PHILLIPS ALASKA, INC.

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REGIONAL SUPERVISOR
FIELD OPERATION
MINERALS MANAGEMENT SERVICE

Exploration Plan
McCovey #1 Well

Beaufort Sea, Alaska

September 19, 2000

PUBLIC FILE
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1.0 INTRODUCTION AND PROJECT SUMMARY

The McCovey project consists of drilling a exploratory well during the 2000-2001 winter drilling season to evaluate the oil and gas potential of Phillips Alaska, Inc. (PAI) operated leases in the McCovey Prospect Area, which is offshore Prudhoe Bay, Alaska (See Figure 1-1). The area of interest covered by this Exploration Plan is encompassed within the proposed McCovey unit (See Figure 1-2). At present, a single exploration well location has been identified in the area. This initial well, hereinafter referred to as "Phillips McCovey No. 1" is to be drilled from a surface location in OCS Lease Block Y-1577 to a bottom hole location on federal leases within the McCovey Prospect Area. PAI is the operator of the proposed well and will be the permittee of record.

An ice island with a land based drilling rig will be used for the proposed drilling activity. Any additional exploration/delineation drilling is dependent on the outcome of the McCovey No. 1 well and further review of geologic, geophysical, and reservoir data. The Phillips McCovey No. 1 well will be expendable, and therefore plugged and abandoned, regardless of any commerciality demonstrated during testing and evaluation. If this initial well shows potential for hydrocarbon development, a well flow test may be conducted. Assuming a positive result, the potential exists for future exploration/delineation drilling in subsequent years.

This Exploration Plan is submitted to the Minerals Management Service (MMS) in accordance with the requirements of 30 CFR 250.203. It also serves as a State of Alaska Plan of Operations, and is submitted to the Division of Oil and Gas as required under the terms and conditions of State of Alaska Lease Sale 65 and AAC Chapter 83. The activities proposed herein will also conform with the Alaska Coastal Zone Management Program, and be conducted consistent with the terms and conditions of Federal and State permits that are required to be obtained by the operator and all applicable local, state, and federal laws and regulations.

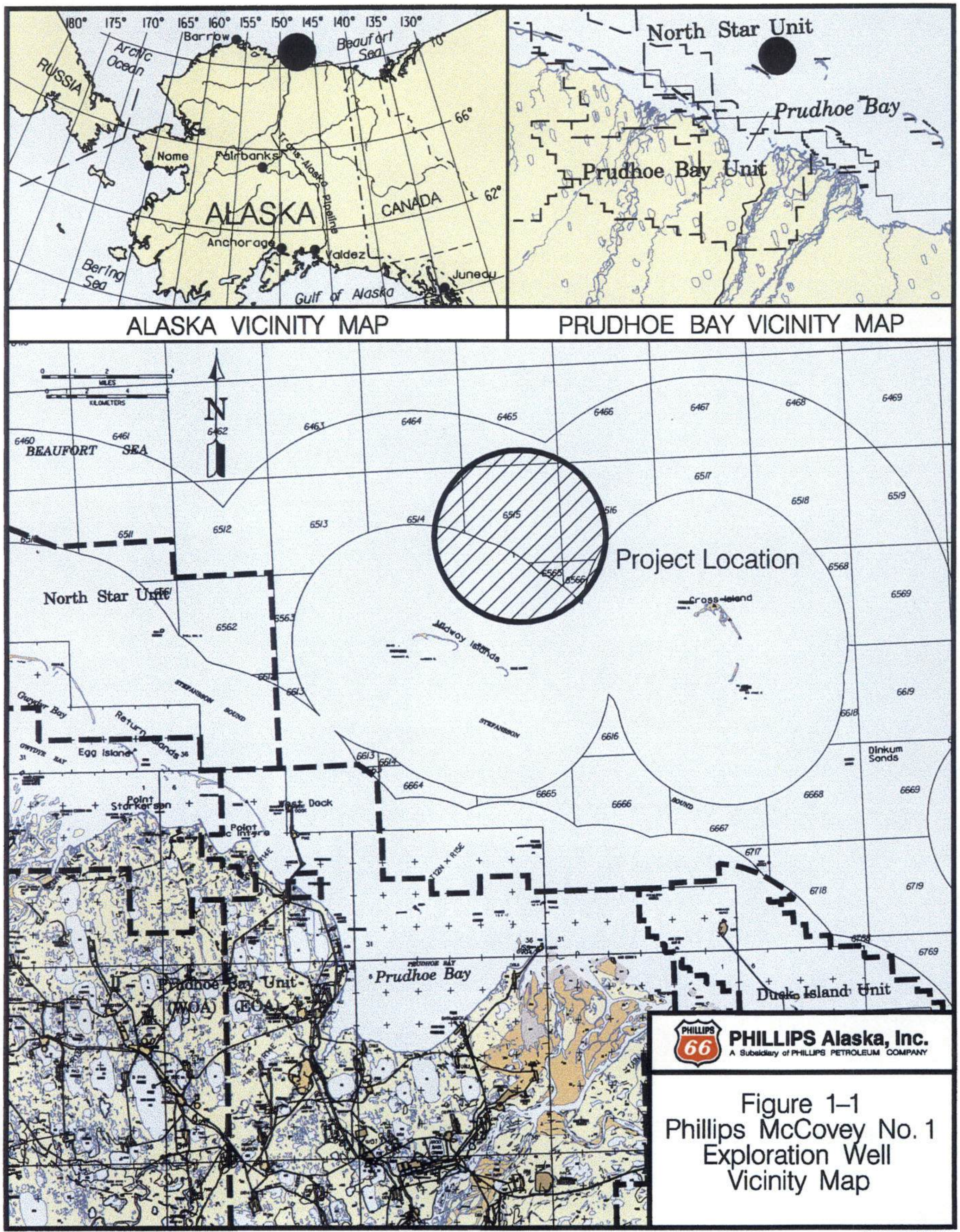

Figure 1–1
Phillips McCovey No. 1
Exploration Well
Vicinity Map

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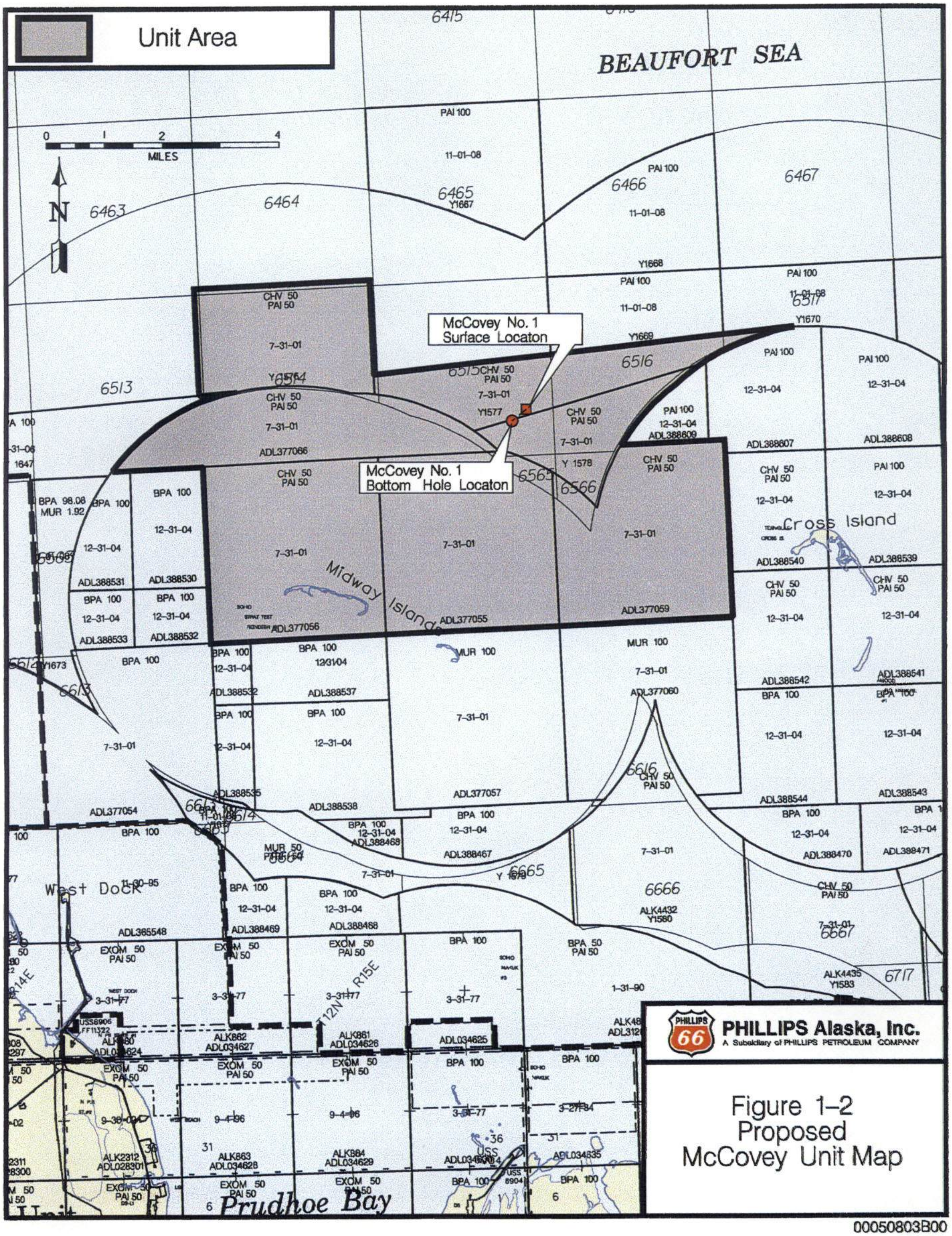

PHILLIPS Alaska, Inc.
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Figure 1–2
Proposed
McCovey Unit Map

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2.0 DESCRIPTION OF PROPOSED ACTIVITIES

30 CFR 250.203(a)(1)

An overview and general description of the Phillips McCovey No. 1 project is found in Section 1.0 herein. The following sub-sections expand on the type and sequence of exploratory activities and present a schedule for project execution.

2.1 Project Location

The Phillips McCovey No. 1 drilling location lies approximately 12.5 miles northeast of West Dock at Prudhoe Bay, 60 miles northeast of Nuiqsut, 7 miles northwest of Cross Island, and 110 miles northwest of Kaktovik in the Beaufort Sea (See Figure 2-1).

2.2 Proposed Project Schedule

Construction of an ice island and ice road is expected to begin in December 2000 when the sea ice is thick enough to support light weight, ice road construction equipment. The Phillips McCovey No. 1 well will be spudded shortly after completion of the ice island. This could occur in late February, 2001. Numerous project related activities are scheduled to occur during the months prior to the spud date.

Permitting and Regulatory Affairs (August 2000-November 2000)

Approximately three (3) months have been allocated for permit application, review, and approvals.

Shallow Hazard Geophysical Surveys (April- August 2000)

Site specific shallow hazard surveys are required at the Phillips McCovey No. 1 location before a Permit to Drill can be issued. The result of these surveys will be submitted to the MMS when they are compiled. Remote Ocean Vehicle (ROV) and geotechnical data were collected in April 2000. Preliminary ROV data indicates that there are no benthic communities in the vicinity of the drilling location which has a flat sandy bottom. Additional subsurface imaging data was acquired in August 2000. Figure 2.2 shows a location map of the shallow hazard survey work.

Ice Road and Ice Island Construction (December 2000-March 2000)

As soon as the ice is thick enough to support rolligon/ATV traffic, the ice road and ice island routes will be surveyed for ringed and bearded seal activity, as described in PAI's application to the National Marine Fisheries Service (NMFS) for an incidental harassment authorization (Appendix V). During construction, personnel will be housed in the support camp near Reindeer Island or on Prudhoe Bay West Dock. This camp will be placed on an ice pad prior to use to provide spill protection for the island. Construction of the ice island and ice road is expected to take 50 days; however, this is dependent on the actual weather conditions encountered during construction.

Drilling the Phillips McCovey No. 1 Well (-February 2001-April 2001)

After construction of the ice island and acceptance by the MMS, the McCovey well will be spudded and drilled in accordance with the program that will defined and submitted in the Application for Permit to Drill. Spudding is scheduled to occur in late February 2000. The drilling operation is expected to take approximately 40 days to reach TD. This timeline is based on drilling data from the Gulf Oil Cross Island #1 well, the AMOCO No Name Island well, and the Sohio Reindeer Island Well along with numerous other nearby wells used for drilling performance information. During drilling, personnel will be housed on the rig camp that will be located at either West Dock or on an ice pad at Reindeer Island.

Post-Drilling Evaluation Activities (Approximate Time Frame: April 2001-May 2001)

At the conclusion of drilling and log evaluation, several options are presented, depending on what is discovered in the McCovey No. 1 well. If the well is a dry hole and the operator elects to cease all further work, the well would be permanently plugged and abandoned (P&A), and the rig demobilized back to Prudhoe Bay. After demobilization, the ice island and the ice road will be cleaned up prior to break-up.

If drilling results are encouraging, the operator may elect to flow test the well. This activity is anticipated to take one to two weeks depending on the test program. At the conclusion of testing, the well will be P&A'd as in the previous scenario and the rig demobilized.

During the evaluation phase, the operator may elect to seismically profile the wellbore(s). The energy source for this activity will be an airgun, a vibrioses unit, or other appropriate energy source, depending on ice thickness. Approval of this geological and geophysical exploration activity is being sought concurrently with the overall Phillips McCovey No. 1 permitting process.

Demobilization and Site Clean-up (May 2001)

Once the well is permanently plugged and abandoned in accordance with 30 CFR 250.112, all equipment will be demobilized from the McCovey location. All refuse and materials will be removed from the location and any contaminated/discolored surface of the ice island and pad will be chipped up and removed for melting and disposal on-shore.

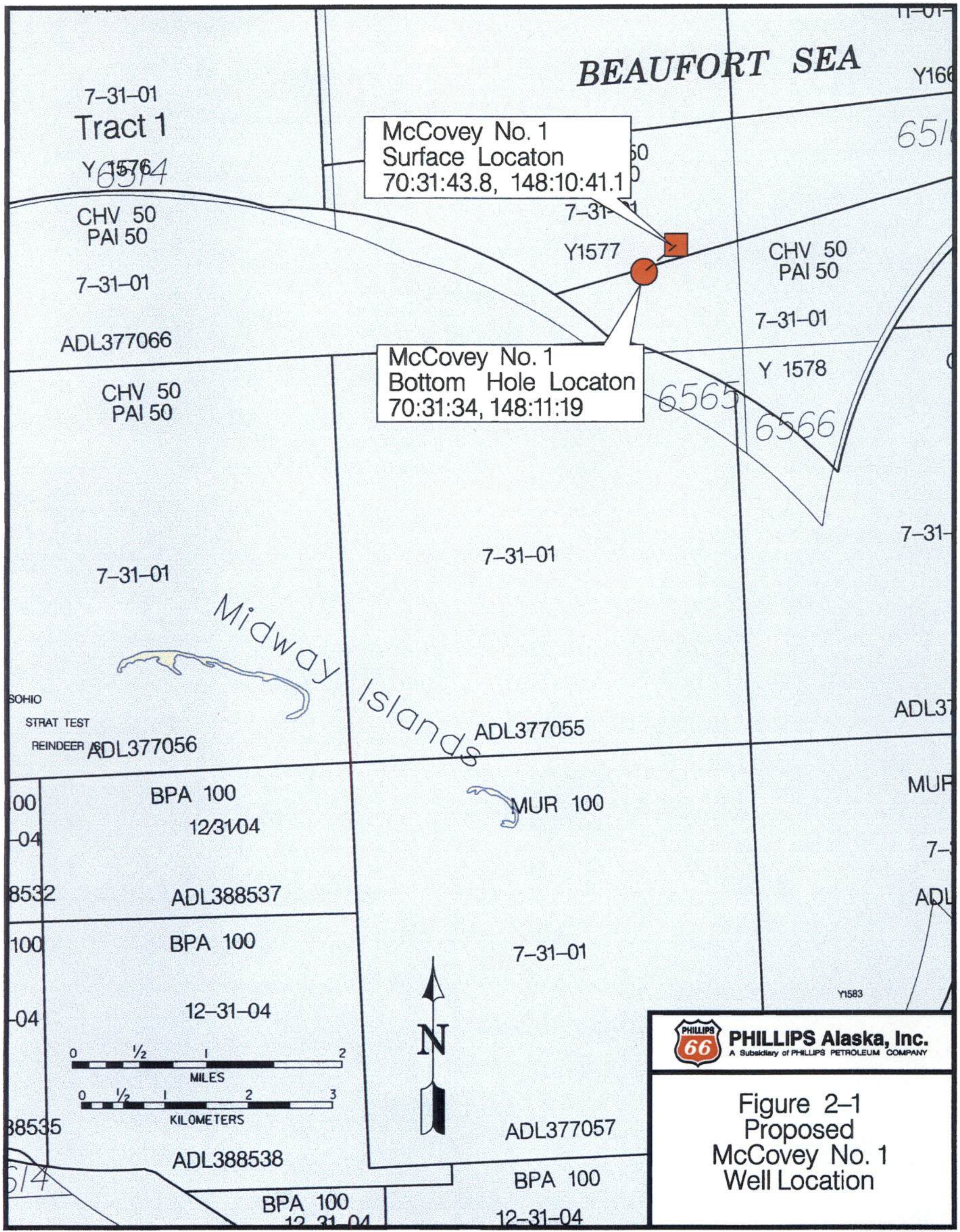

Figure 2–1
Proposed
McCovey No. 1
Well Location

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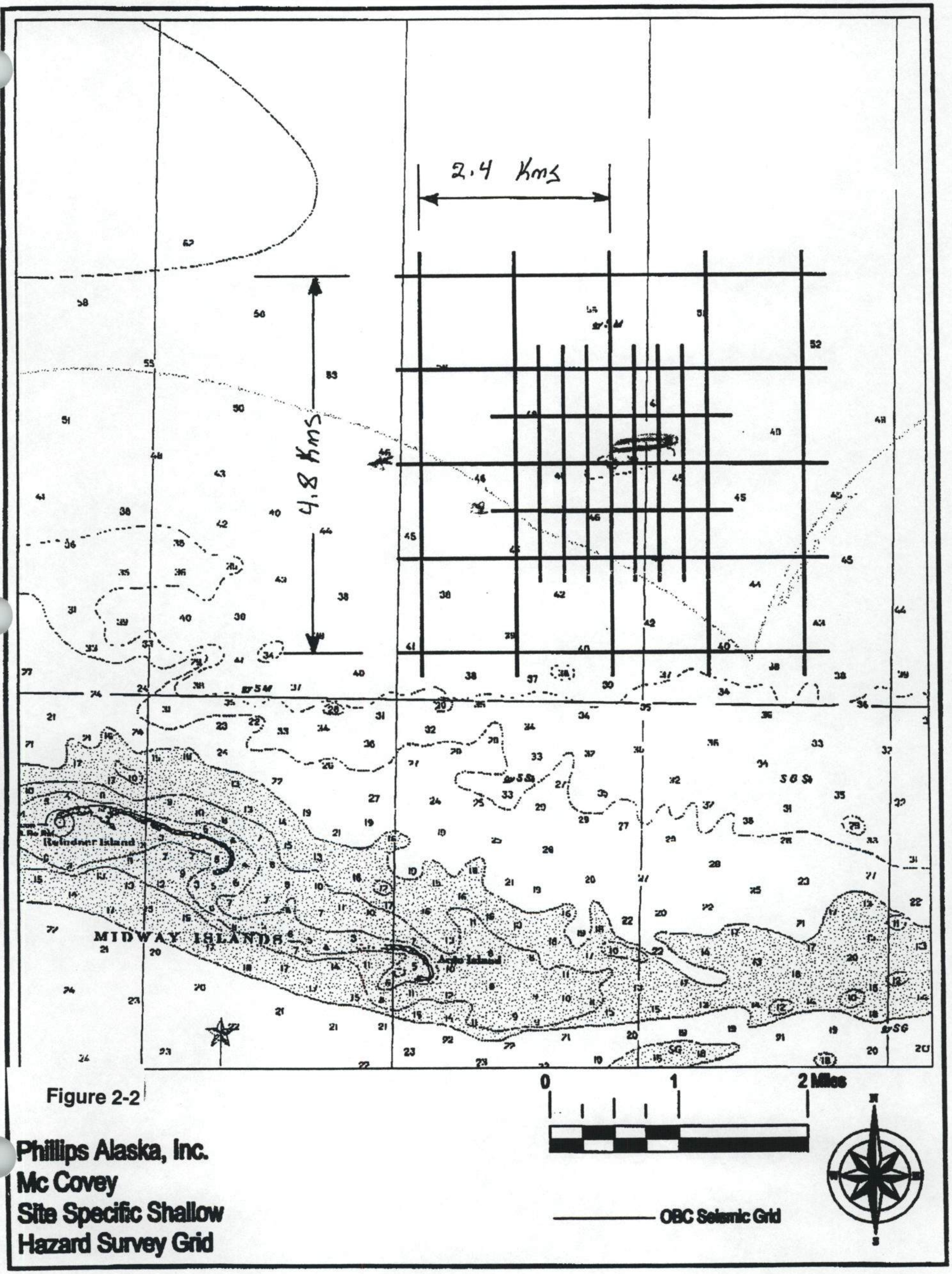


Figure 2-2

Phillips Alaska, Inc.
Mc Covey
Site Specific Shallow
Hazard Survey Grid

3.0 DESCRIPTION OF THE DRILLING UNIT INCLUDING SAFETY AND POLLUTION PREVENTION FEATURES

30 CFR 250.203(a)(2)

3.1 Mobile Drilling Unit Description

PAI is currently considering two rigs for drilling the McCovey No. 1 exploration well, Nabors 14E (formerly Pool 4) and Nabors 16E (formerly Pool 6). These rigs are both hercable rigs that are located on the North Slope. Nabors 14E is currently stacked in Deadhorse and Nabors 16E is drilling development wells for PAI in the Kuparuk River Unit. These rigs were originally identical sister drilling rigs; however, modifications were made to Nabors 16E prior to beginning development drilling at Kuparuk.

At this time, PAI is working with Nabors to prepare 14E for drilling at the McCovey Prospect; however, an alternative plan has been developed around using Nabors 16E should 14E become unavailable. Nabors 14E was last used for drilling the BPX Liberty Exploration Project and since that time was cold stacked at Pt. Thompson. The rig was transported back to Deadhorse last winter. The rig is currently being evaluated and will be subject to a full function test of all major rig components, including safety systems, prior to being transported to the McCovey location. The drilling equipment listed in the following section was as Nabors 14E existed for the Liberty project. During the functional check-out, Nabors and PAI may elect to replace some of these parts with equivalent or improved equipment.

3.1.1 Major Drilling Equipment

The equipment list shown below is for Nabors 14E.

Drawworks: Oilwell E-2000 2000-HP 1-3/8" Lebus grooved drum, four forward and two reverse gears, Foster 37 AK make-up and 24 AK break-out catheads, rotary table drive assembly with back brake, all air controlled from drillers console, complete with a Tarmac V-2000 hydromatic auxiliary brake with an Avesco Type AA overrunning clutch and an Oilwell adjustable water level control tank system. The drawworks is equipped with two General Electric 752R single shaft extension DC traction motors.

Drilling Pumps/Discharge Mud Line: Two, Oilwell A-1700-PT-1700 HP, 7-3/4" bore x 12" stroke x 5000 psi fluid end line and discharge manifold system equipped with a Hydril Model K-20, 5000 psi pulsation dampner, Demco 3" 5000 psi maximum safety relief valve and Demco 2": 5000 psi bleed valve back to the suction tanks, Oteco 2" 6000 psi mud gauge and Oilwell 10" suction stabilizer system. Suctions are charged by separate pumps. Gearend equipped with electric driven lube oil pump, filtration, air oil thermostatic controlled oil cooling system. Pistons and liners are flush cooled by an electric driven pump. When a pump is assigned and throttled, the lube, flushing, and suction charging pumps, engage a few moments prior to the pistons. Pumps are driven by two each 20" x 37" sheaves, 8-V-5 bank, 335" V-belt system designed to stroke pumps at a maximum of 120 SPM under full load. Fluid ends are equipped with 6" liners and pistons. Each pump is equipped with two General Electric 752R single shaft extension DC traction motors.

Mast and Substructure: Dreco, Model #M14225 1330 mast with Dreco Model Slingshot elevating substructure system. This assembly is designed in order to set in all floor equipment, stab and raise mast, set in both floor cantilevered doghouses and install 50' high wind walls at a convenient and safe working elevation of 6'6" from ground level. The entire mast floor is then elevated to the drilling level of 29'0" from ground level by means of two large low speed hydraulic winches that are strung up with ten 1-1/8" wire lines to two large A-frame block and tackle systems. The raising system is remote controlled (no personnel ride the floor when raising) similar to large shop cranes. The system of rig up/down does not require cranes (nor do other parts of the rigs) and is therefore a great asset on many remote Alaskan locations. The substructure and mast have the following dimensions and capacities:

• Mast Inside Working Space	142'0"
• Mast Leg Spread	25'0"
• Substructure Vertical Working Space Under Rotary Beams	24'0"
• Substructure Horizontal Space Between Boxes	8'0"
• Rig Floor Height for Rig Up/Down	6'6"
• Rig Floor Height for Drilling	29'0"
• Crown Block, Seven 1-3/8" grooves x 60" sheaves	583 tons
• Gross Nominal Capacity	1,300,000 lbs
• Casing Capacity[1]	900,000 lbs
• Set Back Capacity[1]	500,000 lbs
• Wind Load, no set back	100 mph
• Wind Load, Rated Set Back	84 mph
• Racking Board Capacity – 5" Drill Pipe	240 Stands
• Racking Board Capacity – 8" Drill Collars	12 stands
• Capacity, 12 lines strung	1,000,000 lbs
• Capacity, 10 lines strung	952,000 lbs
• Capacity, 8 lines strung	886,700 lbs

[1] Simultaneous Loading Condition

Traveling Block: Oilwell A500 500-ton six 1-3/8" grooved x 60' OD sheaves with heavy duty eye in top in order to hang off while slipping and cutting the drilling line.

Hook (attaches to Traveling Block): Byron Jackson 5500 500-ton, Dynaplex, positive lock for drilling mode and automatic positioner for tripping and running casing mode.

Bails (Elevator): Byron Jackson 240-ton 2-3/4" x 132", matched set, weldless elevator links.

Swivel: Oilwell PC500 500-ton top of goose neck designed with 2-3/8" opening to facilitate Free Point Backoff Shot tool access in the event of stuck pipe.

Rotary Table: Oilwell Model A37-1/2 opening, capacity 650 tons (dead load), both direction locking, also allows clockwise rotating with racket device which automatically locks against counterclockwise rotating. Driven from DW by 2" pitch double oil bath chain. Driving sprocket is 35 tooth; driven sprocket is 26 tooth that provides a nominal 50-RPM in low gear and a nominal 185-RPM in high gear.

Engines (4500 HP): Five Caterpillar D-398 900-HP each, at 1200 RPM (sea level), turbocharged, after cooled, diesel engines. Each unit equipped with: 2-3 kW arctic automatic thermostatically controlled Jacketwater heater systems, combination air starting prelube system, radiator fan louver with automatic thermostatically controlled cooling system (fan driven by crankshaft), 12" exhaust pipe incorporating a spark and low-oil protection. Each unit (including generator) is installed on a common tricycle type Caterpillar suspension system on top of three hard rubber pads that reduce potential misalignment problems and dampen floor vibrations. One caterpillar diesel 3304, 90 kW generator provides power for cold start-ups and during shut down periods.

Generators (4500 HP): Five Kato 700-kW AC 600-volt 1200 RPM non-sparking generators, single bearing (to reduce potential misalignment problems) with automatic overload protection system and automatic thermostatically controlled electric heating elements. The generators are designed to produce 1,000 kva each, 675 kW or a nominal 900-HP each for SCR type service on a continuous basis. The SCR power distribution system is General Electric. Division I explosion proof motors, lights, panels, and fixtures are located in all gaseous areas in compliance with API RP500. All other motors, lights, panels, and fixtures are either explosion proof (for interchangeability) or Division II vapor proof type.

Drill String Components:

- Grade S-135 Drill Pipe: 285 joints or approx. 9000'
- Grade E Drill Pipe: 190 joints or approximately, 6000'
- Grade G-105 Pup Joints: 5', 10', 15', 20', and 25'
- Heavy Weight Drill Pipe: 36 Joints or approx. 1100'
- 6-1/2" OD x 2-13/16" ID Drill Collars: 12 at 31'each
- 8" OD x 2-13/16" ID Drill Collars: 12 at 31' each

Mud Processing/Solids Control Equipment: The main drilling fluid system consists of a nominal 1,000 barrels of volume; the complex is covered with insulated houses and tank walk surfaces are covered with recessed galvanized bar grating. All tank floors and all tank walls exposed to arctic weather are insulated. The tank bottoms are sloped for ease of cleaning and are coated with cold tar epoxy to prevent rusting. All sections have built in insulated submerged low pressure mud guns and swivel type flow back complete shutoff pipe which is adjustable by hand winch system. One 18" x 24" bypass ditch positive style bypass valves and positive style diversion gates in such a manner to direct any fluids to any of the following section or systems:

- Twin 90 bbl trip tank system, 8.5 bbls
- One sand trap section, 8.5 bbls
- Desander-Degasser suction section, 200 bbls
- Desilter-Mudcleaner suction section, 150 bbls
- Centrifuge/Volume suction section, 230 bbls
- Volume section, 150 bbls
- Twin 280 bbl suction system, 140 bbls. each.

Located adjacent to and made a part of the mud processing system is a 235 bbl Mud/Water storage tank, and also a nominal 160 bbl Waste Fluid Holding Injection tank. The mud check room is located near the shale shaker and is equipped with a Bariod field check kit (viscosity funnel and cup, mud scales, water loss machine, pH papers, sand content) and wash up sink that drains to the shaker waste trap. The solids equipment is as follows:

- Shale Shaker: Harrisburg Dual Tandem linear motion shakers
- Desanders: Two each Demco Model 123 (3-12" cones/unit) rated at nominal flow of 1000 gpm
- Degasser: Swaco nominal 1000 gpm capacity
- Desilter/Mud Cleaner: Brandt double unit combination silt separator (eight 4" cones/unit). When required, the under flow form the cones passes onto fine screens and remaining liquids and the majority of the desired barite pass through screens and return to the mud system. Undesirable solids are discarded. Each unit is rated at the nominal flow of 400 gpm.
- Centrifuge: Pioneer Mark 1 rated at approximately 100 gpm, driven by a 50-HP electric hydraulic system. The unit is charged with 2" x ½" 100 gpm centrifugal pump.
- Mud Agitators: Eight Brandt 5-HP mud agitators with 32" impellers.
- Mud Hoppers: Two Geosource S-800 sidewinder mud mixers, rated at a nominal 1000 gpm.

- Chemical Mixer: PAA-designed 2-bbl capacity agitator tumbler jet system, charged by a Galigher 2" x 2-1/2" pump. Both are driven by a single 5-HP electric motor.
- Injection Pump: Gardner Denver Model Tee 4" bore x 6" stroke triplex single acting pump dressed with 4" API liners and pistons. Discharge equipment with Demco valve, manifolding. The pump is driven through an Eaton transmission and chain system (maximum 150 SPM) by a Caterpillar 3304 turbocharged after cooled diesel engine producing 125-HP at 1800 RPM. The engine is equipped with spark arresting residential muffler and Caterpillar air starter.

3.2 Safety Features

The safety features associated with Nabors 14E are listed below. In addition, PAI will be preparing a Polar Bear Interaction Plan which will implemented to ensure the safety of all personnel on location.

3.2.1 Blowout Preventers and Controls:

Surface Hole Diverter System: Hydril MSP 21-1/4" ID, 2000 psi WP annular blowout preventer; Diverter Spool is Universal 21-14" ID x 72" high, 21-1/2" 2000 psi flanged top and bottom with two 10" 150 ANSI flanged side outlets and one 2" 3000 psi NPT female threaded Outlet; Three 16" 300 psi rated knife valves hydraulically operated; 300' of 16" OD ERW line pipe 40.48 ppf 0.365" wall and 16" 300 psi flanges.

Main Blowout Preventer Stack: consists of the following components (Stainless Steel Ring Grooves):

- Annular BOP: Hydril GK 13-5/8" ID 5000 psi WP with top 13-5/8" 5000 psi stud BX160 connection and bottom 13-5/8" 10,000 psi Cameron Iron Works, Inc. (CIW) hub No. 15, BX159 connection complete with LATCHED top bonnet connection. Includes a spare neoprene rubber element.
- Gate BOP(s): Four each Hydril hydraulic ram single gate blowout preventer 13-5/8" ID 10,000 psi WP MPL (automatic ram lock) 13-5/8" 10,000 psi WP CIW hub No. 15 with BX159 top and bottom connection and two 4-1/16" ID 10,000 psi flanged BX155 side outlet connections, both side outlets covered with matching target type blind flanges. One of the above is Blind/Shear Rams.
- Drilling Spool: Universal 13-5/8"ID with 13-5/8" 10,000 psi WP CIW hub No. 15 BX159 top connection and bottom connection and one (kill line) 3-1/16" ID 10,000 psi BX154 flange side outlet and one (choke line) 4-1/16" ID 10,000 BX155 flange side outlet.

- Adapter Spool: Universal 13-5/8" ID with 13-5/8" 10,000 psi WP CIW hub No. 15 BX159 top connection x 13-5/8" 5000 psi flanged bottom connection to mate up with casing spool flange looking up.
- Kill Line, two each CIW Type FCC 3-1/16" ID x 10,000 psi WP BX154 flanged connections, one valve is MANUALLY OPERATED, and one valve is HYDRAULICALLY ACTUATED by a 3,000 psi WP Cylinder and one Lynn International 3-1/16" ID x 10,000 psi WP BX154 flanged check valve. Includes 80' (some are spare) of 2-3/8" OD, schedule 160, 7.46 ppf, A-53B, seamless pipe rated 10,140 psi at a minimum yield, complete with matching weld connections, flanges, studs, nuts and ring gaskets to hook up.
- Choke Line, two each CIW Type FCC 4-1/16" ID x 10,000 psi WP BX155 flanged connections, one valve is MANUALLY OPERATED, and one valve is HYDRAULICALLY ACTUATED by a 3,000 psi WP cylinder. Includes 40' (some are spare) 4-1/2" OD double extra strong (XX-STR) 27.54 ppf, A-53B, pipe rated 10,140 psi at minimum yield, complete with matching weld connections, flanges, studs nuts, and ring gaskets to hook from drilling spool to choke assembly.

Upper Kelly Cock, Lower Kelly Cock, and Drill Pipe Floor Valve: each Hydril Kelly Guard 10,000 psi WP.

Drill String Inside BOP Valve (Spring Loaded): one Flocon inside BOP 10,000 psi WP.

Chock Manifold Assembly: consists of all 10,000 psi WP valves and fittings on WELL CONTROL SIDE and 5,000 psi WP valves and fittings on flow DIVERTER SIDE of choke assembly.

Poor-boy Degasser Vessel: mounted over shale shaker, shop make of 30" OD 118.65 ppf casing approximately 16' long with four half-inch inlet, 8-5/8" dropout to shaker equalizer box, 8-5/8" gas vent from the top, 1" sample catch line, 3" HP collar with a (Consolidated Relief Valve company) pressure release valve and 11" x 15" handhold cleanout washout access.

Blow Out Preventer Control System is NL Koomey Model T30200-3S blowout preventer control unit with 202 gallon volume tank, main energy provided by a 40-HP electric motor driven triplex plunger pump rated at 20.2 gpm at 3000 psi charging twenty eleven-gallon bladder type separator accumulators. Second energy charging system consists of two Model 31-00103 air pumps rated at a combined volume of 11.0 gpm at 1200 psi, or 7.2 gpm at 3000 psi. Above two energy systems BACKED UP by six 220 cu. ft. nitrogen bottles connected to the manifold system. All above system controlled by a Model SU2KB7 S series manifold with seven manual control stations at the unit. One Annular BOP with Pressure regulator control; Five Gate Valves (one is spare); kill line;

one choke line (includes a Model MGBK7EH electrically operated remote control panel located on derrick floor, just behind driller position with two manifold pressure gauges and nine push button controls with lights; one push to operate (fail-safe bypass); one Annular decrease/increase psi regulator control.

BOP Control Lines: one lot of 1" Armor coated hoses to connect between the control manifold and the BOPE stack.

BOP Equipment Test Pump: NLB Model 1075E triplex plunger pump rated at 10,000 psi WP at 10 gpm driven by a top mount 75-HP electric motor complete with make up tank, adjustable pressure relief bypass valve system, gauges and four, 50' long 3/8" 10,000 psi WP x 30,000 psi WP x 30,000 psi burst hoses with snap type couplers.

3.2.2 Instrumentation/Communication

Crown Block Protector: Stewart & Stevens Model TCB Crown-O-Matic block protector system, air operated.

Driller's Console: Totco COMMAND 37" stainless steel panel located in front of driller for convenient visibility. Complete with VISUAL instruments such as weight indicator Type 100 with 16' face, string weight sensed from a Type 50-C load cell located in a Hercules, Model 120 wireline deadline anchor, STANDPIPE mud pressure, PUMP RPM, dual digital, MUD VOLUME gain/loss, TRIPTANK level, FLOWLINE percent, ROTARY torque, ROTARY RPM, TONG torque, EZY-TORQ torque and RIG MAIN WATER TANK level. Located inside housing of console is a Totco combination automatic air dryer filtration system. The drilling recorder can also be engaged/disengaged from this console by a remote air control valve during fast drilling conditions. Note: There is one additional Totco Remote Standpipe Pressure Gauge Located in the Derrickman's Mud Hopper Room.

Drilling Recorder System: Totco Model DR8WPT(E)RS(2) F 24-hour clock with DEPTH METER COUNTER complete with a 8-PENS recording the following information: rate of PENETRATION, hook WEIGHT with pressure, PUMP #1 SPM, PUMP #2 SPM, and FLOWLINE percent. There is a manual override to engage/disengage clutch on the face of the unit. Includes storage filling cabinet for new and used charts.

Mud Tank/Trip Tank Monitoring Recording: Totco PITOMETER Unit L-8 consists of eight vertical pit level sensor floats (0 to 12' adjustable). One float is located in each twin trip tank section. The MUD TANK volume recorder is located in the driller's doghouse. There are two (2) pens on the Trip Tank Recorder, each pen with a different color ink to represent either No. 1 or No. 2 trip tank recordings.

Gas Monitoring System: Three General monitors VISUAL/ALARM/LIGHTS gas level detector gauges Model 520, located in driller's doghouse, complete with six SENSORS #10000-1, located in the following areas of the rig:

- Derrick Floor
- Substructure
- Shale Shaker House
- Choke Assembly House
- Mud Hopper House
- Mud Pump House

H_2S Detector: General Monitor Model 2280 4 Channel with Audio/Horn and Visual/Light Alarms and sensors located in the following locations.

- Derrick Floor
- Substructure
- Shale Shaker House

Verbal Communications: Twelve Atkinson Dynamics Model AD-27-4 industrial type, rough service, extreme temperature, open-all-stations (everybody can receive at all times; push button to talk) style intercom system. One unit each located in the following areas:

- Derrickman's board (inside insulated house)
- Driller's position at drawworks
- Driller's doghouse, near knowledge box and automatic choke panel
- Shale shaker house, near shaker and trip tanks
- Mud mixing hopper house, near remote pump gauge
- Mud pump room, near work bench
- Choke assembly near trip tank pump
- Generator control room
- Electric motor control center room
- Mechanic/Electrician/Welder shop building
- Company representative office
- Toolpusher's office

3.2.3 Fire/First Aid Items:

Fire Extinguishers On-Site: Thirty each Ansul Model LTK-30-E (30 lb) No. 14398, all low temperature hand portable fire extinguisher units, charged with all purpose PURPLE K (ABC) powder. All units are mounted in thirty Ansul HD 30 lb (fast-action boomer lever) brackets, mounted in protected areas, preferably just inside doors at regulation heights. Units are located in the following areas:

- 10 in Rig Proper
- 4 in Pipe Shed
- 4 in Mechanical/Electrician/Welder Shop
- 1 in Portable Welding House
- 6 in Camp Proper
- 2 in Camp Utility House Complex
- 2 in each Water Hauling House
- 1 in Caterpillar 966 Fork Lift

Wheel Mounted Extinguishers: Included with Rig are two each Ansul Model IRTLRK-150-C (150 lb) wheel-mounted fire extinguishers. One unit is located behind a fast-action door located on the end of the BOP accumulator house at the rig. One unit has its own small house with FAST ACTION DOOR and is readily movable by forklift. This unit is normally spotted near from entrance of camp and/or the mechanic/electrician/welder shop.

Fire Hose Reel: Ten each steam/water fire hose reels with 50' of hose per reel.

First Aid Kits: Three each, Zee Medical Service Company first-air cabinets measuring 19" wide x 29' high x 6-1/2" deep. One each located in toolpusher's office, driller's doghouse and mechanic/electrician/welder shop.

First Aid Litters: Two each, MSA, wire mesh type evacuation litter baskets with retaining straps and handles. Includes a warm up blanket with each unit. One litter each located on rig and mechanic/electrician/welder shop.

Breathing Masks: Eight each MSA Model 401 PN 463831 breathing mask apparatus complete with oxygen tanks, harness, and protective carrying cases. Four normally stored in camp and four in the motorman's room near the generator complex.

3.2.4 Miscellaneous Safety Items:

- Dreco electric adjustable casing stabbing board and safety belt for stabber and PAA-design 4" adjustable casing fill up line.

- Derrickhand's insulated steel warm up house, located at the back of board, equipped inside with an explosion proof electric heater, electric winch system (to facilitate standing back drill collars or retrieving a stand accidentally dropped across mast), and an intercom system to driller's position. Safety belt and pull back ropes are stored in this house in order to be dry and ready for the next trip.
- Derrickman's Geronimo escape system from the board and Dreco derrickman's ladder climbing safety counter balance system all the way to the crown run around landing.
- Substructure is equipped with two each BOPE hydraulic powered 10 ton monorail hoists. Both together will handle 20 tons.
- Two adjustable air powered substructure BOPE working platforms for nippling up, changing rams, etc.
- The driller's console and foot throttle is totally enclosed and pressurized for Class I, Division I Service.
- The pump room is separated from all other rooms and is not considered a potential gaseous area.
- All rig power and control cables incorporate ITT Suprenant Exane with arctic insulation flexible without damage to –60°F below zero. All runs are totally enclosed in solid or flexible conduit wherever practical and possible. PAA Tee support designed heavy-duty cable trays are utilized where solid or flexible conduit is impractical and impossible on portable machinery. All cable conduits and trays are laid out and located in a manner to prevent damage during rig moves, rigging up/down, and when operating. Division I explosion proof motors, lights, panels and fixtures are located in all gaseous areas in compliance with API RP500. All other motors, lights, panels and fixtures are either explosion proof (for interchangeability) or Division II vapor proof type.
- The generator control equipment and all main electric distribution systems are located in two insulated houses which are heat-and-cooling atmosphere controlled automatically by two (one is spare) Trane 7-1/2 ton each air conditioner units.

3.3 Pollution Prevention Features

3.3.1 Drill Rig Pollution Prevention Features

- All fuel tanks, test tanks, and all liquid chemicals will be placed in timber bermed, herculite lined containment areas. This secondary containment will be a minimum of 110% of the single largest tank or any group of tanks permanently manifolded together.
- PAA-custom designed combination heated sectional rotating pipe rack and mud drainage system, with Press-Weld 2" x 2" air power diaphragm cellar pump.
- Mud Box: Okeh mud saver bucket with 3-1/2" and 5" OD end seals complete with drain through derrick floor into the flow line.

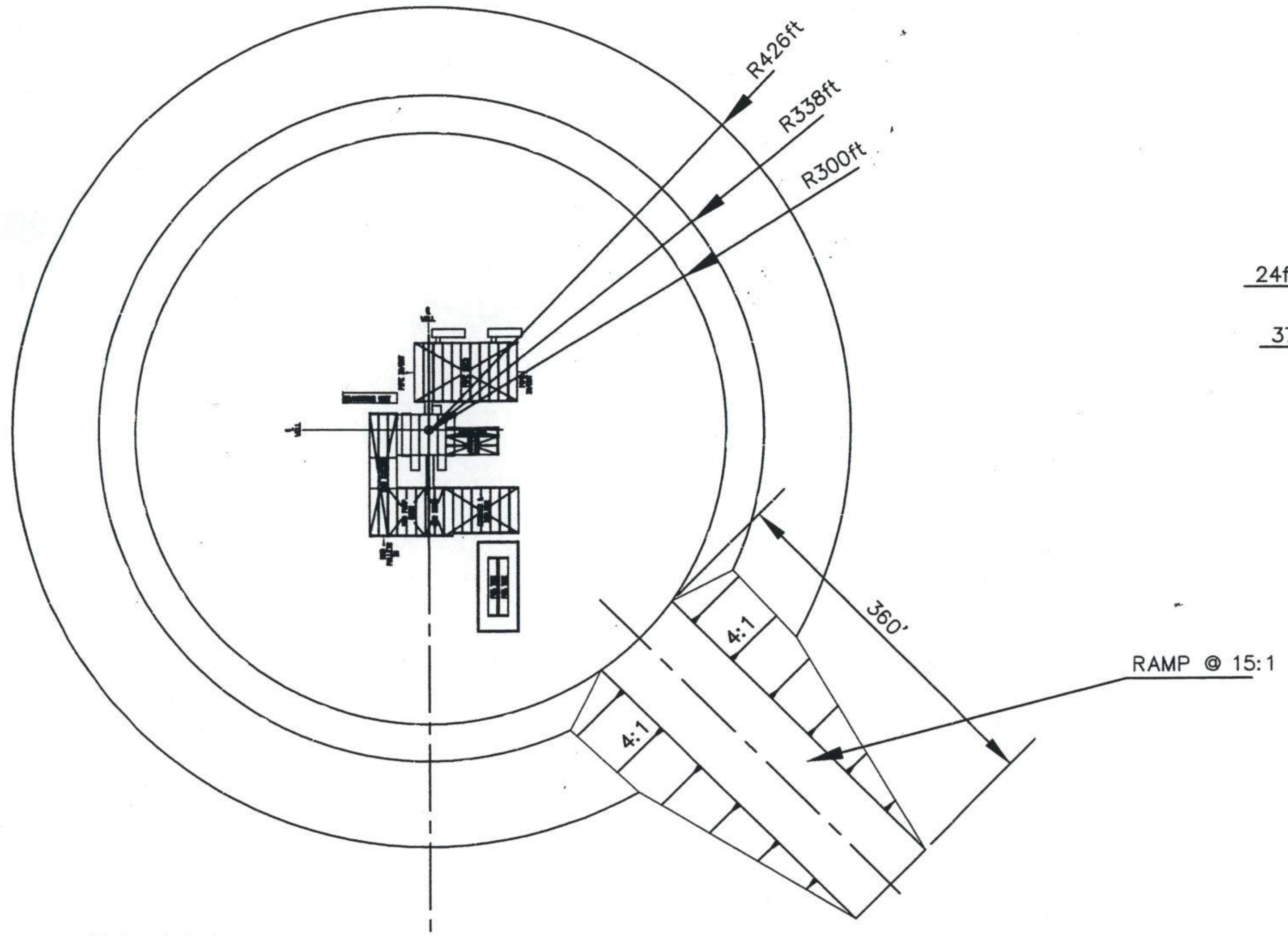
- Rathole and Mousehole: Kelly set back sock with 20" x 10-3/4" top guide, 10-3/4", 51 ppf casing x 40' long tapered to 2" drain to cellar, (no rat hole drilling required) complete with setback line and sheaves. Mousehole sock of 9-5/8", 47" casing x 28' long taper to 2" drains to the cellar, complete with coil spring and face plate to facilitate fine alignment of starting threads.
- Cellar will be designed as sealed containment and cellar pump will be used to pump cellar fluids into pit complex for recycle.
- Fuel Tank System/Pumps:
    - Three nominal 500-bbl main storage tanks, each 8' wide x 53'6" long x 8'6" high, double walls and double bottom, heavy oilfield skids, ladders with cleanout manholes on top. One tank is normally located near the camp generators and two tanks are normally located near the rig.
    - One Fuel transfer house 5' wide x 8' long x 8' high totally insulated complete with two (one as a back up) Roper HBFW pumps. Includes manifolding, explosion proof light and electric heater, valving, fittings and piping to Contractor's equipment.
    - One Nominal 70 bbl (3000 gallons) rig day tank located and made a part of No. 5 generator house, complete with filtration system, two (one as back up) Jaccuzzi 1" x 1-1/2" electric 1-HP centrifugal pump feeding and/or filling the engine boilers, Tioga heaters, rolling stock, shop heaters and mud system (when required). Includes all valving, fittings, pipe and hoses to Contractor's equipment.

3.3.2 Operational Pollution Prevention Features

- PAI will station a spill van with response equipment on the McCovey location. Also, an Alaska Clean Seas (ACS) technician will be on-site throughout the entire operation.
- All fuel transfer operations will be conducted pursuant to the North Slope Fluid Transfer Guidelines.
- PAI Waste Minimization activities and opportunities associated with the McCovey Prospect are included in Section 13 of this plan.

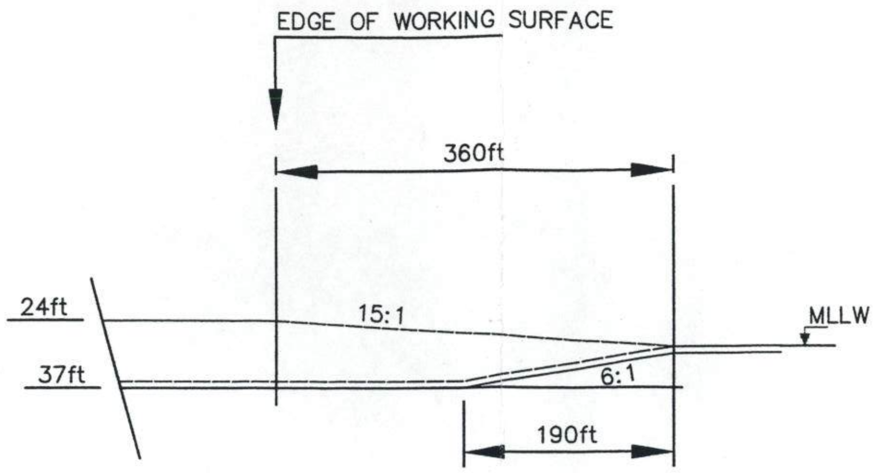
3.4 Ice Island Description

PAI intends to construct a grounded spray ice island at the McCovey No. 1 location in approximately 37 feet of water. The island must be capable of resisting the lateral ice forces and still be constructed early enough in the winter to allow the rig to be mobilized on site, drill and evaluate the well, and demobilize by early May 2001. The island will be approximately 600' in diameter at the work surface, nearly 900' in diameter at the sea ice surface, and approximately 24' higher than the surrounding ice. (See Figure 3.1)



PLAN

SECTION A—A



RAMP ONTO ISLAND

Figure 3-1

McCovey Ice Island
Nabors Rig 14E

REV.	BY DATE	REVISION	APP'D	BY DATE	PRELIMINARY ISSUE	REV.
				CAD FILE NO. 142401C003		

APPROVED
DATE
B. 142401—C—03

SCALE		YR.	MO.	DAY
DRAWN	BG	00	06	13
CHECK				
DESIGN	DMM			
DES. CHK.				

McCOVEY ICE ISLAND
600ft. CORE DIAMETER
600ft. DIA. WORKING SURFACE

Sandwell

Phillips Alaska, Inc.

DWG. 142401—C—03 REV 1

3.4.1 Ice Movement

Ice motion is an important consideration in the determination of the feasibility of any Beaufort Sea ice island or ice road, especially in deeper water where the structure is located in a relatively exposed area. Thus, a thorough analysis of all available ice movement information for the Alaskan Beaufort Sea has been conducted as part of the design process.

Ice motions are either slow movements over periods of weeks to months caused by seasonal temperature changes or rapid events lasting minutes to days, caused by the passage of storms. The general trends in ice motion events are that the expected motion is greater outside of the Barrier Islands than inside the Barrier Islands, increases with increasing water depth, and increases from west to east. Events can occur at any time in the winter/spring. Most events have a magnitude of less than five feet while a relatively few have motions greater than twenty feet. Not all locations have detectable motions during a storm generated event. Particular weather conditions appear to be associated to be required to generate a large ice movement. Specifically, storm winds from one direction would need to be followed immediately by storm winds from the opposite direction.

For the McCovey project, an ice motion of greater than twenty feet is likely to have an effect on the schedule. Ice movements of less than ten feet would have minimal effect on the project schedule. The majority of the negative effects would be delays caused by the creation of a lead in the ice road. There are methods to repair the road after an event such as bridging a crack, filling the crack with chipped ice or ice blocks or using a spray pump. The ice motion can alternatively create a pressure ridge if compression is created in the ice.

Table 3-1. Effects of Ice Movement During McCovey Project

Major Task	Effect of Movement Less than 10'	Effect of Movement between 10' and 20'	Effect of Movement greater than 20'
Ice Road and Island Site Preparation	Minor repairs to the road. No effect on island.	Repairs to or re-routing of road. No effect on island.	Repairs to or re-routing of road. Possible delay in spray start-up.
Spraying prior to grounding	Minor repairs to road. No effect on island.	Repairs to or re-routing of road. If leads occur at island, pump moves delayed.	Repairs to or re-routing of road. If lead occurs at island pump moves delayed. If movement very large, possibility of damage to island or being displaced from original location.
Spraying after grounding	Minor repairs to road. No effect on island.	Repairs to or re-routing of road. If leads occur at island, pump moves delayed.	Repairs to or re-routing of road. If lead occurs at island pump moves delayed. Ice rubbling at perimeter.
Transport of Rig along ice road to island	Minor repairs to road. No effect on island.	Repairs to road. Likely delay in rig move. Minor ice rubbling at island.	Repairs to road. Likely delay in rig move. Ice rubbling at island.
Drilling	Minor repairs to road. No effect on island.	Repairs to road. Minor ice rubbling at island.	Repairs to road. Likely delay in rig move. Ice rubbling at island.
Demobilization	Minor delay in rig move. No effect on island.	Likely delay in rig move. Minor ice rubbling at island	Repairs or re-routing of road. Likely delay in rig move. Ice rubbling at island perimeter.

From the analysis of ice motion data, a conservative estimate of the chance of an ice motion for greater than twenty feet occurring sometime during the whole project is 10%. Including all ice movements both less than and greater than twenty feet, there is approximately one event per season at a particular location with the median event being three feet. The McCovey location is considered to be a feasible and operationally safe location of the drilling of an exploratory well from an ice island with primary access and supply by a floating ice road. Secondary access and supply to the location will be by rolligon and helicopter, as required.

3.4.2 Ice Island Monitoring

PAI will be developing a Critical Operations and Curtailment Plan (COCP) for the McCovey project. This plan will include the detailed monitoring program associated with the ice island and on-going operations. PAI will be monitoring weather, ice movements and drilling conditions. General ice movements in the McCovey area will be monitored by using satellite imagery. The horizontal and vertical ice movements of the island itself will be monitored using inclinometers (or GPS equivalent measuring devices) and sondex instruments. In addition, thermistor strings will be used on the island to ensure the island is unaffected by any rig heat. The COCP will establish clear operational procedures should the monitoring show an increased risk to the island drilling operation. The COCP will be submitted to the MMS with the Application for Permit to Drill for review and approval.

3.4.3 Ice Island Platform Verification Process

As required in 30 CFR Subpart I, the McCovey Ice Island design and construction will be subject to a third-party platform verification process. PAI will be nominating a qualified ice design expert to the MMS in the next few weeks. Submittal of the engineering report to the MMS is anticipated to be in late-September. MMS will also be monitoring the construction effort and the rig will not be mobilized to the site until verification process is complete. This process will ensure the ice island is a stable drilling structure.

3.5 Drilling Program

The specifics of the PAI McCovey No. 1 drilling program will be presented in the Application for Permit to Drill (APD) which will be filed with the MMS according to 30 CFR 250.414. The McCovey No. 1 exploration well will be drilled from a surface location in OCS Lease Block Y-1577 to a bottomhole location on a federal lease within the McCovey Prospect Area. The well will be approximately 13000 ft TVD. Specific information on the well design and logging program will be contained in the APD.

As described in Section 2.2, the post-drilling evaluation activities are dependent on what is discovered during the drilling and evaluation program. PAI may elect to flow test the well or just plug and abandon the well without testing.

If a decision is made to flow test the well, a testing program will be written at that time based on the known downhole conditions and submitted for approval. Pressure or mechanically activated test tools will be employed. Recovered liquids will be stored in portable tanks brought to the site for that purpose and gas will be flared from a flare stack on the ice island. Produced fluids will be reinjected (bullheaded) back into the formation from which they originated or transported back to an on-shore production facility. All permit restrictions and stipulations will be observed during any of these operations.

4.0 EMERGENCY PLANNING

30 CFR 250.203(a)(2)(i), (ii) and (iii)

30 CFR 250.203(a)(2) requires that Exploration Plans in the Alaska OCS Region contain a discussion of drilling of a relief well should a blowout occur; the loss or disablement of the drilling unit; and the loss or damage to support craft. This discussion is considered pertinent to State of Alaska DNR/DOG Plans of Operations as well. All contingency plans for these emergencies are founded on the following priorities and objectives:

- Protection and safety of personnel;
- Protection and safety of the environment;
- Minimization of rig and property damage; and

PAI considers the risk and potential of a blowout occurring during drilling and testing operations at the McCovey site as extremely low due to the following conditions:

- The drilling crews for Nabors 14E are Surface Stack Certified in Well Control as per 30 CFR 250 Subpart O.
- Key personnel (i.e. toolpushers, operator's representatives, drilling engineers, mud engineers, and drillers) are Subsea and/or Surface Stack Certified in Well Control as per 30 CFR 250 Subpart O.
- The PAI Drilling Supervisors, toolpushers, drillers, and most crew members have many years of experience drilling exploration and development wells in the arctic environment.
- The well design has been prepared primarily based on data from other exploratory wells drilled in the immediate McCovey Prospect area (Sohio Reindeer Island Well #1, Amoco No Name Island #1, and Gulf Oil Cross Island #1).
- A mud logging unit will be employed on the McCovey well which will add a second pit level and flowline monitoring system, in addition to the one already provided or rig use. Mud logging unit equipment will include gas monitors to track background, connection, and trip gas. This equipment will aid in the rapid detection of impending influx into the wellbore, and assist in prompt well shut in response.
- PAI has established formal internal procedures to ensure all well control situations are addressed immediately and that adequate personnel and equipment services are employed to prevent the total loss of well control (blowout). Redundant and back up equipment and systems are utilized to prevent such an occurrence.
- PAI has contracted WELLCALL (the well control alliance between Halliburton Energy Services and IWC Services) to assist PAI in the intervention and resolution of any well control emergencies. WELLCALL will be notified immediately in the event of any well control situation which has the potential to escalate.

- Formal procedures and equipment for monitoring drilling fluid and wellbore conditions during drilling and tripping operations will be implemented at all times, including, but not limited to:
    - Shutdown during trips to monitor the well for flow,
    - Use of a trip tank to monitor hole fill up and fluid displacements during trips,
    - Pit volume totalizer with flow show indicator and pump pressure monitors,
    - Continuous measurement of mud weight in and out, and
    - Addition of a pitwatcher to rig crew to monitor fluids and mud pit equipment continuously 24 hours/day. There will also be a full time mud engineer on location during all drilling, tripping, and testing operations.

In addition to the controls listed above, the risk of a blowout is extremely low. There have been no blowouts of oil wells in the Beaufort Sea during the history of oil exploration in Alaska. PAI has based the information contained in the McCovey Oil Spill Contingency Plan on the assumptions agreed upon by the North Slope Spill Response Project Team (NSSRT) which consists of EPA, ADNR, ADEC, U.S. Coast Guard, the NSB, and MMS.

The NSSRT used worldwide data in determining that a worst case blowout for an exploration well is fifteen (15) days. This number is based on research findings that a blowout in the OCS worldwide persists for only three (3) days, while a worst case blowout onshore persists for a maximum of eight (8) days. The fifteen (15) days figure was arrived at by doubling the worst case for an onshore well. The reason exploration wells cease flowing is due to formation bridging off down hole, which then chokes off the uncontrolled flow of fluids.

It should also be noted that a blowout is extremely unlikely, as research reveals that blowouts of more than 5,000 barrels of oil per day occurred only once out of 1,700,000 wells (F.G. Bercha and Associates Limited., 1978, *Probabilities of Blowouts in Canadian Arctic Waters*).

4.1 Relief Well Discussion

Three potential scenarios are presented below which show a realistic plan of attack in the event a relief well was required at McCovey. It should be noted that a relief well operation is seen as a remote possibility, and that it is difficult to predict with precision, the combination of well bore, ice, and weather conditions which would be present at the time. All operational procedures and practices implemented are designed toward a common goal of preventing an uncontrolled release of well bore fluids so that a relief well operation is not necessary.

Scenario A: Shallow Depth Blowout
Sufficient Season Remaining
Minimal Damage to Rig

The first option in any well control situation is to utilize the existing drilling equipment and drilling platform to the maximum extent possible to regain control of the well. In the case of McCovey, the responses to a blowout would depend on three (3) key factors:

- The length of time remaining in the drilling season on the ice island
- The depth of the source of the blowout fluids in the blowing well
- The degree of damage (if any) to the existing rig positioned over the blowing well

If the depth of the blowout was relatively shallow, if there was still sufficient time remaining in the season, and if the rig did not sustain substantial damage during the well control event, then the first and primary response would be to skid the rig to a new location on the existing ice island. From that location, a relief well could be drilled relatively quickly and the blowing well intercepted and killed.

Scenario B: Deeper Zone Blowout
Moderate Length of Ice Island Season Remaining
Rig Unusable Due to Damage

In the more serious scenario where the blowout occurs at a deeper zone in the well, the time required to drill to that depth and intercept for the kill is increased. Also, if the ice island drilling season has been partially expended, and sufficient time does not remain, a relief well from the existing ice island may not be feasible.

Compounding this issue would be the possibility that Nabors 14E was either damaged to the point of being unusable, or perhaps the blowing well bore fluids were ignited, causing a major safety concern for crews, then an alternative response would be required.

Since there are no existing Barrier Islands within relief well distance of McCovey, and since the water depths likely would not allow expedient construction of a second ice island in the current drilling season, the next alternative would be to begin the immediate construction of a gravel island near McCovey to serve as the relief well drilling platform.

The gravel island would be placed adjacent to the existing ice road, approximately one half to one mile away from the McCovey ice island. This gravel island could be supplied by ice road, rolligon, and then by barge and support vessels as the summer open water season approached, as required.

The relief well rig identified for this scenario is Nabors 16E, a fully equipped "sister" rig to Nabors 14E, which is currently drilling development wells in the Kuparuk Field while under contract to Phillips Alaska, Inc.

Scenario C: Deeper Zone Blowout
Minimal Length of Ice Island Season Remaining
Rig Unusable Due to Damage

In the scenario where there was little time remaining in the ice island drilling season, and in which access to the ice road would also be in question, the next alternative would be to mobilize the CIDS (Concrete Island Drilling Structure) to a relief well location close to the McCovey ice island. The CIDS would be moved to the relief well site as soon as ice conditions and the available tugs and support vessels allowed for safe towing.

The CIDS would then become the drilling platform for the relief well. The CIDS is equipped with a complete drilling rig and crew quarters.

Other General Comments and Notes Relating to McCovey Relief Well Operations:

Generally, there are four (4) options available for a relief well drilling platform in this situation, depending on the time of year and the availability of equipment:

- Drilling a relief well from grounded ice at or near the McCovey island location;
- Construction of a gravel island near McCovey;
- Use of bottom founded arctic drilling vessel (e.g., the CIDS or SSDC); or,
- Construction of another ice island.

The selection of the surface location and platform from which to drill a relief well would be based upon:

1. The relief well option selected above,
2. The water depth,
3. The safe distance and direction from the blowout and/or fire,
4. The planned point of intersection with the blowing well in order to optimize the kill of the blowing well, and
5. The length of time remaining in the winter drilling season.

Drilling a relief well from grounded ice at or near McCovey: This option is only feasible if bathymetry indicated a shallow water zone close enough to McCovey where grounded ice would exist. The current location selected for McCovey is on a shoal area which is in shallow water compared to the surrounding area. This is what makes the grounded ice island application at McCovey feasible.

As described in Scenario A above, utilizing the existing ice island would be the simplest and most expedient option for a relief well. Since the working diameter of the McCovey island is approximately 600 feet, there should be adequate space available to position a rig to drill the relief well, assuming there is enough time left in the season. Expanding one side of the existing ice island is another very feasible possibility.

Another factor to consider is that in an emergency situation requiring a relief well to be drilled, the operational drilling season could feasibly be extended into May and June, assuming agency approvals could be secured. In this case, a secondary ice road could be constructed to a nearby Barrier Island (e.g. Cross Island), allowing equipment and material to be demobilized to the nearby barrier island, instead of to the shore, after the relief well operation was completed.

This same material and equipment could then be staged back to shore by barge from the Barrier Island during the summer open water season.

Construction of a Gravel Island: A gravel island could be constructed to support a relief well during either open water, when gravel would be placed by barge; or under winter conditions when gravel could be trucked to the site over an ice road. If required by emergency conditions, the island could be constructed during broken ice conditions with ice breaker / ice management vessel assistance.

It is estimated that approximately 350,000 cubic yards of gravel would be required to construct an island with a 500 ft diameter base and 200 ft diameter work surface, with 15 ft of freeboard and in 40 ft. water depth. Additional gravel would be required for slope protection (4 cubic yard gravel bags).

Gravel for island construction could be obtained from existing mine sites in the Prudhoe and Kuparuk area. Potential gravel sources include Put 23 mine site in the EOA, Northstar Mine Site, or Kuparuk Mine Site C. The material could be trucked to the site over an ice road constructed for that purpose (winter scenario), or barged to the site (summer scenario). Other mine sites include Kuparuk Mine Sites E and F.

The time required to construct a gravel island of the aforementioned dimensions under both the open water (summer) and winter scenarios is as follows:

Activity	**Open Water**	**Winter**
Mobilize gravel equipment	4 days	2 days
Construct gravel island	30 days	21 days
Set conductor and mob rig, Equipment and materials	28 days	28 days

In the gravel island scenario, a modular land rig would be transported to the island by truck (winter), or by barge (open water). The gravel island approach offers the most flexible approach to supporting relief well operations and the greatest tolerance for seasonal operating restrictions.

Use of Another Bottom Founded Arctic Drilling Vessel: The Global Marine Concrete Island Drilling Structure (CIDS) is currently being moved and relocated to its historic stack site approximately 10 miles from the McCovey Prospect. The CIDS will be moved to this location and cold-stacked during August 2000. As it is, this distance is not feasible for relief well purposes at McCovey.

Due to water depth limitations, the only other bottom founded vessel in North America capable of drilling a relief well in the McCovey area is the SSDC, which is currently located in Port Clarence, Alaska. Assuming that this rig was available for a relief well assignment, mobilization to the McCovey vicinity would be limited to the open water season, and passage around Point Barrow in early spring could be problematic.

Further assuming that the foregoing conditions could be met, it is estimated that warm-up and mobilization of the SSDC would require approximately 45 days to complete at best. The SSDC option is not considered the most viable approach to relief well planning. Approximately 30 days is estimated for the warm-up and mobilization of the CIDS, accounting for the fact that this vessel has just recently been moved from Camden Bay to its Prudhoe Bay area stack site.

In either case, icebreaker support would be needed to mobilize the CIDS or the SSDC in the period prior to the summer open water season. Both towing and ice management support would be required to move these vessels prior to open water conditions.

Construction of an Ice Island: If a relief well was required, another ice island could be constructed in the area of the McCovey location. The time required to construct an ice island is both weather and water depth dependent. For purposes of this scenario, a 37 to 45 ft water depth is assumed, as bathymetric surveys have confirmed this depth near the McCovey bottomhole location and still close enough to directionally drill to the McCovey wellbore.

The time to construct a spray ice island with 15 feet of freeboard is estimated to be forty (40) to eighty (80) days depending on temperature and other weather conditions during the construction period. Once the island was constructed, a conventional modular land rig, equipment and materials could be transported to the island by ATV.

The window available for drilling a relief well would be dependent on when the ice island was constructed. Obviously the relief well would have to be completed, plugged, and abandoned in time to demobilize from the ice island while ATV transport was still possible. The ice island option offers a workable approach for relief well operations over an approximate 4-5 month period that encompasses the winter and early spring seasons.

However, it is clear that weather conditions could impact ice island construction operations, particularly in March and April, and the other options listed above would likely be more feasible in most circumstances.

Relief Well Drilling Considerations: The equipment and materials needed to drill a relief well are available from drilling stocks on the North Slope, Fairbanks, Anchorage, Kenai, or other Alaska support locations. These items would be moved to the relief well site by truck, ATV, or barge depending on the season. It is expected that extensive helicopter operations would support the drilling effort.

The time required to drill a relief well and kill a blowout is dependent on the depth required, directional drilling considerations, the complexity of the kill itself, and weather. With this many variables, it is impossible to accurately forecast a time duration for relief well drilling; however, for planning purposes, a period of four (4) to seven (7) weeks is estimated.

4.2 Loss or Disablement of the Drilling Unit

Land Based Rig on Ice or Gravel Island

As part of the McCovey Project planning process, PAI has assessed the potential for loss or disablement of the drilling unit from cases other than a loss of well control. In the case of the ice island, the possibility of the island being moved by a multi-year ice event was evaluated.

Specific actions to be taken if the rig becomes disabled would be addressed in the Critical Operations Curtailment Plan (COCP), a detailed attachment to the Application for Permit to Drill (APD). The APD package will be submitted to the MMS for review and approval.

Geotechnical information on the soils has been evaluated and the shear strength of the soils determined. The amount of ice island mass and area that needs to be built has been calculated to ensure that the ice island will be able to withstand the forces imposed on the structure by a multi-year ice event that could take place. In the case of McCovey, these calculations are performed by Sandwell Engineering, presented to the MMS, and then verified by an independent third party expert to satisfy MMS requirements.

Ice movement will be constantly monitored using GPS satellite technology, in addition to satellite imagery of the regional ice conditions, and also by the use of sensitive inclinometers on the island itself to detect any movement of the island. The location of the McCovey ice island is unique and is ideally suited for this application. This site is positioned on a sub-sea shoal or "high" compared to the adjacent sea floor elevations.

Resting on this local "high" area will result in natural protection for the ice island since deep keel, multi-year ice floes will tend to "ground out" before contacting the ice island.

In general, if the land-based rig selected for the McCovey well, that is Nabors 14E, for some reason becomes disabled, the well would be immediately secured, and repairs to the rig initiated immediately. If the rig was damaged beyond repair for whatever reason, the well would be secured and suspended or P&A'd, and immediate measures would be taken to remove the disabled unit, and replace it with the sister rig, Nabors 16E.

Should any condition develop during the drilling of the McCovey well that presents a potential threat to the integrity of the drilling rig (i.e. multi-year ice event), the well would be suspended by placing a cement or mechanical plug (i.e. storm packer or bridge plug) in the wellbore, leaving the hole filled with a minimum of 200 psi overbalance drilling fluid, and securing operations until the threat is past or overcome.

Bottom Founded Offshore Drilling Unit (CIDS or SSDC)

Before the CIDS is allowed to ballast down on a location the geotechnical information on the soils will be evaluated and shear strength of the soils determined. Then the amount of ballast water that needs to be taken on will be calculated to ensure that the CIDS will be able to withstand the forces imposed on the structure by a multi-year ice event that could take place. These calculations are done by Global Marine in the case of the CIDS, and then verified by a third party to satisfy MMS requirements.

5.0 LOCATION TABLE

30 CFR 250.203(a)(3)

This table is provided as required in 30 CFR 250.203(a)(3). If the results of the McCovey No. 1 are encouraging, additional exploration/delineation wells may be proposed in the future.

Table 5-1. Phillips McCovey No. 1 Well Location and Depth Information

	Lease Block*	Geodetic Position	ASPC Zone 4 GRS 1980 NAD 83 (ft)	UTM Zone 6 N Clark 1866 NAD 83 (m)	Water Depth	Well Depth @ TD
Surface Location	Y-1577	Lat: 70°31'43.8"N Long: 148°10'41.1"W	X = 1862831 Y = 6046256	X = 456176 Y= 7825280	37 Ft MLLW	
Bottomhole Location @ 13,000 FT TVDSS	Y-1578	Lat: 70° 31'34"N Long: 148° 11'19"W	X = 1861573 Y = 6045201	X =1862831 Y =6046256		13,000 ft TVDSS 14,400 ft MD

*Note: Both surface and bottomhole locations are in OCS Block 6515.

6.0 GEOLOGIC CONDITIONS

30 CFR 250.203(b)(1)

PAI is submitting under separate cover Appendix IX to the McCovey Exploration Plan. The information submitted in Appendix IX is submitted in fulfillment of the requirements of 30 CFR 250.203 (b)(l)(i through ix). Appendix IX includes items described in Subparagraphs (l) through (viii) inclusive. In addition, a general non-propriety description is included in the following section. The shallow hazard report required by subparagraph (ix) will be submitted to the MMS in mid October, 2000, as the data for the shallow hazard survey was acquired in late August due to ice conditions. PAI requests that Appendix IX remain confidential pursuant to 30 CFR 250.118 and 30 CFR 250.203(f).

6.1 Analysis of Seafloor and Subsurface Geological and Man-Made Hazards

Geohazards and geotechnical investigations have been performed in support of the McCovey exploration project. Site investigations were undertaken during the winter/spring of 2000 on the ice sheet. This spring program included a ROV survey, side scan sonar survey, a multibeam bathymetric survey, and geotechnical soil borings and insitu testing. These datasets were collected at the proposed location for exploration. During the summer open water periods of July and August 2000, a high-resolution geophysical survey was performed. A short discussion of the findings in included in this Exploration Plan. Further data processing and additional evaluations and discussions will be submitted with the McCovey Geohazards Survey that will be submitted along with the McCovey Application to Drill.

Bathymetry survey was performed off the ice sheet during the winter/spring program 2000. The bathymetric data from this winter survey indicates a generally flat, even substrate at the site. The bathymetry data also indicates a very low seabed gradient of approximately 0.67%, or 1 in 150 at the site. Water depths within the survey area range from approximately 34 feet in the northwest, 38 feet in the south, and 36 feet in the north. The bathymetric data collected over the site clearance grid supports original bathymetric results and interpretations that the proposed location of the McCovey exploration site is located on a shoal feature. Water depths at the well location range from 33 ft. to 36 ft. (10 to 11 meters) across the proposed wellsite.

Figure 6-1 is a plot of the uncorrected bathymetric data (limited correction applied-for the depth of the vessel transducer) collected from the marine vessel during the summer open-water high-resolution geophysical survey by Western Geophysical company. The bathymetric data collected over the site clearance grid supports original bathymetric results and interpretations that the proposed location of the McCovey exploration site is located on a shoal feature. The bathymetric data collected during the summer survey and presented on Figure 6-1 depicts the entire high-resolution geophysical survey area. The uncorrected data has been contoured on a 1 m interval, and water depths at the well location range from 33 ft. to 36 ft. (10 to 11 meters) across the proposed wellsite.

Side scan sonar was performed through the ice sheet during the 2000 winter/spring program. The data at the proposed wellsite found a clean sand seafloor with minute sand wavelet bedforms and no excessive ice gouging. The ROV video survey performed supported the sonar data set collected at the proposed ice island location. No evidence of any seafloor hazards on the seabed was observed at the time of our investigation, no boulders were visible, nor was ice gouging prevalent (Figure 6-2). The ice gouge tracks observed on the seafloor at the site were low profile and limited in length to non-existent. No man-made hazards were observed.

DataSonics Chirp II Subbottom profiler was run across the high-resolution geophysical survey area and the data records indicate a relatively hard bottom. Interpretations of a hard seafloor are based on resulting shallow penetration of the subbottom profiler to a limited depth of 5 m across the site as a result of the dense sand present at the seafloor. The top of the shoal is relatively featureless with excessive gouge morphology incisions of the seabed present on the flanks of the shoal. No other seafloor or near seafloor features were identified in the review of the analogue subbottom profiler records.

DataSonics Bubble Pulser system was run across the high-resolution geophysical survey area. Review of the bubble pulse analogue records show an erosional feature that has a similar appearance of a "channel" to the north of the proposed exploration site. This erosional feature is oriented parallel with the shoal. The depth of the base of the feature is approximately 8 m below the mudline, and is approximately 300 m in width and visible in a length of 600 meters. This orientation and shape appears to be associated with gouging and sea bed ice keel interaction as opposed to being a pre-historic terrain feature. The ice island seafloor "footprint" is not situated on this feature; therefore, there will be no potential impact.

Further review of the bubble pulser records support interpretations that the site is located on a constructional feature, such as an island or shoal. This interpretation is based on sequential consistent hard reflectors at depth.

The geotechnical and geophysical surveys show that there are no seafloor and subsurface geological and man-made hazards in the McCovey area. The site-specific shallow hazards report will be submitted the Application to Drill in accordance with the 30 CFR 250.414(f)(1)(vii).

6.2 Archeological Report

An archeological report has been prepared in accordance with 30 CFR 250.194 for the McCovey project. The full report will be submitted under separate cover along with this Exploration Plan. The report examined the data obtained during the geotechnical and geophysical survey along with a literature review for any potential historic or prehistoric archeological resources.

Potential submerged archaeological resources range from historic to prehistoric. Historic resources include man-made objects or structures, such as shipwrecks, submerged structures and aircraft older than 50 years. Potential sites for prehistoric archaeological resources include areas that are in water shallower than water depths that correspond to a submerged paleo-shoreline representing a low stand of sea level approximately 13,000 years before present in age, for Alaska OCS this generally is 50 meters below sea level. These prehistoric sites include terrestrial landforms, such as; high ground near paleo-rivers, river confluences, paleo-shorelines, and preserved levees or terraces on paleo-channels.

6.2.1 Historic Resources

A copy of the most recent shipwreck database from the MMS office in Anchorage, Alaska, has been obtained. Mr. Mike Burwell maintains this database at the MMS office in Anchorage. This data indicates only one shipwreck is near the "McCovey" Prospect. This wreck occurred on Aug. 4, 1894 when the bark "Reindeer" from San Francisco was trapped in ice that came in quickly and the ship was forced ashore. The historical account of this wreck is attributed to Mr. Thomas Brower, Sr. of Point Barrow. The island that the ship went aground on is now named for the ship (Reindeer Island). According to MMS's experts, the ship's exact location is not known, but it is probably on the western end of the present island, along the north shore. He also stated that there have not been any recent sightings of the remains of the "Reindeer" and that the timbers may have been salvaged by Natives to be used for firewood, structures, etc. According to historical reports no lives were lost in the wreck of the "Reindeer".

Reindeer Island is approximately 4 1/4 miles southwest of the proposed exploration location being considered by Phillips Alaska, Inc. as part of the McCovey Prospect. The probability of historic archaeological resources being at or near the location is very low. Side scan sonar records and ROV video footage at the site do not show any historic resources at the proposed McCovey location.

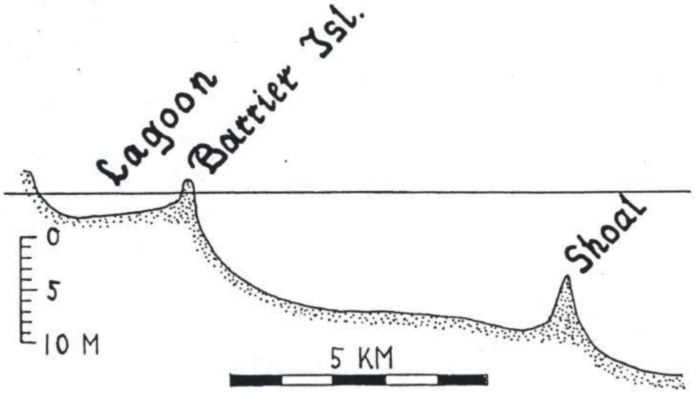
6.2.2 Prehistoric Resources

In order to evaluate the potential for prehistoric archaeological resources in the area, the baseline study prepared by Friedman and Schneider for the Beaufort Sea Planning Area which has been used in previous lease sale EIS documents, and in all Beaufort Sea archaeological analysis and assessments prepared in support of Alaska OCS exploration activities was reviewed. In addition, the published report "Archaeological Assessment of Warthog Prospect" prepared by MMS Alaska Archaeological working group was reviewed. These resources support the conclusion that the probability of a significant archeological site at the McCovey location is very low.

The recommendation regarding prehistoric resources presented in the base line study is that the Alaska OCS Beaufort Sea sale area should be exempted from this requirement. This is further supported from the results of the MMS working group recommendations that exemption for prehistoric archaeological resources may not be appropriate for areas of the Beaufort Sea landward of the Barrier Islands and for those protected by floating land fast ice coverage during the winter. The McCovey Prospect is seaward of the Barrier Islands and is located near the Stamuhki zone, and review of the geohazard data collected in support of the exploration plan, no significant archaeological resources have been identified.

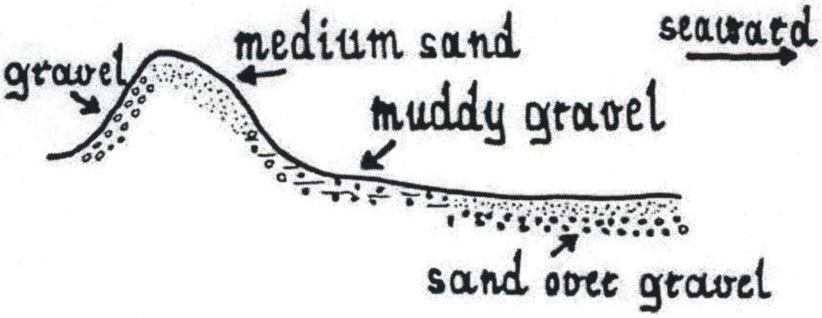
In addition, to investigate the probability of pre-historic archaeological resources present within the McCovey Prospect, a review of publicly available data for the Beaufort Sea was performed. This review provided an overview of anticipated site conditions, such as; soil type, presence of permafrost, presence of shallow gas, shallow faulting, thickness of Holocene sediments and potential for slumping, significant geomorphologic features, and effects of sea ice on the region. The collected data set was used for the purposes described herein to investigate archaeological concerns but to also validate and support the geophysical and geotechnical interpretations prepared from the data collected for the geohazards survey and site engineering analysis performed for the exploration drilling program at the McCovey site.

The exploration site appears to be located on a sand shoal. The generalized cross section prepared from the borehole logs indicate that it could be interpreted as a shoal, or a submerged relic barrier island. This interpretation is based on the dense sand present at the seafloor, and the fining upward sequence of fine-to-medium grained sands in the surface stratigraphy. Rounded accretionary organics, shell fragments, and a lack of linear bedding of the silts and sand supports a medium energy barrier island environment for the initial deposition. The presence of permafrost at depth in borings more central in the feature support the aerial exposure at some past time. As the barrier island continued to prograde shoreward, the sand deposits were left in the study area, most likely resulting in the present shoal. Currently, the microtidal (<0.5 meter tidal range) environment and the lack of a wave front provides little energy for movement of these deposits, movement would be limited to ice seabed interaction along the Stamukhi zone coincidental to the Beaufort Gyre. The feature to a water depth of 34 to 38 feet at the site rises from the surrounding seafloor with nominal water depths of 42 to 49 feet.



Reimnitz (1978)

A number of linear shoals, representing pronounced topographic anomalies on the surface of the Beaufort shelf have been studied in the Prudhoe Bay area by USGS researchers. The Reimnitz and Maurer study (1978) of the Stamukhi shoals, and based on their works they have stated that these shoals are constructional features younger than the post-Wisconsin transgression. These linear shoals described by Reimnitz, et.al, as constructional features present a sediment profile inclusive of a medium sand-capped crest. The presence of clean sands, rather than gravel capping the shoals supports interpretations of enhanced winnowing of the sediments from ice keel contacts and currents. Dive observations made by USGS investigators found the linear shoals to have few ice gouge features at the cap with shallow ripple structures in the sand cap associated with wave or current produced bedforms, Figure 6-2.



Reimnitz (1978)

Along the flanks seaward of the shoal, an increase in gouging is present with the gouges trending parallel to the orientation of the linear shoal, ranging in depth from 1 to 2 meters and up to 10s of meters wide. The gouges typically terminate within the field of view in short distances and resemble more of a landing area or holding point for ice keels. Reimnitz, et al., have indicated that similar in shape to barrier islands, the linear shoals are different in composition and do not appear to represent submerged barrier islands. Lewellen has referred to these shoals as submerged barrier islands. The linear shoals identified, Jaws Mound, Cat Shoal and Stamukhi Shoal, proximal to the McCovey Prospect, these shoals appear to be moving slowly as a result of ice and seafloor interaction in the Stamukhi zone. The monitored movements of the shoals and the understanding of observations made of modern processes of the Arctic suggest that anything which stands above the general relief of the shelf is planed off by the action of the ice. Even gently sloping and generally flat surfaces are reworked by ice at a rate of once every 50 to 80 years.

Summer ice distribution is controlled by grounding on the shoals as well. Reimnitz, et al. 1977 stated that a large portion of the available marine energy is expended on the seafloor within the Stamukhi zone. Linear shoals take the brunt of the transfer of forces, Reimnita stated, "it is difficult to believe that the linear shoals are drowned barrier islands that have survived since submergence." The relative paucity of ice gouging present at the site is more a function of the seabed relief, and the interaction of the linear shoals with the ice keels along the Stamukhi zone. The redistribution of seafloor and near seafloor sediments as a result of ice keel impact is much different than what is conventionally idealized with ice gouging processes landward of the barrier islands.

The base of the erosional feature, or "channel" identified in the bubble pulser records is at a depth of 8 meters. The location of this feature at the site and its orientation are parallel to the linear shoal (Jaws Mound), this is supportive of interpretations of this feature as an erosional feature associated with ice impacts and keel - seafloor interaction and not a relict "channel" buried beneath the Holocene marine sediments.

The seabed soil conditions at the "McCovey Prospect" site consist mainly of fine to medium-grained sands with a dense to very dense consistency, to a depth of 15 feet. Overlying fine-grained cohesive soil, silt, and clay with a very stiff to hard consistency to a depth of 55 feet. Below the silt/clay, fine to medium-grained sand and gravel was present to 83.5 feet, the maximum depth penetration below mudline during the winter site investigation. None of the soil borings drilled and sampled during the winter/spring geotechnical program encountered any significant or stratified organic material at the site.

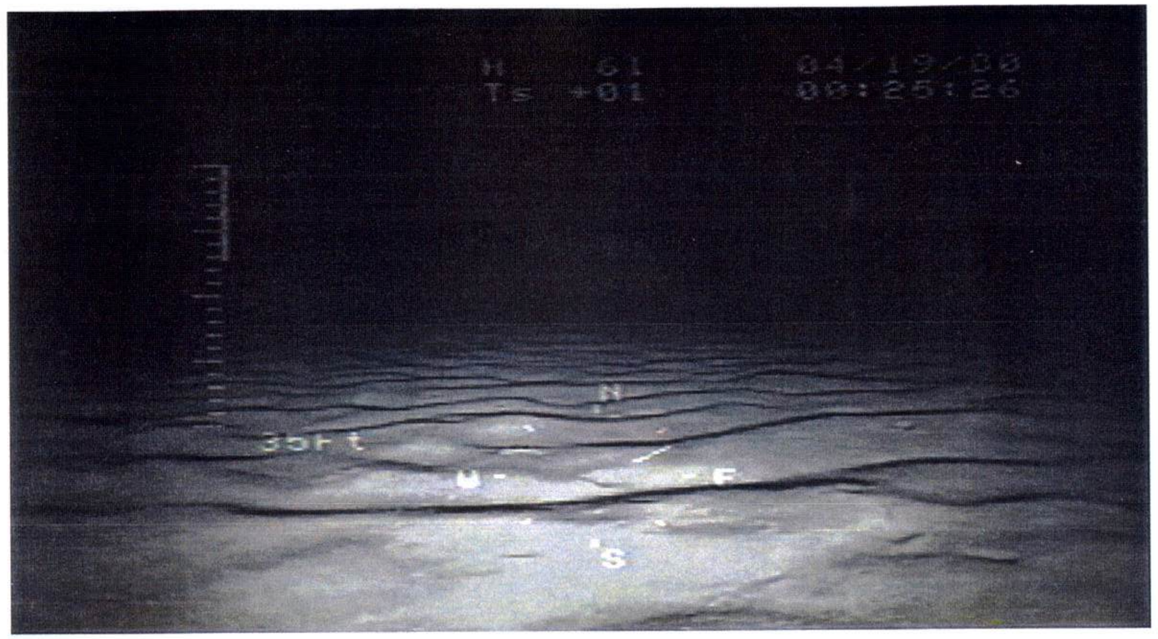
Permafrost conditions, bonded soils with visible ice, were logged in two of the boreholes at the "McCovey" exploration site, at a depth of 46-48 feet below mudline and continued to depth.

Site soil conditions are very dense and over-consolidated, the findings of Phillips' site surveys is supported by interpretations of USGS researchers. The impact of a bottom-founded structure on the dense granular seabed soils is minimal. Geotechnical analysis for settlement of a bounded-founded structure, specifically an ice island as proposed for the McCovey Exploration site is estimated to be less than 12 cm.

6.2.3 *Effect on Potential Archeological Resources by McCovey Exploration Operations*

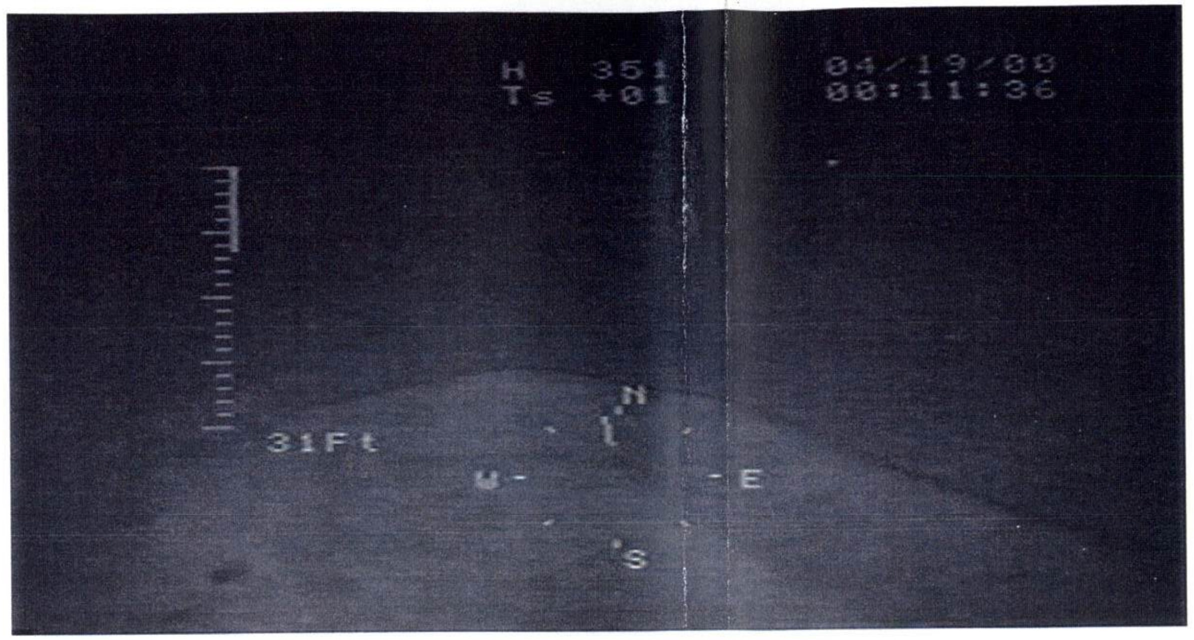
In summary, the potential effects of the proposed operations on historical and pre-historical archaeological resources is not significant. The surveys, performed to date and the review of literature, support the findings of no historical resources on the seabed or within the near surface soils at the proposed well site. Impact to prehistoric resources is also considered to be very low as the structure proposed is an ice island and is a bottom-founded structure. The ice island should only affect the top 12 cm of the seafloor and they are temporary in nature. In addition, the proposed conductor (20") will cause a very limited areal disturbance to sedimentary structures or any potential archaeological resources.

The identified "channel" feature can be interpreted to be an erosional feature within the Holocene sediments that would be associated with processes and shoal morphology in the Stamuhki zone. In addition, the proposed location is to the south of the mapped channel and proposed conductor and well casing operations presently planned will not intersect this feature. Also, the ice island will be constructed on the very dense over-consolidated seafloor soils will not cause impact to the depth of the "channel" feature.



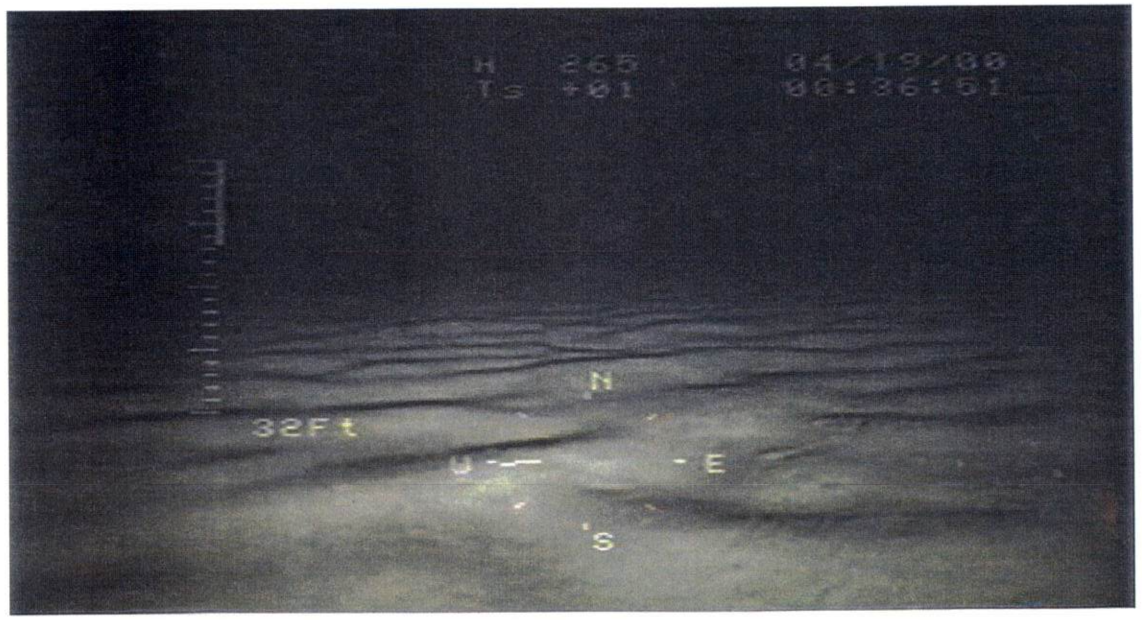
END OF EAST SURVEY LINE

350 FEET FROM DEPLOYMENT HOLE
4 / 2



ICE GOUGE TERMINUS. WATER DEPTH 31 FEET

NORTH OF DEPLOYMENT HOLE 4 / 2



SEABED FLOOR, TYPICAL OF AREA

ROV EAST OF DEPLOYMENT HOLE

4 / 2

ICE GOUGE TRACK

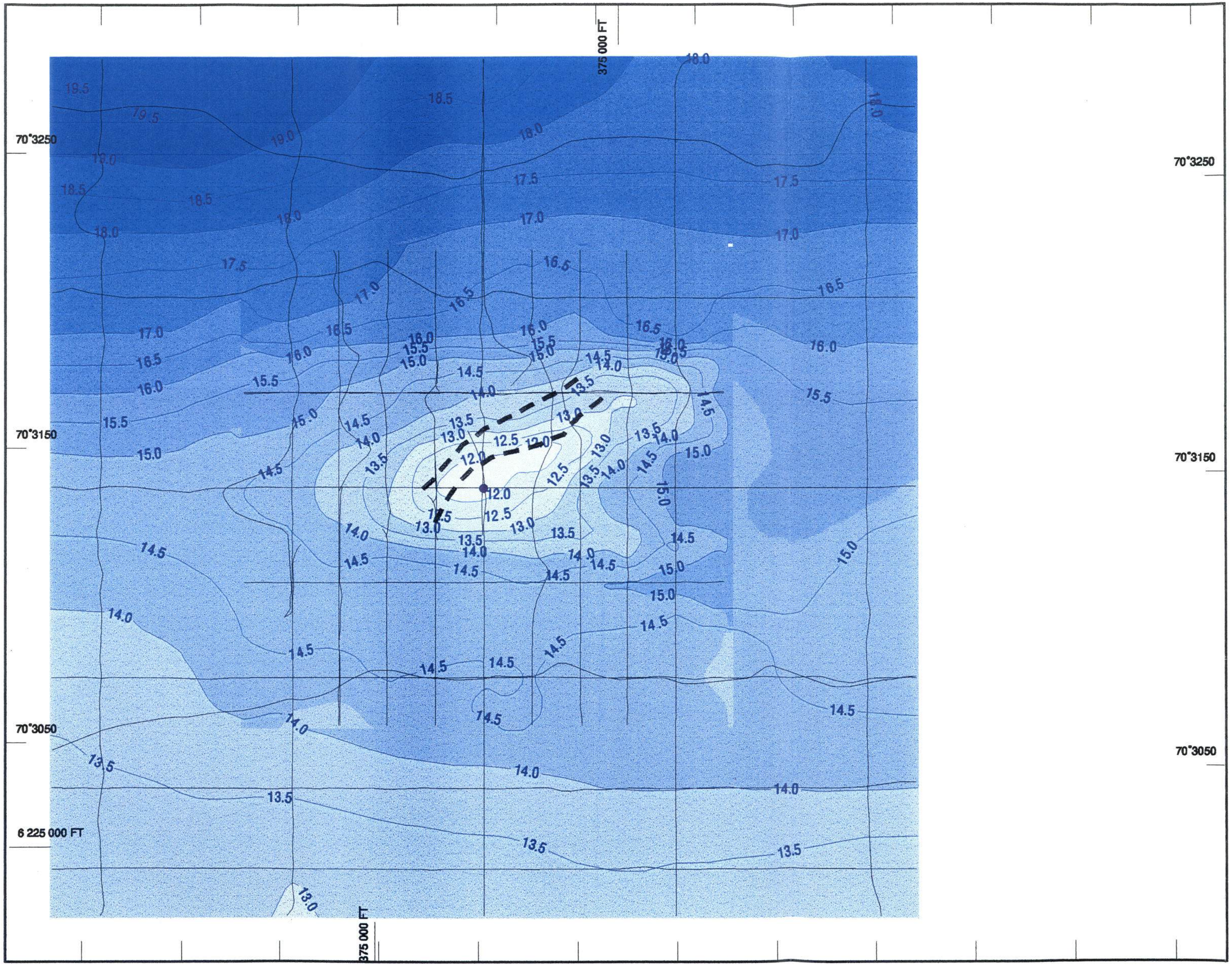
HEADING SOUTH FROM
DEPLOYMENT HOLE 4 / 2

ARCTIC GEOSCIENCE, INC.

Title:
ROV PHOTOS OF SEABED
McCovey Prospect Site Clearance Program: Site No. 4
Beaufort Sea, Alaska

Client:
PHILLIPS Alaska, Inc.

By: LCM
Date: 09/14/00
Project No: 00-0505
Checked: MGS
File Path:
Horizontal Scale:
Figure Number: **Figure 6-2**



Title:
Project Description:

Figure 6-1

Bathymetry, Channel and Site Locations McCovey Prospect

Client:

PHILLIPS Alaska, Inc.

Legend:

● Location of McCovey Project Area

— Geophysical Survey Tracklines

-- Approximate Location of Subsurface Channel

Bathymetry displayed in meters.

Note: Depths are uncorrected for changes in sea level due tidal and atmospheric influences.
Data collected during the Summer Geohazard Survey conducted by Western Geophysical.

Projection:

UTM Zone 6, WGS 84
Clarke 1866 Spheroid

Scale 1:25,000

0 1000 2000 3000 4000 5000
feet

Project No:	Date:	By:	Checked by:	File:
00-0505wo6	09/15/00	RFC	MGSfig_2_	00-0505wo6.rt

ARCTIC GEOSCIENCE, INC.
1000 O'Malley Drive, Suite 205
Anchorage, Alaska 99515-3069
Phone: (907) 522-4300
Fax: (907) 522-4301
agsimail@arcticgeo.com
www.arcticgeo.com

7.0 OIL SPILL RESPONSE PLAN

30 CFR 250.203(b)(2)

The Oil Discharge Prevention and Contingency Plan (ODPCP) prepared for the McCovey No. 1 drilling program is contained in Appendix I. The plan provides information on oil spill prevention and control procedures, response organization, risk analysis, and environmental sensitivity. It is designed to assist PAI and contractor personnel in responding rapidly and effectively to oil spills that may result from exploratory drilling operations.

The ODPCP provides a detailed description of appropriate actions and techniques for various spill circumstances, response times for mobilization of personnel and equipment from various locations, equipment operating characteristics, and the availability of equipment both on site and off site. This plan emphasizes the prevention of oil pollution by employing the best control mechanisms for blowout prevention and fuel transfer, and by implementing a mandatory program of personnel training. MMS Regulations (30 CFR 254) include specific requirements for oil spill and pollution prevention. PAI will fully comply with these requirements.

All project personnel, including PAI employees and contractors, will be involved in oil spill contingency response and will receive training as described in the ODPCP. Training drills will be conducted periodically to familiarize personnel with on-site equipment, proper deployment techniques, and maintenance procedures.

8.0 COMPLIANCE WITH LEASE STIPULATIONS

30 CFR 250.203(b)(3)

The surface location for drilling activities is on federal leases obtained under Federal OCS Sale 124. Leases obtained in State of Alaska Lease Sale 65 are also proposed to be part of the McCovey Unit; therefore stipulations specific to that sale are included. This section describes how PAI will comply with the lease stipulations for these lease sale areas.

8.1 Federal OCS Lease Sale 124

Stipulation No. 1: Protection of Archaeological Resources

The Regional Supervisor, Field Operations (RSFO) may require the lessee to prepare a report determining the potential existence of any archaeological resource that may be affected by the operations; if evidence suggests that an archaeological resource may be present the lessee shall either relocate the site so as to not affect the resource or establish to the satisfaction of the RSFO that an archaeological resource does not exist or will not be adversely affected by the operations; and if the RSFO determines that an archaeological resource does exist and may be adversely affected the lessee shall take no action until told by the RSFO how to protect the resource.

PAI Action: The closest known archaeological resource to the McCovey project area are the cabins and house depressions located on Cross Island 7 miles to the southeast. Although there are known to be numerous shipwrecks along the coast of the Beaufort Sea, no surveys for locations of these shipwrecks have been made. In April 2000, PAI conducted a shallow hazard survey that confirmed the absence of any historic archaeological sites at the project location. A full report of the shallow hazards survey will be provided to the MMS in September 2000.

In addition, since some McCovey activities will occur near Reindeer Island (ice road and potential camp location) PAI contracted an archeological survey of Reindeer Island to ensure that there will be no impacts to archeological resources. This survey revealed no know archeological resources on the island. In fact, recent field inspections indicated that Reindeer Island has been eroded to the point where it is no longer an island, and is now simply a shoal.

Stipulation No. 2: Protection of Biological Resources

The RSFO may require the lessee to conduct biological surveys needed to determine the extent and composition of biological populations and habitats requiring additional protection. As a result of these surveys, the RSFO may require the lessee to relocate the site of operations; modify the operation and/or establish that operations will not have adverse effects, or that special biological resources do not exist; or operate during periods of time that will not cause significant adverse effects upon the resource. In addition, the lessee is required to report any areas of biological significance discovered during the conduct of any operations on the lease, and make every effort to preserve and protect the biological resources from damage until the RSFO provides direction with respect to resource protection.

PAI Actions: The previous survey work on nearby federal and state acreage and site specific shallow hazard work at the McCovey location in April 2000 have not identified any hard bottom (i.e. "boulder patch" areas). In April 2000, as required by 30 CFR 250.33 (b)(1)(ix), PAI conducted shallow hazard activities including detailed bathymetry and remote underwater camera work. The remainder of the survey was conducted during August 2000 to collect subsurface imaging data. These surveys did not identify any presently unknown biological communities in a 500 meter x 500 meter area centered on the drilling location. These surveys, and their interpretations will be made available to the RSFO as part of the Shallow Hazard report.

Stipulation No. 3: Orientation Program

The lessee must develop a proposed orientation program for all personnel involved in the exploration program.

PAI Actions: All PAI and contractor personnel will receive North Slope cultural awareness training, and specific training in environmental awareness and safety, including polar bear avoidance. This training will include appropriate parts of video materials currently in the PAI library that were prepared for the NPR-A project and other recent off-shore operations. PAI will provide the RSFO will a copy of these materials prior to commencing construction operations. A formal polar bear interaction plan has been completed and will be included with this document (Appendix IV).

Stipulation No. 4: Transportation of Hydrocarbons

This stipulation states that pipelines are the preferred mode of transporting production.

PAI Actions: This stipulation is not applicable to this exploratory drilling program.

Stipulation No. 5: Industry Site-Specific Bowhead Whale Monitoring Program

A monitoring program is required for drilling and seismic operations conducted during the bowhead whale migration.

PAI Actions: The eastern fall bowhead whale migration has been defined by the MMS as September 1 through October 31. No drilling or seismic activities are scheduled during this period. However, PAI is considering pre-staging materials near or adjacent to Reindeer Island during this time period. Any pre-staging activities will occur after completion of subsistence whaling activities. In addition, all activities will be inside the Barrier Islands, away from the main bowhead whale migration routes.

Stipulation No. 6: Subsistence Whaling and Other Subsistence Activities

Exploration, development, and production operations must be conducted in a manner that prevents unreasonable conflicts between the oil industry and subsistence activities (including, but not limited to bowhead whale subsistence hunting). The lessee must contact the potentially affected communities and a discussion of resolutions reached during a consultation process and any unresolved conflicts with communities, individuals, and other entities shall be included in the exploration plan and a copy of this plan will be delivered to the potentially affected communities.

PAI Actions: PAI is taking measures to minimize potential adverse effects on the availability of marine mammals for subsistence users. One such measure is that PAI is able to construct an ice island in these water depths, which allows a winter drill operation. Thus, no drilling will occur during the spring or fall bowhead migration. PAI met with the Mayor of Kaktovik on August 8, 2000 to discuss the proposed McCovey project schedule. A copy of the information reviewed with the Mayor is contained in Appendix IX. This information was shared with the Community Council on August 15, 2000. McCovey was also discussed with the Kuukpik Subsistence Oversight Panel (KSOP) on August 22, 2000 in Nuiqsut. A summary of the comments from the KSOP is also contained in Appendix VIII.

In addition, PAI plans on meeting with the community of Nuiqsut in late September (after whaling season) to discuss planned activities associated with the McCovey Prospect to minimize any adverse effects on subsistence seal hunting. The Alaska Eskimo Whaling Commission (AEWC) has also been provided with information regarding the McCovey prospect during a North Slope Borough pre-application meeting on August 11, 2000. A copy of the information reviewed at this meeting and the attendees in contained in Appendix VIII. PAI also presented McCovey information to the North Slope Borough Planning Commission on August 30, 2000. Details on this meeting can also be found in Appendix VIII.

Stipulation No. 7: Oil Spill Response Preparedness

Lessee must submit Oil Spill Contingency Plans for review and approval that address all aspects of oil spill response readiness prior to approval of exploration or development and production plans.

