

# IAP Cover Sheet

Incident Name:  
LPC L-3 Pipeline Leak

Operational Period to be covered by IAP:  
Period 3 (11/30/2009 06:00 - 11/30/2009 18:00)

Approved by:

Matt Carr FOSC :

*[Signature]* 11/30/09

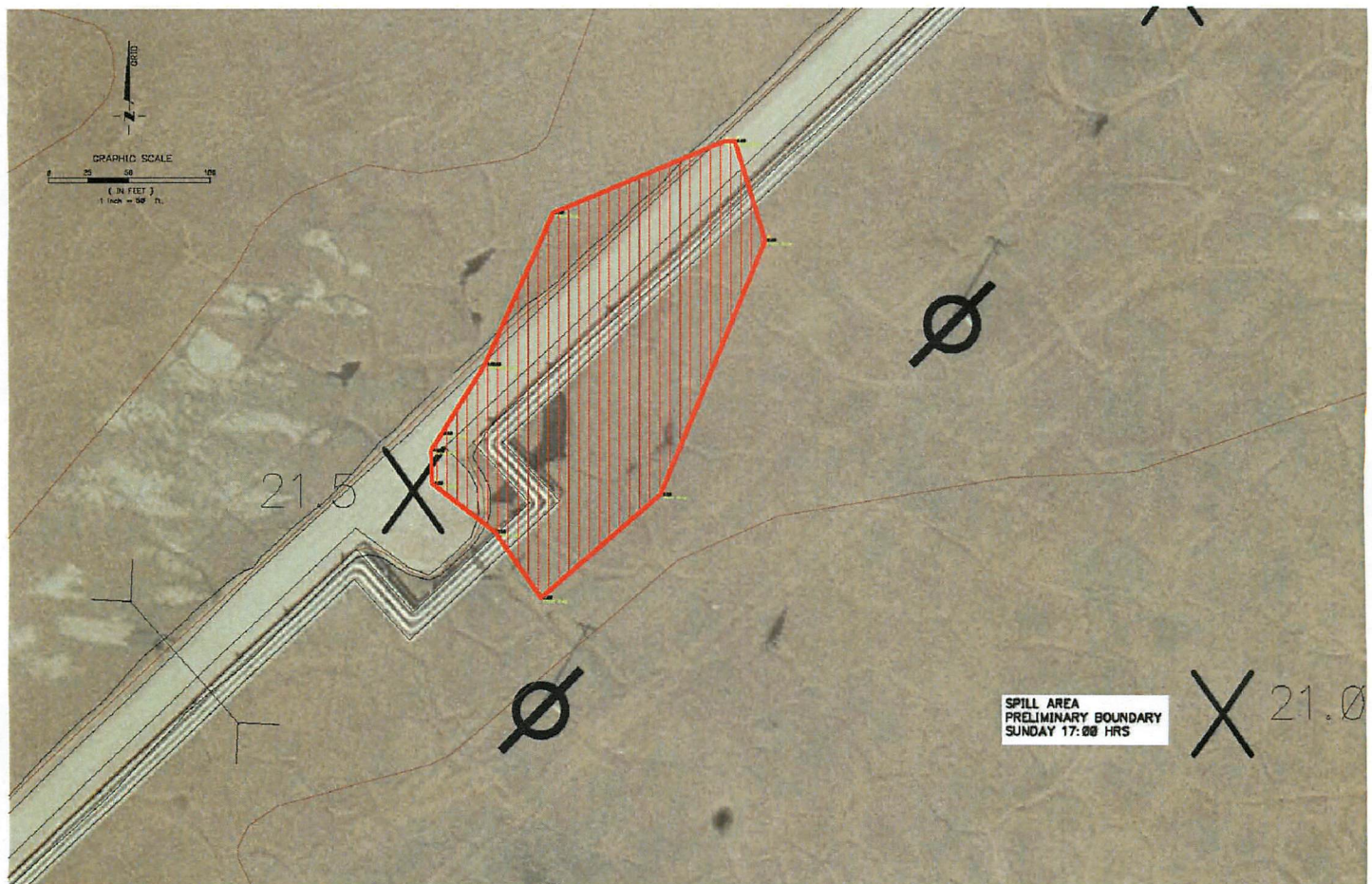
Tom DeRuyter SOSC :

*[Signature]* 11/30/09

James Fausett RPIC :

*[Signature]* 11-30-2009

## Incident Action Plan



Prepared By: Planning

Prepared Date/Time: 11/30/2009 06:04

IAP Cover Sheet

Printed: 11/30/2009 06:16

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**ICS 202 - General Response Objectives**

