Lon: 60.6° N 152.2° W ([Google Map](#))

**Current Conditions**

MARITIME , Nikiski, Alaska (PWS)

Updated: 52 min 22 sec ago



**30 °F**  
Scattered Clouds

Windchill: 15 °F  
Humidity: 78%  
Dew Point: 24 °F  
Wind: 28 mph from the North

Wind Gust: 33.0 mph  
Pressure: 29.29 in (Falling)  
Visibility: 10.0 miles  
UV: 3 out of 16  
Clouds: Scattered Clouds 9500 ft (Above Ground Level)

Elevation: 52 ft

**Rapid Fire Updates:**

Enable  Disable

**Source for Current Conditions:**

PWS & Airport  Airport Only

» [Weather History for This Location](#)

Select a source for your current conditions:

MARITIME

**Raw METAR**

**Aviation**

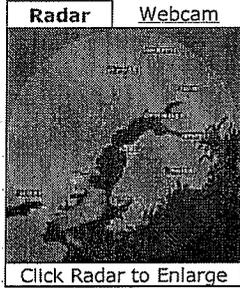
**Weather Radio**

Flight Rule:	VFR (PAEN)
Wind Speed:	20.0 kts.
Wind Dir:	360° (North)
Ceiling:	Unlimited
<a href="#">Full Report</a> — <a href="#">Pilot Maps</a>	

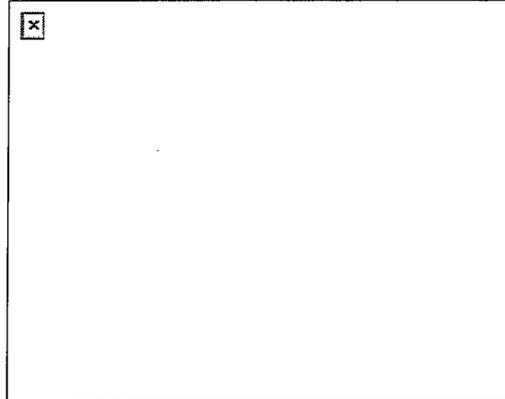
[Talk to State Farm agents near you:](#)

**Nearby Airports**

City:	Temp.:	Conditions:	Updated:
<a href="#">Kenai</a>	40 °F	Scattered Clouds	12:53 PM AKDT
<a href="#">Soldotna</a>	37 °F	Scattered Clouds	1:16 PM AKDT
<a href="#">Big River Lakes</a>	34 °F	Overcast	12:50 PM AKDT
<a href="#">Anchorage</a>	29 °F	Mostly Cloudy	12:53 PM AKDT



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- [Trip Planner](#)
- [Weather Stations](#)



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**Forecast for Western Kenai Peninsula**

Updated: 9:01 am EDT on March 29, 2009

No Active Advisories ([US Severe Weather](#))

**Strong wind through late this afternoon...**

**Today**

Cloudy. A chance of snow in the morning...then a chance of rain and snow in the afternoon. Around Kachemak Bay...occasional light snow mixing with rain in the afternoon. Little or no snow accumulation. Highs in the upper 30s. Northeast wind 15 to 30 mph with gusts to 45 mph along the mountains. Around Kachemak Bay...east wind 30 to 40 mph becoming south 15 to 25 mph in the afternoon.

» [ZIP Code Detail](#)



**Tonight**

Snow. Snow accumulation 1 to 2 inches. Lows in the lower to mid 20s. South wind 10 to 20 mph except southwest 15 to 30 mph around Kachemak Bay.



**Monday**

Mostly cloudy with scattered snow showers. Highs around 30. Southwest wind 15 to 25 mph...strongest along the inlet.

» [ZIP Code Detail](#)



**Monday Night**

Mostly cloudy in the evening then becoming partly cloudy. Lows 10 to 20 above. South wind 10 to 20 mph except west 15 to 30 mph around Kachemak Bay.



**Tuesday**

Partly cloudy. Highs in the 30s. Light winds.

» [ZIP Code Detail](#)



**Tuesday Night**

Partly cloudy. Lows 15 to 25.



**Wednesday and Wednesday Night**

Mostly cloudy with a chance of snow. Highs in the 30s. Lows 15 to 25.



**Thursday**

Partly cloudy. Highs in the 30s.

**Thursday Night and Friday**