PAI Actions: The Oil Discharge Prevention and Contingency Plan (ODPCP) submitted for the McCovey No. 1 drilling program is located in Appendix I. The plan provides information on oil spill prevention and control procedures, response organization, risk analysis, and environmental sensitivity. It is designed to assist PAI and contractor personnel in responding rapidly and effectively to oil spills that may result from exploratory drilling operations.

Stipulation No. 8: Agreement Between the United States of America and the State of Alaska

This stipulation is advisory as to the Outer Continental Shelf Lands Act and the ownership of disputed tracts. No compliance activity is required. It is PAI's understanding that this matter was resolved in 1997.

Stipulation No. 9: Agreement Regarding Unitization

This stipulation is also advisory in nature and identifies those blocks subject to the "Agreement Regarding Unitization for the Outer Continental Shelf Oil and Gas Lease Sale 124 and State Oil and Gas Lease Sale 65 Between the United States of America and the State of Alaska". No compliance action is required.

8.2 State of Alaska Lease Sale 65

Stipulation No. 1: Discovery of Historic or Archaeological Objects and Measures Taken to Preserve Such Objects

This stipulation relates to the discovery and preservation of any site, structure, or object of historic or archaeological interest during the conduct of lease operations. Since the subject lease lies entirely offshore, if any such objects are present they will most certainly be of shipwreck related origin.

PAI Actions: Geotechnical, bathymetric and remote underwater camera work was conducted in April 2000 as part of the shallow hazard survey and there were no ancient shipwrecks or other marine objects present in the area of the McCovey well.

Stipulation No. 2: Oil Pollution Control

Lessees are required to comply with the Alaska Oil Pollution Control Act, AS 46.04 and it's implementing regulations. Lessees must submit a SPCC plan to ADEC in compliance with federal guidelines.

PAI Actions: The McCovey Oil Discharge Prevention and Contingency Plan is located in Appendix I. A copy of the Plan will also be submitted to ADEC for review.

Stipulation No. 3: Plan of Exploration

This stipulation requires that the lessee submit an exploration plan to DO&G for it's review and approval. The DO&G will review the plan for consistency with the ACMP under AAC 50.

PAI Actions: PAI will submit a copy of this Exploration Plan to DO&G.

Stipulation No. 4: Seasonal Drilling Restrictions

This stipulation defines seasonal drilling restrictions in Sale Area 65 in order to minimize interference with the bowhead whale migration and subsistence hunting activities. Subject to provisions to minimize noise during the whale migration, and conditions that must be implemented in order to drill in periods of broken ice, drilling from bottom founded structures is allowed year round.

PAI Actions: All McCovey drilling activities will be conducted during solid ice conditions; therefore, will not interfere with the bowhead whale migration and subsistence hunting activities.

The State of Alaska Lease Sale 65 fact sheet lists several additional mitigation measures which are specific permit conditions for conducting operations in the sale area. Since these measures are permit specific, they are not addressed in this Exploration Plan.

9.0 DRILLING FLUIDS PLAN

30 CFR 250.203(b)(4)

The following mud plan was developed for the Phillips McCovey No. 1 well:

I. Type(s) of Mud Proposed for Discharge:

This well will be drilled with a modified generic Mud #2 from the initial spud to the final total depth (TMD) of the well. The components of this mud system and their maximum concentrations are listed in Table 9.1. Both fresh water and/or seawater will be used to maintain this mud system. Rates of discharge of both muds and cuttings will be in accordance with the limitation specified in the NPDES permit.

However, in the event of formation damage or wellbore stability problems, a "Custom Potassium Mud" may be used. Toxicity information for this mud system is provided along with the modified generic Mud #2 in Appendix VII.

2. Well Name: McCovey No. 1

3. Well Number: #1

4. NPDES Permit Number: AKG-28-4205

5. Mud Types (primary):

McCovey #1 - Modified Generic Mud #2 (see Table 9-1)

6. Details of Mud System: See Table 9-1

7. Determination of System Toxicity:

To insure drilling mud and cuttings discharges comply with the >30,000 ppm SSP limitation for operations in the Beaufort Sea, the following information is provided:

a) The primary mud plan is to use the additives as outlined on Table 9-1 from spud to total depth. The mud bioassay provided in Appendix VII (Baroid Bioassay Laboratory BL-0618 (11/12/93) provides certification of that system's overall toxicity of 245,700 ppm SSP. This is well above the 30,000 ppm SSP NPDES permit limitation. Note all the additives listed in Table 9-1 were tested at maximum concentrations with the exception of the lost circulation materials (KwikSeal/Baroseal(blended flakes, fibers and granules), mica flakes and crushed nut hulls), and the zinc carbonate. These products have been authorized for use, due to their lack of influence on the resulting mud toxicity. Pursuant to the NPDES permit, a monthly bioassay will be conducted to confirm actual discharge toxicity.

b) Based upon the calculated toxicity (see Table 9-2) an EZ Spot-NT/mineral oil pill will be used if a spotting fluid is required. The pill will be recovered when circulated out of the hole pursuant to the NPDES permit requirements and the residual content will not exceed 2% by volume. In the event a spotting fluid is required, the appropriate sampling will be done before and after the spot to confirm the discharge toxicity.

8. Procedure for Determining if New Additives May Be Used:

While it will be the intent of this drilling program to use only the products which are listed in Table 9-1 (or the mud products as listed for the "Custom Potassium Mud" if required), if any additional additive(s) are required, the following process will be used prior to use of the product(s):

Toxicity Estimations For New Mud Additives

To insure the drilling mud does not exceed the 30,000 ppm SSP limit for Beaufort Sea discharges when adding a product or products that were not originally planned, this "Mud Plan" will incorporate one of three mechanisms to estimate final mud toxicity's as listed below:

1) Perform a Drilling Fluid Toxicity Test (Petrazzuolo, 1993) on the complete base mud system with all mud additives at maximum concentrations.

2) Calculate the resulting mud toxicity using the following mathematical formula:

"The inverse of the LC50 for each additive is added to the inverse of the LC50 of the base mud. The inverse of the sum of the inverse then represents the estimated LC50 of the combined mud formulation."

$$(1/LC50A + 1/LC50B + 1/LC50C + ... = 1/LC50TOT)$$

This method is demonstrated on Table 9-2 that estimates the resulting toxicity for the Modified Generic Mud #2 (Table 9-1) when containing residual mineral oil spotting fluids (EZ Spot-NT and mineral oil).

3) In some cases, based upon a detailed review of the product and a determination of the relative non-toxic nature of the additive, use of the product may proceed without actual LC50 data. Examples of these products may include lost circulation materials such as walnut hulls or mica flakes.

9. Outline of the Mud Planning Process:

This mud plan has been established based upon standard procedures for previous mud system approval for discharge in state and federal waters offshore Alaska. The mud system toxicity is based upon actual bioassay data, consequently no problems are anticipated in terms of compliance with NPDES permit requirements. Also, the product mix in Table 9-1 has been used on several offshore operations and has established a history in terms of being able to comply with permit limitations for toxicity. This mud plan design is meant to tie into the other requirements of the current Arctic general NPDES permit which in combination provide a comprehensive mechanism to insure minimal impact to the receiving waters.

The estimated volume of mud to be discharged during the drilling of the McCovey project is 13,375 barrels. Discharge will be to solid ice conditions.

The personnel responsible for the development and implementation of the Mud Plan are:

Paul Mazzolini, Phillips Alaska, Inc.	(907)263-4603
Tom Mc Kay, Phillips Alaska, Inc.	(907)265-6890

Table 9-1 Maximum Proposed Concentrations of Mud Additives, Generic Mud No. 2 with Additives.

Mud Type:				Modified Generic Mud #2	MAC	PC(Avg)		
A	B	C	D	Generic/Chemical Description	(ppb)	(ppb)	Trade Names	Function:
x			x	Bentonite/Attapulgite/Sepeolite	50	15.0	Aquagel/Seamud/Zeogel	viscosifier
x			x	Lignite	10	0.7	Carbonox	mud thinner/fitration control
x			x	Caustic	5	0.4		pH control
x			x	Lime	2	0.1		alkalinity control
x			x	Barite	575	22.4	Baroid	mud density
x			x	Soda Ash/Bicarb	2	0.3		cement cont./hardness control
x			x	Cellulose Polymer	5	0.9	PAC's/Drispac's	filtration control
x			x	Seawater or Fresh Water	as need	357.0		base fluid
		x	x	Xanthan Gum	3	0.3	Barazan-D/N-Vis	viscosifier
		x	x	Modified Lignin	10	1.1	Baranex	filtration control
	x		x	Sulfonated Asphalt	6	1.1	Barotrol/Soltex	shale stabilization
		x	x	Graded Calcium Carbonate	100	0.7	Baracarb's	bridging material/LCM
	x		x	Drilling Detergent	0.4	0.3	ConDet	clay "balling" problems
		x	x	Mud Defoamer	0.75	0.1	BaraDefoam HP	mud defoamer
		x	x	Tannin Thinner	1	0.4	Desco CF	mud thinner/fitration control
		x	x	Starch	7	1.1	Dextrid/N-Dril HT	filtration control
		x	x	PHPA	2	0.0	EZ Mud DP	shale stabilization
		x		Blended LCM	50	0.3	Baroseal/Kwikseal	lost circulation material
	x			Mica Flakes	45	0.0	Micatex	lost circulation material
	x			Nut Hulls	as req.	0.7	WallNut	lost circulation material
		x	x	Sodium Bromide	2	0.0		mud filtrate tracer
	x		x	Vegetable Oil/Alcohol Blend	6	0.4	Torq-Trim II	mud lubricant
	x		x	Bentonite Extender	1	0.0	X-Tend II/Benex	viscosity enhancement
	x			Zinc Carbonate & Lime	as need	0.0	No Sulf/Coat 45	H_2S control
		x	x	Glutaraldehyde	0.2	0.2	Aldacide-G	biocide
		x	x	Cellulose Fibers	12	0.5	Barofibre/Liquid Casing	lost circulation material
	x		x	Acrylic Polymer	4	0.4	Therma-Thin	mud thinner
		x	x	Citric Acid	3	0.1	PH-6	cement contamination treatment

MAC – Maximum Allowable Concentrations
PC(avg)- Probable Average Concentrations

Mud Type Key

A. - Generic Mud #2 Additives
B. - Table #2 Additives
C. - Additional Materials
D. - Products Included in Mud Bioassay (Baroid Report BL-0618 in Appendix VII)

Table 9-2 Mud Plan Toxicity Estimation Program

I. Definition/Procedure

The inverse of the LC50 for each additive is added to the inverse of the LC50 of the base mud. The inverse of the sum of the inverses then represents the estimated LC50 of the combined mud formulation.

(1/LC50A + 1/LC50B + 1/LC50C + ... = 1/LC50TOT)

II. Toxicity Estimation

	Component LC50	(1/LC50)	System/Product Identification:
LC50A =	245700	4.1E-06	Lignosulfonate Mud (BS-0618)
LC50B =	160000	6.3E-06	EZ Spot NT Spotting Fluid
LC50TOT =	96899	1.032E-05	

III. Bioassay Details

System/Additive	Ligno. Mud	EZ Spot-NT/Mineral Oil
Laboratory	Baroid	Espey, Huston & Associates, Inc.
Project Number	BL-0618	3428
Date	Nov-93	May-83

(See bioassays in Appendix xx for details)

10.0 HYDROGEN SULFIDE INFORMATION AND PRECAUTIONARY MEASURES

30 CFR 250.203(b)(5)

Hydrogen sulfide was not encountered in the Sohio Reindeer Island well, the AMOCO No Name Island #1 well, or Gulf Oil Cross Island #1 wells. Based on these drilling histories PAI intends to request that the McCovey project area be classified as a "Zone where the presence of H2S is absent". PAI feels that there is no chance of encountering H_2S in the McCovey well(s) and will submit the request for classification of this area with the Application for Permit to Drill prior to the start of operations.

A Hydrogen Sulfide (H_2S) Contingency Plan for drilling and testing operations in the McCovey area will be prepared and submitted to MMS if required based on the results of the request for H_2S classification of the project area submitted with the application for permit to drill as required by 30 CFR 250.417(c)(2). This H_2S Plan will contain the information required by 30 CFR 250.417(f) and will be present in multiple copies on the drilling unit and rig personnel will be trained in the physical and chemical characteristics of the gas, safety procedures, and the use and maintenance of breathing equipment. H_2S drills will be conducted frequently. The land-based drill rig will be equipped with H_2S detectors, alarms, and personal protective equipment.

11.0 NEW AND UNUSUAL TECHNOLOGY

30 CFR 250.203(b)(6)

PAI does not plan to use any new or unusual technology on this well. All technology to be used on this project has been proven on past exploration wells, and/or is currently being used successfully in other PAI North Slope drilling operations. The use of an ice island is the continued use of a technology, which has been proven in the past. Details on the ice island design are contained in Section 3.0.

12.0 ONSHORE OPERATIONS SUPPORT AND FACILITIES

30 CFR 250.203(b)(7)& (8)

12.1 Project Management and Administration

The Phillips McCovey No. 1 drilling operations and any subsequent related activities will be directed from the PAI offices at 700 G Street, Anchorage, Alaska. Ice island and road construction equipment will be mobilized using ATV/rolligon support from West or East Dock at Prudhoe Bay. The support functions will utilize existing facilities at Deadhorse, Alaska such at PAI's 100 % Pad, or in Prudhoe Bay. No new facilities will be constructed.

12.2 ATV and/or Ice Road Support

A sea ice road will be constructed from existing gravel roads in Prudhoe Bay to a support camp located on or near Reindeer Island to the McCovey ice island location. Overland travel time from Deadhorse to the Phillips McCovey well site is expected to be four (4) hours by ATV or an hour by ice road. ATVs are currently based in Deadhorse, as are operators and support personnel. Potential ATV and/or ice road routes are shown in Figure 12-1. Final route locations will be dependent on ice conditions.

Fresh water will be used to construct the final cap on the ice road. Existing permitted lakes in the Prudhoe Bay Unit will be used for this purpose. PAI will work with BPX as operator of the Prudhoe Bay Unit for this water use activity. All water sources will be accessed using existing gravel roads.

12.3 Support Camp at West Dock or Reindeer Island

During construction of the ice road and ice island, a small support camp will be staged either at West Dock or on an ice pad at the Reindeer Island location. This camp will house 20-30 people. A larger camp (70-80 person) will be moved to the same location, either West Dock or Reindeer Island, when drilling commences. Rig crews will be transported to the rig camp after each shift. A small camp (10 person) for essential personnel will be located at the McCovey location.

12.4 Use of Prudhoe Bay and Deadhorse Facilities

PAI currently operated a warehouse and office facility in Deadhorse called the 100% Pad. This pad will be used to stage materials in support of the McCovey project. In addition to the 100% Pad, PAI will utilize a number of existing Prudhoe Bay facilities to support the project. While PAI is not an operator at Prudhoe Bay, as a Unit owner, the facilities are available for use. Ballot and alignment agreements are in place or being finalized, which will allow PAI to use the following Prudhoe Bay Unit facilities:

- West Dock
- Prudhoe Bay Topping Unit for Diesel
- Waste Disposal Facilities such as G&I and Pad 3
- Sewage Treatment Facility
- Potable Water
- Emergency Response (e.g., medical and fire)
- Oil Spill Response
- Housing/Billeting

12.5 Emergency Support

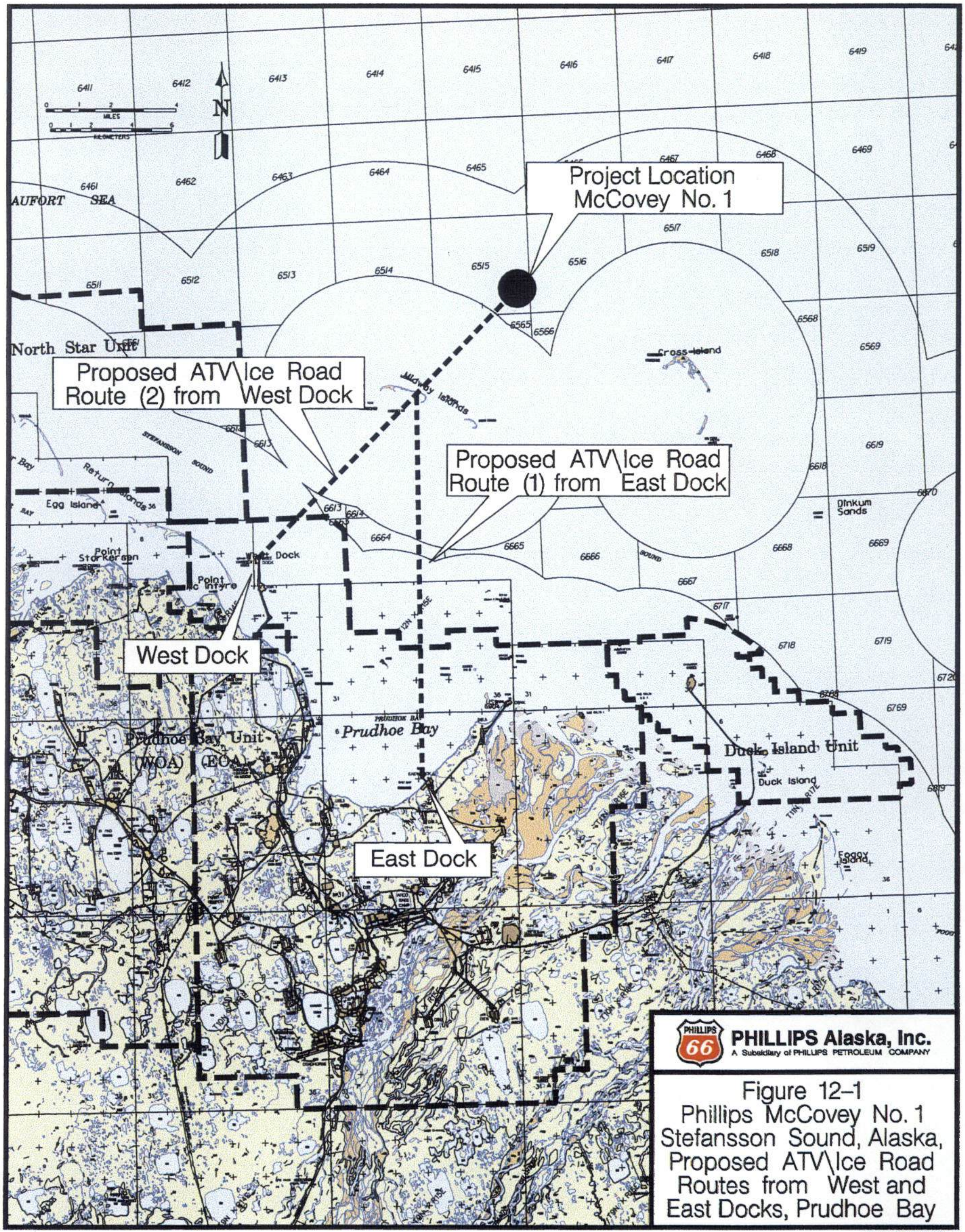
Necessary medical, fire, spill, and evacuation support infrastructure is located in Prudhoe Bay, Deadhorse, and Endicott. Any medivac situations on the rig could be made by ice road or air. PAI will employ an EMT III/Environmental Technician on site who will have Advanced Life Support capabilities. A spill van will be on location to provide ready access to equipment in the event of a spill. In the event of a massive spill beyond the rig crew's capability to control, the Emergency Response Network and Alaska Clean Seas will be activated and personnel and equipment from across the North Slope and all Alaska can be accessed if necessary.

PAI will generate an Emergency Action Plan for responding to emergency situations during the McCovey project.

12.6 Project Staffing

Labor requirements will vary during the Phillips McCovey No. 1 project. Estimated project staffing for operational phases of the program are shown below:

Project Activity	**Estimated Number of Personnel**
Ice Road/Island Construction	40-50
Rig Mobilization	65-70
Drilling	60-70
Evaluation	50-55
Testing	60-65
Demobilization	65-70



PHILLIPS Alaska, Inc.
A Subsidiary of PHILLIPS PETROLEUM COMPANY

Figure 12–1
Phillips McCovey No. 1
Stefansson Sound, Alaska,
Proposed ATV\Ice Road
Routes from West and
East Docks, Prudhoe Bay

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5-9-00

13.0 WASTE MANAGEMENT

30 CFR 250.203(b)(9)

PAI has developed a waste management plan for this exploratory drilling program to ensure compliance with applicable federal, state, and local regulations. The Alaska Waste and Reuse Guide produced by PAI and BPX (Appendix II) will also be used as a waste management tool for this project.

PAI has requested and received coverage under the EPA Arctic General NPDES Permit for Oil and Gas Exploration (No. 284200) for discharges that are authorized under that permit. As part of this request for general NPDES coverage, PAI will prepare a Best Management Practices Plan that describes methods to minimize discharges to the sea ice and any impacts related thereto, defines measures to be taken to ensure upset-free discharge operations, and establishes specific objectives for the control of pollutants.

13.1 Estimated Waste Quantities, Composition and Disposal Methods

Based on a single well scenario and recent experience with a land based rig in the National Petroleum Reserve-Alaska (NPR-A), Table 13-1 was developed with a list of potential waste streams, quantities and disposal options.

13.2 Waste Disposal and Treatment Summary

Drill cuttings and drilling fluids will be discharged to the sea ice surface under the terms of the general NPDES permit. Discharges of these materials are limited to 500 bbls per hour by the Arctic General Permit due to water depth considerations. As a contingency for mechanical problems, cuttings may be temporarily stored and later injected or discharged to the sea ice. Discharge of drilling fluids will be minimized by on-site reuse where possible. As an alternative to discharge, drilling fluids could be disposed of down an injection annulus when this becomes available on the well. Annular pumping will be requested in the Application for Permit to Drill in order to establish this injection annulus. Produced reservoir fluids will be transported to a North Slope production facility for recycling or reinjected downhole. Gas will be flared in accordance with the air permit.
Used oil will be recycled back to Prudhoe Bay or other North Slope production facilities at the end of the project for recycling. No hazardous wastes are expected to be generated as a result of this project. However, if any hazardous wastes are generated, they would be temporarily stored in Satellite Accumulation Areas (SAAs), then transported off-site for disposal in an approved facility.

Sewage from the camp on West Dock or Reindeer Island will be transported to on-shore treatment facilities at either Prudhoe Bay, Deadhorse or Kuparuk. Kitchen trash, and non-metallic trash from the rig quarters will be hauled to the North Slope Borough waste disposal facility.

All waste generated during the McCovey project will be segregated according to management strategy (e.g., disposal, recycle, or reuse). Minimal food waste will be generated out the at McCovey ice island location since the camp will be staged at either West Dock or Reindeer Island. This will be keep the waste from attracting polar bears to the operation.

TABLE 13-1 McCOVEY EXPLORATION DRILLING WASTE STREAMS

Wastestream *	RCRA Classification (If Discarded)	Estimated Volume Per Well	Minimization Opportunities	Recommended Disposal Option
Acid - unused	Hazardous Waste	**10 bbls**	Use on other job	Cannot discard- use on other job
Acid - returned from downhole	E&P Exempt	**200 bbls**	Use on other job if clean enough	Class II Disposal Well
Aerosol Cans (not empty)	Potentially Hazardous	**N/A**	Use contents entirely	SAA (designated for puncturing)
Aerosol Cans (empty)	Non-Hazardous	**22 cans**	Metal may be recyclable	Scrap metal dumpster
Ash- Incinerator	Potentially Hazardous	**300 lb**	Minimize burnable waste	Testing required for NSB Landfill
Batteries - alkaline	Non-Hazardous	**15 lb**	Use rechargeable batteries	Nonburnable dumpster
Batteries - lead-acid	Hazardous Waste	**2 batteries**	Recyclable- return to supplier	Return to supplier
Batteries - Ni-cad, mercury, lithium, silver-oxide	Universal Waste	**2 battery packs**	Send to off-site recycler	Hold in SAA
Boiler Blowdown Water	Non-Hazardous	**100 bbls**	Beneficial Reuse (example, rinse E&P Exempt material off equipment)	If not reused, send to Class I Disposal Well or reuse for EOR Class II-R well
Brine - unused	Non-Hazardous	**N/A**	Use on other job	If not reused, send to Class I Disposal Well or reuse for EOR Class II-R well
Brine - returned from downhole	E&P Exempt	**200 bbls**	Use on other job if clean enough	Send to Class II Disposal Well or reuse for EOR Class II-R well
Carbolite (Frac Sand) - unused	Non-Hazardous	**15K lbs**	Use on other job	NSB Landfill- subject to approval
Carbolite (Frac Sand) - returned from downhole	E&P Exempt	**20K lbs**	None	Class II Disposal Well
Cement - unused	Non-Hazardous	**1000 lbs**	Use on other job	Solids to NSB Landfill, Liquids to Class I or reuse in EOR Class II-R well
Cement - returned from downhole	E&P Exempt	**100 bbl**	None	Class II Disposal Well
Cement rinsate - from unused cement	Non-Hazardous	**20 bbl**	Beneficial Reuse (example, pre-flush well in prep for top job)	Class I Disposal Well or Annular Pumping
Chemicals - unused	Case by Case Determination	**N/A**	Return to Vendor	Dependent on Chemical
Completion Fluid - unused	Non-Hazardous	**N/A**	Use on other job	Class I Disposal Well
Completion Fluid - returned from downhole	E&P Exempt	**200 bbls**	None	Class II Disposal Well
Crude Oil	E&P Exempt	**10,000 bbls**	Recycle into a crude production stream	Recycle into a crude production stream
Cuttings	E&P Exempt	**600 cu yd**	None	Discharge per NPDES or Class II Disposal Well
Diesel - unused	Hazardous Waste	**2000 gallons**	Reuse or recycle in to crude production stream	Recycle only
Diesel - circulated downhole	E&P Exempt	**200 bbls**	Reuse or recycle in to crude production stream, freeze protection	Recycle or leave downhole
Drums/Barrels - not empty	Potentially Hazardous	**1 drum**	Use remaining fluids	Use completely, see below.
Drums/Barrels - RCRA empty	Non-Hazardous	**10 drums**	Return to vendor or metal recycling. Purchase in bulk containers.	Barrel Crushing Facility
Filters - glycol or motor oil	Non-Hazardous	**20 lb**	Reuse/recycle free liquids	NSB Landfill Oily Waste Dumpster
Frac Fluids - unused	Non-Hazardous	**200 bbls**	Use on other job	If not reused, send to Class I Disposal Well or reuse for EOR Class II-R well
Frac Fluids - returned from downhole	E&P Exempt	**500 bbls**	None	Class II Disposal Well
Garbage/Food Waste	Non-Hazardous	**200 lb**	No styrofoam used on location.	Incinerate on-site
Glycol - unused	Non-Hazardous	**N/A**	Reuse	If not reused, send to Class I Disposal Well or reuse for EOR Class II-R well
Glycol - from vehicles/equipment	Non-Hazardous	**30 bbls max**	Reuse	If not reused, send to Class I Disposal Well or reuse for EOR Class II-R well
Light bulbs - fluorescent	Potentially Hazardous	**10 lb**	None	Case by Case Determination

TABLE 13-1 McCOVEY EXPLORATION DRILLING WASTE STREAMS

Wastestream *	RCRA Classification (If Discarded)	Estimated Volume Per Well	Minimization Opportunities	Recommended Disposal Option
Light bulbs - screw-in type	Hazardous Waste	**10 lb**	None	Hold in SAA. Ship off-site to hazardous waste disposal facility.
Methanol - unused	Hazardous Waste	**None**	Reuse	Reuse only
Methanol - circulated downhole	E&P Exempt	**25 bbls**	Reuse	Class II Disposal Well
Mud - unused	Non-Hazardous	**N/A**	Reuse	Class I Disposal Well or Annular Pumping
Mud- returned from downhole	E&P Exempt	**13,375 bbl**	None	Discharge per NPDES or Class II Disposal Well
Oil/Grease from Kitchen	Non-Hazardous	**20 gal**	None	Incinerate on-site
Oil, Used	Potentially Hazardous	**8-10 drums**	Recycle into a crude production stream	Recycle into a crude production stream
Paint/Thinners	Hazardous Waste	**N/A**	Don't paint on location, don't wash brushes, use all paint cans until empty	Hold in SAA. Ship off-site to hazardous waste disposal facility.
Paper Products	Non-Hazardous	**200 lb**	Recycle white paper, copier/printer toner cartridges.	Incinerate on-site
Rig Wash	E&P Exempt	**300 bbls**	Reuse for mud make-up	Discharge per NPDES or Class II Disposal Well
Rinsate	Case by Case Determination	**1000 bbl**	Dedicate trucks to minimize rinsing needs.	Case by Case Determination
Sewage	Exempt	**4000 bbl**	Low flow shower nozzles, low flush toliets.	Discharge per NPDES at McCovey location or on-shore treatment facility
Snow	Case by Case Determination	**N/A**	Melt and reuse in mud system	Case by Case Determination
Solvent/Degreaser, citrus based	Potentially Hazardous	**N/A**	Use material completely. Minimize maintenance activities on location	Case by Case Determination
Solvent/Degreaser, Stoddard	Hazardous Waste	**N/A**	Do not use. Use citrus based.	Hold in SAA. Ship off-site to hazardous waste disposal facility.
Solvent/Degreaser, other (no chlorinated)	Case by Case Determination	**N/A**	Do not use. Use citrus based.	Case by Case Determination
Sorbents/Rags	Case by Case Determination	**200 lb**	Use rags until completely saturated.	Case by Case Determination
Wood	Non-Hazardous	**2000 lb**	Recycle when possible	NSB Landfill Burnable Dumpster
Not Listed in AK Waste Disposal and Reuse Guide				
Refuse- Metal	Non-Hazardous	**2000 lb**	Off-site metal recycler	NSB Landfill Metal Dumpster
Thread Protectors	Potentially Hazardous	**N/A**	Send to off-site reclaiming facility	Recycle Only

* If not on this list, refer to the AK Waste Disposal and Reuse Guide.

E&P = Exploration and Production
EOR = Enhanced Oil Recovery
NPDES = National Pollutant Discharge Elimination System
NSB = North Slope Borough
RCRA = Resource Conservation and Recovery Act
SAA = Satellite Accumulation Area (temporary storage of hazardous waste < 55 gallons)

14.0 ENVIRONMENTAL REPORT

30 CFR 250.203(b)(10) through (17)

The environmental report for the Phillips McCovey No. 1 project is included herewith as Appendix III to this Plan of Operations.

15.0 CERTIFICATION OF COASTAL ZONE CONSISTENCY

30 CFR 250.203(b)(18)

PAI has submitted the following Coastal Project Questionnaire (CPQ) and Certification Statement to the office of the Governor, Division of Governmental Coordination.

Coastal Project Questionnaire and Certification Statement

Please answer all questions. To avoid a delay in processing, **please call the department if you answer "yes" to any of the questions related to that department**. Maps and plan drawings must be included with your packet.
An incomplete packet will be returned.

■ APPLICANT INFORMATION

1. Phillips Alaska, Inc.
Name of Applicant
P.O. Box 100360
Address
Anchorage, AK 99510
City/State Zip Code
(907)265-1173
Daytime Phone
(907)265-6216
Fax Number E-mail Address

2. __________
Agent (or responsible party if other than applicant)
Address
City/State State Zip Code Zip Code
Daytime Phone
Fax Number E-mail Address

■ PROJECT INFORMATION

Yes No

1. This activity is a: ☒ new project ☐ modification or addition to an existing project
If a modification, do you currently have any State, federal or local approvals related to this activity? .... ☐ ☐
Note: Approval means any form of authorization. If "yes," please list below:

Approval Type	Approval #	Issuance Date	Expiration Date

2. If a modification, has this project ever been reviewed by the State of Alaska under the ACMP?........... ☐ ☒
Previous State I.D. Number: AK________ Previous Project Name:________

■ PROJECT DESCRIPTION

1. Provide a brief description of your entire project and ALL associated facilities and land use conversions. Attach additional sheet(s) as needed.
Complete one or more exploratory wells at the McCovey Prospect in the Beaufort Sea. An ice island will be constructed and a land based drilling rig will be used to drill from a top-hole location in the federal Outer Continiential Shelf (OCS) waters to a bottom-hole location in another OCS tract. The drill site is located about 60 miles northeast of Nuiqsut, AK and 7 miles northwest of Cross Island, AK. Drilling will be conducted from freeze-up until such time the target formation is reached and evaluated. Operations will be supported by ice road from either West Dock or East Dock. Depending on results, well testing may be conducted. Operations will be completed or shut down before mid-May 2001.
Proposed starting date for project: December 1, 2000 Proposed ending date for project: May 31, 2001

2. Attach the following: • a detailed description of the project, all associated facilities, and land use conversions, etc. (Be specific, including access roads, caretaker facilities, waste disposal sites, etc.); • a project timeline for completion of all major activities in the proposal; • a site plan depicting property boundary with all proposed actions; • other supporting documentation that would facilitate review of the project. Note: If the project is a modification, identify existing facilities as well as proposed changes on the site plan.

■ PROJECT LOCATION

1. Attach a copy of the topographical and vicinity map clearly indicating the location of the project. Please include a map title and scale.

2. The project is located in which region (see attached map): ☒ Northern ☐ Southcentral ☐ Southeast
☐ within or associated with the Trans-Alaska Pipeline corridor

3. Location of project (Include the name of the nearest land feature or body of water.) North Slope
Township 14N Range 15E Section 35 Meridian UM Latitude/Longitude 70° 31' 44" N/148° 10' 41"W USGS Quad Map ___

4. Is the project located in a coastal district? Yes ☒ No ☐ If yes, identify: North Slope Borough
(Coastal districts are a municipality or borough, home rule or first class city, second class with planning, or coastal resource service area.) Note: A coastal district is a participant in the State's consistency review process. It is possible for the State review to be adjusted to accommodate a local permitting public hearing. Early interaction with the district is important; ***please contact the district representative listed on the attached contact list.***

5. Identify the communities closest to your project location: Deadhorse, Nuiqsut

6. The project is on: ☐ State land or water* ☒ Federal ~~land~~ water-☐ Private land
☐ Municipal land ☐ Mental Health Trust land
**State land can be uplands, tidelands, or submerged lands to 3 miles offshore. See Question #1 in DNR section.*
Contact the applicable landowner(s) to obtain necessary authorizations.

■ DEPARTMENT OF ENVIRONMENTAL CONSERVATION (DEC) APPROVALS

	Yes	No
1. Will a discharge of wastewater from industrial or commercial operations occur?	☐	☒
Will the discharge be connected to an already approved sewer system?	☐	☒
Will the project include a stormwater collection/discharge system?	☐	☒
2. Do you intend to construct, install, modify, or use any part of a wastewater (sewage or greywater) disposal system?	☐	☒
a) If so, will the discharge be 500 gallons per day or greater?	☐	☒
b) If constructing a domestic wastewater treatment or disposal system, will the system be located within fill material requiring a COE permit?	☐	☒

If you answered yes to a) or b), answer the following:

1) What is the distance from the bottom of the system to the top of the subsurface water table?
2) How far is any part of the wastewater disposal system from the nearest surface water? The approved marine sanitation device is located above the surface of the sea level.
3) Is the surrounding area inundated with water at any time of the year? ☐ ☒
4) How big is the fill area to be used for the absorption system? NA

(Questions 1 & 2 will be used by DEC to determine whether separation distances are being met; Questions 3 & 4 relate to the required size of the fill if wetlands are involved.)

3. Do you expect to request a mixing zone for your proposed project? ☐ ☒
(If your wastewater discharge will exceed Alaska water quality standards, you may apply for a mixing zone. If so, please contact DEC to discuss information required under 18 AAC 70.032.)

Yes **No**

4. a) Will your project result in the construction, operation, or closure of a facility for the disposal of solid waste? ☐ ☒
(Note: Solid waste means drilling wastes, household garbage, refuse, sludge, construction or demolition wastes, industrial solid waste, asbestos, and other discarded, abandoned, or unwanted solid or semi-solid material, whether or not subject to decomposition, originating from any source. Disposal means placement of solid waste on land.)
b) Will your project result in the treatment of solid waste at the site? ☐ ☒
(Examples of treatment methods include, but are not limited to: incineration, open burning, baling, and composting.)
c) Will your project result in the storage or transfer of solid waste at the site? ☒ ☐
d) Will the project result in the storage of more than 50 tons of materials for reuse, recycling, or resource recovery? ☐ ☒
e) Will any sewage solids or biosolids be disposed of or land-applied to the site? ☐ ☒
(Sewage solids include wastes that have been removed from a wastewater treatment plant system, such as a septic tank, lagoon dredge, or wastewater treatment sludge that contain no free liquids. Biosolids are the solid, semi-solid, or liquid residues produced during the treatment of domestic septage in a treatment works which are land applied for beneficial use.)

5. Will your project require the application of oil, pesticides, and/or any other broadcast chemicals? ☐ ☒

6. a) Will you have a facility with industrial processes that are designed to process no less than *five tons per hour* and needs air pollution controls to comply with State emission standards? ☐ ☒
b) Will you have stationary or transportable fuel burning equipment, including flares, with a total fuel consumption capacity no less than 50 million Btu/hour? ☒ ☐
c) Will you have a facility with incinerators having a total charging capacity of no less than 1,000 pounds per hour? ☐ ☒
d) Will you have a facility with equipment or processes that are subject to Federal New Source Performance Standards or National Emission Standards for hazardous air pollutants? ☐ ☒
i) Will you propose exhaust stack injection? ☐ ☒
e) Will you have a facility with the potential to emit no less than 100 tons per year of any regulated air contaminant? ☐ ☒
f) Will you have a facility with the potential to emit no less than 10 tons per year of any hazardous air contaminant or 25 tons per year of all hazardous air contaminants? ☐ ☒
g) Will you construct or add stationary or transportable fuel burning equipment of no less than 10 million Btu/hour in the City of Unalaska or the City of St. Paul? ☐ ☒
h) Will you construct or modify in the Port of Anchorage a volatile liquid storage tank with a volume no less than 9,000 barrels, or a volatile liquid loading rack with a design throughput no less than 15 million gallons? ☐ ☒
i) Will you be requesting operational or physical limits designed to reduce emissions from an existing facility in an air quality nonattainment area to offset an emission increase from another new of modified facility? ☐ ☒

7. Will you be developing, constructing, installing, or altering a public water system? ☐ ☒

8. a) Will your project involve the operation of waterborne tank vessels or oil barges that carry crude or non-crude oil as bulk cargo, or the transfer of oil or other petroleum products to or from such a vessel or a pipeline system? ☒ ☐
b) Will your project require or include onshore or offshore oil facilities with an

effective aggregate storage capacity of greater than 5,000 barrels of crude oil
or greater than 10,000 barrels of non-crude oil? .... ☐ ☒

Yes **No**

c) Will you be operating facilities on the land or water for the exploration or production of hydrocarbons? .... ☒ ☐

If you answered "NO" to ALL questions in this section, continue to next section.
If you answered "YES" to ANY of these questions, contact the DEC office nearest you for information and application forms. Please be advised that all new DEC permits and approvals require a 30-day public notice period. DEC Pesticide permits take effect no sooner than 40 days after the permit is issued.

Based on your discussion with DEC, please complete the following:

Types of project approvals or permits needed	Date application submitted
Oil Discharge Prevention and Contingency Plan (MMS approval/ADEC review)	8/28/00
EPA OCS Air Permit	8/28/00

9. Does your project qualify for a general permit for wastewater or solid waste?(General NPDES) .... ☒ ☐
Note: A general permit is an approval issued by DEC for certain types of routine activities.

If you answered "YES" to any questions in this section and are not applying for DEC permits, indicate reason:
☐ ____________________ (DEC contact) told me on ______________ that no DEC approvals are required on this project because____________________
☐ Other: ____________________

DEPARTMENT OF FISH & GAME (DFG) APPROVALS

1. Will you be working in, removing water or material from, or placing anything in, a stream, river or lake? (This includes work or activities below the ordinary high water mark or on ice, in the active flood plain, on islands, in or on the face of the banks, or, for streams entering or flowing through tidelands, above the level of mean lower low tide.) *Note: If the proposed project is located within a special flood hazard area, a floodplain development permit may be required. Contact the affected city or borough planning department for additional information and a floodplain determination.)* .... ☐ ☒
Name of waterbody: ____________________

2. Will you do any of the following: .... ☐ ☒
Please indicate below:

- ☐ Build a dam, river training structure, other instream impoundment, or weir
- ☐ Use the water
- ☐ Pump water into or out of stream or lake (including dry channels)
- ☐ Divert or alter the natural stream channel
- ☐ Change the water flow or the stream channel
- ☐ Introduce silt, gravel, rock, petroleum products, debris, brush, trees, chemicals, or other organic/inorganic material, including waste of any type, into the water
- ☐ Alter, stabilize or restore the banks of a river, stream or lake (provide number of linear feet affected along the bank(s)
- ☐ Mine, dig in, or remove material, including woody debris, from the beds or banks of a waterbody
- ☐ Use explosives in or near a waterbody
- ☐ Build a bridge (including an ice bridge)
- ☐ Use the stream, lake or waterbody as a road (even when frozen), or cross the stream with tracked or wheeled vehicles, log-dragging or excavation equipment (backhoes, bulldozers, etc.)
- ☐ Install a culvert or other drainage structure
- ☐ Construct, place, excavate, dispose or remove any material below the ordinary high water of a waterbody
- ☐ Construct a storm water discharge or drain into the waterbody
- ☐ Place pilings or anchors
- ☐ Construct a dock
- ☐ Construct a utility line crossing
- ☐ Maintain or repair an existing structure

☐ Use an instream in-water structure not mentioned here

Yes No

3. Is your project located in a designated State Game Refuge, Critical Habitat Area or State Game Sanctuary? .... ☐ ☒

4. Does your project include the construction/operation of a salmon hatchery? .... ☐ ☒

5. Does your project affect, or is it related to, a previously permitted salmon hatchery? .... ☐ ☒

6. Does your project include the construction of an aquatic farm? .... ☐ ☒

If you answered "No" to ALL questions in this section, continue to next section.
If you answered "Yes" to ANY questions under 1-3, contact the Regional or Area DFG Habitat and Restoration
Division Office for information and application forms.
If you answered "Yes" to ANY questions under 4-6, contact the DFG Commercial Fisheries Division headquarters for information and application forms.

Based on your discussion with DFG, please complete the following:

Types of project approvals or permits needed	Date application submitted
______________________	______________
______________________	______________

If you answered "YES" to any questions in this section and are not applying for DFG permits, indicate reason:
☐ **______________ (DFG contact) told me on __________ that no DFG approvals are required on this project because______________________**
☐ **Other: ______________________**

■ DEPARTMENT OF NATURAL RESOURCES (DNR) APPROVALS

1. Is the proposed project on State-owned land or water or will you need to cross State-owned land for access? ("Access" includes temporary access for construction purposes. *Note: In addition to State-owned uplands, the State owns almost all land below the ordinary high water line of navigable streams, rivers and lakes, and below the mean high tide line seaward for three miles.)* .... ☒ ☐
   a) Is this project for a commercial activity? .... ☒ ☐

2. Is the project on Alaska Mental Health Trust land (AMHT) or will you need to cross AMHT land?
   Note: Alaska Mental Health Trust land is not considered State land for the purpose of ACMP reviews. .... ☐ ☒

3. Do you plan to dredge or otherwise excavate/remove materials on State-owned land? .... ☐ ☒
   Location of dredging site if different than the project site: ______________
   Township ________ Range ________ Section ________ Meridian ________ USGS Quad Map ____________

4. Do you plan to place fill or dredged material on State-owned land? .... ☐ ☒
   Location of fill disposal site if other than the project site: ______________
   Township ________ Range ________ Section ________ Meridian ________ USGS Quad Map ____________
   Source is on: ☐ State Land ☐ Federal Land ☐ Private Land ☐ Municipal Land

5. Do you plan to use any of the following State-owned resources: .... ☐ ☒
   ☐ ***Timber***: Will you be harvesting timber? Amount: ______________
   ☐ ***Materials such as rock, sand or gravel, peat, soil, overburden, etc.:*** ....
   Which material? ______________ Amount: ______________

Location of source: ☐ Project site ☐ Other, describe: ____________________

Township ________ Range ________ Section ________ Meridian ________ USGS Quad Map ____________

	Yes	No
6. Are you planning to divert, impound, withdraw, or use any fresh water, except from an existing public water system or roof rain catchment system (regardless of land ownership)?	☐	☒
Amount (maximum daily, not average, in gallons per day): ____________________		
Source: ____________________ Intended Use: ____________________		
If yes, will your project affect the availability of water to anyone holding water rights to that water?	☐	☒
7. Will you be building or altering a dam (regardless of land ownership)?	☐	☒
8. Do you plan to drill a geothermal well (regardless of land ownership)?	☐	☒
9. At any one site (regardless of land ownership), do you plan to do any of the following?	☐	☒

☐ Mine five or more acres over a year's time

☐ Mine 50,000 cubic yards or more of materials (rock, sand or gravel, soil, peat, overburden, etc.) over a year's time

☐ Have a cumulative unreclaimed mined area of five or more acres

If yes to any of the above, contact DNR about a reclamation plan.

	Yes	No
If you plan to mine less than the acreage/amount stated above and have a cumulative unreclaimed mined area of less than five acres, do you intend to file a voluntary reclamation plan for approval?	☐	☒
10. Will you be exploring for or extracting coal?	☐	☒
11. a) Will you be exploring for or producing oil and gas?	☒	☐
b) Will you be conducting surface use activities on an oil and gas lease or within an oil and gas unit?	☒	☐
12. Will you be investigating, removing, or impacting historical or archaeological or paleontological resources (anything over 50 years old) on State-owned land?	☐	☒
13. Is the proposed project located within a known geophysical hazard area?	☐	☒

Note: 6 AAC 80.900(9) defines geophysical hazard areas as "those areas which present a threat to life or property from geophysical or geological hazards, including flooding, tsunami run-up, storm surge run-up, landslides, snowslides, faults, ice hazards, erosion, and littoral beach process." "known geophysical hazard area" means any area identified in a report or map published by a federal, state, or local agency, or by a geological or engineering consulting firm, or generally known by local knowledge, as having known or potential hazards from geologic, seismic, or hydrologic processes.

	Yes	No
14. Is the proposed project located in a unit of the Alaska State Park System?	☐	☒

If you answered "No" to ALL questions in this section, continue to Federal Approvals section.
If you answered "Yes" to ANY questions in this section, contact DNR for information.

Based on your discussion with DNR, please complete the following:

Types of project approvals or permits needed	Date application submitted
Exploration Plan of Operations Approval	Pending

If you answered "YES" to any questions in this section and are not applying for DNR permits, indicate reason:

☐ ____________ **(DNR contact) told me on** ____________ **that no DNR approvals are required on this project because**____________________

☒ **Other:** Surface location and bottom hole are on federal leases.

FEDERAL APPROVALS

U.S. Army Corps of Engineers (COE)

	Yes	No
1. Will you be dredging or placing structures or fills in any of the following: tidal (ocean) waters? streams? lakes? wetlands*?	☒	☐
If yes, have you applied for a COE permit?	☒	☐

Date of submittal: Pending

(Note: Your application for this activity to the COE also serves as application for DEC Water Quality Certification.)

**If you are not certain whether your proposed project is in a wetlands (wetlands include muskegs), contact the COE, Regulatory Branch at (907) 753-2720 for a wetlands determination (outside the Anchorage area call toll free 1-800-478-2712).*

Bureau of Land Management (BLM)

	Yes	No
2. Is the proposed project located on BLM land, or will you need to cross BLM land for access?	☐	☒
If yes, have you applied for a BLM permit or approval?	☐	☒

Date of submittal:

U.S. Coast Guard (USCG)

	Yes	No
3. a) Will you be constructing a bridge or causeway over tidal (ocean) waters, or navigable rivers, streams or lakes?	☐	☒
b) Does your project involve building an access to an island?	☐	☒
c) Will you be siting, constructing, or operating a deepwater port?	☐	☒
If yes, have you applied for a USCG permit?	☐	☐

Date of submittal:

U.S. Environmental Protection Agency (EPA)

	Yes	No
4. a) Will the proposed project have a discharge to any waters?	☒	☐
b) Will you be disposing of sewage sludge (contact EPA at 206-553-1941)?	☐	☒
If you answered yes to a) or b), have you applied for an EPA National Pollution Discharge Elimination System (NPDES) permit?	☒	☐

Date of submittal: April 17, 2000 (permit received May 1, 2000).

(Note: For information regarding the need for an NPDES permit, contact EPA at (800) 424-4372.)

	Yes	No
c) Will construction of your project expose 5 or more acres of soil? *(This applies to the total amount of land disturbed, even if disturbance is distributed over more than one season, and also applies to areas that are part of a larger common plan of development or sale.)*	☐	☒
d) Is your project an industrial facility which will have stormwater discharge which is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant?	☐	☒

If you answered yes to c) or d), your project may require an NPDES Stormwater permit. Contact EPA at 206-553-8399.

Federal Aviation Administration (FAA)

	Yes	No
5. a) Is your project located within five miles of any public airport?	☐	☒
b) Will you have a waste discharge that is likely to decay within 5,000 feet of any public airport?	☐	☒

If yes, please contact the Airports Division of the FAA at (907) 271-5444.

Federal Energy Regulatory Commission (FERC)

6. a) Does the project include any of the following:

	Yes	No
1) a non-federal hydroelectric project on any navigable body of water	☐	☒
2) a location on federal land (including transmission lines)	☐	☒
3) utilization of surplus water from any federal government dam	☐	☒
b) Does the project include construction and operation, or abandonment of natural gas pipeline facilities under sections (b) and (c) of the Federal Power Act (FPA)?	☐	☒

Yes No

c) Does the project include construction for physical interconnection of electric transmission facilities under section 202 (b) of the FPA? .... ☐ ☒

If you answered yes to any questions under number 6, have you applied for a permit from FERC? .... ☐ ☒

Date of submittal: ________________

(Note: For information, contact FERC, Office of Hydropower Licensing (202) 219-2668; Office of Pipeline Regulation (202) 208-0700; Office of Electric Power Regulation (202) 208-1200.)

U.S. Forest Service (USFS)

7. a) Does the proposed project involve construction on USFS land? .... ☐ ☒

b) Does the proposed project involve the crossing of USFS land with a water line? .... ☐ ☒

If the answer to either question is yes, have you applied for a USFS permit or approval? .... ☐ ☐

Date of submittal: ________________

8. Have you applied for any other federal permits or authorizations? .... ☐ ☒

AGENCY	APPROVAL TYPE	DATE SUBMITTED
U.S. Environmental Protection Agency	Air Quality (Part 55)	8/28/00
U.S. Minerals Management Service	Exploration Plan	8/28/00
U.S. Minerals Management Service	Oil Spill Contingency Plan	8/28/00
U.S. Minerals Management Service	Geological & Geophysical	Pending
U.S. Minerals Management Service	Permit to Drill	Pending
U. S. Fish & Wildlife	Polar Bear Incid. "Take"	Pending
U.S. National Marine Fisheries Service	Marine Mammal Incid. "Take"	8/1/00

Please be advised that the CPQ identifies permits subject to a consistency review. You may need additional permits from other agencies or the affected city and/or borough government to proceed with your activity.

Certification Statement

The information contained herein is true and complete to the best of my knowledge. I certify that the proposed activity complies with, and will be conducted in a manner consistent with, the Alaska Coastal Management Program.

Signature of Applicant or Agent

8/28/00
Date

Note: Federal agencies conducting an activity that will affect the coastal zone are required to submit a federal consistency determination, per 15 CFR 930, Subpart C, rather than this certification statement. DGC has developed a guide to assist federal agencies with this requirement. Contact DGC to obtain a copy.

This certification statement will not be complete until all required State and federal authorization requests have been submitted to the appropriate agencies.

- **To complete your packet, please attach your State permit applications and copies of your federal permit applications to this questionnaire.**

16.0 EPA PART 55 AIR PERMIT

30 CFR 250.203(b)(19)

On August 15, 2000 PAI submitted a "Notice of Intent to Operate an Outer Continental Shelf Source for Oil Exploration Drilling, Beaufort Sea, Alaska", to the U.S. Environmental Protection Agency (EPA). This notice advised the EPA that PAI intends to submit an application for a Part 55 OCS permit for the Beaufort Sea for the McCovey activity. The Notice of Intent is consistent with an agreement reached with the EPA on April 13, 2000 at a meeting in Seattle, Washington, concerning the approach toward permitting the emissions from McCovey Project drilling operations. The formal application, including emission inventories and modeling data was submitted to the EPA on August 28, 2000 and is included in Appendix VI.

In addition, emissions associated with the equipment to construct the ice road and ice island is listed in Table 16.1.

Table 16-1. Construction Equipment for McCovey Project Emission Summary

Facility	Estimated Emission (tons)				
	NO_x	CO	PM	VOC	SO_2
Ice Island	88.7	24.8	5.1	4.36	7.2
Support Camp	21.2	6.2	1.6	1.87	1.6
West Dock Ice Road	15.9	6.2	1.3	1.55	1.4
Total	125.9	37.1	8.1	7.8	10.2

This summary is based on the emissions inventory listed in Table 16-2. Estimates are based primarily on AP-42 emission factors.

Table 16-2. Construction Equipment for McCovey Project Inventory

MCCOVEY ICE ISLAND

- (4) 800 hp diesel spray pumps
- (1) 500 hp diesel spray pump
- (4) 280 hp diesel RD-85 CATCO units
- (2) 225 KW generators
- (2) 40 KW warm up shacks
- (5) diesel pickups
- (4) 10KW light plants
- (2) 125 hp diesel LATV drill units
- (1) Incinolet electric toilet
- (1) 185 hp diesel 14G Blade
- (2) 235 hp diesel 966 loader
- (1) 370 hp diesel 966 Snowblower
- (2) 170 hp D-6 dozers

SUPPORT CAMP

- (2) 225 KW generators
- (1) 110 KW generator
- (2) Diesel pickups
- (2) 10 KW light plants
- (3) Incinolets electric toilets
- (1) 235 hp diesel 966 loader
- (1) 280 hp diesel RD-85 CATCO unit

ICE ROAD

- (7) 125 hp diesel LATV drill units
- (3) diesel pickups
- (4) 10KW light plants
- (1) 185 hp diesel 14G Blade
- (2) 235 hp diesel 966 loader
- (1) 370 hp diesel 966 Snowblower
- (1) 170 hp D-6 dozers
- (4) PEAK 225 BBL Water trucks

17.0 PAI CONTACT NUMBERS

30 CFR 250.203(b)(20)

As required in 30 CFR 150.203(b)(20), the following PAI contact numbers are provided for use by the MMS:

Environmental Permitting Questions
Lisa L. Pekich
Senior Environmental Coordinator
(907)265-1173
(907)265-6216 (fax)

Drilling Operations Questions
Paul Mazzolini
Exploration Drilling Team Leader
(907)263-4603
(fax)265-6224
(cell)244-5685

PHILLIPS ALASKA, INC.

Exploration Plan
McCovey #1 Well

Beaufort Sea, Alaska

APPENDIX I
OIL DISCHARGE PREVENTION AND CONTINGENCY PLAN

September 19, 2000

PHILLIPS ALASKA, INC.

OIL DISCHARGE PREVENTION AND CONTINGENCY PLAN

MCCOVEY EXPLORATION WELL
NORTH SLOPE, ALASKA

August 2000

MANAGEMENT APPROVAL AND MANPOWER AUTHORIZATION

OIL DISCHARGE PREVENTION AND CONTINGENCY PLAN
McCOVEY EXPLORATION WELL
NORTH SLOPE, ALASKA

This Oil Discharge Prevention and Contingency Plan has been prepared for exploration activities in the McCovey Exploration Area conducted by Phillips Alaska, Inc.

This plan is approved for implementation as herein described. Manpower, equipment, and materials will be provided as required in accordance with this plan.

Michael A. Richter 8/25/00

Mike Richter
Exploration Vice President
Phillips Alaska, Inc.

Date

RECORD OF REVISIONS

REVISION NUMBER	REVISION DATE	DATE ENTERED	SIGNATURE OF PERSON ENTERING CHANGES

OIL DISCHARGE PREVENTION AND CONTINGENCY PLAN
MCCOVEY EXPLORATION WELL, NORTH SLOPE, ALASKA

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LIST OF ACRONYMS AND DEFINITIONS

AAC	Alaska Administrative Code
ABS	American Bureau of Shipping
ACS	Alaska Clean Seas
ADEC	Alaska Department of Environmental Conservation
ADNR	Alaska Department of Natural Resources
AOGCC	Alaska Oil and Gas Conservation Commission
API	American Petroleum Institute
ASTM	American Society for Testing and Materials
ATV	all-terrain vehicles
BAT	best available technology
bbl	barrel
BMP	Best Management Practices
BOP	blowout preventer
bopd	barrels of oil per day
BPXA	BP Exploration (Alaska) Inc.
CFR	Code of Federal Regulations
CIDS	Concrete Island Drilling System
CMT	Crisis Management Team
DOT	Department of Transportation
EOA	Eastern Operating Area (Prudhoe Bay Unit)
EPA	Environmental Protection Agency
FEC	Field Environmental Compliance
FOSC	Federal On-Scene Coordinator
gpm	gallons per minute
GPMA	Greater Point McIntyre Area
H_2S	hydrogen sulfide
HAZWOPER	Hazardous Waste Operations and Emergency Response
HDPE	High-density polyethylene
ICS	Incident command system
IMS	Incident Management System
IMT	Incident Management Team
ISB	In-situ burning
KRU	Kuparuk River Unit
LOSC	Local On-Scene Coordinator
MAD	Mutual Aid Drill
MMS	Minerals Management Service
MODU	mobile offshore drilling unit
NSSRPT	North Slope Spill Response Project Team
PREP	Preparedness for Response Exercise Program
ODPCP	Oil Discharge Prevention and Contingency Plan
OPA 90	Oil Pollution Act of 1990
OSRO	Oil Spill Removal Organization
PAI	Phillips Alaska Inc.
PEL	permissible exposure level
PLC	programmable logic controller
PPE	personal protective equipment
QI	Qualified Individual
psig	pounds per square inch gauge
PVC	polyvinyl chloride
RPS	response planning standard
RRT	Regional Response Team
SOSC	State On-Scene Coordinator
SPCC	Spill, Prevention, Control, and Countermeasures
SRT	Spill Response Team

SSD	Shared Services Drilling
TF	Task Force
TVD	total vertical depth
UHF	ultra high frequency
UOP	Unified Operating Procedure
USCG	U.S. Coast Guard
VHF	very high frequency
WCD	worst case discharge

OIL POLLUTION ACT OF 1990 ADDENDUM

U.S. Department of Interior, Minerals Management Service

MCCOVEY EXPLORATION WELL

OIL DISCHARGE PREVENTION AND CONTINGENCY PLAN

U.S. DEPARTMENT OF INTERIOR, MINERALS MANAGEMENT SERVICE

MCCOVEY EXPLORATION WELL
OIL DISCHARGE PREVENTION AND CONTINGENCY PLAN

CROSS REFERENCE TO
U.S. MINERALS MANAGEMENT SERVICE RESPONSE PLAN REQUIREMENTS
[30 CFR 254, Subpart B)]

REGULATION SECTION (30 CFR)	SECTION TITLE	PLAN SECTION
254.22	**Introduction and Plan Contents**	
(a)	Identification of facility, Including Location and Type	Sections 1.8 and 3.1
(b)	Table of Contents	Table of Contents
(c)	Record of Changes	Page ii
(d)	Cross-Reference Table	This section
254.23	**Emergency Response Action Plan**	
(a)	Designation of Trained Qualified Individual (with full authority to implement removal actions and notify federal officials and response personnel)	Section 1.1
(b)	Designation of Trained Spill Management Team Available 24 Hours (including organizational structure and responsibilities and authorities of team members)	Section 3.3, Table 3-1
(c)	Description of Spill Response Operating Team, Including Numbers and Types of Personnel (trained and available on 24-hr basis)	Section 3.3
(d)	Locations and Primary and Secondary Communications for Spill Response Operations Center (including phone numbers and radios)	Section 1.4
(e)	List of Types of Oil Handled, Stored, or Transported	Section 2-3, Table 2-1
(f)	Procedures for Early Detection of a Spill	Section 2.5
(g)	Procedures for Spill or Substantial Threat of a Spill for Differing Spill Sizes	Section 1.6
(g)(1)	Notification Procedures (including reporting form from Area Plan)	Section 1.2; Tables 1-1 and 1-2
(g)(1)(i)	Contact Information for Qualified Individual, Spill Response Coordinator and Alternates, and Other Spill Response Management Team Members	Sections 1.1 and 3.3
(g)(1)(ii)	Names and Addresses for Oil Spill Response Organizations (OSROs) and Regulatory Agencies to be Notified and Contacted for Environmental Information	Sections 1.2 and 3.8, Tables 1-1, 1-3A and 1-3B
(g)(2)	Methods to Monitor and Predict Spill Movement	Sections 1.6.14 and 3.10.1
(g)(3)	Methods to Identify and Prioritize Sensitive Areas	Sections 1.6.5, 1.6.14, 3.10
(g)(4)	Methods to Protect Sensitive Areas	Sections 1.6.5, 1.6.14, 3.10

MCCOVEY EXPLORATION WELL
OIL DISCHARGE PREVENTION AND CONTINGENCY PLAN

CROSS REFERENCE TO
U.S. MINERALS MANAGEMENT SERVICE RESPONSE PLAN REQUIREMENTS
[30 CFR 254, Subpart B)]

REGULATION SECTION (30 CFR)	SECTION TITLE	PLAN SECTION
254.23 (Cont'd)	**Emergency Response Action Plan (Cont'd)**	
(g)(5)	Methods to Mobilize and Deploy Equipment and Personnel	Sections 1.5 and 1.6.14
(g)(6)	Methods for Storage of Recovered Oil (to allow containment and recovery to continue without interruption)	Sections 1.6.10 and 1.6.14
(g)(7)	Procedures to Remove Oil and Oiled Debris from Shallow Areas and Along Shorelines and to Rehabilitate Oiled Waterfowl	Sections 1.6.11, 1.6.12, 1.6.14
(g)(8)	Storage, Transfer, and Disposal Procedures	Sections 1.5, 1.6.10, 1.6.14
(g)(9)	Methods to Implement Dispersant Use Plan and In Situ Burning Plan	Section 1.7
254.24	**Equipment Inventory Appendix**	
(a)	Inventory of Spill Response Materials and Supplies, Services, Equipment, and Response Vessels Available Locally and Regionally (identify supplier, location, and phone number)	Section 3.6
(b)	Procedures for Inspecting and Maintaining Spill Response Equipment (inspected monthly; records of inspections and maintenance kept for at least 2 years)	Section 3.6.2
254.25	**Contractual Agreements Appendix (copies of contracts or membership agreements or certification that they are in effect; must ensure 24-hr availability)**	Section 3.8
254.26	**Worst-Case Discharge Scenario Appendix**	
(a)	Volume and Assumptions/Calculations	Sections 1.6.13 and 1.6.14
(b)	Trajectory Analysis (including maximum extent of oil travel)	Sections 1.6.4, 1.6.14
(c)	List of Sensitive Areas That Could be Affected (from Area Contingency Plan) and Strategies for Protecting Them	Sections 1.6.6, 1.6.14, 3.10
(d)	Response to Worst-Case Scenario in Adverse Weather Conditions	Section 1.6.14
(d)(1)	Response Equipment Used for a 30-day Blowout (types, locations, owners, quantity, capabilities, and daily recovery capacities using 20% derate)	Section 1.6.14
(d)(2)	Personnel, Materials, and Support Vessels (Locations, Owners, Quantities, and Types)	Section 1.6.14

MCCOVEY EXPLORATION WELL
OIL DISCHARGE PREVENTION AND CONTINGENCY PLAN

CROSS REFERENCE TO
U.S. MINERALS MANAGEMENT SERVICE RESPONSE PLAN REQUIREMENTS
[30 CFR 254, Subpart B)]

REGULATION SECTION (30 CFR)	SECTION TITLE	PLAN SECTION
254.26 (Cont'd)	**Worst-Case Discharge Scenario Appendix (Cont'd)**	
(d)(3)	Description of Oil Storage, Transfer, and Disposal Equipment (Location, Owners, Quantities, and Capacities)	Section 1.6.14
(d)(4)	Estimate of Response Times	Section 1.6.14
(d)(4)(i)	Procurement of Identified Containment, Recovery, and Storage Equipment	Section 1.6.14
(d)(4)(ii)	Procurement of Equipment Transportation Vessels	Section 1.6.14
(d)(4)(iii)	Procurement of Personnel to Load and Operate the Equipment	Section 1.6.14
(d)(4)(iv)	Equipment Loadout	Section 1.6.14
(d)(4)(v)	Travel to Deployment Site	Section 1.6.14
(d)(4)(vi)	Equipment Deployment	Section 1.6.14
(e)	Equipment, Materials, Support Vessels, and Strategies Must be Suitable to Range of Environmental Conditions. Discussion in (d) Must Use Standardized Defined Terms in ASTM F625-94 and F818-93	Sections 1.5, 1.6.14, 3.4, and 3.6
254.27	**Dispersant Use Plan Appendix**	Not Applicable
(a)	Inventory and Location of Dispersants and Other Spill Response Chemicals	Not Applicable
(b)	Summary of Toxicity Data	Not Applicable
(c)	Application Equipment and Time to Deploy	Not Applicable
(d)	Application Procedures	Not Applicable
(e)	Conditions Under Which Product Use May be Requested	Not Applicable
(f)	Outline of Procedures for Obtaining Approval	Not Applicable
254.28	**In Situ Burning Plan Appendix**	Section 1.7
(a)	Description of Equipment, Including Availability, Location, and Owner	Section 1.7.4
(b)	In Situ Burning Procedures, Including Ignition	Section 1.7
(c)	Environmental Effects of Burn	Section 1.7
(d)	Guidelines for Well Control and Personnel Safety	Sections 1.6.3, 1.7
(e)	Circumstances When Burning is Appropriate	Sections 1.7.2
(g)	Outline of Procedures for Obtaining Approval	Sections 1.7

MCCOVEY EXPLORATION WELL
OIL DISCHARGE PREVENTION AND CONTINGENCY PLAN

CROSS REFERENCE TO
U.S. MINERALS MANAGEMENT SERVICE RESPONSE PLAN REQUIREMENTS
[30 CFR 254, Subpart B)]

REGULATION SECTION (30 CFR)	SECTION TITLE	PLAN SECTION
254.29	**Training and Drills Appendix**	
(a)	Training: Describe Dates and Types of Training Given to Response Team Personnel; Location of Certificates: • Annual hands-on training of spill response operating team • annual training for spill response management team, including locations, intended use, deployment strategies, and operation and logistics of response equipment; spill reporting; trajectory analysis; responsibilities • qualified individual sufficiently trained • keep training certificates and attendance records at least 2 years	Section 3.9
(b)	Exercise Plans for Annual Spill Management Team Tabletop, Annual Deployment of Equipment Staged Onshore, Annual Notification Exercise, Semiannual Deployment for Equipment at Vessel (entire plan must be exercised once every 3 years). National Preparedness for Response Exercise Program [NPREP] can be used	Section 3.9

Worst-Case Discharge

MMS regulations [30 CFR 254.47(b)] require a worst case discharge (WCD) volume and scenario that addresses a response for a 30-day blowout. As required under these regulations, the WCD for an exploratory operation is the daily volume from an uncontrolled blowout. For McCovey, the WCD is 5,500 barrel (bbl). Section 1.6.14 contains the response scenario for an uncontrolled blowout. As noted in the Qualifying Statement to the scenarios, MMS has accepted the 15-day blowout scenario as meeting MMS regulations. Phillips Alaska, Inc. has the capability to continue response and cleanup activities for an indefinite length of time.

U.S. DEPARTMENT OF INTERIOR, MINERALS MANAGEMENT SERVICE

ACP/NCP CONSISTENCY CERTIFICATION FOR MCCOVEY EXPLORATION

Phillips Alaska, Inc. hereby certifies to the U.S. Department of Interior, Minerals Management Service that it has reviewed the National Contingency Plan (NCP) and applicable Area Contingency Plans (ACPs) and found the McCovey Exploration Well Oil Discharge Prevention and Contingency Plan to be consistent with them. The NCP/ACPs reviewed include the NCP as set forth in the 40 CFR Part 300 as published in FR Bol. 59, No. 178, Final Rule, September 15, 1994 and the Alaska Federal/State Unified Preparedness Plan ACP (The Unified Plan), Volume I, dated May, 1994 and Volume II (North Slope Borough), dated December 1999.

Mike Richter

Mike Richter
PAI Exploration Vice President

9-21-00
Date

INTRODUCTION

This Oil Discharge Prevention and Contingency Plan (ODPCP) is for Phillips Alaska, Inc.'s (PAI) McCovey Exploration Well activities. These exploration activities will be supported by the Kuparuk Field, located on the North Slope, Alaska. PAI's address, phone, and fax numbers are provided below:

Mailing Address:
P.O. Box 100360
Anchorage, AK 99510-0360

Street Address:
700 G Street
Anchorage, AK 99510-0360

Phone: (907) 276-1215

Fax: (907) 265-6235

OBJECTIVES

The objective of this ODPCP is to prevent and/or limit the spread of a spill, thereby minimizing potential environmental impacts, and to provide for the safety of personnel. Where the two may conflict, safety of personnel will always be given the first consideration. This ODPCP will also provide PAI with the background information and response planning guidelines necessary to implement an effective spill response. The following types of facilities and operations are covered by this plan:

- Drilling Activities
- Well Testing Operations
- Storage Operations
- Transfer Operations

The plan follows the format of oil discharge prevention and contingency plan regulations of the Alaska Department of Environmental Conservation (ADEC) [18 Alaska Administrative Code (AAC) 75.425]; however, because the facility is located in federal waters, it is regulated by the U.S. Minerals Management Service (MMS). A cross-reference table is provided for the MMS regulations, based on the Oil Pollution Act of 1990 (OPA 90).

OPA 90 Section, pages MMS-1 through MMS-4

A spill response operation on the North Slope falls into one of three categories:

- **Level I:** Small operational spills dealt with by on-scene personnel and equipment.
- **Level II:** Larger spills which could affect the area around the facility or operation and that require equipment and/or trained personnel located in the other operating areas of the North Slope.
- **Level III:** A major spill requiring resources from off the North Slope.

Both Level II and III spills may result in the activation of the Incident Management Team (IMT) and/or the Crisis Management Team (CMT). As necessary, the responsible party will use the resources of other North Slope operators through Alaska Clean Seas (ACS), Mutual Aid, spill response cooperatives, and contractors. The response organization structure described in this plan is based on the Incident Command System (ICS) and will accommodate each level of response.

ACS TECHNICAL MANUAL

PAI is a member of ACS, which serves as the primary response action contractor for operators on the North Slope. This ODPCP incorporates by reference, wherever applicable, the ACS *Technical Manual*, which consists of Volume 1, *Tactics Description*; Volume 2, *Map Atlas*; and Volume 3, *Incident Management System*. Volume 1 describes the tactics that can be used in responding to a variety of spill situations. Volume 2 provides maps and a narrative description of resources at risk and key response considerations. Volume 3 details the incident management system that will be used to respond to a spill.

PLAN CONTENTS ORGANIZATION

Following is a summary of the principal contents of this ODPCP:

- **Management Approval and Manpower Authorization**. Providing approval and authorizing resources as required to implement this plan.
- **OPA 90 Section.** Addressing the federal spill planning regulations of MMS [30 Code of Federal Regulations (CFR) 254], as applicable.
- **Part 1 - Response Action Plan**. The response action plan provides information to guide the Spill Response Team (SRT), IMT, and CMT in a response to an incident. Information includes reporting and notification procedures, basic safety procedures, a communications plan, deployment and response strategies, and initial response procedures. Company personnel are familiar with the contents of this plan and other manuals necessary to carry out a successful response.
- **Part 2 - Prevention Plan**. The prevention plan provides a detailed description of policies, best management practices, and prevention measures employed at the facility. Information is included on identified risks, historical spills, and measures being taken to minimize potential impacts.
- **Part 3 - Supplemental Information**. The supplemental information provides an overview of the facility operations, environmental information, and supporting response information.

This plan relies heavily upon information that is provided in the ACS *Technical Manual*. This information is not repeated in this plan. On each page of this plan, the right-hand column contains references to specific tactics descriptions, maps, and IMT information contained in the ACS *Technical Manual*. In addition, the right-hand column references tables and figures contained in this plan. This format minimizes duplication of information.

PLAN DISTRIBUTION

The plan is distributed to PAI management and staff as appropriate. The plan is maintained by the PAI Exploration Permitting Group.

UPDATING PROCEDURES

The plan is reviewed and updated when major changes occur. Below is a list of key factors, which may cause revisions to the plan:

- New exploration activities
- Changes to response planning standards
- Change in oil spill response organizations
- Change in Qualified Individual
- Changes in a National Contingency Plan or Area Contingency Plan that have a significant impact on the appropriateness of response equipment or response strategies
- Change in response procedures
- Change in ownership

Modifications to the plan may also be made after spill response drills or incidents have been fully evaluated. In addition, all plan recipients are encouraged to provide comments on the plan which could lead to updates or modifications to the plan.

Any significant amendment to the plan is submitted to the appropriate agency for review prior to implementation. MMS regulations require that revisions be submitted for approval within 15 days whenever significant changes are made.

Revisions to the plan are logged on a Record of Revisions - Master Plan form. On receipt of revisions, the plan recipient replaces pages as instructed and records the changes on the Record of Revisions form provided in the front of the document. This process indicates the completeness of the plan, as revisions are consecutively numbered. It is the responsibility of each plan recipient to ensure that updates are promptly incorporated into the plan.

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1. RESPONSE ACTION PLAN
[18 AAC 75.425(e)(1)]

1.1 EMERGENCY ACTION CHECKLIST [18 AAC 75.425(e)(1)(A)]

Contact Information

Table 1-1 provides a checklist of the immediate response and notification actions to be taken for a spill at the McCovey Exploration site. The Qualified Individuals for McCovey are listed below:

Table 1-1

Overall Responsibility, Exploration Operations:
Mike Richter
Position: Exploration Vice President
Telephone: (907) 263-4587

McCovey Qualified Individual:
Paul Mazzolini
Position: Exploration Drilling Team Leader
Telephone: (907) 263-4603 or (907) 244-5685

McCovey Alternate Qualified Individual:
M. Lemon
Position: Drilling Manager
Telephone: (907) 263-4585

Note: The responsibilities of the Incident Commander are the same as the Qualified Individual under OPA 90 requirements.

Any person who causes or observes a spill will immediately report the spill to his/her supervisor. If your supervisor is not available, notify the PAI Onsite Company Representative. The PAI Onsite Company Representative will then notify the Exploration Field Environmental Compliance (FEC) personnel.

TABLE 1-1
SPILL NOTIFICATION PROCESS

LEVEL I SPILL	
PERSONNEL	**ACTION TO BE TAKEN**
FIRST PERSON TO SEE THE SPILL	Assess safety of situation, determine whether source can be stopped, and stop the source of spill if possible. Immediately notify your supervisor. If your supervisor is not available, notify the Rig Company Man.
SUPERVISOR	From a safe distance, determine that the spill is stopped and contained. Call Rig Company Man.
RIG COMPANY MAN	Contact Kuparuk FEC. Complete a spill report form and turn in to FEC.
FIELD ENVIRONMENTAL COMPLIANCE	Activate SRT members and additional equipment, as needed. Notify the appropriate agencies according to the nature and circumstances of the spill.

If the PAI Onsite Company Representative or FEC determines that the spill is a Level II or III event, the following additional notifications should take place.

TABLE 1-1 (CONT)
SPILL NOTIFICATION PROCESS

LEVEL II OR LEVEL III SPILL	
KUPARUK RIVER UNIT (KRU) EMERGENCY SERVICES CHIEF	Activate the IMT and Mutual Aid.
IMT LIAISON OFFICER	Establish and maintain contact with the On-Scene Coordinator, the Regional Response Team (RRT) (if activated), and other governmental agencies as necessary.

A summary of the emergency actions described in this manual is available to field personnel on a wallet-sized checklist containing immediate response instructions.

Table 1-2

TABLE 1-2
IMMEDIATE ACTION CHECKLIST

Initial Spill Response Actions

1. Protect people: Safety is first priority.
2. Notify your supervisor.
3. Contain spill/protect environment.
4. Stop the spill source.
5. Recover the spilled product.
6. For a blowout, implement well control and evacuation procedures and activate Level III ICS.

What to Report to your Supervisor

1. Was anyone hurt?
2. Where is the spill?
3. What time did it happen?
4. What was spilled?
5. How much was spilled?
6. What is the source?
7. What are the weather conditions?
8. What actions have you taken?
9. What equipment do you need?
10. Are there any immediate environmental impacts?

Contacts

PAI Kuparuk	**Phone**
Security	(907) 659-7300
Fire Department (HAZMAT)	(907) 659-7494
Field Manager	(907) 659-7253
Field Environmental Compliance	(907) 659-7242
Wells Control Director	(907) 263-4348
Drilling Field Supervisor	(907) 659-7726
Drilling Team Leader	(907) 263-4603
Alaska Clean Seas	
Alaska Clean Seas	(907) 659-3249
ACS Operations Manager	(907) 659-3202
ACS Spill Techs	(907) 448-4956
Mutual Aid	
Eastern Operating Area (EOA) Security	(907) 659-5300
EOA Prudhoe	(907) 659-5646
BP Exploration (BPXA)-Endicott	(907) 659-6501
BPXA-Western Operating Area/Prudhoe	(907) 659-4178
BPXA-Milne Point	(907) 659-6325
Alyeska Pipeline Service Company Pump Station 1	(907) 659-2637
Other Support	
Anchorage CMT/IMT	(907) 265-1000
Facility Systems (Maps, Facility and Pipeline Diagrams)	(907) 659-5327
Lounsbury & Associates (Surveys, Maps)	(907) 659-7313
Prudhoe Bay Weather	(907) 659-5888
Mayor of Nuiqsut	(907) 480-6727
North Slope Borough	(907) 852-0440

1.2 REPORTING AND NOTIFICATION [18 AAC 75.425(e)(1)(B)]

A PAI and PAI Contractor Spill Report form must be completed for reportable spills.

Figure 1-1

1.2.1 External Notification Procedures

The Kuparuk FEC is responsible for notifying the appropriate regulatory agencies. Appropriate agency verbal notifications and written reports may include:

Tables 1-3A, 1-3B

- National Response Center
- MMS
- ADEC
- U.S. Coast Guard (USCG)
- Alaska Oil and Gas Conservation Commission (AOGCC)
- Alaska Department of Natural Resources (ADNR)
- North Slope Borough (NSB)

1.2.2 Written Reporting Requirements

Depending on the type and amount of material spilled, individual government agencies have written reporting requirements, which must be adhered to by PAI.

Tables 1-3A, 1-3B

MMS requires immediate notification of all spills into marine waters regulated by the agency. A written report for any spill greater than 1 bbl must be reported within 15 days after the spillage has been stopped.

Regulation 18 AAC 75.300 requires notification to ADEC of any spill on State lands or waterways. After notification of the discharge has been made to ADEC, the department will, at its discretion, require interim reports until cleanup has been completed (18 AAC 75.307). A written final report must be submitted within 15 days of the end of cleanup operations, or if no cleanup is conducted, within 15 days of the discharge (18 AAC 75.307).

ACS Tactic A-2

FIGURE 1-1
PAI AND PAI CONTRACTOR SPILL REPORT

☐ KUPARUK ☐ BELUGA ☐ ALPINE ☐ OTHER

PERSON REPORTING	**PHONE**
RESPONSIBLE PARTY (COMPANY NAME)	**DEPARTMENT NAME**
DATE / TIME OCCURRED	**DATE / TIME REPORTED**
FACILITY NAME / LOCATION	**PRODUCT (If a mixture, describe %)**

QUANTITY SPILLED	**SURFACE TYPE (GRAVEL, TUNDRA, WATER)**	**SURFACE AREA (SQ FT)**

WAS SPILL:

Off Pad? YES ____ VOLUME _______

Into a Building? YES ____ VOLUME _______

Into Lined Secondary Containment? YES ____ VOLUME _______

TYPE OF ERROR:

- ☐ Corrosion
- ☐ Equip/Mechanical Failure
- ☐ Maintenance Neglect
- ☐ Operator/Procedural Error
- ☐ Process Failure
- ☐ Weather Conditions
- ☐ Unknown

SOURCE OF SPILL

- ☐ Coiled Tubing Unit/Wireline Equip
- ☐ Compressor Vents/Module Vents
- ☐ Drums/Containers/Dumpsters
- ☐ Fittings/Seals/Connections
- ☐ Heavy Equip/Mobile Equip/Vehicles
- ☐ Pipe/Flowlines/Hardlines
- ☐ Flanges
- ☐ Flares
- ☐ Pumps
- ☐ Sumps
- ☐ Tanks
- ☐ Transfer Hoses

ACTIVITY DURING SPILL

- ☐ Construction/Projects
- ☐ Drillsite Maintenance
- ☐ Fluid Transfer/Transport
- ☐ Production/Facility Maint Ops
- ☐ Road Pad Maint
- ☐ Drilling
- ☐ Hydrotesting
- ☐ Road Travel
- ☐ Wireline Work
- ☐ Other/Unknown

CAUSE OF SPILL

PREVENTIVE ACTION

RESPONSE and CLEAN UP ACTIONS

DISPOSAL FACILITY / METHODS	**QUANTITY CONTAINED / RECOVERED / DISPOSED**

DATE OF FINAL CLEANUP		**DATE OF FINAL DISPOSAL**	

INTERNAL NOTIFICATION

TITLE	DATE	TIME	PERSON CONTACTED, LEFT RECORDING, ETC.
SECURITY			
AREA SUPERVISOR			
OTHER			

Signature of Responsible Party		**DATE**	

***** TO BE COMPLETED BY THIRD PARTIES ONLY *****

Company Rep.		**Contractor Rep.**	

EXTERNAL NOTIFICATION

AGENCY CONTACTED	DATE / TIME OF VERBAL REPORT	DATE WRITTEN REPORT SUBMITTED

Fax completed report to FEC: (907) 659-7212

TABLE 1-3A
AGENCY NOTIFICATION REQUIREMENTS FOR OIL SPILLS

AGENCY	SPILL SIZE	VERBAL REPORT	PHONE NUMBER	ALASKA CONTACT	WRITTEN REPORT
National Response Center Notifies all appropriate federal agencies	See specific federal agency below for guidance on reportable spill size	Immediately	(800) 424-8802 (24 hr)	24 hour line	Not required as form is completed during phone notification process.
U.S. Environmental Protection Agency (EPA)	Any size to navigable waters of the U.S. (includes tundra) or to land that may threaten navigable waters	Immediately	(907) 271-4306, (M-F, 8 to 5) (206) 553-1263 (907) 271-3424 (FAX)	Carl Lautenberger Seattle office, 24-hour EPA fax number	For facility requiring Spill Prevention, Control, and Countermeasures Plan if spill is 1000 gallons or more or if it is second spill in 12 months.
U.S. Coast Guard	Any size in or threatening navigable waters	Immediately	(907) 271-6700 (24 hr) (907) 271-6751 (FAX)	Marine Safety Office USCG fax number	Not required but requested.
U.S. Department of Transportation (DOT)	Any size from a regulated pipeline	Immediately	(800) 424-8802	24 hour line	Required within 30 days on DOT Form 7000-I (see form for details).
U.S. Department of Interior, U.S. Fish & Wildlife Service	Any size that poses a threat to fish and wildlife	Immediately	(907) 271-2797	---	---
U.S. Department of the Interior, Minerals Management Service	All spills into marine waters	Immediately	(907) 271-6065 (24-hour) (907) 271-6504 (FAX)	Jeff Walker	Copies of any reports submitted to ADEC as soon as possible.
Pipeline Corridor Office (SPLO/DOT) - Anchorage, AK	Any size from a regulated pipeline	Immediately	(907) 271-4373	---	---
Alaska Department of Environmental Conservation, Northern Alaska Response Team	**WATER** - Any Spill	Immediately	(907) 451-2121 (907) 451-2362 (FAX) and (800) 478-9300 (M-F after 5, Sat, Sun)	Ed Meggert ADEC fax number or Alaska State Troopers	Interim reports until cleanup complete, as required by ADEC. If no written report is required by ADEC, a written report is required within 15 days of end of cleanup or if no cleanup, within 15 days after discharge.
	LAND				
	>55 gallons including cumulative discharge (outside impermeable area)	Immediately			
	>10 gallons but <55 gallons	48 hours			
	>55 gallons (inside impermeable area)				
	1 to 10 gallons (including cumulative discharge)	none			Monthly report
Alaska Department of Natural Resources	>55 gallons	Immediately	(907) 451-2678 (907) 451-2751 (FAX) and (907) 269-8815	Spill Report Number ADNR fax number and Kristina O'Connor	Monthly written record of any discharge, including a cumulative discharge, of oil solely to land for spills between 1 and 10 gallons.
	10 to 55 gallons	48 hours			
	1-10 gallons	None			
Alaska Oil and Gas Conservation Commission	All spills from wells or involving any crude loss	Immediately	(907) 279-1433 (24 hr) 276-7542 (FAX) and (907) 659-3607 659-2717 (FAX)	Dan Seamount	Within 5 days of loss
North Slope Borough	All spills	>55 gallons as soon as possible (no verbals <55 gallons)	(907) 852-0390 (Barrow) (907) 852-0327 (FAX)	Oma Gilbreth, Occupational Safety & Environmental Affairs	Copy of any reports submitted as requested.

TABLE 1-3B
AGENCY NOTIFICATION REQUIREMENTS FOR HAZARDOUS MATERIALS

AGENCY	SPILL SIZE	VERBAL REPORT	PHONE NUMBER	ALASKA CONTACT	WRITTEN REPORT
National Response Center Notifies all appropriate federal agencies	See specific federal agency below for guidance on reportable spill size	Immediately	(800) 424-8802 (24-hr)	---	---
U.S. Environmental Protection Agency	All hazardous substance releases that equal or exceed the reportable quantity (or release at RCRA facility) PCB Spill	Immediately 24 Hours	(907) 271-4306, M-F, 8 to 5 (206) 553-1263 (907) 271-3424 (FAX) (M-F, 8 to 5)	Carl Lautenberger Seattle office, 24-hour EPA fax number	Within 15 days to DOT for transportation-related release (DOT Form 5800.1) Within 15 days to EPA for release at RCRA facility.
U.S. Coast Guard	Any size in or threatening navigable waters	Immediately	(907) 271-6700 (24 hr) (907) 271-6751 (FAX)	Marine Safety Office USCG fax number	Not required but requested.
U.S. Department of Transportation	Any size from a regulated pipeline	Immediately	(800) 424-8802	24 hour line	Required within 30 days on DOT Form 7000-I (see form for details).
U.S. Department of the Interior, Minerals Management Service	All spills into marine waters	Immediately	(907) 271-6065 (907) 271-6504 (fax)	Jeff Walker	Copies of any reports submitted to ADEC as soon as possible.
Alaska Department of Environmental Conservation, Northern Alaska Response Team	All hazardous substance releases	Immediately	(907) 451-2121 (907) 451-2362 (FAX) (800) 478-9300 (M-F after 5, Sat, Sun)	Ed Meggert ADEC fax number or Alaska State Troopers	Within 15 days of end of cleanup
Alaska Department of Natural Resources	All spills	Immediately	(907) 451-2678 (907) 451-2751 (FAX) and (907) 269-8815	Spill Report Number ADNR fax number And Kristina O'Connor	---
North Slope Borough	All spills	>55 gallons as soon as possible (no verbals for <55 gallons)	(907) 852-0390 (Barrow) (907) 852-0327 (FAX)	Oma Gilbreth, Occupational Safety & Environmental Affairs	Copy of any reports submitted as requested.

Note:

1. The National Response Center (800-424-8802) must be called even if the release is reported to the local number. Alternate phone number for the National Response Center is (202) 267-2911.

Interim and final written reporting requirements are specified in 18 AAC 75.307. The report must contain the following information:

- Date and time of discharge
- Location of discharge
- Name of facility or vessel
- Name, mailing address, and telephone number of person or persons causing or responsible for the discharge and the owner and the operator of the facility or vessel
- Type and amount of each hazardous substance discharged
- Cause of the discharge
- Description of any environmental damage caused by the discharge or containment to the extent the damage can be identified
- Description of cleanup actions taken
- Estimated amount of hazardous substance cleaned up and hazardous waste generated
- Date, location, and method of ultimate disposal of the hazardous substance cleaned up
- Description of actions being taken to prevent recurrence of the discharge
- Other information the department requires to fully assess the cause and impact of the discharge

1.3 SAFETY [18 AAC 75.425(e)(1)(C)]

ACS
Tactics S-1
through S-6

The principal sources of information concerning safety procedures and practices to be followed in the event of a spill are:

- The ACS *Technical Manual*, which includes site entry procedures, site safety plan development, and personnel protection procedures.
- The *Alaska Safety Handbook* distributed to all North Slope employees and contractors.

As outlined in the North Slope Subarea Plan, the Local On-Scene Coordinator (LOSC) will be involved in any spill that poses an immediate threat to public safety. The North Slope Borough Emergency Services Director or designee will typically integrate into the command structure through a LOSC liaison representing all affected communities.

1.4 COMMUNICATIONS [18 AAC 75.425(e)(1)(D)]

PAI's communications plans are designed for compatibility with the communications equipment available through PAI's North Slope operations, ACS, and the rig used for the drilling operations.

In an emergency, ACS will provide the repeater, coast station, antennas, handheld radios, and backboarded mobiles to allow for effective spill response, when necessary. With repeaters installed across the North Slope, coverage is provided from the eastern National Petroleum Reserve-Alaska (NPR-A) to Badami. The range of each fixed repeater is approximately 30 to 50 miles, depending on topography. Repeaters provided by ACS are diesel generator-powered and portable enough to be airlifted to the spill location. During periods of suitable daylight hours, solar-powered portable repeaters can also be deployed at the time of a spill.

ACS Tactic L-5

A detailed explanation of oil spill communications on the North Slope is provided in the ACS *Technical Manual.*

1.4.1 McCovey Exploration Area

PAI will supply a C-band satellite system to provide network and telephone service. A VHF repeater is located at the Lisburne Production Center to provide communications throughout the EOA/Greater Point McIntyre Area (GPMA) and Kuparuk operating areas. This repeater is tied into the ACS wide-area VHF radio network as Channel OS39, but it is also the primary means of communicating for PAI spills or spill exercises that do not include ACS or other mutual aid responders. Fixed facilities, mobile equipment, and individual members of PAI's SRT are all equipped to access this VHF system.

Radio frequencies will be assigned to McCovey upon mobilization.

1.4.2 Unified Command

ACS *Technical Manual,* Vol. 3

When an incident occurs, the North Slope Operators view it as a single problem, requiring a single, highly focused response effort. Constructing such an effort can be difficult when multiple organizations exist with the authority to launch simultaneous, potentially divergent response operations. The Unified Command concept is designed to address this problem.

The North Slope Operators view Unified Command as a structure that is created at the time of an incident to bring together the "Incident Commanders" of each major organization involved in response operations. In Alaska, the members of Unified Command are usually the Federal On-Scene Coordinator (FOSC), the State On-Scene Coordinator (SOSC), the LOSC, and the responsible party's Incident Commander.

The primary responsibilities of the Unified Commanders are to:

- Establish objectives and priorities.
- Review and approve tactical plans developed to address objectives and priorities.
- Ensure the full integration of response resources.
- Resolve conflicts.

These responsibilities are typically exercised through the conduct of periodic, highly focused Unified Command meetings with attendance typically restricted to the members of Unified Command.

The role of the agency representatives on the Unified Command is to fulfill their legal responsibilities (i.e., to direct and/or monitor response operations), while allowing the Responsible Party to manage emergency response operations.

When an incident occurs, the Unified Command structure is established and superimposed at the top of the IMT. In this position, the Unified Commanders are ideally situated to carry out the responsibilities cited above. They should provide overall direction by establishing

Strategic Objectives and response priorities that must be addressed by the IMT through the planning process. Moreover, they should review and approve the products of the planning process (i.e., Incident Action Plans) developed by the IMT to address the objectives and priorities.

Their position at the top of the IMT also facilitates the appropriate integration of response resources. For the agency representatives, it allows them to determine the appropriate role(s) for agency personnel and to position them optimally within the IMT structure. For the Responsible Party, it ensures that members of the IMT have access to valuable expertise without diluting their ability to manage response operations.

1.5 DEPLOYMENT STRATEGIES [18 AAC 75.425(e)(1)(E)]

1.5.1 Transport Procedures [18 AAC 75.425(e)(1)(E)(i)]

Table 1-4
ACS Tactic
L-3, L-4

PAI daily operations provide an infrastructure for a spill response. For instance, the extensive transportation infrastructure for personnel and equipment can support a small response and can be enhanced for a major spill. Transportation options, depending of the location, season, and weather, include vehicles, Rolligons/heavy all-terrain vehicles (ATVs), helicopters, fixed-wing planes, air-cushion vehicles, and airboats.

TABLE 1-4
SEASONAL TRANSPORTATION OPTIONS

MODES OF TRANSPORTATION	SEASONS		
	SUMMER	WINTER	BREAK-UP/FREEZE-UP
Helicopters	X	X	X
Fixed-Wing Aircraft	--	X	--
Heavy all-terrain vehicles	--	X	--
Air-Cushion Vehicle	X	X	X

The estimated response time from discovery of a spill at the McCovey location to the deployment of equipment varies depending on the incident causing the spill, the size of the spill, time of year, logistical support, and available information.

ACS Tactic
L-3

Listed below are the estimated response times. These estimates do not include the time involved for a health and safety characterization or release of the site.

- There will be immediate response to a spill at McCovey with the pre-staged response equipment.
- The estimated response time driving in a Rolligon/heavy ATV from the EOA/GPMA base camp is approximately 1.6 hours and the mobilization time would be 6 hours from notice to respond (ACS Tactic R-23).
- The estimated response time driving in a Rolligon/heavy ATV from Deadhorse is approximately 2 hours and the mobilization time would be 6 hours from notice to respond.

- Flight time in a helicopter from Deadhorse is approximately 20 minutes on a good day and the mobilization time would be 1 hour from the notice to fly.
- Flight time in a helicopter from EOA/GPMA base camp is approximately 10 minutes on a good day and the mobilization time would be 1 hour from the notice to fly.

Section 1.6.14

All of the above response times are general estimates based on ideal conditions. Actual response and mobilization times will vary depending on a variety of factors, such as weather, personnel safety, wildlife considerations, and terrain. During adverse weather conditions that prohibit the transport of equipment, personnel, and other resources to the spill site, spill response activities will be conducted solely by on-site personnel and equipment.

ACS Tactic L-3

The ACS *Technical Manual* provides information on travel times on the North Slope for a variety of transportation equipment. The scenarios in Section 1.6.14 illustrate deployment strategies for spill response equipment.

Prestaged Equipment

Table 3-3

Equipment that will be prestaged at the exploration site is identified in Section 3.6.

Air Access

Helicopters could land on the ice near the ice pad, if air access is needed. Air operations can be limited by weather conditions, as discussed in Section 3.4. In general, air access is best suited for movement of personnel and for emergency movement of supplies or equipment.

Marine Access

Figure 1-4

An ice road will be constructed from either West Dock or East Dock to the exploration site. The ice road will allow site access by all vehicles.

In addition, Rolligons/heavy ATVs can travel across the ice to the site from mid-December to mid-May.

1.5.2 Notification and Mobilization of Response Action Contractor [18 AAC 75.425(e)(1)(E)(ii)]

Table 1-1
Section 3.8

Section 1.1 of this ODPCP describes immediate response and notification actions, which include notification of ACS (Section 3.8). While ACS is mobilizing personnel and equipment to the spill site, PAI personnel will determine safety procedures, notify government agencies and PAI personnel, and proceed with source control measures. In addition, if safe to do so, on-site response personnel will deploy on-site spill containment equipment.

1.6 RESPONSE STRATEGIES [18 AAC 75.425(E)(1)(F)]

Section 1.6.14

The following subsections provide information on the strategies used for responding to incidents at the McCovey location. This information supports the discussions in Section 1.6.14, Spill Response Scenarios. Where warranted, a narrative discussion has been provided; otherwise the reader is directed to the relevant portion of the scenarios.

1.6.1 Procedures to Stop Discharge [18 AAC 75.425(e)(1)(F)(i)]

Procedures to stop the discharge are discussed in the response scenarios in Section 1.6.14.

1.6.2 Fire Prevention and Control [18 AAC 75.425(e)(1)(F)(ii)]

In the event of a spill, all sources of ignition will be eliminated, if safe to do so. In addition, during a spill response, accidental ignition will be prevented by using explosion-proof equipment and non-sparking tools where necessary.

1.6.3 Blowout Control/Relief Well Plan [18 AAC 75.425(e)(1)(F)(iii)]

If well control is lost, resulting in an uncontrolled flow of fluids at the surface, detailed planning will begin to regain control. A thorough evaluation of the situation will be necessary to determine the best course of action. Three primary considerations in developing a well control plan based on specific well conditions are:

- Additional surface control measures
- Ignition of the blowout
- Drilling a relief well

Surface Control

Section 2.1.6

Section 2.1.6 outlines preventive and recovery measures to minimize hydrocarbon spill potential, which are applied to drilling operations. All well control discussions in Section 2.1.6 are aimed at preventing spills (i.e., blowouts where hydrocarbons spill to the surface) from occurring during drilling operations. In the unlikely event that well control is lost while drilling a well, every effort would be made to provide control at the surface. Historically, regaining control at the surface is faster than drilling a relief well and has a high success rate. An uncontrolled flow at the surface presents a safety hazard. Safety procedures are employed to protect personnel, the environment and property.

Loss of surface control maximizes the pressure drop across the formations. Under these conditions, reservoir formations flow to equalize pressure, and the resulting bridging results in decreased flow at the surface. While surface control can be regained through natural bridging, additional mechanical methods are employed as soon as the well can be safely accessed. The exact surface control methods used depend on the type of situation. Potential mechanical surface control methods include:

- Establishing primary control by pumping kill-weight fluids (mud, cement, brine)
- Establishing secondary control by replacing, repairing or adding mechanical containment equipment

Each of these methods may require removal of equipment around the rig, or the rig itself, to minimize damage, ensure personnel and environmental safety, and gain access to the wellhead. Once safe access is established, uncontrolled fluids at the surface would be diverted into a collection area.

Following the Iraq-Kuwait war, the techniques and experience for handling blowouts with surface control have improved. Operators have established relationships with well-control specialist companies to assist in the intervention and resolution of any well-control emergency. These companies would be notified immediately in the event of any well-control situation that has the potential for escalation.

Blowout Well Ignition

Ignition of a blowout will be a decision made by PAI management in conjunction with regulatory agencies. The decision to ignite a blowout will be made only after assessing the probability of implementing successful surface control, reviewing potential safety hazards, addressing pertinent environmental considerations, and obtaining necessary agency approvals. One potential justification for the ignition of a blowout would be a gas blowout where the hydrocarbon had a toxic component such as hydrogen sulfide (H_2S). In such instances, the blowout may be ignited to control the toxic gases while preparations are being made to kill the well. Once well kill preparations were in place, the fire would be put out and the kill operations would commence. Direct telephone and/or radio communication will be maintained with the Source Control Unit Leader if any burning activities are conducted.

Relief Well

The lead time involved in relocating a rig to a surface location and drilling a relief well necessitates early planning. Due to long lead times associated with drilling a relief well, the relief well plan may be initiated concurrently with the implementation of surface control methods. If surface control measures fail, PAI relief well plans are fully implemented as provided in the *PAI Arctic Well Control Contingency Plan.* PAI decisions are made by management in accordance with procedures contained in the relief well plan.

The amount of time required to execute a relief well depends on the success of surface control techniques and well conditions, including any natural bridging that may occur.

Relief Well Surface Locations

The optimum surface location for a relief well depends on several factors including the depth and direction of the wellbore, personnel safety, and weather conditions. The surface location would be selected so the relief well could be drilled in the most efficient manner. Other surface location considerations include hole angle, minimizing drilling time, and directional control.

The ice pad itself offers the primary location providing that it is safe to work there. If the drilling rig is still usable, then with certain replacement equipment (e.g., well-control equipment), it may be possible to drill a relief well with this unit. Otherwise, an alternative rig would have to be deployed.

If the ice pad was deemed an unsuitable location for a rig, then a rig could be placed on a new ice pad as close as possible above the bottomhole location of the blowout well.

A relief well could potentially be drilled from Reindeer Island, although the distance makes this option less likely.

Relief Well Drilling Rig and Equipment

Relief-well rig-mobilization plans begin within minutes of a confirmed well-control situation. The primary relief well option is mobilization of another rig that is in use nearby. This can be accomplished by immediately suspending drilling operations on a nearby rig and moving the rig to the relief well site.

Operators' and contractors' management commitment of manpower and equipment to combat spills, as attested in the Spill Prevention Control and Countermeasures plans, is testimony that everything within reason will be done to expedite the movement of a rig to a relief well site. In accordance with standard oil industry practice, other operators would commit the necessary rigs and resources to combat a well control incident if an PAI-operated rig is unavailable. Operator cooperation and sharing of resources have often been used on the North Slope when rigs, equipment, and other services are in short supply. Although some equipment is specified in the plan, this equipment may be replaced by functionally similar equipment, as necessary.

All the equipment necessary for drilling the relief well is in drilling stock, either on the North Slope or in Fairbanks. Truckable rigs can be mobilized, as can North Slope modular-wheeled rigs.

Relief Well Timing

The drilling of the well would begin as soon as the rig-up was complete. The planned range of time for completing a relief well is as follows:

Construction or modification of an ice pad	1 to 3 days
Mobilization of equipment, rig up, and preparation to spud	5 to 10 days
Drilling of relief well	20 to 60 days
Killing of well	10 days
TOTAL	36 to 83 days

A range of time is given for controlling a blowout by drilling a relief well due to a number of unpredictable circumstances that may occur, including weather, cause of blowout, choice of surface location, and depth of well.

Permits

In the event of a well blowout, a series of federal, state, and local permits would be required to support the response effort. Permits would be needed to authorize construction of gravel or ice island and/or onshore support facilities (e.g., ice or gravel staging pads, temporary storage areas, temporary water uses).

Federal approval would be required in the form of a Section 404/10 permit from the U.S. Army Corps of Engineers for placement of gravel (fill) in waters of the United States (nearshore coastal waters). The Corps has issued Nationwide Permit #20, which authorizes placement of fill needed for cleanup of spilled oil. A request for this authorization would require approval from the RRT. This request would typically be approved very rapidly assuming the RRT is in agreement with the overall cleanup strategy for this specific spill event.

In addition to this federal permit, it is likely that State of Alaska and North Slope Borough permits will also be required. As part of overall North Slope oil spill preparedness, ACS holds a series of permits authorizing a variety of cleanup-related activities, including excavation and placement of fill.

1.6.4 Discharge Tracking [18 AAC 75.425(e)(1)(F)(iv)]

Discharge tracking is discussed in the response scenarios in Section 1.6.14

Section 1.6.14

1.6.5 Protection of Sensitive Areas [18 AAC 75.425(e)(1)(F)(v)]

ACS Tactic W-6

The entire open water, nearshore, and offshore marine areas of Stefansson Sound including the Midway Islands, Cross Island, No Name Island and portions of the Return Islands are subject to oiling from potential unrecovered spills from the McCovey exploration area. Sensitive land and water surfaces are afforded major protection from spilled oil by snow and ice cover. See Section 3.2 for discussion of the local environment.

Should a spill occur at the McCovey exploration area, initial strategies for protection and cleanup of these areas will be determined based on the data contained in the ACS *Technical Manual, Volume II*, Map Atlas.

As a spill progresses, priorities may change based on seasonal variations and assessments conducted at the time of the spill.

1.6.6 Containment and Control Strategies [18 AAC 75.425(e)(1)(F)(vi)]

ACS Tactics C-1, C-4, C-10, C-11, C-12

Containment and control strategies are discussed in the ACS *Technical Manual.*

1.6.7 Recovery Strategies [18 AAC 75.425(e)(1)(F)(vii)]

ACS Tactics R-1 through R-7, R-13

Recovery strategies are discussed in the ACS *Technical Manual.*

1.6.8 Lightering, Transfer, and Storage of Oil from Tanks [18 AAC 75.425(e)(1)(F)(viii)]

ACS Tactics R-22 through R-24, R-27, R-28

Lightering, transfer and storage of oil from tanks are discussed in the ACS *Technical Manual.*

1.6.9 Transfer and Storage Strategies [18 AAC 75.425(e)(1)(F)(ix)]

ACS Tactics R-1, R-2, R-3, R-5, and R-27

Transfer and storage strategies are discussed in the ACS *Technical Manual* (Volume 1).

1.6.10 Temporary Storage and Disposal [18 AAC 75.425(e)(1)(F)(x)]

Temporary storage of oil, oily waste, and debris recovered during a spill cleanup may be provided by tanks, pits, or basins located at facilities near the site. The spill location or other logistical problems may require storage of oil, oily waste, and debris in smaller, more portable containers that can be brought to the scene via Rolligon/heavy ATVs, trucks, or aircraft.

Other temporary storage options during a spill response include construction of lined snow containment berms, and portable storage (bladder tanks, inflatable tanks, open-top drums, vacuum trucks, dump trucks, etc.).

Disposal options for spill-related wastes include recycling of recovered fluids at Flow Station 1, disposal of oily gravel at Pad 3, and disposal of oily wastes at the North Slope Borough's incinerator.

ACS Tactics D-1 through D-5

The method of disposal for oil and contaminated materials from spill recovery operations (or for oily waste from normal operations) must be approved by the appropriate state and federal agencies. At the time of the spill, the Operations Chief, in consultation with the Environmental Unit Leader, determines the reuse, recycling, or disposal method best suited to the state of the oil, the degree of contamination of recovered debris, and the logistics involved in these operations. Application for agency approvals are completed before the determined method of disposal is implemented. An initial determination must be made regarding the classification of the waste as exempt, hazardous, or non-hazardous. This classification can be made on a case-by-case basis. The Environmental Unit Leader provides assistance in determining the classification if the status of the waste material is in question. In general, the following guidelines apply:

- Spilled material that comes out of a well, either during drilling or workover operations, is exempt. Spilled material that did not come out of a well may not be exempt and might have to be tested to determine if the material to be disposed of is hazardous.
- Spills that occur from filling a tank (e.g., vehicle, storage, etc.) are non-exempt, even though they may occur on a well pad; they must be tested to determine if the material to be disposed of is hazardous.

If materials need to be transported off the North Slope, truck, barge, and/or air transportation will be arranged.

Incident-specific information is provided in Section 1.6.14.

1.6.11 Wildlife Protection [18 AAC 75.425(e)(1)(F)(xi)]

Wildlife protection strategies are discussed in the ACS *Technical Manual* (Volume 1).

ACS Tactics W-1 through W-6

1.6.12 Shoreline Cleanup [18 AAC 75.425(e)(1)(F)(xii)]

Not applicable, this is a winter exploration well.

ACS Tactics SH-1 through SH-12

1.6.13 Response Planning Standards [18 AAC 75.425(E)(1)]

ACS Tactic T-6

The response planning standard (RPS) used for a well blowout response scenario in this plan is based on the very limited actual well test data from wells drilled in a comparable reservoir formation. The highest well test data from the Badami field and from the Alaska St. #1 exploration well had flow rates of approximately 4,500 barrels of oil per day (bopd) and 2,500 bopd, respectively, in overpressured reservoir conditions. The McCovey well is on the same geologic trend as these wells, but is not expected to be overpressured. Therefore, the RPS used for the well blowout response scenario is the State default rate of 5,500 barrels of oil per day (bopd) for an exploration well (18 AAC 75.434). For a blowout lasting for 15 days, the RPS volume is 82,500 bbl.