<b>Incident:</b> LPC L-3 Pipeline Leak	<b>Prepared By:</b> Planning at 11/30/2009 08:17
<b>Period:</b> Period 3 (11/30/2009 06:00 - 11/30/2009 18:00)	<b>Version Name:</b> 11/30/2009 8:11 AM

**Overall and Strategic Objectives**

	Assigned To	Status
Site Safety - Complete plan, including hot zone, decon and monitoring of 18" line to allow initiation of site clean-up activities.		
Develop 18" line de-pressuring / stabilization plan to prepare for repair plan execution		
<ul style="list-style-type: none"> <li>• Gain support from Technical Directorate.</li> </ul>	BST Technical Advisor	
Initiate clean-up plan following stabilization of pipeline		
Initiate construction of ice pad north of L3 pipeline road for staging clean-up equipment		
<ul style="list-style-type: none"> <li>• Evaluate use of rig mats if conditions do not allow ice pad construction</li> </ul>	Environmental Unit Leader	
<ul style="list-style-type: none"> <li>• Obtain DNR permit for tundra travel.</li> </ul>	Environmental Unit Leader	
<ul style="list-style-type: none"> <li>• Remove any contaminated snow from proposed ice pad location.</li> </ul>	On-Scene Commander	
Confirm and gain UC approval of spill clean-up plan.		
<ul style="list-style-type: none"> <li>• Clarify status of 18" line and assure alignment between Operations and Planning Sections.</li> </ul>	Incident Commander	
Develop plan for recycle of recovered spill materials.		
<ul style="list-style-type: none"> <li>• Define storage plans and select facility for recycle.</li> </ul>	Planning Section Chief	
Develop spill volume estimation plan.		
Re-establish flow in 24" line upon confirmation of positive 18" line isolation		
Establish long term staffing plan		

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

**Approved By**

: \_\_\_\_\_

## Weather Report

<b>Incident:</b> LPC L-3 Pipeline Leak	<b>Prepared By:</b> Section, Planning at 11/30/2009 04:57
<b>Period:</b> Period 3 (11/30/2009 06:00 - 11/30/2009 18:00)	<b>Version Name:</b> 11/29/2009 07:40

### Present Conditions

<b>Wind Speed:</b> 8.7 mph	<b>Wave Height:</b>
<b>Wind Direction From The:</b> ESE	<b>Wave Direction:</b>
<b>Air Temperature:</b> +2.3 Fahrenheit	<b>Swell Height:</b>
<b>Barometric Pressure:</b> 29.67 Rising	<b>Swell Interval:</b>
<b>Humidity:</b> 88.6%	<b>Current Speed:</b>
<b>Visibility:</b> 10.4 miles	<b>Current Direction Toward:</b>
<b>Ceiling:</b> feet	<b>Water Temperature:</b>
<b>Next High Tide (Time):</b>	<b>Next Low Tide (Time):</b>
<b>Next High Tide (Height):</b>	<b>Next Low Tide (Height):</b>
<b>Sunrise:</b> 06:00	<b>Sunset:</b> 19:00

**Notes:** Tonight forecast: Variable clouds with snow showers. Low -11F. Winds WSW at 5 to 10 mph. Chance of snow 40%.

### 24 Hour Forecast

<b>Sunrise:</b> 06:00	<b>Sunset:</b> 19:00
<b>High Tide (Time):</b>	<b>High Tide (Time):</b>
<b>High Tide (Height):</b>	<b>High Tide (Height):</b>
<b>Low Tide (Time):</b>	<b>Low Tide (Time):</b>
<b>Low Tide (Height):</b>	<b>Low Tide (Height):</b>

**Forecast:** Monday forecast: Mostly cloudy with snow showers around in the morning. High near -5F. Winds light and variable. Chance of snow 40%.

### 48 Hour Forecast

<b>Sunrise:</b> 06:00	<b>Sunset:</b> 19:00
<b>High Tide (Time):</b>	<b>High Tide (Time):</b>
<b>High Tide (Height):</b>	<b>High Tide (Height):</b>
<b>Low Tide (Time):</b>	<b>Low Tide (Time):</b>
<b>Low Tide (Height):</b>	<b>Low Tide (Height):</b>

**Forecast:** Tuesday forecast: A few snow showers around in the morning, otherwise mostly cloudy. Wind chills may approach -20F. High -1F. Winds E at 10 to 15 mph. Chance of snow 30%.