It should be noted that response resources, through ACS and it's mutual aid partners, are available to respond to a larger blowout. For example, the Pt. McIntyre Drill Site #2 blowout scenario in the Oil Discharge Prevention and Contingency Plan for the Eastern Operating Area of the Prudhoe Bay Unit and the Greater Pt. McIntyre Area documents the frozen ice response capability for a RPS of 12,000 bopd. Similarly, the frozen ice blowout scenario for the Northstar development documents a response capability for a RPS of approximately 15,000 bopd.

The receiving environment is an ice pad surrounded by frozen seawater. Oil travels from the well in an aerial plume. The deposition of the aerial plume used in the response scenario in Section 1.6.14 is based on the SL Ross model.

Section 1.6.14

1.6.14 Spill Response Scenarios

This section contains spill response strategies to address the following spill scenarios:

- Scenario 1 - Offshore Exploration Well Blowout in Winter
- Scenario 2 - Diesel Tanker Spill (medium)
- Scenario 3 - Diesel Tanker Spill (small)

Qualifying Statement

The following scenarios were developed in accordance with 18 AAC 75.425(e)(1)(F) and 18 AAC 75.445(d). They describe equipment, personnel, and strategies that could be used to respond to an oil spill. The scenarios are for illustration only and are not performance standards or guarantees of performance. The scenarios assume conditions of the spills and responses only to display general procedures, strategies, tactics, and selected operational capabilities.

Some details in the scenarios are examples. Although some equipment is named, it may be replaced by functionally similar equipment in the future. The response timelines are for illustration only. They do not limit the discretion of the persons in charge of the spill response to select any sequence or take whatever time they deem necessary for an effective response without jeopardizing safety.

In situ burning could be used in a spill response to reduce the quantity of oil, regardless of whether a scenario hypothesizes in situ burning to help meet the RPS.

Actual response performance equal to the scenarios is not guaranteed. Weather, malfunctions and human performance can compromise efficiency. As a result, effectiveness may be less than illustrated in a theoretical, mathematical planning model. Experience shows that a catastrophic spill will result in a long-term cleanup program, which will be the "shortest possible time."

Actual responses in an oil spill emergency depend on personnel safety considerations, weather and other environmental conditions, agency permits and priorities, and other factors. In any accident, considerations to ensure the safety of personnel will be given highest priority. The scenarios assume the agency on-scene coordinators and other agency officials will immediately grant any required permits.

ACS Tech. Manual Volume 1

These scenarios were developed according to the guidelines established by the North Slope Spill Response Project Team. These guidelines can be found in the front portion of Volume 1 of the ACS *Technical Manual.* Scenario parameters and assumptions regarding oil recovery rates are shown according to these guidelines. The scenarios include procedures for the following, as appropriate:

i. Procedures to Stop Discharge
ii. Fire Prevention and Control
iii. Blowout Control/Relief Well Plan
iv. Discharge Tracking
v. Protection of Sensitive Areas
vi. Containment and Control Strategies

vii. Recovery Strategies

viii. Damaged Tank Transfer

ix. Transfer and Storage Strategies

x. Temporary Storage and Ultimate Disposal

xi. Wildlife Protection

xii. Shoreline Cleanup

The oil distribution and spill response illustrations of Scenario 1 for a well blowout of 15 days are directly applicable to spills of 30 days. Specifically, the oil movement and recovery efforts at the end of Day 3 in the scenario would continue at that scale through Day 30 for spills of that duration. MMS representatives and other members of the North Slope Spill Response Project Team agreed to apply the 15-day scenarios to also show how operations would be supported for a blowout lasting 30 days, as required in 30 CFR 254.27.

SCENARIO 1

OFFSHORE EXPLORATION WELL BLOWOUT IN WINTER

TABLE 1-5
OFFSHORE EXPLORATION WELL BLOWOUT IN WINTER SCENARIO CONDITIONS

PARAMETER	PARAMETER CONDITIONS	PROJECT TEAM ASSUMPTION?
Spill Location	Offshore exploration well 13 miles north of Heald Point	Not applicable
Date	March 15	Not applicable
Duration	15 days	Yes
Type of Spill	Uncontrolled well blowout through an open orifice	Yes
Quantity of Oil Spilled	82,500 bbl (RPS volume of 5,500 bopd for 15 days)	Yes
Emulsification Factor (Applicable to oil that reaches open water, for storage purposes)	Not applicable. The oil falls to snow and ice cover; none enters open water.	Not applicable
Oil Type	Alaska North Slope Crude	Yes
Wind Speed	10 knots	Not applicable
Wind Direction	**Day 1**: wind from the SW; **Day 2 and beyond**: wind from the NE	Yes
Current	N/A	Not applicable
Air Temperature	-30° F	Not applicable
Surface	Average 12 inches of snow covers continuous sea ice five feet thick.	Not applicable
Trajectory	The S.L. Ross model for 1300 gas-to-oil ratio and 6.5 mmscf/d from a 4-inch diameter orifice projects an aerial plume of oil from the well in the direction of the wind, NE from the well on Day 1 and SW from the well on Days 2-15. Two-thirds of the oil falls within 1/8 mile of the well. Eighty-five percent falls within 1.6 miles. (See Figure 1-2).	Yes, *ACS Technical Manual* Tactics Description T-6

TABLE 1-6
OFFSHORE EXPLORATION WELL BLOWOUT IN WINTER RESPONSE STRATEGY

ADEC REQUIREMENT	RESPONSE STRATEGY	ACS TECH. MANUAL TACTIC
(i) Stopping Discharge at Source	• Efforts are made to bring the well under control. • Once it is determined that control of the well cannot be immediately regained, or the safety of personnel is at risk, personnel are protected per Standard Operating Procedure, in the PAI Exploration *Emergency Management Plan.* • The On-Site Company Representative notifies the Drilling Superintendent-Exploration. All appropriate notifications are made. • The Incident Management Team is activated. • The On-Site Company Representative calls WELLCALL in an initial effort to stop the discharge. WELLCALL is called out from Houston and arrives in 12 hours. WELLCALL initiates attempts to stop the blowout. Surface methods control the blowout on Day 15. In the meantime, a relief well rig is mobilized.	Section 1 of this plan Vol. 3, IMS
(ii) Preventing or Controlling Fire Hazards	Throughout the first few hours of the spill, the Site Safety Officer verifies that all sources of ignition are shut down or removed from the area. The Site Safety Officer provides access zone information and determines personal protection equipment (PPE) requirements. Access to the spill site is carefully controlled and the scene is secured by Security. Monitoring protocol is established by the Site Safety Officer for all work areas to ensure personnel protection. The monitoring protocol establishes safety zones according to applicable OSHA and fire hazard standards. Containment and recovery operations are allowed without respiratory protection in areas where safety criteria are met. Recovery operations and traffic are disallowed downwind of the blowout well in areas where workers may become exposed to flash fire hazard or oil particulate matter at concentrations in excess of permissible exposure limits.	S-1 Through S-6
(iii) Well Control Plan	While potential surface control measures are evaluated, the relief well drilling plan is implemented such that a drill site is ready should surface control be ineffective.	Section 1.6.3 of this plan.
(iv) Surveillance and Tracking of Oil	The extent of oil on the snow is delineated so that it can be found if subsequent snowfall or blowing snow covers the spill.	T-1 T-3
(v) Exclusion Procedures	All oil falls to the surface and is absorbed into the snow. No priority protection sites are identified.	Not applicable
(vi) Spill Containment and Control Actions	Snow and the sea ice contain the oil. An ice road is built around the ice pad by Day 10. It provides site access for heavy equipment to the oiled areas and contains the potential spread of oil to the sea ice undersurface. On Days 1 and 2, a staging pad is set up at West Dock Staging Area south of the Causeway on West Dock Road. From there, equipment is dispatched to an ice pad staging area one mile south of the ice pad. Rolligons/heavy ATVs with augers build an ice road and a one-acre 2-foot thick ice pad with seawater from Days 1 to 4. The pad then supports heavy equipment, decontamination area, forward command post and security. On Day 2, a trailer camp is set up near the new ice pad.	L-1, C-10 L-1, L-2
(vii) Spill Recovery Procedures	• Task Force 1: On Day 2, TF-1 begins recovery of oiled snow in Area A (Table 1-7). Small Rolligons/heavy ATVs with augers measure ice thickness for safety. Larger Rolligons/heavy ATVs with trailers carry equipment to the site. • Task Force 2: On Day 2, TF-2 begins recovery of lightly oiled snow in Area B with North Slope personnel; additional personnel and equipment to support sustained operations are mobilized from other regions (Table 1-7). Personnel are reassigned from TF-1 and TF-4 to TF-2 and TF-5 when recovery is complete in Areas A and B.	R-1 (5) R-2 (10)

TABLE 1-6 (CONTINUED)
OFFSHORE EXPLORATION WELL BLOWOUT IN WINTER RESPONSE STRATEGY

ADEC REQUIREMENT	RESPONSE STRATEGY	ACS TECH. MANUAL TACTIC
(vii) Spill Recovery Procedures (cont'd)	• Task Force 3: Vacuum trucks suck directly from pits on the sea ice bermed with sand bags and snow adjacent to the ice pad beginning on Day 2. Because recovery of free oil is constrained by oiled snow removal, it is done in conjunction with snow removal operations.	R-6 (5), C-12
	• Task Force 4: On Day 16, TF-4 begins recovery of heavily oiled snow in Area C (Table 1-7).	R-3 (17), R-14
	• Task Force 5: On Day 16, TF-5 begins recovery of lightly oiled snow in Area D. TF-5 consists of out-of-region personnel mobilized on Day 2 (see Table 1-7).	R-2 (24)
	• Task Force 6: Once recovery operations in Area D are complete, TF-6 is assigned to delineate and remove embedded oil.	R-5
	• Task Force 7: On July 1, the task force burns oil on the surface of the rotting ice within the western sector of the ice road ring. Situation Status Unit predicts a wind shift will soon break up the ice. A helicopter burns surface oil lying more than a few hundred feet downwind of the ice pad. An ACS technician in the helicopter collects limited quantities of burn residue when it is safe. On July 7, the ice breaks up. Open water response tactics are put into operation.	B-5, B-1, B-6
(viii) Lightering Procedures	Not applicable	Not applicable
(ix) Transfer and Storage of Recovered Oil/Water; Volume Estimating Procedure	Oiled snow is loaded into end dump trucks for transport to the lined temporary storage pit at West Dock Staging Area. Vacuum trucks haul oily liquids to Flow Station 1 for recycling.	R-1, R-2, R-3, R-5, R-6
(x) Plans, Procedures, and Locations for Temporary Storage and Disposal	• Heavily oiled snow is taken to the lined temporary storage pit at West Dock Staging Area.	D-5
	• Oil recovered by vacuum truck is taken for processing at Flow Station 1 slop oil tank and injection into the crude stream going to Pump Station #1.	D-1
	• Lightly oiled snow is taken to the lined temporary staging area at West Dock Road. The temporary storage pits are continuously monitored until all contents have been processed.	D-1, D-5
	• Non-oily wastes are classified and disposed of accordingly.	D-2, D-3
(xi) Wildlife Protection Plan	No wildlife becomes oiled. Polar bear monitors are assigned to protect bears and workers. Building U8 is made available to agency biologists and veterinarians standing by for potential reports of oiled bears and seals. Hazing equipment is available if needed.	W-1, W-2
(xii) Shoreline Cleanup Plan	Not applicable	Not applicable

TABLE 1-7
OFFSHORE EXPLORATION WELL BLOWOUT IN WINTER CUMULATIVE AREA DISTRIBUTION

AREA	AREA OF SCATTERED OIL (sq ft)		VOLUME OF OIL (bbl)	OIL FALLOUT (gal. per sq ft)	AVERAGE DEPTH OF FALLOUT (inches)	VOLUME OF CONTAMINATED SNOW[2] (cu yd)
	Initial Area	After Spread				
A	42,250	42,250	3,685	3.7	5.9	1,565
B	52,757,750	52,757,750	1,815	0.0014	0.0023	21,511[3]
C	42,250	386,925[1]	51,590	51	82	14,331
D	52,757,750	52,800,000	25,410	0.020	0.032	81,481[4]
Total	52,895,007	32,844,675	82,500	--	--	118,888

[1] Depth of oil fallout in snow before spreading is 9 inches. Subsequent deposits spread to a mean thickness of 9 inches.

[2] Depth of snow removed in contaminated areas is 12 inches by mechanical recovery (R-3) and 1 inch by manual removal (R-2).

[3] Oil is encountered on 160 acres.

[4] Oil is encountered on half of the area.

TABLE 1-8
OFFSHORE EXPLORATION WELL BLOWOUT IN WINTER RECOVERY AND HANDLING CAPABILITY

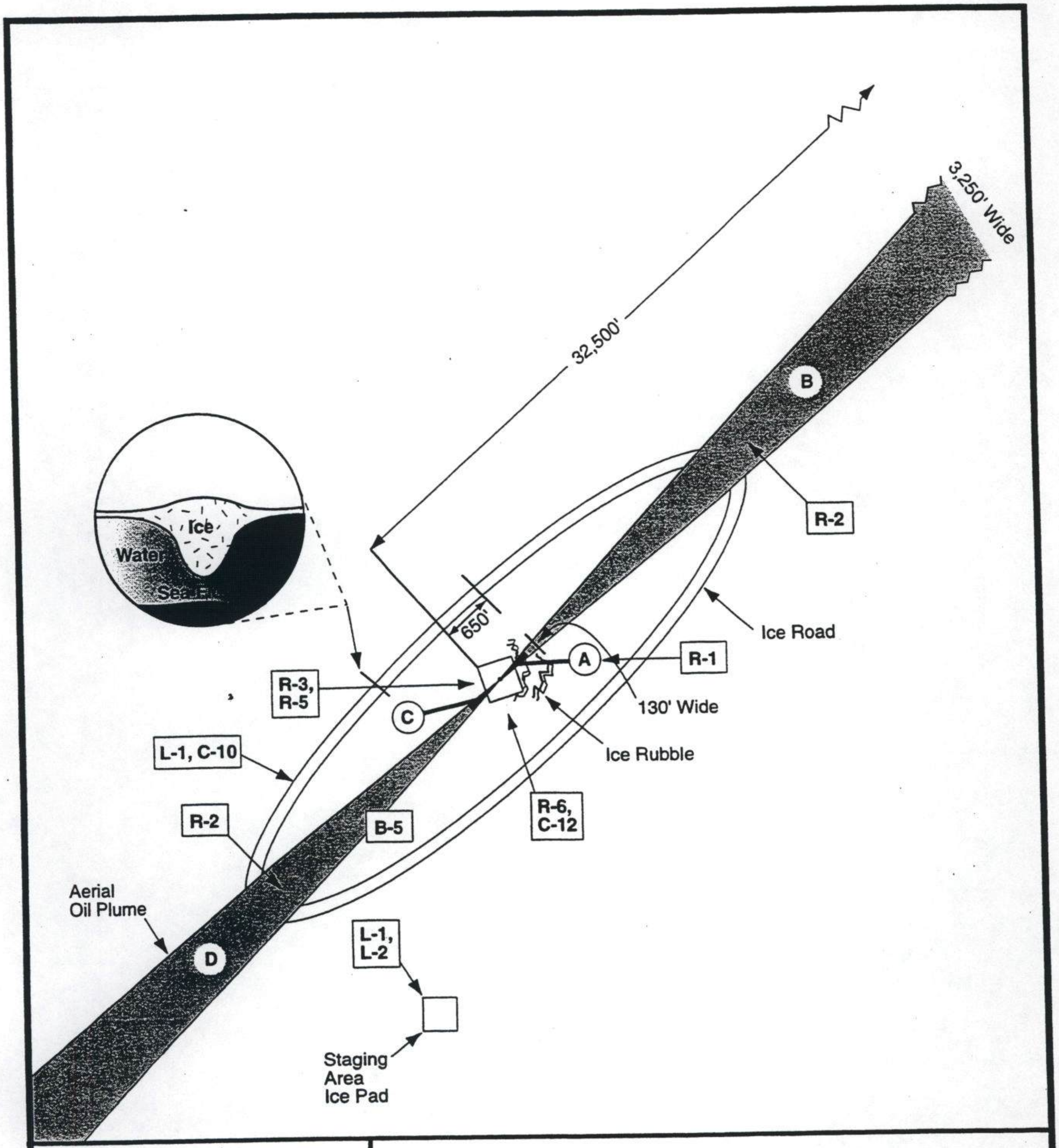
A	B	C	D	E	F	G
SPILL RECOVERY TACTIC	**NUMBER OF SYSTEMS**	**RECOVERY SYSTEM**	**OILED SNOW RECOVERY RATE[3]** **(cubic yards per hour; barrels of oil per hour)**	**MOBILIZATION AND TRANSIT TIME TO SITE** **(hours)**	**OPERATING TIME** **(hours per day)**	**HANDLING CAPACITY** **B X D X F** **(cubic yards per day; barrels oil per day)**
Start Day 2:						
TF-1: R-1	5	Front end loader w/ end dump	11 cyh	2.25[1]	20	1,100 cyd
TF-2: R-2	10	Manual recovery	3 cyh[4]	2.25[1]	16[4]	480 cyd
TF-3: R-6	5	300-bbl vacuum truck	60 boph	24	20	6,000 bopd
Start Day 16:						
TF-4: R-3	17	Front end loader w/ end dump	11 cyh	2.25[2]	20	3,740 cyd
TF-5: R-2	24	Manual recovery	3 cyh[4]	est. 3-4 days	16[4]	1,152 cyd

[1] Mobilization is completed on Day 1; recovery does not begin until a safe working zone is established on Day 2.

[2] Mobilization is completed prior to safe working zone establishment on Day 16.

[3] Recovery rate includes delivery cycles to storage/processing areas. Distance to West Dock Staging Area is 13 miles.

[4] Recovery rate is based on R-2 (one six-man crew can recover 30 cu yd in 10 hours; reduced to 24 cu yd in 8 hours for cold weather conditions, as defined in Tactic L-7).



Scenario 1
Offshore Exploration Well Blowout During Winter

ARCO Alaska, Inc. ◆

Figure 1-2

3/2000

SCENARIO 2

DIESEL TANKER SPILL TO MCCOVEY EXPLORATION WELL ICE PAD DURING WINTER (MEDIUM SPILL)

TABLE 1-9
DIESEL TANKER SPILL TO MCCOVEY EXPLORATION WELL ICE PAD DURING WINTER (MEDIUM SPILL)
SCENARIO CONDITIONS

PARAMETER	PARAMETER CONDITIONS	PROJECT TEAM ASSUMPTION?
Spill Location	McCovey Exploration Well Ice Pad	N/A
Date	Winter	N/A
Duration	Instantaneous	N/A
Type of Spill	Puncture in side of tank truck	N/A
Quantity of Oil Spilled	2,200 gallons	N/A
Emulsification Factor (for Storage Purposes)	N/A	N/A
Oil Type	Arctic diesel fuel	N/A
Wind Speed	20 knots	Yes
Wind Direction	**Day 1**: wind from the SW; **Day 2 on**: wind from the NE	Yes
Current	N/A	N/A
Air Temperature	-20° F	N/A
Trajectory	The spill spreads out laterally from the source, but is contained on the frozen pad.	N/A

TABLE 1-10
DIESEL TANKER SPILL TO MCCOVEY EXPLORATION WELL ICE PAD DURING WINTER (MEDIUM SPILL): RESPONSE STRATEGY

ADEC REQUIREMENT	RESPONSE STRATEGY	ACS TECH. MANUAL TACTIC
(i) Stopping Discharge at Source	The Fire Chief dispatches the Fire Department's HazMat Team to patch the tanker and prevent further leakage.	Not applicable
(ii) Preventing or Controlling Fire Hazards	The truck driver is directed to turn off his engine to eliminate the engine as an ignition source. Throughout the first few hours of the spill, the Site Safety Officer verifies that all sources of ignition are shut down or removed from the area. The Site Safety Officer provides access zone information and determines PPE requirements. Access to the spill site is carefully controlled and the scene is secured by Security. Monitoring protocol is established by the Site Safety Officer for all work areas to ensure personnel protection.	S-1 through S-6
(iii) Well Control Plan	Not applicable	Not applicable
(iv) Surveillance and Tracking of Oil	The extent of the diesel is marked on the snow and ice so that it can be found if subsequent snowfall or drifting covers the spill. The diesel saturates the top 6 inches of the surrounding 1 ft. snow depth in an area approximately 35 ft. by 35 ft.	T-1
(v) Exclusion Procedures	Not applicable. All spilled product can be contained on the pad.	Not applicable
(vi) Spill Containment and Control Actions	A snow berm is built around the perimeter of the spilled diesel. Areas are continually shored as necessary so that the spill is contained on the pad.	C-1
(vii) Spill Recovery Procedures	Approximately 1,500 cubic feet (55 cu yd) of snow and diesel-contaminated snow are removed by front-end loader with snow bucket and transferred to dump trucks for transport. Once recovery of oiled snow is complete, any diesel embedded in the surface of the ice is removed by Bobcat-mounted trimmer and transferred to dump trucks for transport.	R-3 R-5
(viii) Lightering/ Transfer Procedures	The damaged tank is lightered.	R-27
(ix) Transfer and Storage of Recovered Oil/Water; Volume Estimating Procedure	All recovered material is in the form of contaminated snow and ice.	Not applicable
(x) Plans, Procedures, and Locations for Temporary Storage and Disposal	• Contaminated snow is hauled to Prudhoe for melting and processing. • Non-liquid oily wastes are classified and disposed of according to classification. • Non-oily wastes are classified and disposed of accordingly.	D-1 D-2 D-3
(xi) Wildlife Protection Plan	The spill is contained on the pad area. No risk to wildlife is anticipated.	Not applicable
(xii) Shoreline Cleanup Plan	All contaminated materials are recovered as described in vii above. No additional clean-up measures are required.	Not applicable

TABLE 1-11
DIESEL TANKER SPILL TO MCCOVEY EXPLORATION ICE PAD DURING WINTER (MEDIUM SPILL): RECOVERY AND HANDLING CAPABILITY

A SPILL RECOVERY TACTIC	B NUMBER OF SYSTEMS	C RECOVERY SYSTEM	D OILY MATERIAL RECOVERY RATE[1] (cu yd per hour)	E MOBILIZATION AND TRANSIT TIME TO SITE (hours)	F OPERATING TIME (hours per 24-hour shift)	G HANDLING CAPACITY (cu yd per day) (B X D X F)
R-3	1	Front-end loader w/ snow bucket to dump truck	5.9	3.5	10	59
R-5	1	Bobcat-mounted trimmer to front-end loader to dump truck	5.9	3.5	10	59

[1] Recovery rate includes load time, transit time to storage/processing areas, off-load time, and return trip to site

SCENARIO 3

DIESEL TANKER SPILL TO MCCOVEY EXPLORATION WELL ICE PAD DURING WINTER (SMALL SPILL)

TABLE 1-12
DIESEL TANKER SPILL TO MCCOVEY EXPLORATION WELL ICE PAD DURING WINTER (SMALL SPILL)
SCENARIO CONDITIONS

PARAMETER	PARAMETER CONDITIONS	PROJECT TEAM ASSUMPTION?
Spill Location	McCovey Exploration Well Ice Pad	N/A
Date	Winter	N/A
Duration	Instantaneous	N/A
Type of Spill	Puncture in side of tank truck	N/A
Quantity of Oil Spilled	500 gallons	N/A
Emulsification Factor (for Storage Purposes)	N/A	N/A
Oil Type	Arctic diesel fuel	N/A
Wind Speed	20 knots	Yes
Wind Direction	**Day 1**: wind from the SW; **Day 2 on:** wind from the NE	Yes
Current	N/A	N/A
Air Temperature	-20° F	N/A
Trajectory	The spill is contained on the frozen pad.	N/A

TABLE 1-13
DIESEL TANKER SPILL TO MCCOVEY EXPLORATION WELL ICE PAD DURING WINTER (SMALL SPILL): RESPONSE STRATEGY

ADEC REQUIREMENT	RESPONSE STRATEGY	ACS TECH. MANUAL TACTIC
(i) Stopping Discharge at Source	The Fire Chief dispatches the Fire Department's HazMat Team to patch the tanker and prevent further leakage.	Not applicable
(ii) Preventing or Controlling Fire Hazards	The truck driver is directed to turn off his engine to eliminate the engine as an ignition source. Throughout the first few hours of the spill, the Site Safety Officer verifies that all sources of ignition are shut down or removed from the area. The Site Safety Officer provides access zone information and determines PPE requirements. Access to the spill site is carefully controlled and the scene is secured by Security. Monitoring protocol is established by the Site Safety Officer for all work areas to ensure personnel protection.	S-1 through S-6
(iii) Well Control Plan	Not applicable	Not applicable
(iv) Surveillance and Tracking of Oil	The extent of the diesel is marked on the snow and ice so that it can be found if subsequent snowfall or drifting covers the spill. The diesel saturates the top 6 inches of the surrounding 1 ft. snow depth in an area approximately 17-ft. by 17-ft.	T-1
(v) Exclusion Procedures	Not applicable. All spilled product can be contained on the pad.	Not applicable
(vi) Spill Containment and Control Actions	A snow berm is built around the perimeter of the spilled diesel. Areas are continually shored as necessary so that the spill is contained on the pad.	C-1
(vii) Spill Recovery Procedures	• Approximately 300 cubic feet (11 cu yd) of snow and diesel-contaminated snow are removed by front-end loader and transferred to dump trucks for transport. • Once recovery of oiled snow is complete, any diesel embedded in the surface of the ice is removed by bobcat-mounted trimmer and transferred to dump trucks for transport.	R-3 R-5
(viii) Lightering/ Transfer Procedures	The damaged tank is lightered.	R-27
(ix) Transfer and Storage of Recovered Oil/Water; Volume Estimating Procedure	All recovery is in the form of contaminated snow and ice.	Not applicable
(x) Plans, Procedures, and Locations for Temporary Storage and Disposal	• Contaminated snow and ice are hauled to Prudhoe for melting and processing. • Non-liquid oily wastes are classified and disposed of according to classification. • Non-oily wastes are classified and disposed of accordingly.	D-1 D-2 D-3
(xi) Wildlife Protection Plan	The spill is contained on the pad area. No risk to wildlife is anticipated.	Not applicable
(xii) Shoreline Cleanup Plan	All contaminated materials are recovered as described in vii above. No additional clean-up measures are required.	Not applicable

TABLE 1-14
DIESEL TANKER SPILL TO MCCOVEY EXPLORATION ICE PAD DURING WINTER (SMALL SPILL): RECOVERY AND HANDLING CAPABILITY

A SPILL RECOVERY TACTIC	B NUMBER OF SYSTEMS	C RECOVERY SYSTEM	D OILY MATERIAL RECOVERY RATE[1] (cu yd per hour)	E MOBILIZATION AND TRANSIT TIME TO SITE (hours)	F OPERATING TIME (hours per 24-hour shift)	G HANDLING CAPACITY (cu yd per day) (B X D X F)
R-3	1	Front-end loader w/ snow bucket to dump truck	5.9	3.5	10	59
R-5	1	Bobcat-mounted trimmer to front-end loader to dump truck	5.9	3.5	10	59

[1] Recovery rate includes load time, transit time to storage/processing areas, off-load time, and return trip to site.

1.7 NONMECHANICAL RESPONSE OPTIONS [18 AAC 75.425(e)(1)(G)]

PAI will mechanically contain and clean up oil spills to the maximum extent possible. PAI will request approval for in situ burning from the Unified Command when mechanical response methods prove ineffective or when in situ burning will be used as a tool to minimize environmental damage.

1.7.1 Obtaining Permits and Approvals

ACS;
Exhibit 1-1;
B-1, B-1A

Burning will not be conducted without approval of state and federal agencies. The PAI Incident Commander will discuss the option of in situ burning with the FOSC, SOSC, and LOSC. PAI and ACS will complete an "Application for ISB."

1.7.2 Decision Criteria for Use

ACS Tactic
B-1

In situ burning of spilled oil will be considered under conditions such as the following:

- Mechanical recovery is impractical or ineffective.
- Shorelines are threatened.
- Burning would augment the oil elimination capacity of mechanical recovery.
- Present and forecast wind conditions will carry the smoke plume away from populated areas.
- A successful test burn has been conducted.

1.7.3 Implementation Procedures

ACS
Tactics B-1,
B1-A, B-3,
B-5

If the PAI Incident Commander decides to use in situ burning and obtains the necessary authorization, ACS will carry out the response.

1.7.4 Required Equipment and Personnel

ACS Tactic
L-6

ACS maintains the equipment and personnel for in situ burning.

EXHIBIT 1-1
MCCOVEY OIL DISCHARGE PREVENTION AND CONTINGENCY PLAN
PHILLIPS ALASKA, INC

In situ Burning of Oil Spills on North Slope and in Beaufort Sea
Open Burn Permit Application

(Alaska Air Quality Plan, Section III.F, Open Burning)

Phillips Alaska, Inc. hereby requests an ADEC open burn permit to conduct in situ burning of potential spills of crude oil from PAI's North Slope operations as described in the PAI *McCovey Oil Discharge Prevention and Contingency Plan* ("plan").

It should be noted that PAI cannot burn an oil spill without the approvals described in Annex F of the Unified Plan, in addition to the ADEC open burn permit. If in situ burning were being considered for use on a spill from PAI facilities (as discussed in Section 1.7 of the plan), PAI will request approval from the RRT.

1. Location and inclusive dates for fires to the extent possible

It is not possible to state exactly when in situ burning of oil spills would be used. This application is for a general permit to burn oil spills, which could occur at any time. Because multiple burns would be used on different oil concentrations, these burns could be spread over several days.

2. Location of all sensitive population centers, ground travel routes, airports or other activities that should not be impacted by smoke

The exact location of an in situ burn operation at an exploration site cannot be specified until a spill actually occurs.

3. Where the weather forecasts will be obtained and how they will be used to prevent smoke problems

The National Weather Service in Anchorage and/or Barrow will be contacted to provide weather forecasts for the time period in which in situ burning is proposed. The following parameters will be obtained: ventilation factor, visibility, wind speed and direction. The burn will be conducted only after a small test burn confirms that good dispersion conditions exist and that the wind is blowing away from response personnel.

4. How weather changes will be monitored and what will be done to reduce or mitigate smoke impacts if unfavorable weather should occur after ignition

On-site observations will be used to monitor the burn. If the wind shifts or dispersion changes during burning, oil held within fire-containment boom will be allowed to spread so that it becomes too thin to support continued burning.

5. Considerations for visibility impacts

Authorities having control over the sensitive features listed in Item 2 will be notified if visibility is expected to be reduced, due to smoke or fog, to less than 3 miles for a period of time in excess of 30 consecutive minutes and/or 180 minutes during a 24-hour period.

6. How coordination with air quality authorities having jurisdiction will be accomplished

The ADEC representative at the response command center will be notified verbally before ignition. If an ADEC representative is not present, the Fairbanks office of ADEC will be notified by telephone.

7. The procedures that will be used to coordinate with other concerned agencies such as the Federal Aviation Administration, state troopers, military, adjacent land managers, etc.

Coordination with other concerned agencies will be simplified because of their representation on the Alaska Regional Response Team. PAI will ensure that, at a minimum, the following agencies are notified before ignition:

- Federal Aviation Administration
- U.S. Coast Guard
- Alaska State Troopers
- North Slope Borough
- Minerals Management Service

8. How the public will be informed prior to, during, and after the burning

The news media will be used to inform the public prior to, during, and after the burning.

9. What will be done within reason to reduce the duration of the active fire phase and smoldering phase

In situ burning for an oil spill at an exploration site would likely involve scattered patches of oil on snow and ice during winter. The active fire phase for each burn would be brief (on the order of several hours), with no smoldering phase.

10. What will be done to validate predicted smoke dispersal conditions such as a test fire, smoke bomb, etc.

If the RRT approves the use of burning, the approval would likely be for a test burn. In any case, PAI would have ACS conduct a small test burn to ensure that smoke was dispersing as expected. Visual observation would then be used to verify predicted smoke dispersal.

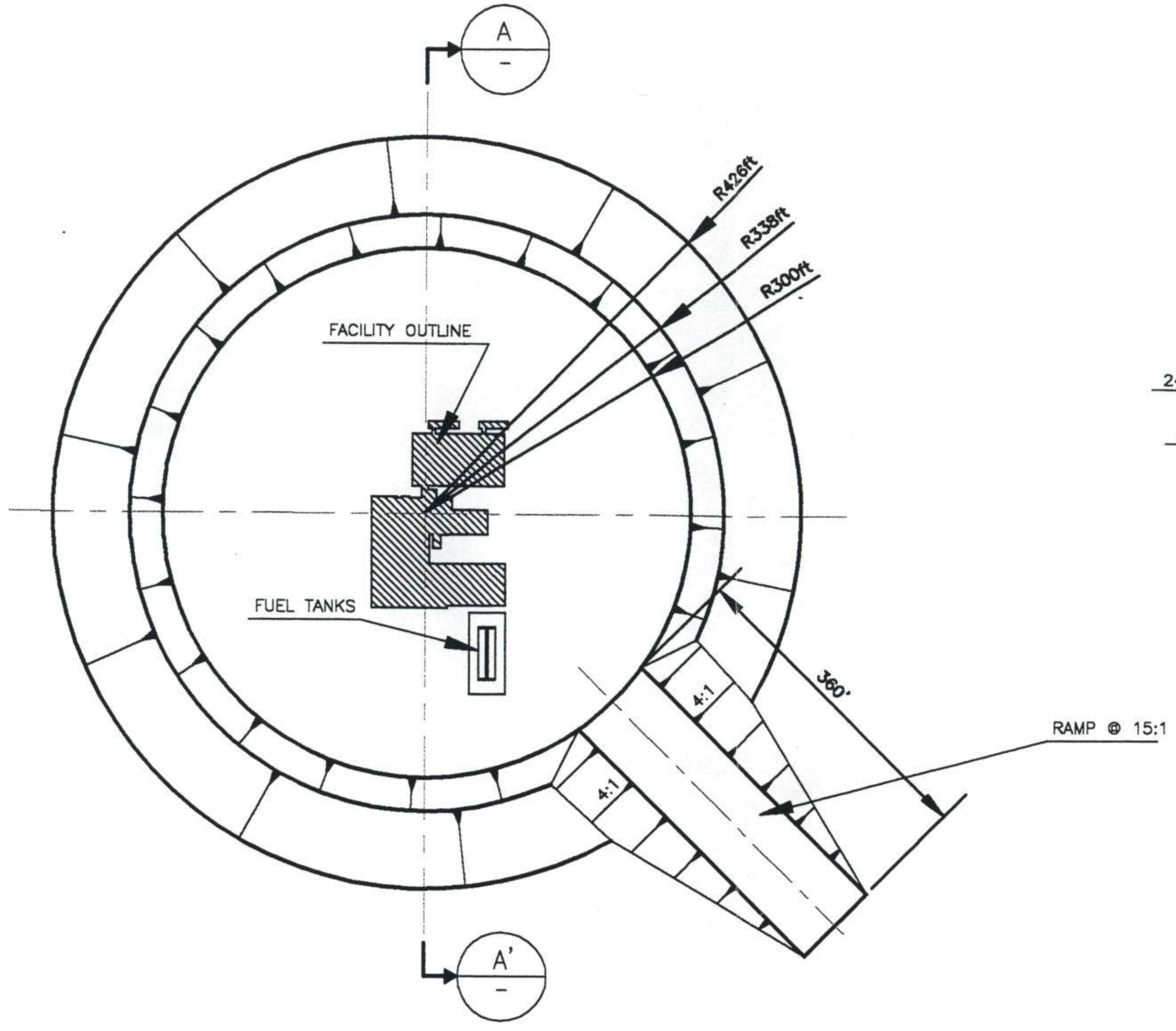
11. For fires other than fire fighter training, an evaluation of alternatives to open burning, demonstrating that open burning is the only feasible alternative.

Such an evaluation cannot be made until the actual time of a spill.

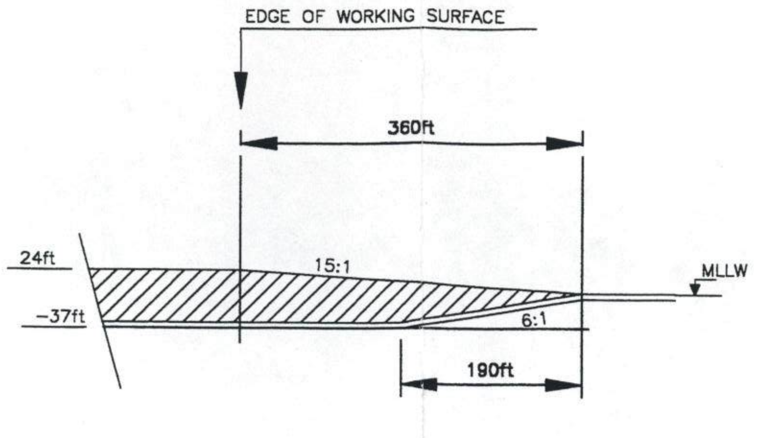
1.8 FACILITY DIAGRAMS [18 AAC 75.425(e)(1)(H)]

The following exploration location map and rig schematic are provided on the following pages:

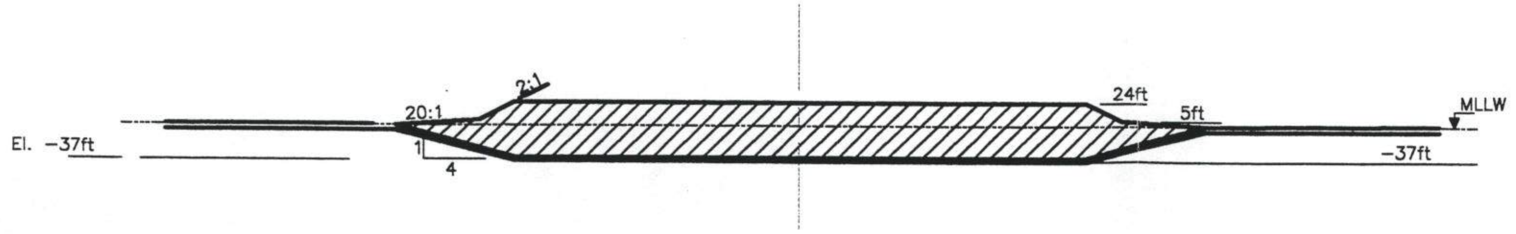
- Figure 1-3, Proposed McCovey Ice Pad Diagram
- Figure 1-4, McCovey Exploration Well Location and Ice Road Map



PLAN VIEW

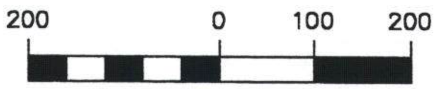


RAMP SECTION VIEW



SECTION VIEW A-A'

SOURCE: INFORMATION PROVIDED BY
SANDWELL, CAD DRAWING # 142401-C-03 REV. 1



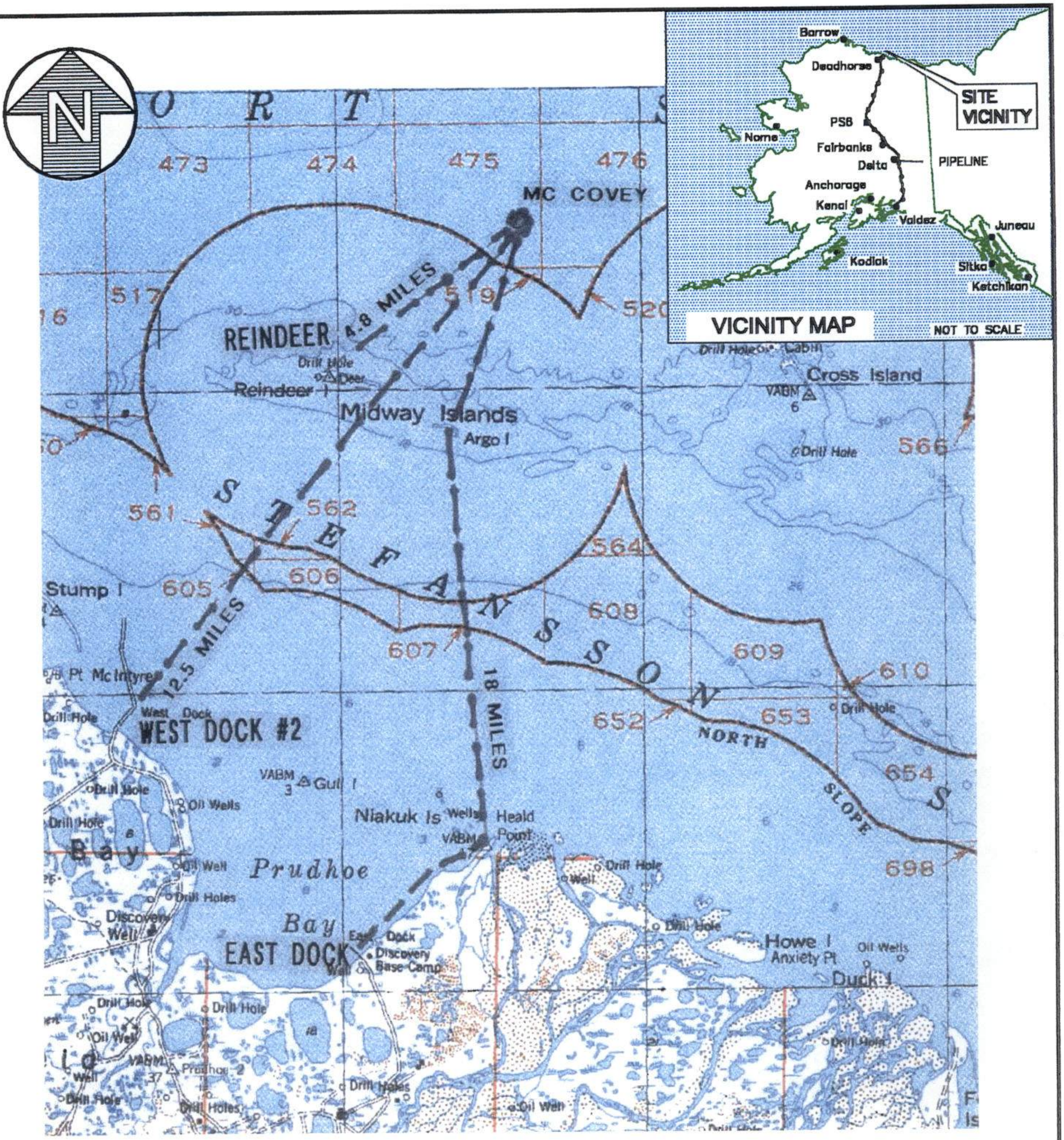
SCALE: 1" = 200'

McCOVEY ICE PAD DIAGRAM
600ft. CORE DIAMETER AND 600 ft. WORKING SURFACE DIAMETER
McCovey Ice Island, Alaska

PLAN VIEW, SECTION AND DETAIL

CLIENT:
PHILLIPS ALASKA, INC.

PROJECT MANAGER: S. KANE	APPROVED: S. KANE	DESIGNED: R. BEST	SCALE: 1" = 200'	REVISION: 0	FIGURE: 1-3
PROJECT NO.: 807176	DRAWN: R. BEST	DATE: 09-10-00	FILE: 807176_001_03.DWG		



PHILLIPS 66

POTENTIAL McCOVEY ICE ROAD ROUTES
McCovey Ice Island, Alaska

2000 ICE ROADS ROUTE MAP

PROJECT MANAGER: S. KANE	APPROVED: S. KANE	DESIGNED: R. BEST	SCALE: NOT TO SCALE	REVISION: 0	FIGURE: 1-4
PROJECT NO.: 807176	DRAWN: R. BEST	DATE: 03-15-00	FILE: 807176_001_01.DWG		

CLIENT:
PHILLIPS ALASKA, INC.

2. PREVENTION PLAN
[18 AAC 75.425(e)(2)]

2.1 PREVENTION, INSPECTION AND MAINTENANCE PROGRAMS [18 AAC 75.425(e)(2)(A)]

2.1.1 Prevention Training Programs [18 AAC 75.007(d)]

All employees involved in spill response and/or cleanup activities are thoroughly trained so that they fully understand the safety and health risks associated with the job, as well as the practices and procedures required to control their exposure to potential safety and health hazards. The level of training is based upon the duties and functions of each responder in the emergency response plan, and complies with the regulatory requirements for employee training.

The following list of training is provided to all drilling personnel to ensure safety and promote prevention of spills:

- Safety Orientation/Personal Protective Equipment
- Respirator Fit Testing
- Confined Space Entry
- Lockout/Tagout of Hazardous Energy Sources
- Hazard Communication Standard
- Blinding (Process Line Operating)
- H_2S Gas
- Safety and Accident Prevention
- ICS - Basic Overview
- Hazardous Waste Operations and Emergency Response (HAZWOPER) Level 1
- First Aid/CPR Training (supervisors only)
- Well Control Training (certain employees)

All construction, drilling, and operations personnel will receive the appropriate level of training for their activities. Training will be in compliance with 30 CFR 250, Subpart O and the training programs for well completion, workovers, and control must be reviewed and approved by MMS [250.1503(f)]. The well control training is certified by MMS.

All personnel involved with the operation and maintenance of Production Safety Systems are required to have training, as described in MMS regulations 30 CFR 250.1520, Table B. This training is intended to help eliminate the release of hydrocarbons into the atmosphere. MMS review and approval of these courses are required under MMS regulations, 250.1504(d). The training is also certified by MMS.

The PAI Training Department maintains a database of the courses taken by each PAI employee, a brief description of the course, and the date completed. Current training records for an individual are available through the immediate supervisor or by contacting the Training Department. Contractors maintain their own training records.

2.1.2 Substance Abuse Programs [18 AAC 75.007(e)]

The PAI drug policy was established to provide for the safety of employees, contractors, and non-employees, and to establish a safe working environment at all operations. PAI's company-wide policy covers all employees and is outlined below:

> The use, possession or being under the influence of intoxicants, marijuana, or other controlled or illegal substances is STRICTLY PROHIBITED on PAI-controlled premises. Entry onto PAI-controlled premises constitutes CONSENT to and recognition of the right of the Company to CONDUCT SEARCHES of persons, property, vehicles and living quarters. Violation of this policy, or failure to cooperate with a search request will result in TERMINATION for PAI personnel, and REMOVAL from Company premises for all others.

2.1.3 Medical Monitoring [18 AAC 75.007(e)]

All PAI employees must meet minimum physical requirements for their job classification as determined by the Medical Department. Subsequent physical examinations are also available to employees, with frequency based on age.

Since the use of a respirator is required for many jobs, a key aspect of the physical examination is a determination of the employee's physical capability to wear a respirator. Personnel who have not been medically qualified, fit-tested, and trained will not be permitted to use respiratory protective equipment.

A medical evaluation may be required if personnel are exposed or may be exposed to hazardous substances at or above the permissible exposure level (PEL). If a PEL does not exist, published exposure levels may be used instead. The exposure will be the ambient air concentration (whether or not respirators are used). Medical surveillance will also be provided at the employee's request.

If overexposure is known or suspected as a result of an accidental release, then the employee(s) are examined and treated as necessary. Medical attention can be rendered by physician assistants who work under the direction of a physician. Persons requiring additional medical attention are taken to Anchorage by air ambulance or by commercial or company charter for treatment.

2.1.4 Security Program [18 AAC 75.007(f)]

Access to North Slope Operations is controlled through security checkpoints, where Security records personnel present in the operating areas. This program provides for security and safety of personnel while moving to and from the site and while at the site. Since the ice road will be built from West Dock or East Dock, access to the ice road will be controlled through the existing Security checkpoints.

In addition, the drilling site is a remote, off-site location with limited access. The on-site supervisor strictly controls any transit and access to the site.

For proprietary and safety reasons, access to the rig or rig facilities will be restricted to authorized persons and regulatory personnel only. Authorized regulatory personnel carrying photo identification may access the pad at any time. They must contact the on-site drilling supervisor if they wish access to rig facilities and they must comply with all applicable safety regulations. All other personnel must obtain authorization from the Drilling Department at PAI's Anchorage office, located at 700 G Street.

2.1.5 Fuel Transfer Procedures (18 AAC 75.025)

Appendix A

Employees must follow established PAI safety procedures for conducting flammable and combustible fluid transfers. Employees are required to complete a Best Management Practices checklist prior to conducting fuel transfers.

Before transfers begin, all tank and container levels are checked to prevent overfilling. Absorbents or catch basins are placed under connections and vents to contain potential leaks or drips.

An operator monitors all transfers throughout the entire operation, maintaining a constant line-of-sight to the transfer. Transfer operations are not left unattended. For transfers requiring two persons, the equipment operator and observer maintain constant communication by voice, radio, or hand signals. Tank levels, containment, absorbents, and piping are inspected after each transfer for signs of fuel or chemical loss, leakage, or failure.

2.1.6 Operating Requirements for Exploration and Production Facilities (18 AAC 75.045)

General Facility Requirements

Flow Tests

Oil produced during a formation flow test or other drilling operations must be collected and stored in a manner that prevents the oil from entering state or federal land or waters. Oil produced for flow tests will be stored in mobile tanks. These tanks will be placed in lined and bermed containment areas.

Ice Island Integrity Inspections

The McCovey ice island will be inspected in accordance with MMS regulations, 30 CFR 250.912. Inspections will include monitoring for temperature, horizontal, and vertical movement of the ice and weather.

Ice temperatures will be monitored throughout drilling through the use of vertical and horizontal thermistors. This monitoring will ensure that the drilling operations do not undermine the thermal integrity of the ice. The main areas of concern are directly under the rig and around the conductor and cellar.

Monitoring of horizontal movement will be accomplished using automatic and manually read inclinometers. The inclinometers will be installed around the island perimeter as well as on the island, to provide a profile of any lateral deflection.

Vertical movement of the ice island will be monitored by manually-read Sondex instruments. These instruments will be installed on the perimeter of the rig as well as close to the cellar.

Isolation Valves for Pipelines Leaving Platforms

Not applicable.

Drip Pans and Curbing

Drip pans and curbing will be provided at transfer locations.

Catch Tanks

Not applicable.

Other Requirements for Tanks

Oil storage tanks will meet the requirements of MMS regulations, 30 CFR 250, Subpart C.

Section 2.1.8 and 2.1.9

Other Requirements for Piping

Not applicable.

Well Control and Emergency Shutdown

Drilling Assurance

Section 1.6.3

This section outlines preventative and recovery measures to minimize hydrocarbon spill potential, which are applied to development drilling operations and are applicable to onshore as well as offshore island facilities. All well control discussions presented in this section are aimed at preventing spills from occurring during drilling operations. Recovery measures that can be used to regain well control in the event of lost control are summarized in Section 1.6.3.

The following definitions apply to this section:

Barrier -- During drilling and well activities the following barriers will normally exist:

a) A barrier consisting of a homogenous mud column in hydrostatic overbalance in relation to the reservoir pore pressure.

b) A barrier consisting of a cemented casing, wellhead, pipe ram/annular preventer and drill string with Kelly valve/check valve.

Blowout -- Any uncontrolled flow of formation fluids to the surface due to formation pressure exceeding the hydrostatic pressure of the mud or fluid column and failure of the second barrier.

Shallow Gas Blowout -- Any uncontrolled flow of gas from gas pockets located above the intended reservoir prior to the blowout preventer being fitted.

Completion -- Covers any installation of production tubing, packers and other equipment, as well as perforation and stimulation in production and injection wells.

Development Drilling -- Covers all operations related to production, injection and observation wells between spudding and cementing the production casing.

Exploration Drilling -- Covers all operations related to wildcat and appraisal wells between spudding the well and plugging and abandonment.

Kick -- Unplanned introduction of hydrocarbons or fluids (brines, water) into the wellbore from formations.

Production -- Covers all wells, which produce oil and/or gas but excludes well intervention, start-up and close-in operations.

Workover -- Covers all intervention operations other than operations carried out with wireline.

Remedial -- Covers only those intervention operations where wireline or coil tubing is used.

Well Control During Planning

The process of well control commences before actual drilling operations with the planning and design of any well or workover. This is more onerous for exploration and appraisal wells than for development wells due to the lesser amount of offset data available to make design decisions. Offset data from exploration and appraisal wells in the form of lithology, geological horizon depths, pore pressure/fracture gradients, hydrocarbon zones, potential loss zones etc. allows for a more robust development well design. With good offset data:

- Appropriate precautions for shallow gas accumulations can be implemented in the well program by a shallow hazards analysis.
- Correct mud weights (primary well control barrier) for drilling fluids can be selected for each hole section to prevent kicks while ensuring losses do not occur to potential thief zones.
- Hole sizes, and hence casing sizes, are selected to optimize production from the well while allowing well control incidents to be handled safely (i.e. kick tolerance). Kick tolerance is a safety factor that is utilized to allow for control of additional downhole formation pressure should it be encountered.
- Casing points are selected which allow weaker geological zones to be cased off prior to drilling deeper, higher pressure sections which require higher mud weights to prevent the breakdown of formations at the shoe. If known loss zones exist, casing programs are designed to minimize effects of lost circulation.
- Casing weights, grades, and cementing programs are designed utilizing data and engineering calculations to withstand drilling, completion, production and well control conditions.
- Directional drilling processes and procedures are in place to plan and drill wellbores so as to avoid collision with existing wells.

All the above planning parameters are in accordance with both AOGCC and MMS regulations and Operator policies and API recommended practices, which are, at a minimum, equivalent to AOGCC and MMS regulations.

Well Control During Drilling

There are two areas where the potential for loss of well control exists during drilling. The first is during the drilling of the surface hole where the potential for a shallow gas blowout exists. It should be noted that shallow gas blowouts do not contain oil and no spill of oil occurs at the surface. However, these incidents are critical from a safety standpoint. The second is while drilling the below-surface hole; a blowout can occur while drilling into the reservoir or other hydrocarbon-bearing zones or during completion of the well. In both cases, kick identification and management are the primary tools used to prevent a blowout.

Well Control During Surface Hole Drilling

During surface hole drilling, a shallow gas blowout can occur when a volume of trapped gas is encountered. This causes a rapid unloading of the wellbore fluids (mud) and gas at surface in a very short time span.

Shallow seismic surveys are carried out over the proposed drilling location to establish the presence of gas accumulations. Offset data is also valuable, but accumulations tend to be localized, so caution is vital at all times in case an incident occurs. Detection during drilling or tripping (i.e., running the drillstring into or out of the hole) will be visible by monitoring the returns to the surface from the drilling fluid system, monitoring the volume of drilling fluid required to fill the wellbore, and monitoring the drilling fluid weight in and out of the well to detect any influx of gas into the wellbore.

No attempt is made to shut in the well to contain the gas, as surface formations typically have insufficient strength to prevent gas broaching to the surface from these shallow depths. Instead, the flow of gas is directed away from the rig floor using a diverter annular preventer and diverter line, which vents the gas at a safe distance from the drill rig to atmosphere. Procedures are developed to keep pumping fluid to the drillstring wherever possible to try and establish primary well control, though most shallow blowouts deplete rapidly and/or bridge off.

Well Control While Drilling Below the Surface Hole

While drilling below the surface hole, causes of kicks include drilling into abnormally pressured formations with under-weight drilling fluid, tripping (pulling or putting drill pipe in the hole) too fast, not filling the hole, mud losses due to lost circulation zones, etc. The majority of kicks occur not because of well design shortcomings or drilling, but because of human error, especially during tripping operations. To assist the drilling operations team in detecting and preventing kicks during this drilling period, certain rig equipment is employed:

- A mud return line flow meter giving a reading of increased mud returns when drilling at constant pump rate could be an indication of a kick being taken downhole.
- A pit volume totaliser records the volume of mud in the mud system tanks and any changes in volume (gains or losses) set off alarms at the driller's console.
- Gas detection equipment is used around the drilling mud circulating system to sense the presence of gas breaking out of the mud which can be an indication of insufficient drilling fluid weight.

- A trip tank is utilized during tripping operations to accurately monitor mud volumes displaced from or pumped to the well as the drillstring is pulled out of, or run into, the well. This is a small tank with reduced cross-sectional area such that slight volume changes mean relatively large depth variances resulting in alarms being set off at the driller's console.
- All the above mechanical indicators are continually monitored at the driller's console during drilling and tripping operations.
- For areas where high pressures and/or small hole sizes are being drilled, an early kick detection system is utilized to detect much smaller volume changes in the fluid system.
- Mud logging services with formation sample catching, gas chromatography can indicate kicks and also confirm depths/formations being drilled. This greatly assists actual casing seat selection decisions consistent with well designs.
- Logging while drilling tools assist in formation identification and actual casing seat selection decisions as well as identifying potential hydrocarbon-bearing zones.

Section 2.1.1

Equipment alone will not prevent kicks from occurring. Personnel training is required to monitor drilling conditions, react correctly to anomalies and follow procedures to establish whether or not a kick has been taken. As discussed in Section 2.1.1, personnel involved with well control and the operation and maintenance of Production Safety Systems will have training in accordance with MMS regulations.

If it has been established that a kick has been taken below surface hole and a well control incident is underway, then blowout prevention (BOP) equipment and procedures are used to remove the kick safely from the wellbore and prevent further kicks and possible escalation into a more serious incident such as a blowout. BOP and casing installations conform to AOGCC regulations (20 AAC 25.035 and 25.285) and MMS regulations (30 CFR 250 Subpart D). To assist the drilling operations team in managing kicks, certain rig BOP equipment is employed. In the event primary well control is lost, this surface equipment will be utilized for secondary containment of the fluid influx into the wellbore. The BOP equipment will contain fluids and pressures in the annulus and drill pipe while the mud weight is raised to overbalance the bottom hole formation pressure. In addition, there are well kill procedures to circulate heavier mud into the well and remove the kick fluids safely. Blowout prevention equipment and procedures are described below:

- A BOP stack is located above the wellhead and is used on all hole sections below surface hole. It has a series of hydraulic (or manually operated) rams (pipe, variable and blind/shear) and annular preventers for closing in the well around the drillstring or open hole plus actuated and manual valves and kill/choke lines. The shear ram can close on the drillstring and sever it to give a complete seal across the wellbore. The BOP essentially acts like a valve at surface which contains all wellbore fluids and pressures while downhole operations are planned and executed safely. Redundancy exists in the BOP stack with additional ram preventers and valves.
- The casing program is designed to allow safe well control procedures to be carried out during drilling, workover, and production operations; the cementing program isolates hydrocarbon zones and abnormally pressured formations, lost circulation zones, and freshwater aquifers.

- A choke manifold is a system of piping and valves for handling fluids circulated from the wellbore in a controlled and safe manner. All valves in the system have a backup.
- Degassers are used to remove gas from drill fluids circulated to the surface from the well.
- The BOP stack and choke manifold have redundancy built in such that a ram, choke or valve failure will not mean a leak and potential blowout of hydrocarbons.
- All BOP equipment is rated for the pressure regimes to be encountered in the development wells and is configured and regularly tested (witnessed by appropriate regulatory agencies) according to operator policies and agency regulations.

Drilling operations may resume when normal conditions prevail.

As with kick detection, equipment alone will not totally manage kicks. Training of personnel to react correctly to well control incidents and follow procedures to safely bring the well back under control is vital.

- Supervisory drilling staff are certified in well control which includes theory and procedures for both prevention and handling of well control incidents. This includes both rig site personnel (toolpusher, driller, relief driller, company man, drilling engineer) and office personnel (drilling superintendent, senior drilling engineer, operations drilling engineer)
- Drills are carried out with all crews to close in wells and simulate well control incidents. Well kill sheets are compiled and posted on the rig floor and updated once a tour for the drilling conditions prevalent at the time (i.e., hole sizes, drillstring, bottom hole assembly, mud weights, and slow pump rate). The well kill sheets are updated as hole conditions dictate.
- Operator policies and industry-recommended practices have procedures for different kill techniques suitable for specific well control situations.

Operator well control contingency plans provides guidelines on how to safely and effectively respond to and manage a well control incident.

Well Suspension/Abandonment

Upon completion of drilling operations, the well will be plugged and abandoned in compliance with MMS regulations 30 CFR 250.700.

2.1.7 Facility Piping Requirements (18 AAC 75.080)

Not applicable, there is no facility piping as this is an exploratory operation.

2.1.8 Oil Storage Tanks (18 AAC 75.065)

Inspections of Non-Elevated Tanks

Not applicable.

Inspections of elevated and Portable Tanks

All tanks with a capacity greater than 10,000 gallons will be inspected in accordance with API standards. The rig or well testing contractor is responsible for tank inspections.

Inspection Records

API tank inspections will be prepared according to API document guidelines and retained for the service life of the tanks. These records are maintained by the drilling rig or well testing contractor.

Repair or Alteration

PAI or its contracted drilling company will immediately perform necessary maintenance or repairs, as required by 30 CFR 250.301.

Leak Detection

See Section 2.5.1.

Overfill Prevention

See Section 2.5.2.

2.1.9 Secondary Containment Areas for Oil Storage Tanks (18 AAC 75.075)

Secondary containment for the exploration diesel tanks and oil storage tanks will be provided by the drill rig itself or by bermed, lined, impermeable secondary containment structures constructed of 10-ft. x 10-ft. timbers and HDPE liner material.

Offshore Platforms

Not applicable.

Debris Removal

The secondary containment areas will be maintained free of debris and other material that might interfere with the effectiveness of the system, including excessive accumulated snow and snowmelt.

Drainage

Not applicable.

New Installation

Not applicable.

Monitoring Wells

Not applicable.

Loading Racks

Not applicable. .

2.2 DISCHARGE HISTORY (>55 GAL) [18 AAC 75.425(e)(2)(B)]

Not applicable since this is an exploratory operation.

2.3 ANALYSIS OF POTENTIAL DISCHARGES [18 AAC 75.425(e)(2)(C)]

Several types of spills could occur during McCovey exploration activities. Analyses have been conducted of potential discharges for McCovey and are summarized below.

TABLE 2-1
SUMMARY OF POTENTIAL DISCHARGES

TYPE	CAUSE	PRODUCT	SIZE	DURATION	ACTIONS TAKEN TO PREVENT POTENTIAL DISCHARGE
Diesel transfer from Rolligon/heavy ATVs/trucks to tanks	Hose rupture	Diesel	800 bbl	30 seconds	Trasfer procedures in place; secondary containment
Diesel transfer from fuel trucks to tanks	Tank overfill	Diesel	50 gal	30 seconds	Transfer procedures in place; secondary containment
Diesel	Tank rupture	Diesel	10,240 bbl	Instant	Secondary containment; tank inspection program
Blowout	Uncontrolled flow from wellbore	Crude oil	82,500 bbl	15 days	Blowout prevention equipment, operator training

2.4 OPERATIONAL CONDITIONS INCREASING RISK OF A SPILL [18 AAC 75.425(e)(2)(D)]

Conditions specific to PAI's North Slope operations that potentially increase the risk of discharge, and actions taken to eliminate or minimize identified risks, are summarized below:

- **Temperature:** Cold temperatures pose a threat to personnel and equipment and heat from operations may cause gases to expand and increase the likelihood of discharge. North Slope facilities and drilling procedures are engineered to accommodate temperature fluctuations. Personnel wear weather-appropriate protective gear for outside operations.
- **Weather Conditions:** The operation most likely potentially affected by adverse weather conditions is the drilling support operation, such as transportation activities

between the exploration site and Prudhoe Bay. If transportation was required, strict adherence to vehicle safety and speed limits will minimize the potential for vehicular accidents, which may cause a spill. Reflectors and warning signs are located at traffic and caution areas in the vicinity of the drillng rig and at regular intervals along ice roads.

2.5 DISCHARGE DETECTION [18 AAC 75.425(E)(2)(E)]

2.5.1 Discharge Detection Systems

Discharge detection will rely on visual surveillance.

2.5.2 Storage Tank Overfill Protection

Diesel Tanks

The diesel storage tanks have no automatic fluid-level control devices. Tank fuel levels are monitored and controlled manually. Transfer procedures are relied on to protect against tank overfill.

Section
2.1.5

Day Tanks

The rig day tank may have an overfill float and automatic alarm which sounds over the rig intercom. See the drill rig's SPCC plan for tank details.

Appendix B

Testing of Overfill Prevention Devices

The overfill protection device on any tanks greater than 10,000-gallon will be tested before each transfer of diesel into the tank.

Visual Inspections

The exploration site will be staffed 24 hours a day by drilling personnel. During routine tours, facility personnel will visually inspect all tankage, sumps and drains for indications of oil leaks. Piping, valves, glands, wellheads, pumps and all other machinery will also be visually inspected as part of the daily routine. Any oil leaks or spills will be noted. The source of the spill will be located and corrected, and the oil spill cleaned up.

2.6 RATIONALE FOR CLAIMED PREVENTION CREDITS [18 AAC 75.425(e)(2)(F)]

PAI is not requesting any reduction of response planning standards.

2.7 COMPLIANCE SCHEDULE [18 AAC 75.425(e)(2)(G)]

Not applicable.

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3. SUPPLEMENTAL INFORMATION
[18 AAC 75.425(E)(3)]

3.1 FACILITY DESCRIPTION AND OPERATIONAL OVERVIEW [18 AAC 75.425(e)(3)(A)]

Facility Ownership [18 AAC 75.425(E)(3)(A)]

PAI will drill an exploration well at the McCovey site in the winter of 2000/2001. Lease of this exploration area was acquired in 1991. Leaseholders and percentages owned are as follows:

Phillips Alaska, Inc.	50%
Chevron	50%

General Site Description

The McCovey well will be located in federal waters, approximately 10 ½ miles northeast of West Dock. Sidetrack wells will be drilled from the same location. The proposed surface location is latitude 70° 31' 39" N and longitude 148° 10' 30" W.

Section 1.8, Figure 1-4

The major components of the McCovey exploration well project are:

- A circular ice island for drilling operations
- An ice road from either West Dock or East Dock to McCovey and an ice road from a possible rig camp on Reindeer Island to McCovey
- Fuel storage
- Drilling activities
- Flow testing

Ice Pad Description

The ice pad will be circular, approximately 600 feet in diameter. The pad will have a working surface approximately 61 feet thick, graduating to mean level low water at the pad edge. The upper surface of the pad will have a 15:1 slope ratio and the subsurface pad will have a 6:1 slope ratio. A working surface of an impermeable HDPE-liner, timbers, and matting boards will be placed on the grounded ice pad underneath the rig sub-base.

Section 1.8, Figure 1-3

No material will be stored off the pad.

Rig Camp

A rig camp may be located on Reindeer Island, approximately 4.8 miles away from the exploration site. An alternate rig camp location is at the West Dock staging area. An ice road will connect the camp to the exploration well island. The modular camp structure supplied with the drilling rig will house 60 people. The rig camp will be approximately 500 feet by 500 feet.

A small satellite camp may also be built on the McCovey ice island and will house up to 10 people.

Ice Road

Section 1.8, Figure 1-4

An ice road will be constructed from either West Dock or East Dock to the McCovey exploration area. If the rig camp is located on Reindeer Island, then an ice road will be constructed from the camp to the exploration site.

The ice road will be constructed by using fresh water to form an initial trail. Ice thickness will be increased by spraying additional fresh water until the road has the desired thickness. The road will be constructed to a maximum usable width of 35 feet. Additional water will be added as necessary for road maintenance. Construction of the ice road will be scheduled to begin as soon as weather conditions are appropriate.

Fuel Storage

Appendix B

The drill rig and its associated fuel tanks will be located on the McCovey ice island. Details on the rig's tanks, fuel flow diagrams, fuel transfer procedures, valving details, and safety precautions for the drilling rig are listed in the drilling contractor's SPCC Plan (Nabors 14-E, formerly Pool Rig 9).

Fuel will be transported to the well site by Rolligon/heavy ATV or by fuel truck on the ice road. All fuel tanks will have secondary containment. When fuel is stored for less than seven days, as during mobilization and demobilization or other off-pad activities of short duration, PAI will use ADEC-approved BMPs.

Flow Tests

Flow testing may be conducted if hydrocarbon liquids are discovered in the wellbore. The temporary flowline will be monitored 24 hours during the flow periods. Produced liquids from these tests will be temporarily stored in mobile tanks, located in secondary containment. Tank details cannot be provided at this time since tanks have not yet been selected for this project.

The produced liquids will be transported by truck to Kuparuk or Prudhoe for processing or will be re-injected. Produced gas will be flared. Fluid transfers will be conducted in accordance with PAI BMPs.

Bulk Storage Containers

Section 2.1.9, Appendix B

Fuel tanks and crude oil tanks will be located on the ice island in bermed, HDPE-lined, impermeable secondary containment structures. The secondary containment for all fuel storage tanks will be a minimum of 110 percent of the single largest tank or any group of tanks permanently manifolded together. Specific fuel tank information is addressed in the rig's SPCC plan and is provided in Appendix B.

All tanks with a capacity of greater than 10,000 gallons will be API-certified, in accordance with ADEC regulations.

Transfer Procedures and Major Fueling Areas

Fuel transfer procedures have been developed and implemented for North Slope operations. The *North Slope Fluid Transfer Guidelines*, dated February 15, 1993, prescribe practices for responsible transfers of kiesel fuel. Appropriate use of surface liners and drip pans is described in the North Slope Unified Operating Procedure, Number 1-93, dated April 2, 1993.

Appendix A

When fuel is stored for less than seven days, as during mobilization and demobilization or other off-pad activities for short duration, PAI will use ADEC-approved best management practices (BMPs). PAI will also use the BMPs for fuel transfer procedures at the staging area.

Transfer from Truck to Tank

If necessary, the rig's diesel tanks will be filled by transfer with a fuel hose from tanker trucks traveling to the site by the ice road. Each fuel hose connection has a drip pan, and the entire transfer is closely monitored by truck and exploration site personnel in accordance *with North Slope Fluid Transfer Guidelines*. Personnel visually monitor the hose and examine the tank level throughout the transfer and stay in communication via radio and hand signals to assure that the transfer can be quickly stopped if necessary.

Section 2.1.5, Appendix A

Crude Oil and Resevoir Characteristics

This is an exploration facility.

Proposed Drilling Schedule

December 2000	Mobilization of equipment
December 2000 to February 2001	Construction of ice pad
January to mid-February 2001	Construction of ice road and camp pad
March to April 2001	Drilling and testing at McCovey No. 1
End of April to May 2001	Demobilization

3.2 RECEIVING ENVIRONMENT [18 AAC 75.425(e)(3)(B)]

An Environmental Impact Statement was written for the Outer Continental Shelf lease sale 124 by MMS in September 1990, which covers the area where PAI plans to conduct exploratory drilling during the winter of 2000. In addition, MMS will conduct an environmental assessment for the McCovey area prior to drilling.

Exploration activities associated with the McCovey prospect will be conducted in the Beaufort Sea, outside of the barrier islands. Drilling will be performed during winter months, during solid ice conditions.

Routes of Travel to Open Water [18 AAC 75.425(e)(3)(B)(I)]

A spill during drilling activities will not enter open water because drilling is planned during winter only.

3.3 COMMAND SYSTEM [18 AAC 75.425(e)(3)(C)]

ACS Tactic L-8, ACS Vol. 3

All emergency response situations will utilize the Incident Command System (ICS), which provides clear definition of roles and lines of command, together with the flexibility for expansion or contraction of the organization as necessary. Under this system, the first person discovering or responding to an emergency situation becomes the Incident Commander (person in charge) until that individual relinquishes authority to another person better able to control the situation.

Details of the management structure in a spill response are provided in the ACS *Technical Manual*, Volume 3. Appendix B of Volume 3 contains a description of ICS position responsibilities and checklists. Note that the SRT fulfills the function of the Tactical Response Team, as discussed in Volume 3. Appendix D of *Volume 3* contains many common ICS forms for documenting response decisions and activities. Costs associated with a spill response would be tracked through an Authorization for Commitment code.

Section 1.1

In most Level I incidents, the SRT possesses the capabilities to effectively control the incident. The On-Site Company Representative will fulfill the role of Incident Commander. ACS will be activated to stand by for all spills until an assessment is performed. Once the assessment is complete, ACS is either released or mobilized.

Table 3-1

Level II/III responses are initiated by the Drilling Superintendent - Exploration. The IMT is activated and begins to provide support to the field responders (operations section) and to coordinate the collection and distribution of information. ACS provides manpower and equipment resources from Deadhorse to assist in spill containment and recovery. The North Slope operators coordinate with ACS to ensure that a reserve of trained manpower is available for an extended spill response.

The QI would be notified during call out of the IMT (Level II or III response). During Level II events, the Mutual Aid agreements cover resource issues associated with personnel and equipment. During Level III events, the QI acts as the company representative for commitment of Off-Slope resources.

ACS Tactic L-8

If the spill exceeds the response capabilities of the SRT, Mutual Aid will be activated. At that time, the Incident Command switches to the Kuparuk Field. Through the Mutual Aid Agreement, dated November 4, 1999, response personnel are available to respond to a Level II or Level III incident at the exploration site. PAI would arrange for equipment and manpower from contractors beyond the Mutual Aid agreement limits if necessary to complete a spill response. Contracts for additional trained response personnel are in place through ACS. Contracts with North Slope-based contractors for additional equipment are in place through PAI.

TABLE 3-1
INCIDENT MANAGEMENT TEAM NOTIFICATION LISTING

IMT Position	PAI Job Title	Phone Numbers	
		Pager	Office
Incident Commander	Production Manager	451	659-7253
Deputy Incident Commander	Facility Superintendents (Primary)	851	659-7219
	Production Superintendent	--	659-7634
	Production Supervisors (Secondary)	621	659-7727
		202	659-7502
		519	659-7226
	Maintenance Supervisors (Alternate)	146	659-7787
		661	659-7506
Command Staff	Legal Officer - Chief Counsel	--	--
	Safety Officer - Safety Supervisor	675	659-7590
	HSET Manager	742	659-7652 *or* 263-4682
Liaison Officer (Director)	FEC Supervisor	441	659-0406
Information Officer	Public Relations Representative	--	227-3985
	Human Resources Representative	--	659-7237
Operations Section Chief	Production Supervisors	621	659-7727
		202	659-7502
		431	659-7682
Radio Dispatcher	Equipment Dispatcher	821	659-7949
	Wells Dispatcher	342	659-7532
On-Scene Commander	Emergency Services Chief	900	659-7494
On-Scene Commander Aide	Emergency Services Admin. Specialist	800	659-7919
Deputy On-Scene Commander	Spill Lead Technician	801	659-7879
	Assistant Fire Chief	901	659-7882
Staging Area Manager	Field Support Coordinator	171	659-7931
	Field Services Foreman	172	659-7948
	Spill Response Technicians	802 / 803	659-7836
Staging Area Assistant	Cost Assistant	874	659-7142
	Administrative Assistant	875	659-7842
On-Scene Safety Officer	Safety Specialist	675	659-7320
		673	659-7605
		672	659-7503
Air Operations Manager	Security Captain	410	659-7213
ICP Situation Status	HSET Aide	679	659-7593
Division/Group Supervisor	SRT Team Leaders	--	--
Planning Section Chief	Central Maintenance Supervisor	665	659-7222
	Maintenance Supervisor CPF-1 (Alternate)	146	659-7887
Technical Specialist	Corrosion Engineer	381	659-7869
	Corrosion Engineer Supervisor (Alternate)	346	659-7773
	Field Planners (Alternate)	321	659-7321

TABLE 3-1 (CONT.)
INCIDENT MANAGEMENT TEAM NOTIFICATION LISTING

IMT Position	PAI Job Title	Phone Numbers	
		Pager	Office
Situation Status Unit Leader	Project Engineer	119	659-7816
	Engineer Tech./Wells Engineer Tech.	911 / 731	659-7285 or 7535
Situation Status Specialist	Engineering Technician	239	659-7843
Situation Status Mapping Operator	Survey Office Technician	878	659-7660
		399	659-7418
Resource Status Unit Leader	Training Advisor	535	659-7595
	Maintenance Supervisor CPF-2 (Alternate)	661	659-7506
Resource Status Unit Aide	Corrosion Technician Aide	306	659-7878
Environmental Unit Leader	Environmental Coordinator	669	659-7242
Environmental Specialist	Environmental Specialist	438	659-7212
Documentation Unit Leader	QA/QC Clerk	694	659-7659
	Engineering Services Aide (Alternate)	568	659-7477
Logistics Section Chief	Materials Supervisor (Primary)	585	659-7254
	Camp Services Supervisor	681	659-7448
	Field Services Supervisor	881	659-7978
	Inventory Specialist (Alternate)	329	659-7239
Logistics Section Aide	Vacant	--	--
Support Branch	Inventory Specialist	329	659-7239
	Materials Specialist	262	659-7361
Supply Unit	Facility Materials Specialists	262	659-7361
		221	659-7287
		153	659-7328
		114	659-7351
Food/Facilities Unit	Catering Manager	234	659-7250
	Catering Lead	420	659-7338
	Head Housekeeper	113	659-7992
Ground Support Unit	Partsman	474	659-7657
	Field Equipment Support	184	659-7439
Warehouse Support	Materials Supervisor	369	659-7583
		363	659-7336
Service Branch	Camp Services Supervisor	681	659-7448
Medical Unit	Physicians Assistant	811	659-7230
	Security Captain	410	659-7213
Communications Unit	Communications Supervisor	105	659-7400
		104	659-7800
Security Unit	Security Captain	410	659-7213
Finance Section Chief	Business Analyst	918	659-7801
Time/Cost Unit Leader	Vacant	--	--
Insurance/Claims Unit Leader	Vacant	--	--
Procurement Unit Leader	Vacant	--	--
Contract Administrator	Materials/Contracts Assistant	195	659-7363

For significant oil spills, there may be On-Scene Coordinators from the Federal Government, the State, the Local Government as well as the responsible party. These individuals will become part of the Unified Command, representing their organization. Each contributes to the process of:

- Determining and establishing overall incident objectives and priorities
- Selecting strategies
- Planning for tactical activities
- Conducting integrated tactical operations
- Using resources efficiently and effectively

The responsible party will be the Incident Commander in the unified structure unless the SOSC or FOSC determines the response is inadequate. At that time, either the SOSC or FOSC will assume the Incident Commander's duties.

3.4 REALISTIC MAXIMUM RESPONSE OPERATING LIMITATIONS [18 AAC 75.425(e)(3)(D)]

ACS Tactic L-7

The realistic maximum response operating limitations are described in the ACS *Technical Manual*. Environmental conditions can sometimes limit response work. Some limitations are based on safety, and others concern equipment effectiveness. The ACS *Technical Manual* lists the percentage of time some variables reduce effectiveness of response for planning purposes.

The single most limiting factor of mechanical containment and response effectiveness at the exploration site is extreme winter conditions. In the event of such conditions, activities at McCovey may be curtailed due to safety considerations.

Any drill rig operation during Phase 1, 2, or 3 weather conditions is considered a non-standard operation. Phase 1, 2, or 3 weather conditions are described below:

Phase 1	Caution - reduced visibility. Travel on the field is permitted using extreme caution. Reduce speed and be certain all equipment (radio, lights, etc.) is operating properly. Arctic gear is required.
Phase 2	Restricted - convoy only travel in the field. Travel is permitted in convoys of two or more vehicles only. Radio communication between vehicles in the convoy is required.
Phase 3	Closed - critical or emergency travel only. Travel will be by heavy equipment convoy only.

All non-standard operations require a pre-job safety meeting in which hazards are assessed. A risk assessment is done on those hazards and appropriate mitigation measures are identified to manage the hazards. If the risk assessment indicates that the hazards cannot be appropriately managed, then the rig will be shut down until weather conditions improve. The risk assessment will be led by the PAI onsite representative with participation from the contractor toolpusher and any other appropriate personnel. The PAI onsite representative is responsible for making the final decision on the rig as to the level of risk.

The PAI company representative should consider the following when doing a risk assessment:

- Forecast for weather conditions: duration, area, severity, crew change out
- Fuel and water levels to sustain operations
- Support personnel: trucking companies, mud companies, Tool Service, etc. Will you be needing their services at your operations?
- Safety of operation: type of operation, hazards and risks involved
- Availability of emergency equipment and fire trucks, and medical facilities proximity

3.5 LOGISTICAL SUPPORT [18 AAC 75.425(e)(3)(E)]

Section 3.8; ACS Tactic L-4, L-9, L-10

PAI has an existing logistical support infrastructure for its operations on the North Slope. Transportation equipment, coordination procedures and maintenance procedures are in place under normal operations. PAI has in place existing contracts for operational logistical support, which would also be used to support a spill response.

3.6 RESPONSE EQUIPMENT [18 AAC 75.425(E)(3)(F)]

3.6.1 Equipment Lists

Table 3-3, ACS Tactic L-6

North Slope operator spill response equipment is available through the ACS Charter. Table 3-3 identifies on-site response equipment at the exploration site. A summary list of North Slope spill equipment is provided in ACS *Technical Manual* Tactic L-6.

3.6.2 Maintenance and Inspection of Response Equipment

ACS Tactic L-6

Response equipment will be maintained in such a manner that it can be deployed rapidly and in a condition for immediate use. The on-site response equipment will be routinely inspected and tested. ACS performs routine inspection and maintenance of all ACS and exploration site response equipment.

ACS holds the following Oil Spill Removal Organization (OSRO) classifications:

- Class A through E for river environments
- Class A through D for inland environments
- Class D for ocean environments

ACS has fulfilled the equipment maintenance and testing criteria that these USCG classifications require.

3.7 NONMECHANICAL RESPONSE INFORMATION [18 AAC 75.425(e)(3)(G)]

Nonmechanical response information is provided in the ACS *Technical Manual.*

Section 1.7, ACS Tactics B-1 through B-7

TABLE 3-2
ON-SITE SPILL RESPONSE EQUIPMENT
ACS DRILLING CONNEX

Description	Quantity	Unit
General Safety		
Small first aid kit	1	Each
PPE		
Rubber boots	3	Pair
Rain gear (top and bottom)	6	Set
Goggles, splash	6	Pair
Rubber gloves	6	Pair
Cotton gloves, Green Ape®	6	Pair
Respirators, organic vapor, ½ face	5	Each
Respirator cartridges	6	Pair
Tyvek® suits, XXX-large	1	Box
Sorbent		
Sorbent roll (36-in. x 150-ft.)	8	Each
Sorbent boom (8-in. x 40-ft.)	5	Each
18-in. x 18-in. sorbent pads/bale	4	Bale
18-in. x 18-in. glycol sorbent pads/bale	1	Bale
Burning		
Aerial ignitors	10	Each
Surefire gelling agent (20#)	20	Lb.
Propane weed burner	1	Each
Propane gas, w/20# bottle	1	Each
Recovery		
Rope mop (Z-14E package) with 2-in. female and 3-in. male Camlock® adapter	1	Each
2 kW diesel generator	1	Each
3-in. trash pump	1	Each
3-in. diaphragm pump	1	Each
3-in. discharge hose	200	Feet
3-in. suction hose	40	Feet
Tools		
Tripod light system	1	Each
4-5 kW Generator (diesel)	1	Each
2 cycle oil (chain saw)	1	Gallon
Chain saw	1	Each
Shovel, square	3	Each
Shovel, round	3	Each
Shovel, snow (aluminum scoop)	3	Each
Floor squeegee, 24-in.	2	Each
PVC, 4-in. x 10-ft.	4	Each
Sledge hammer, 8#	1	Each

TABLE 3-2 (CONTINUED)
ON-SITE SPILL RESPONSE EQUIPMENT
ACS DRILLING CONNEX

Description	Quantity	Unit
Tools (cont.)		
Pitchfork	2	Each
Ice chipper	2	Each
Tool box with assorted small hand tools	1	Each
2.0-gallon gas can w/gas (mixed/ready 50:1 mixture)	1	Each
5-gallon diesel fuel can	1	Each
Handsaw	1	Each
Stiff bristle broom	3	Each
Miscellaneous		
Safety tape, 100 ft. roll "Do not enter"	2	Roll
Fence post (rebar, 5-ft. x 5/8-in.)	12	Each
Studs (2-in. x 4-in.)	6	Each
Plywood sheet (1/2-in. x 4-ft. x 8-ft.)	2	Each
Utility knife	2	Each
Visqueen® roll (6 mil, 20-ft. x 100-ft.)	2	Each
Flashlight with batteries	1	Each
Survey stakes, bundle of 50	2	Bundle
Oily waste bags, box of 100	1	Box
Tie wire, 100-ft.	2	Roll
Poly rope, ¼-in. x 100-ft.	1	Roll
Survey tape	2	Roll
Duct tape, 2-in.	3	Rolls
Extension cord, 50-ft.	2	Each
Tank car seals	50	Each

3.8 RESPONSE CONTRACTOR INFORMATION [18 AAC 75.425(E)(3)(H)]

ACS is the OSRO for PAI's North Slope operations. Contact information for ACS is provided below:

Address: Pouch 340022, Prudhoe Bay, Alaska 99734
Phone number: (907) 659-2405 (24-hour contact number)

ACS Tactics L-8, L-9, L-10

PAI will activate ACS and the North Slope Operators to provide the initial manpower and resources required to respond to a large or lengthy spill response. If additional resources are required, they will be accessed through Master Services Agreements maintained by ACS.

PAI's Statement of Contractual Terms with ACS for this exploration activity is provided at the end of this section.

3.9 TRAINING PROGRAM [18 AAC 75.425(E)(3)(I)]

3.9.1 SRT Training

The North Slope Spill Response Teams consist of workers who volunteer to be emergency spill response technicians. Each team member is required to have initial emergency response training and annual refresher training, which meets or exceeds the requirements in the HAZWOPER regulations, 29 CFR 1910.120(q). Annual requirements for HAZWOPER refreshers, medical examinations, and respiratory fit test are tracked by ACS through weekly reports from the database.

ACS Tactic A-3

The training program consists of weekly classes, which emphasizes hands-on experience, field exercises and team building drills. The courses are selected by the facility Lead ACS Technician in conjunction with field management and use PAI, ACS and external training consultants. Table 3-4 lists typical SRT training courses. Because of operational time constraints, many of the courses are divided by subject area and taught in the 2- or 3-hour time frame of an SRT meeting. To ensure regular attendance at these meetings, team members are required to maintain an annual attendance rate of 75 percent or better. The training and attendance is documented and available for review. The yearly training schedule is also available at the facility and ACS.

Table 3-3

3.9.2 IMT Member Training

IMT members are trained through the North Slope Incident Management System (IMS). This training consists of IMS philosophy, drills and exercises, and practical experience. The IMS training program meets or exceeds the National Preparedness for Response Exercise Program (PREP) guidelines.

ACS Technical Manual, Vol. 3

The IMS training program includes an introduction to new members of the IMT, position-specific training, and the IMS process flow. The program is designed to be provided in a progressive manner that leads personnel through the entire operational planning period for an incident. A majority of the IMS training modules consists of process flow information. Table 3-5 provides a summary of these modules.

Table 3-4

Tabletop exercises and drills are used to test personnel knowledge and competency of the system. When additional training or response procedures are identified, training programs or workshops are designed to address the identified issue. Current training schedules are available at the facility.

3.9.3 Record Keeping

Complete training records for all PAI employees are kept on file in the PAI Training Department. Contractor records and ACS personnel records are kept on file at ACS in Deadhorse. ACS maintains oil spill training records of all North Slope SRT personnel, both employees and contractors.

Training attendance records for SRT members are kept in the SRT office and in PAI's Training Department. Training records of other employees, including IMT members, are kept on file at the PAI Training Department.

TABLE 3-3
NORTH SLOPE SPILL RESPONSE TEAM TRAINING PROGRAM COURSES

Category	Course Title
Communication	ICS Basic Radio Procedures
Decontamination	Decontamination Procedures
Environmental	Environmental Awareness Wildlife Hazing
Equipment	Basic Hydraulics For Spill Responders Boom Construction and Design Fastanks and Bladders Skimmer Types and Application Snow Machines and ATV Operations 90 Spill Response Equipment Proficiency Checks
Management	Incident Command System Management and Leadership During An Oil Spill Quarterly Drill and Exercises Staging Area Management
Miscellaneous	Global Positioning System
Response Tactics	In Situ Burning Nearshore Operations Summer Response Tactics Winter Oil Spill Operations Winter Response Tactics
Safety/Survival	Arctic Cold Weather Survival Arctic Safety HAZWOPER Spill Site Safety Weather Port and Survival Equipment
Vessel-Related	Arctic Cold Water Survival Airboat Operations Boat Safety and Handling Boom Deployment On Rivers Captain/Crewman Vessel Training Charting and Navigation Deckhand/Knot Tying River Response School Swiftwater Survival

TABLE 3-4
NORTH SLOPE IMS TRAINING MODULES

MODULE NUMBER	COURSE
0	IMS Overview
1	Development of Tactical Worksheet
2	Development of Initial Incident Briefing Form
3	Field Reports and Field Team Organization
4	Resource Ordering and Tracking
5	Initial Incident Briefing (201)
6	Mapping
7	Information Management: Situation Status
8	Information Management: Resource Status
9	Operational Planning Worksheet & Situation Reports
10	Operational Planning Worksheet for Next Operational Period
11	Assessment Meetings
12	Preparation of Tactical Objectives
13	Tactical Operations Planning
14	Preparation of Incident Action Plan Support Documents
15	Shift Change Briefing
16	Command
17	Environmental Unit Training
18	Documentation Unit Training
19	Safety Officer Training
20	Tabletop Talk-Around
21	Tabletop Exercise
22	Integrated Tabletop Exercise

3.9.4 Spill Response Exercises

PAI has fully adopted the PREP guidelines as the structure for PAI's training program and procedures. The National PREP guidelines were developed to establish a workable exercise program that meets the intent of OPA 90 for spill response preparedness. Participation in the National PREP and use of the National PREP guidelines ensure all federal exercise requirements mandated by OPA 90 are met

Internal Exercises

Internal exercises are those conducted wholly within PAI and are designed to test the various components of this Plan to ensure it is adequate to meet the needs of PAI for response to a spill. Internal exercises include:

- **Quarterly Qualified Individual Notification Drills:** To ensure the Qualified Individual is able to be reached on a 24-hour basis in a spill response emergency and carry out assigned duties.
- **Annual Spill Management Team Tabletop Exercises:** To ensure all personnel are familiar with the contents of this plan, including the Incident Command

System, crisis response procedures, mitigating measures, notification numbers and procedures, and individual roles in the response structure.

- **Semi-Annual Equipment Deployment Exercises:** To ensure all internal and contractor-operated response equipment is fully functional and can be deployed in an efficient and productive manner.
- **Triennial Exercise of Entire Plan**
- **Government-Initiated Unannounced Exercises**

With the exception of government-initiated unannounced exercises, all internal exercises are self-evaluated and self-certified. Documentation, including a description of the exercise, objectives met and results of evaluations, is maintained for a minimum of 3 years. All exercise documentation is in written form, signed by the Health, Safety, and Environment Support Team Leader for each exercise, and available for review on request.

External Exercises

External exercises involve efforts outside of PAI to test the interaction between PAI and the response community. The external exercises also test the plan and the coordination between PAI and the response community including: the OSRO (ACS); state, federal and local agencies; and local community representatives.

PAI participates in an annual Mutual Aid Drill (MAD), which satisfies the requirement of one unannounced exercise per year. In addition to actively participating in the MAD, federal, state and local agencies are involved in the development and evaluation of the drill. Every year, equipment is deployed at the MAD according to PREP guidelines. The MAD exercise satisfies the PREP requirements to exercise all aspects of the response plan at least every 3 years. The following are the components that are tested through the MAD exercise:

Organizational Design
- Notifications (includes training on 24-hour notifications and reporting to the National Response Center)
- Staff mobilization
- Ability to operate within the response management system described in the plan

Operational Response
- Discharge control
- Assessment of discharge
- Containment of discharge
- Recovery of spilled material
- Protection of economically and environmentally sensitive areas
- Disposal of recovered product

Response Support
- Communications
- Transportation
- Personnel support
- Equipment maintenance and support
- Procurement
- Documentation

3.10 PROTECTION OF ENVIRONMENTALLY SENSITIVE AREAS AND AREAS OF PUBLIC CONCERN [18 AAC 75.425(E)(3)(J)]

3.10.1 Prediction of Discharge Movement

Flow from a release would be from an ice pad to frozen sea ice and snow. See ACS Technical Manual T-6 and T-7 for discussion of oil-retention rates of snow and for blowout aerial oil plume distribution.

ACS
Tactics T-6
and T-7

3.10.2 Information on Probable Points of Contact

Spilled oil will reach frozen, snow- and ice-covered surfaces. Oil trajectories are not expected to affect open water, shorelines, or environmentally sensitive areas.

3.11 ADDITIONAL INFORMATION [18 AAC 75.425(e)(3)(K)]

Not applicable.

3.12 BIBLIOGRAPHY [18 AAC 75.425(e)(3)(L)]

Alaska Clean Seas. 1998. ACS *Technical Manual,* Volume 1, *Tactics Descriptions:* Volume 2, *Map Atlas;* and Volume 3, *North Slope Incident Management System.*

PAI Alaska, Inc. and BP Exploration (Alaska) Inc. 1996. *Alaska Safety Handbook.* Anchorage, Alaska.

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PAI's Statement of Contractual Terms with ACS for McCovey Exploration

RESPONSE ACTION CONTRACT

by and between

ALASKA CLEAN SEAS

AND

ARCO Alaska, Inc.

This Response Action Contract is entered into this 22 day of December, 1993 by and between Alaska Clean Seas ("ACS"), an oil spill response cooperative organized and existing under the laws of the State of Alaska, and ARCO Alaska, Inc ("User"), a Delaware corporation.

WHEREAS, User may request from time to time the use of response services and equipment provided by ACS as a response action contractor in the event of a release or threatened release ("release") of crude oil or refined petroleum products ("liquid hydrocarbons"), or for a drill conducted by any authorized governmental agency ("drill");

NOW, THEREFORE, in consideration of the premises, and in further consideration of the promises below, the parties agree as follows:

1\. **Term of Agreement.** This agreement is effective the date first written above.

2\. **Payment Due Dates.** All invoices rendered by ACS to User shall be due and payable not more than ten days after the date the invoice is transmitted to User, and amounts due shall bear interest at the rate of one percent per month or portion thereof from the due date until paid. ACS may decline to provide services to User at any time that payments are past due. Further, ACS may request and receive from User adequate security for payments, such as a cash deposit or an irrevocable letter of credit in amount equal to the anticipated costs for one or more months of services to be rendered, or other security satisfactory to ACS. In the event such security is not forthcoming immediately upon request, ACS may decline to provide services for User under this agreement, and may cease services immediately upon notice to User.

In the event ACS and User cannot agree on any charge or charges made by ACS to User under this Response Action Contract, User may hold back the disputed portion of such charges, only, pending resolution of the dispute, provided that in the event User holds back more than ten percent of any billing on account of disputed charges, ACS may elect to terminate this agreement immediately upon notice to User.

3\. **Work and Services to be Provided.** In the event of a release or a drill, User may notify ACS of the fact of such release or drill and request that ACS provide response services and equipment in connection with the same. In that event ACS is obligated to provide such response service and equipment to User under the terms and conditions of this response action contract.

User will compensate ACS for such response services and equipment according to the schedule attached hereto as Schedule "B". ACS may, upon 30 days; written notice to User, amend the contents of Schedule "B", including rates to be charged by ACS, provided that ACS shall use due diligence to keep available the response services and equipment listed for ACS in User's contingency plans covering the ACS area of interest. ACS shall use due diligence to maintain such equipment in a state of readiness, in accordance with industry standards.

ACS may condition the use of any and all equipment and materials upon the utilization of ACS, or ACS-approved personnel to operate the same. All response services and equipment provided to User by ACS shall be under User's direction. As soon as practicable after ACS commences providing response services and equipment to User, ACS and User shall agree upon the duration, scope and nature of the response action to be provided by ACS, and such agreement shall be reflected on a completed copy of Schedule "A". ACS shall notify User immediately if ACS is materially unable to carry out response action specified in this response action contract or in User's contingency plan.

4. **Controlling Documents.** User shall not direct ACS, nor shall ACS be under any obligation, to undertake response actions that are not in strict compliance with the terms and conditions of:

4.1. this response action contract,

4.2. any applicable remedial action plan approved by the Alaska Department of Environmental Conservation or other authority having jurisdiction over the applicable remedial action plan,

4.3. any applicable contingency plan approved by the Alaska Department of Environmental Conservation or other authority having jurisdiction over the applicable contingency plan, and

4.4. any applicable order, direction or requirement by a State or Federal agency asserting jurisdiction over the release.

5. **Spill Notification.** User shall notify the Alaska Department of Environmental Conservation (or other authority required by law) of any release of liquid hydrocarbons. User shall confirm such notification to ACS.

6. **User Warranty.** User warrants that all directions and mandates given by User to ACS in connection with any release of liquid hydrocarbons will be consistent with the plans and orders described in Paragraph 4, above. In the event ACS believes that a direction or mandate given by User to ACS is not consistent with such plans and orders, ACS may suspend or discontinue all or any part of the response action being provided, or to be provided, by ACS under this agreement.

7. **Indemnification.**

7.1. Special Recitals. User acknowledges that:

7.1.1. Neither this agreement nor any other instrument requires User to use the services of ACS or its contractor(s), or to utilize ACS for response action in connection with any release;

7.1.2. User is solely responsible for all planning, preparation, equipment acquisition, contracting and operations in connection with response action necessitated by a release originating from User's equipment or facilities;

7.1.3. For the purposes of any dispute related to the enforceability of these indemnification provisions, User waives any claim that:

7.1.3.1. it did not have adequate opportunity to participate in decisions made by or on behalf of ACS with regard to planning, equipment and materials acquisition and maintenance, operations, and other functions;

7.1.3.2. it did not have adequate opportunity to inspect the equipment, materials and supplies that have been acquired by ACS and to evaluate their condition and usefulness to User in the event of a release;

7.1.3.3. it did not have adequate opportunity to evaluate the ability of contractor(s) engaged by ACS to be of assistance to User in the event of a release;

7.1.4. Any and all equipment, supplies, materials and services provided by ACS to User are provided "as is, where is," and neither ACS nor any member of ACS makes any representation as to the availability, merchantability or fitness for any particular purpose of the same.

7.1.5. If these indemnification provisions were not included in this agreement, ACS would be unwilling to enter into this agreement.

7.2. Indemnification. It is the intent of the parties that User shall assume all indemnification responsibilities provided herein. User hereby agrees to indemnify, defend, and hold harmless ACS, its members, directors, officers, managers, executive committee, contractors and employees, together with all officers, directors, contractors, employees and affiliates of each of the members of ACS, and each of them, from and against any and all claims, demands, causes of action, damages, costs, fees (including reasonable attorneys' fees), expenses, penalties, losses or liabilities, in law or in equity, of every kind and nature whatsoever, arising out of or in any way connected with:

7.2.1. Any and all actions, or failures to act, on the part of User, its contractors, or ACS, its members, staff and contractor(s), carried on under or in connection with response action requested or received by User, including, without limitation, the activities of members of ACS as participants in business entities providing vessels, equipment and material to ACS;

7.2.2. Any and all penalties, fines or other liability imposed on ACS on account of the violation of any law or regulation, compliance with which is left by law to User, if such penalties, fines or other liability arise out of or are in any way connected with response action requested or received by User; and

7.2.3. Any and all liens, claims, assessments, levies and stop notices of labor, and any other liens or claims on account of overdue or other deficient handling of charges for labor or materials, if such liens, claims, assessments, levies, and stop notices of labor, or other liens or claims arise out of or are in any way connected with response action requested or received by User.

7.3. Extent of Indemnification. The indemnification obligations of User are fully effective to the extent allowed by law even if such claims, demands, causes of action, damages, costs, expenses, penalties, losses or liabilities were caused or contributed to, in whole or in part, by:

7.3.1. The active or passive negligence or other fault (including gross negligence) of ACS or its members, or their staff, contractor(s), agents, representatives or employees;

7.3.2. Any equipment or materials supplied to User by ACS, howsoever caused, whether by failure, malfunction or defect, latent or otherwise, in said equipment or materials, or by the maintenance thereof; or

7.3.3. The liability without fault of ACS or its members, or their contractor(s), agents, representatives or employees.

The obligations of indemnification are not limited, restricted, or in any way affected by the amount of insurance carried by User, or by any terms or conditions of any insurance policies. The obligations of indemnification shall survive the termination of this agreement, the dissolution of ACS and the withdrawal of any member from ACS.

7.4. Indemnification Duties. User assumes, without limitation, the following obligations:

7.4.1. At its own cost, expense and risk, to accept and conduct the defense of any and all suits, actions and other legal proceedings that may be brought or instituted against the indemnitees, or any of them, and prosecute any appeals;

7.4.2. To pay and satisfy any and all settlements, final judgments and decrees that may be paid by, or enforceable against, the indemnitees, or any of them;

7.4.3. To reimburse the indemnitees, and each of them, for any and all reasonable attorneys' fees, costs and expenses incurred by the indemnitees, or any of them, in order to enforce the provisions of this agreement;

7.4.4. To reimburse the indemnitees, and each of them, for any and all reasonable attorneys' fees, costs and expenses incurred by the indemnitees, or any of them, prior to the assumption of indemnification responsibilities by User in connection with any and all suits, actions and other legal proceedings described above; and

7.4.5. After User has assumed such responsibility, any and all indemnitees are entitled to participate at its or their sole cost and expense in the defense of any suit, action, or other legal proceeding without affecting the indemnity obligations of User under this agreement.

7.5. Administration.

7.5.1. In requesting that ACS furnish response action, and in utilizing and receiving the benefits of response action, User reaffirms thereby its commitment to perform its obligations as provided herein.

7.5.2. ACS may, if it so elects, pay and discharge any liens or overdue charges for labor, equipment, or materials incurred by User as may be reasonably necessary to protect the interests of ACS. Any and all such payments shall be for the account of User.

7.5.3. The provision of response action by ACS to User does not constitute or affect any construction contract under AS 45.45.900.

8. Insurance. At all times during the term of this agreement, User shall carry and maintain in force with carriers satisfactory to ACS, Workers' Compensation (including adjustments for marine service) and Employers' Liability Insurance in accordance with the law that may be applicable to its employees, and Comprehensive General Liability and Automobile Liability Insurance covering injury or death of persons and property damage in an amount not less than ten million dollars. User shall provide certificates of insurance for each of these policies at the request of ACS. No such insurance will be materially changed during the term of this agreement without at least thirty days' written notice to ACS. Nothing contained in this clause shall limit or waive User's legal or contractual responsibilities to ACS or others.

8.1. User agrees to have its insurers add ACS as an additional insured or loss payee under any policies of insurance applicable to this agreement, and to obtain a waiver of its insurers' rights of subrogation against the indemnitees.

8.2. In the event User elects to self-insure, ACS reserves the right to approve such self-insurance and to request and receive such information as ACS deems necessary to evaluate the self-insurance provided by User. In any case, if User elects to self-insure, User shall treat ACS as an additional insured or loss payee and hereby waives any rights of subrogation against ACS and ACS's members and their employees.

9. Accounting and Audit.

9.1. ACS agrees that all financial settlements, billings, and reports rendered to User, as provided for in this agreement, and/or any amendments to it, will reflect properly the facts about all activities and transactions handled for the account of User, which data may be relied upon as being complete and accurate in any further recording and reporting made by User for any purpose.

9.2. User's duly authorized representatives shall have access during normal business hours and upon reasonable notice during the term of this agreement to ACS's books, records, pricing manuals, receipts, vouchers, and similar documents for the purpose of verifying invoice prices or other charges billed in connection with this contract. Such representatives shall have the right to reproduce any of the aforesaid documents. ACS agrees to preserve all such documents for a period of two years after completion of any services under this contract as described in any completed Schedule "A", and to make all such documents available to User's representatives during such period. User shall notify ACS of any erroneous billings made by or paid to ACS, and ACS shall promptly make appropriate adjustments and reimburse User the amount of any agreed overpayment.

10. Confidentiality. ACS and User agree that they and their employees will treat as proprietary all information and materials developed or acquired in the course of its services for User, including business, operational, mechanical, technical, and financial data and reports. ACS or User will disclose such information and materials only to those of its employees who must receive it for the efficient performance of this agreement. The provisions of this paragraph shall remain binding on the parties and shall survive the completion or termination of this agreement.

11. Independent Contractor Status.

11.1. The parties intend that an independent contractor relationship shall be created by this agreement. Each party agrees to take all reasonable actions so that the public and all governmental agencies are given no reasonable basis to believe that the parties are engaged in a single business, partnership or other combination.

11.2. ACS shall pay all applicable taxes imposed by reason of the work to be performed by ACS hereunder (except for sales and use taxes, which shall be the sole responsibility of User) and any and all employment-related taxes. ACS shall timely file all reports and information required by law to be filed by ACS and covering the time ACS is engaged in performance of this contract.

11.3. ACS shall own exclusively the rights to any and all inventions, methods, and other intellectual property that it develops in the course of performance of work and services under this agreement.

12. Notices. All notices, requests and/or other communications provided for or permitted to be given by any party hereunder shall be made in writing and delivered in person or by mail, facsimile, telegraph or telex, properly addressed to each party to whom given, with postage and charges prepaid. Notices by facsimile, telegraph or telex shall be promptly confirmed by mail. A notice shall be deemed given only when received by the party to whom such notice is directed.

Notices shall be sent to the following addresses:

If to ACS:

General Manager
Alaska Clean Seas
12350 Industry Way, Suite 200
P. O. Box 196010
Anchorage, Alaska 99519-6010

CC: Manager, Logistics

Telephone: 907+345-3142
Facsimile: 907+345-2435

If to User:

____
____
____
____
____

Telephone: ____________________
Facsimile: ____________________

13. Termination. Either party may terminate this agreement upon thirty days' written notice. Upon termination, ACS will be paid according to this contract's compensation terms for any and all services ACS performs up to the date of termination and in carrying out User's termination instructions. Termination shall not affect the rights and responsibilities of the parties under this agreement with regard to insurance, indemnification, audit, records maintenance, confidentiality, choice of law, or venue.

14. Miscellaneous Provisions.

14.1. No Reference to ACS in Contingency Plans. User ☐ is ☐ is not a member in good standing of ACS. Only members in good standing of ACS shall be entitled to make reference to ACS, its equipment or its services in any contingency plan filed with any governmental agency, as being obligated to provide response action to User. ACS is not, and shall not under any circumstances be referred to by User as User's primary response action contractor unless User is a member of ACS in good standing. ACS shall be entitled to provide information to any governmental agency regarding User's relationship to ACS.

14.2. ACS is, and will remain certified as, an "oil spill primary response action contractor" under Alaska law, and an "oil spill removal organization under the Oil Pollution Act of 1990.

14.3. Assignment. No rights under this Response Action Contract shall be assigned or transferred without written consent of ACS and User.

14.4. No Third Party Beneficiary. No governmental agency or private party, including any subcontractor, is intended to be a third party beneficiary of any rights or obligations under this agreement.

14.5. Choice of Law; Venue. This agreement shall be construed under the laws of the State of Alaska. The parties agree that all matters involving interpretation or enforcement of this agreement will be referred to the United States District Court for the District of Alaska, in Anchorage, Alaska, or, if and only if the United States District Court does not have jurisdiction over any such matter, to any other court of competent jurisdiction in Anchorage, Alaska.

IN WITNESS WHEREOF, the parties have signed this agreement, effective the date first written above.

ACS	User
ALASKA CLEAN SEAS	ARCO Alaska, Inc
By	By
Its General Manager	Its EH*S Manager & ACS Member Rep

SCHEDULE "A"

DATE: ____________

1. **LOCATION OF RELEASE:**

____

____

____.

2. **SUBSTANCE(S) RELEASED AND QUANTITY(IES), IF KNOWN:**

____

____

____.

3. **POTENTIALLY RESPONSIBLE PARTY(IES), IF KNOWN:**

____

____

____.

4. **EQUIPMENT, MATERIALS AND SERVICES DESIRED:** (attach additional sheets, if necessary)

____

____

____

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____

____

____.

5. **NAME, ADDRESS, TELEPHONE ETC. OF USER CONTACT:**

____

____

____.

AGREED AND ACCEPTED: ____________________

SCHEDULE "B"

4. BEST AVAILABLE TECHNOLOGY
[18 AAC 75.425(e)(4)]

This section discusses the best available technology (BAT) requirements contained in 18 AAC 75.425(e)(4)(A), (B), and (C) to address technologies not subject to response planning standards or performance standards in 18 AAC 75.445(k)(1) and (2). The discussion of each technology covers the requirement to analyze applicable technologies and to provide a justification that the technology is BAT. The spill prevention and response equipment for the exploration site meets the BAT requirements because it is subject to response planning standards and performance standards in 18 AAC 75.

4.1 COMMUNICATIONS [18 AAC 75.425(e)(1) (D)]

ACS Tactic L-11A

The communications system for use in a spill response at the exploration site is described in the ACS *Technical Manual*.

4.2 SOURCE CONTROL [18 AAC 75.425(e)(1) (F)(i)]

Source control procedures for purposes of this BAT analysis relate to loss of well control, and failure of the piping and valves on the diesel tanks.

Loss of well control (i.e., a blowout) is discussed in the *PAI Arctic Well Control Contingency Plan*, which addresses all possible methods of well control available, including surface control measures, relief well drilling, and blowout ignition. PAI will use the services of a professional well control firm if well control was not regained by conventional mechanical means. No additional well control technologies are available for a blowout, other than those that will be employed by drilling engineers and well control personnel.

Table 4-1

Fuel storage tank(s) associated with drilling rigs are equipped with a manual shutdown valve(s). The valve is closed except during fuel transfers.

4.3 TRAJECTORY ANALYSES [18 AAC 75.425(e)(1) (F)(iv)]

ACS Tactic L-11B

Trajectory analyses and forecasts are described in the *ACS Technical Manual.*

4.4 WILDLIFE CAPTURE, TREATMENT, AND RELEASE PROGRAMS [18 AAC 75.425(e)(1) (F)(ix)]

ACS Tactic L-11C

Wildlife capture, treatment, and release programs are described in the ACS *Technical Manual.*

4.5 CATHODIC PROTECTION FOR TANKS [18 AAC 75.065(h)(3)]

Not applicable.

TABLE 4-1
BEST AVAILABLE TECHNOLOGY ANALYSIS
DIESEL TANK EMERGENCY SHUTDOWN VALVE

BAT EVALUATION CRITERIA	CURRENT METHOD: MANUAL GATE OR BALL VALVE CLOSURE	ALTERNATIVE 2: AUTOMATIC BALL VALVE CLOSURE	ALTERNATIVE 3: AUTOMATIC GATE VALVE
AVAILABILITY: Whether technology is best in use in other similar situations or is available for use by applicant	System is currently in use.	Technology exists to do this and is commonly done in pipeline systems.	Technology exists and is commonly used on pipeline systems.
TRANSFERABILITY: Whether each technology is transferable to applicant's operations	System is currently in use.	This technology is transferable.	This technology is transferable.
EFFECTIVENESS: Whether there is a reasonable expectation each technology will provide increased spill prevention or other environmental benefits	Effective because of ease of use, little maintenance, and work familiarity. Relies on strict administrative controls (procedures).	An effective means of preventing releases where operator error may occur. Concern may be that valve closes and filling hose ruptures.	An effective means of preventing releases where operator error may occur. This technology would have a longer closure time than the ball valve.
COST: The cost to the applicant of achieving BAT, including consideration of that cost relative to the remaining years of service of the technology in use by the applicant.	No change in cost as this is what is presently in place.	ROM of $20,000	ROM of $20,000
AGE AND CONDITION: The age and condition of technology in use by the applicant	Old technology, age of equipment varies	This would be a new installation with new equipment.	This would be a new installation with new equipment.
COMPATIBILITY: Whether each technology is compatible with existing operations and technologies in use by the applicant	Compatible and widely used. Requires no change.	Could be made compatible with the existing system.	Could be made compatible with the existing system.
FEASIBILITY: The practical feasibility of each technology in terms of engineering and other operational aspects	Feasible, easy to use and maintain	Feasible to implement	Feasible to implement
ENVIRONMENTAL IMPACTS: Whether other environmental impacts of each technology, such as air, land, water pollution, and energy requirements offset any anticipated environmental benefits	There are no environmental impacts that would offset any anticipated benefit.	There are no other environmental impacts that would offset any anticipated benefit.	There are no other environmental impacts that would offset any anticipated benefit.

TABLE 4-2
BEST AVAILABLE TECHNOLOGY ANALYSIS LEAK DETECTION FOR TANKS

BAT EVALUATION CRITERIA	PROPOSED SYSTEM OR METHOD: VISUAL INSPECTION	ALTERNATIVE: REMOTE MONITORING SYSTEM
AVAILABILITY: Whether technology is best in use in other similar situations or is available for use by applicant	System is currently used.	Sensors are readily available.
TRANSFERABILITY: Whether each technology is transferable to applicant's operations	System is currently used.	Transferable but not applicable to temporary tanks associated with a drill rig.
EFFECTIVENESS: Whether there is a reasonable expectation each technology will provide increased spill prevention or other environmental benefits	Effective if procedures are strictly adhered to.	Effective in detecting minor leaks before they are visible but prone to malfunction.
COST: The cost to the applicant of achieving BAT, including consideration of that cost relative to the remaining years of service of the technology in use by the applicant.	No cost	The cost to redesign the rig and its associated storage tank would be high.
AGE AND CONDITION: The age and condition of technology in use by the applicant	Not applicable	The system would be new.
FEASIBILITY: The practical feasibility of each technology in terms of engineering and other operational aspects	Currently in use and widely used.	Feasible but redundant and not as reliable
ENVIRONMENTAL IMPACTS: Whether other environmental impacts of each technology, such as air, land, water pollution, and energy requirements offset any anticipated environmental benefits	None	None

4.6 LEAK DETECTION FOR TANKS [18 AAC 76.065(h)(4)]

Daily inspections of fuel tanks and secondary containment areas are used to detect leaks.

Table 4-2,
Section 2.5

4.7 MAINTENANCE PROCEDURES for BURIED STEEL PIPING [18 AAC.75.080 (b)]

Not applicable.

4.8 TANK LIQUID LEVEL DETERMINATION [18 AAC 76.065(j)(3)]

Tank levels are manually measured to determine the required volume prior to any fuel transfers occurring. Fluid transfers follow the *North Slope Fluid Transfer Guidelines*. Secondary containment areas are inspected daily.

Table 4-3,
Appendix A

4.9 PROTECTIVE WRAPPING OR COATINGS FOR TANKS AND PIPELINES [18 AAC 75.080(b)(1)(A)]

Not applicable.

4.10 PIPELINE LEAK DETECTION, MONITORING, AND OPERATIONS [18 AAC 75.055(A)]

Not applicable.

4.11 CATHODIC PROTECTION FOR PIPELINES [18 AAC 75.080(B)(1)(A)

Not applicable.

4.12 CORROSION SURVEYS [18 AAC 75.080(b)(2)(A)]

Not applicable.

TABLE 4-3
BEST AVAILABLE TECHNOLOGY ANALYSIS
TANK LIQUID LEVEL DETERMINATION SYSTEM

BAT EVALUATION CRITERIA	PROPOSED SYSTEM OR METHOD: VISUAL INSPECTION	ALTERNATIVE 1: MICROPROCESSOR -BASED ELECTRONIC CONTROL SYSTEM	ALTERNATIVE 2: HARD-WIRED RELAY LOGIC CONTROL SYSTEM	ALTERNATIVE 3: PNEUMATIC CONTROL SYSTEM
AVAILABILITY: Whether technology is best in use in other similar situations or is available for use by applicant	Proposed method	Microprocessor-based programmable logic controllers (PLCs) are used in almost all electronic control systems in industry today. The reason for PLCs' popularity is that the controllers have proven to be BAT over the past 20+ years.	Hardwired relay logic control systems are still in use today but are becoming less popular.	Pneumatic control systems are used in very few applications today and never where pumps and motors are turned on or off.
TRANSFERABILITY: Whether each technology is transferable to applicant's operations	Transferable	Allen Bradley SLC5 PLCs and all instrumentation are not transferable to the drill rigs.	Undetermined	Undetermined
EFFECTIVENESS: Whether there is a reasonable expectation each technology will provide increased spill prevention or other environmental benefits	Effective if procedures are strictly adhered to.	Highly effective	Relay systems do not provide for logic status monitoring or alarming.	Pneumatic systems are prone to freezing if moisture build-up occurs in the tubing.
COST: The cost to the applicant of achieving BAT, including consideration of that cost relative to the remaining years of service of the technology in use by the applicant.	Not applicable	The cost to redesign the rig and its associated storage tank would be high.	The cost of design changes to a relay based logic system is high. Re-wiring is required for any revision.	The cost of design changes to a pneumatic logic system is high. Re-tubing is required for any revision.
AGE AND CONDITION: The age and condition of technology in use by the applicant	Procedures have been in place since 1993 for fuel transfer operations.	Not applicable	Not applicable	Not applicable
FEASIBILITY: The practical feasibility of each technology in terms of engineering and other operational aspects	Feasible and preferred due to potential for electronic or pneumatic systems to experience damage from rough handling.	Rig tanks are frequently moved over rough roads. Rough handling has the potential to effect the accuracy and/or operability of the system.	Rig tanks are frequently moved over rough roads. Rough handling has the potential to effect the accuracy and/or operability of the system.	Rig tanks are frequently moved over rough roads. Rough handling has the potential to effect the accuracy and/or operability of the system.
ENVIRONMENTAL IMPACTS: Whether other environmental impacts of each technology, such as air, land, water pollution, and energy requirements offset any anticipated environmental benefits	None	None	None	None

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APPENDIX A

BEST MANAGEMENT PRACTICES AND PROCEDURES

NORTH SLOPE FLUID TRANSFER GUIDELINES

NORTH SLOPE UNIFIED OPERATING PROCEDURE

Subject: North Slope Fluid Transfer Guidelines

ISSUE DATE: August 3 1993 **Scope: Field-wide**

Note: SAFETY is the first and foremost goal in all operations, including the transfer of all fluids. It is EVERYONE'S responsibility to ensure all related safety and environmental guidelines are being followed at all times.

1) Check your vehicle and/or equipment. Ensure that it is has been properly maintained and that there are no leaking parts. **If your vehicle or equipment does not appear to be in proper order and leaks are apparent, stop the job and have adequate repairs done.** In accordance with field operating procedures, a surface liner may be used for a short period of time under critical use equipment.

2) Stage vehicles away from water bodies, tundra and wildlife habitats. Staging or parking of vehicles and equipment in off-pad locations or on-pad edges should be avoided whenever possible.

3) Position equipment so that valves, piping, tanks, etc., are protected from damage by other vehicles or heavy equipment.

4) Verify that you have adequate secondary containment and absorbent pads on hand. Utilize as per published field operating procedures.

5) Before starting any fluid transfer operation, inspect all hoses, connections, valves, etc. Ensure that these items have been properly maintained; gaskets are present and in good shape; all valves are checked to verify they're in the proper on/off position, and that each connection is tightened properly.

6) Prior to the actual fluid transfer, check all tank and container levels, valves, and vents to prevent overfilling or accidental releases.

7) Use secondary containment under all appropriate connections, vents or any other likely source of spillage. Use as many secondary containers as are practical, or as are required per the published field operating procedures.

8) Upon starting the transfer of liquids, keep line of sight with operator and/or all connections, hoses, vents or any other likely source of spillage. Be prepared to stop proceedings if any leak is noticed. **Do not attempt to repair a leaking situation while fluid is being transferred. Stop operations to fix leaks!**

9) Maintain a constant line-of-sight with critical components throughout the transfer. **Transfer operations must not be left unattended.**

10) After transfer is complete, take every precaution while breaking connections. Secondary containment and absorbent pads must continue to be used until the rigging down process is complete.

11) Check all tank and container levels after each transfer for signs of spills. Immediately report **all** spills to the Field Environmental group in your area.

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FLAMMABLE & COMBUSTIBLE FLUID TRANSFER PROCEDURE

FLAMMABLE & COMBUSTIBLE FLUID TRANSFER PROCEDURE

Objective

This procedure is based on the Flammable and Combustible Fluid Truck Transfer Policy in the PAI SH&E Policies and Guidelines Manual. Refer to the policy for definitions, policies, and references. The objective of the Flammable and Combustible Fluid Truck Transfer Policy is to establish minimum requirements to protect the safety and health of PAI and contract employees when using vacuum and tanker trucks to transfer flammable and combustible fluids to or from non-permanent facilities.

Exceptions

Equipment fueling operations, diesel transfers for well service work, and permanent loading and unloading facilities (e.g., bulk-fuel loading dock, oily waste, recycle facilities, and fixed-chemical tanks) will continue according to established safe operating procedures.

Responsibilities

Vehicle Contractor/Operator:

- Ensure proper training, safe operation, and maintenance of their equipment.

PAI Representative:

- Ensure that steps are taken to prevent personnel injury, damage to the environment, or property damage.
- Ensure trucks and procedures used for the fluid transfer comply with the PAI Flammable and Combustible Fluid Truck Transfer Policy.
- Ensure the North Slope Unified Operator Procedure on the use of drip pans/surface liners is followed for environmental protection.
- Complete a pre-job safety meeting identifying potential hazards and escape routes.
- Use the Unit Work Permit with the checklist on the back of it, for all operations covered by this policy when not present for the entire transfer.

Operating Procedures

A PAI Representative shall perform the following pre-job checkout before the start of any flammable or combustible fluid truck transfer to or from a non-permanent facility. If a particular situation cannot meet specifics of the following requirements, the PAI Representative will take appropriate steps to safeguard personnel and equipment.

A. Inspect the site of the loading and unloading operations. If a Contract Foreman will supervise the work, conduct the site visit with the Contract Foreman. Conduct a pre-job safety discussion and a job scope review, including the potential hazards of the work and emergency procedures, with all participants.

1. Survey the truck and equipment to assure compliance with the policy criteria.
2. Review loading positions, emergency escape paths, and fire lanes.

    a. Identify a minimum of two emergency exit paths leading away from the transfer area for personnel egress. These exit paths must be a minimum unobstructed width of 5 feet and should be established perpendicular to the prevailing wind direction.
    b. Maintain a minimum unobstructed pathway of 20 feet for fire and emergency vehicle access to the transfer area.
3. Review the wind direction relative to the trucks and equipment layout. Monitor the prevailing wind conditions so any potential sources of hydrocarbons are kept at least 256 feet downwind of any potential ignition source.
4. Locate the inlet and/or outlet piping (truck connections) and truck-mounted fluid pumping equipment 25 feet or more downwind from any potential ignition source on the site or on the back of the truck.
5. The trucks and/or tank involved in the transfer should be separated by at least 25 feet.
6. Review positions of fire extinguishing equipment, and ensure the operator is trained in its proper use.
7. Assure continuous electrical bonding between transfer equipment.
8. Complete a Unit Work Permit if the fluid transfer will not be supervised by a PAI Representative the entire time.
9. Note that when venting at low ambient temperatures, there is potential for the vented gas to condense and possible freeze off the vent and check valves. Ensure that when applicable, the operator monitors the condition and takes appropriate actions to mitigate the hazard.
9. Test the means of communication for proper function.

B. Additional guidelines for solids waste handling ("supersucker" or "guzzler") operations:

1. Flammable and combustible fluids to be "supersucked" or "guzzled" must be at least 40° below their flash point.
2. Liquid flash point measurement will be required for "supersucker" or "guzzler" operations as warranted by the PAI Representative. Frequent tests are suggested, especially where the material may not be homogeneous.

APPENDIX B

RIG SPCC PLAN

NABORS DRILL RIG NO. 14E

(FORMERLY POOL ARCTIC ALASKA DRILL RIG NO. 9)

POOL ARCTIC ALASKA

SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

DRILL RIG NO. 9

September 28,1999

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DRILL RIG NO. 9

INTRODUCTION

The Federal Water Pollution Control Act Amendments of 1972 require the Administrator of the Environmental Protection Agency (EPA), with other federal, state, and interstate agencies, to enter into programs designed to prevent, reduce, or eliminate pollution of the navigable waters of the United States.

On December 11, 1973, the EPA published regulations for prevention and control of oil spills identified as Title 40, Code of Federal Regulations, Part 112 (40 CFR, Part 112). These regulations became effective on January 10, 1974.

Pool Arctic Alaska (PAA) Rig No. 9 is a portable drill rig in service on the North Slope of Alaska. It operates at various locations designated by the particular client to whom the rig is contracted. The site-specific Spill Prevention Control and Countermeasure (SPCC) Plan for each location is included in the client's drilling permit request.

The rig is classified as a land rig facility adjacent to navigable waters of the United States. Drilling locations are usually on man-made gravel pads constructed by our client on the site-specific location designated by our client.

The facility must satisfy the applicable federal/state laws, regulations, rules, standards, policies, and procedures. These safety standards, fire prevention, and pollution rules pertaining to spill prevention programs are necessary to minimize the oil discharge and fuel loss potential of the portable drill rigs.

The SPCC Plan for PAA conforms to, but is not limited to, the following:

1. The site-specific SPCC Plan provided by our client with each drilling permit request.
2. 40 CFR, Part 112.
3. Alaska Statute, Title 46, Water, Air, and Environmental Conservation.
4. National Fire Code, Pamphlet No. 30.
5. Uniform Building Code, latest edition.

PAA will review and evaluate this SPCC Plan each time the rig is moved. Any substantive amendment to the original SPCC Plan will be certified by a professional engineer.

PROFESSIONAL ENGINEERING CERTIFICATION

I hereby certify that I have examined PAA Rig No. 9 and this SPCC Plan. Being familiar with the provisions of 40 CFR, Part 112, I attest that this SPCC Plan has been prepared in accordance with good engineering practices.

Signature:

Name: Brian G. Hoefler, P.E.

Registration Number: CE 8384

State of Registration: Alaska

Date: September 28,1999 (Seal)

Brian G. Hoefler
CE-8384

MANAGEMENT APPROVAL

On behalf of PAA, I hereby certify that this SPCC Plan will be implemented as described herein and that the manpower requirements of this SPCC Plan are employees of Pool Arctic Alaska. These employees will be available on a continuous basis during the period of time when PAA Rig No. 9 is in operation.

It is anticipated that in almost all cases our clients will develop more detailed and stringent site specific SPCC Plans. In these cases, PAA will apply its full cooperation to assure complete compliance with our clients' plans.

Signature:

Name: Dale Larsen

Title: General Manager

Date: September 28,1999

I. GENERAL CONDITIONS

A. PAA RIG NO. 9

PAA Rig No. 9 is a mobile oil field drilling unit for operations in Alaska's northern Arctic. On occasions, new drill sites could be located on sites accessible by air year-round, with overland travel possible during winter frozen conditions. Drillsites are often constructed under winter frozen conditions. Drilling operations continue through winter and sometimes summer seasons. If completion is not attained the first season, rig integrity may be maintained until the next winter season when it will be re-activated and drilling completed.

The drill rig is of a special design and enclosed in winterized housing for operation in the Alaskan Arctic. Drilling pads may at times be connected by roads permitted for all seasons. In such instances, drilling operations probably will continue year-round, and this SPCC Plan will be applicable for such instances.

B. SUPPORT FACILITIES

Support facilities for Rig No. 9 typically include a camp for 20 to 30 personnel, waste holding tank, a shop facility, and miscellaneous vehicles.

C. SPILL POTENTIAL

The fuel storage tanks located on the facility pose the greatest potential for a possible oil spill.

The maximum oil quantity in a possible spill, as defined in the regulations, is the largest fuel tank or about 20,000 gallons. The maximum rate would be a tank rupture and subsequent dumping of the contents. Spills occurring as a result of fill line breakage during tank filling operations present a special problem, and security measures are described in the "Fuel Transfer Operations," Section III. D. 4. of this report.

II. PHYSICAL CONDITIONS

A. LAND USE

1. Facilities Land Usage

The typical drilling site is a man-made gravel work pad or island. Specific details of the work pad construction are covered in the client's SPCC Plan.

Typical drillsite work pads cover approximately 3 acres of land. Of this total, the bulk fuel oil storage tanks use a small area due to their large volume and compact placement. The drill rig will be located on a gravel pad work area approximately 160 feet wide by 400 feet or longer.

The PAA bulk storage tanks are of double-walled construction. Bulk storage tanks are placed in containment berms lined with impermeable membranes during building of the facility prior to rig start-up procedures. These berms remain intact while fuel is being stored on site.

2. Facility Drainage and Topography

Site-specific drainage and topography will be controlled by construction. An ice pad will be constructed and maintained beneath the drill rig and shop, with slope toward a central containment area, for collection and disposal. At the conclusion of each drilling program, approximately 6 inches of ice from the top of the pad will be removed for disposal at an oily waste disposal facility.

A snow and ice or gravel berm may be pushed into place around the entire periphery of the pad in such a manner that the access road can be closed off, and a total site containment could easily and quickly be attained if a blowout or other catastrophic accident occurred on site.

3. Fuel Storage Tanks

The number and capacity of bulk fuel oil storage tanks may vary according to accessibility to supply potential from fuel dealers. A minimum of the following tanks are required for rig operation:

- Two 20,000-gallon welded steel, double-walled, insulated diesel oil tanks
- One 3,000-gallon welded steel rig day tank

Other small tanks, as required for Rig 9 operation, consist primarily of equipment and vehicle day tanks. The specific number and quantity of fuels stored are client and site dependent. A typical tank inventory is provided in Table 1. Typical locations of these tanks are shown in the rig drawing attached to this SPCC Plan.

4. Spill History

Rig No. 9 has had no reportable spill events.

5. Possible Hazards

Potential hazards for the drill rig are as follows:

a. Permafrost/Subsidence

Dikes could subside during the spring or thawing period of the yearly cycle. The gravel dikes will be carefully observed during this period of time and replaced or maintained as needed. When

Table 1
Rig No. 9 Tank List

Tank	Description/Location	Volume	Contents	Construction	Secondary Containment	Inflow From	Outflow To	Comments
901	Diesel Storage Tank	9,000 gal	Diesel	Welded steel	single-walled;steel dike	Truck	903	--
902	Vehicle & Equipment Diesel Tank	1,000 gal	Diesel	Welded steel	single-walled; steel dike	Truck	Vehicles & Equipment	--
903	Diesel Day Tank	3,000 gal	Diesel	Welded steel	In building	901	Rig Engines	--
904	Diesel Day Tank	500 gal	Diesel	Welded steel	In Building	Truck	921	--
905	Diesel Day Tank	280 Gal	Diesel	Welded steel	In Building	901	Moving Engine	--
906	Desilter Pit	80 bbl	Drilling Mud	Welded steel	In building	907	910	--
907	Degasser Pit	60 bbl	Drilling Mud	Welded steel	In building	908	906	--
908	Desander Pit	140 bbl	Drilling Mud	Welded steel	In building	Well	907	--
909	#2 Volume Pit	150 bbl	Drilling Mud	Welded steel	In building	910	911	--
910	Centrifuge Tank	200 bbl	Drilling Mud	Welded steel	In building	906	909	--
911	Suction Pit	200 bbl	Drilling Mud	Welded steel	In building	909	Mud Pumps	--
912	#2 Pill Pit	165 bbl	Drilling Mud	Welded steel	In building	911	Mud Pump	--
913	#1 Pill Pit	125 bbl	Drilling Mud	Welded steel	In building	911	Mud Pump	--
914	#1 Volume Pit	90 bbl	Drilling Mud	Welded steel	In building	909	911	--
915	Underflow Tank	120 bbl	Drilling Mud	Welded steel	In building	Shale shaker	Truck	--
916	Cuttings Receiver Tank	120 bbl	Drilling Cuttings	Welded steel	In building	Shale shaker	Truck	--
917	Cuttings Bucket	200 cu ft	Drilling Mud	Welded steel	Lined dike	Shale shaker	Truck	--
918	Trip Tank	27 bbl	Drilling Mud	Welded steel	In Building	Well	908	--
919	Jacking System Hydraulics	200 Gal	Hydraulic oil	Welded steel	In Building			Hydraulic unit
920	Drawworks Glycol Tank	300 gal	Glycol	Welded steel	In building	Rig Drawworks	Drawworks	--
921	Diesel Day Tank	300 gal	Diesel	Welded steel	In building	Truck	Rig Engines	Moving Engine

Tank	Description/Location	Volume	Contents	Construction	Secondary Containment	Inflow From	Outflow To	Comments
922	Jacking System Hydraulics	200 gal	Hydraulic Oil	Welded steel	In building			Hydraulic unit
923	Koomey Unit	280 gal	Hydraulic Oil	Welded steel	In building			Hydraulic unit
924	Laydn Mach. /Jacking Syst	280 gal	Hydraulic Oil	Welded steel	In building			Hydraulic unit
925	Diesel Day Tank	280 gal	Diesel	Welded steel	In building	901	Moving Engine	
926	Jacking System Hydraulics	200 gal	Diesel	Welded steel	In Building			Hydraulic unit
927	Diesel Storage	20,000 gal	Diesel	Welded Steel	Lined Berm	Truck	903	Remote Site
928	Diesel Storage	20,000 Gal	Diesel	Welded Steel	Lined Berm	Truck	903	Remote Site

ice and snow berms are used as the secondary containment method, all on-site fuel will be removed and stored elsewhere, if the drill rig is scheduled to be in place during the summer.

b. **Wind Storms**

Winds in excess of 100 mph have occurred in this area of Alaska in the past. The drill rig is designed to withstand this load.

III. OPERATIONAL CONDITIONS

A. GENERAL ADMINISTRATION

The remote location of the drill rigs on the North Slope coupled with the unique application of the facility causes serious administrative and control problems that are not apparent in a warmer area. The quality of operations and control personnel in a large part determines the condition and/or maintenance of the facility.

Location of the drill rig may pose special administrative problems relating to spill control and containment. PAA and our clients are fully aware of these possible problems and have instituted administrative procedures for construction and maintenance of containment structures.

Our clients have on-site staff and personnel to oversee the compliance of this SPCC Plan with drilling and cleanup operations.

B. INSPECTIONS AND RECORDS

1. Spill Events

The forms titled "Initial Pollution Report" approved by the Coast Guard and "Oil Spill Checklist" are included in the Appendix, pages A-10 and A-11. These forms will be maintained on site for reporting of oil spill events. The Anchorage offices of PAA and our client also maintain these forms with a listing of agencies to be contacted in case a spill occurs.

Cleanup procedures will commence immediately when a spill has occurred. Field supervisors are instructed to start cleanup operations in accordance with Section VI. E., Corrective Action, of this report.

2. Equipment Failure Potential

The greatest period of potential for spills with existing equipment lies in two major categories: (1) tank overfill and (2) line rupture, leakage, or other failure. The overfilling of both storage and day tanks is of serious consideration and is covered in detail in the Fuel Transfer Operations section of this report, plus operational and administrative procedures of both PAA and our client.

The interior power plant piping from the day tank to the diesel engines is laid out next to the exterior shell of the building or contained within the building and is thus protected. If the procedure for filling the storage tank from the transfer vehicle is followed as outlined in the "Fuel Transfer Operations" section of this report, diking or secondary structures will not be necessary around the fill line. These operational procedures will be followed to the letter, thus making diking around transfer locations unnecessary.

C. MANPOWER AVAILABILITY AND TRAINING

Manpower is available on a strict 24-hour-a-day basis during operation of the drill rig. Operational and administrative training and procedures have been adopted by PAA to enforce the SPCC Plan and its associated commitment of manpower that are necessary for adequate spill detection, containment, and disposal.

Personnel responsible for fuel transfer and spill response operations are trained in the proper procedures and in appropriate health and safety precautions.

D. PLANT OPERATION AND PROCEDURE

Policies and procedures for prevention of fuel and oil spills are provided in the Appendix, page A-1.

1. Fill Line Inspection

A fill line inspection by a PAA representative will include a thorough inspection of the line to ascertain that the valves are secure, the line is empty, and that it has not been damaged, both before and after the transfer of fuel.

2. Interior Plant Piping

Due to the inherent vibration of diesel generating units, it is necessary that the power plant operator check all of the lines for leaks daily and take steps to ensure that no leakage occurs. Oil absorbent material is available in the power plant to collect drips and minor seepage from the equipment.

3. Storage Tank Interconnected Piping

All storage tank interconnected piping will be inspected thoroughly prior to fuel transfer to day tanks. All piping is located above ground and cathodic protection is not required. Should piping be buried, for any unanticipated reasons, the buried portion will be wrapped with a polyethylene material to keep corrosion to a minimum.

4. Fuel Transfer Operations

Specific fuel transfer procedures for diesel and gasoline are provided in the Appendix, pages A-3 and A-4.

a. Filling Storage and Day Tanks

The delineation of authority is of paramount interest during the tank filling phase from transport vehicle to storage tanks. PAA's on-site representative (Rig Supervisor/Toolpusher) will be given this responsibility.

The possibility of tank overfill, spill at connections, and spill at a broken pipeline is greatest at time of fill. Having an individual responsible for the fuel off-loading operations has several advantages for PAA. These are as follows:

1) Protection of the environment.

2) Reduced capital expenditure for diking containment to the tank farm area only. Dikes along the length of the fill line would not be required.

3) Reduced liability from the regulatory agencies in the event of a spill.

4) Assurance that the tank farm is properly and completely filled.

b. Lube Oil Storage

Lube oil will be stored within the dike portion of the facility on a platform and/or barrel rack within easy access. The used lube oil will be stored in oil drums, marked as such, and placed for later disposal in a proper manner or refinement.

5. Maintenance

a. Corrosion Control

The in-place valves and storage tanks have been pre-painted prior to the field installation. The entire fuel system will be completely cleaned and painted on a periodic maintenance schedule of 3 to 4 years or as operational maintenance supervisory personnel deem necessary.

b. **Housekeeping**

A good effort will be made to maintain a clean facility and special attention will be directed toward inspection, maintenance, and operation of equipment and fuel lines. Drip pans are used in areas where small leaks occur. Any fluid collected is stored with the used lube oil described under III D 4b above.

c. **Generator Upkeep**

The fuel supply and return lines from the day tank to the power units will be checked daily for leaks, damage, and to see that they are working in an acceptable manner. All power units of this type have engine blowby.

6. **Security**

a. **Fencing**

Fencing is not required, due to the remote locations.

b. **Locks**

Locks installed on valves, pumps, and other equipment are not necessary for this facility, due to its continuous operation.

IV. CONTAINMENT ALTERNATIVES

Implementation of secondary containment will conform to the client's SPCC Plan.

Secondary containment alternatives that may be considered include the following:

A. CURBING

A curb of gravel material utilizing an overfill technique would not contain the large containment volume required; therefore, larger gravel dikes or dug pits are proposed for these sites, when necessary.

B. CULVERTING, GUTTER, AND OTHER DRAINAGE SYSTEMS

An interceptor ditch may be required at site locations to drain storage tank areas into a sump pit or other means of secondary containment, if a liner is not placed during pad construction.

C. WEIRS, BOOMS, AND OTHER PROTECTIVE BARRIERS

Weirs, booms, and other mechanisms used to skim the water may be ineffective at many of these locations because operations may be conducted under winter frozen conditions.

D. SPILL DIVERSION PONDS

The sump pit can be utilized as a diversion pond. If the sump pit cannot be used, a second pit may be dug for a secondary containment alternate if a liner is not installed under the rig.

E. ABSORBENT MATERIALS

A quantity of absorbent materials and cleanup tools will be stored at the site in order to facilitate spill mop-up. See the site-specific SPCC Plan provided by our client.

F. DIKES

The following is a brief discussion on the alternate types of dikes that were considered for the SPCC Plan. The methods selected are adequate for temporary fuel storage facilities.

1. Urethane-Formed Dikes

Urethane-formed dikes would be impractical for a temporary installation.

2. Concrete-Formed Dikes

The freight cost of bringing in concrete, plus subsequent breakage and damage, due to active layer movement eliminates the use of concrete from an economic and operational standpoint. In addition, a concrete dike would be impractical for a temporary installation.

3. Gravel Berm

The gravel berm is the best possible solution for a temporary facility of this type. Complete gravel dikes or berms are utilized for containment of possible spills. Gravel berms are lined for all-season use or sprayed with water to form an impermeable membrane for winter use according to the site-specific SPCC Plan.

4. Ice and Snow Berm

Ice and snow berms may be utilized for containment within the working area of the rig in any possible winter spill event. An ice berm around the periphery of the pad will contain large spills to the pad proper, and subsequent cleanup can prevent any pollution of surrounding navigable waters.

5. Timber Berms

Lined timer berms may be used for containment around storage areas. This method is preferred for temporary facilities, due to ease of construction and possible reuse of materials.

V. CONSTRUCTION METHODS AVAILABLE

A. AVAILABLE LOCAL MATERIALS

The on-site soil materials are gravel fill. The client's SPCC Plan may utilize a basic diking plan for secondary containment, and this SPCC Plan provides committed manpower should the basic diking plan fail. The contingency plan is implemented to minimize the potential for fuel spills and, if a spill occurs, have an adequate method of immediate reporting and cleanup.

B. AVAILABLE LOCAL LABOR

Drill rigs have a crew on duty 24 hours a day. During location construction and/or rig-up, the necessary labor is available to place the dikes needed for fuel spill containment. The cost of dike placement will be negligible to the drilling operation if they are placed at this time.

C. AVAILABLE LOCAL EQUIPMENT

The following equipment is readily available at Prudhoe Bay for the construction of a secondary containment structure.

1. Heavy duty front-end loader and dozer.
2. Other heavy duty earth moving equipment, as needed.

VI. SPILL PREVENTION AND CONTINGENCY PLAN

A site-specific oil spill prevention and contingency plan will be developed for each oil drilling operation. General prevention and contingency plan measures are as follows.

A. INSPECTION

All equipment used to contain, transfer, store, or utilize hydrocarbon base fuel will be inspected for damage, which could result in a spill, on the following schedule.

1. B.O.P.--Installed and in good working order at all times. Please refer to Design and Operating Information of PAA's client's SPCC Plan for the site-specific inspections.

2. Pumps, Valves, and Fixtures--Inspect immediately prior to and immediately after use.

3. Storage Tanks--Inspect prior to filling and on a monthly schedule thereafter.

4. Fill and Transfer Pipelines--Inspect immediately prior to and immediately after line use.

5. Secondary Containment Structures--Inspect prior to filling storage tanks and on a monthly schedule thereafter.

6. Continuous Usage Lines--Monitor on a continuous basis with a thorough monthly inspection.

The monthly inspection checklist is provided in the Appendix, page A-9. The aforementioned inspections are minimum, and additional facility inspections will be made if conditions warrant a possible spill occurrence.

B. PREVENTION

Personnel training, diking, and record keeping are of paramount importance, when minimizing the potential for discharges of oil to the environment. Personnel will be informed both by posted and verbal instructions to use caution and thoroughly inspect facilities when they are involved in handling fuel. Fuel storage and transfer records will be maintained and signed off by the appropriate supervisor or inspector.

Additional policies and procedures for spill prevention are provided in the Appendix, page A-1.

C. DETECTION

Any spill occurrence will be reported to the rig supervisor immediately by <u>any</u> person on site. Spills and leaks not readily apparent will be detected during scheduled inspections and corrective action taken immediately.

D. CONTAINMENT

Area grading or sloped liner to the sump pit or central sealed cellar are designed to contain a spill to an area where the oil can be collected and reused or disposed of in an approved manner.

E. CORRECTIVE ACTION

Small volume spills not readily absorbed or contained by floor sweep will be cleaned up using an acceptable oil absorbent material (Conwed Oil Sorbents by M Chemical Company, Inc., 15324 South Broadway, Gardena, California 90248, or equal). A quantity of the absorbent material and cleanup tools will be stored on site for use when required.

Failure or refusal to comply with the preparation and implementation of this SPCC Plan may result in liability for a civil penalty of up to $5,000 for each day such violation continues (40 CFR 112.6).

F. FUEL TRANSFER OPERATIONS

Operating instructions for fuel transfer procedures are outlined in the Appendix, pages A-1 through A-4.

G. CAMP WASTE

Wastewater generated from employee camp usage will be stored and shipped to an Alaska State-approved sewage disposal unit.

APPENDIX

MEMORANDUM

TO: All Employees, PAA Rig No. 9

FROM: Office, Pool Arctic Alaska

SUBJECT: PREVENTION OF FUEL AND OIL SPILLS, PAA RIG NO. 9

DATE: February 9, 1993

Due to the proximity of the Beaufort Sea and/or various rivers and streams, we must take every precaution to prevent fuel and oil spills, which might contaminate the sea.

We have certain responsibilities and legal liabilities for oil spills as a drilling contractor. These include the transfer of fuel from storage tanks to our rig tanks or camp tanks; fuel lines from rig tank to engines, air heaters, boilers, etc., all Hydril or other B.O.P. control lines; and safe and careful handling of used oil.

The following routine precautions must always be taken when handling fuel:

1) Any transfer of fuel should involve two men to prevent overfilling. One man should be in a position to observe the fuel level in the tank being filled. He should also be clearly visible to the man at the pump to ensure shutdown before overfilling can occur.

2) All fuel storage tank valves will be tagged.

3) All lines should be carefully installed to avoid cracked fittings, crossed threads, etc., which might cause a leak.

4) All fuel lines or fuel lines should be installed to avoid traffic areas. If it is necessary to install a fuel line across a traffic area, it should be buried deep enough to prevent any damage from traffic and posted with surface markers.

5) Oil from engines, drawworks, etc., should be drained into a barrel or other container to avoid spillage of used oil.

6) We should cooperate with our customer's representatives to ensure that the location is designed so that any spill that might occur will be trapped by pits, dikes, etc., provided for that purpose.

7) Fuel will be hauled to the location by our customer or its contractors. We should ensure that the fuel is unloaded in a safe manner as we are responsible for the rig and the location 24 hours per day.

8) Every precaution should be taken to ensure perfect operation of B.O.P.s. Every good drilling practice should be followed. There is absolutely no circumstance that can justify taking a chance on a blowout.

9) If there are any questions now or in the future, do not hesitate to raise them.

10) Please be aware that our customer's site-specific SPCC Plan does not relieve PAA as owner/operator of the rig from the ultimate responsibility from a regulatory point of view in the event of a spill.

Larry E Ross

Larry E. Ross
Operations Manager

POOL ARCTIC ALASKA
DRILLING RIG DIESEL SYSTEM
FUEL TRANSFER PROCEDURES

Notes:

1. All valves are to remain closed except where operation of the system requires that they be open.

2. Valves tagged 5 on diesel storage tanks and 13 on the rig day tank must remain closed and bull plugged at all times.

3. Transfer of fuel to rig is performed automatically with a manual override system.

Filling Storage Tanks

A. Check level of tank to determine required volume.
B. Connect tanker hose to inlet.
C. Open valve tagged 2 (closest to the tank to be filled).
D. Open valve tagged 1 at inlet.
E. Start pump on fuel tanker and fill tank.
F. Stop pump when tanker is empty or required volume is in tank.
G. Close valve tagged 2.
H. Start tanker pump with reverse flow to remove liquid in piping and transfer hose.
I. Close valve tagged 1.
J. Stop tanker pump and disconnect hose.

Transferring Fuel to Rig Day Tank

A. Check that the valves tagged 1, 2, 5, and 13 are closed.
B. Open valves 3 and 4 on the tank(s), from which fuel is to be drawn, and valves 6, 7, 8, and 9 on the transfer house and the rig day tank.
C. Turn the fuel transfer pump control panel to automatic.

Automatic Operation

1. The float level switches in the day tank will start the pump on low level and stop the pump on high level.
2. High fuel level and low fuel level alarms will sound when the fuel level exceeds the pumps top level and falls below the pump start level.

Manual Operations

1. Check the level in the day tank to determine required volume.
2. Check that the appropriate valves are open and/or closed per above.
3. Turn the transfer pump switch to on until the required level is reached.

4. Turn the transfer pump to off.
5. Close the valves, which were opened in (b) above.

POOL ARCTIC ALASKA
DRILLING RIG GASOLINE SYSTEM
FUEL TRANSFER PROCEDURES

Note: All valves to remain closed except where operation of system requires they be open.

Filling

A. Check level of tank to determine required volume.
B. Check that valve tagged 1 is closed.
C. Fill tank using tanker hose, taking care not to overfill or spill fuel when removing hose.

Transferring Fuel

A. Open valve 1.
B. Fill vehicle using service station type valve taking care not to spill any fuel.
C. Close valve tagged 1.

Table A-1
Spill Reporting Requirements
Pipeline Region

Agency	Spill Size	Verbal Report	Telephone Number/Fax	Contact	Written Report
Alaska Department of Environmental Conservation (ADEC)	On Water Any spill - South of PS-10	Immediately	(907 269-7500 (Anchorage) (800) 478-9300 (24 hr / State Trooper Dispatch)	Brad Hahn	Within 15 days of end of cleanup for any spill
	Any Spill - North of PS-10	Immediately	(907)451-2121 (Fairbanks) (800)478-9300 (24 Hr / State Trooper Dispatch)	Ed Meggert	Within 15 days of end of cleanup for any spill
	On Land > 55 gal > 55 gal in secondary containment area > 10 gal but < 55 gal	Immediately 48 hrs 48 hrs	As above	As above	Within 15 days of end of cleanup for any spill
Alaska Oil and Gas Conservation Commission	All spills from wells or involving any crude loss	As soon as possible	(907) 279-1433 (24 hr)	David Johnston	Within 5 days of loss
North Slope Borough	> 55 Gal.	Immediately	(907) 852-0440 (Barrow) (907) 852-5991 (fax)	John Dunham	Written report requested for all spills
National Response Center/ U.S. Coast Guard (USCG)	Any size or threatening navigable waters, including adjoining shorelines	Immediately	(800) 478-5555 (Juneau) (907) 271-6700 (Anchorage MSO) (800) 424-8802 (NRC) *	Officer on Duty	Not required
National Response Center/ U.S. Environmental Protection Agency (USEPA)	Any spill on land, but threatening or in surface waters	Immediately	(800) 424-8802 (NRC) (907) 271-4346	Phil Burna	For a facility with an SPCC Plan, report any spill > 1000 gals or when 2 spills that are verbally reportable occur in any 12-month period

Note: The National Response Center must be called even if the release is reported to a local number. The alternate telephone number for the NRC is (202) 426-2675.

Table A-2
Spill Reporting Requirements
Northern Region

Agency	Spill Size	Verbal Report	Telephone Number/Fax	Contact	Written Report
Alaska Department of Environmental Conservation (ADEC)	On Water: Any spill	Immediately	(907) 451-2121 (Fairbanks) (800) 478-9300 (24 hr) (907) 451-2362 (fax)	Ed Meggert	Within 15 days of end of cleanup for any spill.
	On Land: > 55 gal > 55 gal in secondary containment area > 10 gal but < 55 gal	Immediately 48 hours 48 hrs			
Alaska Department of Natural Resources	> 55 gallons spills on state lands	Within 24 hours	(907) 659-2830 (907)451-2678 (24 hr)	Leon Lynch	Within 15 days of end of cleanup for any spill.
Alaska Oil and Gas Conservation Commission	All spills from wells or involving any crude loss	As soon as possible	(907) 279-1433 (24 hr)	David Johnston	Within 5 days of loss.
National Response Center/ U.S. Coast Guard (USCG)	Any size or threatening navigable waters, including adjoining shorelines	Immediately	(800) 478-5555 (24 Hr) (907) 271-6700 (800) 424-8802 (NRC)	Officer on Duty	Not required.
National Response Center/U.S. Environmental Protection Agency (USEPA)	Any spill to land, but threatening or in surface waters	Immediately	(907) 271-5083 (907) 271-3424 (fax) (800) 424-8802 (NRC) (800) 478-5555	Matt Carr	For a facility with an SPCC Plan, report any spill > 1000 gals or if 2 spills that are verbally reportable occur in any 12-month period.
Bureau of Land Management	Any spill on federal oil leases or land	Immediately	(907)267-1450	Chris Gibson	Written notification for major spill within 24 hours; for minor spill (<100 bbls) within 15 days. Written final report for major spill within 30 of end of cleanup.

Table A-2 (Cont'd)
Spill Reporting Requirements
Northern Region

Agency	Spill Size	Verbal Report	Telephone Number/Fax	Contact	Written Report
Minerals Management Service	1 bbl or less on or threatening federal OCS oil lease	Within 12 hours	(907) 271-6448 (days) (907) 271-6065 (nights)	Officer on Duty	Written confirmation within 15 days of spill.
	> 1 bbl on or threatening federal OCS oil lease	Immediately			
Alaska Department of Fish and Game	Any spill threatening a National Wildlife Refuge or walrus or migratory Bird habitat, or stream	Within 12 hours	(907) 459-7289 (Fairbanks)	Jack Winters	Not required.
North Slope Borough	All major spills	Immediately	(907) 852-2611 (Barrow) (907) 659-7314 (Deadhorse)	Chris Mello	Written report requested.
Alaska Clean Seas	Any major spill	Within 1 hour	(907) 659-2405 Ext: 3220 (Prudhoe Bay)	Jim Mchale	Not required.

Table A-.
Spill Reporting Requirements
Southcentral Region

Agency	Spill Size	Verbal Report	Telephone Number/Fax	Contact	Written Report
Alaska Department of Environmental Conservation (ADEC)	<u>On Water</u> Any spill <u>On Land</u> > 55 gal > 55 gal in secondary containment area > 10 gal but < 55 gal	Immediately Immediately 48 hrs 48 hrs	<u>Kenai District Office</u> (907) 262-5210 (907) 262-2294 (fax) <u>Southcentral Regional Office</u> (907) 269-7500 <u>24-Hour Number</u> 1-800-478-9300	L. Buchholtz Brad Hahn	Within 15 days of end of cleanup for any spill. Within 15 days of end of cleanup for any spill.
Alaska Department of Fish and Game	Wildlife refuges on shorelines, major spills to open water	Immediately	(907) 267-2338 (wk) (907) 267-2342 (wk) (907) 267-2464 (fax)	Mark Fink Lance Trasky	Send copy of ADEC report.
Alaska Oil and Gas Conservation Commission	All spills from wells or involving any crude loss	As soon as possible	(907) 279-1433 (24 hr)	David Johnston	Written report requested.
Captain Cook State Recreation Area	All spills in Swanson River	Notification requested	(907) 262-5581	Chris Degrenes	Written report requested.
Kenai National Wildlife Refuge	All spills in Refuge	Immediately	(907) 262-7021 (907) 262-3599 (fax)	Robin West	Within 15 days.
Kenai Peninsula Borough	All spills	Immediately	(907) 262-4441 ext 247	Nancy Blaedon	Written report requested.
National Response Center (NRC)/ U.S. Coast Guard (USCG)	Any size or threatening navigable waters, including adjoining shorelines	Immediately	(800) 424-8802 (NRC) (800) 478-5555 (907) 271-6733	Officer on Duty	Not required.
National Response Center (NRC)/U.S. Environmental Protection Agency (USEPA)	Any spill on land, but threatening or in surface waters	Immediately	(800) 424-8802 (NRC) (907) 271-5083 (907) 271-3424 (fax)	Matt Carr	For a facility with an SPCC Plan, report any spill > 1,000 gals or when 2 spills that are verbally reportable occur in any 12-month period.
Alaska Department of Natural Resources	> 55 gallons spills on state lands	Within 24 hours	(907) 659-2830 (907)451-2678 (24 hr)	Leon Lynch	Within 15 days of end of cleanup for any spill.

ote: The National Response Center must be called even if the release is reported to a local number.

Rig No. _____

POOL ARCTIC ALASKA
MONTHLY INSPECTION CHECKLIST

1. Name ______________________________

2. Location ______________________________

3. B.O.P. installed and in good working order ( ) Yes ( ) No

4. Check day tank line fittings, valves, and gauges for leaks and/or damage.

   List discrepancies: ______________________________

5. Check pumps, valves, and fixtures for leakage. List discrepancies:

6. Check storage tanks for leakage ( ) Yes ( ) No List discrepancies:

7. Check continuous usage lines for leaks. List discrepancies:

8. Check all tank farm lines for closed valves, except for tank in use.

   ( ) Yes ( ) No

9. Check all other lines and fittings for oil leakage. List discrepancies:

10. List action taken to remedy and discrepancies noted: ______________________________

Rig No. ______

Spill I.D. No. ______________

POOL ARCTIC ALASKA
INITIAL POLLUTION REPORT

Date/time report received: ____________________

Time FAA Duty Officer received: ______________________

Report received from: Other persons involved in sighting:

Name: ____

Company: ____

Address: ____

Telephone: ____

Location Initial: ____

____

Follow Up (Time): ____

____

Type and quantity of spill: ___________________________________

____

Description of slick (ashore and afloat): _______________________

____

Apparent hazard to life and property: __________________________

____

Damage: __________________ Injuries: ____________________

__________________ ____________________

Weather: Temp ______________

Wind direction and velocity _______________

Tide condition ____________________

Visibility ____________________

Next high/low ____________________

Initial action taken by persons on-scene:

(to stop spill) ____

(to clean up) ____

Company Intended Action: ______________________________

Coast Guard Action: ______________________________

Rig No. _____

POOL ARCTIC ALASKA
OIL SPILL CHECKLIST

1. Name ______________________________

2. Location ______________________________

3. Location of spill ______________________________

____

4. Amount of oil spilled ______________________________

____

5. Type of oil ______________________________

6. Distance from spill to water edge ______________________________

7. Time spill occurred ______________________________

Length of time spill occurred ______________________________

8. Temperature ______________________________

9. Visibility ______________________________

10. Wind direction and speed ______________________________

11. How close is the spill to any building? ______________________________

____

____

12. What caused the spill? ______________________________

____

____

13. What did you do to stop it? ______________________________

____

____

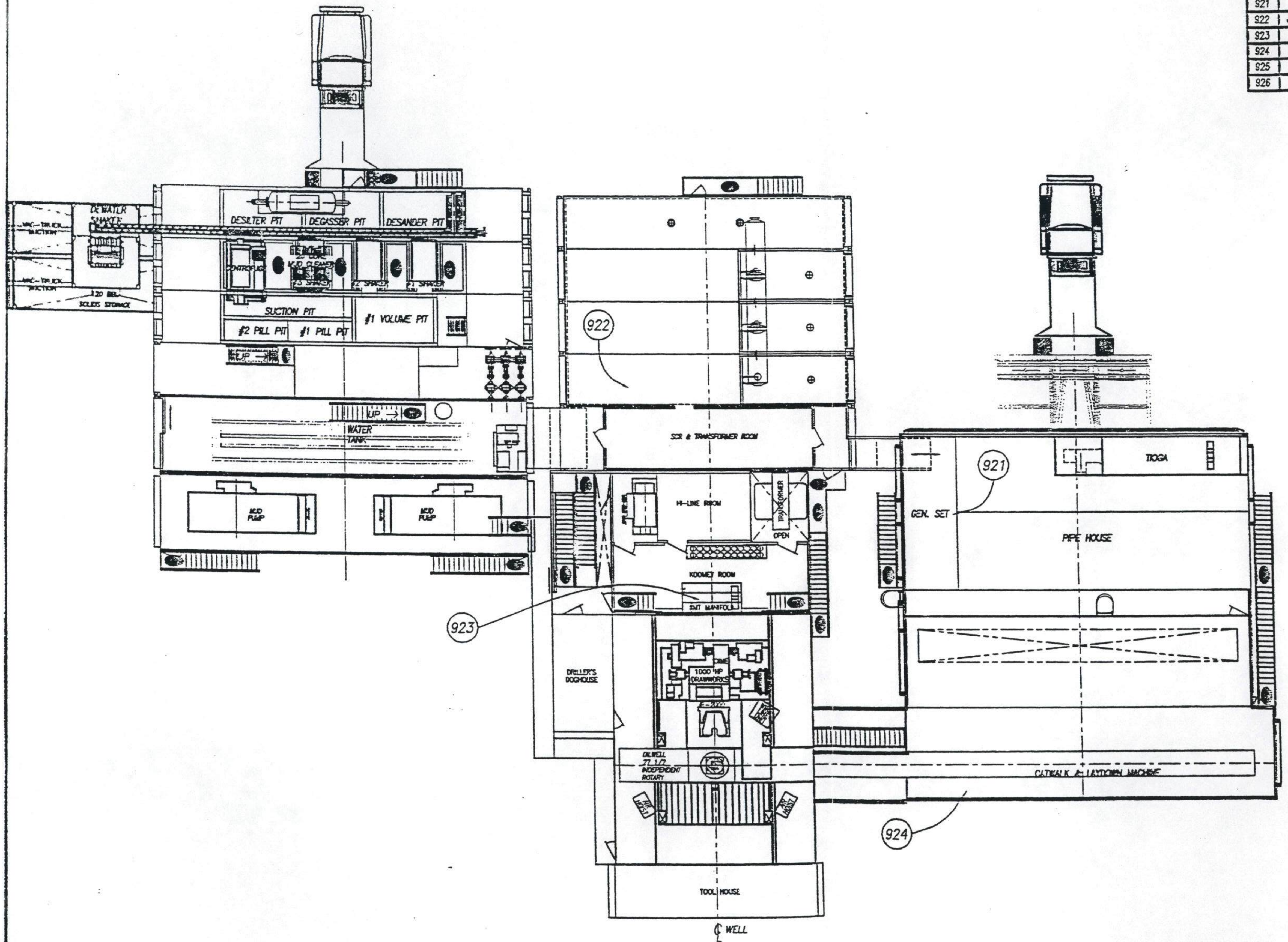
14. What did you do to clean up the spill? ______________________________

____

____

PAA RIG 9 TANK LIST
2nd. DECK

TANK	DESCRIPTION/LOCATION	VOLUME	CONTENTS
921	DIESEL DAY TANK	300 GAL	DIESEL
922	JACKING SYSTEM HYDRAULICS	200 GAL	HYDRAULIC OIL
923	KOOMEY UNIT	280 GAL	HYDRAULIC OIL
924	LAYDN MACH./JACKNG SYST.	280 GAL	HYDRAULIC OIL
925			
926			



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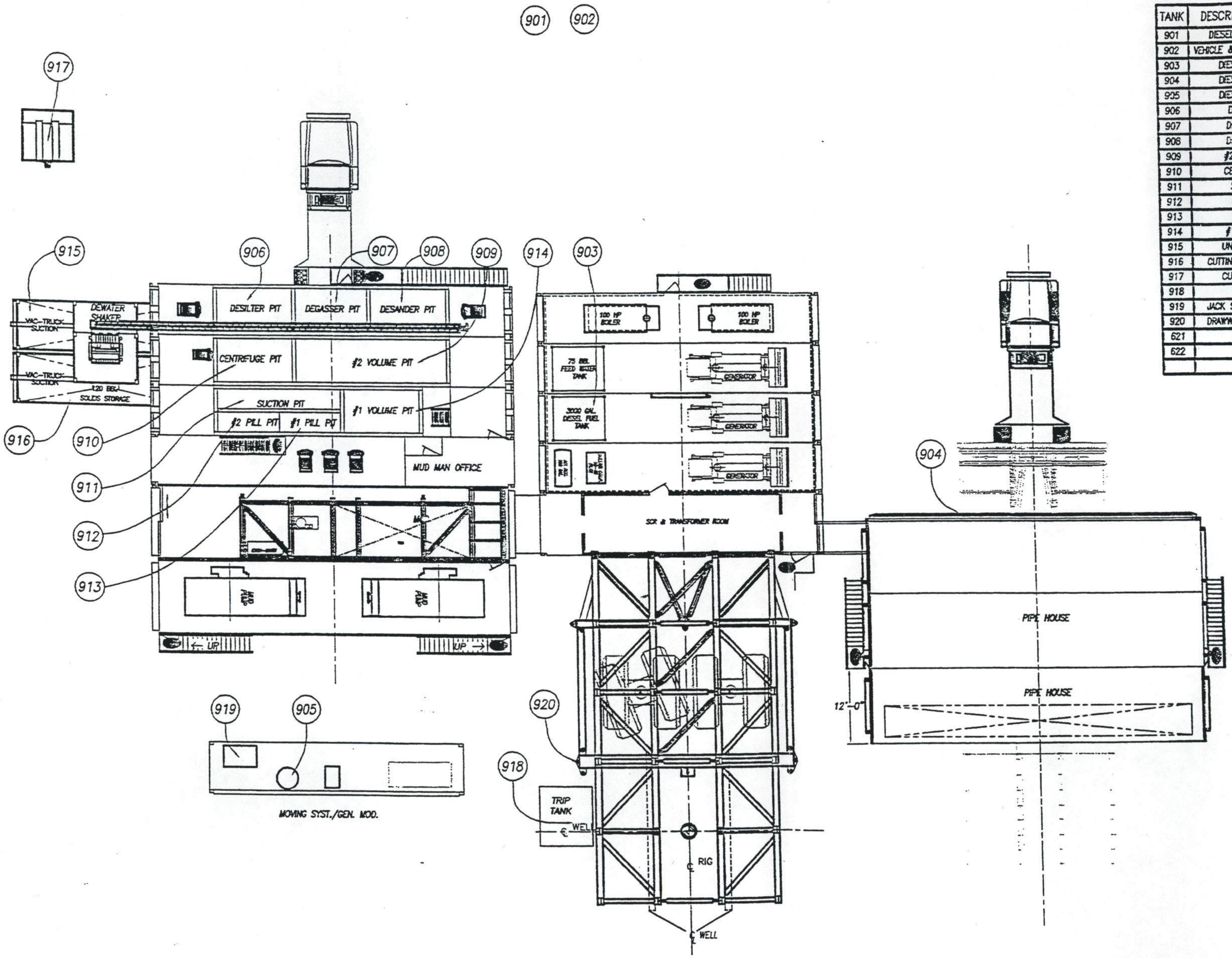
POOL ARCTIC ALASKA
[illegible]
Anchorage, Alaska [illegible]

PAA RIG 9
SPCC PLAN ILLUSTRATION
2ND DECK

1 of 1



PAA RIG 9 TANK LIST
1st DECK

TANK	DESCRIPTION/LOCATION	VOLUME	CONTENTS
901	DIESEL STORAGE TANK	9,000 GAL	DIESEL
902	VEHICLE & EQUIP. DIESEL TANK	1,000 GAL	DIESEL
903	DIESEL DAY TANK	3,000 GAL	DIESEL
904	DIESEL DAY TANK	500 GAL	DIESEL
905	DIESEL DAY TANK	280 GAL	DIESEL
906	DESILTER PIT	80 BBL	DRILLING MUD
907	DEGASSER PIT	60 BBL	DRILLING MUD
908	DESANDER PIT	140 BBL	DRILLING MUD
909	#2 VOLUME PIT	150 BBL	DRILLING MUD
910	CENTRIFUGE PIT	200 BBL	DRILLING MUD
911	SUCTION PIT	200 BBL	DRILLING MUD
912	#2 PILL PIT	165 BBL	DRILLING MUD
913	#1 PILL PIT	125 BBL	DRILLING MUD
914	#1 VOLUME PIT	90 BBL	DRILLING MUD
915	UNDERFLOW TANK	120 BBL	DRILLING MUD
916	CUTTINGS RECEIVER TANK	120 BBL	DRILLING CUTTINGS
917	CUTTINGS BUCKET	200 cu.ft.	DRILLING MUD
918	TRIP TANK	27 BBL	DRILLING MUD
919	JACK SYSTEM HYDRAULICS	200 GAL	HYDRAULIC OIL
920	DRAWWORKS GLYCOL TANK	??? GAL	GLYCOL
621			
622			

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POOL ARCTIC ALASKA
[illegible]
Anchorage, Alaska 99518

PAA RIG 9
SPCC PLAN ILLUSTRATION
1ST DECK

UNLESS OTHERWISE SPECIFIED

SCALE 1/8"=1'-0" | SHEET 1 of 1 | SPCC

PHILLIPS ALASKA, INC.

Exploration Plan
McCovey #1 Well

Beaufort Sea, Alaska

APPENDIX II
ALASKA WASTE DISPOSAL AND REUSE GUIDE

September 19, 2000

ALASKA

Waste Disposal

And

Reuse Guide

[illegible]

BP

BP [illegible] CONTROL

[illegible]
[illegible]
[illegible]

December, 1998

Dear Employees and Contractors:

ARCO Alaska, Inc. and BP Exploration (Alaska) are working to standardize environmental procedures in our operations. The **Alaska Waste Disposal and Reuse Guide** is the first joint environmental guide ever issued by ARCO and BP. It was compiled to ensure environmental procedures in our operations are consistent and to ensure compliance with applicable regulations and company policies.

This guide provides a single set of "best" waste management practices for all employees and contractors. We hope you'll find the guidelines useful and we expect each of you to use this guide, and associated training program, to make sound decisions on the job in all of our operations in Alaska.

A key component of conducting operations in a sound environmental manner is developing a waste management plan, including waste minimization, pollution prevention and recycling opportunities. This guide sets the expectation that these waste management principles will become part of your daily operations.

This represents a significant milestone and application of the **Alaska Waste Disposal and Reuse Guide** is a clear demonstration of working together to continuously improve our environmental performance.

Please contact your supervisor or field environmental staff if you have any questions regarding this guide, how to apply it to your area or about environmental compliance, waste minimization, pollution prevention and recycling opportunities.

Ke O. Meyers

Kevin O. Meyers
ARCO Alaska, Inc.

Richard C. Campbell
BP Exploration (Alaska), Inc.

ALASKA WASTE DISPOSAL AND REUSE GUIDE

NOTES, QUESTIONS, AND SUGGESTIONS

Your input is important. Please contact your environmental representative whenever you have comments, questions, or suggestions (see back of this page for phone numbers). Use this page to keep track of any issues you would like to discuss.

The environmental staff will forward these comments to the annual review team. All suggestions will be considered for inclusion in the next revision of this document.

CONTACTS

	Phone	Pager
ARCO Alaska, Inc.		
Alpine		
Alpine HSET	659-1776	189 x136
Kuparuk and Beluga		
Kuparuk Field Environmental Specialist	659-7212	189 x438
Kuparuk Field Environmental Coordinator	659-7242	189 x669
Prudhoe Bay Unit, Eastern Operating Area		
Field Environmental Compliance (FEC) Coordinator	659-5609	5100 x1669
Anchorage Headquarters		
Environmental Consultant, Waste Issues	263-4307	
BP Exploration (Alaska) Inc.		
Badami		
Environmental Specialist	659-1243	
Endicott		
HSE Supervisor	659-6666	
Milne Point		
Environmental	670-3473	
Northstar		
Compliance Advisor	659-2984	
Prudhoe Bay Unit, Western Operating Area		
North Slope Environmental Advisor	659-4789	4236 x579
Operations Integrity (OI) Services Waste Coordinator	659-4810	4236 x110
Anchorage Headquarters		
Environmental Manager	564-5990	
Shared Services Drilling		
Field HSE Advisor	659-4650	4236 x649
North Slope Borough		
Service Area 10 (Landfill/Incinerator/Dumpsters)	659-0114	

TABLE OF CONTENTS

AUTHORITY AND REVISIONS

The *Alaska Waste Disposal and Reuse Guide* has been jointly prepared by BP Exploration (Alaska) Inc. (BP) and ARCO Alaska, Inc. (ARCO). It has been reviewed by BP, ARCO, and EXXON environmental and legal professionals. It is fully authorized for use by staff and contract personnel at all BP and ARCO facilities in Alaska.

Our goal is to provide practical, accurate, and consistent guidelines that ensure compliance with applicable regulations and company policies. We do not expect everyone to become regulatory experts. However, we do expect you to use tools such as this document, and its associated training program, to make sound decisions in the workplace. Most importantly, we expect you to contact your supervisor and your field environmental staff if you have any questions about waste management, waste minimization, or recycling.

This document will be reviewed at least annually and revised as needed to reflect changing regulations, policies, and practices. An annual review team composed of representatives from each operating field will be formed to conduct the review.

BPXA has adopted this guide as an element in the BP Amoco Group Environmental Management System (EMS), pursuant to the Plea Agreement between the United States of America and BP Exploration (Alaska) Inc. (BPXA) dated September 23, 1999, which agreement was incorporated into the final judgment at the sentencing hearing by the United States District Court on February 1, 2000 in the matter of United States of America v. BP Exploration (Alaska) inc. Case No.: A99-141 CR (JKS).

RECORD OF REVISIONS

DATE	REVISION	SUMMARY OF CHANGES
11/1/95		• Initial version
7/27/96	1	• Reformatted document • Added new waste streams (brine, diatomaceous earth)
12/31/96	2	• Replaced entire introductory section • Reviewed and updated all items on list • Added separate column for EOR; added EOR Specifications drawing • Added Pad 3 waste stream classifications • Expanded coverage for Milne Point and Endicott • Added "Definition of Downhole" drawings • Added PBU facilities table
7/3/97	3	• Reviewed and updated waste tables • Added waste mixture table • Updated PBU facilities table to include Oily Waste Skid specifications • Revised EOR Specifications to include corrosion engineering review • Added blank manifest forms as attachments
12/98	4	• Issued as joint BP/ARCO document; coverage expanded to include all BP/ARCO Alaskan operations • Title changed from "Waste Disposal and Reuse Options" to "Alaska Waste Disposal and Reuse Guide" • Replaced entire introductory section • Added new section on individual responsibility for complying with environmental laws • Reviewed and updated all tables, added several new items • Reorganized waste tables: deleted "Activity" column, consolidated all wastes into single alphabetical directory, added Badami Class I waste streams • Revised Attachment A ("Consequences of Mixing Wastes") • Replaced "Definition of Downhole" drawings with "Class II Disposal Guidelines" (Attachment B) • Added "Satellite Accumulation Area Guidelines" (Attachment D) and "Dumpster Guidelines" (Attachment E) • Added Facility Guides (Attachment F) for several BP/ARCO facilities
4/2000	5	• General review and update, all sections • Several items added to Disposal/Reuse Tables • Added Pad 3 and Badami "waste stream codes" to match North Slope Manifest • Added guidelines for Annular Pumping (Attachment D) and Manifests (Attachment H – replaces former Section 9). Renumbered Attachments. • Added Facility Guides for Alpine and Northstar

1. INTRODUCTION

The *Waste Disposal and Reuse Guide* provides management options for the majority of routine waste streams generated by oil and gas exploration and production operations in Alaska. It is a tool for staff and contractors who have attended the BP/ARCO waste management training program and who, therefore, have a basic understanding of waste regulations, classification, and handling procedures.

> Training is mandatory for generators, transporters, and receivers who manifest wastes to BP/ARCO facilities. Training is also mandatory for anyone who intends to use this guide to make waste management or reuse decisions. Please contact the BP or ARCO environmental staff for more information about training requirements and schedules.

The "Disposal/Reuse Tables" (starting on page 1) describe various waste streams and products, which are listed in alphabetical order. The list has evolved in response to questions and suggestions from the field. A number of management options are presented for each item on the list. The final decision will depend on factors such as location, season, facilities available in the area, facility-specific operating limitations, and owner company policies.

> This guide is not intended to answer every question you might have about disposal, recycling, or waste minimization. If you do not find a particular substance or management option on the list, ask the environmental staff for a case-by-case evaluation.

The tables are followed by several attachments that provide additional guidance and information. These include:

A. ***Consequences of Mixing Wastes***, describing how disposal options may change if different types of waste are combined.

B. ***Class II Disposal Guidelines***, describing how wastes are evaluated for injection in a Class II Disposal Well.

C. ***Enhanced Oil Recovery Specifications***, illustrating current regulatory and technical guidelines for injection of fluids into the waterflood system.

D. ***Annular Pumping Guidelines***, providing general information about management of drilling wastes in an approved well annulus.

E. ***Satellite Accumulation Area Guidelines***, summarizing regulatory requirements for temporary management of hazardous wastes on-site.

F. ***Dumpster Guidelines*** for items commonly discarded on the North Slope.

G. ***Facility Guides*** for each operating area, listing the facilities available for disposal, storage, and recycling. These guides include restrictions, paperwork requirements, and contacts for each facility.

H. ***Manifests*** section, explaining the proper use of the North Slope Manifest form.

2. YOUR INDIVIDUAL RESPONSIBILITY FOR COMPLYING WITH ENVIRONMENTAL LAWS

- Waste disposal, recycling, and reuse activities are subject to many environmental laws. Violations of these laws may lead to enforcement actions by State or Federal officials.
- Enforcement actions may be directed against the individuals actually performing waste disposal or reuse operations, or their supervisors.
- This means that you may be personally at risk of criminal prosecution if you violate environmental laws, or supervise individuals who do.
- ***You can significantly reduce or eliminate the risk of violating an environmental law by following the advice provided in this Guide.***
- It is especially important that you keep accurate and complete records of your waste management activities. Without these records, it may be impossible to prove compliance, particularly if an investigation occurs long after the activity has taken place.

Relationship of the *Waste Disposal & Reuse Guide* to law, regulations, and company policies, and possible legal positions:

The tables in this Guide are based on regulations and policy guidelines of the Environmental Protection Agency, Alaska Department of Environmental Conservation, and the Alaska Oil and Gas Conservation Commission, as understood by Health, Safety, and Environmental representatives of BP and ARCO.

BP and ARCO recognize that the scope and meaning of many environmental laws and regulations remain unclear in some respects. Therefore, it is possible that we may hold legal positions different from legal or regulatory positions taken by some of the agencies. Nevertheless, BP and ARCO have elected to incorporate agency policies and guidelines, as we understand them, into this Guide. The information in the Guide's tables was compiled on this basis, often after discussions with agency personnel.

3. ABBREVIATIONS AND ACRONYMS USED IN THIS GUIDE

ARCO	ARCO Alaska, Inc.
ADEC	Alaska Department of Environmental Conservation
AME	Alaska Materials Exchange
AOGCC	Alaska Oil and Gas Conservation Commission
BP	BP Exploration (Alaska) Inc.
CFP	Central Facilities Pad
CFR	Code of Federal Regulations
CGF	Central Gathering Facility
COTU	Crude Oil Topping Unit
CPF	Central Production Facility/Central Processing Facility
DOT	Department of Transportation
EOA	Eastern Operating Area
EOR	Enhanced Oil Recovery
E&P	Exploration and Production
EPA	Environmental Protection Agency
FEC	Field Environmental Compliance
FS	Flow Station
G&I	Grind & Inject Facility
GC	Gathering Center
HSE	Health, Safety, and Environmental
KUTP	Kuparuk Unit Topping Plant
MPI	Main Production Island (Endicott)
MPU	Milne Point Unit
NORM	Naturally Occurring Radioactive Material
NSB	North Slope Borough
OI	Operations Integrity
PBU	Prudhoe Bay Unit
RCRA	Resource Conservation and Recovery Act
SA 10	Service Area 10 (North Slope Borough utility area)
SAA	Satellite Accumulation Area
WOA	Western Operating Area

4. PRACTICAL DEFINITIONS FOR FIELD USE

Several important terms are described below, in plain language.

> Do not use these definitions to classify wastes or make decisions about disposal. If you need a precise regulatory or technical definition, please contact your environmental staff.

Annular Pumping

See Attachment D. Placement of specifically approved drilling-related materials from new well construction into the open annulus of an approved well. Annular pumping is regulated by AOGCC and is approved for individual wells with a Permit to Drill and/or an Approval of Sundry Operations. Contact your drilling or environmental representative for site-specific information.

Beneficial Reuse

Returning used material to service without treatment. The material is not considered a waste if it can be used again without processing. However, the product must replace in-kind and serve the same function as a similar volume of new product that would normally be used for the purpose. Improper disposal by sham reuse or recycling is not allowed. Beneficial uses, other than those specifically listed, should be approved by the environmental representative on a case-by-case basis.

Class I Disposal (Class ID) Well

An injection well for disposal of non-hazardous or RCRA-exempt waste (see definitions below). Class ID wells are permitted and regulated by EPA through the Underground Injection Control (UIC) Program. Class ID wells may also accept wastes that are approved for disposal in Class IID wells (see below).

Class II Disposal (Class IID) Well

See Attachment B. A well for injection of materials associated with oil and gas exploration and production (E&P). Note that Class II is not the same as "exempt" (see "RCRA E&P exempt" definition below). All Class II wastes are RCRA E&P exempt, but not all exempt wastes are Class II. In other words, just because a waste is exempt from RCRA, it does not necessarily mean that the waste can go into a Class IID well. Generally, EPA interprets RCRA E&P exempt wastes to be those from downhole. EPA has delegated authority for Class IID wells to AOGCC, under the UIC Program.

Class II Recovery (Class IIR) Well – see Enhanced Oil Recovery

DOT-Regulated Sales Pipelines

Common carrier pipelines used to transport crude oil and natural gas from the oil field, downstream of the production separation process. These pipelines are subject to DOT regulation under 49 CFR. Fluids, solids, and associated wastes from DOT pipelines are not E&P exempt under RCRA and must be evaluated on a case-by-case basis for proper recycling or disposal options. DOT sales pipelines include (but are not limited to):

Trans Alaska Pipeline System from Pump Station (PS) 1
Alpine Sales Line from Alpine to Kuparuk CPF2
Badami Sales Line from pipe rack at diesel tank storage area to PS 1
Beluga Sales Line
Endicott Sales Line from suction flange on shipping pumps to PS 1
Kuparuk Sales Line from CPF2 to PS 1
Oliktok NGL Pipeline (Kuparuk)
Milne Point Sales Line from CFP2 to Kuparuk tie-in
EOA NGL Sales line from CGF to Skid 50 (including lines to FS1, FS3, DS2)
WOA Sales Line from Skid 50

Please check with the field environmental staff for the exact starting points of these and other DOT-regulated lines.

Downhole

Material that originates below the ground surface during the oil and gas exploration, drilling, and production process OR otherwise meets the Class II disposal criteria as shown on Attachment B (*Class II Disposal Guidelines*).

Enhanced Oil Recovery (EOR)

See Attachment C. Injection of fluids into the producing formation to increase the production of oil (also known as "waterflood"). EOR is a beneficial use of fluid, not disposal. Fluids must be non-hazardous and must meet technical specifications established by each field's reservoir and corrosion engineers. Fluids must be similar, physically and chemically, to seawater and produced water, which are the primary fluids used for EOR. EOR injection wells are regulated by AOGCC as Class II Recovery (Class IIR) wells, with entirely different criteria than Class IID wells.

Exempt Waste

This term is used broadly in the field to describe wastes that are **not regulated** as hazardous waste under RCRA. Exemptions are based on the source of the waste, not on its actual properties or composition. There are several exemptions that are important to oil and gas operations:

(continued)

Exempt Waste (cont'd)

The ***RCRA Exploration and Production (RCRA E&P) exemption*** is for drilling fluids, produced water, and other wastes associated with oil and gas exploration and production. Use the waste tables in this book to determine if a specific waste is exempt, or contact your field environmental staff. The determination is not always straightforward, so do not guess or extrapolate. RCRA E&P exempt wastes are not regulated as hazardous waste regardless of their composition or properties. New or leftover **products**, such as acids, methanol, seawater, diesel, drilling mud, and cement, are **not** RCRA E&P exempt. To be RCRA E&P exempt, materials must have actually been **used** for exploration or production work.

The ***empty container exemption*** applies to residues in containers. These residues are not regulated as hazardous waste if the container is "RCRA empty" (see below).

A ***household exemption*** applies to waste derived from homes, hotels, bunkhouses, and crew quarters.

The ***sewage exclusion*** applies to domestic sewage and graywater from camps and office facilities. Sewage is excluded from the regulatory definition of solid waste and, therefore, is beyond the scope of hazardous waste regulations.

Generator

BP and ARCO use the term "generator" to mean any person who has material that requires disposal or recycling, **or** a person in charge of the process that produces this material. Most of the disposal or recycling facilities operated by BP and ARCO are restricted to generators who are **certified** by completing a specialized waste management training program. Only **certified generators** may sign manifests for these BP/ARCO facilities. The generator is responsible for characterizing the material, managing it properly, and selecting appropriate disposal or reuse options.

Hazardous Waste

Waste that meets specific regulatory definitions under RCRA.

Characteristic hazardous waste has one or more of the following properties:

- Ignitability (flash point less than 140 degrees F)
- Corrosivity (pH less than or equal to 2.0, or greater than or equal to 12.5)
- Reactivity (inherently unstable under ordinary conditions or when exposed to water)
- Toxicity (exceeds allowable concentrations of regulated metals, pesticides, or organic compounds such as benzene)

Listed hazardous waste appears on lists published by the EPA.

Acutely hazardous waste is a subcategory of listed hazardous waste with particularly toxic properties and more stringent management standards.

(continued)

Hazardous Waste (cont'd)

Hazardous waste from oil and gas operations may include paints, thinners, chlorinated solvents, corrosives (acids, caustics), gasoline, diesel, xylene, and methanol. In Alaska, the generation, storage, transportation, and disposal of hazardous waste are regulated directly by EPA. There are no facilities in Alaska for disposal of hazardous wastes.

Hazardous waste may not be moved from one field to another, or brought into a BP/ARCO field without explicit approval from the BP or ARCO environmental staff.

Non-hazardous Waste

A waste that does not meet the criteria for hazardous waste as defined by RCRA (see definition above). However, waste may still be regulated under other programs and could present hazards to employees who handle them. Follow all recommended safety and handling practices.

Operationally Empty

This is a term developed by BP and ARCO for **non-hazardous** or **RCRA exempt** (see below) residues in vacuum trucks and other large containers. Operationally empty is discussed in the BP and ARCO waste training programs — it is not a legal or regulatory term. If the truck or container has been emptied to the extent practicable using normal means, the remaining non-hazardous residue is considered negligible or *de minimus*. It does not affect the classification of the next load. Operationally empty applies **only to non-hazardous or RCRA-exempt residues** such as fresh water, seawater, unused drilling mud, or exempt fluid. Containers which have carried **new diesel, new methanol, new xylene**, or any other material that would be considered a hazardous waste must be **RCRA empty** (see definition below) before being rinsed or used to pick up a load of different material.

RCRA Empty

This term applies to residues in containers. If the container has been emptied as much as possible by normal means (pouring, pumping, aspirating), the contents are not regulated as hazardous waste if there is no more than 1 inch of residue, **or** no more than three percent of the total capacity in containers that hold 110 gallons or less, **or** no more than 0.3 percent if the container is larger than 110 gallons. Once the container is RCRA empty, subsequent rinse fluids are also exempt. Fluids used to rinse containers that are **not** RCRA empty must be evaluated and managed as hazardous waste if they are determined to be hazardous.

Recycling

Returning material to service after some degree of processing. Recycling differs from beneficial reuse in that waste may require treatment before it can be recycled. Treatment and recycling may be regulated, especially if the material would be classified as hazardous waste if discarded and not recycled. In some cases, sampling, testing, and documentation may be required. Check with your environmental or HSE representative before attempting to treat waste for recycling.

Satellite Accumulation Area (SAA)

A temporary collection point for hazardous waste, located at or near the point of waste generation. SAAs are usually set up by the environmental staff for routinely generated wastes such as light bulbs, aerosols, and spent solvents. Instructions for SAA management are posted in each area. General guidelines are summarized in Attachment E. Each SAA is limited to 55 gallons of **total** waste. Once the 55-gallon limit is reached, the waste must be moved to a centralized collection point within three days.

Solid Waste

This term is commonly used in the field to describe trash, debris, and other discarded material that is actually in a solid physical state. However, the regulatory definition is much broader and includes solids, liquids, and gases.

Universal Waste

A special category of wastes, formerly classified as hazardous waste, that are subject to slightly less stringent storage and paperwork requirements. In oil and gas facilities, the universal waste category applies mainly to batteries (Ni-Cad, mercury, and lithium) and light bulbs that can be shipped intact to recycling facilities. They are still collected and managed in designated areas, and shipped off site to approved facilities, but the volumes do not count towards a generator's hazardous waste accumulation limits.

5. WASTE MANAGEMENT PLANNING

Waste management must be included in the planning process for all projects and operations. Do not assume that any waste generated on a project can be accepted by the nearest BP or ARCO disposal facility. Inadequate waste management planning can have very costly consequences.

First:

- Identify products that will be used, such as fuels, lubricants, cleaners, and other chemicals.
- Identify the type and amount of waste likely to be generated.
- Consider waste minimization, recycling, and pollution prevention opportunities. These may significantly reduce disposal costs, environmental impact, and regulatory liabilities.

Next:

Review this information with the BP or ARCO environmental staff, and:

- Determine disposal or recycling options for each waste stream.
- Select the appropriate facilities for managing each waste stream.
- Determine (in advance) what sampling, documentation, or training will be required.
- Set up procedures for transportation and delivery to the selected facilities.

Seismic, Exploration, and Remote Drilling Programs

Waste management plans are especially critical for seismic, exploration, and remote drilling operations. On-site storage and disposal options are limited, and logistics for off-site disposal are complicated. A written waste management plan must be prepared well before any field work begins and approved by the appropriate BP or ARCO environmental representative.

6. CONTRACTORS AND THIRD PARTIES

These disposal/reuse guidelines apply **only** to materials generated by BP/ARCO operations. Other materials, such as those generated at a contractor's shop in Deadhorse, are the responsibility of that contractor unless specific arrangements have been made for management by BP or ARCO.

Contractors are an integral and essential part of BP and ARCO operations. Where contractor operations are under direct management by BP or ARCO, wastes can often be managed at BP/ARCO facilities.

Contractors and third parties **may not bring any materials generated outside field boundaries** into BP or ARCO facilities for disposal, recycling, or beneficial reuse without prior written approval.

BP and ARCO are willing to review contractor and third party operations on a case-by-case basis. Materials generated outside the field will be considered for BP/ARCO management if (a) the contractor or third party provides sufficient information about the waste stream or product, and (b) the contractor or third party can demonstrate that they have an effective on-site waste management plan. Please contact a BP or ARCO field environmental representative if you would like more information or assistance.

Contractors who would like more information about managing wastes at their own facilities may wish to contact the ADEC Compliance Assistance Office at 1-800-521-ADEC, or log on to the web site of the ADEC Division of Statewide Public Service at http://www.state.ak.us/local/akpages/ENV.CONSERV/dsps/dec_dsps.htm. Services are free, and the assistance providers do not have enforcement authority.

Contractors are also encouraged to participate in BP's "Contractor Toolbox and Mentoring Program." This program has been set up to help contractors develop their own environmental compliance programs. It includes a workshop and a free Internet site with many self-help tools and links. Please contact a BP or ARCO environmental representative for more information about this program.

7. BENEFICIAL REUSE AND RECYCLING WITHIN BP AND ARCO FIELD BOUNDARIES

A variety of products can be collected and reused **within field boundaries**. BP and ARCO personnel, as well as contractors under BP and ARCO supervision, are encouraged to consider beneficial reuse as an alternative to disposal. Several approved reuse options are listed in the *Disposal/Reuse Tables*. **Other uses may be possible**, but these should be evaluated by the field environmental staff on a case-by-case basis.

> The reused material must be an effective replacement for a similar volume of new product that would normally be needed for the job. **Improper disposal through sham recycling or reuse is not allowed.** Therefore, if this Guide does not identify a specific reuse option for your waste stream, you must consult the appropriate BP or ARCO environmental representative for case-by-case approval before you reuse the material. Remember that contractors and third parties **may not bring any materials generated outside field boundaries** into BP or ARCO facilities for disposal, recycling, or beneficial reuse without prior written approval.

In each operating area, collection stations have been set up for materials like paper, wood, metals, and polystyrene, which can be sent off site for recycling. Used oil and other hydrocarbons may also be recyclable. Check the *Facility Guides* (Attachment G) for information about hydrocarbon recycling in each operating area.

Green Star Program

BP and ARCO are firmly committed to waste minimization, recycling, and beneficial reuse. Both companies are members of the Green Star program. This program, which was initiated by various regulatory agencies, recognizes companies that integrate pollution prevention and waste minimization into daily operations. All contractors are encouraged to enroll in the Green Star program. A special Arctic Green Star Chapter has been formed on the North Slope. For information about Green Star certification, contact a BP or ARCO environmental representative, contact The Alliance at 562-2226 (http://www.akalliance.org), or call the Green Star program headquarters at 278-7827 (http://www.alaska.net/~greenstr/index.htm).

Alaska Materials Exchange

The Alaska Materials Exchange (AME) is another resource for businesses wishing to reuse materials and find alternatives to disposal. AME is a service of the Alaska Department of Environmental Conservation (ADEC) in cooperation with BP and ARCO. Through quarterly catalogs, AME subscribers can publicize surplus and unwanted materials that can be made available to other companies. This can result in significant cost savings. For more information, contact ADEC's Compliance Assistance Office at 800-510-ADEC (within Alaska) or go to the AME web site at: http://www.state.ak.us/local/akpages/ENV.CONSERV/dsps/compasst/ptnrshp.htm.

8. RESTRICTED PRODUCTS

Chlorinated compounds like 1,1,1-trichloroethane are found in many popular commercial solvents, degreasers, and cleaners. Although these are very effective solvents, they pose serious health and environmental hazards, as well as liabilities for improper disposal. If chlorinated solvent is mixed with used oil or other wastes, the entire mixture may have to be managed as hazardous waste. Remember that there are no hazardous waste disposal facilities in Alaska.

BP and ARCO strongly discourage the use of products containing chlorinated solvents such as 1,1,1-trichloroethane, unless no other product will do the job.

- Check the MSDS for all products that you intend to purchase or use. If the product contains a chlorinated solvent, look for an alternative.
- If there is no suitable alternative, advise your field environmental representative.
- Follow instructions for proper management and disposal as hazardous waste.
- **Do not mix chlorinated solvents with used oil or any other wastes.**

Evaluate **all** products before purchase or use. Make sure you are aware of health risks, handling precautions, and disposal requirements. Be aware that even "environmentally friendly" products may have hazardous properties and disposal restrictions.

9. DISPOSAL/REUSE TABLES: INSTRUCTIONS

STEP 1: Look for your material in Column 1.

- Materials are listed in alphabetical order.
- There may be several listings for the same material. **Read each listing carefully**!
- Select the listing that matches your situation or waste-generating process.
- Be sure to note the difference between **used** and **unused** material, and material that has circulated through the well system vs. excess or unused material that has not been circulated.
- If your item or process is not listed, contact a field environmental representative.

STEP 2: Note the classification in Column 2.

- You will need this information to select an appropriate disposal facility.
- Waste for Class I disposal on the North Slope must be non-hazardous or RCRA exempt.
- Wastes for Class II disposal must meet the criteria shown on the attached *Class II Disposal* diagram.
- If you are not sure of the classification, store "unknown" wastes separately and **immediately** contact the environmental staff for assistance.
- **Do not** mix wastes of different classification!
- **Do not** mix potentially hazardous wastes with used oil or other wastes!

STEP 3: Check the disposal/reuse options in Column 3.

- Several options are presented. Selection will depend on practical considerations, such as season and location, each facility's operating limits, company policies, and other restrictions.
- Any wastes sent to Pad 3. Badami, or Alpine must fit into pre-approved waste streams. Suggested waste stream descriptions are provided in Column 3. These should be indicated on the North Slope Manifest.
- A separate column for "EOR" (non-hazardous, water-based fluids) shows, at a glance, which fluids have been pre-approved for beneficial reuse in the waterflood system. If an item is not checked, contact your field environmental representative for case-by-case evaluation. Fluids must meet the attached *EOR Specifications.*

STEP 4: Check the *Facility Guides* for site-specific information.

- A series of tables called *Facility Guides* are attached. They are organized by operating area and summarize the options that are available in each location.
- Each facility has its own operating restrictions and paperwork requirements.
- Contact the facility or the environmental staff in advance if there are any questions about procedure.
- Only approved generators, transporters, and receivers may manifest materials to BP or ARCO facilities.

If an item or disposal/reuse option is not listed, be sure to contact your environmental representative for a case-by-case determination.

DISPOSAL / REUSE TABLES

If an item or disposal/reuse option is not listed here, contact ARCO or BP Environmental representative for a case-by-case determination.

1. MATERIAL AND SOURCE	2. CLASSIFICATION	3. DISPOSAL/REUSE OPTIONS See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	EOR
ACID ACID - unused or leftover (not circulated downhole[5])	• Hazardous waste[3] if discarded	• Use on other job (example: hold for a well stimulation) – Small amounts: rinse truck on location with displacement fluid and utilize as part of the displacement • If no other use, contact Environmental	
ACID - returned from downhole[5] (stimulation flowback) and **neutralized**	• Class II • E&P exempt	• Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • EOR (water-based fluids)	✓
AEROSOL CANS	• Potentially hazardous waste[2] due to contents and/or container pressurization • Recyclable as scrap metal (follow site-specific procedures)	• Use contents entirely, if possible • Manage aerosol cans temporarily in SAA or as specified by Environmental staff • Do not puncture on site (Contact Environmental) • In WOA, may bring directly to Centralized Solid Waste Site	
ANTI-FOAM - leftover, unused, off-spec	• Class I • Potentially hazardous[2] if discarded	• Use for original intended purpose in process • Do not mix different products • Contact Environmental	
ARCTIC PACK - diesel-based freeze protection product ARCTIC PACK - unused or leftover; diesel has not been downhole[5]	• Class I • Potentially hazardous waste[3] if discarded	• Recover for freeze protection on other job • May not be injected in disposal well if hazardous • Class I Disposal Well if nonhazardous – Pad 3 (P7 "Off Spec Product" - specify) – Badami (B7 "Other" - specify)	
ARCTIC PACK - circulated downhole[5]	• Class II • E&P exempt	• Recover for freeze protection or other approved use • Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • Annular pumping at AOGCC-approved wells[4]	
ASBESTOS DEBRIS	• Solid waste • Not RCRA-hazardous, but regulated under other programs	• Follow company's asbestos management procedures (contact Environmental, Safety, or Industrial Hygiene) • Double bag and label • Send to permitted landfill off Slope (follow landfill operator's procedures)	

Notes:

1. Typically non-hazardous, but may require verification
2. Could contain listed or characteristic hazardous waste, subject to verification
3. Known to contain a listed hazardous waste or to be a characteristic hazardous waste
4. Annular pumping is subject to site- or well-specific restrictions and permits/approvals
5. "Downhole" means that material meets criteria for Class II Disposal shown in Attachment B

DISPOSAL / REUSE TABLES

If an item or disposal/reuse option is not listed here, contact ARCO or BP Environmental representative for a case-by-case determination.

1. MATERIAL AND SOURCE	2. CLASSIFICATION	3. DISPOSAL/REUSE OPTIONS See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	EOR
ASH			
ASH - from waste incinerator	• Class I • Potentially hazardous[2]	• **Do not discard in dumpster** • Class I Disposal Well (subject to testing) as slurry – Badami (B12 "Other") – Not typically approved for Pad 3 • Borough landfill (subject to testing and pre-approval by Borough)	
ASH - from fuel-burning heaters	• Class I • RCRA-Exempt (not E&P - see 40 CFR 261.4(b)(4))	• **Do not discard in dumpster** • Class I Disposal Well as slurry • Borough landfill (subject to pre-approval by Borough)	
BATTERIES			
BATTERIES - alkaline	• See *Dumpster Guidelines* • Non-hazardous	• Landfill dumpster	
BATTERIES - lead-acid, unbroken	• Recyclable	• Return to supplier (follow specific handling and collection procedures in your operating area)	
BATTERIES - lead-acid, broken	• Recyclable	• Contact Environmental • Will require special handling prior to recycling	
BATTERIES - Ni-Cad, mercury, lithium, silver-oxide	• Universal waste	• Manage temporarily in SAA or designated area • Contact Environmental	
BIOZAN (see "Gel")			
BLEED TRAILER FLUIDS			
BLEED TRAILER FLUIDS - not returned from downhole[5]	• Class I • Potentially hazardous[2] (case-by-case determination)	• Class I Disposal Well, subject to testing and approval	
BLEED TRAILER FLUIDS - returned from downhole[5]	• Class II • E&P exempt	• Beneficial reuse upon approval by Environmental • Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P)	

Notes:
1. Typically non-hazardous, but may require verification
2. Could contain listed or characteristic hazardous waste, subject to verification
3. Known to contain a listed hazardous waste or to be a characteristic hazardous waste
4. Annular pumping is subject to site- or well-specific restrictions and permits/approvals
5. "Downhole" means that material meets criteria for Class II Disposal shown in Attachment B

DISPOSAL / REUSE TABLES

If an item or disposal/reuse option is not listed here, contact ARCO or BP Environmental representative for a case-by-case determination.

1. MATERIAL AND SOURCE	2. CLASSIFICATION	3. DISPOSAL/REUSE OPTIONS See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	EOR
BRINE/KCL			
BRINE - unused or leftover	• Class I • Non-hazardous[1]	• Reuse on other job • Class I Disposal Well – Pad 3 (P7 "Off Spec Product") – Badami (B7 "Off Spec Product") • EOR (non-hazardous, water-based fluids)	✓
BRINE - returned from downhole	• Class II • E&P exempt	• Recondition and reuse • Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • Annular pumping at AOGCC-approved wells[4] • EOR (water-based fluids)	✓
CARBOLITE (FRAC SAND)			
CARBOLITE - unused or leftover	• Class I • Non-hazardous[1]	• Use on other job • Borough landfill (subject to testing and pre-approval by Borough) • Approved solid waste storage area (always verify location with Environmental)	
CARBOLITE – oil-free, returned from reverse out	• Class II • E&P exempt	• Class II Disposal Well • Class I Disposal Well as slurry ("RCRA Exempt")	
CARBOLITE - oily, returned from downhole[5]	• Class II • E&P exempt	• Class II Disposal Well subject to facility limitations on solids and hydrocarbon content • Class I Disposal Well ("RCRA Exempt" E&P)	
CAUSTIC			
CAUSTIC - unused or leftover (<u>not</u> circulated downhole[5])	• Hazardous waste[3] if discarded	• Use on other job (example: hold for a well stimulation) • If no other use, contact Environmental	
CAUSTIC - returned from downhole[5] (stimulation flowback) and **neutralized**	• Class II • E&P exempt	• Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • EOR (water-based fluids)	✓

Notes:
1. Typically non-hazardous, but may require verification
2. Could contain listed or characteristic hazardous waste, subject to verification
3. Known to contain a listed hazardous waste or to be a characteristic hazardous waste
4. Annular pumping is subject to site- or well-specific restrictions and permits/approvals
5. "Downhole" means that material meets criteria for Class II Disposal shown in Attachment B

DISPOSAL / REUSE TABLES

If an item or disposal/reuse option is not listed here, contact ARCO or BP Environmental representative for a case-by-case determination.

1. MATERIAL AND SOURCE	2. CLASSIFICATION	3. DISPOSAL/REUSE OPTIONS See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	EOR
CEMENT			
CEMENT - unused, leftover, <u>not</u> from downhole[5]	• Class I • Non-hazardous[1]	• Use on other job • Class I Disposal Well – Pad 3 (P7 "Off Spec Product" or P9 "Tank Cleaning/Drum Rinsate") if injectable slurry – Badami (B7 "Off Spec Product" or B8 "Non-Exempt Drilling/Well Work") • Solids to Borough landfill (subject to testing and pre-approval by Borough)	
CEMENT - returned from downhole[5] (may be contaminated w/mud and contain retarder)	• Class II • E&P exempt	• Class II Disposal Well • Class I Disposal Well ("RCRA Exempt") • Annular pumping at AOGCC-approved wells[4] • Solids to Borough landfill (subject to testing and pre-approval by Borough)	
CEMENT RINSATE			
CEMENT RINSATE - remove cement residual that has <u>not</u> circulated downhole[5]	• Class I • Non-hazardous[1] (verify pH)	• Use to pre-flush well in preparation for a top job • Use to clean cuttings conveyor • Other beneficial reuses upon approval by Environmental • Class I Disposal Well – Pad 3 (P9 "Tank Cleaning/Drum Rinsate") - may require solids separation and pH test – Badami (B8 "Non-Exempt Drilling/Well Work") • Annular pumping at AOGCC-approved wells[4]	
CEMENT RINSATE - remove returned cement residual from equipment (cement has circulated downhole[5])	• Class II • E&P exempt	• Class II Disposal Well • Beneficial reuse. Examples: - Use to pre-flush well in preparation for a top job - Use to clean cuttings conveyor • Annular pumping at AOGCC-approved wells[4] • Class I Disposal Well ("RCRA Exempt" E&P) – Pad 3 - may require solids separation	
CEMENT SPACER (CHEMICAL) - returned from downhole[5]	• Class II • E&P exempt	• Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P)	

Notes:

1. Typically non-hazardous, but may require verification
2. Could contain listed or characteristic hazardous waste, subject to verification
3. Known to contain a listed hazardous waste or to be a characteristic hazardous waste
4. Annular pumping is subject to site- or well-specific restrictions and permits/approvals
5. "Downhole" means that material meets criteria for Class II Disposal shown in Attachment B

DISPOSAL / REUSE TABLES

If an item or disposal/reuse option is not listed here, contact ARCO or BP Environmental representative for a case-by-case determination.

1. MATERIAL AND SOURCE	**2. CLASSIFICATION**	**3. DISPOSAL/REUSE OPTIONS** See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	**EOR**
CHEM CLEAR - commercial hydrocarbon-based cleaner			
CHEM CLEAR - leftover, unused	• Class I • Non-hazardous[1] (verify flash point)	• Use for intended purpose • Class I Disposal Well – Pad 3 (P7, "Off Spec Product") – Badami (B7, "Off Spec Product") • EOR (non-hazardous, water-based fluids)	
CHEM CLEAR - used, mixed with residues that have not been downhole[5]	• Class I • Mixture may be hazardous[2] - case-by-case determination	• Class I Disposal Well if nonhazardous – Pad 3 (P6, "Equipment/Facility Wash Water") – Badami (B6, "Facility Wash Water") • EOR (non-hazardous, water-based fluids)	
CHEM CLEAR - used, mixed with residues that have been downhole[5]	• Class II • E&P exempt	• Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • EOR (water-based fluids)	
CHEMICALS AND REAGENTS - leftover, unused, off-spec. Examples: anti-foam, corrosion inhibitor, emulsion breaker, scale inhibitor, drilling mud reagents, other additives	• Class I • Case-by-case determination needed • Potentially hazardous waste[2] if discarded	• Use chemicals for original intended purpose in process • Do not mix different products • Contact Environmental as soon as disposal is required • Manage temporarily in SAA	
CLEANOUTS (see also "Tank/Vessel Solids") - residues from lines, vessels, or trucks containing Class II materials such as vessel sediments, pigging solids, crude oil. May include non-hazardous surfactants and detergents, non-hazardous hydrocarbon-based cleaning agents.	• Class II • E&P exempt	• Recycle hydrocarbon-based fluids • Oily solids to approved solid waste storage area (always verify location with Environmental) • Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P)	
COMPLETION FLUID			
COMPLETION FLUID - unused or leftover (not from downhole[5]) such as weighted brine with lost circulation material (LCM)	• Class I • Non-hazardous[1]	• Class I Disposal Well – Pad 3 (P7 "Off Spec Product") – Badami (B7 "Off Spec Product")	
COMPLETION FLUID - returned from downhole[5], such as weighted brine with LCM	• Class II • E&P exempt	• Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P)	
CONDENSATES - drain sump and blow case discharge (i.e., bridle blow down); lineup of reboiler condensate knock out pots during gas plant upsets	• Class II • E&P exempt	• Recycle hydrocarbon-based fluids • Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • EOR (water-based fluids)	✓

Notes:

1. Typically non-hazardous, but may require verification
2. Could contain listed or characteristic hazardous waste, subject to verification
3. Known to contain a listed hazardous waste or to be a characteristic hazardous waste
4. Annular pumping is subject to site- or well-specific restrictions and permits/approvals
5. "Downhole" means that material meets criteria for Class II Disposal shown in Attachment B

DISPOSAL / REUSE TABLES

If an item or disposal/reuse option is not listed here, contact ARCO or BP Environmental representative for a case-by-case determination.

1. MATERIAL AND SOURCE	2. CLASSIFICATION	3. DISPOSAL/REUSE OPTIONS See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	EOR
CORROSION INHIBITOR			
CORROSION INHIBITOR - leftover, unused	• Class I • Potentially hazardous[2] (verify with Environmental)	• Use for intended purpose • Class I Disposal Well (subject to verification) – Pad 3 (P7 "Off Spec Product") – Badami (B7 "Off Spec Product") • EOR (non-hazardous, water-based fluids)	✓
CRUDE OIL			
CRUDE OIL - from in-field wells, flow lines, production facilities (including dead crude)	• Recyclable • Class II • E&P exempt (**Except** for crude from DOT-regulated sales pipelines or COTU)	• Reuse on other job • Recycle to production stream • Use for freeze protection • Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P)	
CRUDE OIL - from DOT-regulated sales pipelines and crude oil topping plants (COTU, KUTP)	• Recyclable • Not E&P exempt - potentially hazardous waste[3] if discarded	• Contact Environmental • Recover for hydrocarbon recycling	
CRUDE OIL TOPPING UNIT (COTU/KUTP) PROCESS FLUIDS - crude oil, diesel, aviation fuel, arctic heating fuel	• Recyclable • Not E&P exempt - potentially hazardous waste[3] if discarded	• Contact Environmental • Recover for hydrocarbon recycling	
CRUDE/DIESEL MIXTURES			
CRUDE/DIESEL MIXTURE - mix of crude and unused or leftover diesel (diesel has <u>not</u> been downhole[5])	• Hazardous waste[3] if discarded	• Use on other job • Contact Environmental	
CRUDE/DIESEL MIXTURE - mix of crude and returned diesel (diesel used downhole[5])	• Class II • E&P exempt	• Reuse on other job • Recycle to production stream • Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P)	
CUTTINGS - returned from downhole[5], including those removed when reconditioning mud	• Class II • E&P exempt	• Class II Disposal Well – G&I • Annular pumping at AOGCC-approved wells[4]	
DIATOMACEOUS EARTH			
DIATOMACEOUS EARTH - used to filter new seawater and brine	• Class I • Non-hazardous[1]	• Fluid: see "Brine" • Solids to Borough landfill (subject to testing and pre-approval by Borough)	
DIATOMACEOUS EARTH - used to filter returned seawater and brine	• Class II • E&P exempt	• Fluid: see "Brine" • Class II Disposal Well (G&I) as slurry	

Notes:
1. Typically non-hazardous, but may require verification
2. Could contain listed or characteristic hazardous waste, subject to verification
3. Known to contain a listed hazardous waste or to be a characteristic hazardous waste
4. Annular pumping is subject to site- or well-specific restrictions and permits/approvals
5. "Downhole" means that material meets criteria for Class II Disposal shown in Attachment B

DISPOSAL / REUSE TABLES

If an item or disposal/reuse option is not listed here, contact ARCO or BP Environmental representative for a case-by-case determination.

1. MATERIAL AND SOURCE	2. CLASSIFICATION	3. DISPOSAL/REUSE OPTIONS See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	EOR
DIESEL AND DIESEL MIXTURES (see also "Freeze Protection Fluids from Above-Ground Well Operations")			
DIESEL - NEW PRODUCT (unused or leftover), has <u>not</u> been downhole[5] - New product remaining in temporary service hookups at wellhead (lines have <u>not</u> contained downhole[5] materials) - New product used to <u>pressure test</u> new or non-process lines (lines have <u>not</u> contained downhole[5] materials) - New product used to clean production lines or vessels, even if they contain downhole[5] materials	• Contact Environmental in local operating area • Hazardous waste[3] if discarded	• **New product diesel may not be injected in Class I or Class II disposal wells even if mixed with Exempt or Class II wastes** • **Do not use new product diesel for pressure testing, freeze protection, or solvent properties without consulting Environmental in advance!** • Recover fluids for approved reuse (fuel, freeze protection, well work) • Contact Environmental in your operating area for site-specific options and procedures	
DIESEL - USED DOWNHOLE[5] for well work (freeze protection, downhole testing, etc.) - Used to <u>pressure test</u> existing production flowlines (lines have contained downhole[5] fluids) - Reused to clean production lines, vessels, or equipment containing downhole[5] materials (mixture of returned diesel + Class II or Exempt waste)	• Recyclable • Class II • E&P exempt	• Recover fluids for approved reuse (fuel, freeze protection, well work) • Recycle to production stream • Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • EOR (water-based fluids)	

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3. Known to contain a listed hazardous waste or to be a characteristic hazardous waste
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DISPOSAL / REUSE TABLES

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1. MATERIAL AND SOURCE	**2. CLASSIFICATION**	**3. DISPOSAL/REUSE OPTIONS** See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	**EOR**
DIRT (see "Cuttings", "Gravel", "Sandblast Media", "Sump Solids")			
DIRT - dry floor sweepings, incidental soil or road/pad dirt that is not from downhole[5]	• Class I • Potentially hazardous[2] if contains metal filings, paint chips, chemical spill residues	• Small quantities (mixed with regular trash) in landfill dumpsters • Significant amounts - approved solid waste storage area (always verify location with Environmental - testing may be required) • Borough landfill (subject to testing and pre-approval by Borough)	
DIRT - wet solids from sumps, tanks, etc. - not from downhole[5]	• Class I • Potentially hazardous[2] if contains metal filings, paint chips, chemical spill residues	• Approved solid waste storage area (always verify location with Environmental - testing may be required) • Borough landfill (subject to testing and pre-approval by Borough) • Class I Disposal Well capable of handling solids – Waste stream usually determined by the "carrier" fluid (such as "Sump Fluid", "Equipment/Facility Wash Water", etc.)	
DIRT - Class II solids, may be mixed with other Class II fluids	• Classification depends on process • Evaluate on case-by-case basis	• Approved solid waste storage area (always verify location with Environmental - testing may be required) • Borough landfill (subject to testing and pre-approval by Borough) • Class II Disposal Well capable of handling solids • Class I Disposal Well capable of handling solids ("RCRA Exempt" E&P)	
"DIRTY WATER" OR "SLOP OIL" TANK FLUIDS - consisting only of Class II fluids and/or recyclable used oil	• Recyclable (oil) • Class II (water-based fluid) • E&P exempt	• Hydrocarbons skimmed and recycled in production stream • Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • EOR (water-based fluids)	✓
"DIRTY WATER" OR "SLOP OIL" TANK SOLIDS - removed during cleanout of dirty water tank at production facility	• Class II • E&P exempt	• Oily solids to approved solid waste storage area (always verify location with Environmental) • Class II Disposal Well – G&I	
DOMESTIC WASTEWATER (see also "Sewage")	• Class I • Exempt (Sewage or Household exemption)	• Class I Disposal Well ("RCRA Exempt" E&P) • EOR (non-hazardous, water-based fluids)	✓
DRAG REDUCING AGENT (DRA) - unused, recovered from spill	• Class I • Non-hazardous[2]	• Physical properties require special handling • Approved solids storage area (always verify location with Environmental)	

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4. Annular pumping is subject to site- or well-specific restrictions and permits/approvals
5. "Downhole" means that material meets criteria for Class II Disposal shown in Attachment B

DISPOSAL / REUSE TABLES

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1. MATERIAL AND SOURCE	**2. CLASSIFICATION**	**3. DISPOSAL/REUSE OPTIONS** See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	**EOR**
DRUMS/BARRELS			
DRUMS/BARRELS - <u>not</u> empty	• Contents may be hazardous waste (product-specific)	• Use contents completely • If unusable, contact Environmental	
DRUMS/BARRELS - RCRA empty (see Definitions)	• Non-hazardous • Possibly recyclable	• Barrel Crushing Facility or approved recycler • Collect as instructed prior to delivery • See facility-specific procedures	
EPINEPHRINE - from medical facility; unused / leftover, or expired	• Acute hazardous waste if discarded • Potentially recyclable	• Manage temporarily in SAA; contact Environmental • Unused but expired product may still be reusable off site - contact Environmental	
FILTERS			
FILTERS - diesel	• Non-hazardous[2] solid, subject to testing	• Recover fluids for approved reuse • Place drained filter in oily waste bag • Oily waste dumpster (no free liquids) – subject to NSB testing requirement • Beluga incinerator	
FILTERS - glycol or motor oil	• Non-hazardous[1] • See *Dumpster Guidelines*	• Hot drain and puncture, place in oily waste bag • Oily waste dumpster (no free liquids) • Beluga incinerator	
FILTERS - TEG, from production facility; may be contaminated with crude oil when changed out	• Non-hazardous[1] • See *Dumpster Guidelines* • Fluids: Class II, E&P exempt	• Hot drain and puncture, place in oily waste bag • Oily waste dumpster (no free liquids) • Beluga incinerator • Fluids to Class II Disposal Well or Class I Disposal Well ("RCRA Exempt" E&P)	
FILTERS - other	• Case-by-case determination[2]	• Contact Environmental	
FLARE/RELIEF PIT WATER			
FLARE/RELIEF PIT WATER - fresh water in unused or closed out pits (pits do <u>not</u> contain downhole[5] residuals)	• Class I • Non-hazardous[1]	• Recover fluid for reuse • Class I Disposal Well – Pad 3 (P2 "Heat Exchanger Media") – Badami (B2 "Heat Exchange Media") • EOR (non-hazardous, water-based fluids)	✓
FLARE/RELIEF PIT WATER - fresh water in used or active pits that contain downhole[5] residuals	• Class II • E&P Exempt	• Recover fluid for reuse • Class II Disposal Well • Class I Disposal Well – Pad 3 (P2 "Heat Exchanger Media") – Badami (B2 "Heat Exchange Media") • EOR (water-based fluids)	✓
FOAM, POLYURETHANE - leftover chemical products from spray job	• Potentially hazardous waste[2] if discarded	• Contact Environmental	

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5. "Downhole" means that material meets criteria for Class II Disposal shown in Attachment B

DISPOSAL / REUSE TABLES

If an item or disposal/reuse option is not listed here, contact ARCO or BP Environmental representative for a case-by-case determination.