**ICS 206 - Medical Plan**

**Incident:** LPC L-3 Pipeline Leak      **Prepared By:** Wieliczkiewicz, Ed      **at** 11/29/2009 20:55  
**Period:** Period 3 (11/30/2009 06:00 - 11/30/2009 18:00)      **Version Name:** 11/29/2009 17:00

**Medical Aid Stations**

Name	Location	Paramedics (On-Site)	Phone	Radio
Endicott Clinic	Endicott Island, AK	Yes	659-6806	
EOA/MCC Clinic	Prudhoe Bay, AK	Yes	(907) 659-5239	
WOA/BOC Clinic	Prudhoe Bay, AK	Yes	(907) 659-4315	

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

Name	Location	Paramedics	Phone	Radio
Aeromed International	Anchorage, AK		(907) 646-0738	
Alaska Regional Life Flight	Anchorage, AK	Yes	(800) 478-9111	Y
LifeFlight Air Ambulance	Anchorage, AK		(800) 478-9111	
Providence Lifeguard Air Ambulance	Anchorage, AK		(907) 261-3608	
Providence Lifeguard Air Ambulance	Anchorage, AK		(800) 478-5433	

**Hospitals**

Name	Location	Helipad	Burn Center	Phone	Radio
Alaska Regional Hospital	Anchorage, AK	Yes	No	(907) 276-1130/175	
Alaska Native Hospital	Anchorage, AK	Yes	No	(907) 563-2662	
Providence Alaska Medical Center	Anchorage, AK	Yes	Yes	(907) 562-2211	

**Special Medical Emergency Procedures**

# ICS 207 - Organization Chart

**Incident:** LPC L-3 Pipeline Leak

**Prepared By:** Planning

**at** 11/30/2009 05:19

**Period:** Period 3 (11/30/2009 06:00 - 11/30/2009 18:00)

**Version Name:** Period 3

## Incident Command

Federal
Carr, Matt(Anchorage)
State
DeRuyter, Thomas
Incident Commander
Fausett, James E.

Safety Officer
Harris, Billy Joe

indicates  
initial contact  
point

Investigation Representativ
-----------------------------

NRDA Representative
---------------------

Agency Representative
-----------------------

Operations Section Chief
Hauge, Mikal
Deputy Operations Section
Olsen, Clark A.

Planning Section Chief
Baker, Samuel R. "Sam"
Deputy Planning Section C
Domke, Kenneth M.

Logistics Section Chief
Thibault, Dave R.
Deputy Logistics Section C
Galloway, Anthony D.

Finance Section Chief
Deputy Finance Section Cr

On-Scene Commander
Curley, Patrick M.

Staging Area Manager
Champagne, Phillip

Delineation Group
Cummings, Tommy

Source Control
Burden, Andrew

Operations Staff
Schoomaker, Mike

Situation Unit Leader
Barnes, Douglas H.

Resource Unit Leader
Allen, Elizabeth V.

Environmental Unit Lead
McDaniel, Michael A.

Technical Specialist
Fetzner, David

Plan Development Unit L
Majors, Lee

Support Branch Director
-------------------------

Supply Unit Leader
Nicoll, Kyle

Transportation Unit Lea
-------------------------

Security Unit Leader
Hubble, Denny

Service Branch Director
-------------------------

Information Technology
Help Desk x4226

Medical Unit
--------------

Accounting Unit Leader
------------------------

Contracts Unit Leader
-----------------------

Human Resources Unit
----------------------

Insurance / Claims Unit
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Food Unit Leader
PBOC Kitchen x5714

Equipment Manager
Merkle, Dan

# ICS 208 - Site Safety Plan

<b>Incident:</b> LPC L-3 Pipeline Leak	<b>Prepared By:</b> Shipman, James <b>at</b> 11/30/2009 05:58
<b>Period:</b> Period 3 (11/30/2009 06:00 - 11/30/2009 18:00)	<b>Version Name:</b> Period 3 / 2200hrs

**Applies To Site:** Spill site

**Products:** Crude oil (Attach MSDS)

## SITE CHARACTERIZATION

**Water:**

**Wave Height:**

**Current Speed:**

**Land:** Tundra

**Weather:** Partly Cloudy

**Wind Speed:** 8.7 mph

**Wave Direction:**

**Current Direction:**

**Use:**

**Temp:** +2.3 Fahrenheit

**Wind Direction:** ESE

**Pathways for Dispersion:** Land

### Site Hazards

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Boat safety                     | <input type="checkbox"/> Fire, explosion, in-situ burning | <input checked="" type="checkbox"/> Pump hose           |
| <input type="checkbox"/> Chemical hazards                | <input type="checkbox"/> Heat stress                      | <input type="checkbox"/> Slips, trips, and falls        |
| <input checked="" type="checkbox"/> Cold Stress          | <input type="checkbox"/> Helicopter operations            | <input checked="" 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 checked="" type="checkbox"/> Equipment operations | <input type="checkbox"/> Noise                            | <input type="checkbox"/> Visibility                     |
| <input type="checkbox"/> Electrical operations           | <input type="checkbox"/> Overhead/buried utilities        | <input type="checkbox"/> Weather                        |
| <input type="checkbox"/> Fatigue                         | <input type="checkbox"/> Plants/wildlife                  | <input type="checkbox"/> Work near water                |
| <input type="checkbox"/> Other                           | <input type="checkbox"/> Other                            | <input type="checkbox"/> Other                          |

### Air Monitoring

%O2: 0

%LEL: 0

ppm Benzene: 0

ppm H2S: 0

Other (Specify):

## CONTROL MEASURES

### Engineering Controls

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

### Personal Protective Equipment

- |   |                             |  |  |
|---|-----------------------------|--|--|
| <input checked="" type="checkbox"/> Impervious suit           | Chem Resistant for Clean-up | <input type="checkbox"/> Respirators         | For Clean-up, TBD by IH                          |
| <input checked="" type="checkbox"/> Inner gloves              | Cold Weather                | <input type="checkbox"/> Eye protection      | FF Resp or Chem Goggles                          |
| <input type="checkbox"/> Outer gloves                         | Nitrile for Clean-up        | <input type="checkbox"/> Personal floatation |  |
| <input checked="" type="checkbox"/> Flame resistance clothing | Outer Layer FR              | <input type="checkbox"/> Boots               | Neoprene for Clean-up                            |
| <input checked="" type="checkbox"/> Hard hats                 | MSA or Petzel               | <input type="checkbox"/> Other               | Cold Wx gear. Traffic vests. Snowmobile Helmets. |

### Additional Control Measures

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

# ICS 208 - Site Safety Plan

**Incident:** LPC L-3 Pipeline Leak      **Prepared By:** Shipman, James      **at** 11/30/2009 05:58

**Period:** Period 3 (11/30/2009 06:00 - 11/30/2009 18:00)      **Version Name:** Period 3 / 2200hrs

## WORK PLAN

- Booming       Skimming       Vac trucks       Pumping       Excavation  
 Heavy equipment       Sorbent pads       Patching       Hot work       Appropriate permits used  
 Other    Use of snow-machines to de-lineate spill site

## TRAINING

- Verified site workers trained per regulations

## ORGANIZATION

<u>Title</u>	<u>Name</u>	<u>Telephone/Radio</u>
Incident Commander:	Fausett, James E.	(907) 659-8682
Deputy Incident Commander:		
Safety Officer:	Harris, BJ	(907) 659-8238
Public Affairs Officer:		
Other:		

## EMERGENCY PLAN

- Alarm system  
 Evacuation plan  
 First aid location      MCC Clinic

### Notified

- Hospital      Phone:  
 Ambulance      Phone:  
 Air ambulance      Phone:  
 Fire      Phone:  
 Law enforcement      Phone:  
 Emergency response/rescue      Phone: 911 or 5300

## PRE-ENTRY BRIEFING

- Initial briefing prepared for each site

## Attachments / Appendices

Cold Stress and Hypothermia Consideration

Alaska North Slope (ANS) Crude MSDS

Decontamination Plan



## **APPENDIX: COLD STRESS AND HYPOTHERMIA CONSIDERATIONS**

Frostbite and hypothermia are the two major hazards of working in cold temperatures. A cold environment can reduce the temperature of the body and cause shivering, reduced mental alertness, and sometimes loss of consciousness. However, a healthy worker who is properly protected and takes reasonable precautions can function efficiently and safely in cold environments.

### **A. Factors Affecting Cold Exposure Severity**

#### 1. Important factors contributing to cold injury

- exposure to humidity and high winds
- contact with moisture or metal
- inadequate clothing

General health conditions that affect cold stress severity:

- age
- overall health
- fatigue
- allergies
- vascular disease
- smoking
- drinking
- certain drugs or medications

2. If someone becomes fatigued during physical activity, they will be more susceptible to heat loss. As exhaustion approaches, the body's ability to contract the blood vessels diminishes; blood circulation occurs closer to the skin; and rapid loss of heat begins. Sedative drugs and alcohol increase the risk of hypothermia by dilating the blood vessels near the skin, which increases heat loss and lowers body temperature.
3. The actual effects of a cold environment on the body also depend upon how well the skin is protected. An insulating barrier affects the rate of heat loss from radiation, convection, conduction and evaporation.
4. Environmental factors include wind and humidity, as well as temperature. The faster the air movement, the greater the effects of cold exposure.

### **B. Hypothermia**

Cold injury can be localized or generalized. Frostbite, frostnip, or chilblain are examples of localized injuries. Hypothermia is a generalized (threatening the whole body) cold injury that can be life threatening.