1. MATERIAL AND SOURCE	**2. CLASSIFICATION**	**3. DISPOSAL/REUSE OPTIONS** See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	**EOR**
FRAC FLUIDS			
FRAC FLUIDS - leftover or unused frac fluids that are **<u>not</u>** from downhole[5]	• Class I • Non-hazardous[1]	• Use on other job • Recycle as approved (if gel is broken) • Class I Disposal Well - Contact Environmental to determine if testing required - Pad 3 (P7 "Off Spec Product") - Badami (B7 "Off Spec Product")	
FRAC FLUIDS - returned, flowback from downhole[5]	• Class II • E&P exempt	• Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P)	
FRAC SAND (see "Carbolite")			
FREEZE PROTECTION FLUIDS FROM ABOVE-GROUND WELL OPERATIONS			
Diesel and/or methanol/water mixtures - used for above-ground freeze protection during well work, commingled with downhole[5] fluids (as in coil tubing unit)	• Recyclable • Class II • E&P exempt	• If possible, segregate fluid that has not been circulated downhole[5], and use on other job • Class II Disposal Well • Class I Disposal Well - Describe on manifest (Section 2) as "Surface freeze protection fluids commingled with downhole[5] fluids from (coil tubing, drilling, etc.) operation." - Check Item 6 on North Slope Manifest - do not check Item 7	
Diesel and/or methanol/water mixtures - used for above-ground freeze protection, **<u>not</u>** commingled with downhole[5] fluids	• Contact Environmental in local operating area • Hazardous waste[3] if discarded	• **New product diesel and methanol may not be injected in Class I or Class II disposal wells** • Do not use new product diesel or methanol for freeze protection without consulting Environmental in advance • Recover fluids for approved reuse • Contact Environmental in your operating area for site-specific options and procedures	
FRICTION REDUCER - (see "Drag Reducing Agent")			
GARBAGE, FOOD WASTE	• Solid waste • Non-hazardous	• DO NOT DISCARD IN OUTDOOR DUMPSTERS except for specifically marked food dumpsters with animal-proof lids • Discard indoors in marked containers or kitchen dumpsters	

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5. "Downhole" means that material meets criteria for Class II Disposal shown in Attachment B

DISPOSAL / REUSE TABLES

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1. MATERIAL AND SOURCE	**2. CLASSIFICATION**	**3. DISPOSAL/REUSE OPTIONS** See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	**EOR**
GASOLINE			
GASOLINE - clean	• Usable product - not a waste	• Recover and use for intended purpose	
GASOLINE - contaminated, not usable	• Potentially hazardous waste^{3}	• Manage temporarily in SAA • Contact Environmental	
GEL + CARBOLITE + DIESEL			
GEL + CARBOLITE + DIESEL Mixture of leftover gel, carbolite, and unused diesel (diesel not used downhole^{5}) (See "Frac Fluids" for mixture returned to surface)	• Class I • Potentially hazardous waste^{3}	• Use on other job • Recycle as approved (if gel is broken) • Skim and reuse diesel • Class I Disposal Well - Contact Environmental to determine testing requirements – Pad 3 (P7 "Off Spec Product") – Badami (B7 "Off Spec Product")	
GEL + CARBOLITE + DIESEL Mixture of leftover gel, carbolite, and returned diesel (diesel was used downhole^{5}) (see "Frac Fluids" for mixture returned to surface)	• Class I • E&P exempt	• Segregate for future reuse • Skim and reuse diesel • Class I Disposal Well ("RCRA Exempt" E&P) – Pad 3 **only** if diesel is exempt (e.g., previously used for freeze protection)	
GEL, BIOZAN, OR DUAL POLY unused, leftover (has not been downhole^{5})	• Class I • Non-hazardous^{1}	• Use on other job • Class I Disposal Well - Contact Environmental to determine if testing required – Pad 3 (P7 "Off Spec Productl) – Badami (B7 "Off Spec Product")	
GLYCOL (see also "Production Facility Fluids")			
GLYCOL - unused, surplus, any type: – Monoethylene (MEG) – Triethylene (TEG) – Propylene	• Class I • Non-hazardous^{1}	• Recover fluid for reuse • Class I Disposal Well – Pad 3 (P7 "Off-Spec Product") – Badami (B7 "Off-Spec Product") • EOR (non-hazardous, water-based fluids)	✓
GLYCOL - antifreeze (MEG, propylene, etc.) from vehicles and equipment	• Class I • Non-hazardous^{1}	• Recover fluid for reuse • Class I Disposal Well – Pad 3 (P2 "Heat Exchanger Media") – Badami (B2 "Heat Exchange Media") • EOR (non-hazardous, water-based fluids)	✓
GLYCOL used to freeze-protect lines/vessels that have not contained downhole^{5} fluids **CONTINUED**	• Class I • Non-hazardous^{1}	• Recover fluid for reuse • Class I Disposal Well – Pad 3 (P2 "Heat Exchanger Media") – Badami (B2 "Heat Exchange Media") • EOR (non-hazardous, water-based fluids)	✓

Notes:
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4. Annular pumping is subject to site- or well-specific restrictions and permits/approvals
5. "Downhole" means that material meets criteria for Class II Disposal shown in Attachment B

DISPOSAL / REUSE TABLES

If an item or disposal/reuse option is not listed here, contact ARCO or BP Environmental representative for a case-by-case determination.

1. MATERIAL AND SOURCE	2. CLASSIFICATION	3. DISPOSAL/REUSE OPTIONS See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	EOR
GLYCOL (cont'd)			
GLYCOL - used to freeze protect existing production flowlines (lines have contained downhole[5] fluids)	• Class II • E&P exempt	• Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • EOR (water-based fluids)	✓
GLYCOL used to pressure test lines/vessels that have not contained downhole[5] fluids	• Class I • Non-hazardous[1]	• Recover fluid for reuse • Class I Disposal Well – Pad 3 (P5 "Hydrotest Fluid") – Badami (B5 "Hydrotest Fluid") • EOR (non-hazardous, water-based fluids)	✓
GLYCOL - used to pressure test existing production flowlines (lines have contained downhole[5] fluids)	• Class II • E&P exempt	• Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • EOR (water-based fluids)	✓
GRAVEL			
GRAVEL - clean	• Not a waste	• Stockpile in designated areas for reuse • Do not place in dumpsters	
GRAVEL - from spill cleanups, contaminated with fluids that have not been downhole[5] (e.g., new mud, diesel)	• Class I • Potentially hazardous waste[1], depending on material spilled • Subject to testing	• **Do not discard in dumpster** • Non-hazardous gravel (if excavated) to approved storage area for future remediation. Always verify location with Environmental. • Hazardous gravel (if excavated) managed as hazardous waste in designated storage area • Recover non-hazardous, water-based fluids for reuse or EOR if appropriate (contact Environmental) • Non-hazardous fluids to Class I Disposal Well – Pad 3 (P4 "Non Exempt Spill Cleanup") – Badami (B4 "Non Exempt Spill Cleanup")	
GRAVEL - from spill cleanups, contaminated with fluids from downhole[5]	• Class II • E&P exempt	• **Do not discard in dumpster** • Gravel (if excavated) to approved solid waste storage area for future remediation (always verify location with Environmental) • Class II Disposal Well capable of handling Class II solids – G&I • Recovered fluids to production facility for recycling if appropriate • Recovered fluids to Class II Disposal Well • Recovered fluids to Class I Disposal Well ("RCRA Exempt" E&P) • Recovered water-based fluids to EOR	
GRAYWATER (see "Sewage")			

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5. "Downhole" means that material meets criteria for Class II Disposal shown in Attachment B

DISPOSAL / REUSE TABLES

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1. MATERIAL AND SOURCE	**2. CLASSIFICATION**	**3. DISPOSAL/REUSE OPTIONS** See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	**EOR**
HAZARDOUS WASTES (GENERAL) - may include paints, thinners, chlorinated solvents, xylene, acids, caustics, contaminated gasoline or diesel, methanol, etc.	• Hazardous waste[3] if discarded	• Do not transport across field boundaries • Manage temporarily in SAA • Contact Environmental • Do not mix with other waste or add to recyclable fluids such as used oil or glycol	
HYDRATES	• Class II • E & P Exempt	• Class II Disposal Well • Class I Disposal Well (RCRA Exempt, E&P)	
IRON SULFIDE			
IRON SULFIDE - polyphoric iron sulfide scale from production vessels, lines	• Class II • E & P Exempt • **Spontaneously ignites when dry and exposed to oxygen**	• **Follow applicable safety procedures for handling and storage** • Store wet in leak-proof container • Class II or Class I Disposal Well as slurry - subject to special approval & procedures • Contact Environmental and disposal facility	
IRON SULFIDE – from DOT Hazardous Waste pipelines and topping plants	• Hazardous waste if discarded • **Spontaneously ignites when dry and exposed to oxygen**	• **Follow applicable safety procedures for handling and storage** • Store wet in leak-proof container in SAA • Contact Environmental and disposal facility	
KCL (POTASSIUM CHLORIDE) - (see "Brine")			
KILL WEIGHT FLUID - leftover, unused (has <u>not</u> been downhole[5])	• Class I • Potentially hazardous[2]	• Use on other job • Class I Disposal Well – Pad 3 (P7 "Off Spec Product") - subject to testing – Badami (B8 "Non-Exempt Drilling/Well Work")	
KNOCKOUT LIQUIDS - from normal process separation	• Class II • E&P exempt	• Recycle hydrocarbon-based fluids in production facility • Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P)	
LIGHT BULBS			
LIGHT BULBS - <u>whole</u> (all types)	• Recyclable • Universal waste	• Contact Environmental for site-specific collection procedures	
LIGHT BULBS - <u>crushed</u> (all types)	• Potentially hazardous waste[3] due to lead, mercury	• Follow site-specific procedures for crushing • Manage temporarily in SAA • Contact Environmental	
LITHIUM HYPOCHLORITE	• Class I • Nonhazardous	• **Do not mix with other chemicals** - contact Environmental for disposal instructions	

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5. "Downhole" means that material meets criteria for Class II Disposal shown in Attachment B

DISPOSAL / REUSE TABLES

If an item or disposal/reuse option is not listed here, contact ARCO or BP Environmental representative for a case-by-case determination.

1. MATERIAL AND SOURCE	**2. CLASSIFICATION**	**3. DISPOSAL/REUSE OPTIONS** See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	**EOR**
LOST CIRCULATION MATERIAL (LCM)			
LOST CIRCULATION MATERIAL - leftover, unused (has not been downhole[5])	• Class I • Non-hazardous[1]	• Use on other job (as approved by Environmental) • Borough landfill (subject to testing and pre-approval by Borough) • Approved solid waste storage area (always verify location with Environmental) • Not recommended for disposal by injection	
LOST CIRCULATION MATERIAL - returned from downhole[5]	• Class II • E&P exempt	• Use on other job (as approved by Environmental) • Wash and send to Borough landfill (subject to testing and pre-approval by Borough) • Approved solid waste storage area (always verify location with Environmental) • Not recommended for disposal by injection (contact injection facility for instructions)	
MEDICAL WASTE			
MEDICAL WASTE - equipment without mercury (needles, swabs, etc.)	• Solid waste	• Store in "BIOHAZARD" bag • Send to approved incinerator • Special handling required for mercury debris	
MEDICAL WASTE - medications - (see separate listing for "Epinephrine")	• Potentially hazardous waste[2] • Some acutely hazardous (epinephrine)	• Manage temporarily in SAA • Contact Environmental	
MERCURY & MERCURY DEBRIS - broken thermometers, rags, etc.	• Hazardous waste[3]	• Manage temporarily in SAA • Contact Environmental	

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DISPOSAL / REUSE TABLES

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1. MATERIAL AND SOURCE	2. CLASSIFICATION	3. DISPOSAL/REUSE OPTIONS See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	EOR
METHANOL & METHANOL/WATER MIXTURES (see also "Freeze Protection Fluids from Above-Ground Well Operations") METHANOL - NEAT PRODUCT (unused or leftover) that has not been downhole[5]) – New product remaining in temporary service hookups at wellhead (lines have not contained downhole[5] materials) – New product used to pressure test new or non-process lines (lines have not contained downhole[5] fluids)	• Contact Environmental in local operating area • Hazardous waste[3] if discarded	• **New product methanol may not be injected in Class I or Class II disposal wells** • **Do not use new methanol to pressure test new lines without consulting Environmental in advance!** • Recover fluids for freeze protection or other approved reuse • Contact Environmental in your operating area for site-specific options and procedures	
METHANOL - USED DOWNHOLE[5] for well work (freeze protection, downhole testing, etc.) – Used to pressure test existing production flowlines (lines have contained downhole[5] fluids)	• Class II • E&P exempt	• Recover fluids for freeze protection or other approved reuse (contact Environmental) • Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • EOR (water-based fluids)	✓
MOLECULAR SIEVE - activated alumina	• Class I • Non-hazardous[1]	• **Do not discard in dumpster** • Borough landfill (subject to testing and pre-approval by Borough)	
MUD MUD - unused or leftover drilling mud that has not been downhole[5] (water or oil-based)	• Class I • Non-hazardous[1]	• Use on other job • Use to displace annulus prior to workover • Class I Disposal Well - subject to approval – Pad 3 (P7 "Off Spec Product") – Badami (B8 "Non-Exempt Drilling/Well Work") • Annular pumping at AOGCC-approved wells[4]	
MUD - water or oil-based mud, returned from downhole[5]	• Class II • E&P exempt	• Use on other job • Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • Annular pumping at AOGCC-approved wells[4]	

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3. Known to contain a listed hazardous waste or to be a characteristic hazardous waste
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5. "Downhole" means that material meets criteria for Class II Disposal shown in Attachment B

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1. MATERIAL AND SOURCE	**2. CLASSIFICATION**	**3. DISPOSAL/REUSE OPTIONS** See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	**EOR**
MUD RINSATE			
MUD RINSATE - fresh or seawater used to rinse leftover or unused mud from tanks, trucks, mud pits, lines, equipment (mud has <u>not</u> gone downhole[5])	• Class I • Non-hazardous[1]	• Beneficial reuse upon approval by Environmental • Class I Disposal Well - subject to approval – Pad 3 (P9 "Tank Cleaning/Drum Rinsate") – Badami (B7 "Non-Exempt Drilling/Well Work") • Annular pumping at AOGCC-approved wells[4]	
MUD RINSATE - fresh or seawater used to rinse returned product from tanks, trucks, rig mud pits, and lines (mud has been downhole[5])	• Class II • E&P exempt	• Beneficial reuse upon approval by Environmental • Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • Annular pumping at AOGCC-approved wells[4]	
MUD SOLIDS (see also " Cuttings") - solids from downhole[5], removed when reconditioning returned mud	• Class II • E&P exempt	• Class II Disposal Well capable of handling solids – G&I – Class I Disposal Well (capable of handling solids) ("RCRA Exempt" E&P)	
MUTUAL SOLVENT - commercial product, containing ethylene glycol monobutyl ether – "Musol" (Haliburton) – "U-66" (Dowell)			
MUTUAL SOLVENT - leftover, unused	• Class I • Non-hazardous[1]	• Use for intended purpose • Class I Disposal Well – Pad 3 (P7, "Off Spec Product") – Badami (B7, "Off Spec Product")	✓
MUTUAL SOLVENT - used, mixed with residues that have <u>not</u> been downhole[5]	• Class I • Mixture may be hazardous[2] - case-by-case determination	• Class I Disposal Well if nonhazardous – Pad 3 (P6 "Equipment/Facility Wash Water") – Badami (B6 "Facility Wash Water") • EOR (non-hazardous, water-based fluids)	✓
MUTUAL SOLVENT - used, mixed with residues that have been downhole[5]	• Class II • E&P exempt	• Class II Disposal Well • Class I Disposal Well (RCRA Exempt, E&P)	✓
NATURALLY OCCURRING RADIOACTIVE MATERIAL (NORM)	• Class II • E&P exempt, but regulated	• Contact Environmental and/or Safety for special handling requirements	
OFFICE MACHINE SUPPLIES - toners, etc. from printer, copier, fax	• Potentially recyclable • Potentially hazardous waste[2] if discarded	• Follow collection procedures in each operating area • Return to manufacturer if possible • Contact Environmental prior to disposal	

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DISPOSAL / REUSE TABLES

If an item or disposal/reuse option is not listed here, contact ARCO or BP Environmental representative for a case-by-case determination.

1. MATERIAL AND SOURCE	**2. CLASSIFICATION**	**3. DISPOSAL/REUSE OPTIONS** See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	**EOR**
OIL/GREASE - from kitchen	• Non-hazardous[1] • See *Dumpster Guidelines*	• Collect first in leak-proof container • Store for pickup with oily waste	
OIL, HYDRAULIC OR LUBRICATING - gear/motor oil, lube oil, hydraulic fluid, transmission fluid, etc. (see also "Crude Oil")			
OIL, HYDRAULIC OR LUBRICATING - unused, leftover	• Recyclable • Class I • Non-hazardous[1]	• Use for intended purpose • Hydrocarbon recycle • Class I Disposal Well – Pad 3 (P7 "Off Spec Product") – Badami (B11 "Lubrication Oil")	
OIL, HYDRAULIC OR LUBRICATING - used in vehicles, non-process equipment	• Recyclable • Class I • Potentially hazardous waste[2]	• Label containers as "Used Oil" • Contact Environmental for approval to recycle in production stream or to reuse as fuel (testing may be required) • Class I Disposal Well – Pad 3 (P7 "Off Spec Product") – Badami (B11 "Lubrication Oil")	
OIL, HYDRAULIC OR LUBRICATING - from inside production facility – Transmission fluid used in gear boxes (e.g., TEG transfer pump) – Hydraulic oil leakage from turbine engines – Lube oil leakage from compressors, vent gas blower, turbines, blowcases – Leaks to the drain sump via hard piping	• Recyclable • Class I • Potentially hazardous waste[2]	• Recycle in production stream • Class I Disposal Well – Pad 3 (P7 "Off Spec Product") – Badami (B11 "Lubrication Oil")	
PAINT/THINNERS	• Hazardous waste[3] if discarded	• Manage temporarily in SAA • Contact Environmental	
PAINT CHIPS	• Potentially hazardous waste[2]	• **Do not discard in dumpster** • Contact Environmental • Borough landfill (subject to testing and pre-approval by Borough)	
PAPER PRODUCTS - office paper, cardboard, newspaper	• Potentially recyclable • Non-hazardous[1]	• Follow recycling procedures/restrictions in each area • Landfill dumpster if not recyclable	

Notes:
1. Typically non-hazardous, but may require verification
2. Could contain listed or characteristic hazardous waste, subject to verification
3. Known to contain a listed hazardous waste or to be a characteristic hazardous waste
4. Annular pumping is subject to site- or well-specific restrictions and permits/approvals
5. "Downhole" means that material meets criteria for Class II Disposal shown in Attachment B

DISPOSAL / REUSE TABLES

If an item or disposal/reuse option is not listed here, contact ARCO or BP Environmental representative for a case-by-case determination.

1. MATERIAL AND SOURCE	2. CLASSIFICATION	3. DISPOSAL/REUSE OPTIONS See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	EOR
PHOTO PROCESSING/ X-RAY FLUID - includes developer, stop bath, fixer, wash, detergent	• Class I • Non-hazardous[1] after recovery of silver • Hazardous waste[3] prior to silver recovery	• Process through silver recovery unit (contact Environmental for assistance) • Ship silver cartridge to approved off-site reclaimer • Fluid (after silver recovery) to Class I Disposal Well – Pad 3 (P3 "Photo Processor Fluid") – Badami (B3 "Photo Processor Fluid")	
PIGGING SOLIDS			
PIGGING SOLIDS - from line that has not held material from downhole[5]	• Class I (unless determined otherwise by Environmental) • Non-hazardous[1]	• Approved solid waste storage area (always verify location with Environmental)	
PIGGING SOLIDS - from production line that has held material from downhole[5]	• Class II • E&P exempt Note: Solids from DOT-regulated sales pipelines are **not** E&P exempt and require case-by-case characterization.	• Approved solid waste storage area (always verify location with Environmental) • Class II Disposal Well (designed for solids): – G&I • Class I Disposal Well (designed for solids) ("RCRA Exempt" E&P)	
PIPELINE FLUIDS - from existing production pipeline containing fluids from downhole[5], drained prior to maintenance and pressure testing. Fluids could include produced water, oil, gas, NGLs.	• Class II • E&P exempt Note: Fluids from DOT-regulated sales pipelines are **not** E&P exempt and require case-by-case characterization.	• Recycle in production facility • Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • EOR (water-based fluids)	✓
POLYSHIELD (POLYMER LINER MATERIAL) - leftover from spraying product	• Potentially hazardous waste[2] if discarded	• Contact Environmental	
PRODUCED WATER - from hard piping, drains, sumps, separators, vessels, etc.	• Class II • E&P exempt	• Recycle hydrocarbon-based fluids • Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • EOR (water-based fluids)	✓

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2. Could contain listed or characteristic hazardous waste, subject to verification
3. Known to contain a listed hazardous waste or to be a characteristic hazardous waste
4. Annular pumping is subject to site- or well-specific restrictions and permits/approvals
5. "Downhole" means that material meets criteria for Class II Disposal shown in Attachment B

DISPOSAL / REUSE TABLES

If an item or disposal/reuse option is not listed here, contact ARCO or BP Environmental representative for a case-by-case determination.

1. MATERIAL AND SOURCE	**2. CLASSIFICATION**	**3. DISPOSAL/REUSE OPTIONS** See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	**EOR**
PRODUCTION FACILITY FLUIDS (found in sumps, drains, equipment)			
Produced Fluids: - Condensates - Produced water	• Recyclable • Class II • E&P Exempt	• Recover hydrocarbons for production • Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • EOR (water-based fluids)	✓
- Crude oil from in-field gathering lines	• Recyclable • Class II • E&P Exempt	• Recover hydrocarbons for production • Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P)	
- Crude oil from DOT sales line and topping plants (returned to facility from pigging operation)	• Recyclable • Not Exempt	• Recover hydrocarbons for production	
Fluids from Process Equipment: - BS&W testing samples - Pigging returns (from process maintenance)	• Recyclable • Class II • E&P Exempt	• Recycle hydrocarbons • Class II Disposal Well • Class I Disposal Well	
- Lube/hydraulic oil (may contain water)	• Recyclable • Class I • Potentially hazardous^2	• Recycle hydrocarbons (subject to testing) • Class I Disposal Well (subject to testing)	
Production Chemicals Commingled with Produced Fluids: - MEG (from heating/cooling process) - TEG (from dehydration process) - Methanol (process freeze protection) - Process wastewater (from treatment of produced fluids)	• Class II • E&P Exempt	• Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • EOR (water-based fluids)	✓
CONTINUED			

Notes:
1. Typically non-hazardous, but may require verification
2. Could contain listed or characteristic hazardous waste, subject to verification
3. Known to contain a listed hazardous waste or to be a characteristic hazardous waste
4. Annular pumping is subject to site- or well-specific restrictions and permits/approvals
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DISPOSAL / REUSE TABLES

If an item or disposal/reuse option is not listed here, contact ARCO or BP Environmental representative for a case-by-case determination.

1. MATERIAL AND SOURCE	**2. CLASSIFICATION**	**3. DISPOSAL/REUSE OPTIONS** See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	**EOR**
PRODUCTION FACILITY FLUIDS (cont'd)			
Production/Other Chemicals <u>NOT</u> Commingled With Produced Fluids: - Fire water (from deluge system) - H_2S or O_2 scavenger - MEG (from bulk storage, sulzer seal buffer fluid, lube oil cooling, oil transit cooling, waste heat recovery system, utility heat) - Water (non-process water from boiler blowdown, air compressors, waste heat makeup, backflush, general housekeeping)	• Class I • Nonhazardous[1]	• Use for intended purpose • Class I Disposal Well if unusable - Pad 3 (P7 "Off Spec Product") - Badami (B7 "Off Spec Product") • EOR (non-hazardous, water-based fluids)	✓
- Antifoam agent (bulk storage) - Corrosion inhibitor (bulk storage) - Emulsion breaker (bulk storage) - Scale inhibitor (bulk storage) - Lime scale remover	• Class I • Potentially hazardous waste[2] if discarded	• Use for intended purpose in production stream • Class I Disposal Well (subject to testing) - Pad 3 (P7 "Off Spec Product") - Badami (B7 "Off Spec Product") • EOR (non-hazardous, water-based fluid - case-by-case determination)	✓
- Methanol (from bulk storage or non-process freeze protection)	• Hazardous waste[3] if discarded	• Use for intended purpose • May not be injected in Class I or Class II disposal well	
RADIOACTIVE TRACERS			
RADIOACTIVE TRACERS - unused	• Not regulated under RCRA but potentially regulated as radioactive	• Return to manufacturer or supplier following established protocols	
RADIOACTIVE TRACERS - used downhole[5]	• Class II • E&P exempt	• Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • Approved solids storage area (subject to prior sampling for radioactivity levels)	
RAGS (see "Sorbents," also see name of contaminant)			

Notes:
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3. Known to contain a listed hazardous waste or to be a characteristic hazardous waste
4. Annular pumping is subject to site- or well-specific restrictions and permits/approvals
5. "Downhole" means that material meets criteria for Class II Disposal shown in Attachment B

DISPOSAL / REUSE TABLES

If an item or disposal/reuse option is not listed here, contact ARCO or BP Environmental representative for a case-by-case determination.

1. MATERIAL AND SOURCE	**2. CLASSIFICATION**	**3. DISPOSAL/REUSE OPTIONS** See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	**EOR**
RESERVE PIT FLUIDS			
RESERVE PIT FLUIDS - crude, returned mud, other material from downhole[5]	• Class II • E&P exempt	• Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • EOR (water-based fluids) • Annular pumping at AOGCC-approved wells[4]	✓
RESERVE PIT WATER - fresh water in unused or closed out pits (pits do <u>not</u> contain downhole[5] residuals)	• Class I • Non-hazardous[1]	• Reuse (for example, cold water frac) • Recover fluid for reuse • Class I Disposal Well – Pad 3 (P8 "Contained Snowmelt/Ponded Water") – Badami (B10 "Contained Snowmelt/Ponded Water") • EOR (non-hazardous, water-based fluids)	✓
RESERVE PIT WATER - fresh water in used or active pits that contain downhole[5] residuals	• Class II • E&P Exempt	• Recover fluid for reuse • Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • EOR (water-based fluids)	✓
RIGWASH - primarily water that facilitates cleaning of downhole[5] wastes (e.g., from rig floor, tools, walls)	• Class II • E&P exempt	• Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • Annular pumping at AOGCC-approved wells[4]	
RINSATE (RINSE FLUIDS)			
RINSATE, CLASS I - seawater/fresh water/non-hazardous detergent rinses, used to remove Class I waste residual (which has <u>not</u> been downhole[5]) from trucks, tanks, or vessels	• Class I • Non-hazardous[1]	• Class I Disposal Well – Pad 3 (P9 "Tank Cleaning/Drum Rinsate") – Badami (B8 "Non-Exempt Drilling/Well Work") • Beneficial reuse upon approval by Environmental • EOR (non-hazardous, water-based fluids)	✓
RINSATE, CLASS II - seawater/fresh water/non-hazardous detergent rinses, used to remove Class II waste residual (which has been downhole[5]) from trucks, tanks, or vessels	• Class II • E&P exempt	• Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • Beneficial reuse upon approval by Environmental • EOR (water-based fluids) • Annular pumping at AOGCC-approved wells[4]	✓
CONTINUED			

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3. Known to contain a listed hazardous waste or to be a characteristic hazardous waste
4. Annular pumping is subject to site- or well-specific restrictions and permits/approvals
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DISPOSAL / REUSE TABLES

If an item or disposal/reuse option is not listed here, contact ARCO or BP Environmental representative for a case-by-case determination.

1. MATERIAL AND SOURCE	**2. CLASSIFICATION**	**3. DISPOSAL/REUSE OPTIONS** See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	**EOR**
RINSATE (RINSE FLUIDS) (cont'd)			
RINSATE FROM "NON-PROCESS" PIPES, VALVES, VESSELS, ETC. that have <u>not</u> contained produced fluid from downhole[5]. Cleaned for maintenance or decommissioning. Examples: fuel storage tanks and lines, bulk chemical storage facilities, camp wastewater piping	• Class I • Potentially hazardous waste[2] if discarded	• Contact Environmental prior to generating rinsate • Class I Disposal Well if non-hazardous – Pad 3 (P6 "Equipment Facility Washwater" or P9 "Tank Cleaning/Drum Rinsate") – Badami (B8 "Non-Exempt Drilling/Well Work") • EOR (non-hazardous, water-based fluids)	✓
RINSATE FROM PRODUCTION FLOWLINES, VALVES, VESSELS that have contained produced fluid from downhole[5]. Cleaned with water and non-hazardous detergent	• Class II • E&P exempt • Note: Fluids from DOT-regulated sales pipelines are **not** E&P exempt and require case-by-case characterization.	• Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • EOR (water-based fluids)	✓
RINSATE FROM RCRA-EMPTY VESSELS OR CONTAINERS (see Definitions) - fresh or seawater rinse to remove residue in a drum, truck, tank, or vessel	• Class I • Exempt due to empty container	• Truck or vessel must meet RCRA-empty criteria prior to rinsing (RCRA-empty usually achieved by blowing-down to storage tank) • Class I Disposal Well ("RCRA Exempt" Empty Container) • Beneficial reuse as approved by Environmental • EOR (water-based fluids)	✓
SAMPLES - crude oil, produced water, emulsion breaker from BS&W, spinouts	• Recyclable • Class II • E&P exempt • Verify classification of associated solvents or reagents	• Recycle hydrocarbon-based fluids • Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • EOR (water-based fluids)	✓
SAND BLAST MEDIA - usually associated with maintenance, cleaning	• Class I • Non-hazardous[3] • Potentially recyclable	• **Do not discard in dumpster** • Borough landfill (subject to testing and pre-approval by Borough) • Other uses as approved by Environmental	

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DISPOSAL / REUSE TABLES

If an item or disposal/reuse option is not listed here, contact
ARCO or BP Environmental representative for a case-by-case determination.

1. MATERIAL AND SOURCE	**2. CLASSIFICATION**	**3. DISPOSAL/REUSE OPTIONS** See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	**EOR**
SAND JETTING SOLIDS - used to clean established production lines, vessels, tanks	• Class II • E&P exempt	• Approved solid waste storage area (always verify location with Environmental) • Class II Disposal Well capable of handling solids (subject to facility's acceptance criteria) – G&I • Class I Disposal Well capable of handling solids ("RCRA Exempt" E&P)	
SAP - sodium acid pyrophosphate (gel breaker)			
SAP - leftover, unused	• Class I • Non-hazardous[1]	• Use for intended purpose • Class I Disposal Well – Pad 3 (P7 "Off Spec Product") – Badami (B7 "Off Spec Product")	
SAP - mixed with excess water/gel mixtures that have <u>not</u> been downhole[5]	• Class I • Non-hazardous[1]	• Class I Disposal Well – Pad 3 (P7 "Off Spec Product") – Badami (B7 "Off Spec Product") • EOR (non-hazardous, water-based fluids)	✓
SAP - mixed with water/gel that has been downhole[5]	• Class II • E&P exempt	• Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • Annular pumping at AOGCC-approved wells[4] • EOR (water-based fluids)	✓
SCALE INHIBITOR			
SCALE INHIBITOR - leftover, unused	• Class I • Non-hazardous[1] (verify with Environmental)	• Use for intended purpose • Class I Disposal Well (subject to verification) – Pad 3 (P7 "Off Spec Product") – Badami (B7 "Off Spec Product") • EOR (non-hazardous, water-based fluids)	
SCALE INHIBITOR - used in production lines, vessels, commingled with fluids from downhole[5]	• Class II • E&P exempt	• Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • EOR (water-based fluids)	✓
SCHMOO-B-GONE			
SCHMOO-B-GONE - leftover, unused	• Potentially hazardous waste[2] if unused and discarded	• Use for intended purpose • Contact Environmental before disposal	
SCHMOO-B-GONE - used downhole[5]	• Class II • E&P exempt	• Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P)	
SEAWATER - (see "Water")			

Notes:

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5. "Downhole" means that material meets criteria for Class II Disposal shown in Attachment B

DISPOSAL / REUSE TABLES

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1. MATERIAL AND SOURCE	**2. CLASSIFICATION**	**3. DISPOSAL/REUSE OPTIONS** See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	**EOR**
SEWAGE - sanitary/ domestic wastewater and graywater	• Class I • Exempt (domestic wastewater exclusion or household exemption)	• Sewage treatment plant if possible • Class I Disposal Well ("RCRA Exempt" Sewage) • EOR (water-based fluids) • Check with Environmental for other options	✓
SHEETROCK	• Class I • Non-hazardous	• Small amounts in landfill dumpster • Deliver to Borough landfill, with prior approval	
SMOKE DETECTORS	• Recyclable • Potentially radioactive/ hazardous waste[2] if discarded	• Contact Environmental • Will be returned to manufacturer if possible	
SNOW			
SNOW - contaminated with fluids that have <u>not</u> been downhole[5] (e.g., new mud, diesel, chemicals)	• Class I • Subject to testing	• **Do not discard in dumpster** • Do not mix with other wastes or with spills of downhole[5] fluids • Contact Environmental • Class I Disposal Well (melted snow) if non-hazardous – Pad 3 (P4 "Non Exempt Spill Clean Up") – Badami (B4 "Non Exempt Spill Clean Up") • EOR (non-hazardous, water-based fluids)	✓
SNOW - contaminated with fluids circulated through the wellbore (from downhole[5])	• Class II • E&P exempt	• **Do not discard in dumpster** • Class II Disposal Well (melted snow) • Class I Disposal Well ("RCRA Exempt" E&P) • EOR (water-based fluids)	✓
SNOWMELT OR RAINWATER (STORMWATER)			
SNOWMELT OR RAINWATER from pads, tank farms, impoundments (<u>not</u> in contact with fluids from downhole[5])	• Class I • Non-hazardous[2]	• **No surface discharge without explicit approval from Environmental** • Beneficial reuse (for example, road watering) as approved by Environmental - subject to testing • Class I Disposal Well – Pad 3 (P8 "Contained Snow Melt/Ponded Water") – Badami (B10 "Contained Snow Melt/Ponded Water") • EOR (water-based fluids)	✓
SNOWMELT OR RAINWATER from well cellars, reserve pits - in contact with returned muds, cuttings, fluids from downhole[5]	• Class II • E&P exempt	• Beneficial reuse as approved by Environmental • Class I Disposal Well ("RCRA Exempt" E&P) • Class II Disposal Well • EOR (water-based fluids)	✓

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DISPOSAL / REUSE TABLES

If an item or disposal/reuse option is not listed here, contact ARCO or BP Environmental representative for a case-by-case determination.

1. MATERIAL AND SOURCE	**2. CLASSIFICATION**	**3. DISPOSAL/REUSE OPTIONS** See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	**EOR**
SOAP - various non-hazardous detergents & cleaning agents			
SOAP - leftover, unused	• Class I • Non-hazardous[1]	• Class I Disposal Well – Pad 3 (P7 "Off Spec Product") – Badami (B7 "Off Spec Product") • EOR (non-hazardous, water-based fluids)	✓
SOAP - used, mixed with residues that have not been downhole[5]	• Class I • Potentially hazardous waste[2] if discarded - case-by-case determination	• Class I Disposal Well if nonhazardous – Pad 3 (P6 "Equipment/Facility Wash Water") – Badami (B6 "Facility Wash Water") • EOR (non-hazardous, water-based fluids)	✓
SOAP - used, mixed with residues that have been downhole[5]	• Class II • E&P exempt	• Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • EOR (water-based fluids)	✓
SOLVENT / DEGREASER		• **Note: solvents are not to be beneficially reused for freeze protection or disposed of by processing through production facility**	
SOLVENT, CHLORINATED - 1,1,1-trichloroethane and others, commonly found in industrial cleaning products and degreasers	• Hazardous waste[3] with health hazards, if discarded	• **Evaluate products carefully prior to purchasing - select non-chlorinated alternatives if possible** • Restrict to essential uses • Manage spent product temporarily in SAA • Contact Environmental	
SOLVENT, CITRUS-BASED	• Potentially hazardous waste[2] due to flash point	• Manage temporarily in SAA - be alert to possible combustion hazard • Contact Environmental	
SOLVENT, STODDARD	• Hazardous waste[3] if discarded	• Manage temporarily in SAA • Not recyclable in production stream	
SOLVENT, OTHER	• Case-by-case basis determination - potentially hazardous waste	• **Evaluate products carefully prior to purchasing to determine handling and disposal restrictions** • Contact Environmental promptly to determine classification • Manage spent product temporarily in SAA until classification is confirmed	

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DISPOSAL / REUSE TABLES

If an item or disposal/reuse option is not listed here, contact ARCO or BP Environmental representative for a case-by-case determination.

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SORBENTS/RAGS - used in maintenance, housekeeping, spill cleanups, etc.	• Classification depends on source and composition of absorbed material • Potentially hazardous waste[2] if discarded	• Contact Environmental to determine classification and disposal options • See individual product listings in this table	
SORBENTS/RAGS - contaminated with RCRA-hazardous wastes, including but not limited to paint, thinner, solvent (acetone, toluene, xylene, hexane, chlorinated products)	• Hazardous waste[3]	• **Do not discard in dumpster** • Manage temporarily in SAA • Contact Environmental	
SORBENTS/RAGS - lightly contaminated (not saturated) with oil, diesel, gasoline, Stoddard solvent, non-hazardous products	• Non-hazardous[2] • Potentially hazardous[2] if there is free liquid present	• Collect in oily waste bag • No free liquids • Oily waste dumpster (see *Dumpster Guidelines*)	
SORBENTS/RAGS - contaminated with RCRA-exempt fluids, including <u>returned</u> diesel, <u>returned</u> crude	• E&P exempt	• Collect in oily waste bag • No free liquids • Oily waste dumpster (see *Dumpster Guidelines*)	
SOURCE WATER - from shallow groundwater well (not production well)	• Class I • Non-hazardous[1]	• Class I Disposal Well (melted snow) – Pad 3 (P7 "Off Spec Product") • EOR (non-hazardous, water-based fluids)	✓
SPILL CLEANUP WASTE - contaminated soil, snow, water, sorbents, equipment	• Classification depends on source and composition of spilled material • Potentially hazardous waste[2] if discarded	• Contact Environmental to determine classification and disposal options • See individual product listings in this table	
STIMULATION FLUID - unused or leftover (<u>not</u> circulated downhole[5])	• Class I • Potentially hazardous waste[2] if discarded	• Use on other job – Rinse truck on location with displacement fluid and utilize as part of the displacement – Hold for another well • Class I Disposal Well - subject to testing – Pad 3 (P7 "Off Spec Product") – Badami (B8 "Non-Exempt Drilling/Well Work")	

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5. "Downhole" means that material meets criteria for Class II Disposal shown in Attachment B

DISPOSAL / REUSE TABLES

If an item or disposal/reuse option is not listed here, contact ARCO or BP Environmental representative for a case-by-case determination.

1. MATERIAL AND SOURCE	2. CLASSIFICATION	3. DISPOSAL/REUSE OPTIONS See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	EOR
STUCK-PIPE FREEING AGENTS			
STUCK-PIPE FREEING AGENTS - unused or leftover (have <u>not</u> been downhole[5])	• Class I • Subject to testing	• Use on other job • Contact Environmental • Class I Disposal Well subject to approval – Pad 3 (P7 "Off Spec Product") – Badami (B8 "Non-Exempt Drilling/Wellwork")	
STUCK-PIPE FREEING AGENTS - returned from downhole[5]	• Class II • E&P exempt	• Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • Annular pumping at AOGCC-approved wells[4]	
SUMP FLUIDS - (see also "Production Facility Fluids")			
SUMP FLUIDS, CLASS I - fluids that have <u>not</u> circulated downhole[5] (from equipment, maintenance shops, etc.)	• Class I • Subject to case-by-case evaluation and testing[2]	• Recover usable products for intended purpose • Hydrocarbons to production facility for recovery • Class I Disposal Well – Pad 3 (P7 "Sump Fluids") subject to testing – Badami (B7 "Sump Fluids") subject to testing • EOR (non-hazardous, water-based fluids)	✓
SUMP FLUIDS, CLASS II - fluids that have circulated downhole[5]	• Class II • E&P exempt	• Hydrocarbons to production facility for recovery • Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • EOR (water-based fluids)	✓
SUMP SOLIDS			
SUMP SOLIDS, CLASS I - solids accumulating in sumps that collect materials which are <u>not</u> from downhole[5]	• Class I • Subject to case-by-case evaluation and testing[2]	• Approved solid waste storage area (always verify location with Environmental - testing may be required) • Borough landfill (subject to testing and pre-approval by Borough) • Class I Disposal Well capable of handling solids – Badami (B12 "Other")	
SUMP SOLIDS, CLASS II - solids accumulating in sumps dedicated to materials from downhole[5]	• Classification depends on process • Evaluate on case-by-case basis	• Approved solid waste storage area (always verify location with Environmental - testing may be required) • Borough landfill (subject to testing and pre-approval by Borough) • Class II Disposal Well capable of handling solids (must meet facility's acceptance criteria) – G&I • Class I Disposal Well capable of handling solids – Badami ("Other")	

Notes:

1. Typically non-hazardous, but may require verification
2. Could contain listed or characteristic hazardous waste, subject to verification
3. Known to contain a listed hazardous waste or to be a characteristic hazardous waste
4. Annular pumping is subject to site- or well-specific restrictions and permits/approvals
5. "Downhole" means that material meets criteria for Class II Disposal shown in Attachment B

DISPOSAL / REUSE TABLES

If an item or disposal/reuse option is not listed here, contact ARCO or BP Environmental representative for a case-by-case determination.

1. MATERIAL AND SOURCE	2. CLASSIFICATION	3. DISPOSAL/REUSE OPTIONS See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	EOR
SURPLUS PRODUCTS - new, off-spec, otherwise unwanted	• Potentially hazardous waste[2] if discarded	• Use for intended purpose whenever possible • Return to vendor if appropriate • Contact Environmental or Materials	
TANK/VESSEL SOLIDS			
TANK/VESSEL SOLIDS - removed from tanks that have not held materials from downhole[5] (seawater, chemicals, potable water, sewage, etc.)	• Class I • Non-hazardous[2], subject to case-by-case evaluation and testing	• Contact Environmental prior to cleanout if possible • Approved solid waste storage area (always verify location with Environmental) • Borough landfill (subject to testing and pre-approval by Borough) • Class I Disposal Well capable of handling solids – Badami (B12 "Other")	
TANK/VESSEL SOLIDS - removed from cleanout of tanks that have held used/returned materials from downhole[5]	• Class II • E&P exempt	• Approved solid waste storage area (always verify location with Environmental) – Class II Disposal Well capable of handling solids (subject to facility's acceptance criteria) • Class I Disposal Well capable of handling solids ("RCRA Exempt" E&P)	
TEG WITH TEA (TRIETHYLAMINE) - wastewater from gas processing (dehydration system)	• Class II • E&P exempt	• Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • EOR (water-based fluids)	✓
THERMINOL - commercial heat exchange product			
THERMINOL - leftover, unused	• Potentially hazardous waste[3] if discarded (toxicity characteristic due to benzene)	• Use for intended purpose • Contact Environmental if unusable	
THERMINOL - used, mixed with residues that have not been downhole[5]	• Potentially hazardous waste[3] if discarded	• Contact Environmental prior to disposal	
TURBINE WASH WATER	• Class I • Potentially hazardous waste[2] if discarded	• Class I Disposal Well - subject to testing – Pad 3 (P6 "Equipment/Facility Wash Waters") – Badami (B12 "Other") • EOR (non-hazardous, water-based fluids)	✓

Notes:

1. Typically non-hazardous, but may require verification
2. Could contain listed or characteristic hazardous waste, subject to verification
3. Known to contain a listed hazardous waste or to be a characteristic hazardous waste
4. Annular pumping is subject to site- or well-specific restrictions and permits/approvals
5. "Downhole" means that material meets criteria for Class II Disposal shown in Attachment B

DISPOSAL / REUSE TABLES

If an item or disposal/reuse option is not listed here, contact ARCO or BP Environmental representative for a case-by-case determination.

1. MATERIAL AND SOURCE	**2. CLASSIFICATION**	**3. DISPOSAL/REUSE OPTIONS** See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	**EOR**
WASH BAY FLUIDS			
WASH BAY FLUIDS - water collected in sumps from washing vehicles in shops	• Class I • Non-hazardous[1]	• Class I Disposal Well - subject to testing – Pad 3 ("Sump Fluids") – Badami ("Sump Fluids") • EOR (non-hazardous, water-based fluids)	✓
WASH BAY FLUIDS - water used to remove fluids and solids returned from downhole[5] from equipment and drilling tools	• Class II • E&P exempt	• Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • EOR (water-based fluids)	✓
WASHING MACHINE WATERS - used to clean downhole[5] fluids from clothing	• Class II • E&P exempt	• Use as makeup water for mud and workover mixtures • Other beneficial reuse upon approval by Environmental • Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • Annular pumping at AOGCC-approved wells[4] • EOR (water-based fluids)	✓
WATER - (see also "Flare/Relief Pit Water" and "Reserve Pit Water")			
WATER - fresh or seawater that has <u>not</u> been downhole[5]	• Class I • Non-hazardous[1]	• Use on other job (mud makeup water or other use) • Class I Disposal Well – Pad 3 (P8 "Contained Snowmelt/Ponded Water" or P11 "Other" - specify) – Badami (B10 "Contained Snowmelt/Ponded Water" or B11 "Other" - specify) • EOR (non-hazardous, water-based fluids)	✓
WATER - fresh or seawater circulated or reversed out from downhole[5] (e.g., when setting kickoff plug)	• Class II • E&P exempt	• Reuse on other job (mud makeup water or other approved use) • Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • Annular pumping at AOGCC-approved wells[4] • EOR (non-hazardous, water-based fluids)	✓
WATER - fresh or seawater used to pressure test new lines or valves	• Class I • Non-hazardous[1]	• Class I Disposal Well – Pad 3 (P5 "Hydro Test Fluid") – Badami (B5 "Hydro Test Fluid") • Possible discharge under NPDES permit (contact Environmental well in advance) • EOR (non-hazardous, water-based fluids)	✓
WATER - fresh or seawater used to pressure test existing production flowlines or valves which contain residual downhole[5] fluids	• Class II • E&P exempt	• Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • EOR (water-based fluids)	✓

Notes:
1. Typically non-hazardous, but may require verification
2. Could contain listed or characteristic hazardous waste, subject to verification
3. Known to contain a listed hazardous waste or to be a characteristic hazardous waste
4. Annular pumping is subject to site- or well-specific restrictions and permits/approvals
5. "Downhole" means that material meets criteria for Class II Disposal shown in Attachment B

DISPOSAL / REUSE TABLES

If an item or disposal/reuse option is not listed here, contact ARCO or BP Environmental representative for a case-by-case determination.

1. MATERIAL AND SOURCE	2. CLASSIFICATION	3. DISPOSAL/REUSE OPTIONS See *Facility Guides* for options in each operating area. (Note Pad 3 and Badami Class I waste streams in parentheses.)	EOR
WATER SOFTENER BACKWASH EFFLUENT (see "Brine")			
WELL CELLAR FLUIDS - fluids from downhole^5 (crude, produced water) collected in cellar, plus rainwater or snowmelt in contact with downhole^5 fluids	• Class II • E&P exempt	• Class II Disposal Well • Class I Disposal Well ("RCRA Exempt" E&P) • EOR (water-based fluids)	✓
WOOD	• Potentially recyclable	• Check for site-specific collection and recycling procedures	

Notes:

1. Typically non-hazardous, but may require verification
2. Could contain listed or characteristic hazardous waste, subject to verification
3. Known to contain a listed hazardous waste or to be a characteristic hazardous waste
4. Annular pumping is subject to site- or well-specific restrictions and permits/approvals
5. "Downhole" means that material meets criteria for Class II Disposal shown in Attachment B

ATTACHMENTS

A. CONSEQUENCES OF MIXING WASTES

Mixing wastes together can change their classification and make disposal of the resulting mixture more complicated — and expensive. Keep wastes separate until you have confirmed their classification and understand the consequences of mixing. Until you know otherwise, assume that:

- Hazardous waste + non-hazardous waste = hazardous waste
- Exempt waste + non-exempt waste = non-exempt waste
- Class I waste + Class II waste = Class I waste

Do not mix any wastes with recyclable materials, like used oil.

Also, be aware of any potential safety hazards if incompatible materials are combined.

B. CLASS II DISPOSAL GUIDELINES

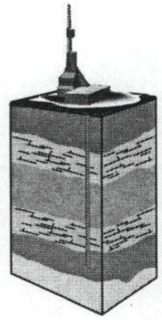
Drilling and Production Wastes

Fluids which have been brought to the surface in connection with oil/gas exploration and production may be injected into a Class II disposal well.

CASE 1: Material that originates below ground*

Examples:

- Crude oil
- Produced water
- Produced sand
- Condensates
- Formation cuttings
- Sludges and solids collecting in production lines and vessels

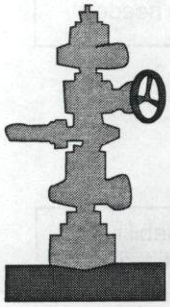


CASE 2: Products that are <u>used</u> or <u>circulated</u> within the well system for a specific purpose related to drilling, workovers, or production.* Does not include unused or surplus product remaining in temporary service lines or portable service equipment.

NOTE: Fluids may not be circulated through the well system for the purpose of reclassifying them for disposal.

Examples:

- Returned drilling mud
- Returned seawater
- Returned workover and stimulation fluids
- Returned frac sand
- Returned cement
- Returned freeze protection fluids from well tubing, annulus, or production lines
- Fluids returned during pressure bleedoff
- Fluids used for essential pressure testing at the wellhead
- Used hydraulic fluid from subsurface safety valve system

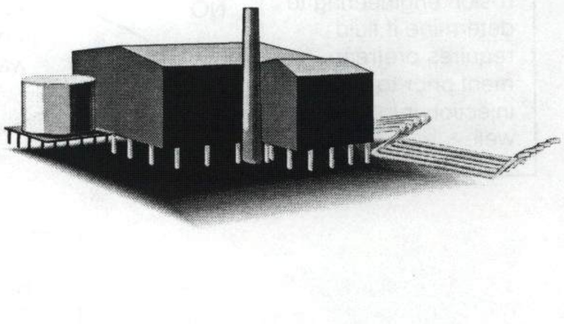


CASE 3: Products that physically come into contact with downhole materials in the course of the production process*

CAUTION: Mixing Class II wastes with other wastes or materials may change the classification - contact Environmental before mixing!

Examples:

- Fluids used to freeze-protect existing flow lines
- Water and non-hazardous cleaners used to remove downhole materials during pipeline or vessel cleanouts
- Snowmelt or rainwater in contact with downhole materials in reserve pits or well cellars
- Diatomaceous earth used to filter returned brine
- Fresh or seawater used to rinse off returned fluids or solids from tools and equipment



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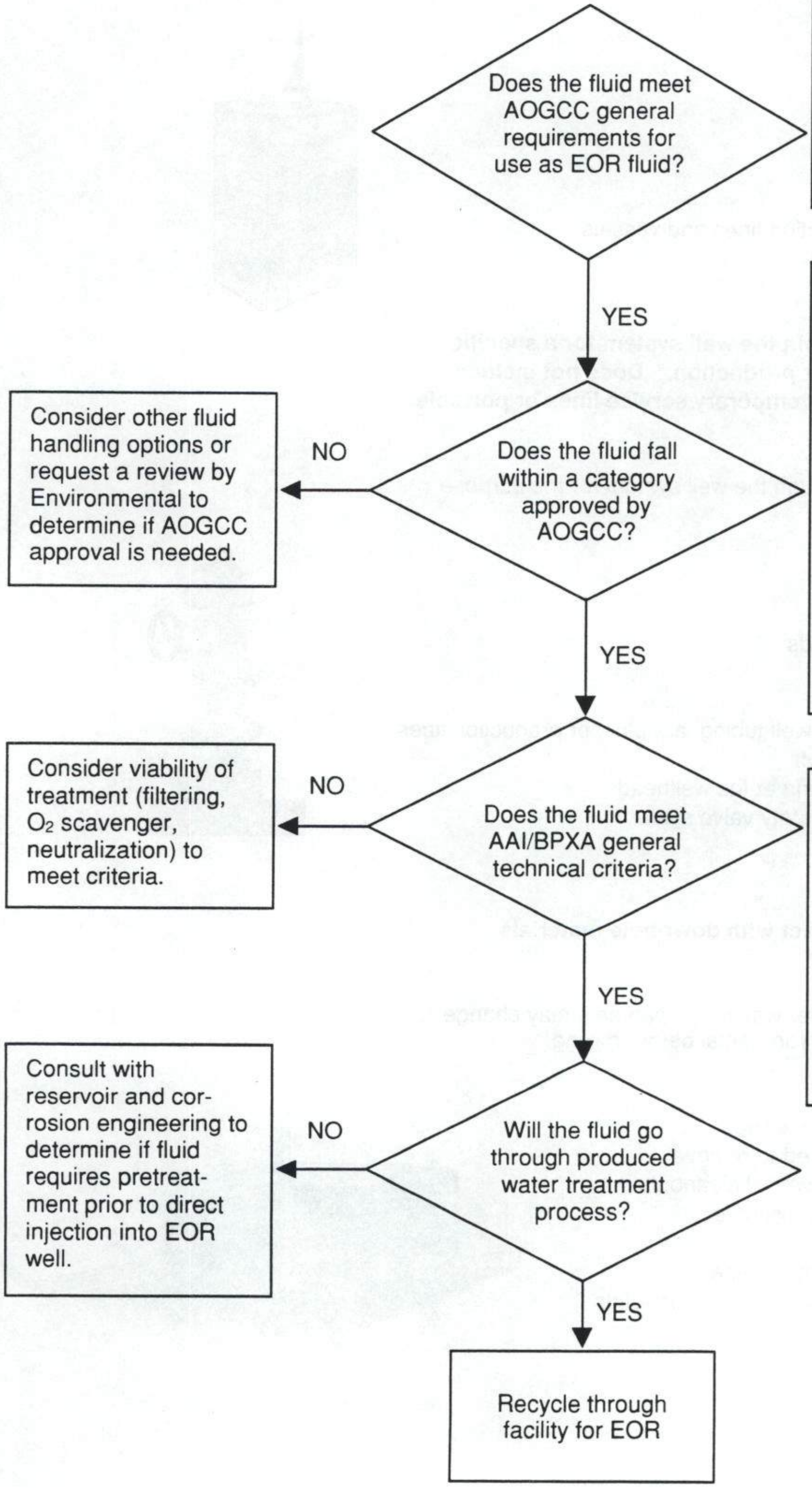
*If not listed here, check with Environmental

C. ENHANCED OIL RECOVERY SPECIFICATIONS

Guidance for Fluids Approved for Reuse in Waterflood System



AOGCC General Requirements:

- Injection of the fluid will serve to enhance oil recovery
- Chemically similar to & compatible with produced water (PW)/seawater (SW) normally used for EOR
- Fluid is not a RCRA hazardous waste

Categories of Fluids Approved for EOR:

- Treated domestic wastewater
- Unused/leftover freshwater from drilling operations
- Water rinses to facilitate removal of residues from drilling operations
- Vehicle wash water collected in sumps
- Snowmelt/rainwater collected from containment areas and drilling pads
- Snowmelt w/spill residue from drilling operations, and reserve pit snowmelt fluids (hydrocarbon residue recycled through 3-phase system)
- Hydrotest fluids such as glycol, seawater from infield flowlines

AAI/BPXA General Technical Criteria:

Representative sampling indicates:

- For wastewater injected directly into EOR wells, TSS, % oil, pH, dissolved oxygen are compatible with PW/SW over the period of injection
- Default criteria are DO = 0, TSS<15 mg/l, <50-75 microns
- For wastewaters entering 3-phase system, PW/SW quality will not be adversely affected

D. ANNULAR PUMPING GUIDELINES

Annular pumping refers to the placement of specifically approved materials into the open annulus of an approved well. It applies to drilling-related materials from new well construction. Annular pumping is regulated by AOGCC and is approved for individual wells with a Permit to Drill and/or an Approval of Sundry Operations.

Annular disposal is considered incidental to drilling a well. It is not regulated under the Underground Injection Control (UIC) program and is not subject to "Class I" and "Class II" permit restrictions. However, there are restrictions on volume and location so that annular pumping does not become a permanent disposal method.

These guidelines are for general information only. Since stipulations may vary from place to place, contact your Drilling or Environmental representative for site-specific information.

- Maximum 35,000 bbls total fluid per annulus
- Permit valid for one year (starting from date disposal began)
- Duration of disposal not to exceed 90 days
- Fluids must be generated on the same gravel pad as the approved annulus
- Approved for materials listed in the Disposal/Reuse Tables, generated during drilling and completion operations. These fall into three categories:
    - Drilling mud, cutting, reserve pit fluids, cement contaminated drilling mud, completion fluids and formation fluids
    - Drill rigwash fluids and drill rig domestic waste water
    - Other fluids that are approved by AOGCC (e.g., cement rinsate)
- Records must be kept of all fluids pumped down annulus

E. SATELLITE ACCUMULATION AREA GUIDELINES

General Description

- Satellite Accumulation Areas (SAAs) are temporary collection sites for small quantities of regulated hazardous wastes[1] like non-recyclable light bulbs, aerosol cans, paint, thinners, solvents, and contaminated rags.
- Wastes from SAAs are ultimately moved to centralized locations in each operating area, where trained personnel prepare the waste for shipment to regulated disposal facilities in the continental U.S. The attached *Facility Guides* show the locations of these centralized storage areas in each field.

Site-Specific Procedures

- Each operating area has specific requirements for setting up and managing SAAs. Contact the field environmental staff for assistance.
- Do not move hazardous waste from one operating area to another.

Regulatory Requirements (40 CFR 262.34 (c))

- Each SAA is limited to 55 gallons total accumulation (one quart total for acutely hazardous wastes[2]). Several smaller containers may be used for different types of waste, but the total in each area may not exceed 55 gallons.
- Universal wastes such as batteries and recyclable light bulbs (unbroken) may be collected in the vicinity of an SAA, but they are not counted towards the 55 gallon limit.
- SAAs must be located at or near the point of waste generation.
- SAAs must be under the control of an operator of the process generating the waste at all times.
- Containers must be tightly closed at all times except when being filled or emptied.
- If funnels are attached to the containers, they must have valves and be kept closed when not in use.
- Containers must be compatible with the contents and in good condition at all times (tight sealing bungs or lids and no significant rust or dents).
- Containers must be clearly marked with the words "Hazardous Waste" or with the contents of the container (e.g., "Used Aerosol Cans," "Waste Paint").
- On the date when the container becomes full and/or the 55-gallon limit is reached, this date (the accumulation start date) must be marked on each container.
- The waste must be moved to a designated hazardous waste storage area within 72 hours (3 days) of becoming full.

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[1] See Definitions.

[2] Acutely hazardous wastes are identified on EPA's P-list in 40 CFR 261.33(e). P-listed wastes are rarely encountered in Alaskan oil and gas operations.

F. DUMPSTER GUIDELINES - NORTH SLOPE

Dumpster policies are subject to change.
Please contact your field environmental staff for current information or call Service Area 10 at 659-0114.

LANDFILL DUMPSTERS

"Landfill" dumpsters are for material that is sent to the NSB Landfill.

YES

- Banding, non-recyclable
- Batteries, small alkaline or carbon ("A," "AA," "AAA," "C," "D"), in small quantities
- Cable with insulation, non-recyclable
- Concrete, set up, less than 1 drum
- Electrical ballast, non-PCB
- Electrical wire, small pieces
- Flexible duct, "elephant trunk"
- Food and kitchen waste ONLY if dumpsters have animal-proof lids
- Glass
- Hoses
- Insulation (no asbestos)
- Metal cuttings, free of oil (if not recycled)
- Pails and buckets, metal or plastic (empty and free of liquids)
- Paint cans/buckets, empty (dry)
- Paper products that are bagged (if not recycled)
- Piping, plastic and metal, less than 4' lengths
- Pit liner material (free of oil contamination — no free liquids), not larger than 20 x 20'
- Styrofoam (if not recycled)
- Tires, up to 20" diameter rims (larger tires must be cut up)
- Wire (if not recycled)
- Wood and broken pallets (if not recycled)
- Visqueen

NO

- Aerosol cans
- Chemicals or hazardous waste
- Food waste, unless dumpsters are equipped with animal-proof lids
- Free liquids
- Gravel or snow
- Incinerator ash, molecular sieve, sandblast sand — these materials should be delivered directly to the landfill, after they are tested and pre-approved by the NSB
- Oily waste
- Recyclable
- Refrigeration equipment w/Freon and/or oil
- Wood or paper that can be recycled
- Timbers (larger than 10')

"BURNABLE" DUMPSTERS

"Burnable" dumpsters are still used in some locations for kitchen/household waste and other material that is burned on site.
These are very general guidelines — always verify site-specific procedures.

YES

- Food waste **if dumpsters are equipped with animal-proof lids**
- Lightweight, burnable cans, buckets, containers
- Paper products that are bagged (if not recycled)
- Styrofoam (if not recycled)
- Wood and broken pallets (if not recycled), within size limits

NO

- Chemicals or hazardous waste
- Free liquids
- Oily waste

OILY WASTE DUMPSTERS

All oily waste must be bagged in clear bags with yellow stripe before placing into dumpster.
Each bag must be tied and may not exceed 50 pounds.

YES

- Grease or pipe dope cans, empty and wiped clean (no liquids)
- Kitchen grease and oil in leak-proof containers (check with local environmental staff for site-specific procedures)
- Oil filters (must be punctured with ¼" hole and hot-drained)
- Oil filters, cloth (must be drained)
- Oily pit liner material (no free liquid, dirt, or gravel), cut <4' wide x 25' long, rolled and tied
- Sorbents, rags, floor sweepings, or other oily debris containing only non-hazardous or RCRA-exempt waste

NO

- Aerosol cans, batteries
- Food waste — use kitchen dumpsters only
- Contaminated gravel or snow
- Free liquids in bags
- Sorbents/rags contaminated with RCRA-hazardous wastes including: paint, thinner, solvent (acetone, toluene, xylene, hexane, chlorinated products)

DUMPSTER GUIDELINES (continued)

RECYCLABLE METAL BINS

Recyclable metals are managed by BP and ARCO at the Mukluk Yard in Deadhorse (659-4205).

YES

- Banding, metal (**must** be cut up and contained in either mud boxes or drums)
- Cable, electrical, spooled or rolled
- Cable, other, wound neatly and secured (no "bird nests")
- Canisters, depressurized and open
- Conduit, metal, and fittings
- Cuttings, metal, containerized
- Drums, empty, clean, and crushed
- Lead tire weights
- Pipe: black iron, galvanized, steel
- Pipe, insulated (**only** in special containers provided by Mukluk Yard)
- Pipe spools
- Plate steel
- Pup joints
- Scrap metal, including short pipe, steel, channel, I-beam
- Sheet metal that is flat
- Stainless steel, copper, aluminum
- Valves, metal (must be open and drained)
- Wire cable/drilling line, spooled or rolled

- Aerosol cans may be recycled **only** if they are completely empty (no product or propellant inside). Do not place cans directly into recyclable (scrap) metal dumpster. Follow site-specific procedures for collecting cans prior to recycling. Cans may only be punctured and drained by authorized personnel.

NO

- Asbestos-containing material
- Batteries, capacitors, liquid-type transformers
- Closed containers (fire extinguishers, propane bottles, sealed cans or drums, fuel tanks)
- Explosives
- Fluorescent light ballast
- Food waste
- Hazardous material or hazardous waste of any kind
- Insulation (except pipe in approved containers)
- Liquids (except water)
- Mercury switches
- Office furniture or junk equipment
- Oily waste
- Paint cans containing product
- Scaled motors/compressors
- Trash (wood, paper, food, food cans, concrete, cement, rubber, glass, plastic, dirt, rocks, weeds, garbage)

G. FACILITY GUIDES – BY OPERATING AREA

G.1 ALPINE FACILITY GUIDE (page 1 of 2)

	HYDROCARBON RECYCLING	**CLASS II DISPOSAL**		**CLASS I DISPOSAL**
Name	**Alpine Production Facility**	**Alpine Grind & Inject (G&I)**	**Alpine Class I Disposal Well (WD-2)**	**Alpine Class I Disposal Well (WD-2)**
Location	Alpine	Alpine	Alpine	Alpine
Operator	AAI	AAI	AAI	AAI
Materials Accepted	• Non-hazardous and exempt hydrocarbons with at least 2% hydrocarbons • Crude oil/water mixtures • Non-exempt lubricating oils, hydraulic fluids, transmission fluids, grease • Well fluids, production fluids, including petroleum distillate based production chemicals	• Exempt Class II waste only • Approved mud products and drilling fluids	See next column	• Non-hazardous and RCRA-exempt fluids and solids • Class II fluids and solids • Solids processed in ball mill
Restrictions	• For infield use and by prior approval only (including drilling rigs at Alpine) • pH 6-9 • No used solvents • No chlorinated solvents • <200 ppm organic chlorides • No hazardous wastes • No non-exempt wastes	• For infield use by Alpine Drilling • Washed gravel processed by G&I must be sampled for DRO and TCLP metals, and meet specified criteria prior to reuse. Pending analytical results, washed gravels are staged in the permitted storage cell.	See next column	• All wastes must be characterized by testing or generator knowledge • For in-field use and by prior approval only (including drilling rigs at Alpine)
Paperwork Required	North Slope Manifest	North Slope Manifest	North Slope Manifest	North Slope Manifest
Facility Contact	Alpine Operations 659-1713	ARCO Company Man 263-3000	Alpine Operations 659-1713	Alpine Operations 659-1713
Compliance Contact	Alpine Environmental 659-1776	Alpine Environmental 659-1776	Alpine Environmental 659-1776	Alpine Environmental 659-1776
Notes		Manifest not required for hard-piped lines and drilling chains from rig		

G.1 ALPINE FACILITY GUIDE (page 2 of 2)

	APPROVED SOLID WASTE STORAGE (see also *Dumpster Guidelines*)	SOLID NON-HAZARDOUS WASTE INCINERATION	HAZARDOUS WASTE STORAGE (see also *SAA Guidelines*)
Name	**Lined Storage Area**	**Alpine Incinerator**	**Lined Containment Area**
Location	Alpine	Alpine	Alpine
Operator	AAI	AAI	AAI
Materials Accepted	• Oily gravel and soil • Contaminated snow pending snow melting	• Non-hazardous burnable waste • Food waste • Household waste • Sewage sludge • Non-hazardous oily waste	270-day storage of hazardous or potentially hazardous waste from Alpine only (including drilling rigs operating at Alpine)
Restrictions	• No hazardous waste • Testing may be required to verify that material is non-hazardous prior to disposal or recycling	• No listed or characteristic hazardous waste • No aerosol cans, batteries, or light bulbs • Waste must be visually inspected before burning • Solid waste to sewage sludge ratio 90%:10%	• All waste requires proper characterization, storage, and manifesting • All materials from SAAs must be manifested to storage area
Paperwork Required	• North Slope Manifest • Material Receipt Log	N/A - visual inspection	• Material Receipt Log • North Slope Manifest for transfers
Facility Contact	Alpine ACS 659-1726	Alpine Operations 659-1713	Alpine ACS 659-1726
Compliance Contact	Alpine Environmental 659-1776	Alpine Environmental 659-1776	Alpine Environmental 659-1776
Notes	Material must be logged in		

G.2 BADAMI FACILITY GUIDE (page 1 of 1)

	HYDROCARBON RECYCLING	**CLASS II DISPOSAL**	**CLASS I DISPOSAL**	**APPROVED SOLID WASTE STORAGE (see also *Dumpster Guidelines*)**	**HAZARDOUS WASTE STORAGE (see also *SAA Guidelines*)**
Name	**Badami Production Facility**	**Badami Class I Disposal Well**	**Badami Class I Disposal Well**	**Temporary Metal Storage Bins**	**Lined Pit**
Location	Badami	Badami	Badami	Badami	Badami
Operator	BPXA		BPXA	BPXA	BPXA
Materials Accepted	• Non-hazardous and exempt hydrocarbons • Crude oil/water mixtures • Non-exempt lubricating oils, hydraulic fluids, transmission fluids, grease	See next column	• Non-hazardous or RCRA-exempt fluids and solids (including Class II) in pre-approved waste stream categories • Solids processed in ball mill	Exempt or non-hazardous gravel from spill and spot cleanups	• Hazardous or potentially hazardous waste from Badami only (including SSD rigs operating at Badami) • Wastes brought first to Spill Connex for processing
Restrictions	• For in-field use only (including SSD rigs at Badami) • <200 ppm organic chlorides • No hazardous wastes • No non-exempt diesel or solvents	See next column	• Wastes must be characterized by testing or generator knowledge • Non-Badami wastes require review and approval well in advance	• Testing may be necessary to verify that material is non-hazardous prior to placing it in storage • Access limited to Environmental Specialist	• Access limited to Environmental Specialist
Paperwork Required	North Slope Manifest	See next column	North Slope Manifest	N/A	Material Receipt Log
Facility Contact	Badami Environmental Specialist 659-1243	Badami Ball Mill Operator 659-1266	Badami Ball Mill Operator 659-1266	Badami Environmental Specialist 659-1243	Badami Environmental Specialist 659-1243
Compliance Contact	Badami Environmental Specialist 659-1243	Badami Environmental Specialist 659-1243	Badami Environmental Specialist 659-1243	Badami Environmental Specialist 659-1243	Badami Environmental Specialist 659-1243
Notes		G&I (EOA) also authorized (see Facility Guide G.8)	Pad 3 (EOA) also authorized for Class I fluids (Fac. Guide G.8)		

G.3 BELUGA FACILITY GUIDE (page 1 of 2)

	HYDROCARBON MANAGEMENT	**EOR**	**CLASS I DISPOSAL**	**CLASS II DISPOSAL**	**APPROVED SOLID WASTE STORAGE (see also *Dumpster Guidelines*)**	
Name	**Used Oil Space Heater**	**None**	**Evaluate for re-use or off-site disposal**	**Beluga River Waste Injection Facility (BRWD-1)**	**Central Drilling Waste Disposal Facility (CWDF)**	**CWDF Containerized Storage**
Location	Auto Shop/Welding Building			Beluga River Field	Beluga	Beluga CWDF
Operator	AAI			AAI	AAI	AAI
Materials Accepted	Approved used oils and hydrocarbons burned for energy recovery: • Crankcase & gear oil • Diesel • Drum rinsate • Hydraulic fluid • Lube oil • Wash fluids (case-by-case approval) • Other fluids require case-by-case approval			Class II fluids	Exempt solids: • Drilling solids • Produced solids • Oily exempt solids	Non-hazardous, non-exempt solids: • Cement • Tailings from soil borings • Scale • Sludges - glycol • Sludges - vessels • Spill residues (gravel) from non-exempt/non-hazardous cleanups
Restrictions	• No dielectric oil with PCBs • No hazardous chemicals • No hazardous wastes			• No hazardous chemicals • No hazardous wastes	• No hazardous waste • Only Class II materials while cell is uncovered	• No hazardous waste
Paperwork Required	BRU Waste Oil Heater Log			BRWD Activity Log	Central Waste Disposal Facility Log	Drum Status Log
Facility Contact	Beluga Operations Supervisor 263-3930			Beluga Operations Supervisor 263-3930	Beluga Operations Supervisor 263-3930	Beluga Operations Supervisor 263-3930
Compliance Contact	Environmental Coordinator (Kuparuk) 659-7212		Environmental Coordinator (Kuparuk) 659-7212	Environmental Coordinator (Kuparuk) 659-7212	Environmental Coordinator (Kuparuk) 659-7212	Environmental Coordinator (Kuparuk) 659-7212
Notes						

G.3 BELUGA FACILITY GUIDE (page 2 of 2)

	SOLID WASTE DISPOSAL		HAZARDOUS WASTE STORAGE
Name	**Pipe and Storage (P&S) Yard Incinerator**	**Beluga Landfill**	**Satellite Accumulation Area**
Location	Beluga River Field, P&S Yard	South end of field	Beluga Electric Shop
Operator	AAI	Kenai Peninsula Borough (KPB)	AAI
Materials Accepted	• RCRA exempt and non-hazardous solids • Absorbents, rags • Containers, if burnable • Drums, RCRA-empty • Filters, oil (non-terne-plated or exempt), hot-drained • Filters, glycol - exempt or non-hazardous (confirm by testing) • Glycol regenerator still column saddles	Non-hazardous solid waste • Cement • Containers, drums - empty or pre-burned • Domestic solid wastes • Filters, water • Glass, ceramics, small construction debris • Incinerator ash with prior KPB approval - test each batch • Metals, ferrous and non-ferrous • Paper products • Plastic, rubber, textiles, leather	See *SAA Guidelines*
Restrictions	• No hazardous wastes • No liquids	• No asbestos-containing materials • No hazardous wastes • No liquids • No oil filters • No PCB-containing material • No recyclable or reclaimable materials • No solids containing oil or chemicals (rags, sorbent, gravel)	
Paperwork Required	Burnable Solid Waste Incinerator Log	BRU Municipal Solid Waste Disposal Log	Drum Status Log
Facility Contact	Operations Supervisor 263-3930	Operations Supervisor 263-3930	Operations Supervisor 263-3930
Compliance Contact	Environmental Coordinator (Kuparuk) 659-7212	Environmental Coordinator (Kuparuk) 659-7212	Environmental Coordinator (Kuparuk) 659-7212
Notes			

G.4 ENDICOTT FACILITY GUIDE (page 1 of 2)

	HYDROCARBON RECYCLING	EOR	CLASS II DISPOSAL	
Name	**Snowmelt Tank**	**Snowmelt Tank**	**Well 2-02/P-18**	**Grind & Inject (G&I) Facility**
Location	Endicott Main Production Island (MPI)	Endicott MPI	Endicott MPI	EOA DS 4
Operator	BPXA	BPXA	BPXA	AAI/BPXA Equipment Services
Materials Accepted	• Non-hazardous and exempt hydrocarbons • Crude oil/water mixtures • Non-exempt lubricating oils, hydraulic fluids, transmission fluids	• Seawater, produced water, freshwater, and other exempt and non-hazardous fluids that meet AOGCC EOR guidelines • Fluids that are compatible with the reservoir and meet technical specifications for dissolved oxygen, suspended solids, etc. • Recyclable hydrocarbons (segregated for recovery)	Class II fluids, including: • Produced waters and other fluids originating below the ground surface • Drilling and wellwork fluids used within the wellhead or below the ground surface • Fresh or seawater used for injection of Class II fluids	• Class II solids and non-oily liquids • Oily solids accepted at DS 4 Material Transfer Station
Restrictions	• In-field use only (including SSD rigs) • <200 ppm organic chlorides • No hazardous wastes • No non-exempt diesel • No gasoline/water mixtures • No chlorinated solvents or non-chlorinated solvents such as Stoddard • Contact HSE for testing requirements • Used oil from rigs and VMS is collected in drums and screened prior to recycling via snowmelt tank	• No hazardous waste • No fluids that would be chemically or physically incompatible	• <10% solids • Particle size <1/8" • Wastes from Endicott only	• No oily solids may be offloaded directly at facility (worker exposure/equipment issue) • <1% hydrocarbons or flammables
Paperwork Required	• Endicott Fluid Transfer Permit • Endicott Control Room Injection/Recycle Log	Endicott Fluid Transfer Permit	• Endicott Fluid Transfer Permit • P-18/2-02 Injection Log • Endicott Control Room Injection/Recycle Log	North Slope Manifest
Facility Contact	• Operations Team Leader 659-6520 • Control Room Operator 659-6700 • Wells Team Leader 659-6546	• Operations Team Leader 659-6520 • HSE Supervisor 659-6666	PE Supervisor 659-6546	• G&I Project Foreman 659-8419 • Equip. Svc. Waste Coordinator 659-5017
Compliance Contact	HSE Supervisor 659-6666	HSE Supervisor 659-6666	HSE Supervisor 659-6666	• AAI FEC Coordinator 659-5609 • Equip. Svc. 659-5017
Notes				

G.4 ENDICOTT FACILITY GUIDE (page 2 of 2)

	CLASS I DISPOSAL	**APPROVED SOLID WASTE STORAGE (see also *Dumpster Guidelines*)**		**HAZARDOUS WASTE STORAGE (see also *SAA Guidelines*)**
Name	**Evaluate for EOR or Pad 3**	**Exempt Storage Pit**	**Non-Exempt Storage Pit**	**RCRA Drum Storage Dock**
Location	Pad 3 – EOA DS6	Endicott MPI	Endicott MPI	Endicott MPI
Operator	AAI/BPXA Equip. Svc.	BPXA	BPXA	BPXA
Materials Accepted	Non-hazardous and RCRA-exempt fluids (including Class II) in pre-established waste stream categories	• Gravel contaminated with exempt spill residues • Exempt vessel sand and sediment	Gravel contaminated with non-exempt, non-hazardous spill residues	Known or suspected hazardous waste generated at Endicott (including SSD rigs)
Restrictions	• No hazardous wastes (e.g., non-exempt methanol or diesel) • No non-PBU Solids • Fluids with < 15% solids by volume • Screen size < 1/4"	• Subject to approval • Bagged and tagged with required information	• Subject to approval and testing • Bagged and tagged with required information	• Access restricted to Endicott HSE Supervisor and Security • No deliveries without prior arrangement with HSE Supervisor
Paperwork Required	• North Slope Manifest • See ARCO FOP F-012 for additional non-Unit BP/ARCO paperwork requirements	Gravel Log	Gravel Log	• Waste (Drum) Inventory Log • Endicott Waste Label
Facility Contact	• Pad 3 Operator 659-5533 • Equip. Svc. Waste Coordinator 659-5017	Lead Operator (by radio)	Lead Operator (by radio)	HSE Supervisor 659-6666
Compliance Contact	• HSE Supervisor 659-6666 • AAI FEC Coordinator 659-5609 • Equip. Svc. Waste Coordinator 659-5017	HSE Supervisor 659-6666	HSE Supervisor 659-6666	HSE Supervisor 659-6666
Notes				Site is inspected weekly by Endicott Security

G.5 KUPARUK FACILITY GUIDE (page 1 of 2)

	HYDROCARBON RECYCLING	**EOR**	**CLASS II DISPOSAL (continued on next page)**	
Name	**Kuparuk Hydrocarbon Recycle Facility**	**Water Recycle Facility**	**Oily Waste Injection Facility (OWIF)**	**Dedicated Disposal Wells**
Location	CPF-1	CPF-1	CPF-1	DS1R-18, 2M-23, 3R-11
Operator	AAI	AAI	AAI	AAI
Materials Accepted	• Fluids with at least 2% hydrocarbons • Lube oils, hydraulic fluids, transmission fluids, grease • Crude oil/water mixtures • Well fluids, production fluids, including petroleum distillate-based production chemicals • Diesel	• Seawater, produced water, fresh water, and other exempt and non-hazardous fluids that meet AOGCC EOR guidelines • Fluids that are compatible with the reservoir and meet AAI technical specifications for dissolved oxygen, suspended solids, etc. • Chemicals normally designed for use in EOR or to treat EOR fluids (glycol, biocides, corrosion inhib.)	• Produced waters and other fluids originating below the ground surface • Drilling, wellwork, and production fluids used within the well system or below ground surface • Reserve pit snowmelt waters • Fresh or seawater used to assist in injection of Class II fluids	• Produced waters and other fluids originating below the ground surface • Drilling, wellwork, and production fluids used within the well system or below ground surface • Reserve pit snowmelt waters • Fresh or seawater used to assist in injection of Class II fluids
Restrictions	• pH 6-9 • Organic chlorides <200 ppm • Solids content <2% - may not plug screens • Gels must be broken • No hazardous waste such as unused methanol or xylene • No used solvents (Varsol, Stoddard) • No chlorinated solvents	• No hazardous waste such as unused methanol or xylene • No fluids that would be chemically or physically incompatible • pH 6-9 • Solids content <2% • Gels must be broken • Flash point >100°F	• pH 6-9 • Solids less than 2% • Flash point ≥100°F • Gels must be broken • Organic chlorides <200 ppm • No material that will gum up solids removal equipment • No cement rinsate or other thick rinse fluids	• No cement rinsate without processing through MI unit • Solids <1/8"
Paperwork Required	• North Slope Manifest • Wash Bay Activity Log (if fluid originates from tank/truck washing)	North Slope Manifest	• North Slope Manifest • Wash Bay Activity Log (if fluid originates from tank/truck washing)	• North Slope Manifest • Daily Receiving/Injection Log
Facility Contact	Facility Operator 659-7330	Facility Operator 659-7330	Facility Operator 659-7330	Wells Foreman 659-7634
Compliance Contact	Environmental Specialist 659-7212	Environmental Specialist 659-7212	Environmental Specialist 659-7212	Env. Specialist 659-7212
Notes			Hydrocarbons >2% segregated for recycling	

G.5 KUPARUK FACILITY GUIDE (page 2 of 2)

	CLASS II DISPOSAL (continued)	**CLASS I DISPOSAL**	**APPROVED SOLID WASTE STORAGE (see also *Dumpster Guidelines*)**	**HAZARDOUS WASTE STORAGE (see also *SAA Guidelines*)**
Name	**Grind & Inject (G&I) Facility**	**Evaluate for EOR (see previous page) or Pad 3**	**Oily Waste Storage Facility**	**RCRA Accumulation Area**
Location	EOA DS 4	Pad 3 - EOA DS 6	DS 1H	Kuparuk C/D Warehouse
Operator	AAI/BPXA Equipment Services	AAI/BPXA Equipment Services	AAI	AAI
Materials Accepted	• Class II solids and non-oily liquids • Oily solids accepted at DS 4 Material Transfer Station	Non-hazardous and RCRA-exempt fluids (including Class II) in pre-established waste stream categories	Exempt and non-exempt, non-hazardous solids: • Vessel and tank bottoms • Residues from spills of exempt or non-hazardous fluids • Contaminated snow (exempt/non-hazardous) on space-available basis • Frac sand and other wellwork solids	270-day storage of hazardous or potentially hazardous waste from Kuparuk sources only
Restrictions	• No oily solids may be offloaded directly at facility (worker exposure/equipment issue) • <1% hydrocarbons or flammables	• No hazardous wastes (e.g., non-exempt methanol or diesel) • No Non-PBU solids • Fluids with <15% solids by volume • Screen size <1/4"	• No spill residues from hazardous waste such as unused methanol or xylene • No used solvents or degreasers such as Varsol • No liquids	• No hazardous waste from outside Kuparuk • Access restricted to authorized personnel only • No deliveries without prior arrangement with Materials Supervisor and Environmental Coordinator
Paperwork Required	North Slope Manifest	• North Slope Manifest • See ARCO FOP F-012 for additional non-Unit BP/ARCO paperwork requirements	North Slope Manifest	North Slope Manifest
Facility Contact	• G&I Project Foreman 659-8419 • Equip. Svc. Waste Coordinator 659-5017	• Pad 3 Operator 659-5533 • Equip. Svc. Waste Coordinator 659-5017	Roads and Pads Equipment Dispatcher 659-7949	Materials Supervisor 659-7254
Compliance Contact	• FEC 659-5609 • Equip. Svc. 659-5017	• FEC Coordinator 659-5609 • Equip. Svc. Waste Coordinator 659-5017	Environmental Specialist 659-7212	Environmental Specialist 659-7212
Notes				

G.6 MILNE POINT FACILITY GUIDE (page 1 of 2)

	HYDROCARBON RECYCLING	EOR		CLASS II DISPOSAL	
Name	**Oil Recovery Tank (ORT)**	**Clarifier**	**Well B-12**	**Kuparuk Oily Waste Injection Facility (OWIF)**	**Grind & Inject (G&I) Facility**
Location	MPU Central Facilities Pad	MPU Central Facilities Pad	MPU B Pad	CPF-1	EOA DS 4
Operator	BPXA	BPXA	BPXA	AAI	
Materials Accepted	• Non-hazardous and exempt hydrocarbons • Crude oil/water mixtures • Non-exempt lubricating oils, hydraulic fluids, transmission fluids	• Seawater, produced water, fresh water, and other exempt and non-hazardous fluids that meet AOGCC EOR guidelines • Fluids that are compatible with the reservoir and meet BPXA technical specifications	• See previous column. • Used mainly for seasonal pad dewatering.	• Produced waters and other fluids originating below the ground surface • Drilling, wellwork, and production fluids used within the well system or below ground surface • Reserve pit snowmelt waters • Fresh or seawater used to assist in injection of Class II fluids	• Non-oily Class II solids and liquids • Oily solids accepted at DS 4 Material Transfer Station
Restrictions	• For in-field use only (including SSD rigs in MPU) • <200 ppm organic chlorides • Minimal solids • No hazardous wastes • No non-exempt diesel or solvents	• No hazardous waste • No fluids that would be chemically or physically incompatible	See previous column	• pH 6-9 • Solids less than 2% • Flash point ≥100°F • Gels must be broken • Organic chlorides <200 ppm • No material that will gum up solids removal equipment • No cement rinsate or other thick rinse fluids	• No oily solids may be offloaded directly at facility (worker exposure/ equipment issue) • <1% hydrocarbons or flammables
Paperwork Required	• North Slope Manifest • MPU Fluid Transfer Permit	• North Slope Manifest • MPU Fluid Transfer Permit	See previous column	• North Slope Manifest • Wash Bay Activity Log (if fluid originates from tank/truck washing)	North Slope Manifest
Facility Contact	Control Room 670-3318	Control Room 670-3318	MPU Wells Supervisor 670-3330	OWIF Facility Operator 659-7330	• G&I Project Foreman 659-8419 • Equip. Svc. Waste Coordinator 659-5017
Compliance Contact	MPU Environmental 670-3473	MPU Environmental 670-3473	MPU Environmental 670-3473	Kuparuk Environmental Specialist 659-7212	• FEC Coordinator 659-5609 • Equip. Svc. Waste Coordinator 659-5017
Notes				Hydrocarbons >2% segregated for recycling	

G.6 MILNE POINT FACILITY GUIDE (page 2 of 2)

	CLASS I DISPOSAL	**APPROVED SOLID WASTE STORAGE (see also *Dumpster Guidelines*)**			**HAZARDOUS WASTE STORAGE (see also *SAA Guidelines*)**
Name	**None - Evaluate for EOR or Pad 3**	**Central Reserve Pit (CRP)**	**D Pad Snow Hopper**	**D Pad Gravel Storage**	**MPU Hazardous Waste Storage Module**
Location	Pad 3 - EOA DS 6	MPU A Pad	MPU D Pad	MPU D Pad	MPU
Operator	AAI/BPXA Equipment Services	BPXA	BPXA	BPXA	BPXA
Materials Accepted	Non-hazardous and RCRA-exempt fluids (including Class II) in pre-established waste stream categories	Water-based Class II drilling fluids	Exempt or non-hazardous snow from spill cleanups	Exempt or non-hazardous gravel from spill cleanups	Hazardous or potentially hazardous waste from MPU facilities only and SSD rigs operating within MPU
Restrictions	• No hazardous wastes (e.g., non-exempt methanol or diesel) • No non-PBU solids • Fluids with <15% solids by volume • Screen size <1/4"	• CRP is to be used only when CC2A or G&I are unavailable or inaccessible due to road conditions • Pre-approval from MPU Environmental is required	Testing may be necessary to verify that material is non-hazardous prior to placing it in storage	Testing may be necessary to verify that material is non-hazardous prior to placing it in storage	• Access restricted to authorized personnel • No deliveries without approval of MPU Environmental
Paperwork Required	North Slope Manifest See ARCO FOP F-012 for additional non-Unit BP/ARCO paperwork requirements	• North Slope Manifest • MPU Fluid Transfer Permit	MPU Snow Hopper Receipt Log (completed by Environmental)	MPU Gravel Log (completed by Environmental)	Material Receipt Log
Facility Contact	• Pad 3 Operator 659-5533 • Equip. Svc. Waste Coordinator 659-5017	A-Pad Operator (radio)	MPU Environmental 670-3473	MPU Environmental 670-3473	MPU Environmental 670-3473
Compliance Contact	• FEC Coordinator 659-5609 • Equip. Svc. 659-5017	MPU Environmental 670-3473	MPU Environmental 670-3473	MPU Environmental 670-3473	MPU Environmental 670-3473
Notes					

G.7 NORTHSTAR FACILITY GUIDE (page 1 of 1)

NOTE

Please refer to the Northstar Waste Management Plan (Northstar Field Operating Procedure 99-05) for procedures that apply to the current phase of the project.

Contact the Northstar Field Compliance Advisor (659-2984) or the Northstar HSE Assurance Engineer (264-9168) for information.

A complete Facility Guide table will be added to the *Alaska Waste Disposal & Reuse Guide* once on-site waste management facilities are built at Northstar.

G.8 PRUDHOE BAY EASTERN OPERATING AREA FACILITY GUIDE (page 1 of 2)

	HYDROCARBON RECYCLING	EOR	CLASS II DISPOSAL
Name	**Flow Station 1 (FS 1)** (offload to slop oil tank)	**Flow Stations 1, 2, 3, LPC** Also: designated injector wells available seasonally for pad and pit dewatering	**Grind and Inject (G&I) Facility**
Location	EOA	EOA	EOA DS 4
Operator	AAI	AAI	AAI/BPXA Equipment Services
Materials Accepted	• Fluids with ≥2% hydrocarbons • Crude oil/water mixtures • Fuel/water mixtures • Non-exempt lubricating oils, hydraulic fluids, transmission fluids, grease	• Seawater, produced water, fresh water, and other exempt and non-hazardous fluids that meet AOGCC EOR guidelines • Fluids that are compatible with the reservoir and meet AAI technical specifications for dissolved oxygen, suspended solids, etc.	• Non-oily Class II solids and liquids • Oily solids accepted at DS 4 Material Transfer Station • Oily liquids to Pad 3
Restrictions	• <200 ppm organic chlorides, each source must be analyzed • EOA use only (including SSD rigs) • No viscous emulsions • May not plug screens • Must be delivered in bulk (no drums) • No fluids with high solids content • No hazardous wastes • No chlorinated solvents or non-chlorinated solvents such as Stoddard	• No hazardous waste • No fluids that would be chemically or physically incompatible	• No oily solids may be offloaded directly at facility (worker exposure/equipment issue) • <1% hydrocarbons or flammables
Paperwork Required	North Slope Manifest	N/A	North Slope Manifest
Facility Contact	• Wells Support (for pickup and delivery to FS 1) 659-5104 OR • SRT Technician 659-5800 (for pickup and consolidation from rigs)		• G&I Project Foreman 659-8419 • Equip. Svc. Waste Coordinator 659-5017
Compliance Contact	FEC Coordinator 659-5609	FEC Coordinator 659-5609	• FEC Coordinator 659-5609 • Equip. Svc. 659-5017
Notes	Used oil from rigs is consolidated and sampled by SRT Technician	• EOR fluids are usually hard-piped from Flow Stations; not delivered by trucks or other external sources • Class I or Class II disposal may be an alternative	

G.8 PRUDHOE BAY EASTERN OPERATING AREA FACILITY GUIDE (page 2 of 2)

	CLASS I DISPOSAL	**APPROVED SOLID WASTE STORAGE (see also *Dumpster Guidelines*)**		**HAZARDOUS WASTE STORAGE (see also *SAA Guidelines*)**
Name	**Pad 3 Waste Injection Facility (WIF)**	**DS 4 Material Transfer Station**	**Pad 3 Solid Waste Storage Pits**	**Hazardous Waste Processing Module (HWPM)**
Location	EOA DS 6	EOA DS 4	EOA DS 6	EOA C Pad
Operator	AAI/BPXA Equipment Services	AAI/BPXA Equipment Services	AAI/BPXA Equipment Services	AAI
Materials Accepted	Non-hazardous and RCRA-exempt fluids (including Class II) in pre-established waste stream categories	Class II solids, oily and non-oily	• West Pit: Gravel contaminated with exempt or non-hazardous residues (hydrocarbons, glycols) • East Pit: Snow contaminated with exempt or non-hazardous residues, to be thawed for injection at Pad 3 • Cell 2: Class I non-hazardous solids (cement, sand, dirt) stored for future remediation or disposal	90-day storage of hazardous or potentially hazardous waste from EOA facilities only (including SSD rigs operating in EOA)
Restrictions	• No hazardous wastes (e.g., non-exempt methanol or diesel) • No non-PBU solids • Fluids with <15% solids by volume • Screen size <1/4"	Maintain 2' of freeboard above free liquids	• No non-PBU solids • Pre-approval required for all Class II solids due to space limitations • Minimize free liquids	• No hazardous waste from outside EOA • Access restricted to authorized personnel only • No deliveries without prior arrangement with FEC or SRT
Paperwork Required	North Slope Manifest Additional paperwork requirements for Non-PBU and Third-Party Users: • Approved Waste Analysis & Sampling Plan • Initial characterization data • Indemnification form (one time) • Lack of radioactivity certification (once) • Fingerprint data (as required) • Approval letter from FEC (Third Parties)	North Slope Manifest, delivered to G&I Control Room before offloading	North Slope Manifest	North Slope Manifest
Facility Contact	• Pad 3 Operator 659-5533 • Equip. Svc. Waste Coordinator 659-5017	• G&I Project Foreman 659-8419 • Equip. Svc. 659-5017	Pad 3 Operator 659-5533	SRT Technician 659-5800
Compliance Contact	• FEC Coordinator 659-5609 • Equip. Svc. Waste Coord. 659-5017	• FEC Coordinator 659-5609 • Equip. Svc. 659-5017	• FEC Coordinator 659-5609 • Equip. Svc. 659-5017	FEC Coordinator 659-5609
Notes	See ARCO FOP F-010 for Third Parties and FOP F-012 for Non-PBU BP/ARCO generators			

G.9 PRUDHOE BAY WESTERN OPERATING AREA FACILITY GUIDE (page 1 of 2)

	HYDROCARBON RECYCLING	**EOR**	**CLASS II DISPOSAL**	
Name	**GC1, GC2, GC3**	**GC1, GC2, GC3**	**Grind and Inject (G&I) Facility**	**GC1, GC2, GC3**
Location	WOA - deliveries consolidated by OI Waste Coordinator	WOA	EOA DS 4	WOA
Operator	BPXA	BPXA	AAI/BPXA Equipment Services	BPXA
Materials Accepted	• Non-hazardous and exempt hydrocarbons • Crude oil/water mixtures • Non-exempt lubricating oils, hydraulic fluids, transmission fluids	• Seawater, produced water, fresh water, and other exempt and non-hazardous fluids that meet AOGCC EOR guidelines • Fluids that are compatible with the reservoir and meet BPXA technical specifications	• Non-oily Class II solids and liquids • Oily solids accepted at DS 4 Material Transfer Station • Oily liquids to Pad 3	Class II fluids such as returned seawater, well cellar fluids, meltwater from reserve pits, Class II vessel cleanouts
Restrictions	• For in-field use only (including SSD rigs in WOA) • <200 ppm organic chlorides - coordinate sampling and testing with OI Waste Coordinator • No hazardous wastes • No non-exempt diesel or solvents	• No hazardous waste • No fluids that would be chemically or physically incompatible	• No oily solids may be offloaded directly at facility (worker exposure/equipment issue) • <1% hydrocarbons or flammables	• Minimal solids - may not plug screens • Screen size <1/8" • Restricted to WOA fluids only
Paperwork Required	North Slope Manifest	None	North Slope Manifest	North Slope Manifest
Facility Contact	OI Waste Coordinator 659-4810	• GC1 Control Room 659-4082 • GC2 Control Room 659-4912 • GC3 Control Room 659-4963	• G&I Project Foreman 659-8419 • Equip. Svc. Waste Coordinator 659-5017	• GC1 Control Room 659-4082 • GC2 Control Room 659-4912 • GC3 Control Room 659-4963
Compliance Contact	OI Environmental Advisor 659-4789	OI Environmental Advisor 659-4789	• FEC Coordinator 659-5609 • Equip. Svc. 659-5017	OI Environmental Advisor 659-4789
Notes				

G.9 PRUDHOE BAY WESTERN OPERATING AREA FACILITY GUIDE (page 2 of 2)

	CLASS I DISPOSAL	**APPROVED SOLID WASTE STORAGE (see also *Dumpster Guidelines*)**			**HAZARDOUS WASTE Storage (see also *SAA Guidelines*)**
Name	**Pad 3 Waste Injection Facility (WIF)**	**Pad 3 Waste Injection Facility**	**T Pad**	**Santa Fe Pad Storage Bins**	**C Pad RCRA Storage Area**
Location	EOA DS 6	EOA DS 6	WOA T Pad	WOA Santa Fe Pad at Module A3W2	WOA C Pad
Operator	AAI/BPXA Equipment Services	AAI/BPXA Equipment Services	BPXA	BPXA	BPXA
Materials Accepted	Non-hazardous and RCRA-exempt fluids (including Class II) in pre-established waste stream categories	• West Pit: Gravel contaminated with exempt or non-hazardous residues (hydrocarbons, glycols) • East Pit: Snow contaminated with exempt or non-hazardous residues, to be thawed for injection at Pad 3 • Cell 2: Class I non-hazardous solids (cement, sand, dirt) stored for future remediation or disposal	Exempt and non-hazardous drilling waste, snow, and gravel from PBU and Exploration (with prior approval)	Exempt and non-hazardous contaminated gravel and snow from spot cleanups	Hazardous or potentially hazardous waste from WOA facilities only (including SSD rigs operating in WOA)
Restrictions	• No hazardous wastes (e.g., non-exempt methanol or diesel) • No non-PBU solids • Fluids with <15% solids by volume • Screen size <1/4"	• No non-PBU solids • Pre-approval required for all Class II solids due to space limitations • Minimize free liquids	No non-PBU solids	• Access limited to authorized ACS Spill Technicians • 60-day storage limit	• Access restricted to authorized personnel only • No deliveries without prior arrangement with OI Waste Coordinator • 1-year storage limit
Paperwork Required	North Slope Manifest	See EOA Facility Guide	T Pad Disposal Manifest	Accumulation Bin Log	Material Receipt Log
Facility Contact	• Pad 3 Operator 659-5533 • Equip. Svc. Waste Coordinator 659-5017	• Pad 3 Operator 659-5533 • Equip. Svc. Waste Coordinator 659-5017	OI Waste Coordinator 659-4810	ACS Lead Technician 659-4375	OI Waste Coordinator 659-4810
Compliance Contact	• FEC Coordinator 659-5609 • Equip. Svc. 659-5017	• FEC Coordinator 659-5609 • Equip. Svc. 659-5017	OI Environmental Advisor 659-4789	OI Environmental Advisor 659-4789	OI Environmental Advisor 659-4789
Notes					

H. MANIFESTS

Purpose

Manifest forms are used to track all wastes from the point of generation to the final BP or ARCO disposal facility. They contain important information about the source, composition, volume, and final disposition of the material. This information is needed for billing purposes, permits, regulatory compliance, and corporate statistics. Manifests (or some form of documentation) are also required for many recycling activities such as hydrocarbon recovery and EOR, and for beneficial reuse of certain materials. Check with your Environmental representative for site-specific manifesting requirements.

Liability

Many people ask about the liability associated with signing a manifest. Please read Section 2 (page vii) of this book regarding your individual responsibility for complying with environmental laws. You can significantly reduce or eliminate the risk of violating an environmental law by following these simple steps:

Generators:

- Attend the BP/ARCO Waste Management Certification Training Program.
- Fill out manifests accurately and completely, according to the instructions provided.
- Use the classifications and disposal/reuse options listed in this book.
- Don't leave a signed, incomplete manifest for someone else to fill out.
- Sign only if you are familiar with the material and the process that generated it.
- Check with the BP or ARCO Environmental Staff if you have any questions.

Transporters:

- Attend the BP/ARCO Waste Management Certification Training Program.
- Know what you are hauling - don't let someone else load your truck.
- Pick up only what is described on the manifest, and deliver it only to the facility indicated by the generator.
- Don't pick up any unmanifested waste.
- Contact the generator if you have any questions about the material or the paperwork.

Receivers:

- Attend the BP/ARCO Waste Management Certification Training Program.
- Verify that the generator and transporter are on the current certification list.
- Understand the restrictions and policies of the receiving facility.
- Contact the generator if anything on the manifest is unclear.
- Contact the BP or ARCO Environmental staff if you have any questions.

MANIFESTS (CONT.)

North Slope Manifest Form

In 1999, BP and ARCO developed a standardized North Slope Manifest. This is now the main form used at BP and ARCO disposal/recycling facilities on the Slope. Some facilities require additional paperwork; some use different forms. Check the *Facility Guides* to find out what paperwork is needed for a specific facility.

The North Slope Manifest must be completed and signed by **certified generators, transporters, and receivers**. "Certification" means that an individual has completed the BP/ARCO Waste Management Certification Program and has been authorized to sign manifests by his/her supervisor. Contact the BP or ARCO Environmental staff for training information and schedules. A list of currently certified generators, transporters, and receivers is posted on company Intranet sites.

An example of the current North Slope Manifest is shown on the next page, followed by step-by-step instructions. Each manifest booklet comes with an instruction sheet on the cover flap.

Important!

- Generators: fill in all the appropriate information before you sign the manifest.
- Don't leave an unfinished manifest for someone else to complete.
- Don't use abbreviations or slang in the "generating activity or process " box.
- Be sure to have all the paperwork you need before sending a load to the receiving facility.
- Remember that mixed loads may require more than one manifest.
- Remember that only one Class I waste stream can be used per manifest.
- Everyone: remember to sign and date your section of the form.
- Don't change a manifest without contacting the generator.
- Document all contacts (with generator, Environmental, etc.) in the comments section of the form.

MANIFESTS (CONT.)

NORTH SLOPE MANIFEST

1. GENERATOR INFORMATION	Field/ Asset	Owner Company	Date
Contact (Print Name)	Rig/ Facility	Time ☐ AM ☐ PM	
Phone/ Pager	Source/ Well No.	Cost Code/AFE	

2. GENERATING ACTIVITY OR PROCESS

3. VOLUME (Estimate) ☐ Bbl ☐ Gal ☐ Cu yd

4. DESCRIPTION (Composition must equal 100% - use whole numbers)

Crude Oil	%	Glycol	%	Fresh Water	%
Produced Water	%	Acid	%	Seawater/Brine/KCl	%
Drilling Mud	%	Frac Sand	%	Source Water	%
Cuttings	%	Diesel/Water Gel	%	Reserve/Flare/Relief Pit Water	%
Cement/Contaminate	%	Scale/Corrosion Inhibitor	%	Snow	%
Diesel	%	Boiler Blowdown	%	Gravel/Sand	%
Methanol	%	Used Oil	%	Domestic Wastewater	%

OTHER ________ %

(Describe) ________ %

Check one: ☐ Listed in *Waste Disposal & Reuse Guide*

OR

☐ Approval by (Name/Date)

5. WILL MATERIAL BE REUSED OR RECYCLED?

☐ YES Select method at right and go to PART 8

☐ NO Go to PART 6

__ Water Recycle/EOR

__ Hydrocarbon Recycle

__ Beneficial Reuse (Describe)

6. CLASS II: Does waste meet Class II disposal criteria in *Waste Disposal & Reuse Guide*?

☐ YES Go to PART 8 if Class II facility will be used OR Part 7 if Class I facility will be used

☐ NO Go to PART 7 or contact Environmental

7. CLASS I: Is waste listed as RCRA Exempt or Non-hazardous in *Waste Disposal & Reuse Guide*?

☐ YES Indicate ONE Class I Waste Stream at right and go to PART 8

☐ NO Contact Environmental for case-by-case approval or further instructions

☐ RCRA Exempt (specify) __ E&P __ Empty Container __ Sewage

OR

☐ Non-Exempt, Non-Hazardous (Use code from instruction sheet - only one per manifest)

WASTE STREAM CODE ☐

8. DESTINATION (Name of Facility)

9. SCREENING OR TEST DATA IF REQUIRED BY RECEIVING FACILITY

Flash point ________

pH ________

Organic chlorides (ppm) ________

Percent hydrocarbons ________

Other (Describe)

10. GENERATOR	Name (Print)	Signature
Certification:	*This consignment is fully and accurately described above, and is not a hazardous waste as defined by 40 CFR 261.3.*	Date

11. TRANSPORTER Company	Name (Print)	Signature
	Truck/ Trailer No.	Date

12. RECEIVER Offloaded at:	Name (Print)	Signature
	Volume Received ☐ Bbl ☐ Gal ☐ Cu yd	Date

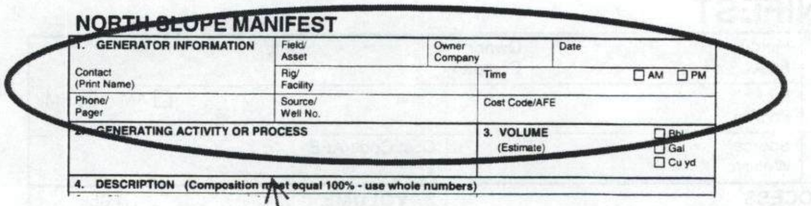
COMMENTS

BP/ARCO Form Version 4/12/99

ORIGINAL - Receiving Facility COPIES - Follow site-specific instructions

MANIFESTS (CONT.)