1. Hypothermia is an abnormally low body temperature caused by exposure to cold in air or in water. Hypothermia results as the body loses heat faster than it can produce it. Air temperature alone is not enough to judge the cold hazard of a particular environment. Hypothermia cases often develop in air temperatures between 30-50 degrees Fahrenheit. When you figure in such factors as windchill, the effective temperature can be significantly lower.
2. Pain in the extremities may be the first warning of dangerous exposure to cold. Severe shivering is a sign of danger requiring removal from the cold exposure.
3. Early warnings of hypothermia are uncontrollable shivering and the sensation of cold; the heartbeat slows and sometimes becomes irregular; the pulse weakens; and the blood pressure changes. Fits of shivering, vague or slurred speech, memory lapses, incoherence, or drowsiness may occur. Other symptoms, which may be seen before unconsciousness, are cool skin, slow, irregular breathing, low blood pressure, apparent exhaustion, and inability to get up after a rest.
4. Handling cold stress and hypothermia victims
  - a. A worker should go immediately to a warm shelter if any of the following symptoms

occur:

- pain, numbness, white color in the extremities, ears, nose, cheeks (or frostnip)
- onset of heavy shivering
- excessive fatigue
- drowsiness
- euphoria

A litter should be used if possible for all but the mildest cases.

- b. The main objective in handling hypothermia is to warm the body core evenly and without delay. However, doing it too rapidly can disrupt body functions such as circulation.
    - The outer layer of clothing should be removed when entering a warm shelter
    - The remaining clothing should be loosened to permit sweat to evaporate, and changed if wet
    - Alcohol and caffeinated drinks should not be consumed
    - Anyone on medications, such as blood pressure control or water pills, should consult a physician about possible side effects of cold stress
  - c. If medical help is not immediately available: keep the person quiet, but awake if possible; avoid unnecessary movement; and if it is necessary to move a hypothermia victim, use a litter - the exertion of walking or rough handling could aggravate circulation problems or cause irregular heartbeats.
  - d. The sudden return of the cool blood pooled in the extremities to the heart can cause shock. Do not rewarm the core and the extremities at the same time. In a case of mild hypothermia where the person is conscious, the body may be packed with heat packs or warm towels at the neck, groin, and armpits. As the extremities begin to recover warmth give conscious victims sweet, warm drinks. Avoid caffeine or alcoholic drinks.
5. Water immersion victims. Floatation is the most important factor in water immersion survival, but may not be available if not provided in advance (see protective clothing notes below).
- a. It is especially important to keep your head dry
  - b. Avoid thrashing about and assume the HELP position (Heat Escape Lessening Posture) by crossing wrists over chest and draw in knees close to your chest to avoid losing body heat. By using the HELP position, the head, neck, armpit, and groin areas are protected which are all high heat loss areas.
  - c. If others are in the water with you, huddle together to reduce heat loss, aid in rescue, and boost morale.

## COLD STRESS INJURY AND TREATMENT

INJURY	SYMPTOMS	POSSIBLE CAUSES	TREATMENT
Hypothermia	Pain in the extremities; uncontrollable shivering; reduced body core temperature; cool skin; rigid muscles; slowed heart rate; weakened pulse; low blood pressure; slow irregular breathing; memory lapses; slow, slurred speech; drowsiness; incoherence; lack of coordination; diminished dexterity and judgment.	Exposure to low air temperatures; exposure to high winds; water immersion; inadequate clothing; allergies; recent alcohol consumption; smoking; prescription medications; exhaustion; dehydration.	Remove person from wind, snow, rain; minimize use of energy by person; keep person awake; remove wet clothing; get person into dry clothing; wrap blanket around person; pack neck, groin, armpits with warm towels; do not rewarm extremities and body at the same time; give sweet warm drinks to conscious person; remove person to medical facility.
Frostbite	Whitened areas on skin; burning sensation at first; blistering; affected part cold, numb, and	Exposure to cold; age (very young or old); underlying disease.	Cover the frozen part; provide extra clothing and blankets; bring person indoors; place the part in tepid water or

	tingling.		rewarm with *warm packs; if no water is available, wrap gently in a sheet and blanket or place fingers under armpits; discontinue warming when the affected part becomes flushed and swollen; give sweet warm fluids to conscious person; if feet are affected, put on dry socks; if cheeks are affected, cover cheeks with warm hands; do not rub the part with anything; do not use heat lamps, hot water bottles, or place near hot stove; do not break blisters; obtain medical assistance immediately.
Chillblain	Recurrent localized itching, swelling, and painful inflammation of the fingers, toes or ears; severe spasms.	Inadequate clothing; exposure to cold and moisture, underlying disease.	Remove to warmer area; consult physician.
Frostnip	Skin turns white.	Exposure to cold.	Remove to warmer area; refer to treatment for frostbite.
Acrocyanosis	Hands and feet are cold, blue, and sweaty.	Exposure to cold; inadequate clothing; underlying disease.	Remove to warmer area; loosen tight clothing; consult physician.
Trench Foot	Edema of the foot; tingling; itching; severe pain; blistering.	Repeated exposure to cold and moisture.	Remove to warmer area; refer to treatment for frostbite; consult physician.
Raynaud's Disease	Fingers turn white, numb and stiff; intermittent blanching and reddening of the fingers and toes; affected area tingles and becomes very red or reddish purple.	Exposure to low air temperature and high winds; inadequate clothing; underlying disease; stress.	Remove to warmer area; consult physician.

### **C. Evaluating Cold Exposure Hazards**

1. Common sense will dictate how much clothing to wear and when to get into a warm area in most cases. However, some work environments require more complex evaluations.
2. Evaluating a work environment to determine the degree of cold stress involves measuring air temperature, wind speed, and the amount of energy expended by the worker.
3. Air temperature can be measured by an ordinary bulb thermometer. Wind speed can be measured in a variety of ways but can also be estimated as follow:
  - 5 mph - light flag moves
  - 10 mph - light flag fully extended
  - 15 mph - raises newspaper sheet
  - 20 mph - blowing and drifting snow
4. Table 2 in the Cold Stress section of the ACGIH TLV booklet estimates effective temperature using actual temperature and wind speed. This booklet also provides additional guidelines for controlling cold exposure hazards.

### **D. Preventing Cold Stress**

1. Reduce manual work load. When cold stress is a concern, personnel exposures should be reduced by eliminating manual operations as much as possible. Power tools, hoists, cranes, or lifting aids should be used to reduce the metabolic work load and to reduce the duration of human exposure. Fatigue is also a compounding stress factor.

2. Dehydration. Working in cold areas causes high water losses through the skin and lungs, because of the dryness of the air. Increased fluid intake is essential to prevent dehydration. Warm, sweet, caffeine-free, non-alcoholic fluids, in addition to water, should be available at the work site for fluid replacement and caloric energy.
3. Warm locations for breaks. For outdoor work such as beach cleaning, where it will be difficult to warm the work area, it is particularly important to provide frequent breaks in a warm location. These locations should also be stocked with warm fluids to help warming and prevent dehydration. A work-rest schedule should be implemented using Table 3 in the Cold Stress section of the latest edition of the ACGIH TLV booklet for guidance. Providing movable spot heaters close to the work area can also be effective, and can also prevent secondary hazards from carbon monoxide when workers attempt to warm themselves near running engines. If fine work is to be performed with bare hands, special provisions should be made to keep the worker's hands warm using such things as warm air jets, radiant heaters, or contact warm plates.
4. Indoor/outdoor wind breaks and shelter. The work area should be shielded if the air speed at the job site is increased by winds, draft, or ventilating equipment. For example, bird/mammal rehabilitation may be conducted in large warehouse type buildings where heating may be difficult. Wet work stations (such as washing or drying stations) should be enclosed by barriers to reduce drafts.
5. Scheduling and task management. Schedule the coldest work for the warmest part of the day. Move work to warmer areas whenever possible. Assign extra workers to highly demanding tasks. Make relief workers available for workers who need a break. The buddy system is required for all waste site operations. This is particularly important when working in stressful environments. Minimize sitting still or standing around for long periods. Older workers need to be extra careful in the cold. Additional insulating clothing and reduced exposure time should be considered for these workers. Sufficient sleep and good nutrition are important for maintaining a high level of tolerance to cold.
6. Protective clothing/equipment.
  - a. General considerations. Provisions for additional total body protection are required if work is performed in an environment at or below 4°C (39.2°F). At air temperatures of 2°C (35.6°F) workers who become immersed in water or whose clothing gets wet should be given dry clothing immediately and treated for hypothermia. Continuous exposure of skin should not be permitted when the air speed and temperature results in an equivalent chill temperature of -32°C (-25.6°F).
  - b. Insulation. It is essential to preserve the air space between the body and the outer layer of clothing to retain body heat. The more air pockets each layer of clothing has, the better the insulation.
    - i. Outer layer should be windproof and waterproof. Outer layers should not prevent sweat evaporation.
    - ii. Dirty or greasy clothing loses much of its insulative value. Air pockets are crushed or filled, and heat can escape more easily.
    - iii. Any interference with the circulation of blood reduces the amount of heat delivered to the extremities. All clothing should be loosely worn and unrestrictive.
  - c. Chemical protective clothing (CPC) considerations. While CPC is important for protecting personnel from hazardous exposures, it is important to remember that CPC ensembles have undesirable, as well as desirable impacts on the cold stress on personnel.
    - i. Undesirable effects. The desired insulating effect of clothing is negated if skin or clothing is wet. Protective clothing (for cold or chemical protection) can also add to the work load/fatigue of workers. When cold stress is a concern, care should be exercised in selecting ensembles particularly for those parts of the ensemble protecting the trunk of the body.