North Slope Manifest Step-by-Step Instructions

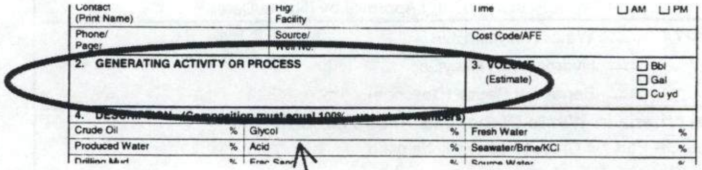


NORTH SLOPE MANIFEST

1. GENERATOR INFORMATION	Field/ Asset	Owner Company	Date
Contact (Print Name)	Rig/ Facility	Time ☐ AM ☐ PM	
Phone/ Pager	Source/ Well No.	Cost Code/AFE	
2. GENERATING ACTIVITY OR PROCESS		3. VOLUME (Estimate) ☐ Bbl ☐ Gal ☐ Cu yd	
4. DESCRIPTION (Composition must equal 100% - use whole numbers)			

Step 1 – Generator Information

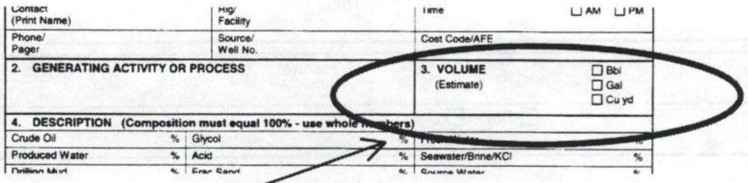
- Print Clearly.
- Fill in each box with the appropriate information.



Contact (Print Name)	Rig/ Facility	Time ☐ AM ☐ PM
Phone/ Pager	Source/ Well No.	Cost Code/AFE
2. GENERATING ACTIVITY OR PROCESS		3. VOLUME (Estimate) ☐ Bbl ☐ Gal ☐ Cu yd
4. DESCRIPTION (Composition must equal 100% - use whole numbers)		
Crude Oil %	Glycol %	Fresh Water %
Produced Water %	Acid %	Seawater/Brine/KCl %
Drilling Mud %	Frac Sand %	Source Water %

Step 2 – Generating Activity or Process

- Accurately describe the activity or process that generated the material.
- Be sure to indicate whether the material was returned from downhole.
- Don't use slang or abbreviations.

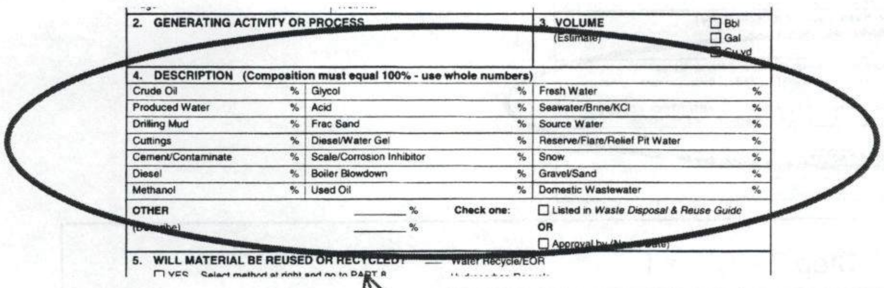


Contact (Print Name)	Rig/ Facility	Time ☐ AM ☐ PM
Phone/ Pager	Source/ Well No.	Cost Code/AFE
2. GENERATING ACTIVITY OR PROCESS		3. VOLUME (Estimate) ☐ Bbl ☐ Gal ☐ Cu yd
4. DESCRIPTION (Composition must equal 100% - use whole numbers)		
Crude Oil %	Glycol %	Fresh Water %
Produced Water %	Acid %	Seawater/Brine/KCl %
Drilling Mud %	Frac Sand %	Source Water %

Step 3 – Volume

- Write in the estimated volume, and check the appropriate box: Bbl, Gal, or Cu yd

MANIFESTS (CONT.)



2. GENERATING ACTIVITY OR PROCESS

3. VOLUME (Estimate) ☐ Bbl ☐ Gal ☒ Cu.yd

4. DESCRIPTION (Composition must equal 100% - use whole numbers)

Crude Oil	%	Glycol	%	Fresh Water	%
Produced Water	%	Acid	%	Seawater/Brine/KCl	%
Drilling Mud	%	Frac Sand	%	Source Water	%
Cuttings	%	Diesel/Water Gel	%	Reserve/Flare/Relief Pit Water	%
Cement/Contaminate	%	Scale/Corrosion Inhibitor	%	Snow	%
Diesel	%	Boiler Blowdown	%	Gravel/Sand	%
Methanol	%	Used Oil	%	Domestic Wastewater	%

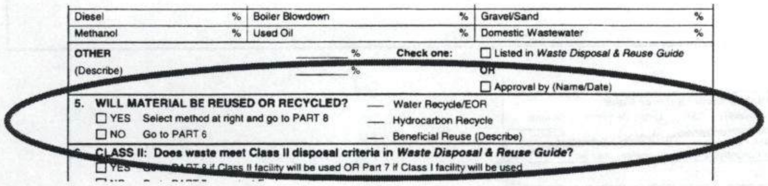
OTHER (Describe) ______ % ______ % **Check one:** ☐ Listed in *Waste Disposal & Reuse Guide* **OR** ☐ Approval by (Name/Date)

5. WILL MATERIAL BE REUSED OR RECYCLED? ___ Water Recycle/EOR

☐ YES Select method at right and go to PART 8

Step 4 – Description

- Estimate percentage of each of the descriptions that apply, totaling 100%.
- Use whole numbers.
- If you check "other," describe the material. It must be listed in the *Waste Guide* or approved by Environmental.



Diesel	%	Boiler Blowdown	%	Gravel/Sand	%
Methanol	%	Used Oil	%	Domestic Wastewater	%

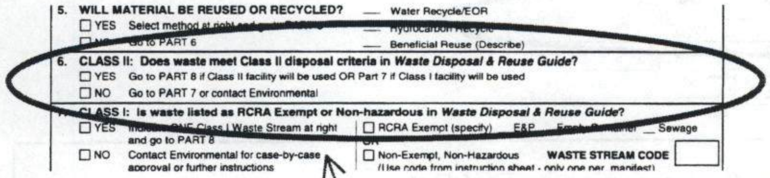
OTHER (Describe) ______ % ______ % **Check one:** ☐ Listed in *Waste Disposal & Reuse Guide* **OR** ☐ Approval by (Name/Date)

5. WILL MATERIAL BE REUSED OR RECYCLED?
☐ YES Select method at right and go to PART 8
☐ NO Go to PART 6
___ Water Recycle/EOR
___ Hydrocarbon Recycle
___ Beneficial Reuse (Describe)

6. CLASS II: Does waste meet Class II disposal criteria in *Waste Disposal & Reuse Guide*?
☐ YES Go to PART 8 if Class II facility will be used OR Part 7 if Class I facility will be used

Step 5 – Will Material Be Reused or Recycled?

- Will the material be reused or recycled? This includes waterflood (EOR) and hydrocarbon recycling.
- If you check YES, then select one of the options on the right.
- If you select "Beneficial Reuse," remember that the use must be pre-approved. Explain how, where, and when the material will be used.



5. WILL MATERIAL BE REUSED OR RECYCLED?
☐ YES Select method at right and go to PART 8
☐ NO Go to PART 6
___ Water Recycle/EOR
___ Hydrocarbon Recycle
___ Beneficial Reuse (Describe)

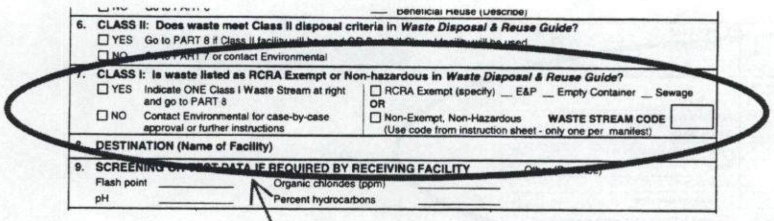
6. CLASS II: Does waste meet Class II disposal criteria in *Waste Disposal & Reuse Guide*?
☐ YES Go to PART 8 if Class II facility will be used OR Part 7 if Class I facility will be used
☐ NO Go to PART 7 or contact Environmental

7. CLASS I: Is waste listed as RCRA Exempt or Non-hazardous in *Waste Disposal & Reuse Guide*?
☐ YES Indicate ONE Class I Waste Stream at right and go to PART 8
☐ NO Contact Environmental for case-by-case approval or further instructions
☐ RCRA Exempt (specify) ___ E&P ___ Empty Container ___ Sewage
OR
☐ Non-Exempt, Non-Hazardous **WASTE STREAM CODE** ☐
(Use code from instruction sheet - only one per manifest)

Step 6 – Class II

- If you checked NO in step five, go to the tables in the *Waste Disposal & Reuse Guide* to see if it is approved for Class II disposal. If not, check with Environmental.
- If it is approved, then select the disposal facility (Step 8).
- Remember that Class II material can also go to a Class I well as RCRA E&P Exempt. If that is the case, then complete Step 7.

MANIFESTS (CONT.)



6. **CLASS II: Does waste meet Class II disposal criteria in *Waste Disposal & Reuse Guide*?**
☐ YES Go to PART 8 if Class II facility [illegible] will be used
☐ NO [illegible] PART 7 or contact Environmental

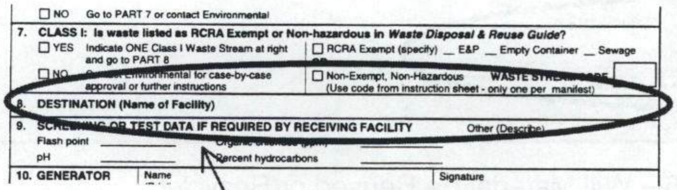
7. **CLASS I: Is waste listed as RCRA Exempt or Non-hazardous in *Waste Disposal & Reuse Guide*?**
☐ YES Indicate ONE Class I Waste Stream at right and go to PART 8
☐ NO Contact Environmental for case-by-case approval or further instructions
☐ RCRA Exempt (specify) __ E&P __ Empty Container __ Sewage
OR
☐ Non-Exempt, Non-Hazardous **WASTE STREAM CODE** ☐
(Use code from instruction sheet - only one per manifest)

8. **DESTINATION (Name of Facility)**

9. **SCREENING [illegible] IF REQUIRED BY RECEIVING FACILITY** [illegible]
Flash point ____ Organic chlorides (ppm) ____
pH ____ Percent hydrocarbons ____

Step 7 – Class I

- If you checked NO in Steps 5 and 6, you are probably going to use Class I disposal.
- You must check either RCRA Exempt or Non-Exempt, Non-Hazardous.
- Your waste must fit into a pre-approved "waste stream." You can find the waste stream in the Disposal/Reuse Tables.
- There can only be one waste stream per manifest!! If you have a mixed load, you need a separate manifest for each waste stream.



☐ NO Go to PART 7 or contact Environmental

7. **CLASS I: Is waste listed as RCRA Exempt or Non-hazardous in *Waste Disposal & Reuse Guide*?**
☐ YES Indicate ONE Class I Waste Stream at right and go to PART 8
☐ NO [illegible] for case-by-case approval or further instructions
☐ RCRA Exempt (specify) __ E&P __ Empty Container __ Sewage
☐ Non-Exempt, Non-Hazardous **WASTE STREAM [illegible]** ☐
(Use code from instruction sheet - only one per manifest)

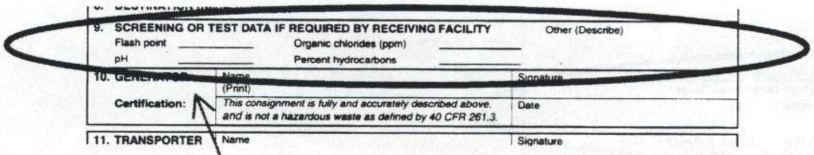
8. **DESTINATION (Name of Facility)**

9. **[illegible] OR TEST DATA IF REQUIRED BY RECEIVING FACILITY** Other (Describe)
Flash point ____ [illegible] ____
pH ____ Percent hydrocarbons ____

10. **GENERATOR** Name Signature

Step 8 - Destination

- Write in the name of the receiving facility. Check the *Waste Disposal & Reuse Guide* for facilities in your area.
- Check the "Facility Guides" for operating restrictions, test requirements, and contact numbers for each facility.



9. **SCREENING OR TEST DATA IF REQUIRED BY RECEIVING FACILITY** Other (Describe)
Flash point ____ Organic chlorides (ppm) ____
pH ____ Percent hydrocarbons ____

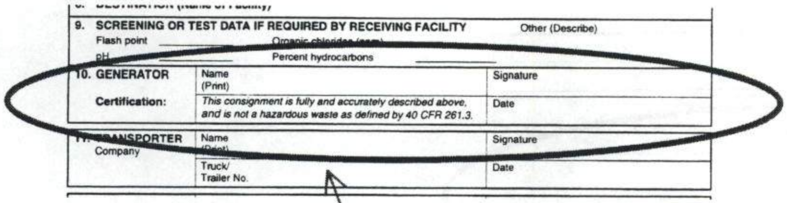
10. **GENERATOR** Name (Print) Signature
Certification: *This consignment is fully and accurately described above. and is not a hazardous waste as defined by 40 CFR 261.3.* Date

11. **TRANSPORTER** Name Signature

Step 9 - Screening or Test Data

- Check with Environmental or the receiving facility to find out if you need any test data. You may need:
  - * pH for some EOR wells
  - * Percent hydrocarbons for recycling
  - * Organic chlorides for used oil recycling
  - * "Fingerprint" data for Class I disposal. (Not required for routine waste streams from BP or ARCO facilities, but may be required if you are a "third party" user.)

MANIFESTS (CONT.)



9. SCREENING OR TEST DATA IF REQUIRED BY RECEIVING FACILITY Other (Describe)

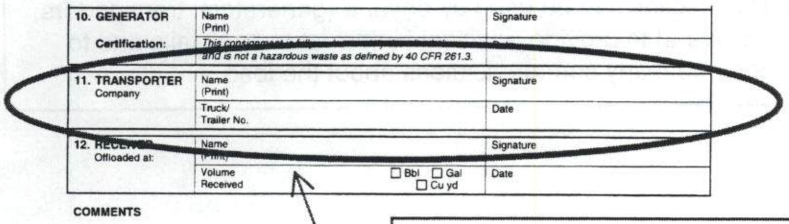
Flash point ______ Organic chlorides (ppm)

pH ______ Percent hydrocarbons ______

10. GENERATOR	Name (Print)	Signature
Certification:	*This consignment is fully and accurately described above, and is not a hazardous waste as defined by 40 CFR 261.3.*	Date
11. TRANSPORTER Company	Name (Print)	Signature
	Truck/ Trailer No.	Date

Step 10 - Generator signature

- Print your name, then sign and date the form.

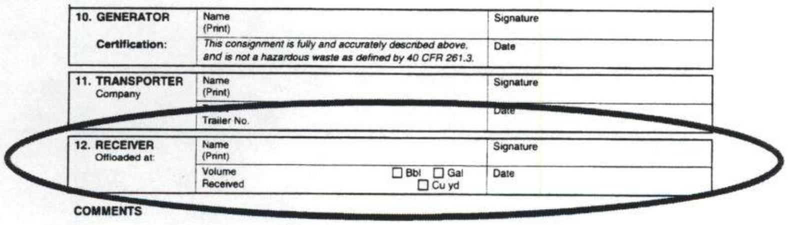


10. GENERATOR	Name (Print)	Signature
Certification:	*This consignment is fully and accurately described above, and is not a hazardous waste as defined by 40 CFR 261.3.*	Date
11. TRANSPORTER Company	Name (Print)	Signature
	Truck/ Trailer No.	Date
12. RECEIVER Offloaded at:	Name (Print)	Signature
	Volume Received ☐ Bbl ☐ Gal ☐ Cu yd	Date

COMMENTS

Step 11 - Transporter

- If you have any questions about the load or the paperwork, talk to the generator before you leave the site.
- Print the company name, your name, and your truck number.
- When you get to the receiving facility, sign and date the form.



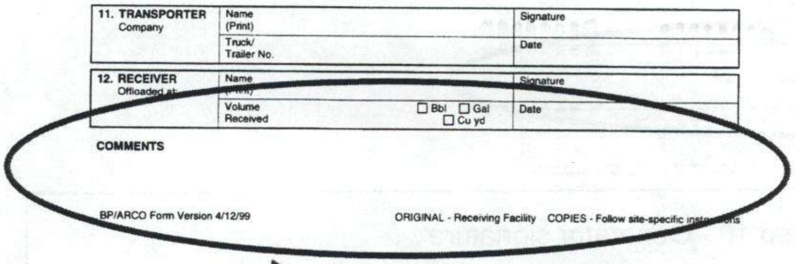
10. GENERATOR	Name (Print)	Signature
Certification:	*This consignment is fully and accurately described above, and is not a hazardous waste as defined by 40 CFR 261.3.*	Date
11. TRANSPORTER Company	Name (Print)	Signature
	Truck/ Trailer No.	Date
12. RECEIVER Offloaded at:	Name (Print)	Signature
	Volume Received ☐ Bbl ☐ Gal ☐ Cu yd	Date

COMMENTS

Step 12 - Receiver

- Is the manifest complete?
- Are the generator and transporter currently certified? Check the list on the BP or ARCO web site.
- Does the material meet your facility's acceptance criteria?
- If there are any discrepancies or questions, contact the generator first. Call Environmental if necessary.
- Write in the location where the material is offloaded.
- Record the volume.
- Sign and date the form.

MANIFESTS (CONT.)



11. TRANSPORTER Company	Name (Print)	Signature
	Truck/ Trailer No.	Date

12. RECEIVER Offloaded at:	Name (Print)	Signature
	Volume Received ☐ Bbl ☐ Gal ☐ Cu yd	Date

COMMENTS

BP/ARCO Form Version 4/12/99

ORIGINAL - Receiving Facility COPIES - Follow site-specific instructions

Step 13 - Comments

- This section can be used by anyone (generators, transporters, receivers) to provide additional information or details and to document any communications about the load.

PHILLIPS ALASKA, INC.

Exploration Plan
McCovey #1 Well
Beaufort Sea, Alaska

APPENDIX III
McCOVEY ENVIRONMENTAL REPORT

September 19, 2000

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1.0 INTRODUCTION

The purpose of the Environmental Report is to provide the Minerals Management Service (MMS), Alaska Outer Continental Shelf (OCS) Region, and other appropriate federal and state agencies with sufficient information for evaluation of the Phillips Alaska, Inc. (PAI) McCovey No. 1 Exploration Well project and its compliance with the National Environmental Policy Act (NEPA) and its implementing regulations. Detailed information about the project is included in other sections of the Exploration Plan prepared for this project.

Significant scientific data are available to describe the existing environment and to assess any potential impacts resulting from exploration activities at the McCovey Prospect. This prospect is located in OCS Lease Block Y-1578 and Y-1577. As required by National Environmental Protection Act (NEPA) regulations, the MMS has, in cooperation with the U.S. Environmental Protection Agency (USEPA) prepared a Final Environmental Impact Statement (EIS) for the Alaska OCS Beaufort Sea Planning Area Oil and Gas Lease Sale 124.

In addition, as regulated under applicable Sections of the Clean Water Act and the U.S. Coast Guard regulations (33 CFR Part 151), the EPA has issued a Final National Pollutant Discharge and Elimination System (NPDES) General Permit for Offshore Oil and Gas Operations on the OCS and State Waters of Alaska (Arctic NPDES General Permit No. AKG284200). This Environmental Report is prepared to supplement the extensive review already completed during the EIS and the NPDES processes. The Final EIS for the Alaska OCS Beaufort Sea Planning Area Oil and Gas Lease Sale 124; the Final NPDES General Permit for Offshore Oil and Gas Operations on the OCS and State Waters of Alaska; and documents prepared by EPA in support of the Arctic NPDES General Permit (USEPA 1995a, 1995b) are hereby incorporated by reference.

In addition, previous studies have addressed the environmental impacts associated with exploration activity in the Beaufort Sea. The McCovey Exploratory Well No. 1, located approximately 13 miles offshore, would not be expected to result in new or different impacts to the surrounding environment. Site-specific environmental information prepared by PAI (PAI, 2000), The IT Group (IT, 2000), and Hoefler Consulting Group (Hoefler, 2000) is hereby incorporated by reference. Finally, an EIS, as well as several monitoring reports that describe the results of a number of studies, were prepared for the BP Amoco Northstar Development Project in 1999 near the McCovey project area. These documents, included in the references section of this report, are hereby incorporated by reference.

The McCovey Prospect activities are detailed in the McCovey No. 1 Exploratory Well Exploration Plan (PAI, 2000). The Exploration Plan and it's appendices (IT, 2000; Hoefler, 2000) include details of the proposed action as specified under 30 CFR 250.203 and are hereby incorporated by reference.

2.0 DESCRIPTION OF THE PROPOSED ACTION

2.1. Background

The McCovey project consists of drilling a exploratory well during the 2000-2001 winter drilling season to evaluate the oil and gas potential of Phillips Alaska, Inc. (PAI) operated leases in the McCovey Prospect Area, which is offshore Prudhoe Bay, Alaska. At present, a single exploration well location has been identified in the area. This initial well, hereinafter referred to as "Phillips McCovey No. 1" is to be drilled from a surface location in OCS Lease Block Y-1577 to a bottom hole location on federal leases within the McCovey Prospect Area. PAI is the operator of the proposed well and will be the permittee of record.

An ice island with a land based drilling rig will be used for the proposed drilling activity. Any additional exploration/delineation drilling is dependent on the outcome of the McCovey No. 1 well and further review of geologic, geophysical, and reservoir data. The Phillips McCovey No. 1 well will be expendable, and therefore plugged and abandoned, regardless of any commerciality demonstrated during testing and evaluation. If this initial well shows potential for hydrocarbon development, a well flow test may be conducted. Assuming a positive result, the potential exists for future exploration/delineation drilling in subsequent years.

2.2. Spring 2000 Activities

As part of the McCovey Prospect Exploration Program, a site survey was conducted to collect geotechnical and subsurface imaging data. PAI submitted a Notice of Preliminary Activities to the MMS for the shallow hazard survey on March 1, 2000 and received approval from the MMS on March 16, 2000 for these activities. Additional subsurface imaging data was collected during August of 2000. The results of the survey will be presented to MMS in October. A location map of the shallow hazard survey can be found in Figure 2-2.

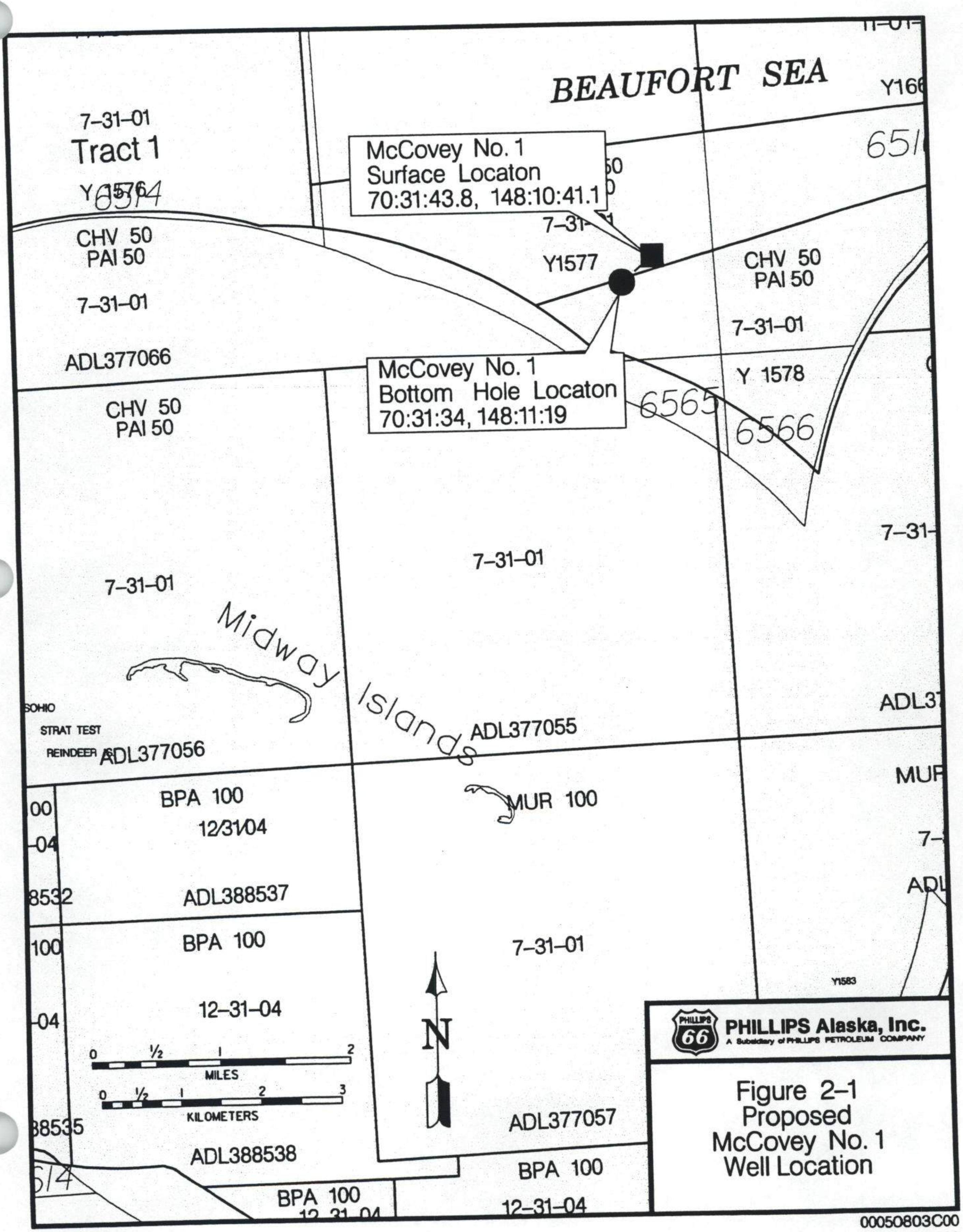


Figure 2–1
Proposed
McCovey No. 1
Well Location

00050803C00
5-9-00

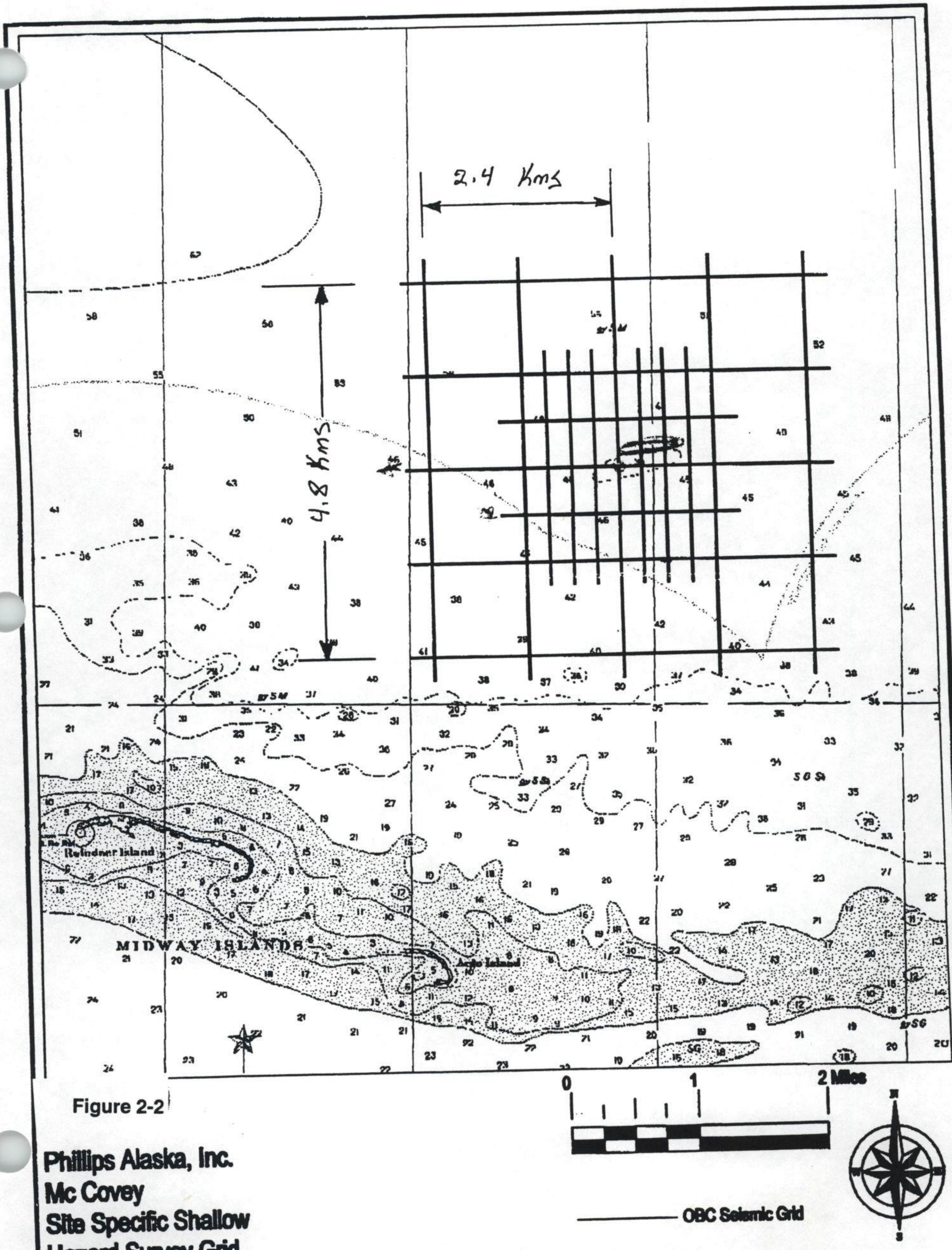


Figure 2-2

Phillips Alaska, Inc.
Mc Covey
Site Specific Shallow
Hazard Survey Grid

2.3. Winter 2000-2001 Activities

As soon as the ice is thick enough to support rolligon/ATV traffic, the ice road and ice island routes will be surveyed for ringed and bearded seal activity, as described in PAI's application to the National Marine Fisheries Service (NMFS) for an incidental harassment authorization (Appendix V to the Exploration Plan). During construction, personnel will be housed in the support camp on either Prudhoe Bay West Dock or Reindeer Island. If located on Reindeer Island, the camp will be placed on an ice prior to use to provide spill protection. Based on recent inspections, the island is now more of a mud flat than an island. Construction of the ice island and ice road is expected to take 50 days; however, this is dependent on the actual weather conditions encountered during construction.

After construction of the ice island and acceptance by the MMS, the McCovey well will be spudded and drilled in accordance with the program that will be defined in the Application for Permit to Drill. Spudding is expected to occur in late February 2000. The drilling operation is expected to take approximately 40 days to reach TD. This timeline is based on drilling data from the Gulf Oil Cross Island #1 well, the AMOCO No Name Island well, and the Sohio Reindeer Island Well. Any additional exploration/delineation drilling in the prospect is dependent on the outcome of the McCovey No. 1 well, and further review of geologic and geophysical data.

At the conclusion of drilling and log evaluation, several options are presented, depending on what is discovered in the McCovey No. 1 well. If the well is a dry hole and the operator elects to cease all further work, the well would be permanently plugged and abandoned (P&A), and the rig demobilized back to Prudhoe Bay. After demobilization, the ice island and the ice road will be cleaned prior to break-up. If drilling results are encouraging, the operator may elect to flow test the well. This activity is anticipated to take one to two weeks depending on the test program. At the conclusion of testing, the well will be P&A'd as in the previous scenario and the rig demobilized.

The McCovey No. 1 well will be expendable and plugged/abandoned regardless of any commerciality demonstrated during testing and evaluation.

3.0 DESCRIPTION OF AFFECTED ENVIRONMENT

3.1. Geology

The PAI McCovey No. 1 drilling location lies approximately 14 miles northeast of West Dock at Prudhoe Bay, 60 miles northeast of Nuiqsut, 7 miles northwest of Cross Island, and 110 miles northwest of Kaktovik in Stefansson Sound, Beaufort Sea. Water depths at the surface location are approximately 37 feet MLLW. The surface location is located on a small shoal that has been determined to be acceptable by PAI for an ice island. Refer to the Exploration Plan (PAI, 2000) for a detailed description of the ice island.

Near the drilling location, a series of migrating, low-lying sand/gravel deposits also known as the Barrier Islands occur immediately south of the McCovey No. 1 Exploratory Well location. A site investigation conducted for PAI in the project area included: 1) geotechnical borings and 2) a geophysical program including, seismic and sub-bottom profiler surveys, a bathymetric survey, and a side scan sonar survey. This site investigation was conducted in mid April 2000 with additional data collected in August 2000. A report on these activities is being finalized and will be submitted as soon as possible.

The Central Beaufort Sea Shelf is characterized by up to 1200 feet of Holocene to Pliocene age sediments (Gubik Formation) overlying the Tertiary rocks and sediments of the Sagavanirktok Formation. These sediments are divided into Plio-Pleistocene sediments, deposited prior to the end of the last glaciation, and recent Holocene marine deposits. The McCovey Prospect is located just north-northeast of the Midway Islands in the Beaufort Sea approximately 12 miles north of Prudhoe Bay. Sedimentation rates at the McCovey location are expected to be low because of its distal position to the Sagavanirktok River and delta system. Minor sediment input of sands and clays into this area would be from longshore drift. Ice rafting may have brought some erratic cobble size material into this area. Wave action, marine currents, and ice scour are expected to be the principal reworking processes of sediments in this area.

The geology of the surface site is typical of proximal Beaufort Sea barrier island formations. The sediments consist of a mixture of unconsolidated sands and clays and are similar to the sediments of the nearby barrier island formation.

The Beaufort Sea Barrier Islands are located in earthquake Zone 1; earthquake possibility is highly unlikely for this region.

The nature and extent of known mineral deposits in the McCovey Prospect is confidential and proprietary.

Onshore aquifers are not expected to be affected as this is an offshore project.

3.2. Meteorology

The PAI McCovey No. 1 Exploratory Well is located in the Arctic climate zone, characterized by cold temperatures, nearly constant wind, and low precipitation. Barter Island meteorological data (Table 3-1) includes the largest set of data which represents this zone. Mean temperatures are approximately 10°F. The maximum recorded temperature in the region is 80°F and the minimum is –68°F. Freezing temperatures are reached for an average of 313 days per year. Mean sky cover varies from 0 to 9.2 tenths; Barter Island reports 0 to 8.6 tenths (WCC 1981). Fog is common from May through September and cloudy weather is common from February through October. Barter Island reports 50 days/year as clear, 68 days/year partly cloudy, and 192 days/year cloudy. Annual precipitation averages less than 10 inches, and winter snowfall is generally less than 3.5 feet.

Winds consistently average 21.3 km/hour (13.3 mph) along the Beaufort Sea coast with the prevailing wind direction being easterly (ENE to NE). From January to April, the prevailing wind direction is westerly (U.S. Army Corps of Engineers, Alaska District, 1999). Gale force winds blow frequently along the coast, and hurricane velocities have been recorded for this region.

The sun remains below the horizon in the project area from November 24 to January 17. Daylight hours representative of the area (70°N) are presented below:

January	0.0
February	4.9
March	9.5
April	14.0
May	18.9
June	24.0
July	24.0
August	21.2
September	15.5
October	11.2
November	6.1
December	0.0

3.3. Air Quality

The existing onshore air quality for most areas adjacent to the Beaufort Sea Planning Area Lease Sale 124 is considered to be relatively pristine, with concentrations of regulated air pollutants that are far less than the maximum allowed by the National Ambient Air Quality Standards and State air quality statutes and regulations. Over most of this onshore area, there are only a few small, scattered emissions from widely scattered sources (primarily diesel-

Latitude: 70° 07' N
Longitude: 143° 40' W
Elevation: 40 feet

Temperature (Degrees F)													Precipitation (Inches)									
	Means			Extremes				Mean Days				Heat Degree Days							Snow			
								Max		Min						Mean Precip	Days Exceeded					
Mth	Max	Min	Mth	Rec Hi	Yr	Rec Lo	Yr	70+	32-	0-	32-	Mth Mean	Mean Mth Tot	Max Day	Yr	0.5	.25	0.1	Mean Mth Tot	Max Dpth	Yr	Mean Days 1.0
Jan	-7.8	-20.5	-14.2	39.0	62	-54.0	75	0.0	30.8	28.6	31.0	2465.0	0.48	2.25	62	0.1	0.5	1.0	5.0	43.0	50	31.0
Feb	-13.9	-26.4	-20.1	37.0	82	-59.0	50	0.0	28.1	27.1	28.3	2407.1	0.23	1.22	55	0.0	0.0	0.6	2.7	43.0	50	28.2
Mar	-8.5	-22.4	-15.5	36.0	67	-51.0	73	0.0	31.0	30.0	31.0	2495.8	0.22	0.54	67	0.0	0.0	0.7	2.6	47.0	55	31.0
Apr	6.8	-9.5	-1.3	43.0	58	-44.0	87	0.0	29.3	23.6	30.0	1992.6	0.19	0.44	63	0.0	0.0	0.3	2.4	47.0	55	30.0
May	26.2	15.4	20.8	52.0	64	-16.0	64	0.0	24.3	3.0	30.9	1359.0	0.30	0.73	54	0.1	0.0	0.8	3.0	40.0	50	28.4
Jun	38.3	30.2	34.3	68.0	76	13.0	74	0.0	3.0	0.0	22.8	912.5	0.52	1.20	52	0.1	0.0	1.5	1.6	35.0	55	5.8
Jul	45.3	34.7	40.0	78.0	74	24.0	67	0.2	0.0	0.0	9.0	765.5	1.00	1.64	71	0.3	0.7	3.3	0.5	2.0	54	0.1
Aug	43.9	34.4	39.2	72.0	57	20.0	86	0.1	0.9	0.0	10.8	794.8	1.08	0.90	48	0.3	0.7	3.4	1.3	3.0	69	1.0
Sep	35.4	27.9	31.6	66.0	86	4.0	70	0.0	10.2	0.0	24.7	993.1	0.68	0.91	57	0.1	0.3	2.2	5.0	20.0	54	6.0
Oct	20.5	10.3	15.4	46.0	69	-26.0	83	0.0	29.1	6.7	31.0	1539.0	0.77	1.98	54	0.1	0.7	1.7	9.0	24.0	54	25.7
Nov	5.6	-6.2	-0.2	37.0	50	-51.0	48	0.0	29.8	20.0	30.0	1962.3	0.41	0.43	54	0.0	0.3	1.0	4.9	24.0	50	30.0
Dec	-6.0	-18.5	-12.1	37.0	73	-51.0	61	0.0	30.9	28.1	31.0	2389.9	0.26	0.52	49	0.0	0.7	0.7	3.3	26.0	49	31.0
Year	Avg 15.5	Avg 4.1	Avg 9.8	Rec 78.0		Rec -59.0		Tot 0.2	Tot 247.3	Tot 167.0	Tot 310.4	Tot 20076.7	Tot 6.12	Rec 2.25		Tot 1.2	Tot 3.8	Tot 17.0	Tot 41.2	Rec 47.0		Tot 248.2

Table 3-1 Climatic Summary for Barter Island from 1947 to 1987 (Leslie 1989)

electric generators in small villages). Major industrial sources exist at the Prudhoe Bay, Kuparuk, Endicott, Milne Point, Greater Point McIntyre, and Lisburne oil production facilities. Ambient air quality standards are generally met in this region even at the sites expected to have the highest concentrations, as shown in various monitoring programs (USAED/AK, 1999).

During operations at the McCovey location construction and drilling activities will occur at BP Exploration's Northstar oilfield. This field is located about twelve miles west southwest of the McCovey location. Air modeling performed for the McCovey location factored in these Northstar activities. This modeling effort demonstrated that the McCovey activities and Northstar activities will not significantly impact air quality.

During the winter and spring, pollutants known as arctic haze are transported to arctic Alaska from Europe and Asia. Data collected by atmospheric chemists in these regions indicate high concentrations of sulfate and vanadium at Barrow. Vanadium is a pollutant resulting from the burning of heavy industrial oils, commonly used as fuel (USAED/AK, 1999).

Existing and anticipated offshore air quality conditions at the McCovey Prospect have been evaluated as part of the project's permitting effort (Hoefler, 2000). A copy of the air permit application is included in Appendix VI of the Exploration Plan (PAI, 2000).

3.4. Physical Oceanography

3.4.1. Summer Conditions

Tides in the Beaufort Sea are generally small and are characterized by a mixed semi-diurnal signal with mean ranges from 10 to 30 cm (4 to 12 inches). The tide appears to approach from the north with little phase change from Barrow to Demarcation Point (USDOI/MMS 1990).

Storm surges significantly increase or decrease sea level from this mean level; in the Beaufort Sea, storm surges are the most important factor in sea level variation. The storm surges are a result of meteorological conditions (wind, pressure gradients, temperature) interacting with the physical elements of the water surface (open water, fetch, density gradients, bathymetry, shoreline topography) creating wave, current, and water mass accumulations that can change sea level conditions by up to 3 m (9.8 feet). Storm surges most frequently occur in September and October when eastward moving storms cross the face of the Beaufort coast and long stretches of open water are present. A vertical rise in water surface will occur on those beach fronts impinged by the wave train, and a negative vertical change in the water surface may help drive upwelling of warm saline water onto the shelf (Aagaard 1988). Much of the water flowing northward from the Chukchi Sea is carried by this current and results in a great expanse of warm water extending eastward across the Beaufort Sea during the summer and fall (Aagaard 1984).

The inner shelf region of the Beaufort Sea is characterized by mean westward water and ice motion primarily driven by the prevailing winds, which are from the east. Strong winds periodically develop from the west causing major flow reversals in the surface current; the response time is rapid, usually a matter of hours. Bottom currents also tend to travel from east to west. Nearshore currents are modified by bottom topography, the presence of ice, river discharge, and the location of offshore barrier islands and shoals (USDOI/MMS, 1990).

Seaward of the 40 m (131 feet) isobath, and north of the project site, the circulation is dominated by the Beaufort Gyre that controls surface ice movement and by the Beaufort Undercurrent that generally runs counter to the predominantly westward ice drift (Aagaard 1984). The long-term mean speeds of this current are normally in the 5 to 10 cm/sec (0.09 to 0.2 knots) range, although maximum speeds near 75 cm/sec (1.5 knots) have been recorded (Aagaard 1988). Frequent current reversals have been observed and appear to be due to the long-shore wind component; they will occur on the lee side of large embayments and extended promontories.

Previous surveys in the region noted water temperatures for coastal areas on the Inner Shelf (i.e., less than 40 m water depths) generally ranged from 0ºC to 9ºC; salinity in true marine waters is greater than 25 ppt while more inshore areas range from 15 ppt to 25 ppt.. During the early to mid-summer, temperature and salinity are stratified with depth because open-water areas adjacent to river deltas are dominated largely by river water and offshore by ice-melt water that forms a 3- to 4-m-thick surface layer. The colder, high salinity marine water lies below this surface layer. Due to the large density difference between the layers and the retreating ice cover, mixing of the fresh- and marine-water layers by winds is negligible in the early summer. Later in the summer, open water areas become large enough for winds and storms to affect mixing and circulation; strong easterly or westerly winds especially have sufficient force to bring about mixing. As a result, late summer storms can cause water temperatures along the coast to decrease from 8 to 12ºC to 3 to 5ºC and salinities to increase 10 or more ppt within 24 hours.

The only industrial activity occurring in this section of the Beaufort Sea is BP Exploration's Northstar project. The Northstar project is expected to be in the drilling resupply phase from February through April of 2001. This phase of the project is expected to have a minimal effect on the marine water quality. The drilling resupply phase is expected to occur concurrently with the McCovey activities (USAED/AK, 1999).

Due to the limited industrial activity, offshore water quality at the McCovey Prospect in the Beaufort Sea Planning Area Lease Sale 124 is good with most contaminants occurring at low levels (USDOI/MMS 1990). However, turbidity, trace metals, and hydrocarbons are introduced into the marine environment through river runoff, coastal erosion, atmospheric deposition, and natural seeps.

3.4.2. Winter Conditions

During winter exploration operations at the McCovey No. 1 Exploratory Well, the region will be covered by ice. Ice cover exists from approximately late September or early October until late June. Winter sea ice on the Beaufort Sea shelf consists of landfast ice (fast ice), drifting pack ice (seasonal pack ice), and a region of pronounced ice ridging and shear line formation (Stamukhi or shear zone), which develops between the pack ice and landfast ice. At the project site, ice is generally within the floating-fast subzone of the landfast ice zone. This area is between the 2-m isobath (the bottomfast ice zone) and the 15-m isobath, the beginning of the Stamukhi zone (WCC 1981). The ice sheet in the project area will grow to a thickness of approximately 2 m by April with breakup expected by late June or July. Ice gouging of seabeds and interaction with the highly mobile pack ice leads will typically occur in water depths of 45 to 60 feet. Gouge intensity is defined as the density of occurrence by the maximum depth of gouging. The project area is located in an area considered to have a low gouge intensity (USAED/AK, 1999).

Negative tide surges (i.e., levels falling below mean sea level) occur primarily during December and January and are up to -1.6 m (-5.2 feet) (Norton and Sackinger 1981). Extensive fracturing of shorefast ice is possible during such surge events.

Previous surveys in the general area noted under-ice water temperatures of -1.7ºC in February, -2.2ºC in March, and -2.4ºC in April. Average salinity was 33 ppt, ranging from a minimum of 28 ppt to a maximum of 33.7 ppt. Temperature and salinity were uniform with depth. Currents under ice were tidally driven and of very low magnitude (WCC 1981).

In winter, nearshore ocean currents are generally westerly and less than 5 cm/sec (0.09 knots) and may not exceed 10 cm/sec (0.2 knots). In fact, less than 5 percent of the registered under-ice current speeds exceeded 5.0 cm/sec (0.16 ft/sec) (WCC 1981; USDOI/MMS, 1990).

3.5. Other Uses of Area

3.5.1. Commercial Fishing

No commercial fishing exists or is anticipated in the immediate project area. The one commercial fishery present along the Alaskan Beaufort Sea coastline occurs on the Colville River more than 50 miles to the west of the McCovey Prospect (USDOI/MMS 1996).

The USDOI/MMS (1996) notes that this commercial fishing operation began more than 25 years ago and occurs during the summer and fall months. Arctic cisco, least cisco, and, to a lesser extent, broad whitefish are the primary species harvested. They are sold for human consumption and for dog food in Fairbanks and Barrow.

3.5.2. Shipping

The only commercial offshore activities in the project area, other than oil and gas exploration, is open water barge traffic providing fuel and other materials to North Slope villages, occasional barge traffice between Prudhoe Bay and the Mackenzie River in Canada and infrequent traversing of the Beaufort Sea by small cruise ships. Barge travel is usually limited to regions north of the Barrier Islands and does not occur during winter months. Cruise ship activity also occasionally occurs north of the Barrier Islands and does not take place during winter months.

3.5.3. Military Use

No regular military use of the area exists or is known to be planned.

3.5.4. Recreation/Sport Fishing/Boating

No sport fishing occurs in the immediate project area. Local boating occurs in the area as part of normal subsistence fishing and whaling activities for the village of Nuiqsut. See Section 3.7 for a discussion of subsistence activities in the project area.

3.5.5. Kelp Harvesting or Mariculture

No kelp harvesting or mariculture exists or is anticipated in the project area.

3.5.6. Known Cultural Resources

There have been a significant number of archaeological and cultural/historical sites identified in the general North Slope area. The closest archaeological resource to the McCovey project area are the cabins and house depressions located on Cross Island 7 miles to the southeast. Although there are known to be numerous shipwrecks along the coast of the Beaufort Sea, no surveys for locations of these shipwrecks have been made. The probability that any possible shipwreck has survived the level of ice gouging in the project area (within the 25 meter isobath) is very low (USDOI/MMS 1990). In addition, there is an existing whaling camp located on Cross Island.

PAI also conducted an archeological survey of Reindeer Island during August 2000. No resources were found and the island has experienced significant erosion this summer.

3.5.7. Refuges, Preserves, and Sanctuaries

The only refuge, preserve, or sanctuary in the immediate vicinity of the McCovey Prospect is the Arctic National Wildlife Refuge. The McCovey project location is approximately 13 miles offshore and 60 miles west of the refuge. The McCovey project will have all onshore support staged from Prudhoe Bay/Deadhorse.

3.5.8. Existing Pipelines/Cables

There are no existing cables in the area. The Northstar (buried) pipeline was installed in the 1999-2000 winter season and is located approximately 12 miles to the west southwest of the McCovey location.

3.5.9. Other Mineral Uses

There are no other existing or anticipated mineral uses in the project area.

3.5.10. Ocean Dumping Activities

Not applicable.

3.6. Flora and Fauna

3.6.1. Pelagic Environment

Plankton: Phytoplankton species are abundant in the region, but are unlikely to be abundant during winter months between September and April when decreased daylight hours and frozen ice conditions exist. Ice algae are likely to be present, but are not expected to be abundant in the project area (WCC 1981). The MMS/DOI (1996) notes that the contribution of ice algae to annual productivity in the Beaufort Sea is probably relatively small (e.g., one-twentieth of the annual total primary production of the nearshore Beaufort). Zooplankton (e.g., copepods) are not likely to be abundant between September and May when frozen ice conditions exist and food sources are minimal.

Marine Fisheries: The MMS/DOI (1996) notes that 43 marine species have been identified in the Alaskan Beaufort Sea, with the most widespread and abundant species being the Arctic cod (*Boreogadus saida*). Other prevalent species include saffron cod (*Eleginus gracilis*), fourhorn sculpin (*Myoxocephalus quadricornis*), twohorn sculpin (*Icelus bicornis*), Canadian eelpout (*Lycodes* sp.), capelin (*Mallotus villosus*), and the Arctic flounder (*Liopsetta glacialis*) (Craig 1984 as cited in USDOI/MMS 1996).

Arctic cod is a key species in the ecosystem of the Arctic Ocean due to its widespread distribution, abundance, and importance in the diets of other fishes, marine mammals, and birds (Andriashev 1984; Quast 1974; Bain and Sekerak 1978; Craig et al. 1982; Sekerak 1982; Craig 1984a). It has been calculated to be the most important consumer of secondary production in the Alaskan Beaufort Sea (Frost and Lowry 1983) and may influence the distribution and movements of marine mammals and seabirds (Craig 1984a citing Klumov 1937; Bradstreet 1980; Davis et al. 1980; and Finley and Gibb 1982).

With the exception of capelin, which spawn in August, most marine species spawn primarily during the winter. Craig and Haldorson (1981) suggest that Arctic cod spawn under the ice between November and February in shallow coastal areas, as well as in offshore waters (USDOI/MMS 1990).

Freshwater Fish: Freshwater fish, which occur in coastal waters of the Alaskan Beaufort Sea, are found almost exclusively in association with fresh waters off of major river deltas. Their presence in the marine environment is generally sporadic and brief, with peaks during and immediately following breakup. Freshwater species, which have been observed in these areas, include Arctic grayling (*Thymallus arcticus*), round whitefish (*Prosopium cylindraceum*), and burbot (*Lota lota*) (USDOI/MMS 1987).

Migratory Fish: Fish species that move between marine waters and fresh waters as part of their life history (e.g., to spawn) or on a seasonal basis in response to food sources tend to concentrate in the nearshore waters of the Beaufort Sea. Species most commonly found in the region include Arctic char (*Salvelinus alpinus*), Arctic cisco (*Coregonus autumnalis*), least cisco (*Coregonus sardinella*), Bering cisco (*Coregonus laurettae*), rainbow (boreal) smelt (*Osmerus mordax*), and whitefish (*Coregonus nasus* and *C. clupeaformis*). These fish generally spawn in fall, with the exception of boreal smelt, which spawn in spring or early summer. Spawning occurs in river deltas, as well as further upstream in the Sagavanirktok, Canning, Hulahula, Aichilik, Kongakut, and Colville Rivers (USDOI/MMS 1984). The Colville River Delta west of the prospect area supports spawning populations of Arctic char, ciscoes, whitefish, and smelt plus small runs of salmon, and is an overwintering area for ciscoes, smelt, and other species (ACS 1983).

During early June, adult and juvenile fishes move into and disperse in coastal waters. During the 3- to 4-month open water season, migratory fishes use the nearshore environment as a feeding area. Food is abundant in this area, the source being mainly epibenthic invertebrates (mysids and amphipods). Temperature and/or salinity parameters, rather than food, appear to be the limiting factors in migratory fish distributions in the warm nearshore brackish water (Craig and Haldorson 1981; Moulton et al. 1985). Although most migratory fish feed in nearshore waters during the summer, both Arctic and least cisco may continue to feed throughout the winter in Colville River Delta habitats (USDOI/MMS 1990).

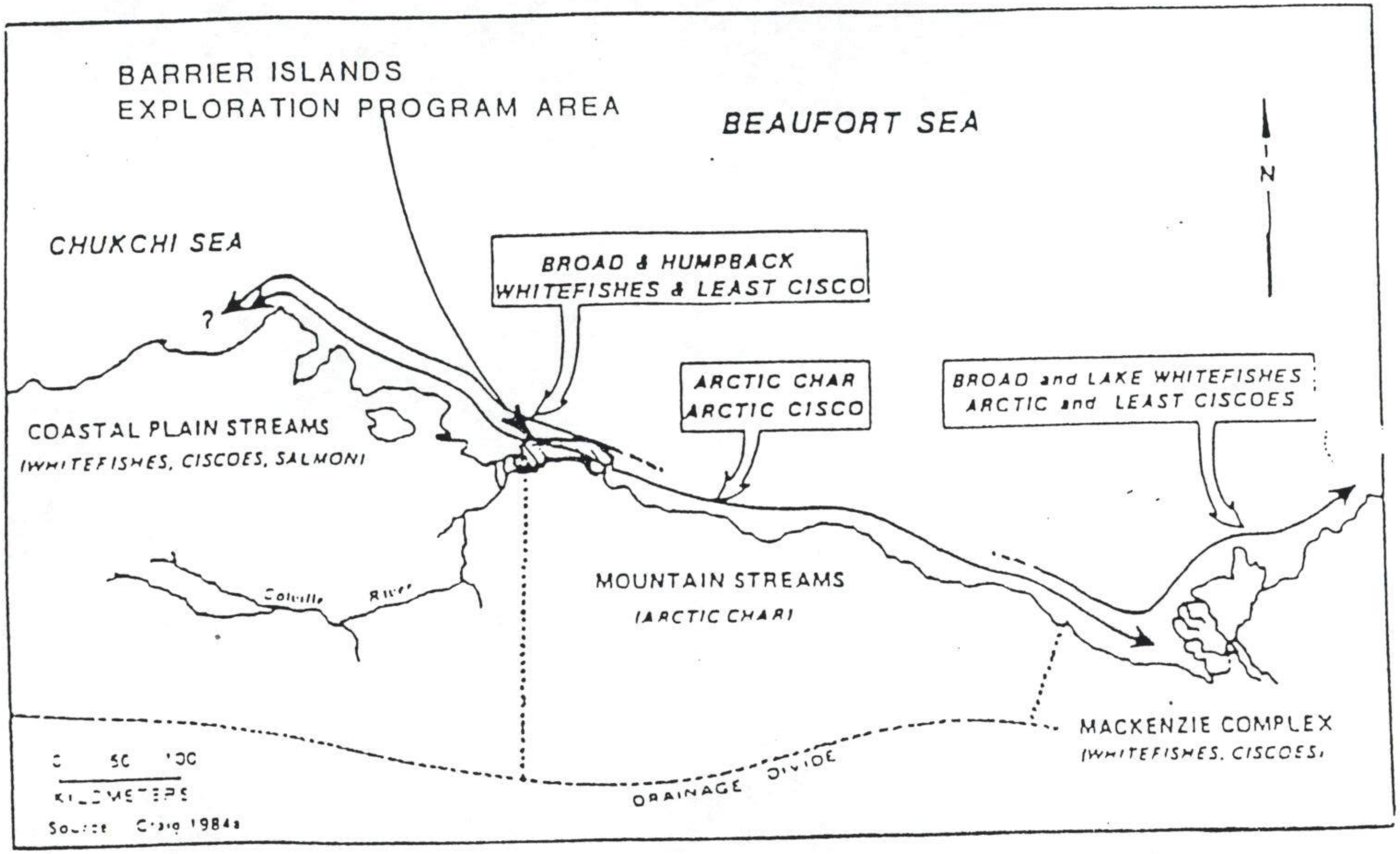
Within the nearshore brackish waters, fish tend to concentrate along the mainland shoreline and the edges and lee sides of the Barrier Islands, rather than offshore or in lagoon centers as exemplified in the general coastal distributions of four major Beaufort Sea migratory species illustrated in Figure 3-1. Arctic cisco, which apparently originate from the Canadian Mackenzie River, can range as far west as Point Barrow, Alaska, whereas Arctic char are found east of the Colville River and spawn and overwinter in mountain streams. Migratory least cisco occur from the Colville River west to Wainwright and in rivers on the northern coast of the Yukon and Northwest Territories, but are absent from the central Beaufort Sea (between the Colville River and the Babbage River in Canada). In the Alaskan Beaufort Sea, broad whitefish occur in association with the freshwater discharges of larger rivers from Point Barrow east to the Sagavanirktok River Delta and also have been reported from the Canning River (USDOI/MMS 1990). A more detailed description of Alaskan Beaufort Sea migratory fishes can be found in the Lease Sale 124 FEIS (USDOI/MMS 1984, 1990, 1996; Morrow 1980; Craig 1984a; and Moulton et al. 1986).

In summary, during the winter months the offshore marine environment in the immediate project area includes marine species with no current commercial value and minimal subsistence value. Arctic cod are the dominant pelagic fish in the region, but earlier surveys show that significant numbers are not present in the project area during the ice-covered months (WCC 1981) as these fish most likely move farther offshore. Marine species that have been associated with the region's benthic environment are unlikely to be present at the well site due to the absence of boulders and cobbles. Fourhorn sculpin are abundant in the area during open water, but move offshore during winter.

Freshwater and migratory fish (e.g., Arctic cisco, broad whitefish, and least cisco) are present in summer, but overwinter in the Colville and Sagavanirktok Rivers and in the Mackenzie River system, and therefore are not likely to be present during exploration activities. As with marine species, few of these fish will likely be encountered due to the absence of boulders and cobbles or similar hard-bottom habitats in the project area.

3.6.2. Benthic Environment

Benthic organisms in the project area include sessile species living within the substrate (bivalves, polychaetes) and mobile organisms living on or near the bottom surface sediments (amphipods, isopods, mysids, and some polychaetes). Benthic organisms are abundant during the summer, but can have decreased numbers/diversity in winter months between September and May when frozen ice conditions exist and grounding of ice occurs. Benthic species diversity increases with water depth until the shear zone is reached at about 15 to 25 m; biodiversity then declines due to ice gouging between the landfast ice and the moving polar pack ice (BPXA 1996). The Boulder Patch located near the mouth of the Sagavanirktok River provides a substrate for a hard-bottom community of invertebrates and algae as well as the associated epifauna (USAED/AK, 1999).



Source: Craig 1984a

Figure 3-1 Freshwater Sources and Coastal Dispersal Patterns of the Principal Migratory Fishes Occurring along the Beaufort Sea Coastline.

3.6.3. Breeding Habitats and Migration Routes

The McCovey Prospect is located within the migratory path and range of a number of marine mammals, and a variety of marine and freshwater fish and invertebrates. Few of these species, however, are likely to be present during the exploration program (i.e., the winter exploration activities). Critical life periods for North Slope mammals, fish, and birds are contained in USDOI/MMS (1990, 1996).

Marine Mammals

Species in this group are the pinnipeds (ringed, bearded, and spotted seals and Pacific walrus), the polar bear, and the beluga, Bowhead, and gray whale. All marine mammals in U.S. waters are protected under the Marine Mammal Protection Act of 1972. Note that endangered bowheads are also discussed in Section 3.6.5, Endangered and Threatened Species.

Pinnipeds: Ringed seals are the most abundant seal in the Beaufort Sea. Densities of ringed seals in the floating shorefast ice zone where the project is located generally range from 1.5 to 2.4 seals per square nautical mile (Frost et al. 1983). Bearded seals are much more abundant in the Bering and Chukchi Seas than in the Beaufort. Densities of bearded seal are greatest during the summer and lowest in winter. Important winter and spring habitat is the Arctic ice zone, which is shoreward of the prospect area. The spotted seal is a seasonal visitor to the Beaufort Sea.

Estimated seal populations in the Bering-Chukchi-Beaufort area are: spotted seals, 250,000; bearded seals, 300,000; and ringed seals, 1.5 million (BPXA 1996). Ringed seals, the most abundant of the three seal species present in the Beaufort Sea, would be expected to be encountered infrequently at the project site.

Most Pacific walrus are associated with the moving pack ice. During the summer, a few walrus migrate through the Beaufort Sea to Canadian waters. The Beaufort Sea is on the eastern limit of the range of the Pacific walrus, and they are only seen infrequently in this region. No Pacific walrus would occur in the project area during the ice-covered winter season. Year-round there are no walrus concentration areas near the prospect area.

Polar bears: Polar bears (*Ursus maritimus*) are found throughout the Arctic. The southern Beaufort Sea population (from Cape Bathurst in Canada to the northern Chukchi Sea) is estimated at 1,500 to 1,800 bears, while the Alaskan population is estimated at 3,000 to 5,000 (USAED/AK, 1999). Polar bear distribution exhibits substantial annual variation in the Beaufort Sea. Average density appears to be about one bear to every 30 to 50 square miles. During the summer in the Alaskan Beaufort Sea area, very few polar bears are found on land; most are found along the edge of the permanent pack ice (Frame 1972; Moore and Quimby 1975; Eley and Lowry 1978). With the advance of the ice sheet in winter, most polar bears are found along the shear zone between the landfast ice and drifting pack ice (Lentfer 1971; Stirling 1974; Moore and Quimby 1975; Eley and Lowry 1978).

Polar bears are most abundant where seals are common in drifting pack ice or shorefast ice in winter, near the pack-ice edge in summer, and along new ice and leads in the fall. Polar bears can be expected to be occasional visitors around the project site during winter exploration activity.

Polar bear den locations in the region have been mapped, historically, by the U.S. Fish and Wildlife Service and the National Biological Service and are scattered throughout the Lease 124 Sale Area (USDOI/MMS 1996).

Whales: Three species of whales are seasonal visitors in the Beaufort Sea: the beluga, the bowhead, and the gray whale. Bowhead whales are on the endangered species list and are discussed in Section 3.6.5, Endangered and Threatened Species; gray whales were recently delisted.

Although small numbers of beluga and bowhead whales have been observed migrating along the coast, most migration occurs further offshore (Figure 3-2). The Bering-Chukchi-Beaufort Sea beluga whale population may exceed 25,000 animals. An estimated 11,500 beluga migrate from the Bering Sea to the eastern Beaufort Sea during April and May (BPXA 1996).

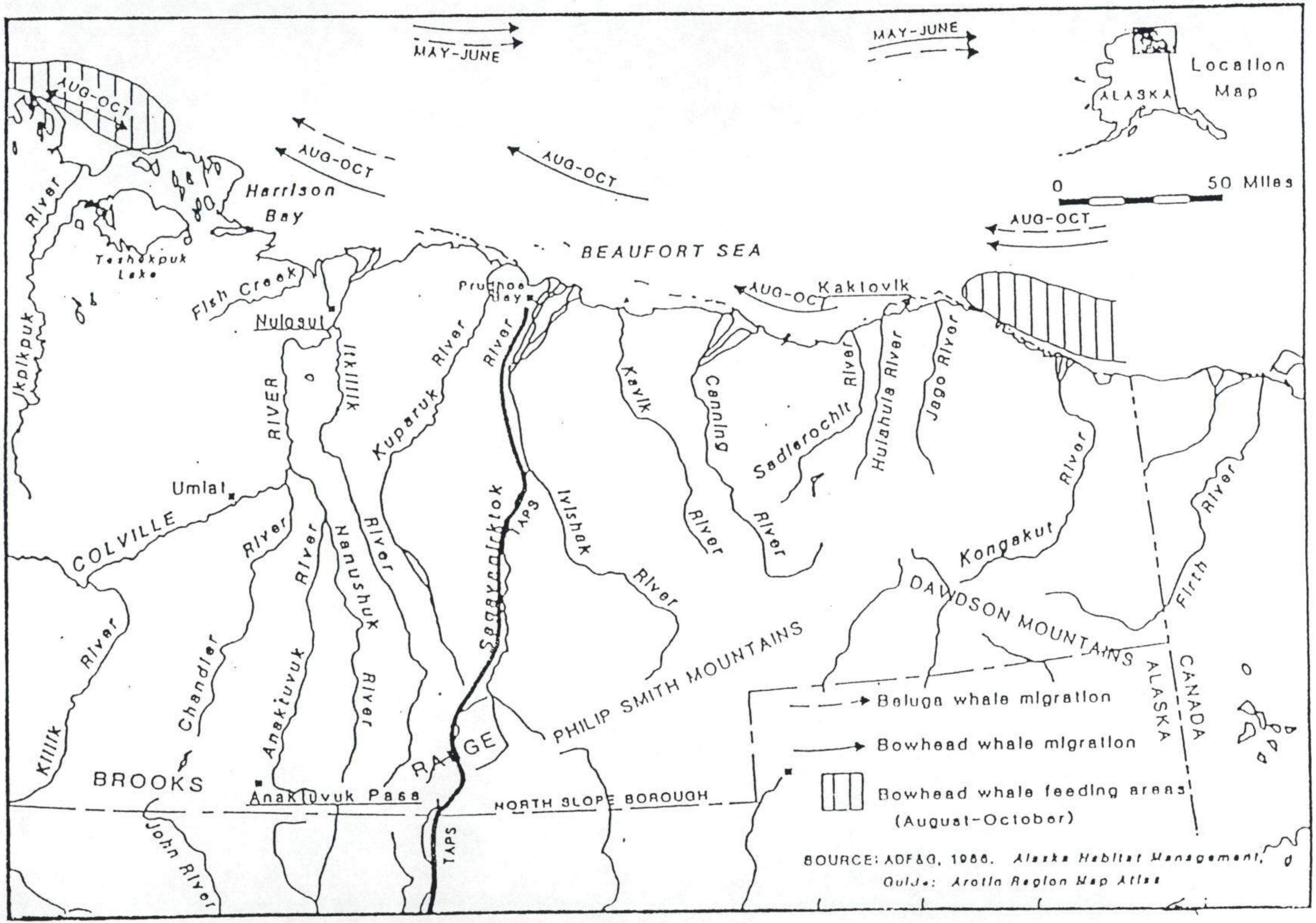
Gray whales are uncommon or rare in the Beaufort Sea. They occur more frequently in the Chukchi Sea which comprises part of the feeding area for the species. Gray whales may be present from June through September and into October before migrating south (USDOI/MMS 1996).

Neither beluga, bowhead, or gray whales would occur in the area during winter exploration activity. See further discussion of bowhead whale in Section 3.6.5, Endangered and Threatened Species.

Avian Species

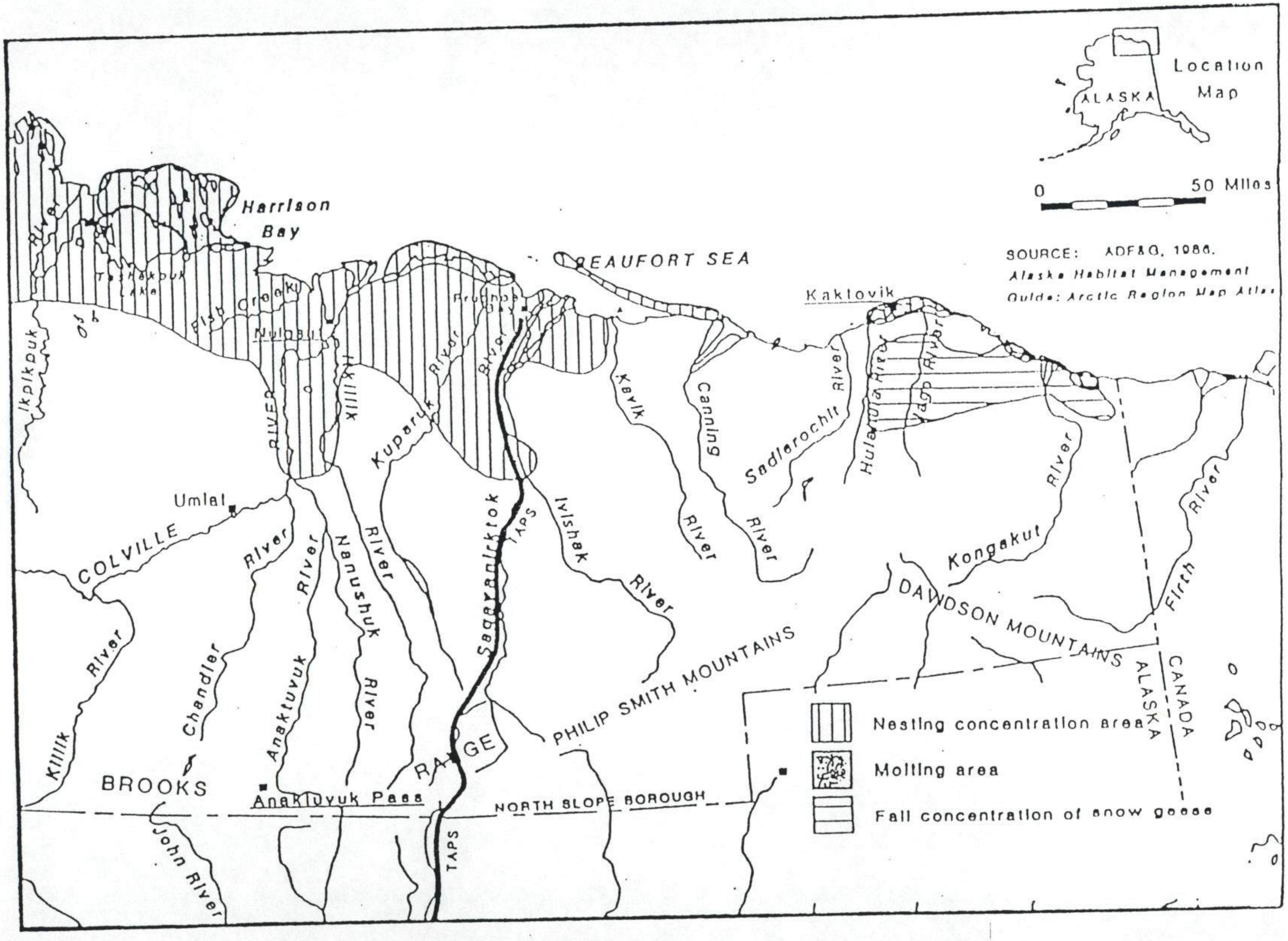
Several million birds of approximately 150 species containing seabirds, waterfowl, shorebirds, passerines, and raptors (including the recently delisted Arctic peregrine falcon and the proposed threatened Steller's eider) occur on the North Slope. Nearly all of these species are found in the Arctic seasonally from May through September. Approximately 75 regularly-occurring species would be expected to occur in the general project area.

In the Beaufort Sea, major concentrations of birds occur nearshore (in waters less than 20 m) and in coastal areas, such as at coastal lagoons and river deltas (Figures 3-3 and 3-4). In proximity to the McCovey No. 1 site there are Common Eider and seabird nesting areas located



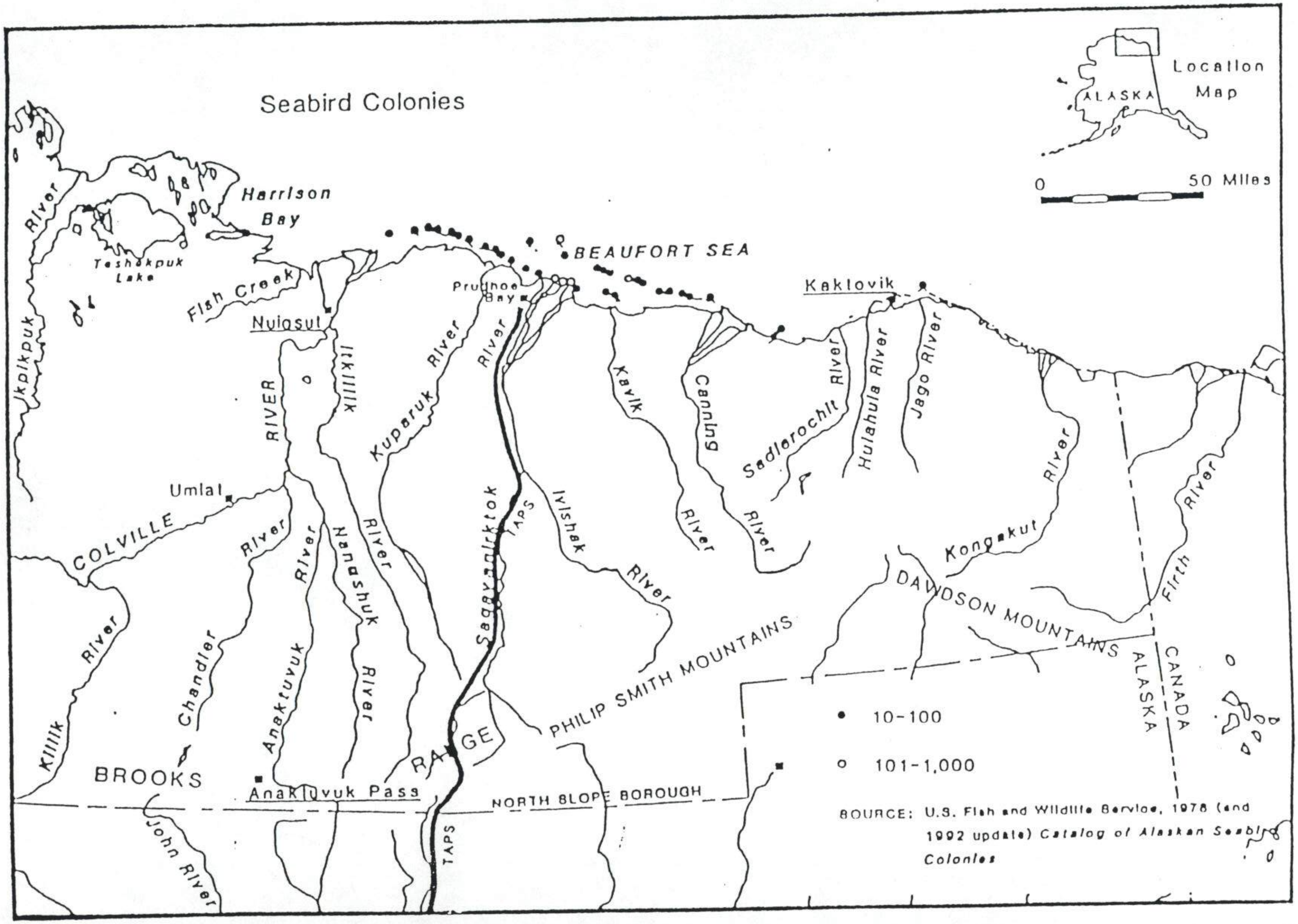
SOURCE: ADF&G, 1986. *Alaska Habitat Management Guide: Arctic Region Map Atlas*

Figure 3-2 Bowhead and Beluga Whale Migration and Feeding Areas.



SOURCE: ADF&G, 1986. *Alaska Habitat Management Guide: Arctic Region Map Atlas*

Figure 3-3 Waterfowl Concentration Areas on the North Slope.



SOURCE: U.S. Fish and Wildlife Service, 1978 (and 1992 update) *Catalog of Alaskan Seabird Colonies*

Figure 3-4 Seabird Concentrations on the North Slope.

on Cross Island (7 miles to the southeast) and both Reindeer Island and Argo Islands (4 miles to the south). The coastal areas of Prudhoe Bay have documented Brant rearing areas and colonies ranging from 12 to 16 miles south of the project area.

Although an estimated 10 million birds use the Beaufort Sea area for spring migration/pre-nesting, nesting, molting and brood-rearing, and fall staging/migration (Johnson and Herter 1989), few birds are expected to be present during winter exploration activities. Most of the 75 regularly-occurring aquatic and terrestrial species are migratory, arriving in late May or early June to breed and departing by late September. Few birds (e.g., gyrfalcon, snowy owl, and common raven) overwinter in the project area. Of these, only ravens are expected to occur at the exploration site during drilling operations.

The population of Arctic peregrine falcons in Alaska appears to be increasing and has been delisted as threatened or endangered. They are present in Alaska from about mid-April to mid-September. Egg laying on the North Slope begins in the middle of May, and the young fledge from about the end of July to mid-August. There are no known active site nests on the Barrier Islands or along the coast. Nest sites closest to the coast occur about 25 miles inland from the coast of Prudhoe Bay.

3.6.4. Presence of Sensitive Underwater Features

The Boulder Patch is an area in Stefansson Sound with patches of scattered rocks on the sea bottom ranging in size from pebbles to boulders. These cobbles and boulders, discovered in the early 1970s by the U.S. Geological Survey, provide the substrate that supports a highly diverse and productive biota, including Arctic kelp and sessile invertebrates (Reimnitz and Ross 1979). Because of its rarity in a region known for soft sediments, the Boulder Patch was intensively studied as part of the National Oceanic and Atmospheric Administration/Outer Continental Shelf Environmental Assessment Program (Sekerak, 1982) in the late 1970s and early 1980s. This significant and unique biological community is located approximately 10 miles southeast of the proposed site near the Sagavanirktok River Delta (BPXA 1996). Significant environmental information has been collected on the location and distribution of this colony (LGL 1992).

Based upon the best available data, no confirmed Boulder Patch type of habitat has been identified at the McCovey drilling location (Reimnitz and Ross 1979). Additionally, shallow hazard work (which included underwater video camera activities) conducted under the ice in April 2000 for the McCovey project area did not identify any sensitive underwater features.

3.6.5. Endangered or Threatened Species

The only endangered or threatened species listed for the Beaufort Sea area are the endangered bowhead whale, the threatened spectacled eider, and the threatened Steller's eider. The Arctic peregrine falcon was recently delisted. These endangered/threatened species will not be encountered near the project area during the winter exploration activity although they do occur seasonally in the Beaufort Sea Lease Sale 124 area (USAED/AK, 1999). The Environmental Information Section of the State of Alaska Regional Oil and Hazardous Substance Spill Contingency Plan for the North Slope Region identifies when these species are present in the Beaufort Sea area.

Bowhead Whales: The Bering Sea population of bowhead whales, based on data collected during the 1993 census off Point Barrow, was estimated at 8,200 individuals (USAED/AK, 1999). Bowhead whales northward spring migration appears to be timed with the ice breakup, usually beginning in April. After passing Barrow from April through mid-June, they move through or near offshore leads in an easterly direction. The USDOI/MMS (1996) notes that east of Point Barrow, the lead systems divide into numerous branches varying in their location and extent from year to year. Bowheads arrive on their summer-feeding grounds in the Canadian Beaufort Sea and Amundsen Gulf and remain there until late August or early September (Moore and Reeves as cited in USDOI/MMS 1996).

In late August, bowheads begin migrating westward from summer feeding grounds located in the Canadian Beaufort Sea to wintering areas in the Bering Sea. Generally, few bowheads are seen in Alaskan waters until the major portion of the fall migration occurs, typically between mid-September and mid-October. The migration route and extent of ice cover may influence the timing or duration of the fall migration. However, based on aerial surveys from 1982 through 1993, the typical water depth over which the greatest number of whales appear to migrate is from 66 to 165 feet (USDOI/MMS 1996).

Spectacled and Steller's Eiders: Both species of eiders are very unlikely to occur in the immediate project area. Spectacled eiders are present on the arctic slope from May to September; it is estimated a few thousand pairs nest on the Alaskan arctic slope. Nest success for spectacled eiders has been relatively high in the Prudhoe Bay area (e.g., 40 percent), suggesting that the recently observed declines in their numbers is caused by factors operating outside the nesting period. Brood-rearing occurs in tundra-pond habitat. The Steller's eiders are coastal migrants along the western Beaufort Sea and the only confirmed nesting area is currently in the vicinity of Barrow (USDOI/MMS 1996).

3.7. Socioeconomics

Land use in the region has traditionally revolved around subsistence resources. Residents of the village of Nuiqsut are the primary subsistence users in the project area. The village of Nuiqsut is located on the Colville River, 70 miles to the west southwest of the McCovey No. 1 Exploratory Well. Many of Nuiqsut's marine subsistence-harvest areas lie within the Lease Sale 124 Area and the village may access the McCovey Prospect project area for this purpose. Harvest use patterns and subsistence seasonal cycles for these communities are described in detail in USDOI/MMS (1996).

As a result of the subsistence lifestyle that occurs in the villages of the nearshore Beaufort Sea, many marine resources are utilized by subsistence users. Regional subsistence activities include whaling, fishing, waterfowl and seaduck harvests, and hunting for seals, polar bears, walrus, and beluga whales (the latter two very infrequently). Travel in the region is likely to be by small boat in summer and snowmachine in winter. Residents of Nuiqsut have historically used coastal areas near the Barrier Islands for subsistence activity. Onshore subsistence activity has typically occurred near the mouths of river deltas. Hunting for ringed seals and polar bears are the activities most likely to occur in or near the project area and primarily occur during the open water season.

The subsistence hunting of bowhead whales is the most valued activity in the subsistence economy of the Nuiqsut community today (USDOI/MMS 1996). This village hunts bowhead only during the fall season between September and early October, depending on ice and weather conditions. The whalers use small (i.e. less than 25 feet) aluminum and fiberglass boats with outboard motors to hunt bowheads in open water. Generally, they whale within 10 miles of shore, but at times they may travel 20 miles or more offshore. Bowhead whales are commonly harvested off of Cross Island with whalers staging from the island, but the entire coastal area from Nuiqsut east to Flaxman Island and the Canning River Delta may also be used. Since the McCovey project will be conducted during solid ice conditions, there will be no conflicts with subsistence whaling activities.

General harvest use patterns and subsistence seasonal cycles for the Nuiqsut community are described for bowhead whales and other species in USDOI/MMS (1996).

The most important migratory fish caught for human subsistence use in nearshore Beaufort Sea waters are Arctic and least cisco and Arctic char. Recent catch statistics also indicate that broad whitefish are an important and preferred species in subsistence harvest (George and Nageak 1986; Moulton et al. 1986; Craig 1984a, 1984b). Migratory fishes, particularly ciscoes, whitefishes, and char, are the focal point of the subsistence fishery. Fishing is conducted during both the open water season and the winter months.

During late spring to early fall, Nuiqsut residents hunt for waterfowl and coastal birds. This activity often occurs adjunct to other activities such as boating, fishing, or hunting. Nuiqsut residents also hunt for caribou during the summer migration and in the winter using snowmachines for travel. Additionally, Nuiqsut residents hunt moose in the late summer (August). This activity typically occurs south of the village.

Subsistence activities by Nuiqsut and Kaktovik villages occur year round with the exception of marine subsistence activities which mostly occur during the open water summer months; activites at the McCovey Prospect will be confined to the winter months after freeze-up.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1. General

In general, direct and cumulative impacts on the offshore and onshore environments expected to occur from exploration activity at the McCovey Prospect will be limited. Some local disturbance of bottom sediments and a temporary increase in turbidity during breakup, and increased potential for certain wildlife encounters are expected as a result of the drilling and drilling cuttings disposal, but general effects to the marine and coastal environment are likely to be minimal (USDOI/MMS 1996).

4.2. Geologic Hazards

No H_2S was encountered in previous wells near the project area nor in the nearby Endicott and Northstar fields. In addition, a shallow hazard survey was conducted in order to identify any potential shallow gas zones that may be encountered during drilling operations.

4.3. Meteorology

4.3.1. Weather

There will be no impacts from the project on weather conditions.

4.3.2. Air Quality

The drilling program at the McCovey Prospect is not expected to cause an exceedance of the National or State of Alaska ambient air quality standards (AAQS). No significant primary adverse environmental effects should result from air emissions generated by the project. Secondary impacts on induced growth, transportation and construction, and subsistence living are believed to be negligible, particularly due to the temporary nature of the project.

Further discussion of air quality project impacts are contained in the project's Exploration Plan (PAI, 2000) and the project air permit application (Hoefler, 2000).

4.4. Physical Oceanography

There will be no impacts from the project on the physical oceanography of the area.

4.5. Other Uses of the Area

4.5.1. Shipping

No impacts are expected since most project activities will take place during the winter months when shipping does not occur.

4.5.2. Commercial and Sport Fishing

There will be no impacts from this project on these activities since commercial fishing and sport fishing do not occur in the immediate project area. See Section 4.5.6, Cultural Resources, for a discussion of potential impacts on fishing by subsistence users.

4.5.3. Military Use

There will be no impacts from this project since known military use does not occur in the area.

4.5.4. Existing Pipelines and Cables

There will be no impacts from this project since existing cables do not occur in the project area. The Northstar pipeline is located about 12 miles west southwest of the McCovey project area.

4.5.5. Mineral Resource Development Other than Oil and Gas

There will be no impacts from this project since other resource development activities do not occur in the project area.

4.5.6. Cultural Resources

Since the McCovey project will be conducted during solid ice conditions, there will be no impact to the subsistence bowhead whaling activities. Other impacts to subsistence users or subsistence resources are likely to be low given the project location and time of season of project activities. Impacts to seals and polar bears are expected to be highly localized with no population-level impacts (USDOI/MMS 1996).

The community of Nuiqsut is the primary subsistence users in the McCovey Prospect area and they may hunt seals year round; however, the primary sealing area is off the Colville Delta, extending as far west as Fish Creek and as far east as Pingok Island. Most seal hunting is done during early summer in open water. Since McCovey activities will be conducted during solid ice conditions, PAI does not anticipate any adverse impact on the availability of the species or stocks of marine mammals for subsistence uses will occur.

4.5.7. Mariculture Activities

There will be no impacts from this project since mariculture activities do not occur in the area.

4.6. Flora and Fauna

Impacts to lower trophic-level organisms (phytoplankton, zooplankton, benthic, and epontic communities) and fishes are expected to be negligible to none due to their limited presence during winter months. Few fish will likely be encountered in the project area due to the scarcity of boulders and cobbles or similar hard-bottom habitats and the presence of ice during the majority of planned activities and operations. However, fish present in the project area will experience temporary, non-lethal effects (i.e., displaced location) as a result of the planned exploration activities (USDOI/MMS 1996).

Polar bear denning sites have previously been reported in the general area. Prior to initiating any site work at the well location, the surrounding areas will be investigated for signs of polar bear denning or other bear activity. Polar bears are likely to be present during winter operations, but PAI will have a Polar Bear Interaction Plan and safety training program in place prior to operations to minimize and, in many cases, avoid interaction between bears and humans. Any polar bear encounter will be avoided if at all possible. While field operations are underway, a polar bear monitor person will be on site and will be responsible for implementation of a Polar Bear Interaction Plan. Any interaction between a polar bear and personnel will be promptly reported to both the Alaska Department of Fish and Game and the U.S. Fish and Wildlife Service.

Arctic foxes are common inhabitants of the project area during winter. Arctic foxes are one of the primary vectors of rabies in northern Alaska. If a person is bitten by a fox, efforts will be made to trap the animal for observation and rabies testing. Encounters with Arctic foxes will, therefore, be avoided if at all possible. A safety training program will also be in place to educate on-site personnel about Arctic foxes and to minimize and avoid interaction between foxes and humans.

4.7. Onshore Impacts

4.7.1. Socioeconomics

All project activities will be staged from Deadhorse/Prudhoe Bay. Therefore, with the minor exception pertaining to subsistence described under Cultural Resources in Section 4.5.6, there will be no onshore impacts to nearby village communities or landfall areas.

4.7.2. Demand for Goods and Services

All project activities associated with PAI McCovey No. 1 will be staged from existing infrastructure located in Deadhorse/Prudhoe Bay. Goods and services will be obtained from Deadhorse/Prudhoe Bay during the entire duration of the project. No goods or services are anticipated to be obtained from onshore village communities with the possible exception of local oil spill response teams located in Nuiqsut.

4.7.3. Environmental Impacts

The McCovey project location is approximately 7 miles from Cross Island and 14 miles from the Beaufort Sea coast. Minimal environmental impacts are expected from the exploration activities associated with this project.

As described in Section 2.2, site-specific shallow hazard data was collected in April 2000 and additional data will be collected this summer during the open water season. Geotechnical data was collected in April and consisted of an approximate 14 day program of coring, cone penetrometer activities, and bathyemetric operations. The subsurface imaging data to be collected this summer is expected to consist of high resolution geophysical studies. As discussed in the Shallow Hazard Survey Notice of Preliminary Activities submitted to MMS March 1, 2000, PAI initially met with the Alaska Eskimo Whaling Commission (AEWC) on January 28, 2000. One of the topics discussed was the shallow hazard survey program.

Direct environmental impacts resulting from exploration activity at the McCovey Prospect include short-term air emissions created by ice road and island construction activity, exploratory activity, drilling discharges to the ice under the Arctic Offshore General NPDES permit, and noise related to drilling and limited site survey activities. Short-term air emissions created by exploration drilling should be adequately dispersed by local wind patterns, thereby mitigating any adverse impacts (EPA 1995c). Drilling-related noises will be present, but are unlikely to affect the few seals and polar bears that may be present in the project area (USDOI/MMS 1996). PAI is applying for a Letter of Authorization (LOA) from the United States Fish and Wildlife Service (USFWS) for taking of polar bears incidental to project activities. PAI has already applied for an Incidental Harassment Authorization (IHA) from the National Marine Fisheries Services for the taking of ringed and bearded seals incidental to exploration drilling operations. A copy of the IHA application is located in Appendix V of the Exploration Plan and is incorporated by reference.

Under the terms of the Final NPDES General Permit for Offshore Oil and Gas Operations on the OCS and State Waters of Alaska (Arctic NPDES General Permit No. AKG284200), drill cuttings and drilling fluids will be discharged to sea ice adjacent the ice island. Material submitted in support of the Arctic NPDES General Permit, including the final Ocean Discharge Criteria Evaluation (ODCE) and the Final Biological Evaluation, are hereby incorporated by reference (EPA 1995a and 1995b). A request for coverage under the General Permit was applied for with the EPA on April 17, 2000 and approved on May 1, 2000.

Some short-term effects resulting from NPDES discharges include disturbance of bottom sediments, an increase in local turbidity, elevated concentrations of some mud constituents (i.e., barium) in the water. However, these effects would only be evident during breakup and would be limited to the initial discharge on the ice surface. The ice in the disposal area will melt in place, limiting deposition of muds and cuttings to a localized area, with only limited impacts to a wider area.

Previous studies of the effects of NPDES discharges show no long-term or significant impacts are expected due to the low toxicity of barium sulfate and no adverse effects on the composition of benthic macroinvertebrate communities (ENSR 1991). In general, projected discharges from all exploration activity in the Beaufort Sea Lease Sale 124 area are small compared to the natural sediment load of the Beaufort Sea. EPA has stated that discharges authorized under this General Permit are not likely to adversely affect any endangered or threatened species nor adversely affect their critical habitat (USGS 1981). Under the terms of the General Permit, discharges will not occur "within 1,000 m of the Stefansson Sound Boulder Patch (near the mouth of the Sagavanirktok River) or between individual units of the Patch where the separation between units is greater than 2,000 m but less than 5,000 m." Under the terms of the General Permit, discharges during stable ice conditions "shall be to above-ice locations and shall avoid to the maximum extent possible areas of sea ice cracking or major stress fracturing."

An ice road will be constructed to connect the ice island to Deadhorse/Prudhoe Bay and traffic will be limited to essential use only. A single route will be established based on ice characteristics to minimize any potential impact to seals or polar bears. The ice road route will be surveyed prior to construction using trained dogs to locate any ringed seal breathing holes and lairs. If possible, the road will be re-routed to avoid any seal structures.

If aircraft travel is necessary, travel will be controlled by FAA-approved flight paths. Aircraft will avoid Native land areas and will comply with flight restrictions imposed by the Beaufort Lease Sale 124 stipulations regarding sensitive biological areas (USDOI/MMS 1990, 1996).

In addition, specific lease stipulations addressing Protection of Biological Resources, an Orientation Program, Transportation of Hydrocarbons, and Subsistence Activities will be followed as applicable to prevent and mitigate environmental impacts (USDOI/MMS 1996).

No significant cumulative impacts are expected from exploration activity at the McCovey No. 1 Exploratory Well. Any cumulative impacts that could result from development of the McCovey Prospect, should that occur, will be addressed as part of the NEPA review for that project.

During the 2000-2001 solid sea ice season, BPX's Northstar project will also be constructing an ice road from West Dock to the Northstar gravel island as part of its drilling resupply phase. Construction of the two ice roads will be done concurrently; however, both ice roads should be complete prior to commencing drilling activities at McCovey. Since both of these ice road routes are further east than the majority of any winter subsistence hunting activities, the cumulative impact should be minimal. A location map showing both the McCovey and Northstar proposed alternative ice road routes is included in Figure 4-1. PAI will also coordinate with BPX to ensure any potential impacts to Northstar monitoring programs is identified and mitigated to the extent practical.

As indicated previously, monitoring will also be implemented to mitigate environmental impacts. Air monitoring and any required NPDES monitoring plans will be developed and submitted as part of the notification process for these permits. A polar bear interaction plan that includes self monitoring will be submitted to the U.S. Fish and Wildlife Service. The Ringed and Bearded IHA application includes information regarding the proposed seal monitoring program.

4.8. Accidents

Adverse environmental impacts that could occur as a result of exploration activity at this site include an oil spill. However, the probability of a spill from winter exploration activity is very low and advanced well control equipment and procedures will be used for the McCovey project. An Oil Discharge Prevention and Contingency Plan (ODPCP) has been prepared for this project and submitted as Appendix I to the project's Exploration Plan.

PAI will use best management practices to reduce potential impacts from all spills. In addition, as noted in the Exploration Plan, PAI will separate any contaminated ice that results from normal operations in a snow melter and fluid will be injected in a permitted Class I or Class II injection well. This practice will prevent contaminated ice from reaching the environment.

Alaska Clean Seas (ACS) technicians will be employed full time from ice construction operations through well testing to prevent and respond to any spills. Initial response equipment will be staged on the ice island.

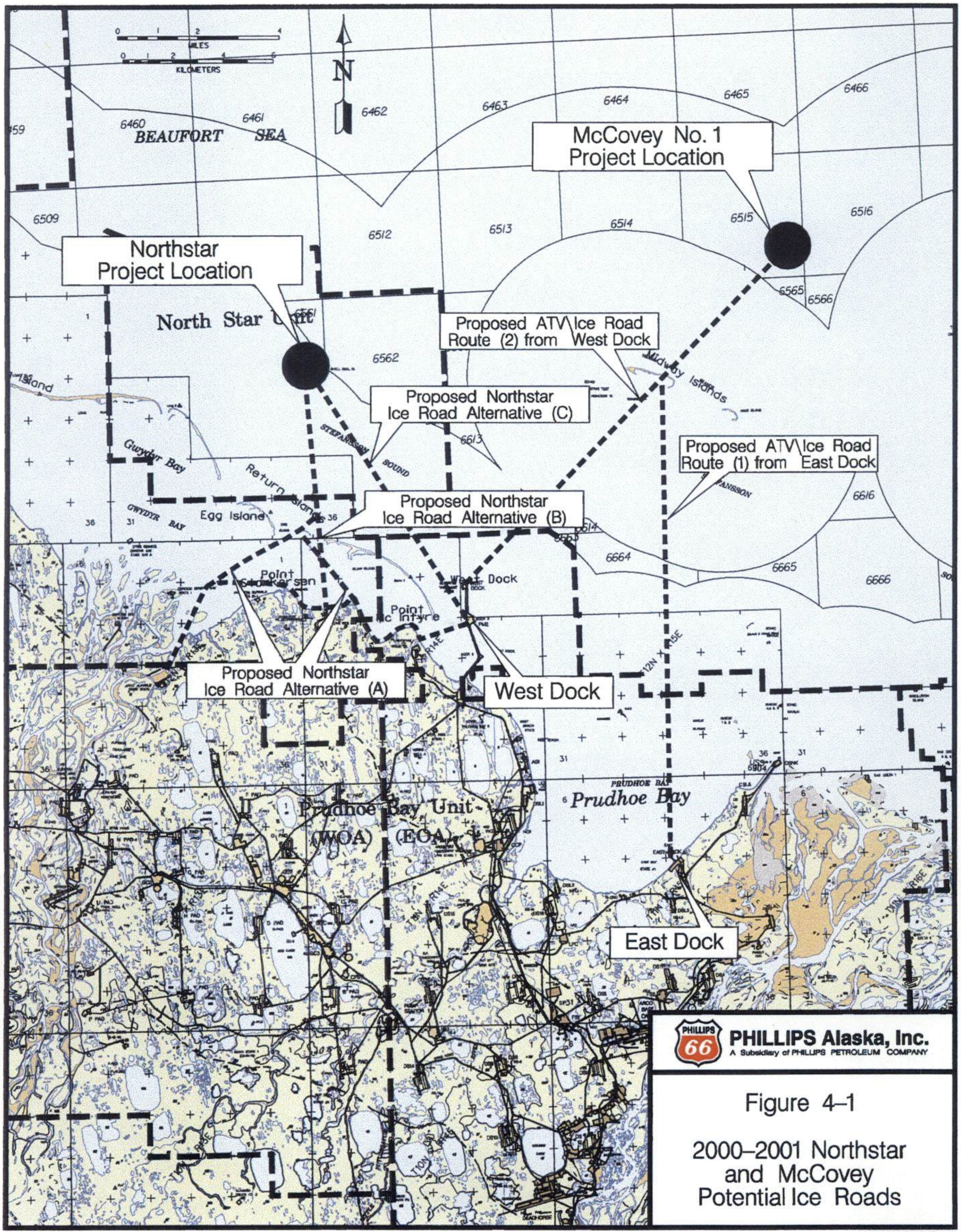


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Figure 4-1

2000–2001 Northstar and McCovey Potential Ice Roads

5.0 ALTERNATIVES TO THE PROPOSED ACTION

Per the MMS guidelines, discussion of alternatives is not required in Environmental Reports for Plans of Exploration.

6.0 UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

PAI intends to employ several mitigation measures to minimize any potential adverse environmental effects. Table 6.1 identifies the mitigation actions proposed by PAI and the expected benefits.

Table 6-1 Proposed Actions for Avoidance and Minimization of Environmental Impacts During McCovey Exploration.

Proposed Action	Expected Benefit
Conduct drilling activities during the winter.	Avoids potential spill to broken ice and open water conditions; avoids activities during bowhead whale migration and subsistence harvest.
Use ice island to drill the well.	Eliminates permanent impacts associated with a gravel island alternative. Also eliminates any open water activities which may conflict with subsistence activities.
Use trained dogs to locate seal structures prior to construction activities.	Locate and avoid where possible seal structures.
Provide on-site environmental presence in the form of Alaska Clean Seas technician during drilling activities to ensure compliance with permit requirements.	Assist with spill prevention and provide initial response activities in the event of the spill. Minimizes variances from permitted activities.
Employ local village personnel to participate in polar bear monitoring program.	Increases awareness and understanding of polar bear.
Coordinate with U.S. Fish and Wildlife Service on historical and recent locations of polar bear den sites and report all sightings.	Avoids actions that would disturb polar bears.
Use existing PBU West Dock facilities to avoid need for on-shore ice roads.	Reduces potential impacts to on-shore areas.
Establish a single ATV or ice road route for rig re-supply and access.	Minimizes potential disturbance of ringed seals and polar bears on single area.
Train personnel in proper interactions with wildlife and actions necessary to comply with permit stipulations.	Reduces potential for harassment of wildlife; reduces adverse effects on personnel from interactions; ensures compliance with permit requirements

No additional unavoidable adverse environmental effects have been identified beyond those described in Section 4.0 of this Environmental Report.

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Exploration Plan
McCovey #1 Well

Beaufort Sea, Alaska

APPENDIX IV
POLAR BEAR INTERACTION PLAN

September 19, 2000

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FIGURES

1.0 INTRODUCTION AND PROJECT SUMMARY

Phillips Alaska, Inc. (PAI) plans to drill the PAI McCovey No. 1 exploratory well approximately 14 miles northeast of West Dock at Prudhoe Bay, 60 miles northeast of Nuiqsut, 7 miles northwest of Cross Island, and 110 miles northwest of Kaktovik in the Beaufort Sea. At present, a single exploration well is programmed to be drilled from a surface location in OCS Lease Block Y-1578 to a bottom hole location on a federal lease within the McCovey Prospect Area. Figure 1-1 shows the proposed surface and bottomhole location within the area of interest.

The McCovey well will be drilled during the 2000-2001 winter drilling season. An ice island with a land based drilling rig will be used for the proposed drilling activity. Any additional exploration/delineation drilling is dependent on the outcome of the McCovey No. 1 well and further review of geologic, geophysical, and reservoir data. The Phillips McCovey No. 1 well will be expendable, and therefore plugged and abandoned, regardless of any commerciality demonstrated during testing and evaluation. If this initial well shows potential for hydrocarbon development, a well flow test may be conducted. Assuming a positive result, the potential exists for future exploration/delineation drilling in subsequent years.

Construction of an ice island and ice road is expected to being in December 2000 when the sea ice is thick enough to support light weight, ice road construction equipment. The Phillips McCovey No. 1 well will be spudded shortly after completion of the ice island. This could occur in late February, 2001. All operations will be complete by early May 2001.

A small support camp will be staged at either Prudhoe Bay West Dock or on an ice pad near Reindeer Island during construction. Once the ice road and ice island are complete, the small camp will be replaced with a larger rig camp at the same location. The only camp facility that will be on the ice island location will be a 8-10 person camp for essential personnel only. This allows the main camp activities to be separate from the main drilling activity. This should reduce the amount of time personnel are walking on the sea ice during shift change since a bus will be provided for transportation.

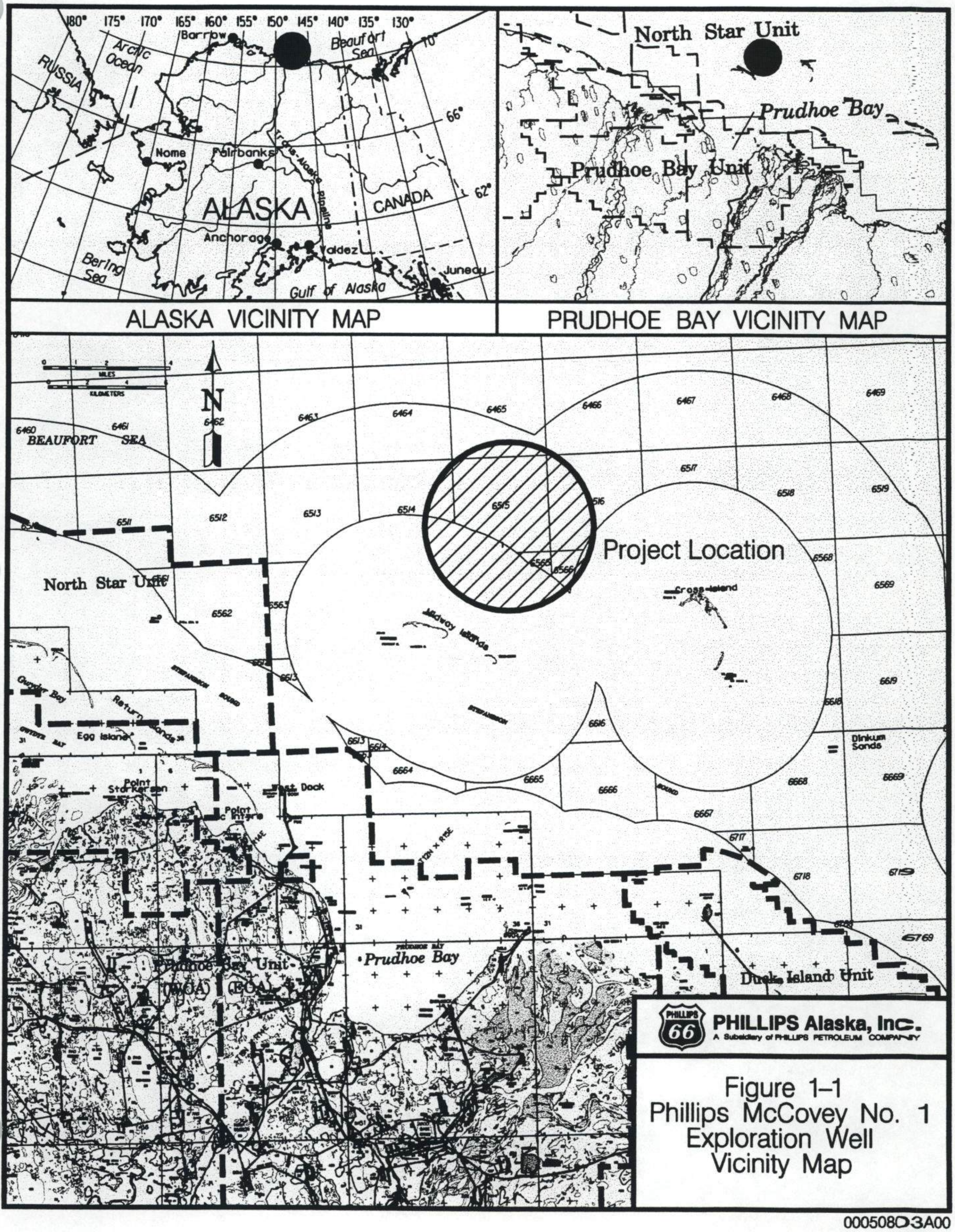

Figure 1–1
Phillips McCovey No. 1
Exploration Well
Vicinity Map

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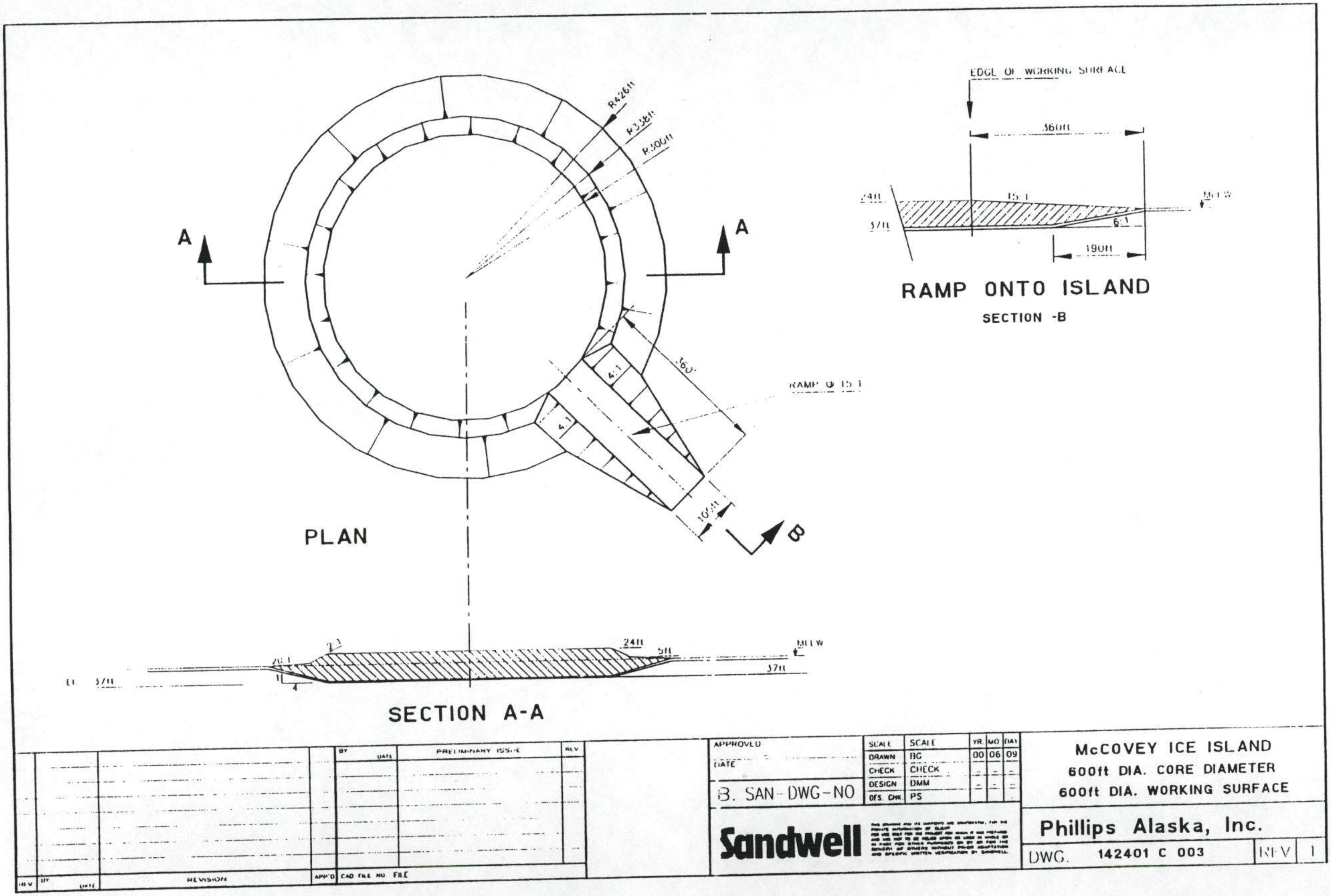

Figure 1-2 Schematic View of the McCovey Ice Island

2.0 PLAN OF COOPERATION

The closest villages to the McCovey project are Nuiqsut, and Kaktovik located 60 miles southwest and 110 miles southeast of the project location, respectively. PAI has met with these villages to address any concerns that local residents have regarding the McCovey project. PAI has also met with the North Slope Borough and the Alaska Eskimo Whaling Commission to brief them on the McCovey exploration project.

Polar bears are used for subsistence by Kaktovik and to a lesser extent by Nuiqsut. The McCovey project operations described above are not likely to negatively impact subsistence users for the following reasons:

- Nuiqsut and Kaktovik typically harvest very few polar bears (less than 10) in a year.

- Use of an ice island eliminates any activity during whaling season.

3.0 POLAR BEARS

PAI and it's contractors recognize that the nearshore area of Stefansson Sound is a potential area of polar bear use. The highest occurrence of polar bears dens lies east of the project area in the Arctic National Wildlife Refuge and into Canada, however, polar bears are known to den near the project area.

Polar bears (*Ursus maritimus*) are found throughout the Arctic. The southern Beaufort Sea population (from Cape Bathurst in Canada to the northern Chukchi Sea) is estimated at 1,500 to 1,800 bears, while the Alaskan population is estimated at 3,000 to 5,000. Polar bear distribution exhibits substantial annual variation in the Beaufort Sea. Average density appears to be about one bear to every 30 to 50 square miles. During the summer in the Alaskan Beaufort Sea area, very few polar bears are found on land; most are found along the edge of the permanent pack ice. With the advance of the ice sheet in winter, most polar bears are found along the shear zone between the landfast ice and drifting pack ice.

Polar bears are most abundant where seals are common in drifting pack ice or shorefast ice in winter, near the pack-ice edge in summer, and along new ice and leads in the fall. Polar bears can be expected to be occasional visitors around the project site during winter exploration activity. Polar bears often hunt seals in open water and in leads and polynyas. The ice island may create an artificial area of open water or leads leeward or adjacent to the structure. These areas of open water may attract ringed seals which may attract polar bears. It should be emphasized that polar bears may be found in the area at any time of year, including the deep winter period of hard freeze up.

Polar bear den locations in the region have been mapped, historically, by the U.S. Fish and Wildlife Service and the National Biological Service and are scattered throughout the project area.

It is in recognition of this possibility that the following Polar Bear Awareness and Interaction Plan has been developed to cover all operational phases.

4.0 PROTECTED STATUS OF THE POLAR BEAR

The polar bear is a marine mammal species fully protected by provisions of the Martin Mammal Protection Act (MMPA). The MMPA explicitly states that a moratorium has been placed on the "take" of any marine mammal. "Take", as defined by the Act means to "harass, injure, capture, kill or to attempt to harass, injure, capture, or kill" a marine mammal. The Federal agency responsible for managing polar bears is the U.S. Fish and Wildlife Service (USFWS).

On November 16, 1993, the USFWS published regulations (Subpart J, 50 CFR Part 18) authorizing the incidental, unintentional taking of small numbers of polar bears during oil and gas industry operations year round in the Beaufort Sea and adjacent northern coast of Alaska. However, it is vitally important that opportunities are reduced to an absolute minimum for accidental encounters between marine mammals and exploratory project personnel that might result in a take, including takes by harassment. Experience h highlights this need: The lethal take of a polar bear did occur in January 1990 at the Stinson exploratory offshore well site in West Camden Bay. While that take may have been unavoidable and necessary in order to ensure the protection of personnel who were working on the sea ice near the drilling rig, the Polar Bear Awareness and Interaction Plan set out below draws upon that experience in an effort to prevent a repetition during this program.

The polar bear is also a subsistence resource available to Alaska Natives. Natives, in cooperation with Canadian native hunters, have over the past few years developed a management plan to insure that subsistence takes from this jointly shared Beaufort Sea polar bear population do not exceed biologically acceptable limits. It is likely that a number of members of the PAI and contractor crews will be Alaska Natives who, as subsistence hunters, might otherwise be authorized to take polar bears. However, Natives employed in the program are governed by rules and procedures which extend to all employees. During periods of active employment, when travelling to and from the project area, and during active service at drillsite locations or with geophysical operations, no subsistence hunting is in any way authorized.

A Native crew member may be assigned tasks as a polar bear watchperson. In the course of these assigned duties, he may be required to use deterrent measures including the use of firearms which is authorized only on the basis of a crew member designated to carry out such measures and not because the crew member might otherwise be entitled to subsistence hunting rights.

5.0 PROJECT PERSONNEL ORIENTATION PROGRAM

All PAI and contractor personnel will receive an environmental orientation before beginning work tasks in the project area. In most instances the orientation will be given prior to arriving on the North Slope; however, it may be given upon initial arrive at the either the construction or rig camp. A major feature of the orientation will consist of viewing "Polar Bears: Safety and Survival", a video prepared by the Alaska Oil and Gas Association (AOGA) in cooperation with experts from the Federal and State wildlife regulatory agencies. This training film covers the life history and biological status of the Beaufort Sea polar bear population; the Marine Mammal Protection Act as it applies to bears; and the measures to be taken to minimize human/bear encounters.

Site specific instructions will also be given to project crew tailored to the type of activity. There will be four main types of activity associated with the McCovey project: ice road construction, ice island construction, drilling, and ice road maintenance.

All work will be bound by the following fundamental principal:

- That EARLY DETECTION AND SAFE AVOIDANCE PROCEDURES followed by personnel are the best guarantee that a harmful encounter (for either bears or people) will not occur. Please refer to Attachment B, "Polar Bear Interaction Procedures" which will be distributed to all project crew at the orientation.

6.0 POLAR BEAR WATCHES

Continuous polar bear watches will be designated at all activity where personnel are required to be working on the sea ice (e.g., ice island construction). ATV/rolligon and equipment operators will also be instructed to report any polar bear sightings or interactions to the designated watchperson. The intent of these visual inspections is to achieve early detection of the presence of bears. The watchperson should not attempt to undertake hazing or harassment actions to scare the bear(s) off. Only when it has been determined by subsequent inspection that bears are no longer present in the work vicinity will the alert be lifted.

In the event that a bear remains in the vicinity of the McCovey project, Mr. John Bridges of the USFWS (907-786-3810) will be contacted for advice on possible measures to deter the bear from use of the work area. In addition to the USFWS, Mr. Dick Shideler of the Alaska Department of Fish and Game (ADF&G) (907-451-6192) should be contacted and informed of the situation. Deterrent or hazing measures may include low level helicopter flights, firing cracker or noise shells or firing bean bag shells. Both the USFWS and ADF&G will be consulted on the most appropriate hazing method to use for the given situation. In addition, one or more of the drilling and construction personnel will also be certified by the USFWS in polar bear hazing techniques.

While it is obviously the case that human safety is the top priority, it is vitally important to emphasize that the early detection and avoidance measures which are prime responsibilities of the polar bear watchperson are equally designed to prevent encounters that might result in harm to humans and bears.

The other duty of the polar bear watchperson will be to keep a journal log of all polar bear sightings. Actual sightings will be recorded on a separate Polar Bear Sighting Log (see Attachment A). To the extent available the activity log will record behavioral observations such as species, group size, age, sex, reaction, duration of interaction, and closest approach. Any data acquired will be made available to the USFWS and the ADF&G at the conclusion of the exploration program.

7.0 POLAR BEAR MONITORING PROGRAM

If polar bears are sighted in the project work areas, the watchperson will systematically collect and record all data. To the extent that safe observation permits, behavioral data will be collected (see Attachment A, “Daily Polar Bear Sighting Log”. Any crew member who sights a polar bear or polar bear sign, such as tracks, should immediately communicate the details of that sighting to the watchperson responsible for maintaining the log.

It is also important that the actual time spent undertaking polar bear observations be part of the journal record. Biologists require this information in the course of collecting accurate statistics in their study efforts.

All data acquired will be submitted to the USFWS and the ADF&G within thirty (30) days of the conclusion of the McCovey exploration program.

8.0 REPORTING

The USFWS and ADF&G will be supplied with reports of any polar bear sightings if and when they occur on the same day. Any other potentially useful information – such as possible den locations – will also be supplied. Reports should be made to:

Mr. John Bridges
USFWS – Marine Mammals Management Section
1011 East Tudor Road
Anchorage, Alaska 99503
Tel. (907)786-3810
FAX (907) 786-3816

And

Mr. Dick Shideler
ADF&G – Habitat Division
1300 College Road
Fairbanks, Alaska 99709-4173
Tel. (907)451-6192
FAX (907)456-3091

In the event that advice is required in dealing with a problem bear or if an actual bear/human encounter occurs, the individuals listed above should be contacted immediately.

ATTACHMENT A

DAILY POLAR BEAR SIGHTING LOG

Watchperson: ______________________________ Date: ________________

Print Name

____

Signature

Maximum Visibility: ________________ (mi/yds) Time: ________________

General Weather Conditions: ____

____

____

Sightings: ____

____

Species: ______________________ Group Size: _________ Age: ________ Sex: _______

Reaction: ____

Duration of Interaction: ______________ Closest Approach: _______________________

Other Comments: ____

____

____

____

<u>Examples:</u>

Weather Conditions Example:	Overcast, clear, winds 3-5 knots from NE, no new snow but some slight blowing snow, 10:50-17:00 when winds picked up to 7-10 knots temporarily.
Sighting Example:	Sighted one polar bear approximately 0.5 mile north of rig waiting by apparent open water. Bear was stationary looking at the sea ice. Appeared to be hunting for seals in open water area. Observed 0900-1800 hrs. Last seen walking in northwest direction.

ATTACHMENT B

POLAR BEAR INTERACTION PROCEDURES

Polar Bears

1. Prior to initiating work on the sea ice, check with the drilling supervisor and designated watchperson to make sure both are aware of the intent for work on the sea ice. The sea ice area and adjacent area must be "bear free" prior to initiation of the work.

2. Ensure the work area is well lit.

3. The designated watchperson(s) will maintain the watch near the activity where visibility is the best. Work crews on the sea ice will maintain radio contact with the watchperson and the loader operator. Vehicles should also remain near the work activity to provide a secure location for workers.

4. Take no food along when working on the sea ice to avoid attracting bears.

5. In the event a bear is sighted, retreat to a secure location. Report all bear sightings to the designated watchperson and drilling supervisor as soon as it is safe to do so in a secure location. Do not remain in an unsafe situation to view or photograph a bear.

6. Use common sense.

PHILLIPS ALASKA, INC.

Exploration Plan
McCovey #1 Well

Beaufort Sea, Alaska

APPENDIX V
RINGED AND BEARDED SEALS IHA APPLICATION

September 19, 2000

PHILLIPS Alaska, Inc.
A Subsidiary of PHILLIPS PETROLEUM COMPANY

P. O. BOX 100360
ANCHORAGE, ALASKA 99510-0360

Telephone 907-265-1173
Facsimile 907-265-6216

August 1, 2000

Ms. Donna Wieting **BY FAX: (301) 713 - 0376**
Chief
Marine Mammal Division
Office of Protected Resources
National Marine Fisheries Service (NMFS)
1315 East - West Highway
Silver Spring, MD 20910-3226

Subject: Request for Approval
Incidental Harassment Authorization
Taking of Ringed and Bearded Seals Incidental to Exploration
Drilling Activities
McCovey Prospect Exploration Well
Central Beaufort Sea, Alaska

Dear Ms. Wieting,

Phillips Alaska, Inc. (PAI) submits the enclosed request for an incidental harassment authorization for taking of ringed and bearded seals incidental to exploration drilling activities in Arctic waters ("IHA") for your review and processing. Also enclosed is PAI's proposed marine mammal monitoring plan associated with this activity. This request was prepared in accordance with the information contained in 50 CFR § 216, which became effective on May 10, 1996. PAI does not anticipate that the activities it plans to undertake in connection with the McCovey prospect will result in the harassment or other taking of any marine mammals. Moreover, in the event that incidental harassment occurs, the impact on the species would not be greater than negligible, and there would be no unmitigable adverse impact on the availability of any species or stock for subsistence hunting. Accordingly, this request is filed solely for the purpose of ensuring that all of the described activities are in compliance with the Marine Mammal Protection Act. 16 U. S. C. § 1361 et seq.

As described herein, PAI proposes to construct an ice island at the McCovey Prospect Area, which is approximately 14 miles offshore of East Dock at Prudhoe Bay. Ice island construction would begin when the ice is thick enough to support construction equipment, which could occur in early December 2000. Drilling and well testing operations will not be conducted in broken ice or open water conditions. Hence, this project will have a negligible impact on the species or stock and will not have an unmitigable adverse impact on the availability of such species or stock for subsistence uses.

PAI respectfully requests that NMFS issue an IHA within 120 days of the date of this application, pursuant to 16 U.S.C. Sec. 1371(a)(5)(D)(iii).

PAI looks forward to working with NMFS on this matter. Please do not hesitate to call me (907) 265-1173 or Mark Major (907) 265-6136 with any questions or comments.

Sincerely,

Lisa L. Pekich
Environmental Coordinator

014.02/llp

Enclosures

C: Maggie Ahmaogak, AK Eskimo Whaling Commission – Barrow, AK
Doug DeMaster, NMFS – Seattle, WA
Ken Hollingshead, NMFS – Silver Spring, MD
Brad Smith, NMFS – Anchorage, AK
Tom Lohman, NSB-Anchorage, AK
Sheldon Adams, NSB- Barrow, AK
(all w/ enclosures)

Phillips Alaska, Inc.
Request for Approval
Incidental Harassment Authorization (IHA)
for
Taking of Ringed and Bearded Seals
Incidental to On-Ice Exploration Drilling Activities
McCovey Exploration Prospect
Offshore Prudhoe Bay, Beaufort Sea, Alaska

Background Information:

Phillips Alaska, Inc. ("PAI") is planning to drill an exploration well at the McCovey Prospect Area, which is offshore Prudhoe Bay, Alaska, during the 2000-2001 winter drilling season. The McCovey Prospect Area is approximately 14 miles north of East Dock at Prudhoe Bay, 60 miles northeast of Nuiqsut, 7 miles northwest of Cross Island, and 110 miles northwest of Kaktovik. (See Attachment 1).

The purpose of this operation is to evaluate the oil and gas potential of PAI operated leases in the McCovey Prospect Area. The well will be drilled from an ice island constructed at the beginning of the winter drilling season. Some equipment may be staged on Reindeer Island prior to freeze-up; however, a majority of the equipment will be staged using an ice road. Drilling and testing operations will not be conducted in broken ice or open water periods.

Information Required by § 216.104:

(1) - Detailed description of the specific activity or class of activities that can be expected to result in incidental taking of marine mammals.

PAI does not anticipate that any of the activities it plans to undertake, including those activities described below, will result in any unmitigable adverse impact on the availability of any marine mammal species or stock for subsistence hunting. If any harassment occurs, the effects would be disturbance only and the impact on the species will not be greater than negligible.

One well is planned to be drilled from a surface location in Outer Continental Shelf (OCS) Lease Block Y-1577. Depending on the results found in this well, well tests may be performed and a sidetrack may be drilled as length of season permits. Ice island construction is expected to begin when ice conditions are thick enough to allow heavy equipment to be transported to the location via ice road (approximately December 2000). All operations will be discontinued in May 2001 before break-up (which usually occurs in late June or July). The McCovey exploration well will be plugged and abandoned regardless of any commerciality demonstrated during well testing and reservoir evaluation.

An ice pad at Reindeer Island will be constructed initially for the support camp and will be later used for the rig camp. A 12 to 14 mile ice road will be constructed from either West Dock or East Dock in Prudhoe Bay out to the McCovey location (Attachment 2). The actual location and length of the ice road route will depend on ice conditions prior to commencing operations. The ice road will then be used to transport the ice island construction equipment and the drilling rig out to the McCovey location.

Construction of the ice road and island will begin when sea ice conditions are suitable for such activities (estimated to be in early- mid December). They are expected to be completed and ready for heavy traffic by mid-February. Following construction, the road will be maintained using graders with snow wings and front-end loaders with snow blowers until ice-road travel is no longer possible, typically in mid-May.

The McCovey Ice Island will be located in 37' of water. Pumps will be used to spray seawater into the cold air to form ice crystals. The sprayed seawater is first used to thicken the ice at the island location to 2-3 meters. Then the water is redirected to the center of the island to ground the island core. The ice island diameter is expected to be 850' at the waterline and 600' working surface above the water. Details regarding the ice island design and construction method are contained in Attachment 3. Also included in Attachment 3 is an American Society of Mechanical Engineers paper describing the Karluk ice island in 1988. This is provided to supply more information relating to the details involved in the engineering and construction of ice islands.

After completion of the ice road and island, a land-based drilling rig will be transported to the location. The support camp will be located on an ice pad constructed on Reindeer Island throughout the drilling operations. Reindeer Island is approximately 4.5 miles from the ice island location. All drilling materials will be transported to the ice island via ice road and staged on the ice island. Muds and cuttings will be discharged to the sea ice in accordance the General Offshore NPDES permit number AKG-28-4205.

Drilling and well testing operations will be performed only during the 2000–2001 winter drilling season and not during broken ice or open water periods.

(2) - The date(s) and duration of such activity and the specific geographic region where it will occur.

Prior to freeze-up in late October 2000, materials will be barged to the Reindeer Island for staging. This includes pumps, a support camp, rolligons and diesel fuel in storage tanks within containment capable of holding 110% capacity of the tanks.

Construction of the ice road and ice island will begin in December 2000 and continue through February 2001. Ice road maintenance will continue until completion of the activity, approximately mid-May 2001.

Drilling and testing activities are estimated by begin in late February 2001 and may continue through mid-May 2001 depending on ice conditions. All debris will be removed from the site and the surfaces of the ice island and pad at Reindeer Island will be chipped up and removed prior to break-up.

The geographic region of the McCovey Prospect is shown in Attachment 1.

(3) - The species and numbers of marine mammals likely to be found in the activity area.

The McCovey Prospect area is located within the range of a number of species of marine mammals. The species which may be present in the winter, which are within the jurisdiction of the National Marine Fisheries Service, are ringed and bearded seals.

The only other marine mammal species that may be encountered in the McCovey Prospect area is the polar bear. This species is managed under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS). PAI will be submitting a separate application for a Letter of Authorization to the USFSW for activities associated with the McCovey Prospect.

Specific information regarding the numbers of these marine mammals likely to be found in the activity area is included in section 4.

(4) - A description of the status, distribution, and seasonal distribution (when applicable) of the affected species or stocks of marine mammals likely to be affected by such activities.

PAI does not anticipate that any of the activities it plans to undertake, including those activities described below, will result in any unmitigable adverse impact on the availability of any marine mammal species or stock for subsistence hunting. If any harassment occurs, the effects would be disturbance only and the impact on the species will not be greater than negligible.

The only species managed by the NMFS that may be affected by the McCovey activities are the ringed seal. However, there is a remote chance that one or more bearded seals may be present in the project area. Ringed and bearded seals are protected by the Marine Mammal Protection Act of 1972. Spotted seals are not expected to found in the project area during winter when solid ice conditions exist. The Alaska stocks of ringed and bearded seals are not classified as strategic stock by the NMFS.

Ringed seals are year-round residents in the Beaufort Sea and will be the most frequently encountered seals in the McCovey Prospect area. The estimated population of ringed seals in the Bering-Chukchi-Beaufort is 1-1.5 million (Kelly 1988; Small and DeMaster 1995) with an estimated 40,000 seals found in the Beaufort Sea in the winter (Frost and Lowry 1981). Ringed seal densities east of Point Barrow are approximately 3-5 times lower than southwest of the Point during winter (Burns and Harbo 1972). Consequently the number and density of ringed seals in the central Beaufort Sea represents a relatively low density and small proportion of the total population.

During winter and spring, the highest densities of ringed seals are found on stable shorefast ice. Studies in Alaska and the Canadian High Arctic have shown ringed seals start to use a series of breathing holes as soon as the ice begins to form in the late fall/early winter (Smith and Stirling 1975; Kelly and Quakenbush 1990). Ringed seals maintain breathing holes in the ice by using their claws. When snow depth exceed 20 cm, ringed seals often excavate a lair in the snow above breathing holes, particularly where drifts form adjacent to pressure ridges or ice hummocks and in deep cracks in the surface ice (McLaren 1958,Smith and Stirling 1975). Ringed seals show a high degree of fidelity to the same breathing holes and lairs throughout the ice-covered period, but some holes are abandoned during winter even in the absence of human activities. Lairs are used primarily as whelping site for females, resting sites for rutting males, or resting sites for non-breeding seals (Kelly and Quakenbush 1990). Ringed seals give birth in these lairs starting in late March, and nurse their pups for 4-6 weeks (McLaren 1958). Winter construction activities for the McCovey Prospect will begin in mid-December, well in advance of female ringed seals establishing birthing lairs.

Aerial surveys conducted by BP Exploration (Alaska) Inc. (BPXA) in support of the Northstar Project, which is approximately 9 miles to the west from the proposed McCovey Prospect, showed an average density of 0.42 seals/km2 on landfast ice over water depths of 5-20 m (Miller et al 1998). Virtually no seals were seen where water depth is <3 m.

Site specific seal survey work was conducted by Western Geophysical at the McCovey location during April 2000. A total of 22 seal structures were found in the core survey area and the surrounding 1 km monitoring zone. An additional 21 structures were found in the transit survey route. Seventeen of the structures were breathing holes, 20 were lairs and 6 were unidentified. None of the lairs were birthing lairs (Coltrane 2000).

As shown above, the timing of each of the described activities, as well as the level of these activities, is such that ringed seals will be negligibly impacted and there will be no unmitigable adverse impact on the availability of such species or stock for subsistence purposes.

During winter, most bearded seals in Alaskan waters are in the Bering Sea where the conditions are more favorable than the Beaufort or Chukchi Seas. No bearded seals are expected to be encountered during the McCovey Project activities. In the remote chance a bearded seal is within the project area, the level of activities is such that bearded seals will be negligibly impacted and there will be no adverse impact to the availability of such species or stock for subsistence purposes.

(5) The types of incidental taking authorization that is being requested.

PAI is requesting authorization for incidental take by harassment (Level B) for ringed and bearded seals. However, in the event that a breathing hole or lair may be located within the footprint of the ice island, it will be covered by ice during construction. Due to the detailed engineering required for the ice island design and construction which is based on the site specific sea floor conditions, the location cannot be moved. Damage to a breathing hole or lair could displace seals away from the activity areas. Beginning construction of the ice island in December should mitigate potential for the damage to fully constructed lairs. There is a remote chance of injury or mortality of seals from constructing and maintaining ice roads.

PAI will be requesting a letter of authorization for unintentional taking of polar bear for the McCovey operation from the U. S. Fish & Wildlife Service. A copy of that request and subsequent approval will be provided to NMFS when available.

(6) - By age, sex, and reproductive condition (if possible), the number of marine mammals (by species) that may be taken by each type of taking identified in paragraph (a) (5) of this section and the number of times such taking are likely to occur.

Following the method described in BPXA's Northstar IHA application dated August 12, 1998; it is estimated that less than 31 seals may be within an area where taking by harassment could occur. This estimate is based on the assumptions that any seals within 0.4 miles (0.644 km) of the ice road and within 2.3 miles (3.7 km) of the ice island may be able to hear noise associated with the McCovey Prospect. The estimate is based on the density recorded during the 1997 BP/LGL Northstar aerial survey, 0.42 seals/km2 (Miller et al. 1998). This estimate is very conservative, since the noise associated with the ice island construction should be less than the noise associated with the construction of a gravel island. The 2.3 miles was based on noise measurements made during the construction Seal Island (a gravel island) in 1982 (Greene 1983). Also, this estimate was based on the entire ice road length (12.5 miles) with no deduction for areas where the ice road may cross grounded ice. (Please note that PAI is not indicating that a take would necessarily occur if a ringed seal heard industrial noise.)

The sex, age, and reproductive condition of the estimated take can not be determined from the available information, but females with young could be displaced if the females remain in the vicinity of the ice road or ice pad. The noise and general human disturbance, however, will likely displace females away from the activity. This combined with timing construction activities well in advance of females establishing birthing lairs, should minimize the take of females or females with young. There is a remote chance of ice road construction and maintenance activities causing injury or mortality to small numbers of seals, including seal pups during spring.

(7) - The anticipated impact of the activity upon the species or stock of marine mammal.

The proposed activities will introduce sound into the Beaufort Sea environment; therefore, creating the potential for some displacement of seals to occur within a few kilometers of the proposed activities. Seal response to noise will be limited due to the following: the relatively poor sound propogation (e.g., shallow water 37 feet) conditions at the McCovey Prospect, the poorer propagation conditions as the water becomes shallower along the ice road route to shore, and the limited hearing sensitivity of seals at low frequencies (Richardson et al. 1995; Kastak and Schusterman 1998). Should displacement occur, it is expected to be localized displacement of adult ringed seals falling within the MMPA definition of a Level B harassment. As mentioned in Section 5, there is also a potential for a small number of breathing holes or lairs to be damaged during the construction of the ice island. There is also a remote chance of injury or mortality of a small number of seals from ice road maintenance activities. The impact on the regional population size, however, would be expected to be minor.

(8) - The anticipated impact of the activity on the availability of the species or stocks of marine mammals for subsistence uses.

The community of Nuiqsut is the primary subsistence users in the McCovey Prospect area and may hunt seals year round; however, the primary sealing area is off the Colville Delta, extending as far west as Fish Creek and as far east as Pingok Island. Most seal hunting by Nuiqsut is done during early summer in open water. Since McCovey activities will be conducted during solid ice conditions, PAI does not anticipate that any adverse impact on the availability of the species or stocks of marine mammals for subsistence uses will occur.

(9) - The anticipated impact of the activity upon the habitat of the marine mammal populations, and the likelihood of restoration of the affected habitat.

All McCovey surface activities are temporary in nature and will be conducted from sea ice. Also, when drilling and well testing operations are completed, the well will be plugged and abandoned, and a final site clearance will be performed, in accordance with MMS regulations. This abandonment activity will leave the McCovey Prospect area in essentially an undisturbed condition, since there will be no wellhead or other appurtenances remaining above the ocean floor. For these reasons, the impact upon marine mammal habitat should be negligible, and there should be no need to perform any restoration of the affected habitat.

(10) - The anticipated impact of the loss or modification of the habitat on the marine mammal populations involved.

As indicated above, no permanent or even long-term loss of habitat for marine mammals is expected to occur from the McCovey operations. There will be a minimal modification to the marine mammal habitat (i.e. temporary physical presence of the ice island on the ocean floor and the presence of an ice road), which will be limited to the period of solid ice conditions. Negligible to no impacts are anticipated during this period from activities associated with the project.

(11) - The availability and feasibility (economic and technical) of equipment, methods, and manner of conducting such activity or other means of effecting the least practicable adverse impact upon the affected species or stocks, their habitat, and on their availability for subsistence uses, paying particular attention to rookeries, mating grounds, and areas of similar significance.

PAI has incorporated a number of measures to mitigate any potential impacts to marine mammals in drilling the McCovey prospect. The most significant measure is that by constructing an ice island, no open water activities are planned, and no permanent structures are going to be constructed. In addition, ice road and ice island construction is expected to commence in December, before the female ringed seals have established their birth lairs and before pups are born. After February, the only activities will be ice road maintenance, drilling, and testing. The ice island should insulate the noises associated with the drilling activity.

To prevent injury or mortality of seals, a survey to identify ringed seal structures will be conducted prior to commencing ice pad and ice road construction. Ringed seal structures that are identified along the proposed ice road route will be avoided where possible. Avoidance of seal structures cannot be done at the actual ice island location due to the dependence on the sea bottom information to the ice island engineering design.

PAI does not believe any specific rookeries, mating grounds, or areas of similar significance for marine mammals exist in the immediate vicinity of the McCovey Prospect. Additionally, the nearest islands to this site are the Midway Islands and Cross Island; neither of these areas supports a rookery or mating ground for marine mammals.

(12) - Where the proposed activity would take place in or near a traditional Arctic subsistence hunting area and/or may affect the availability of a species or stock of marine mammal for Arctic subsistence uses, the applicant must submit a plan of cooperation or information that identifies what measures have been taken and/or will be taken to minimize any adverse effects on the availability of marine mammals for subsistence uses.

PAI is taking measures to minimize potential adverse effects on the availability of marine mammals for subsistence users. One such measure is that PAI is able to construct an ice island in these water depths, which allows a winter drill operation. Thus, no drilling will occur during the spring or fall bowhead migration. In addition, PAI plans on meeting with the communities of Nuiqsut and Kaktovik to discuss planned activities associated with the McCovey Prospect to minimize any adverse effects on subsistence seal hunting.

(13) - The suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species, the level of taking or impacts on populations of marine mammals that are expected to be present while conducting activities and suggested means of minimizing burdens by coordinating such reporting requirements with other schemes already applicable to persons conducting such activity.

PAI proposes to utilize trained dogs or visual observations to assess the level of take of ringed seals during project activities. Prior to commencing ice road and ice island construction, trained dogs will be used to locate seal breathing holes and lairs along the proposed footprint of the ice road route and ice island pad. An adjacent 50-m buffer along the ice road route and a 1 km buffer around the ice island location will also be surveyed. In the event that dogs are not available for the survey, a professional marine mammal biologist and an Inupiat hunter will conduct a visual survey described below. The locations of all seal structures will be recorded using a GPS.

If the use of trained dogs cannot be achieved due to scheduling, PAI proposes the use of a visual survey prior to construction activities. The visual survey will involve searching the designated area for breathing holes, and examining pressure ridges, ice hummocks, and deep ice cracks for lairs. Attempts will be made to confirm the presence of lairs by using an aluminum rod to locate the breathing hole or lair access hole where practical. Success in visually locating lairs will be limited by the relatively low density of ringed seals combined with the difficulty of finding breathing holes or lairs on snow-covered ice during winter conditions. Once operations begin, a designated polar bear watch (typically an Inupiat hunter) will also look for and record any seal activities.

In order to obtain an indication of ringed seal response to PAI operations, a second seal structure survey will be conducted near the end of the McCovey project activities. The second survey will be conducted by biologists on snow machines using GPS units to relocate and determine the presence/absence of seals in lairs at holes identified in the first survey. Any new holes will also be noted.

Whenever possible, biologists and observers working on the ice will record any ringed seal sightings and note the seals' behavior at the time of the sightings. However, it is unlikely that seals will be seen on the ice surface. PAI's proposed monitoring plan is included in Attachment 4. A final report detailing the observations made during the on-ice surveys will be prepared and provided to interested parties after completion of activities.

Since the proposed activity is not anticipated to affect the availability of the species or stock of marine mammals described in response to 50 CFR § 216.104 (a) (3) for taking for subsistence purposes, independent peer review of the proposed monitoring plan is not required pursuant to 50 CFR § 216.108.

(14) - Suggested means of learning of, encouraging, and coordinating research opportunities, plans, and activities related to reducing such incidental taking and evaluating its effects.

PAI will make all data from its monitoring activities available to any party via the final report referenced above. The monitoring program will be coordinated with other monitoring programs in the region including those conducted by BP for Northstar and any research projects. PAI has historically provided support to seal studies in the Beaufort Sea and will continue to do so when practicable. Also, PAI will present its findings from the McCovey Project activities at a future NMFS on-ice workshop if requested.

IHA Time Frame:

PAI is requesting that the NMFS issue an IHA within 120 days of the date of this application, per 16 U.S.C. Sec. 1371(a)(5)(D)(iii). PAI's project schedule is described in Section 2 of this application.

Additional Information:

Spill Response:

McCovey Prospect Area drilling operations will be conducted during winter when the Beaufort Sea is frozen and the most marine mammals have departed from the region. In the unlikely event of a spill, ringed seals could be impacted if exposed to oil for prolonged periods of time. However, the number of ringed seals likely to be exposed to oil would be small because of the reported low density of ringed seals in the general location of the project area (Burns and Harbo, 1972). Furthermore, the impacts on the regional population would be expected to be minor because it would represent a relatively small portion of the total population. Thus, there is a negligible risk of impacting species or stocks of marine mammals and PAI anticipates that there will be no unmitigable adverse impact on the availability of such species or stocks for subsistence purposes in the event of a significant spill.

An oil discharge prevention and contingency plan (ODPCP) is being prepared specifically for the McCovey exploration prospect. The ODPCP is an extensive document which addresses spill response, logistics, several spill scenarios, cleanup activities, and numerous other aspects of oil spill prevention and response. It also specifically addresses spill cleanup in above-ice and under-ice conditions. This plan will be submitted to the Minerals Management Service (MMS) for approval.

In the unlikely event of a significant spill from the McCovey prospect operations, PAI would utilize several resources to respond to the incident, depending on the size of the spill and the particular circumstances. Initial response to all spills would be performed by the rig crew and associated personnel on location. In addition to the on site personnel, a spill response team from Alaska Clean Seas (ACS) in Deadhorse, AK would likely be the next team to be called upon to provide response to spills beyond the capabilities of the on site personnel.

The North Slope operators and several other firms have jointly formed a spill response cooperative (i.e. ACS), which is based in Deadhorse, AK. ACS will be contractually obligated to provide response services for the McCovey operations. ACS maintains one of the world's largest inventories of spill containment and cleanup equipment on site in Deadhorse, AK for use by all members. ACS also has a full time staff trained in the operation and maintenance of the cooperative's spill equipment. Additionally, PAI has its own inventory of spill response equipment on the North Slope in each current or soon to be producing area (e.g., Kuparuk, Alpine) as part of its development field operations, which can be utilized if needed. Other oilfield operators also have spill response equipment located at their fields and are available to provide support pursuant to a Mutual Aid Agreement between all North Slope operators. This equipment can be mobilized for spill response as needed. Finally, the Deadhorse service contractors maintain a crew of personnel trained in spill response activities that can be utilized, if needed.

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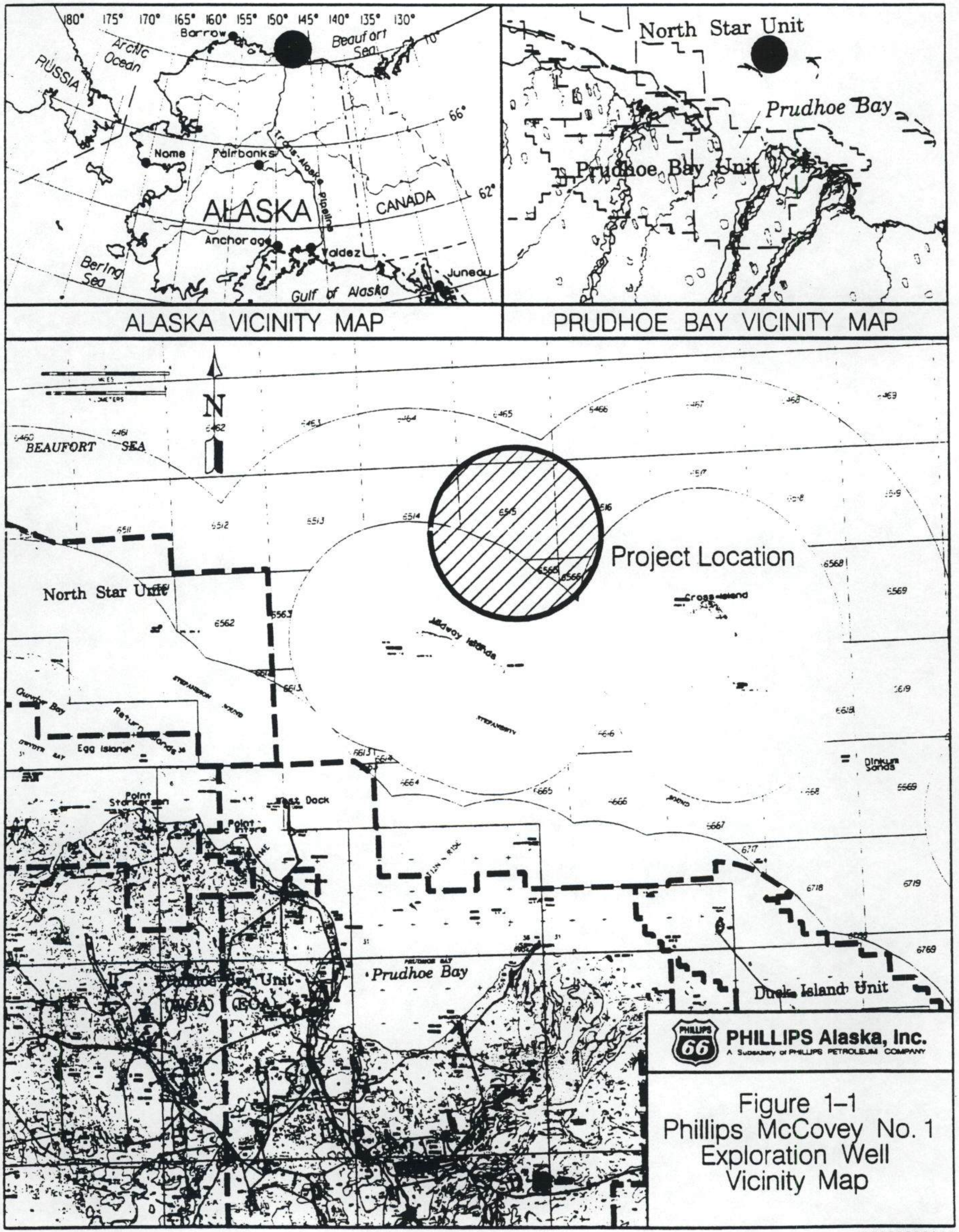
Attachment 1
Location Map for the McCovey Project



PHILLIPS Alaska, Inc.
A Subsidiary of PHILLIPS PETROLEUM COMPANY

Figure 1–1
Phillips McCovey No. 1
Exploration Well
Vicinity Map

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5–9–00

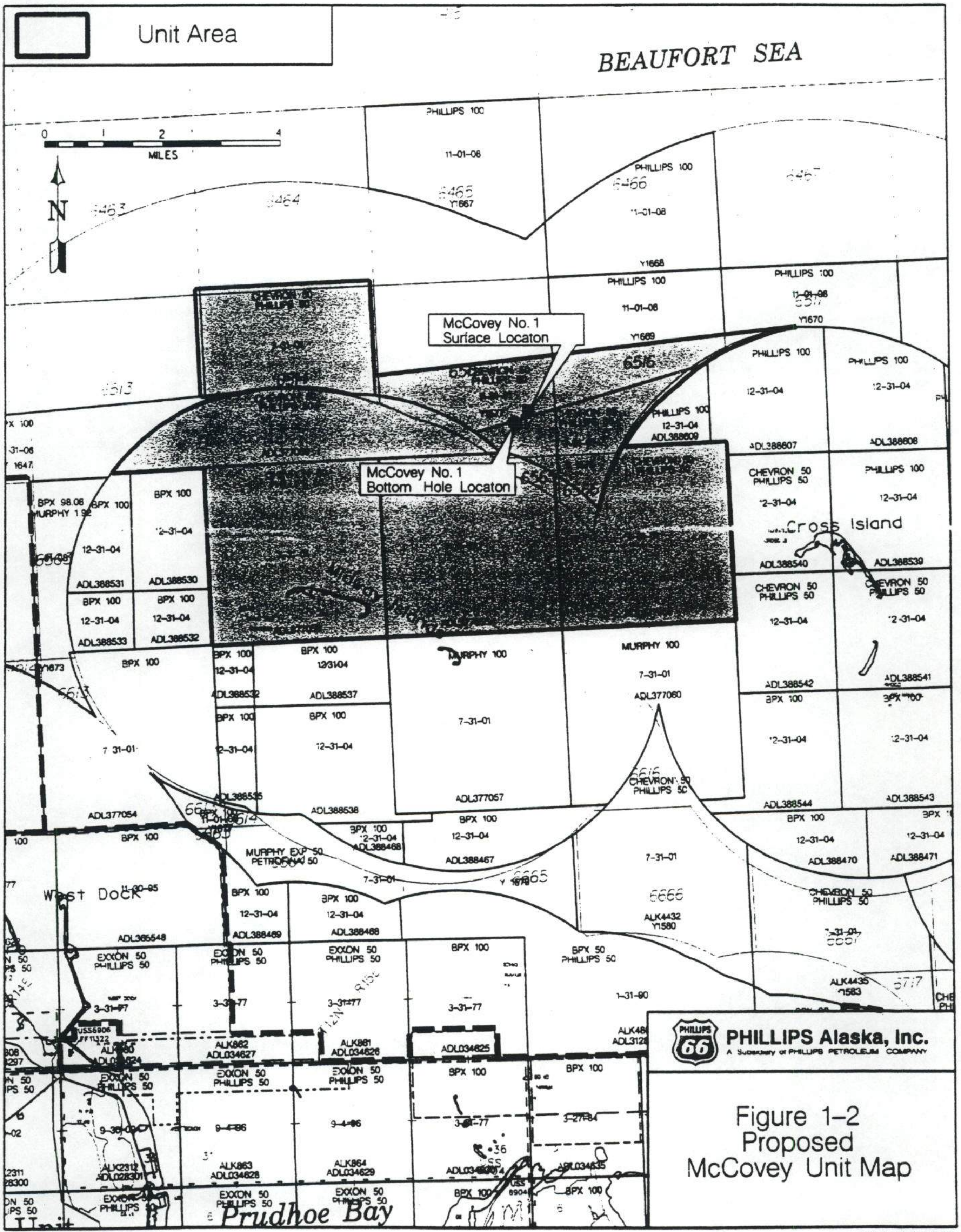

Figure 1–2
Proposed
McCovey Unit Map

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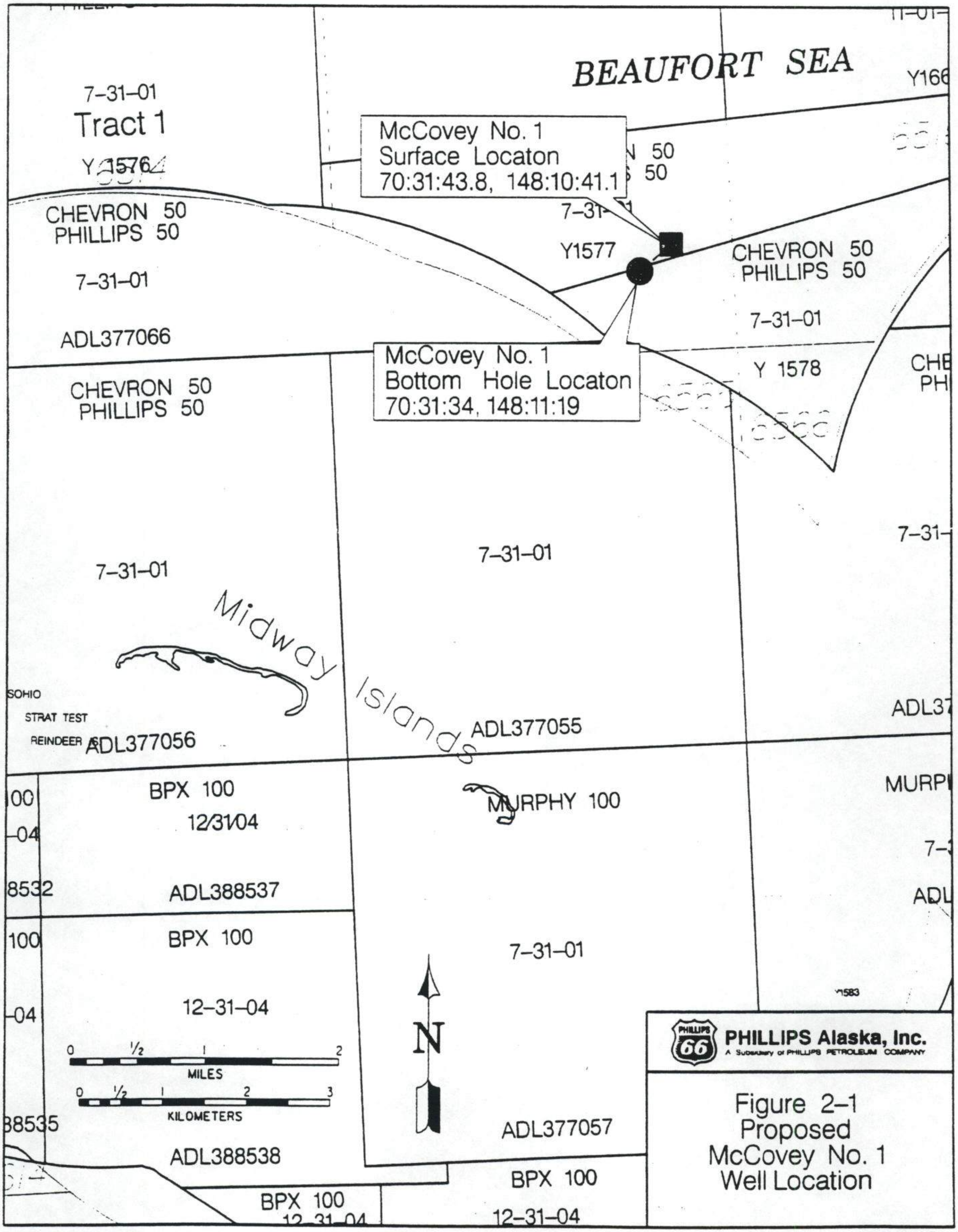
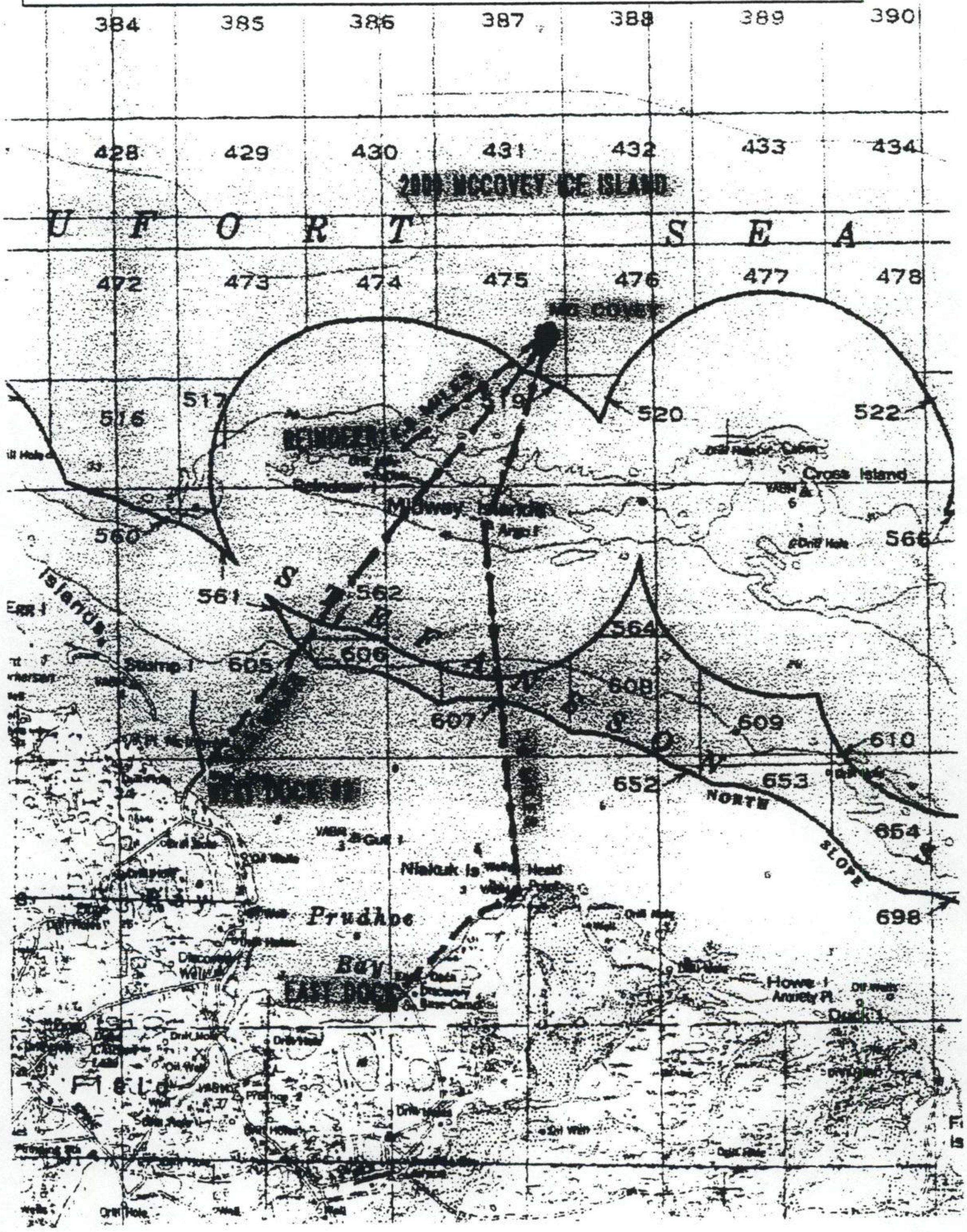


PHILLIPS Alaska, Inc.
A Subsidiary of PHILLIPS PETROLEUM COMPANY

Figure 2–1
Proposed
McCovey No. 1
Well Location

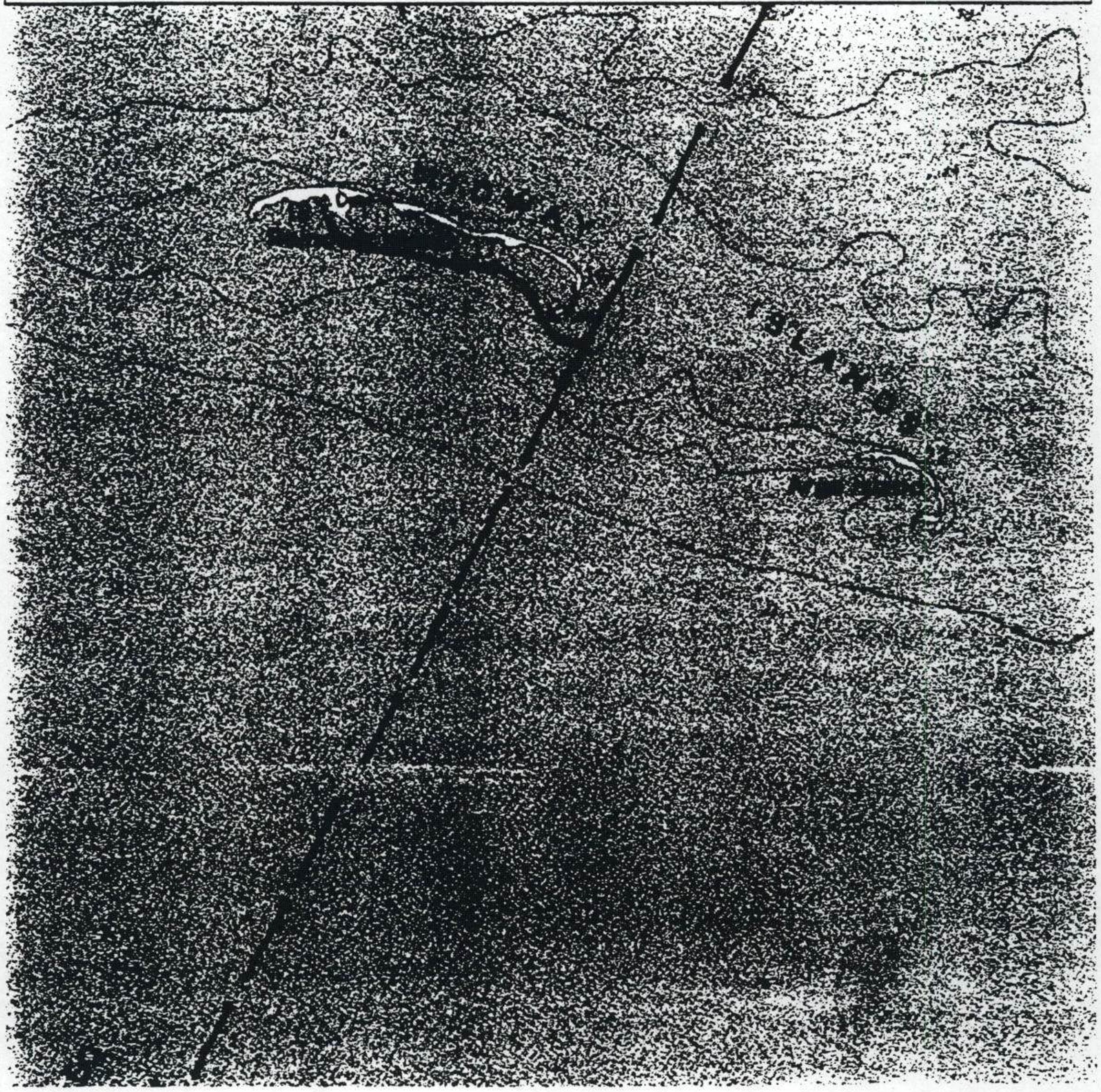
Attachment 2
Potential McCovey Ice Road Routes

AREA OF OPERATIONS – Potential Ice Road Routes



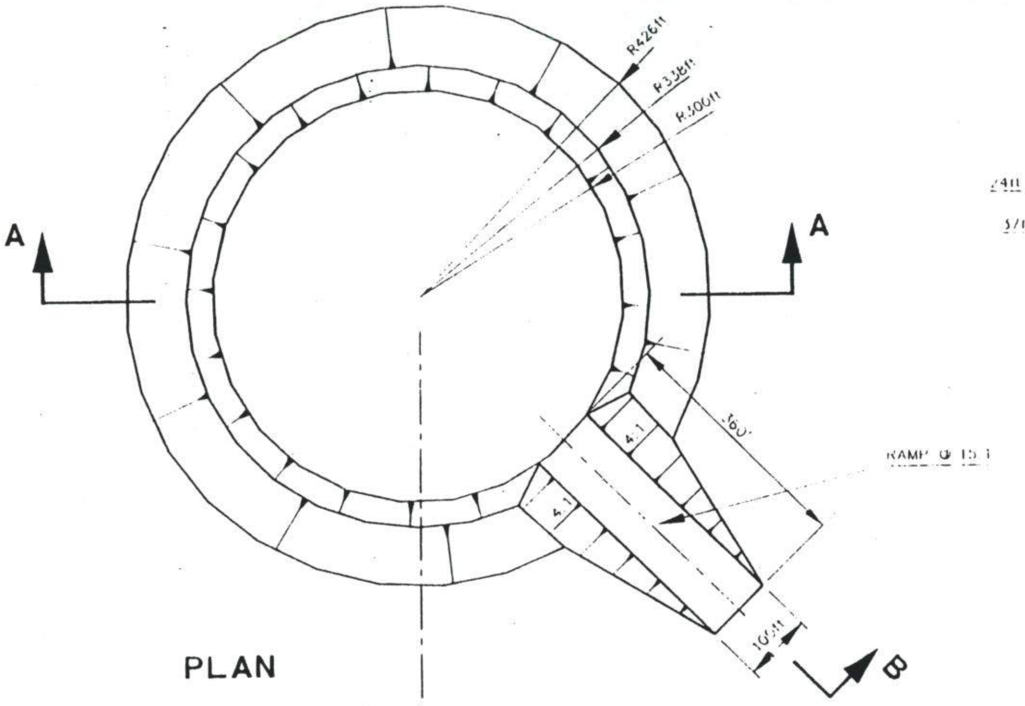
McCOVEY ICE ISLAND
2000-2001

REINDEER ISLAND ACCESS ROAD AND CAMP AREA

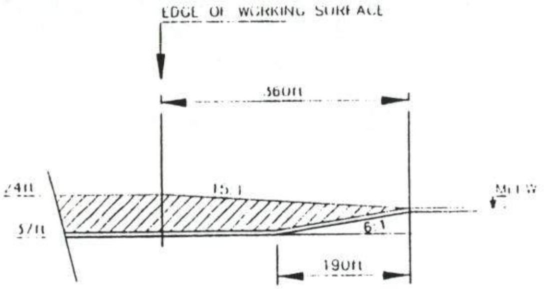


McCOVEY ICE ISLAND
2000-2001

Attachment 3
Ice Island Construction Information

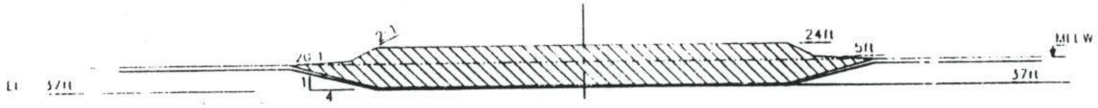


PLAN



RAMP ONTO ISLAND

SECTION -B



SECTION A-A

REV	BY	DATE	REVISION	APP'D

BY	DATE	PRELIMINARY ISSUE	REV

CAD FILE NO. FILE

APPROVED

DATE

B. SAN-DWG-NO

SCALE	SCALE	YR	MO	DAY
DRAWN	BG	00	06	09
CHECK	CHECK	-	-	-
DESIGN	DMM	-	-	-
DES. CHK	PS			

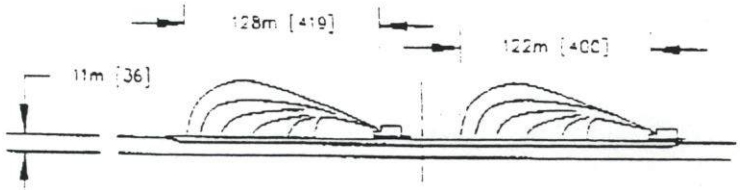
Sandwell

McCOVEY ICE ISLAND
600ft DIA. CORE DIAMETER
600ft DIA. WORKING SURFACE

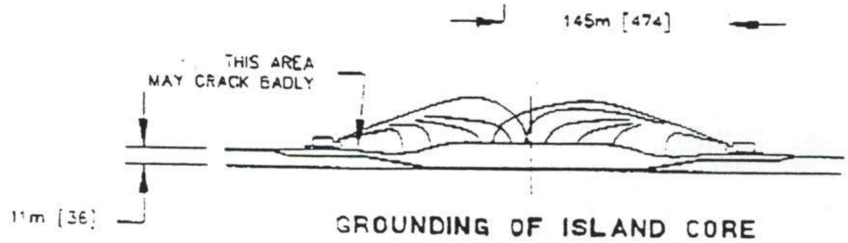
Phillips Alaska, Inc.

DWG. 142401 C 003 REV 1

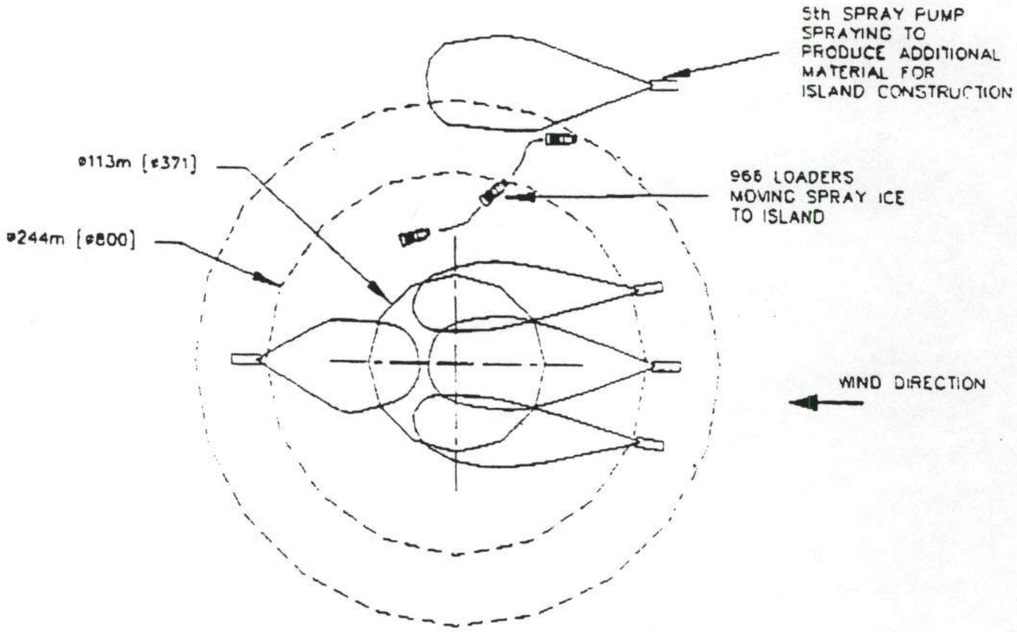
ISLAND SPRAYING - A



INNIATIAL THICKENING TO 2 - 3m

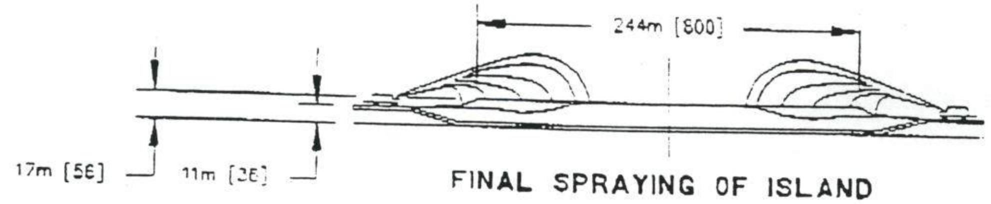


GROUNDING OF ISLAND CORE

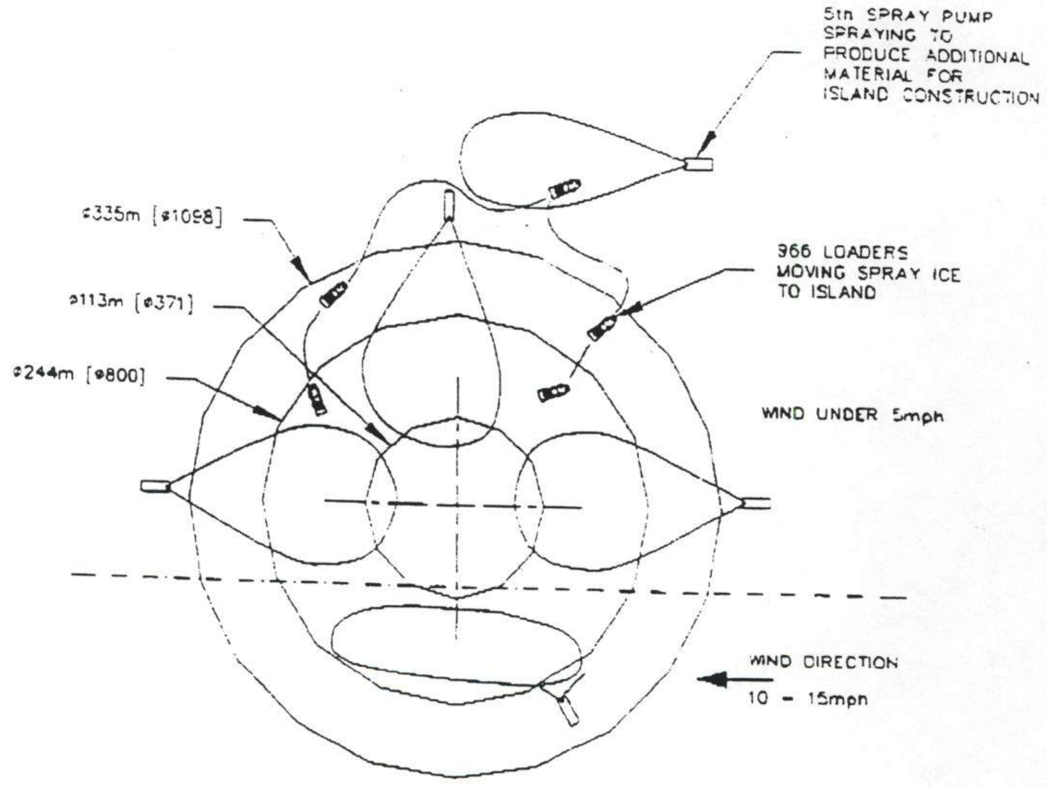


GROUNDING OF ISLAND CORE

ISLAND SPRAYING - B



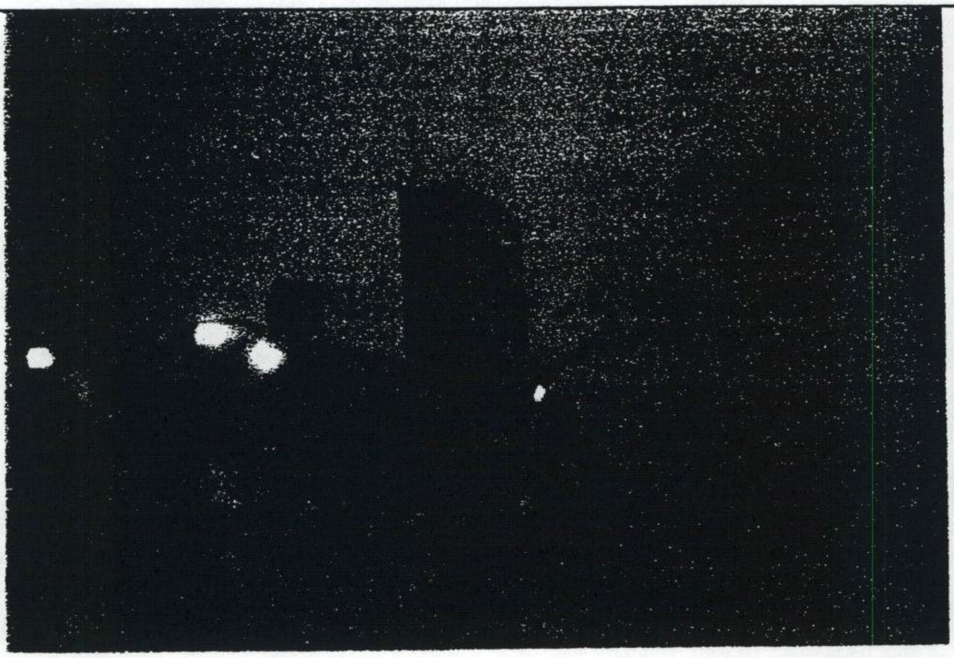
FINAL SPRAYING OF ISLAND



FINAL SPRAYING OF ISLAND

SPRAY-B.DWG

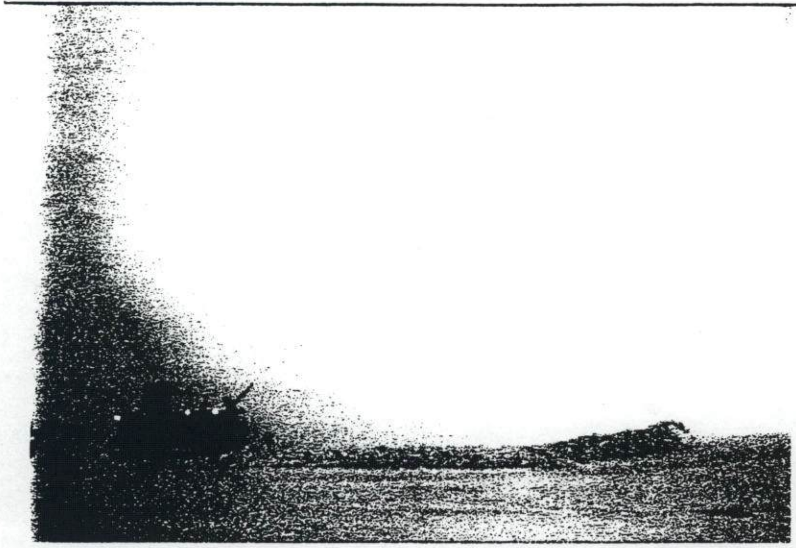
CATCO 5,200 GPM Spray pump

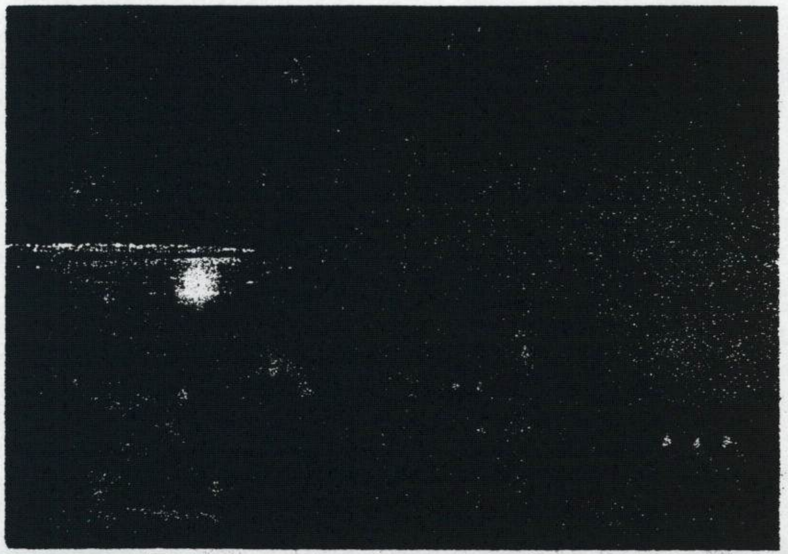


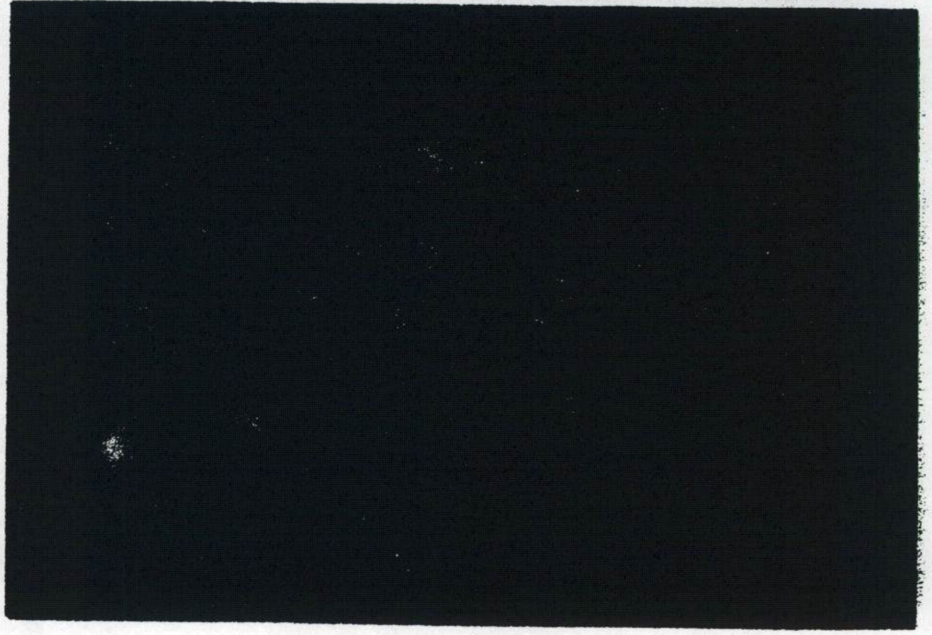
Power: CAT 3508 (800 hp)
Pump: Worthington Centrifugal 8LN26B, 5,000 gpm at 200 psi
Generator: Duetz 30KW
Monitor: Stang Hydraulic .
Cat track mounted

Total weight: 43,000 lbs.

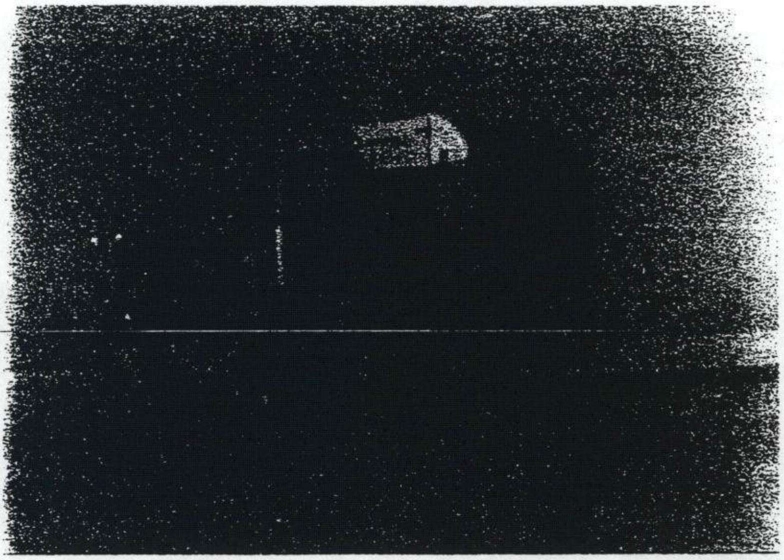
CATCO SPRAY PUMPS IN ACTION

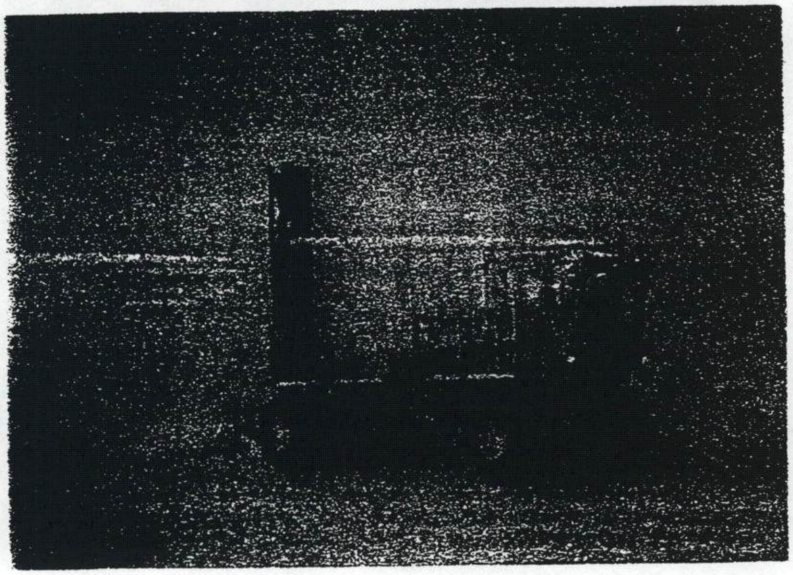


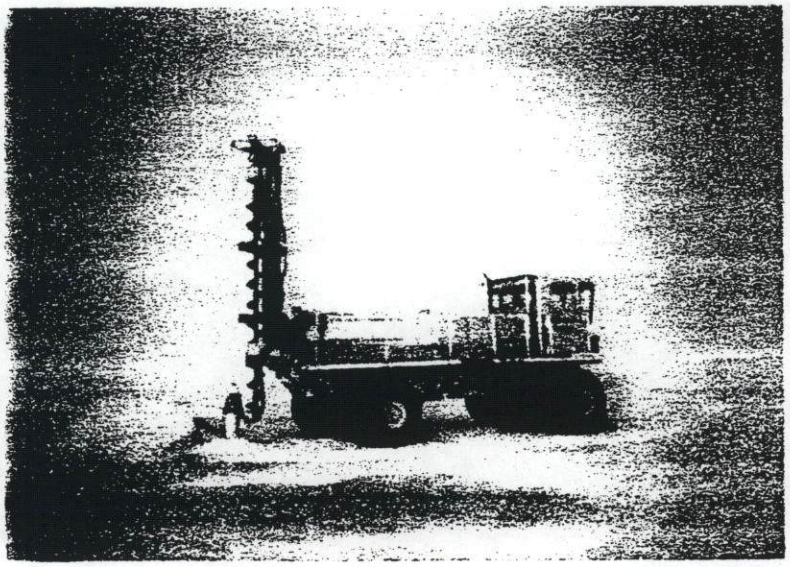


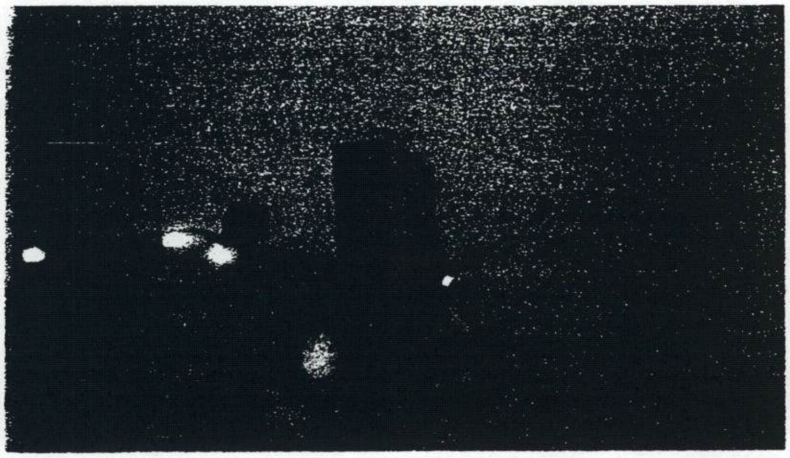


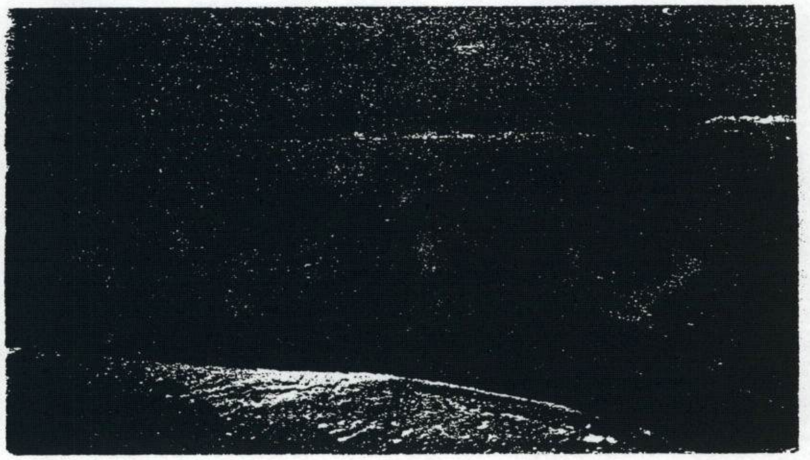
LATV units in the pumping and maintenance configurations

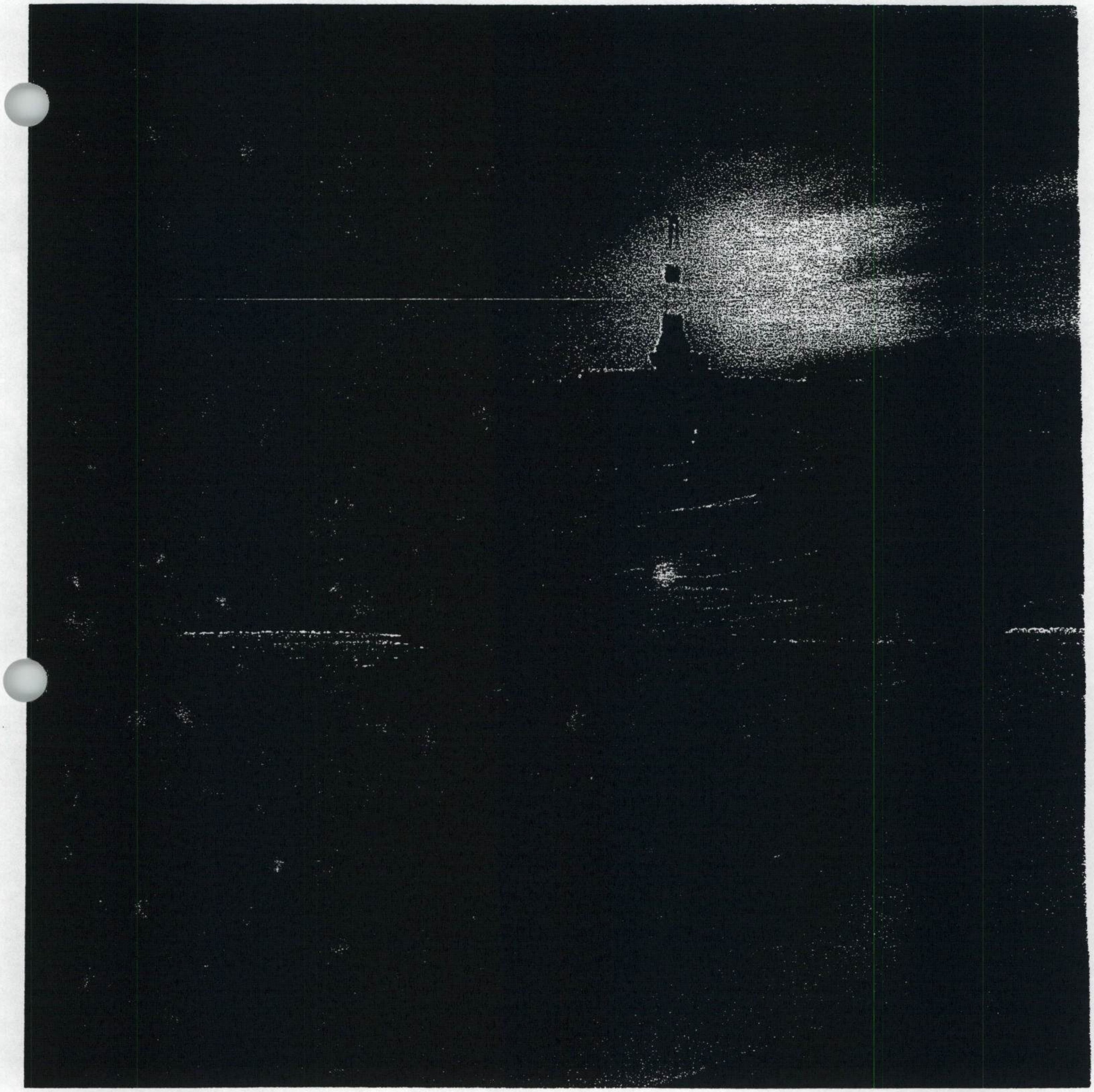












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Book No. I0296F — 1990

The American Society of
Mechanical Engineers

KARLUK ICE ISLAND

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San Ramon, California

D. M. Masterson
Sandwell Swan Wooster, Inc.
Calgary, Alberta, Canada

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ABSTRACT

In 1988, Chevron U.S.A., Inc., as operator, with Mobil Exploration & Producing U.S., Inc., as a 50/50 joint venture partner, drilled an offshore well near Prudhoe Bay, Alaska, using a grounded ice island as the drilling structure. The island was located 7 miles ENE of Cape Brower in about 23 feet (7 m) of water. The island was built by spraying sea water using 5000 gpm (20 m^3/min.), 200 psi (1400 kPa) pressure pumps equipped with nozzles and swivels. An island with a total thickness of 46 feet (14 m) and a diameter of 890 feet (270 m) was designed and built. A lateral design ice load of 92 kips/ft. (1370 kn/m) was used for the stability analysis. Ice loading was the dominant design force. The ability of the ice island to support the rig and associated supplies and equipment in bearing was also assessed. The design included mechanical systems to protect against thawing of the ice by heat generated by the drilling activity.

Construction of the island began on December 13, 1988 and was completed January 20, 1989. Access to the island during construction and drilling was achieved by means of a 12.2 mile (20 km) ice road. After preparation of the island surface, installation of the instrumentation during drilling and rig up, drilling began February 20, 1989 and rig release was April 7, 1989. During construction, ice build-up, ice volume constructed, pump moves and position, water volume pumped, ice temperature and ice density were monitored. Daily progress was reported and daily contour maps were plotted to help in planning the next day's activity. During drilling, horizontal ice movement, vertical ice movement, ice temperature under the rig and meteorological conditions were monitored. Most of the data was logged in real time using a custom-built data acquisition system.

The island construction was completed on schedule and within budget and the well was subsequently drilled without incident. This paper describes the major design issues, construction of the island, monitoring during drilling and performance and evaluation of the performance of the island.

INTRODUCTION

Ice structures have been used to drill exploratory wells in the offshore Arctic since 1974. Thirty-four exploratory wells were drilled using floating ice platforms but only two using grounded ice islands[1,2,3,4].

In 1988, Chevron U.S.A., Inc., as operator, with Mobil Exploration & Producing U.S., Inc., as a 50/50 joint venture partner, drilled an offshore well near Prudhoe Bay, Alaska. The well was drilled from a grounded spray ice island. Ice Construction and Engineering (I.C.E.), a Joint Venture between CATCO, a division of Crowley Maritime, and Sandwell Swan Wooster (SSW) were contracted for the design and construction of the ice island.

The island was located 7 miles ENE of Cape Brower in about 23 feet (7 m) of water. The island was constructed by spraying sea water using large, skid mounted pumps equipped with nozzles and swivels. An island with a total thickness of 46 feet (14 m) and a diameter of 890 feet (271 m) was designed and built. Ice loading controlled the design. The ice island was also designed to support the rig and associated supplies and equipment.

During construction a comprehensive quality assurance and control program was conducted. Daily strategic planning was conducted to ensure optimum use and placement of pumps. A verification program was carried out to ensure that the as-built island met or exceeded specifications. Instrumentation was installed that continuously monitored the performance of the island during drilling.

Drilling began February 20, 1989 and rig release was April 7, 1989.

The cost to design, construct and monitor the spray ice island was about $5.0 million. This is less than one-fourth the cost of a comparable gravel island.

This paper describes the project.

DESIGN

The ice island was designed for a water depth of 24 feet (7.3 m) with 22 feet (6.7 m) of freeboard over a core (top) diameter of 650 feet (198 m). The overall diameter of the island at waterline was 890 feet (271 m).

The principal dimensions of the island were controlled by lateral stability under ice loading. The critical failure plane was through the silty sand base, which was a granular material with a minimum friction angle of 36°.

The maximum horizontal design load was 82.5 x 10^3 kips (367 MN). A load factor of 1.5 was used with this load in sizing the island for lateral stability.

The horizontal load was calculated using a Monte Carlo simulation, assuming an interaction area power-law model[5]. The 82.5 x 10^3 kips (367 MN) corresponds to a return period of 20 years. This load specification is within guidelines set by API Recommended Practice 2N, 1988.

The minimum required density of the spray ice above waterline was 40 pcf (641 kgm^{-3}) and below waterline was specified as 64 pcf (1030 kgm^{-3}). In assessing the lateral stability of the island, a load factor of 0.9 was used on self-weight. A load factor of 1.1 was applied to the vertical loads when overall bearing integrity of the island was evaluated. A finite element analysis confirmed the basic assumption of uniform shear distribution under global loading.

The shear strength of the spray ice above the waterline is assumed to be cohesive in nature, with a design strength of 21.2 psi (146 kPa). The shear strength behavior of the spray ice below waterline was taken as Mohr-Coulomb (c, ϕ) in nature with $c = 2.78$ psi (19.2 kPa) and $\phi = 30^o$. There is strong evidence to support the fact that spray ice below waterline is cohesive with shear strengths in excess of 5.8 psi (40 kPa). This has significant implications for the use of spray ice as an engineering material.

Design issues included bearing integrity and creep settlement under the drill rig. Design calculations showed that if the average ice temperature was maintained under 23°F (-5°C.), bearing capacity and creep settlements would be satisfactory. A thermal simulation showed a 6 in. (150 mm) layer of insulation would be adequate to ensure thermal integrity.

A brine circulation system was designed to minimize heat transfer from the conductor casing to the island. This system continuously circulated cooled brine through an annulus between the conductor pipe and the surface casing.

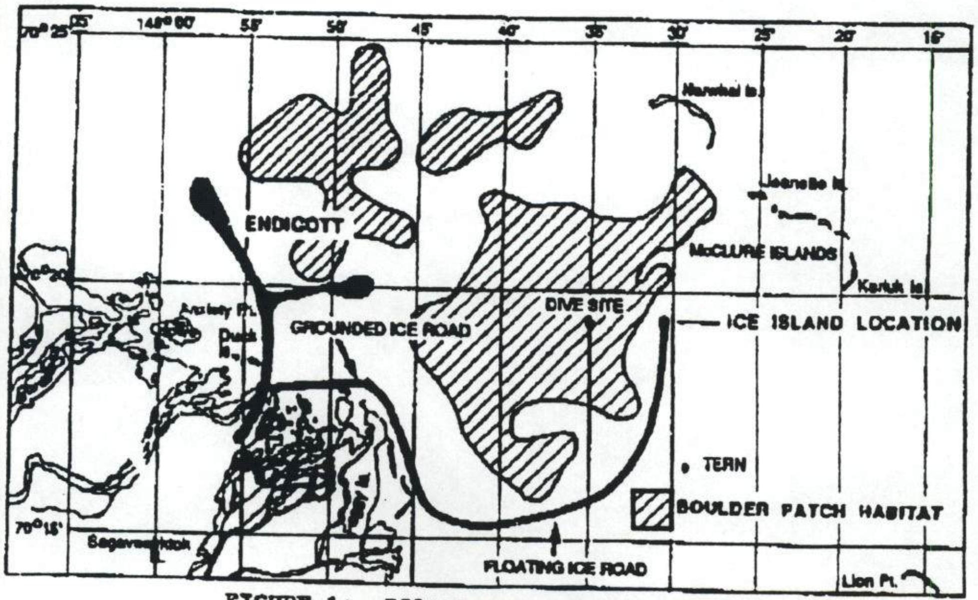

FIGURE 1: ISLAND AND ICE ROAD LOCATION

CONSTRUCTION

Support

Existing facilities at Deadhorse were used as a support base for administration and maintenance. During peak construction, 35 people were accommodated. Access to the island site was via existing roads, including a portion of the Endicott Causeway and from the causeway via an ice road to the island.

The preferred, direct route crossed an environmentally sensitive area known as the boulder patch. The ice road was routed to the south around the boulder patch, as shown in Figure 1.

Construction of the 12.6 mile ice road, 4.6 miles of which was grounded and 8.0 miles floating, commenced on December 1, 1988. By December 12, the ice was thick enough to mobilize construction equipment to the island site. By January 20th the floating portion of the ice road had been flooded to the design thickness of 72 in. (1.82 m) required for the rig move.

Pump Modifications

The pump units, which had been used on a previous project, each contained a 5,000 gpm (20 m^3/min) vertical turbine pump and weighed 82,000 lbs (37 tonnes). The units required 40 in. (1 m) of ice for mobilization and were difficult to move about the island. To increase the mobility, and to enable earlier mobilization, two of the four pump units were modified by replacing the vertical turbines with centrifugal pumps. This, with other weight saving methods, reduced the skids to 43,000 lbs (19.5 tonnes).

Daily Strategy

At the beginning of each shift, a strategy was developed which laid out the pump locations, spray duration and cure time, if any. The strategy was based on four factors:

1) Existing pump positions

Even though the strategy was updated on a shift-by-shift basis, a general plan for the next 24 hours was always considered. Thus, pumping could normally be continued while the shift strategy was planned. This allowed the oncoming shift to evaluate the situation without interfering with the spraying operation.

2) Existing weather conditions

The existing weather conditions determined the spray duration at a location and how far to move the pumps.

3) Existing island thicknesses

One of the concerns when building an ice island is cracking. Experience has shown that severe cracking occurs if the island is grounded without due care. For this reason, prior to grounding, the island was built in layers of 1 foot (300 mm) to 2 feet (600 mm). The overall thickness was maintained uniform over the island area prior to grounding. Ice thicknesses determined where the pumps would be located to maintain this uniform ice thickness.

4) Weather forecast

The weather forecast (for the Prudhoe Bay area) was used to predict the temperature and the wind speed direction expected over the next 24 hours.

Based on this information, the expected pump moves were planned for the shift. As the forecast was not always correct (it proved less than 50% accurate), a lot of flexibility was built in. Temperature readings at the site were often quite different from those forecast from land.

Once the strategy was in place, each individual pump spray pattern and duration were constantly monitored to ensure that the required quality of ice was being deposited at the required thickness and in the desired location.

The spray pattern and ice quality were monitored by a ground survey using the grid stakes as reference. Alterations to the vertical angle sweep and duration were made accordingly. Distances between locations could also be altered.

The nozzle size was another variable. A smaller nozzle increases the ice content in the spray. If the correct nozzle is used, the increase in ice content will more than compensate for the reduction in water volume sprayed. At Karluk, a smaller 2-1/2 inch (64 mm) nozzle yielded greater ice content at warmer temperatures.

Construction Sequence

The construction progress can be divided into two phases:

1) pre-grounding, warm weather phase; and
2) grounding and post-grounding, cold weather phase.

These are plotted on Figure 2.

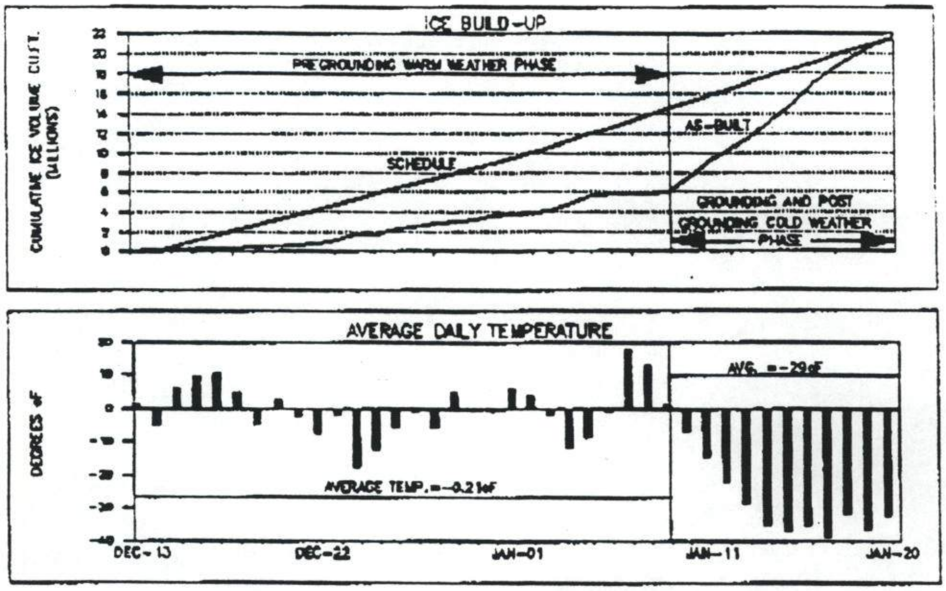

FIGURE 2: COMPARISON OF CUMULATIVE ICE VOLUME BUILD-UP AND AMBIENT TEMPERATURE

From December 13 to January 9, the temperatures were extremely mild. This approximately coincided with the pre-grounding phase. The procedure during pre-grounding was to move the pumps across the island and lay down a layer of ice, as shown in Figure 3. This process was repeated until the bottom of the ice was within 4 feet (1.2 m) to 5 feet (1.5 m) of the sea floor.

FIGURE 3: GENERAL SCENARIO USING FOUR PUMPS (PRE-GROUNDING PHASE)

Between January 10 - 11, the island was grounded, and by January 20, the required volume of ice had been sprayed. During this phase the temperature averaged -29°F (-34°C.) and about 3 feet/day (0.9 m/day) of ice was deposited.

Completion

Final completion and preparation of the island took place between January 20th and February 2nd. Once sufficient ice was in place, two D-6 dozers began levelling the surface and moving ice to locations which were low. A 14-G grader was then used to complete levelling the island. This surface was flooded and graded repeatedly to provide a hard working surface.

General Summary

Figure 4 shows that between 10% and 12% of the available time was used for moving the pumps and mechanical downtime. If lighter equipment is utilized, this percentage will decrease.

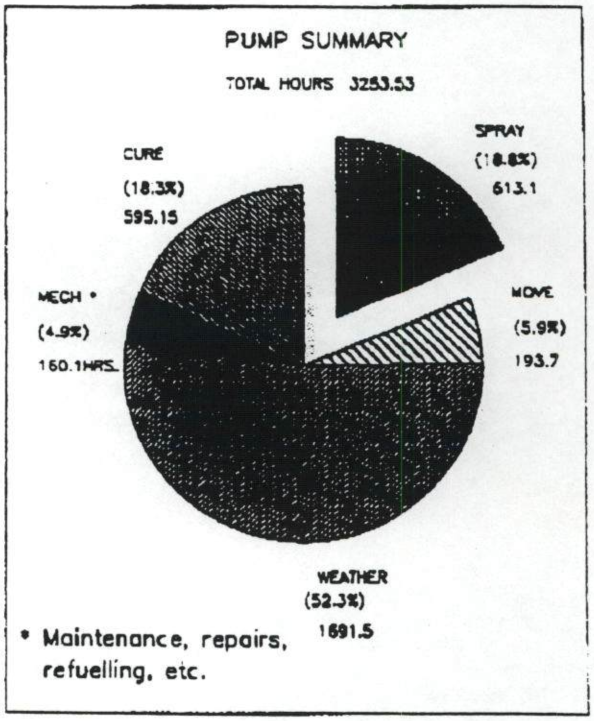

FIGURE 4: PUMP SUMMARY

The weather downtime accounted for 52% of the total time. This is about the same percentage of time that the temperature was above -5°F (-20°C.). Below -5°F (-20°C.), a significant increase in freezing was noted.

The following formula for time required for spraying (for this particular site, at the prevailing weather conditions and equipment used) may be stated as follows:

$$T_{spray} = (0.9T_{Total} - T_{Weather})/2$$

where T = time.

The efficiency during the project, defined as the volume of ice produced/volume of water pumped, was in average 90%. This is higher than the 70% expected. The higher efficiency than expected was due to:

- Low winds during spraying resulting in less loss of frozen spray. For 93% of the time, the speed was less than 20 knots ($10 ms^{-1}$) and less than 10 knots ($5\ ms^{-1}$) for 70% of the time. The wind direction also remained steady from a given direction for a number of days at a time.
- On-site planning and decision making to take best advantage of the current environmental conditions and to make optimal use of available equipment.

QUALITY CONTROL

A quality control program was used to measure build-up, density, salinity, temperature and calorimetry during construction. Build-up, density and ice temperature were used to direct construction procedures.

Build-Up

Using the north-south and east-west axes as staked by the surveyors, a radial build-up stake grid shown in Figure 5 was laid out on December 8th and 9th.

The readings at these locations were used to plot daily contour maps and cross-sections, as shown in Figure 6. Decisions were then made on where to deposit the sprayed ice. During the pregrounding portion, this decision making tool was most important to maintain an even thickness across the island, thus preventing cracking on set-down.

Once the island was grounded the stakes were used to control its topography to insure that a sufficient volume of ice was in place to complete the project. Measurements showed that the required volume was sprayed by January 20th. Dozers did the final shaping and smoothing of the island.

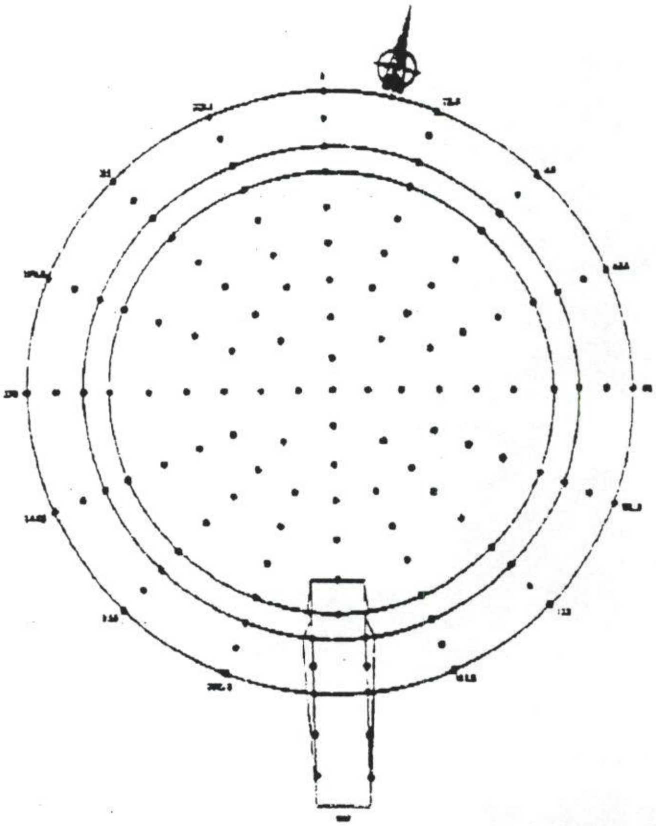

FIGURE 5: BUILD-UP MEASUREMENT STAKE LAYOUT

Density

Ice densities were continuously monitored during construction. The average pre-grounding ice density was 47.3 lb/ft^3 (760 kg/m^3) while the post-grounding density was 38.7 lb/ft^3 (620 kg/m^3). Construction was not interrupted or delayed by density results.

Accumulation of overspray during construction in the rig area resulted in low ice densities. Because the heaviest loads would be placed here, the top 8 feet of ice was excavated using D-6 dozers. After the cellar was in place, this material was replaced with a better quality (higher cohesion), very cold ice placed in layers and compacted.

Ice Temperature

The thermistor strings were installed on December 26. The strings provided the daily ice temperature readings, which were compared to the specifications.

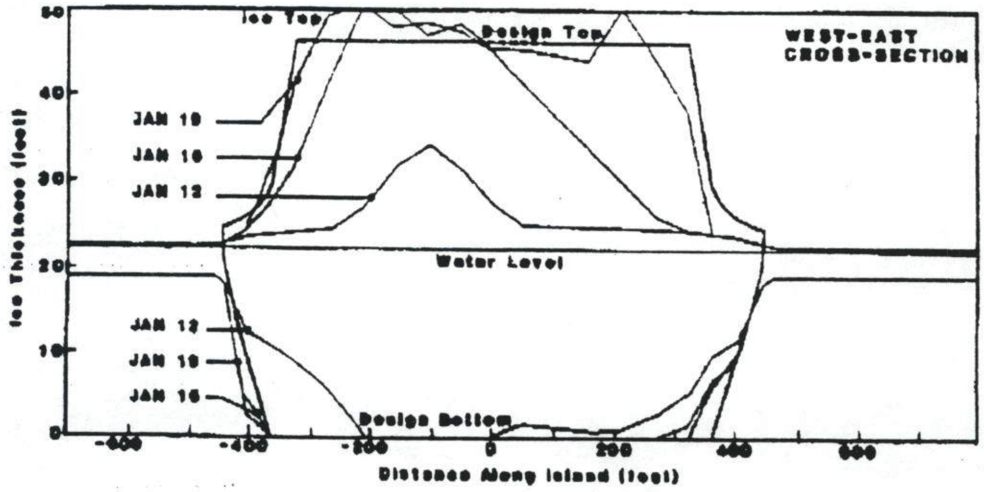

FIGURE 6: ICE ISLAND CROSS-SECTIONS

VERIFICATION

The as-built geometry, density, temperature, and strength of the island were measured. On February 2, 1989, the island was verified as a safe foundation for drilling.

Geometry

Geometry was determined by a topographic elevation survey and thermal drilling. The thermal drilling also showed 100% grounding over the core. A comparison of design and actual parameters for the island is as follows:

	DESIGN	ACTUAL
TOTAL ICE VOLUME	21.8×10^6 ft^3 (617×10^3 m^3)	24.6×10^6 ft^3 (697×10^3 m^3)
AVG. CORE THICKNESS	46 feet (14 m)	46.8 feet (14.3 m)

Density

The average above water (or post-grounding) density of 38.3 lbs/ft^3 (614 kg/m^3) was determined from two cores. This is about the same as the 38.7 lbs/ft^3 (620 kg/m^3) measured during construction. This measured value is lower than the design specification of 40 lbs/ft^3 (641 kg/m^3). However, the combination of more volume and lower density provided a net overburden pressure that was 15% greater than required for lateral stability.

Ice Temperature

A temperature profile taken at the end of construction is shown in Figure 7 along with the specified maximum allowable design temperatures. The actual temperatures were generally colder than specified.

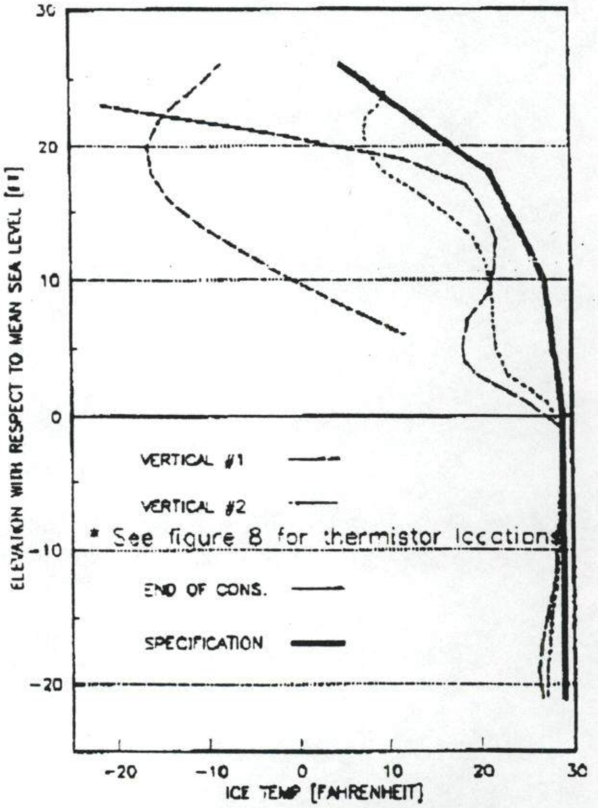

FIGURE 7: TYPICAL ICE TEMPERATURE PROFILE

Cone Penetrometer Tests

Cone penetrometer tests were conducted at 20 points over the core of the island. Tip resistances in the spray ice averaged 35.7 tsf (3.4 MPa) above waterline and 39.5 tsf (3.8 MPa) below waterline.

The cone traces indicated a continuous material through the island depth. Weaker layers were noncontinuous and interlocked with the stronger ones preventing the formation of a preferential shear plane. They also indicated 100% grounding of the island.

PERFORMANCE OF THE ISLAND

The temperature, horizontal and vertical movement of the ice and the weather were monitored during drilling. This was done to ensure a safe drilling operation.

Temperature

Vertical and horizontal thermistor strings located under the rig determined the temperature. Their locations are shown on Figure 8. A vertically installed thermistor string, VT#1, located away from the rig provided a reference temperature profile of the ice island unaffected by any rig heat.

Ice temperatures were monitored continuously during drilling. This was necessary to ensure that drilling operations did not undermine the thermal integrity of the ice. The main areas of concern were directly under the rig and around the conductor and cellar.

The first 24 bead thermistor string, 46 feet (14 m) long, was placed one foot (300 mm) below the ice surface beneath the generators; the second below the mud tanks; and the third below the substructure. Their locations are shown in Figure 8. The specifications required that the temperature should not rise above 23°F (-5°C.). The warmest temperature measured during the course of drilling was 2.5°F (-16.4°C.) with the average at the end of drilling being approximately -2°F (-18.9°C.).