- ii. Desirable. Liquids conduct heat better than air and have a greater capacity for heat than air. For example, a spill of cold gasoline on skin can freeze the tissue very quickly. Chemical resistant gloves, such as neoprene with cotton inserts, should be worn to prevent this localized cold stress.
- d. Priority clothing. The most important parts of the body to protect are the feet, hands, head and face. Keeping the head covered is important because as much as 40% of body heat can be lost when the head is exposed.
- e. Ensemble options. The following items should be considered for addition to worker ensembles in cold environments:
  - i. A cotton t-shirt and shorts under two-piece cotton and wool thermal underwear. Two-piece long underwear is preferred because the top can be removed and put back on as needed.
  - ii. Socks with high wool content. Use thin inner socks and thick outer socks. If cold, wet feet are a concern, the socks should be changed during the mid-shift break.
  - iii. Wool or thermal trousers (lap trousers over boot tops to keep out snow or water).
  - iv. Felt-lined, rubber-bottomed, leather-topped boots, with a removable insole (for heavy work). For chemical protective boots, air insole cushions and felt liners (steel/shank boots should be avoided unless needed for specific safety reasons).
  - v. Wool shirt or sweater over a cotton shirt.
  - vi. Wool knit cap (watch cap) or (if hard hats are required) specially made hard hat liner.
  - vii. Face mask (vital when working in cold wind). Note: Face protectors must be periodically removed so the worker can be checked for signs of frostbite.
  - viii. Double-layered goggles with foam padding around the edges (extremely cold environments).
  - ix. Insulated gloves.  
60 degrees F, or lower, for sedentary work  
40 degrees F, or lower, for light work  
20 degrees F, or lower, for moderate work  
0 degrees F, or lower, wool mittens should be used instead of gloves
- f. Ensembles for work when water immersion may occur.
  - i. Floatation (personal or throwable) devices are extremely important to avoid unnecessary swimming that will increase the rate of body heat loss.
  - ii. Air trapped between layers of clothing will provide buoyancy and heat insulation, but Personal Floatation Devices (PFDs) offer the best chance for survival in cold water. Type III PFDs include float coats and cold water immersion suits which provide floatation and thermal protection.
  - iii. Position throwable floatation devices in boats or work areas near water.
- g. Selection of materials.

MATERIAL	ADVANTAGES	DISADVANTAGES	WEAR IN
Wool	Stretches without damage. Insulates well when wet.	Heavy weight. Absorbs moisture. Skin irritant.	Layer 1-3
Cotton	Comfortable. Lightweight	Absorbs moisture.	Layer 1-2
Silk	Lightweight. Durable. Good insulator. Washes well.	Expensive. Does not transfer moisture well.	Layer 1
Nylon	Lightweight. Durable. Water resistant.	Impervious to perspiration. Flammable.	Layer 3
Down	Lightweight. Durable. Good insulator when dry.	Expensive. Hard to dry. Poor insulator when wet.	Layer 2-3
Polyester	Does not absorb moisture (insulates even when wet).	Heavier than down. Does not compress as well as down.	Layer 2-3

## ICS 224 - Environmental Unit Summary

**Incident:** LPC L-3 Pipeline Leak      **Prepared By:** Collver, Bryan      **at** 11/30/2009 04:24  
**Period:** Period 3 (11/30/2009 06:00 - 11/30/2009 18:00)      **Version Name:** 11/30/2009 0600

### Area Environmental Data

#### Priorities for Mitigating Environment and Cultural Impacts

1 arch site in general vicinity to NE of East Dock- should not impact operations.

#### Wildlife Assessments and Rehabilitation

No known polar bears or grizzly bear dens in area; potential does exist for polar bears to be in area. Potential wildlife in area include caribou, musk ox, and fox.

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

Contact ADNR & NSB for 100 ft x 200 ft ice pad construction on North Side of and adjacent to road in way of spill site. Contact ADEC for permit/authorization to construct of temporary oily waste storage cell at DS-4

#### Waste Management

Draft plan initiated - waiting on info from LPC Operations whether or not a test separator at a designated Lisbourne Drill Site (preferably L-2) is feasible.

#### Other Environmental Concerns

Ensure area for ice pad construction is free of contamination.

#### Logistical Support Needs

Requested flight reservations for ADEC (231)- Tom DeRuyter, Brian Jackson, John Ebel  
NOTE- may need to request PBOC rooms for EPA- per Richard Frank, they may send 4 individuals: Matt Carr, Bob Whittier (EPA) and 2 E & E contractors- decision to come will depend on event size.

## Resources Summary

**Incident:** LPC L-3 Pipeline Leak

**Period:** Period 3 (11/30/2009 06:00 - 11/30/2009 18:00)

ID	Supplier	Resource Type	Description	Quantity	Size	Area of Operation	Status	Status Date/Time
8965	Alaska Clean Seas (ACS)	Equipment: Small	Snow Machine + Trailer	1		Delineation Group	At Staging	11/29/2009 08:06
8983	Alaska Clean Seas (ACS)	Equipment: Small	Snow Machine + Trailer	1		Delineation Group	At Staging	11/29/2009 08:06
9067	Alaska Clean Seas (ACS)	Manpower: Responder	Delination Crew	5		Delineation Group	Assigned	11/29/2009 15:47
8929	CH2MHill	Lighting	Light Plant	8		Demobilized Resources	Demobilized	11/29/2009 17:22
8935	CH2MHill	Trailer	HEATER	7		Demobilized Resources	Demobilized	11/29/2009 17:20
9080	Logistics	Services	relocate plotter to CR2	1		Incident Command Post	Enroute/Sourced	ETA: 11/29/2009 23:39
8947	Alaska Clean Seas (ACS)	Manpower: Responder	Spill Responders	12		On Scene Command	Enroute/Sourced	ETA: 11/30/2009 12:00
8827	NANA Management Servi	Miscellaneous: Food	Food	50		On Scene Command	At Staging	11/29/2009 12:30
8959	NANA Management Servi	Miscellaneous: Water	Bulk Water Cooler	2		On Scene Command	At Staging	11/29/2009 12:30
9055	CH2MHill	Portable Toilets	Porta-Can	1		On Scene Command	Enroute/Sourced	ETA: 11/29/2009 08:37
9037	Shared Services Aviation	Services	FLIR	1		On Scene Command	Assigned	11/29/2009 14:47
8863	Alaska Clean Seas (ACS)	Trailer	Mobile Command Center	1		On Scene Command	Assigned	11/29/2009 08:06
9043	ACS	Vehicle	Pick-Up Truck	1		On Scene Command	Assigned	11/29/2009 15:05
8905	Alaska Clean Seas (ACS)	Manpower: Responder	Day-Pad 10 Stage Suppo	1		Primary Staging Area (Pad 10)	Assigned	11/29/2009 09:08
8953	Alaska Clean Seas (ACS)	Manpower: Responder	Night-Pad 10 Stage Supp	1		Primary Staging Area (Pad 10)	Enroute/Sourced	ETA: 11/29/2009 09:08
8845	CH2MHill	Portable Toilets	envirovac	1		Primary Staging Area (Pad 10)	Assigned	11/29/2009 08:37
9031	CH2MHill	Portable Toilets	envirovac	1		Primary Staging Area (Pad 10)	Enroute/Sourced	ETA: 11/29/2009 08:37
8887	Alaska Clean Seas (ACS)	Trailer	Staging Area Trailer	1		Primary Staging Area (Pad 10)	Stand By	11/29/2009 08:06
8833	CH2MHill	Lighting	Light Plant	1		Secondary Staging (LPC)	At Staging	11/29/2009 07:41
9073	CH2MHill	Lighting	Light Plant	1		Secondary Staging (LPC)	Enroute/Sourced	ETA: 11/29/2009 17:00
8971	Alaska Clean Seas (ACS)	Manpower: Responder	Cummings/Jensen/Schmi	3		Secondary Staging (LPC)	At Staging	11/29/2009 09:08
8893	Alaska Clean Seas (ACS)	Trailer	Warm-up Shack (SRT)	1		Secondary Staging (LPC)	Assigned	11/29/2009 08:57
8839	CH2MHill	Trailer	HEATER	3		Secondary Staging (LPC)	At Staging	11/29/2009 08:26
8851	CH2MHill	Portable Toilets	Porta-Can	1		Security Group	Assigned	11/29/2009 08:37
9049	CH2MHill	Portable Toilets	Porta-Can	1		Security Group	Enroute/Sourced	ETA: 11/29/2009 08:37
8923	Alaska Clean Seas (ACS)	Trailer	Entry Control Trailer	1		Security Group	At Staging	11/29/2009 08:06