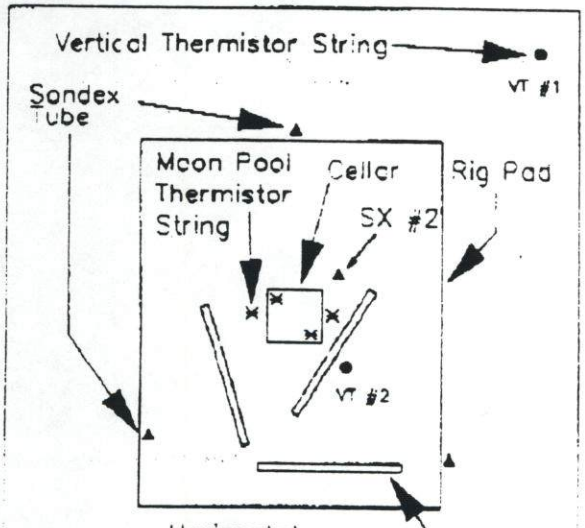

FIGURE 8: SUBSTRUCTURE INSTRUMENTATION THERMISTOR STRINGS

The brine cooling system was designed to minimize heat transfer from the conductor. It required periodic maintenance.

Horizontal Movement

Five in-place inclinometers (IPI's) were located at three places around the perimeter of the ice island to monitor horizontal movement. Six manually read inclinometer stations were located on the island to provide a continuous profile of lateral deflection; three of the six were also located at the IPI stations to provide redundancy. The locations are shown on Figure 9.

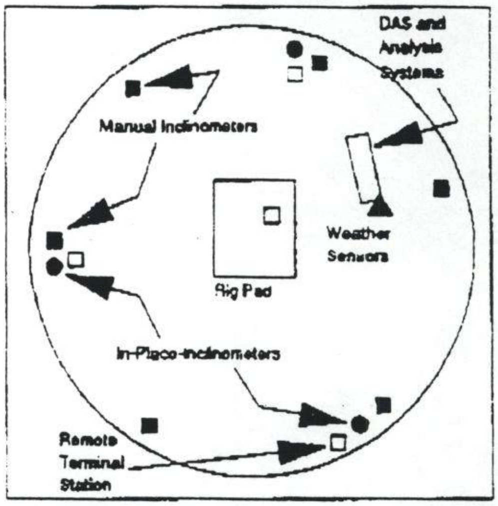

FIGURE 9: INCLINOMETERS

The in-place inclinometers showed maximum movements as shown in Figure 10. The ice moved radially away from the island center. The manual inclinometers showed the same bulging effect. A probable explanation for the bulging is due to the settlement and consequential outward radial movement of the island under self-weight.

Vertical Movement

Vertical movement of the ice was detected by manually-read Sondex instruments. There were three Sondex instruments located on the perimeter of the rig and one located close to the cellar. The locations are shown in Figure 8.

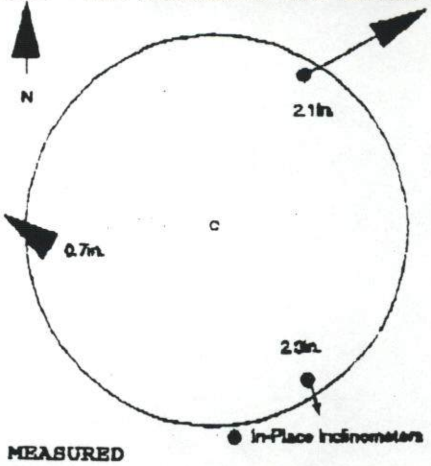

FIGURE 10: MEASURED LATERAL MOVEMENTS OF THE ICE ISLAND

The Sondex instruments were installed close to the rig. The readings from the Sondex closest to the rig substructure for February 23, March 10, March 19, and March 28, 1989, are shown in Figure 11.

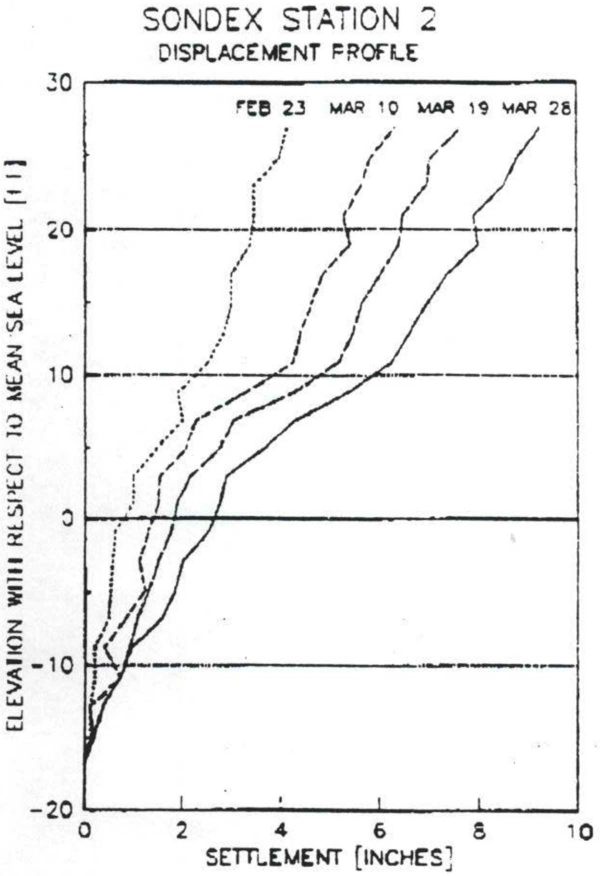

FIGURE 11: ICE SETTLEMENT NEAR RIG SUBSTRUCTURES

Using actual ice temperatures and load duration, the design model predicts a maximum vertical movement of 9.7 in. to 13.75 in. (246 mm to 349 mm).

Weather

The wind speed and direction at an elevation of approximately 36 feet (11 m.) above the island and the air temperature at an elevation of approximately 30 feet (9.2 m.) above the island were measured.

Data Acquisition and Analysis

The data acquisition system automatically recorded temperature and horizontal movement and warned of out-of-limit parameters. The system allowed a quick evaluation of all data and possible unsafe operating conditions. It also provided the performance reporting. The system is shown schematically in Figure 12.

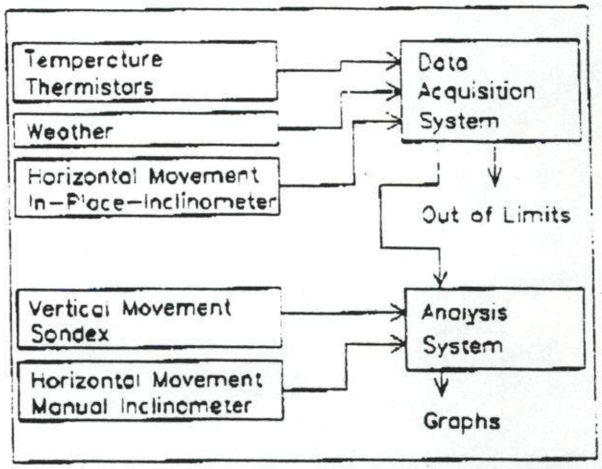

FIGURE 12: INSTRUMENTATION OF THE ICE ISLAND

CONCLUSION

1. Construction of the island was completed on schedule in a safe and efficient manner.
2. Island design and construction costs were within budget.
3. Two pumps were modified to reduce their weight to less than one-half the original. These units were easier to move around the island and construction efficiency was increased.
4. Verification testing after construction revealed that the island met or exceeded all design specifications.
5. Instrumentation for monitoring the horizontal and vertical movement of the island during drilling was successfully installed. There was no excessive movement.
6. Cooled brine was circulated in the annulus between the conductor pipe and surface casing to maintain the ice integrity.
7. Placing the rig on mats underlain by insulation, along with good practice with heat and water on the rig floor, prevented ice melting under the rig.
8. Monitoring during drilling showed that the island performance met or exceeded design requirements.

In summary, the Karluk project has demonstrated that spray ice islands are safe and cost effective platforms for offshore arctic exploration.

ACKNOWLEDGEMENTS

Acknowledgement and appreciation is given to the management of Chevron and Mobil for permission to publish this paper.

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Attachment 4
Marine Mammal Monitoring Program
McCovey Prospect

Attachment 4

Marine Mammal Monitoring Plan for McCovey Prospect Exploration Well(s)

Submitted to:
National Marine Fisheries Services (NMFS)
&
Minerals Management Service (MMS)
by
Phillips Alaska, Inc.

Table of Contents

I. Introduction and Project Summary

Phillips Alaska, Inc. ("PAI") is planning to drill one or more exploration wells at the McCovey Prospect Area, which is offshore Prudhoe Bay, Alaska, during the 2000-2001 winter drilling season. The McCovey Prospect Area is approximately 14 miles north of East Dock at Prudhoe Bay, 60 miles northeast of Nuiqsut, 7 miles northwest of Cross Island, and 110 miles northwest of Kaktovik.

The purpose of this operation is to evaluate the oil and gas potential of PAI operated leases in the McCovey Prospect Area. The well will be drilled from an ice island constructed at the beginning of the winter drilling season. Some equipment may be staged on Reindeer Island prior to freeze-up; however, a majority of the equipment will be staged using an ice road. Drilling and testing operations will not be conducted in broken ice or open water periods.

One well is planned to be drilled from a surface location in Outer Continental Shelf (OCS) Lease Block Y-1577. Depending on the results found in this well, well tests may be performed and a sidetrack may be drilled as length of season permits. Ice island construction is expected to begin when ice conditions are thick enough to allow heavy equipment to be transported to the location via ice road (approximately December 2000). All operations will be discontinued in May 2001 before break-up (which usually occurs in late June or July). The McCovey exploration well will be plugged and abandoned regardless of any commerciality demonstrated during well testing and reservoir evaluation.

Additional project details can be found in Sections 2 and 3 of PAI's IHA application document.

II. Monitoring Plan Overview

PAI proposes to utilize trained dogs or visual observations to assess the level of take of ringed seals during project activities. Prior to commencing ice road and ice island construction, trained dogs will be used to locate seal breathing holes and lairs along the proposed footprint of the ice road route and ice island pad. An adjacent 50-m buffer along the ice road route and 1-km buffer around the ice island will also be surveyed. In the event that dogs are not available for the survey, a professional marine mammal biologist and an Inupiat hunter will conduct a visual survey described below. The locations of all seal structures will be recorded using a GPS.

If the use of trained dogs cannot be achieved due to scheduling, PAI proposes the use of a visual survey prior to construction activities. The visual survey will involve searching the designated area for breathing holes, and examining pressure ridges, ice hummocks, and deep ice cracks for lairs. Attempts will be made to confirm the presence of lairs by using an aluminum rod to locate the breathing hole or lair access hole where practical. Success in visually locating lairs will be limited by the relatively low density of ringed seals combined with the difficulty of finding breathing holes or lairs on snow-covered ice during winter conditions. Once operations begin, a designated polar bear watch (typically an Inupiat hunter) will also look for and record any seal activities.

In order to obtain an indication of ringed seal response to PAI operations, a second seal structure survey will be conducted near the end of the McCovey project activities. The second survey will be conducted by biologists on snow machines using DGPS units to relocate and determine the presence/absence of seals in lairs identified in the first survey. Any new holes will also be noted.

Whenever possible, biologists and observers working on the ice will record any ringed seal sightings and note the seals' behavior at the time of the sightings. All observations will be recorded on the monitoring form in Section III. However, it is unlikely that seals will be seen on the ice surface.

III. On-Ice Searches for Ringed Seal Structures

The study area will be searched for ringed seal structures using experienced field personnel and trained dogs prior to construction activities. Researchers involved in the survey will search transects guided by DGPS coordinates. The routes followed along the transects will be determined daily based on wind speed and direction. Depending on snow and weather conditions, the dogs and handlers will survey transects while followed by snowmachines with tow sleds. A larger tracked vehicle, such as a rolligon, will follow the dog crews to provide shelter for handlers.

The locations of all seal structures will be ascertained using the DGPS receivers, then marked with survey stakes and fluorescent tape. The following data will be recorded for each structure located: type of structure (breathing hole or lair), status of structure (recently-used or abandoned), structure and site description, snow and water depth, sings of predation, air temperature, and local wind speed and direction.

PAI proposes to survey the proposed ice road route plus a 50-m buffer, plus the ice island location and a 1-km buffer. Grounded ice or ice over less than 1.5 m (5 ft) will not be surveyed. The proposed survey is consistent with the on-ice survey conducted during the McCovey Shallow Hazards survey in Spring 2000.

The second survey is proposed to be conducted by trained biologists on snow machines using DGPS units to relocate and determine the presence/absence of seals in lairs identified during the first survey. This second survey is proposed to be conducted in April 2001 as the McCovey operations are concluding.

IV. Monitoring Report Form

DAILY POLAR BEAR AND RINGED SEAL SIGHTING LOG

Watchperson: ________________ Date: ________________
Print Name

____
Signature

Maximum Visibility: ________________ (mi/yds) Time: ________________

General Weather Conditions:

____

____

Sightings: ____

Species: ____

Group Size: _________ Age: ________ Sex: _______

Reaction: ____

Duration of Interaction: ____________ Closest Approach: ________________________

Other Comments: __________ ____

____

<u>Examples:</u>

Weather Conditions Example:	Overcast, clear, winds 3-5 knots from NE, no new snow but some slight blowing snow, 10:50-17:00 when winds picked up to 7-10 knots temporarily.
Sighting Example:	Sighted one polar bear approximately 0.5 mile north of rig waiting by apparent open water. Bear was stationary looking at the sea ice. Appeared to be hunting for seals in open water area. Observed 0900-1800 hrs. Last seen walking in northwest direction.

V. Reporting Procedures

If ringed seals or polar bears are sighted in the project work areas, the Polar Bear observer will systematically collect and record all data. To the extent that safe observation permits, behavioral data will be collected (see Attachment A, "Daily Polar Bear and Ringed Seal Sighting Log". Any crew member who sights a polar bear, polar bear sign such as tracks, or a ringed seal should immediately communicate the details of that sighting to the watchperson responsible for maintaining the log.

It is also important that the actual time spent undertaking polar bear and ringed seals observations be part of the journal record. Biologists require this information in the course of collecting accurate statistics in their study efforts.

Daily reporting of any polar bear sightings will be made in accordance with the McCovey Polar Bear Plan.

VI. Final Report

A report of the results of the monitoring program will be prepared and submitted to the NMFS and to the MMS within 90 days of the completion of the monitoring program. The report will address the following items:

- Dates and types of activities
- Dates and location(s) of seal structure surveys (pre-construction and near end of operations)
- Dates and location(s) of any seals sighted by visual observation.
- Results of the monitoring activities, including an estimate of the level and type of take, species name and numbers of each species observed, and any observed changes or modifications in behavior

PHILLIPS ALASKA, INC.

Exploration Plan
McCovey #1 Well

Beaufort Sea, Alaska

APPENDIX VI
OCS AIR PERMIT APPLICATION

September 19, 2000

PHILLIPS Alaska, Inc.
A Subsidiary of PHILLIPS PETROLEUM COMPANY

P. O. BOX 100360
ANCHORAGE, ALASKA 99510-0360

Telephone 907-265-1173
Facsimile 907-265-6216

August 28, 2000

Daniel L. Meyer
Office of Air Quality
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, OAQ-107
Seattle, Washington 98101

RE: Phillips Alaska, Inc. McCovey Prospect
OCS Permit Application - Revised

Dear Mr. Meyer:

Phillips Alaska, Inc. (PAI) submits the enclosed revised Outer Continental Shelf (OCS) application (two copies) for the McCovey Prospect pursuant to the requirements of 40 CFR Part 55. Also enclosed is the certification statement required by the State of Alaska regulations 18 AAC 50.205, which were incorporated into the EPA OCS 40 CFR Part 55 regulations. This application replaces the one submitted to your office on May 17, 2000. This revision reflects the change to use a land-based drilling rig instead of the Concrete Island Drilling System (CIDS).

If you any questions pertaining to this application, please contact me at (907)265-1173 or by email at lpekich@ppco.com. Your prompt attention to this application is appreciated.

Sincerely,

Lisa L. Pekich
Permit Coordinator

Enclosures

008.03/llp

Cc: Kyle Monkelien, MMS/Anchorage
Glenn Grey, DGC/Juneau
Jim Baumgartner, ADEC/Juneau

Revised OCS Air Permit Application

McCovey Prospect
Beaufort Sea, Alaska

August 2000

prepared for

Phillips Alaska, Incorporated
Anchorage, Alaska

prepared by

Hoefler Consulting Group
701 Sesame Street; Suite 200
Anchorage, Alaska 99503

CERTIFICATION OF TRUTH, ACCURACY, AND COMPLETENESS

"Based on information and belief formed after reasonable inquiry, I certify that the statements and information in and attached to this document are true, accurate, and complete."

Responsible Official: Michael A. Richter

Mike Richter
Exploration Vice-President
Phillips Alaska, Incorporated

8-25-00
Date

Notarization

The foregoing certification was acknowledged before me this 25th day of August 2000, by **Mike Richter**, who is personally known to me or who has produced ________________ as identification and who did take an oath.

Carol Kelly
Notary Public

CAROL KELLY
Printed, ~~Typed,~~ or Stamped Name

Commission Number:

My Commission Expires: Aug. 16, 2004

STATE OF ALASKA
NOTARY PUBLIC
Carol Kelly
My Commission Expires August 16, 2004

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APPENDICES

1.0 Introduction

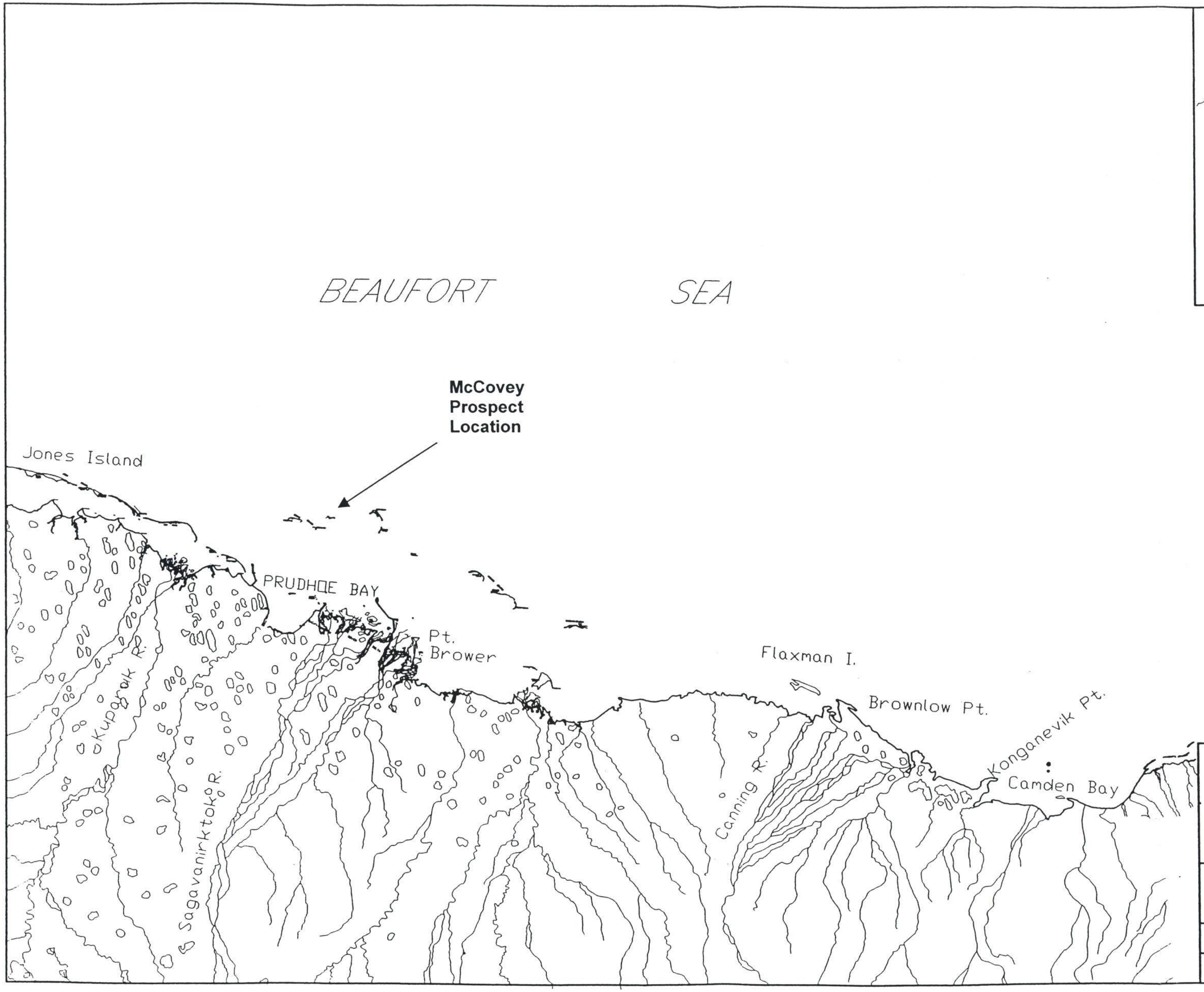
1.1 Purpose

Phillips Alaska, Inc. (PAI), the now amended name of the Delaware corporation previously known as ARCO Alaska, Inc. (AAI), is submitting this application to the U.S. Environmental Protection Agency (EPA) for the proposed exploratory drilling at the McCovey Prospect in accordance with the requirements of 40 Code of Federal Regulation (CFR) Part 55. This application seeks approval to allow PAI to an drill oil and gas exploration well at a location on the Outer Continental Shelf (OCS) near shore waters of the Beaufort Sea, north of the Midway Islands, in the vicinity of Prudhoe Bay, Alaska. A general location map is provided in see Figure 1-1. The exploration will be conducted from an ice island using either Nabors drill rig 14E or 16E. This exploration will include one well with an associated flow test.

EPA approved AAI exploration drilling programs using the Glomar Beaufort Sea I Concrete Island Drilling Structure (CIDS) in the near shore waters of the Beaufort Sea on several recent occasions. On February 12, 1993 AAI applied for six operating scenarios in the Beaufort Sea. In response, EPA issued Approval to Construct No. PSD/OCS X93-01 on December 14, 1993. The domain for potential operating locations that EPA approved was bounded by Brownlow Point to the west, just to the east of Konganevik Point, the approximate territorial shoreline limit on the south, and an arbitrary air quality boundary to the north.

On October 7, 1997 EPA issued Approval to Construct No. PSD/OCS X93-01-Mod. in response to a permit amendment application filed in April 1997 by AAI. The updated permit rescinded the 1993 permit, and authorized exploration under Scenario 7 at the Warthog Prospect wellsite located just east of the previous modeling domain

The McCovey Prospect exploratory drilling program that is proposed in this application is located approximately 80 nautical miles west of the Warthog Prospect location. As such, this application provides the required ambient air quality impact analysis for exploration drilling using the Nabors 14E or 16E rig from an ice island at the McCovey Prospect location. Drilling will likely begin in February 2001, after the ice island construction is completed. As previously discussed with EPA, the McCovey Prospect exploratory drilling program is not subject to the requirements of 40 CFR 52.21, prevention of significant deterioration (PSD) of air quality because the potential to emit of sources at the McCovey Prospect will not cause the facility to be classified as a major facility under 18 Alaska Administrative Code (AAC) 50.300(c).



Phillips Alaska Incorporated
Anchorage, Alaska

Figure 1-1
General Location Map

DATE: 3/26/97	DRAWN BY: SR	SCALE: AS SHOWN	DRAWING: CAMBAY2
C/SC: 1:18000	PM: J. MOHRBACHER	CHECKED: J. MOHRBACHER	PROJECT: 008-05-2

1.2 Application Request

PAI requests that a permit be issued to:

1. Allow operation of either Nabors drill rig 14E or 16E at the McCovey Prospect as described in Sections 2.0, 3.0, and 4.0 of this application. The drill rig would be on location for less than one year and would actually operate for less than 90 days. PAI requests federally enforceable permit restrictions that establish the operating limits listed in Table 3-4.

2. Establish a modeling domain that includes all federal jurisdiction waters within OCS Block 6515 and allow operation of Nabors drill rig 14E or 16E at any location within that block.

2.0 Project Description

2.1 Project Location

PAI proposes to conduct exploratory drilling in the OCS near shore waters of the Beaufort Sea at the McCovey Prospect exploration site, north of the Midway Islands, in the vicinity of Prudhoe Bay, Alaska. The requested permit would allow exploratory drilling in all federal jurisdiction waters within OCS Block 6515, as shown in Figure 2-1. This area includes the anticipated surface location for the McCovey Prospect at 70°31'39" N, 148°10'30" W.

The corresponding onshore area (COA) is in the Prudhoe Bay region of Stefansson Sound. The COA is a PSD Class II area within the Northern Alaska Intrastate Air Quality Control Region. The Alaska Department of Environmental Conservation (ADEC) regulates air quality within this region pursuant to 18 AAC 50. The region is classified as attainment or unclassifiable for all pollutants. The COA has no local air quality requirements.

The nearest PSD Class I area is Denali National Park, which is located approximately 450 miles south of the McCovey Prospect. The nearest nonattainment area is for carbon monoxide in the Fairbanks and North Pole urban area, which is approximately 350 miles south of the McCovey Prospect.

2.2 Drilling Unit Description

The Nabors 14E and 16E drill rigs are owned and operated by Nabors Alaska Drilling, Inc., and would be under contract to PAI. The drill rigs are designed to operate year-round in the harsh Arctic environment of Alaska's North Slope. Either trucks or Hercules aircraft can be used to transport the drilling rigs. For the McCovey Prospect program, the selected drilling rig will be transported to and from the ice island via truck over an ice road. The drilling rig emission units are fully described in Section 3.0. The proposed operation would be classified under Standard Industrial Classification (SIC) Code 1381, "Oil and Gas Extraction."

The drilling rig configuration does not include a supporting construction camp. Instead, the construction camp will be located on Reindeer Island, approximately 5 miles southwest of the ice island in Alaska jurisdictional water. As an alternative, the construction camp may be located on an existing gravel pad at West Dock, approximately 12.5 miles from the construction camp. In either case, access between the ice island and the construction camp will be via an ice road.

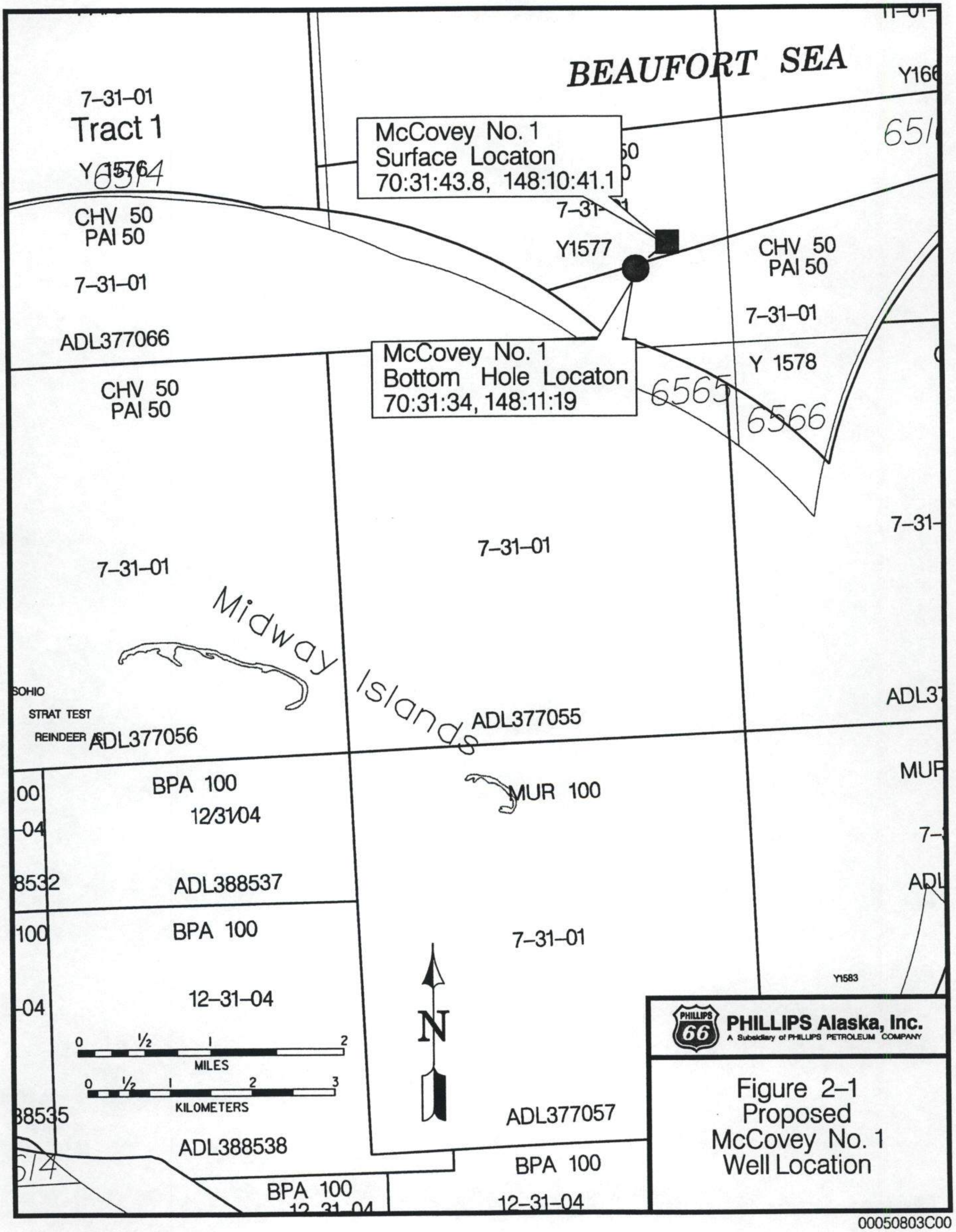


Figure 2-1
Proposed
McCovey No. 1
Well Location

00050803C00
5-9-00

2.3 Project Schedule

The proposed McCovey Prospect project schedule is provided in Table 2-1. Ice road and ice island construction are scheduled to begin in November 2000. The drilling unit is currently sitting in cold-stack in Deadhorse, Alaska. The drilling unit should be ready for trucking to the McCovey Prospect ice island no later than early January 2001. Drill rig mobilization to the ice island should be completed no later than early February 2001.

The McCovey Prospect No.1 exploratory well drilling and testing program will require 84 days to complete. At the end of the program, McCovey No.1 will be plugged and abandoned and the drilling rig will be shutdown. Once shutdown, the drilling will be demobilized and trucked back to Deadhorse or some other destination chosen by Nabors Drilling. The expected time to demobilize and truck the drill rig to an offsite location is approximately two weeks.

Table 2-1.
McCovey Prospect - Anticipated Project Schedule

Activity	Schedule		
	Start Date	End Date	Duration (Days)
Mobilization to Field	1-Nov-00	21-Nov-00	21
Construct Road to Reindeer Island	22-Nov-00	14-Dec-00	23
Mobilize to Reindeer Island	15-Dec-00	22-Dec-00	7
Construct Ice Road to McCovey Site	8-Dec-00	7-Jan-01	31
Construct Ice Island	15-Dec-00	7-Feb-01	55
Mobilize Rig to Ice Island	8-Jan-01	7-Feb-01	31
Drilling and Testing	8-Feb-01	2-May-01	84
Demobilize Rig from Island	3-May-01	9-May-01	7

3.0 Emissions Inventory

3.1 Source Inventory

The source inventories for the Nabors 14E and 16E drill rigs and associated well testing and support equipment are identical, with two exceptions. These two exceptions are as follows.

- The Nabors 16E emission source inventory can include a sixth Caterpillar D-398 engine as a backup drilling engine. This sixth engine is not currently installed on the rig.

- The Nabors 16E emission source inventory includes two Hurst boilers that are not included in the Nabors 14E emission source inventory. To be conservative, emissions from these two boilers were included in the emissions inventories of both drilling rigs.

Each drilling scenario has 32 fuel-burning sources, including engines, boilers, heaters, and a flare. A complete list of emission sources is provided in Table 3-1. Fugitive emissions associated with the drilling program are negligible.

All of the fuel-burning sources except for the flare will use Arctic grade No.1 fuel. The maximum sulfur content of the fuel will be limited to 0.25 percent by weight. Emissions of sulfur dioxide (SO_2) from the combustion of hydrogen sulfide (H_2S) in field gas during exploration well tests are usually low. As a reasonable upper estimate, an H_2S content of 100 parts per million volumetric dry basis (ppmvd) has been assumed for the well test flare. This estimate of H_2S concentration should not be construed to be a request for a permit limit.

No marine vessels will be associated with the McCovey Prospect drilling and testing program. In general, transportation to and from the ice island will be in conventional trucks traveling along the ice road. Rotary wing aircraft may be used less frequently, depending upon weather conditions and other project requirements.

3.2 Operating Parameters

PAI requests limits on the operation of all fuel-burning equipment. The proposed limits are either hours of operation or fuel consumption, which will be monitored for compliance.

Table 3-1
McCovey Prospect - Emission Source Inventory

No.	Source	Source Description	Source Location	Fuel Type	Calculated Fuel Use	Maximum Input/Output
1	Caterpillar D-398 Engine	Drilling - Main Engine #1	Rig Power Module	Diesel	83,682 gallons	600 kW
2	Caterpillar D-398 Engine	Drilling - Main Engine #2	Rig Power Module	Diesel	83,682 gallons	600 kW
3	Caterpillar D-398 Engine	Drilling - Main Engine #3	Rig Power Module	Diesel	83,682 gallons	600 kW
4	Caterpillar D-398 Engine	Drilling - Main Engine #4	Rig Power Module	Diesel	83,682 gallons	600 kW
5	Caterpillar D-398 Engine	Drilling - Main Engine #5	Rig Power Module	Diesel	83,682 gallons	600 kW
6	Caterpillar D-398 Engine[1]	Drilling - Sub Engine #6	Rig Power Module	Diesel	0 gallons	600 kW
7	Caterpillar 3406 Engine	Cold Start Generator	Rig Power Module	Diesel	38,690 gallons	372 hp
8	Kewanee Boiler	Flash Steam Generator #1	Rig Power Module	Diesel	65,670 gallons	100 bhp
9	Kewanee Boiler	Flash Steam Generator #2	Rig Power Module	Diesel	65,670 gallons	100 bhp
10	Hurst Boiler[2]	Steam Generator #1	Rig Power Module	Diesel	61,804 gallons	4.2 MMBtu/hr
11	Hurst Boiler[2]	Steam Generator #2	Rig Power Module	Diesel	61,804 gallons	4.2 MMBtu/hr
12	Tioga Heater	Air Heater	Pipe Rack	Diesel	51,504 gallons	3.5 MMBtu/hr
13	Tioga Heater	Air Heater	Pipe Rack	Diesel	51,504 gallons	3.5 MMBtu/hr
14	Generator Engine	Emergency Light Generator #1	Rig Power Module	Diesel	69,735 gallons	500 kW
15	Generator Engine	Emergency Light Generator #2	Rig Power Module	Diesel	69,735 gallons	500 kW
16	Shop Heater	Shop Heater #1	Pipe Rack	Diesel	22,073 gallons	1.5 MMBtu/hr
17	Shop Heater	Shop Heater #2	Pipe Rack	Diesel	22,073 gallons	1.5 MMBtu/hr
18	Shop Heater	Shop Heater #3	Pipe Rack	Diesel	22,073 gallons	1.5 MMBtu/hr
19	1 MMBtu Heater with 9 kW Engine	Portable Heat #1	Portable	Diesel	15,966 gallons	1.085 MMBtu/hr
20	1 MMBtu Heater with 9 kW Engine	Portable Heat #2	Portable	Diesel	15,966 gallons	1.085 MMBtu/hr
21a	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #1	Portable	Diesel	1,116 gallons	8 kW
21b	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #2	Portable	Diesel	1,116 gallons	8 kW
21c	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #3	Portable	Diesel	1,116 gallons	8 kW
21d	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #4	Portable	Diesel	1,116 gallons	8 kW
21e	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #5	Portable	Diesel	1,116 gallons	8 kW
21f	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #6	Portable	Diesel	1,116 gallons	8 kW
21g	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #7	Portable	Diesel	1,116 gallons	8 kW
21h	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #8	Portable	Diesel	1,116 gallons	8 kW
22	Boiler, line heater	Line Heater	Pipe Rack	Diesel	123,609 gallons	8.4 MMBtu/hr
23	Flare	Test Flare	Well Area	Field Gas	420 MMcf	5.E+06 ft^3/day
24	Rig Engine	Rig Moving Power #1	Rig Power Module	Diesel	0 gallons	500 kW
25	Rig Engine	Rig Moving Power #2	Rig Power Module	Diesel	0 gallons	500 kW
26	Welding Generator	Welding Generator	Pipe Rack	Diesel	12,552 gallons	90 kW

[1] The original configuration of Nabors Rig 16E included this emission source as a backup engine. This emission source is no longer present on either Nabors 1Rig 4E or 16E.

[2] This emission source is present only on Nabors Rig 16E. However, the emission sources has conservatively been included in the emissions inventory of both Nabors Rig 14E and 16E.

The expected operating schedule for the emission units is provided in Table 3-2. The corresponding requested limits on operation of fuel-burning equipment are provided in Table 3-3.

3.3 Emission Calculations

The estimated emissions for the McCovey Prospect exploratory drilling program are presented in Table 3-4. Calculations of emissions from fuel-burning equipment for nitrogen oxides (NO_X), carbon monoxide (CO), respirable particulate matter (PM_{10}), SO_2, and volatile organic compounds (VOCs) are provided in Appendix A. These emissions estimates are based on the owner-requested limits identified in Table 3-3. The NO_x, CO, and PM_{10} emission estimates for the drilling and ancillary support engines are based on manufacturer's data. SO_2 emissions are based on a maximum fuel sulfur content from the Kuparuk topping plant of 0.25 percent by weight. VOC emissions from organic liquid storage tanks are expected to be negligible, as the sample calculations in Appendix B demonstrate.

3.4 Hazardous Air Pollutant Emissions

Trace emissions of hazardous air pollutants (HAPs) are associated with diesel fuel combustion. Estimated HAP emission calculations are provided in Appendix C of this application. Emissions of hazardous metals were determined to be approximately 15.1 pounds per year (lb/yr). Hazardous organic compound emissions were determined to be less than 1.7 tons per year (tpy).

The ADEC does not currently have any applicable requirements for HAP emissions from offshore drilling units. Thus, until EPA issues an emission standard under 40 CFR Parts 61 or 63 for offshore oil exploration rigs, no HAP requirements are in effect in the COA.

Table 3-2
McCovey Prospect - Drilling and Testing Operating Scenario

No.	Source	Source Description	Drill and Test (days)
1	Caterpillar D-398 Engine	Drilling - Main Engine #1	84
2	Caterpillar D-398 Engine	Drilling - Main Engine #2	84
3	Caterpillar D-398 Engine	Drilling - Main Engine #3	84
4	Caterpillar D-398 Engine	Drilling - Main Engine #4	84
5	Caterpillar D-398 Engine	Drilling - Main Engine #5	84
6	Caterpillar D-398 Engine	Drilling - Sub Engine #6	0
7	Caterpillar 3406 Engine	Cold Start Generator	84
8	Kewanee Boiler	Flash Steam Generator #1	84
9	Kewanee Boiler	Flash Steam Generator #2	84
10	Hurst Boiler	Steam Generator #1	84
11	Hurst Boiler+B17	Steam Generator #2	84
12	Tioga Heater	Air Heater	84
13	Tioga Heater	Air Heater	84
14	Generator Engine	Emergency Light Generator #1	84
15	Generator Engine	Emergency Light Generator #2	84
16	Shop Heater	Shop Heater #1	84
17	Shop Heater	Shop Heater #2	84
18	Shop Heater	Shop Heater #3	84
19	1 MMBtu Heater with 9 kW Engine	Portable Heat #1	84
20	1 MMBtu Heater with 9 kW Engine	Portable Heat #2	84
21a	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #1	84
21b	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #2	84
21c	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #3	84
21d	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #4	84
21e	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #5	84
21f	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #6	84
21g	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #7	84
21h	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #8	84
22	Boiler, line heater	Line Heater	84
23	Flare	Test Flare	84
24	Rig Engine	Rig Moving Power #1	0
25	Rig Engine	Rig Moving Power #2	0
26	Welding Generator	Welding Generator	84

Table 3-3
McCovey Prospect - Owner Requested Limits

No.	Source	Source Description	Fuel Type	Annual Operating Limit (hours unless specified otherwise)
1	Caterpillar D-398 Engine	Drilling - Main Engine #1	Diesel	2,016
2	Caterpillar D-398 Engine	Drilling - Main Engine #2	Diesel	2,016
3	Caterpillar D-398 Engine	Drilling - Main Engine #3	Diesel	2,016
4	Caterpillar D-398 Engine	Drilling - Main Engine #4	Diesel	2,016
5	Caterpillar D-398 Engine	Drilling - Main Engine #5	Diesel	2,016
6	Caterpillar D-398 Engine	Drilling - Sub Engine #6	Diesel	0
7	Caterpillar 3406 Engine	Cold Start Generator	Diesel	2,016
8	Kewanee Boiler	Flash Steam Generator #1	Diesel	2,016
9	Kewanee Boiler	Flash Steam Generator #2	Diesel	2,016
10	Hurst Boiler	Steam Generator #1	Diesel	2,016
11	Hurst Boiler+B17	Steam Generator #2	Diesel	2,016
12	Tioga Heater	Air Heater	Diesel	2,016
13	Tioga Heater	Air Heater	Diesel	2,016
14	Generator Engine	Emergency Light Generator #1	Diesel	2,016
15	Generator Engine	Emergency Light Generator #2	Diesel	2,016
16	Shop Heater	Shop Heater #1	Diesel	2,016
17	Shop Heater	Shop Heater #2	Diesel	2,016
18	Shop Heater	Shop Heater #3	Diesel	2,016
19	1 MMBtu Heater with 9 kW Engine	Portable Heat #1	Diesel	2,016
20	1 MMBtu Heater with 9 kW Engine	Portable Heat #2	Diesel	2,016
21a	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #1	Diesel	2,016
21b	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #2	Diesel	2,016
21c	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #3	Diesel	2,016
21d	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #4	Diesel	2,016
21e	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #5	Diesel	2,016
21f	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #6	Diesel	2,016
21g	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #7	Diesel	2,016
21h	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #8	Diesel	2,016
22	Boiler, line heater	Line Heater	Diesel	2,016
23	Flare	Test Flare	Field Gas	420 MMcf
24	Rig Engine	Rig Moving Power #1	Diesel	0
25	Rig Engine	Rig Moving Power #2	Diesel	0
26	Welding Generator	Welding Generator	Diesel	2,016

Table 3-4
McCovey Prospect - Estimated Project Emissions

	Estimated Project Emissions (tpy)				
	NO_x	CO	PM_{10}	VOC	SO_2
Nonroad Engines	127.8	23.9	4.1	4.7	10.9
Other	20.1	79.0	6.1	13.3	13.8
Total	147.9	102.9	10.2	17.9	24.7

4.0 Regulatory Applicability

4.1 Facility Classification and Permit Applicability Determination

The area surrounding the McCovey Prospect has been classified as attainment for all pollutants. The Alaska regulations at 18 AAC 50.100 exclude actual and potential nonroad engine (NRE)emissions determining the classification of a facility under Alaska Statute (AS) 46.14.130, 18 AAC 50.300, and 18 AAC 50.325. With the NRE emissions excluded, the proposed project will have potential emissions less than 250 tpy for each regulated pollutant. Therefore, review under the PSD regulations is not triggered.

The McCovey Prospect is classified as an ambient air quality facility under 18 AAC 50.300(b) because the flare is fuel burning equipment with a rated capacity of 100 million British thermal units (MMBtu/hr). Per 18 AAC 50.310(a), an ambient air quality facility is required to obtain a construction permit. Thus, a construction permit would be required for the emissions sources that will be located at the McCovey Prospect rig if the prospect were located in Alaska jurisdictional water.

4.2 18 AAC 50.100 – Nonroad Engines

The ADEC adopted the federal definition of NREs, which is set forth in 40 CFR 89.2. Under this definition, all engines in or on a piece of equipment that is portable or transportable would be generally classified as NREs if the engines do not remain at a single location for longer than one year.

All engines on the Nabors 14E and 16E drilling rigs are classified as nonroad engines because the facility is expected to be on location for less than one year. In fact, because the project includes drilling and testing from an ice island, no potential exists for the emission sources to remain on location for more than one year.

The ADEC has determined that NREs are not regulated sources requiring identification or any other authorization to construct or operate under the ADEC' s air quality laws and regulations. Emissions from the NREs are not considered in determining whether the PSD permitting requirements are applicable. NREs in the COA are not subject to any applicable requirements.

4.3 18 AAC 50.050 – Incinerator Emission Standards

The Nabors 14E and 16E drilling rigs as configured for the McCovey Prospect drilling program does not include an incinerator. Therefore, 18 AAC 50.050 is not applicable to the proposed project.

4.4 18 AAC 50.055 – Industrial Processes and Fuel Burning Equipment

4.4.1 18 AAC 50.055(a)(1) – Visible Emission Standards

All fuel burning equipment, including boilers, heaters and flares, are subject to the visible emission requirement of 18 AAC 50.055(a)(1). This rule requires that visibility through the exhaust effluent not be reduced by visible emissions, excluding condensed water vapor, by more than 20 percent for more than a total of 3 minutes in any one hour. Although information regarding the specific boiler, heaters and flares on the Nabors 14E and 16E drilling rigs is not available, experience with these types of equipment indicates that the source will be in compliance with the visible emissions standard.

4.4.2 18 AAC 50.055(b)(1) – Particulate Matter Emission Standards

All fuel burning equipment, including boilers, heaters and flares, are subject to the particulate matter emission requirement of 18 AAC 50.055(b)(1). This rule requires that particulate matter emissions not exceed 0.05 grains per cubic foot of exhaust gas corrected to standard conditions (gr/scf) and averaged over 3 hours. Particulate matter emissions from the heaters are expected to be 0.009 gr/scf, based on the emission factor in Table 1.3-1, AP-42. Particulate matter emissions from the flare are expected to be 0.017 gr/scf, based on the emission factor in Table 13.5-1, A-42. Therefore, all Nabors 14E and 16E drilling rig emission sources are expected to be in compliance with the particulate matter emission limit.

4.4.3 18 AAC 50.055(c) – Sulfur Dioxide Emission Standards

All fuel burning equipment, including boilers, heaters and flares, are subject to the SO_2 emission requirement of 18 AAC 50.055(c). This rule requires that SO_2 emissions not exceed 500 parts per million by volume (ppmv) averaged over 3 hours. Based on mass balance calculations, the 500-ppm limit will not be exceeded for any liquid fuel with a sulfur content of less than 2.8 percent by weight. Similarly, the 500-ppmv limit will not be exceeded by any gaseous fuel with an H_2S content of less than 6,175 ppmv. Therefore, all Nabors 14E and 16E drilling rig emission sources are expected to be in compliance with the SO_2 emission limit.

4.5 NSPS Subpart Ka

The Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and Prior to July 23, 1984 (40 CFR 60 Subpart Ka) applies to petroleum liquid storage vessel with a storage capacity greater than 40,000 gallons. The drilling and testing equipment inventory includes three 500-barrel (21,000 gallon), one 70-barrel (2,940 gallon), and one 1,000 gallon fuel storage tanks were constructed in 1981. Subpart Ka is not applicable because each of these tanks holds less than 40,000 gallons.

The drilling and testing equipment inventory also includes four 400-barrel (16,800 gallon) capacity crude tanks and four 572-barrel (24,024 gallon)) capacity crude tanks. Subpart Ka is not applicable because each of these tanks holds less than 40,000 gallons and because the tanks are used to store petroleum prior to custody transfer.

4.6 NSPS Subpart Kb

The Standards of Performance for Volatile Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984 (40 CFR 60 Subpart Kb) applies to volatile liquid storage vessels with a storage capacity equal to or greater than 10,000 gallons. The drilling and testing equipment inventory includes three 500-barrel (21,000 gallon), one 70-barrel (2,940 gallon), and one 1,000 gallon fuel storage tanks were constructed in 1981. Subpart Kb is not applicable because each of these tanks was constructed prior to July 23, 1984 and/or holds less than 10,000 gallons.

The drilling and testing equipment inventory also includes four 400-barrel (16,800 gallon) capacity crude tanks and four 572-barrel (24,024 gallon)) capacity crude tanks. Subpart Kb is not applicable because the tanks are used to store petroleum prior to custody transfer.

5.0 Air Quality Modeling and Impact Assessment

5.1 Study Methodology

5.1.1 Modeling Approach

Dispersion modeling has been conducted to determine the ambient air quality impacts of the emissions generated from drilling and testing operations at the proposed McCovey Prospect exploration location. The drilling and testing equipment will be located on a 600-foot diameter ice island using one of the two equipment configurations shown in Figures 5-1 and 5-2. The Nabors 16E rig configuration is shown in Figure 5-1 and the Nabors 14E rig configuration is shown in Figure 5-2. Both equipment configurations have been modeled to determine worst-case ambient impacts. The modeling results identify peak short-term (24 hours or less) impacts as well as maximum annual impacts.

Emissions of NO_X, SO_2, CO and PM_{10} have been modeled to demonstrate compliance with the National and Alaska Ambient Air Quality Standards (AAQS). Annual ambient impacts have been modeled based on the annual operating scenario that includes all activities at the site for a year. Short-term ambient impacts for all pollutants have been modeled based on maximum hourly emissions, conservatively assuming that drilling and testing occur simultaneously.

5.1.2 Model Selection

The Industrial Source Complex Short-Term (ISCST3, Version 00101) model has been used for the McCovey Prospect dispersion modeling. This model, which EPA approved as a guideline model on August 9, 1995, internally combines the algorithms from the ISCST2 and COMPLEX1 models on an hourly basis. This approach greatly simplifies modeling for simple, intermediate, and complex terrain.

Because the site is located offshore, the Offshore and Coastal Dispersion (OCD) model was considered for modeling. The OCD model accounts for the effects of the oceanic boundary layer and provides theoretical simulation of plume transport over water. However, once ice has formed the sea-ice surface takes on the characteristics of a land mass and ISCST3 is the more appropriate model. The McCovey drilling and testing operations will occur only during the ice season so the ISCST3 model has been chosen.

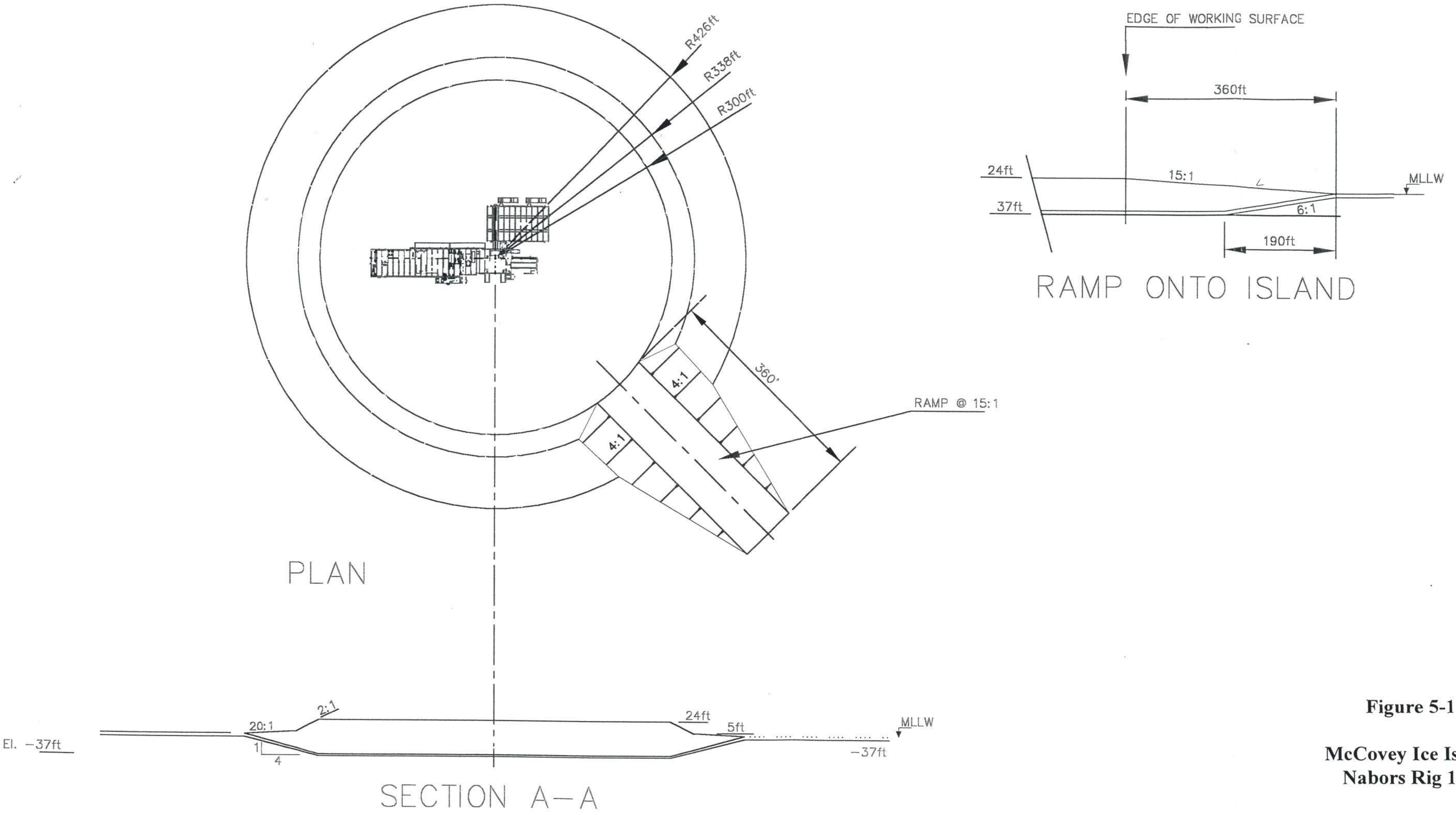


Figure 5-1

McCovey Ice Island
Nabors Rig 16E

BY	DATE	PRELIMINARY ISSUE	REV.

REV.	BY	DATE	REVISION	APP'D	CAD FILE NO. 142401C003

APPROVED

DATE

B. 142401–C–03

SCALE		YR.	MO.	DAY
DRAWN	BG	00	06	13
CHECK				
DESIGN	DMM			
DES. CHK.				

Sandwell

McCOVEY ICE ISLAND
600ft. CORE DIAMETER
600ft. DIA. WORKING SURFACE

Phillips Alaska, Inc.

DWG. 142401–C–03 REV 1

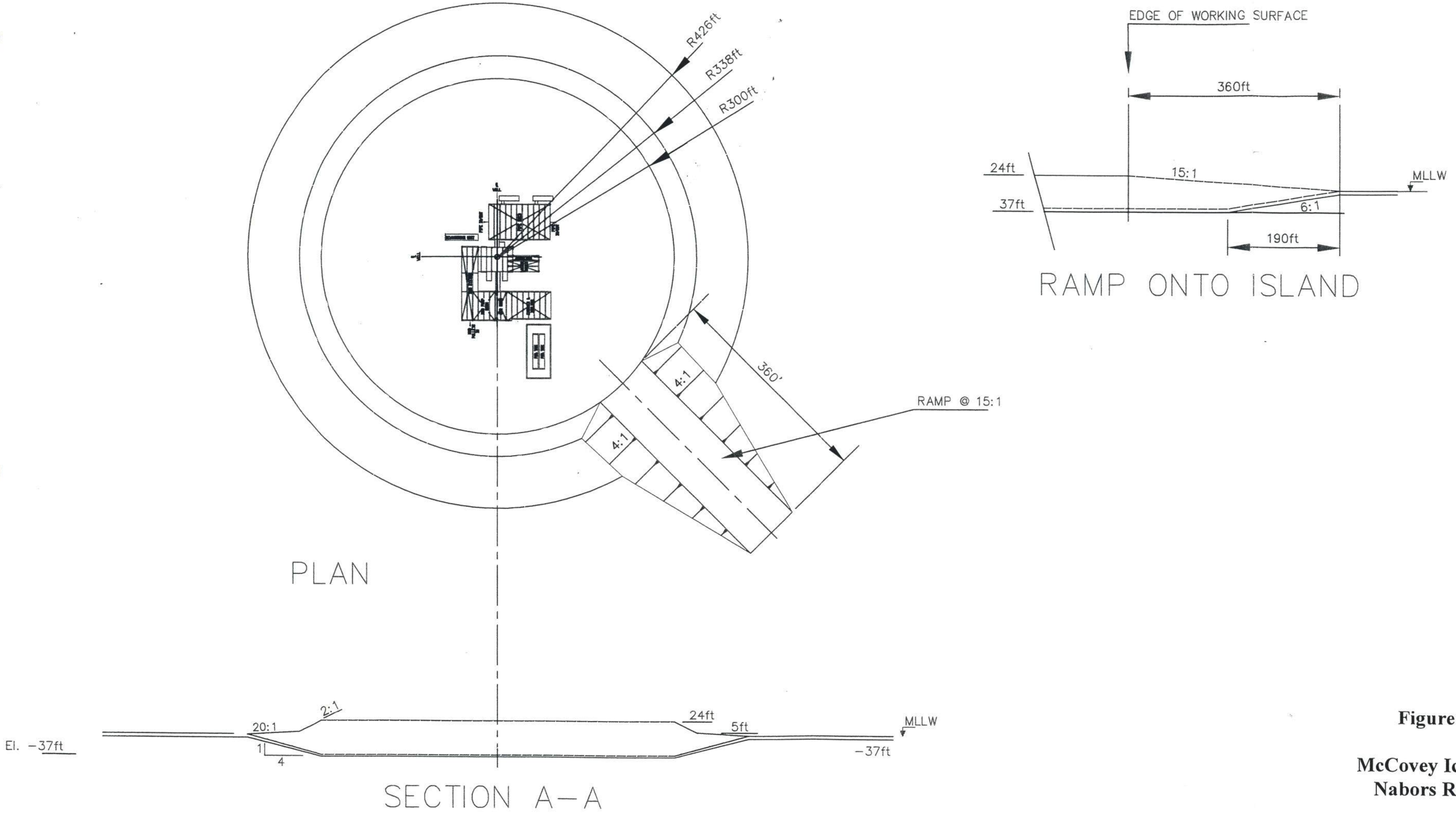


Figure 5-2

McCovey Ice Island
Nabors Rig 14E

REV.	BY DATE	REVISION	APP'D	BY DATE	PRELIMINARY ISSUE	REV.

CAD FILE NO. 142401C003

APPROVED
DATE
B. 142401−C−03

		YR.	MO.	DAY
SCALE				
DRAWN	BG	00	06	13
CHECK				
DESIGN	DMM			
DES. CHK.				

Sandwell

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McCOVEY ICE ISLAND
600ft. CORE DIAMETER
600ft. DIA. WORKING SURFACE

Phillips Alaska, Inc.

DWG. 142401−C−03 REV 1

5.1.3 Receptor Grid

A polar receptor grid with 10-degree spacing was developed extending 10 kilometers (km) in all directions from the McCovey Prospect location. Because the McCovey Prospect surface location is 10 km from shore, the edge of the grid is approximately at the shoreline. As shown in the modeling results, the significant impact area due to all emission sources remains well offshore for all pollutants and averaging times. The innermost receptor ring has a radius of 130 meters (m), which corresponds to the toe of the ice island. Additional rings are placed at 230 m, 500 m, and at 1,000 m spacing from 1,000 m to 10,000 m. The receptor grid is shown in Figure 5-3.

The model coordinates for the sources and the receptors are based on Universal Transverse Mercator (UTM) coordinates. The center point of the coordinate system is the center of the ice island. The UTM coordinates for this point are Easting 456,329 meters, Northing 7,824,980 meters, Zone 6. Because the ice island is located on mostly flat ice, modeled impacts generally drop off steadily with distance from the site. Therefore, a refined receptor grid was not necessary because the peak modeled impacts occurred on the innermost receptor rings.

Baseline elevation for the model is mean sea level (MSL), which, in this area, is only 0.09 meters (0.3 feet) above the mean lower low water (MLLW). The working surface of the ice island will have an elevation of 24 feet (7.32 m). All emission sources will be located on top of the ice island. As a result, all receptors have been modeled as simple terrain.

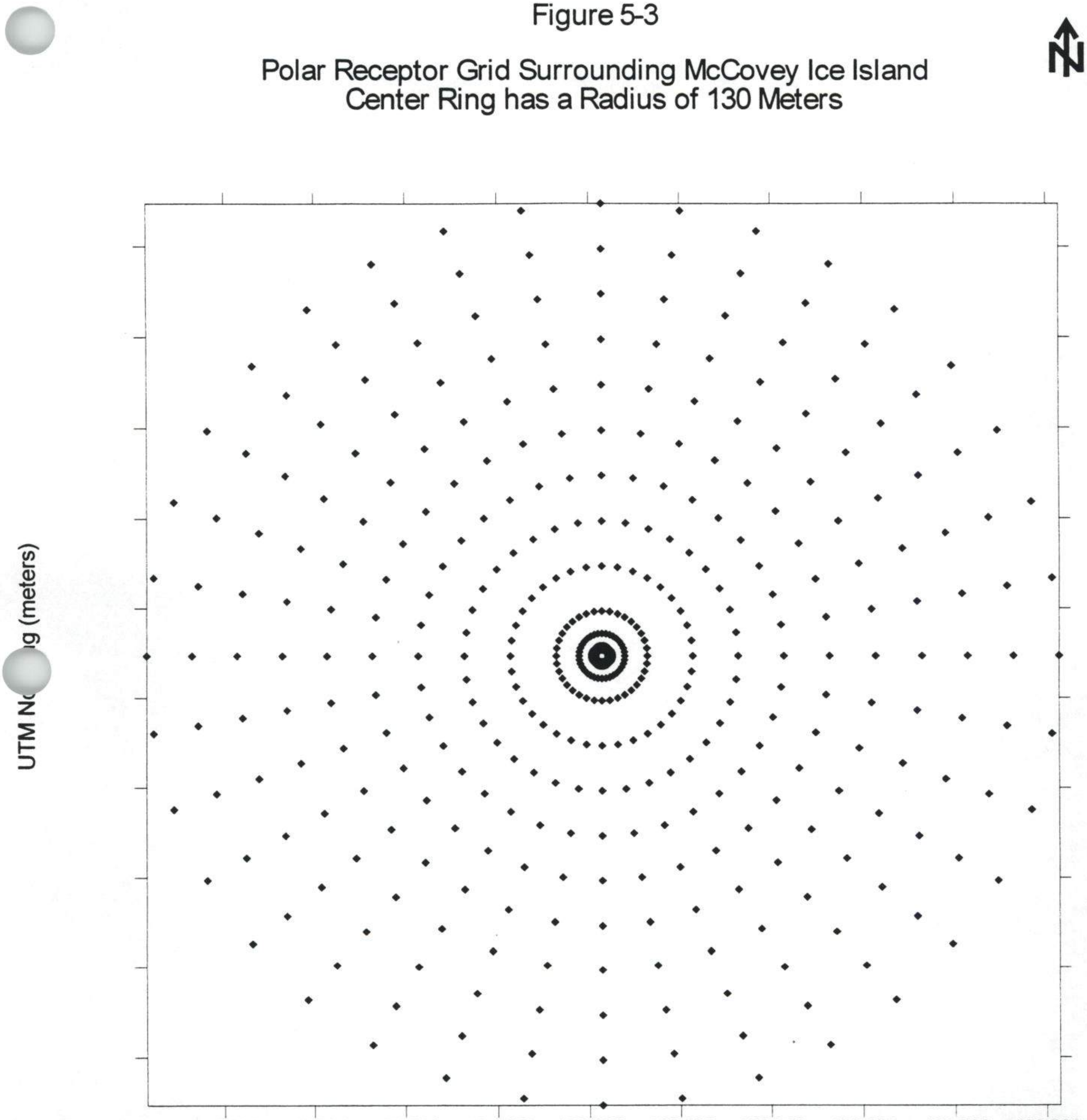
5.2 Model Input Parameters

5.2.1 Meteorological Data

The closest available meteorological surface station to the proposed project site is the Prudhoe Bay Unit (PBU) Pad A meteorological site, which is located approximately 25 miles southwest of the McCovey Prospect. Surface data has been collected at PBU since October 1986. The National Weather Service (NWS) in Barrow, Alaska collects the nearest upper air data from twice daily balloon launches.

Figure 5-3

Polar Receptor Grid Surrounding McCovey Ice Island
Center Ring has a Radius of 130 Meters



UTM Zone 6

Because the meteorological data were collected at an off-site source, the five most recent years of approved data were used for modeling McCovey Prospect air quality impacts. The Pad A meteorological dataset for calendar years 1991 through 1995 was processed and provided by SECOR International, Inc. (SECOR) of Fort Collins, Colorado.

Figure 5-4 shows a windrose of the 5-year data period. Individual windroses for each of the data years are included in Appendix D.

5.2.2 Model Option Settings

The ISCST3 model was run with the following input parameter settings:

- Final plume rise on;
- Stack-tip downwash on;
- Buoyancy-induced dispersion on;
- Calms processing routine on;
- Missing data processing routines off;
- Wind profile exponents set to default;
- Vertical potential temperature gradients set to default;
- Upper bound values for supersquat buildings; and
- Rural mode with exponential decay off.

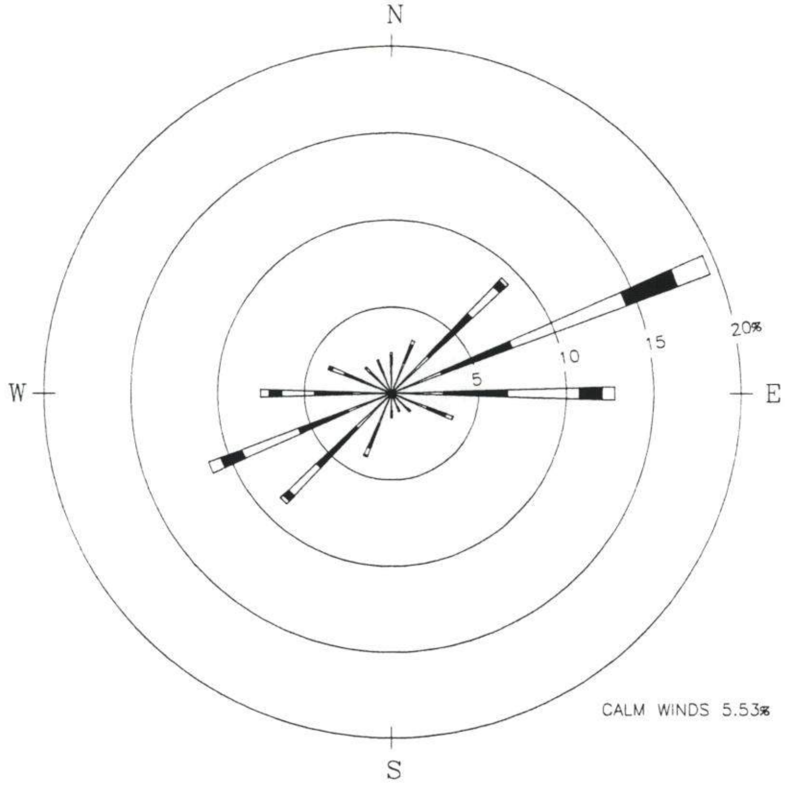
5.2.3 Downwash

Downwash was calculated for each of the stacks using the BEE-LINE GEP-BPIP program. The buildings include all of the equipment housing and pipe rack area. Stack and building base elevations were all set to the elevation of the top of the ice island.

Figures 5-5 and 5-6 are GEP-BPIP plots of the stacks and GEP downwash structures for each of the two equipment configurations. GEP-BPIP produces building downwash code that is integrated into the ISCST3 input file. The GEP-BPIP input and output files have been provided electronically in Appendix E.

Figure 5-4

Windrose for Prudhoe Bay Pad A Meteorlogical Monitoring Station (1991-95)



WIND SPEED CLASS BOUNDARIES
(METERS/SECOND)

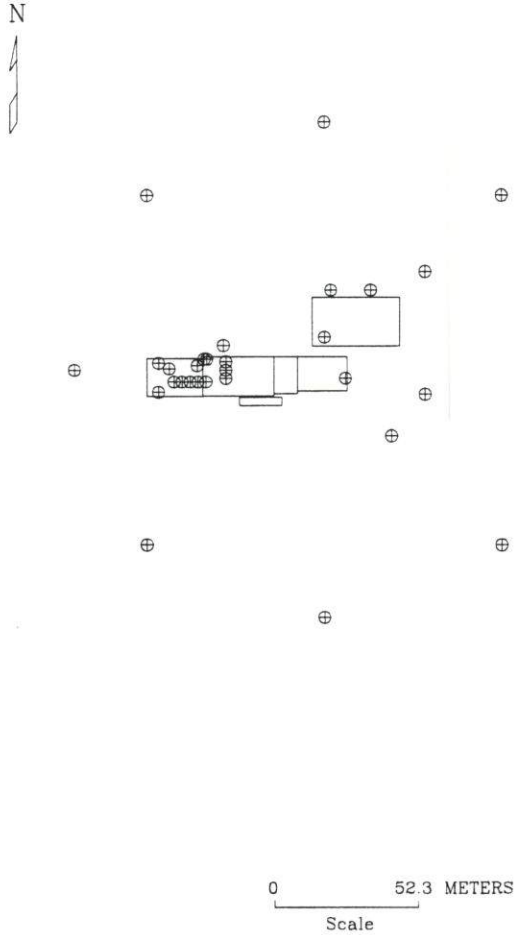
Prudhoe Bay
Monitoring Station
STATION NO: Pad A
PERIOD: 1991–1995

NOTES:
DIAGRAM OF THE FREQUENCY OF OCCURRENCE OF EACH WIND DIRECTION. WIND DIRECTION IS THE DIRECTION FROM WHICH THE WIND IS BLOWING. EXAMPLE – WIND IS BLOWING FROM THE NORTH 2.4 PERCENT OF THE TIME.

Lorenzen Engineering, Inc.
Montana City, Montana

Figure 5-5

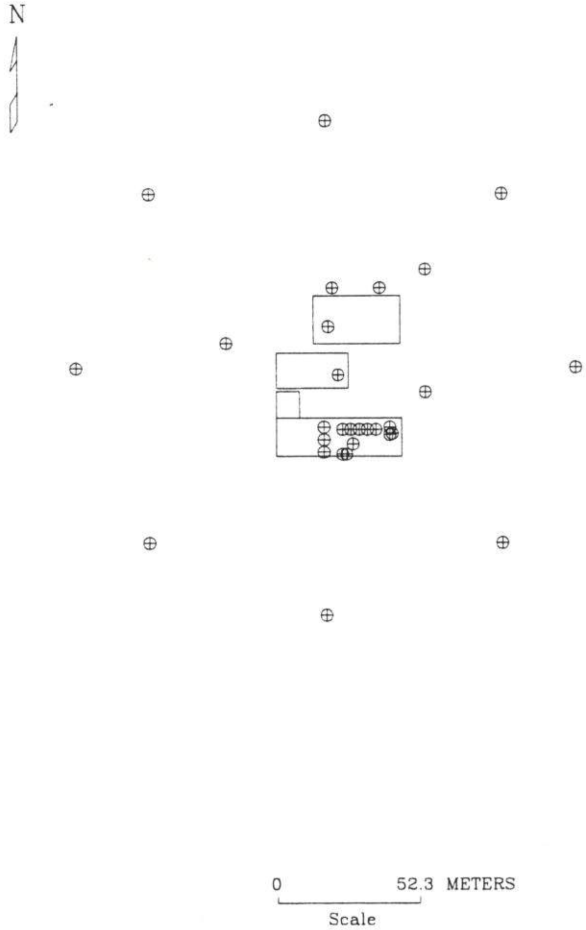
Nabors Rig 16E Stacks and Buildings GEP-BPIP Plot



MCCOVEY PROSPECT ICE ISLAND GEP-BPIP PLOT

Figure 5-6

Nabors Rig 14E Stacks and Buildings
GEP-BPIP Plot



NABORS 14E RIG GEP PLOT

5.2.4 Source Parameters

Two proposed equipment configurations were modeled for the AAQS compliance demonstration. The first set of equipment includes the Nabors 16E rig and the second modeled equipment configuration includes the Nabors 14E rig. The only differences between the modeled configurations are the equipment locations. Figures 5-7 and 5-8 show enlargements of the plot plan for each configuration. Figures 5-9 and 5-10 are plots showing the stack locations as well as the innermost ring of receptors for each configuration.

Modeled emission rates for the equipment used in both configurations are provided in Appendix F. Emission rates for pollutants with annual averaging times were modeled using the annual average emission rates based on the requested maximum operating limits. Short-term emission rates were modeled for maximum hourly production from all equipment used in the drilling and testing operations. Stack parameters used in the ISCST3 model are also provided in Appendix F. Most of the sources are diesel engines with small diameter exhaust vents. All of the engines and the boilers have vertical stacks without covers.

A test flare is included with the site equipment. The effective stack parameters for the flare is based on the physical height and heat rate methodology incorporated in EPA's SCREEN3 model. Consistent with this approach, a nominal stack temperature of 1,273 K and an exit velocity of 20 meters per second (m/sec) were used as model inputs for the flare.

5.2.5 Offsite Sources

The AAQS compliance demonstration must account for the combined impacts of offsite sources and the proposed project. The emission sources included with the proposed support camp for the McCovey prospect were included in the offsite modeling. The camp was conservatively assumed to be located on Reindeer Island. Maximum allowable emissions from sources located at Endicott Island and the Prudhoe Bay Unit were also included in the McCovey Prospect analysis. Maximum allowable emissions from construction activities at the Northstar Unit were also included in the offsite emission source inventory. The Northstar emissions inventory is based on the pre-sea lift scenario. Stack parameters and emission rates for these offsite sources were compiled from the most recent source inventories operated or currently under development on the North Slope. Offsite sources located at other North Slope operation

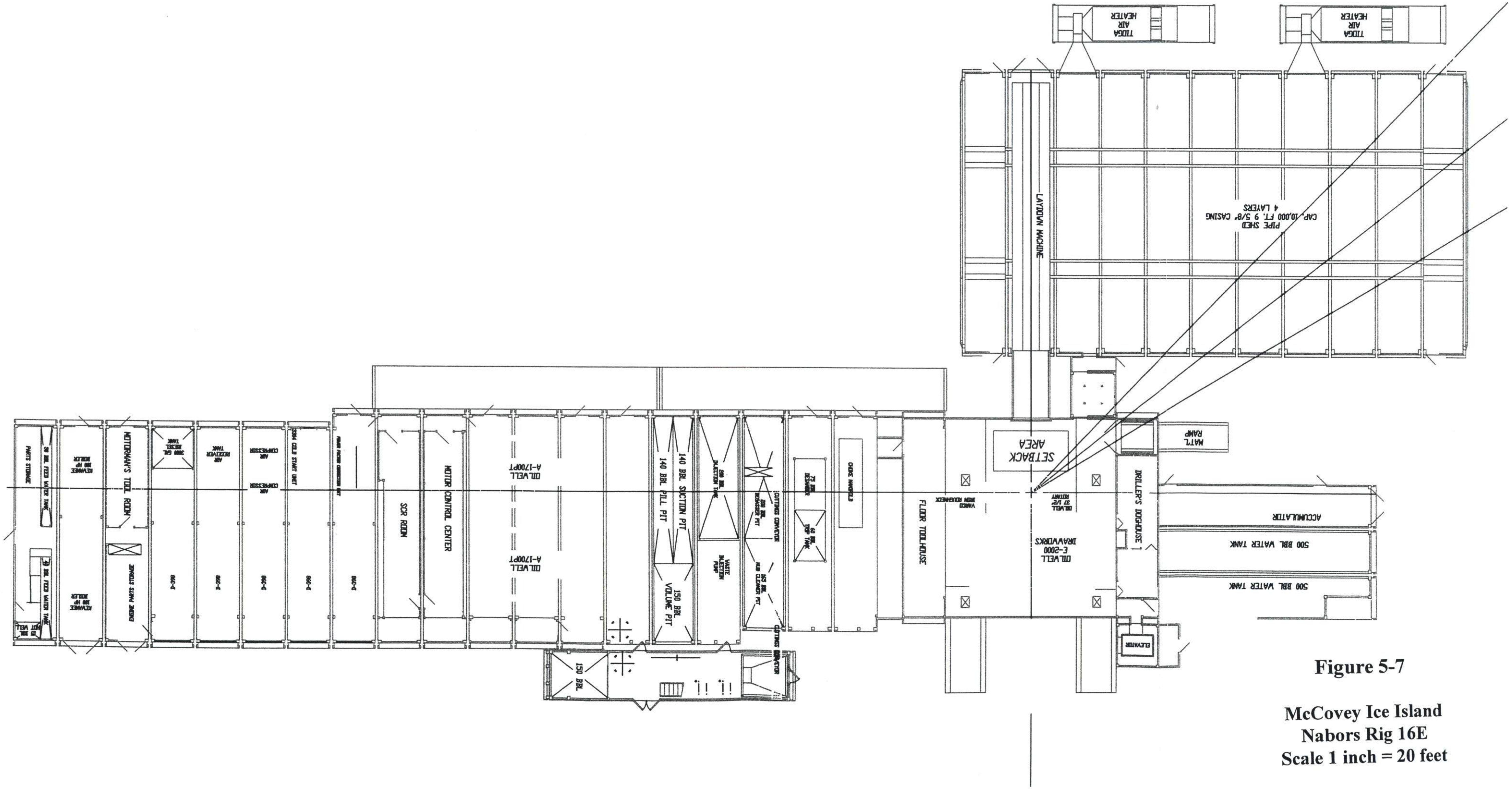


Figure 5-7

McCovey Ice Island
Nabors Rig 16E
Scale 1 inch = 20 feet

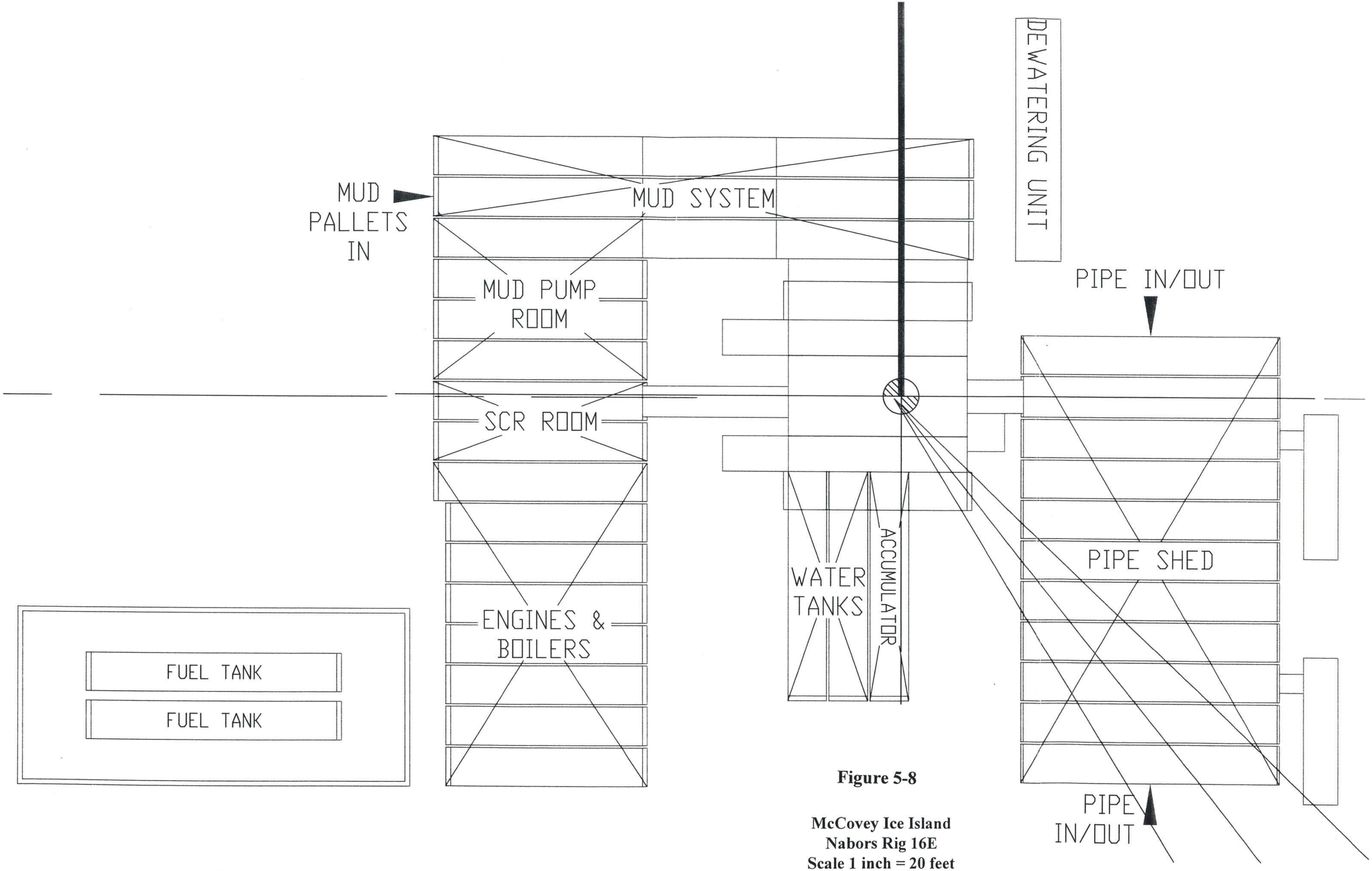


Figure 5-8

McCovey Ice Island
Nabors Rig 16E
Scale 1 inch = 20 feet

Figure 5-9

Nabors 16E Rig Source Locations With Inner Ring of Receptors

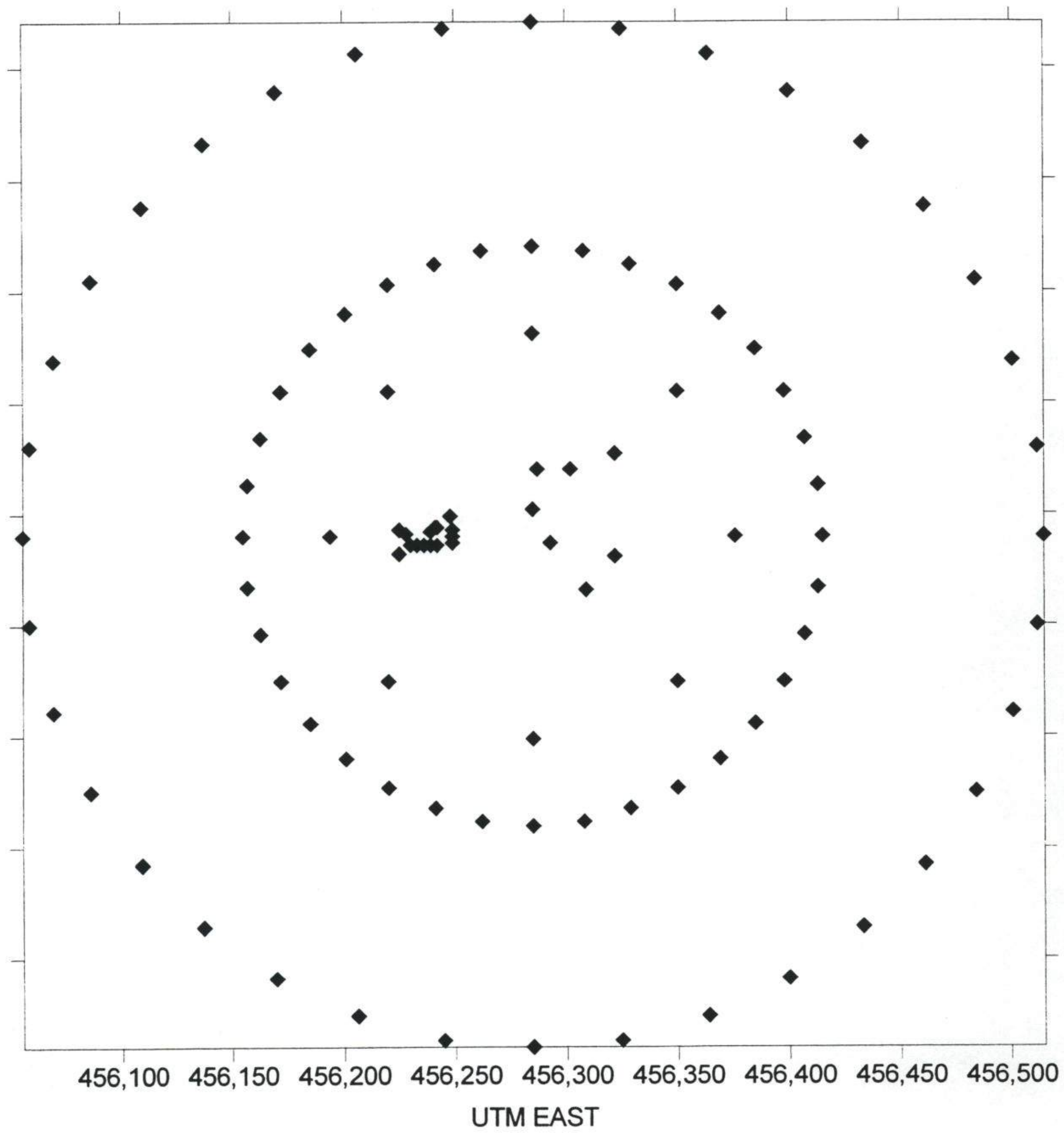


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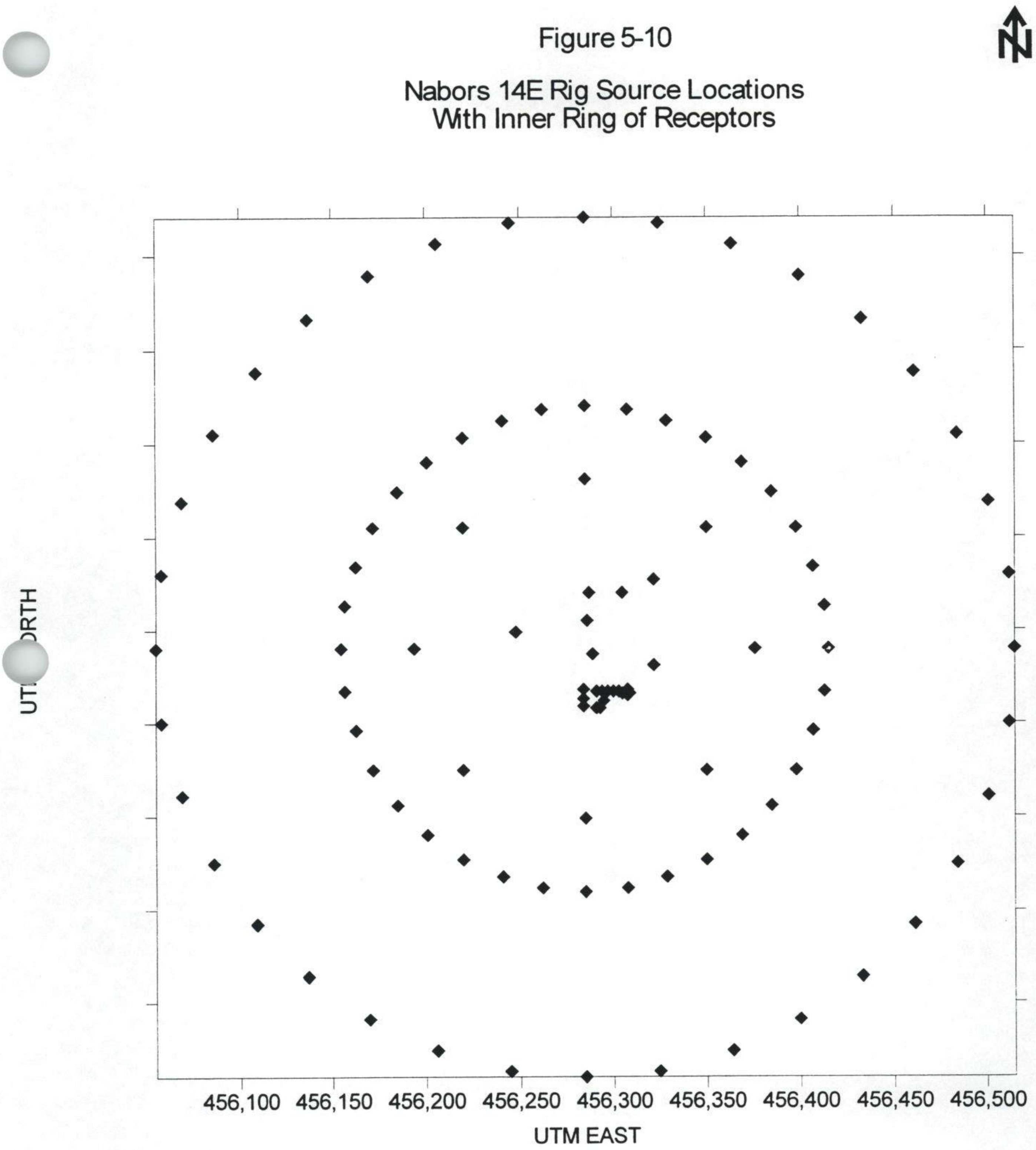
Figure 5-10

Nabors 14E Rig Source Locations With Inner Ring of Receptors



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areas were not modeled because these facilities are located farther than 50 km from the McCovey Prospect significant impact area.

Annual NO_2, SO_2 and PM_{10} and short-term SO_2 and PM_{10} impacts from the offsite sources were modeled. CO emissions from the offsite sources were not modeled because the CO significant impact area for the McCovey Prospect is very small and modeled CO impacts are far below the standard. To streamline the modeling process, all of the long term and short term SO_2 and PM_{10} impacts were modeled using the maximum short term emission rates. This approach provides a conservative result for annual impacts.

The receptor grid for the offsite modeling was limited to the two outermost rings of receptors in the McCovey Prospect modeling grid. Peak impacts from the offsite sources were added to the peak impacts from the McCovey Prospect modeling. This approach provides a conservative estimate of combined emissions because the impacts drop off with distance from the offsite sources and the peak McCovey Prospect impacts occurred close to the island.

Figure 5-11 shows the offsite source locations and the receptor rings surrounding the McCovey Prospect CIDS site.

5.3 Existing Air Quality Data

Existing ambient concentrations of criteria pollutants used in the AAQS compliance demonstration are listed in Table 5-1. The data are conservative estimates of background concentrations at remote locations that were measured during the 1991 calendar year at the Kuparuk River Unit Drill Site 1-F (DS-1F) monitoring site. The short-term concentrations for all pollutants except PM_{10} are the highest recorded during the 1991 period, while the annual values shown are averages for the 1991 calendar year. A 24-hour existing summer PM_{10} concentration of 20 $\mu g/m^3$ was used because the project is located offshore and because no local fugitive dust sources exist on or around the CIDS. The use of these existing ambient concentrations has been approved by ADEC for other projects in the offshore area.

Figure 5-11

Offsite Sources Included in the NAAQS Modeling and Receptor Rings Surrounding McCovey Site

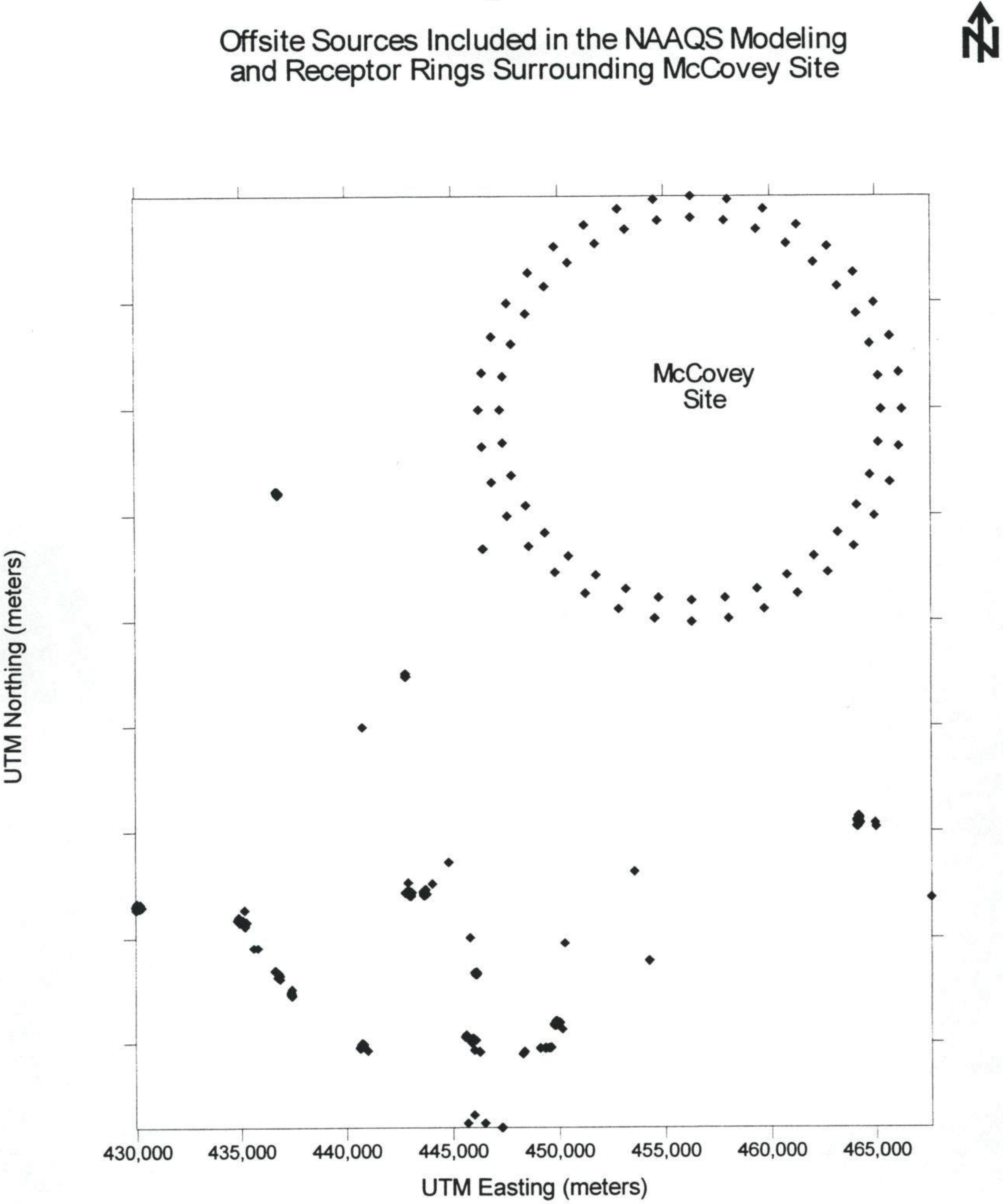

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Table 5-1

Estimated Existing Ambient Air Quality Concentrations at the McCovey Prospect

Pollutant	Averaging Period	Concentration ($\mu g/m^3$)	Reference
NO_2	Annual	5.6	1991 Annual Average at DS-1F
SO_2	Annual	3	1991 Annual Average at DS-1F
	24-hour	10	1991 Max. 24-hour average at DS-1F
	3-hour	55	1991 Max. 3-hour average at DS-1F
CO	8-hour	575	1991 Max. 8-hour average at DS-1F
	1-hour	1,035	1991 Max. 1-hour average at DS-1F
PM_{10}	Annual	7	1991 Annual Average at DS-1F
	24-hour	20	1991 Summer Max. 24-hour average at DS-1F

5.4 Modeling Results

5.4.1 Ambient Ratio Method

The Ambient Ratio Method (ARM) has been used to determine more accurate concentrations of nitrogen dioxide (NO_2) in demonstrating compliance with the AAQS. This method was approved for use when EPA issued Supplement C to the Guideline on Air Quality Models in August 1995. Based on the default ARM methodology, NO_2 concentrations have been assumed to be 75 percent of the modeled NO_x concentrations.

5.4.2 Identification of Significant Impact Area

The first step in the modeling process is to define the area of influence of the proposed project. The size of the impact area is specific to pollutant and averaging time. The impact area is determined by comparing the modeling results for the proposed source to the "significant" values shown in Table 5-2. The significant impact area is a circle with radius equal to the distance to the furthest point at which a significant impact was modeled. As shown in Table 5-2, the largest significant impact area is 9,200 meters for 24-hour SO_2 impacts. The impact area for the NO_2 annual impacts has a radius of 4,200 meters.

The modeled impacts from the McCovey drilling and testing equipment using the two configurations are almost identical. The results of the Nabors 16E configuration modeling were used to determine the significant impact areas because most of the peak impacts were modeled using that configuration.

5.4.3 AAQS Compliance Demonstration

The emission sources on the proposed McCovey Prospect ice island were modeled to demonstrate compliance with the SO_2, NO_2, CO and PM_{10} AAQS. Both equipment configurations were run, and the peak impacts were selected from the worst-case ambient concentrations. Additionally, the Reindeer Island support camp, the Prudhoe Bay Unit, Endicott Island, and the Northstar Unit sources were modeled to determine cumulative impacts.

Modeling results of the McCovey Prospect onsite emission sources only, including peak impact location, are shown in Table 5-3. Supporting model input and output files are provided electronically in Appendix E.

Table 5-2

Identification of Significant Impact Area

Pollutant	Averaging Period	Significant Level ($\mu g/m^3$)	Distance to Furthest Significant Impact
NO_2	Annual	1	4,200 m
SO_2	Annual	1	1,200 m
	24-hour	5	9,200 m
	3-hour	25	7,200 m
CO	8-hour	500	None
	1-hour	2,000	None
PM_{10}	Annual	1	None
	24-hour	5	2,900 m

Table 5-3

McCovey Prospect Modeling Results

Pollutant	Averaging Period	Peak Modeled Impact ($\mu g/m^3$)	UTM Coords. Of Peak Impact Location	Distance from Center of the Ice Island
NO_2	Annual	13.6 (Rig 16E)	E 456,058 m N 7,824,900 m	230 meters
SO_2	Annual	2.0 (Rig 16E)	E 455,793 m N 7,824,853 m	500 meters
	24-hour (HSH)	63.8 (Rig 14E)	E 456,137 m N 7,824,764 m	230 meters
	3-hour (HSH)	137.0 (Rig 16E)	E 456,157 m N 7,824,917 m	130 meters
CO	8-hour (HSH)	121.0 (Rig 14E)	E 455,902 m N 7,824,940 m	500 meters
	1-hour (HSH)	314.0 (Rig 16E)	E 456,155 m N 7,824,940 m	130 meters
PM_{10}	Annual	0.5 (Rig 16E)	E 455,793 m N 7,824,853 m	500 meters
	24-hour (HSH)	15.0 (Rig 14E)	E 456,067 m N 7,824,861 m	230 meters

HSH = Highest Second High

Table 5-4 compares the modeled impacts with the appropriate AAQS. In each case, the peak measured existing ambient concentration has been added to the modeled impact to determine the total concentration. The results in Table 5-4 show that the proposed project will be in compliance with all applicable AAQS. The results are diagramed in Figures 5-12 through 5-16.

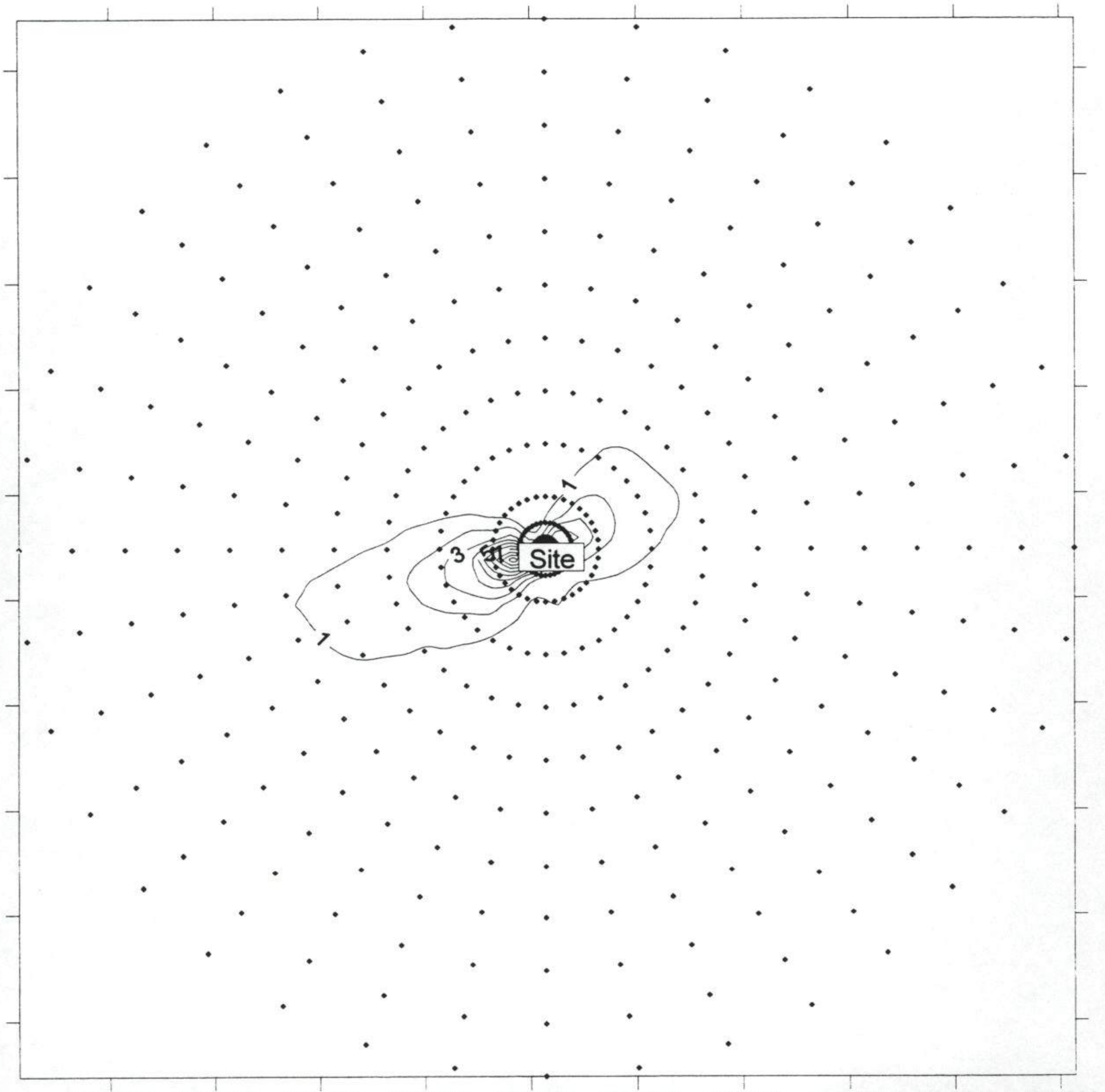
Table 5-4

Demonstration of Compliance with AAQS

Pollutant	Avg. Period	McCovey Impact ($\mu g/m^3$)	Existing Conc. ($\mu g/m^3$)	Offsite Impact ($\mu g/m^3$)	Total Conc. ($\mu g/m^3$)	AAQS ($\mu g/m^3$)	AAQS Consumed (pct)
NO_2	Annual	13.6	5.6	4.72	23.9	100	24
SO_2	Annual	2.0	3	0.88	5.9	80	7
	24-hour	63.8	10	16.2	90	365	25
	3-hour	137.0	55	50.8	243	1,300	19
CO	8-hour	121.0	575	NA	696	10,000	7
	1-hour	314.0	1,035	NA	1,349	40,000	3
PM_{10}	Annual	0.5	7	0.41	7.9	50	16
	24-hour	15.0	20	7.19	42	150	28

Figure 5-12

McCovey Prospect Annual NOx Impacts
Prudhoe Bay Met Data: 1991-1995



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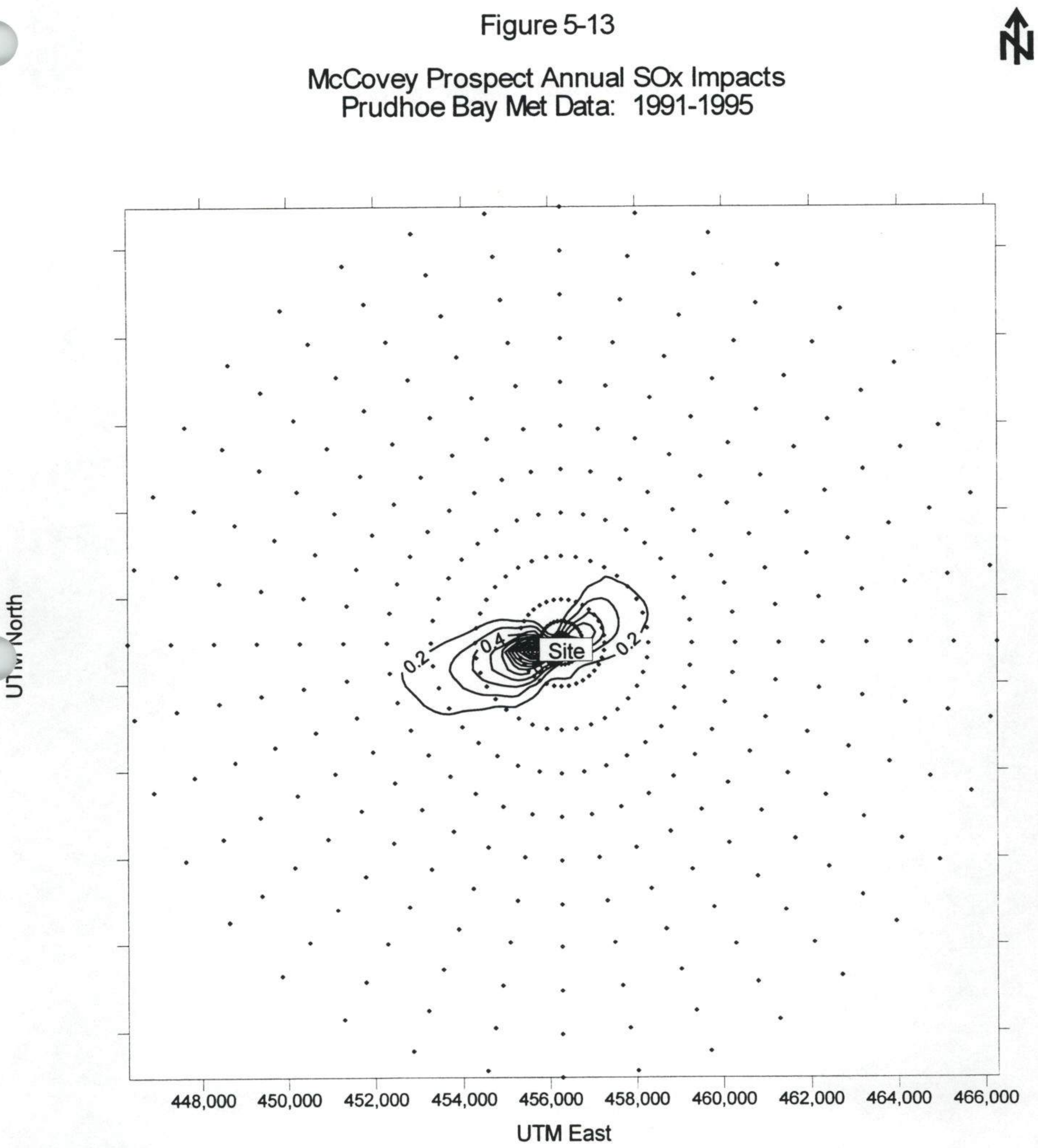
Isopleths show Concentration in Micrograms per Cubic Meter

Figure 5-13

McCovey Prospect Annual SOx Impacts
Prudhoe Bay Met Data: 1991-1995



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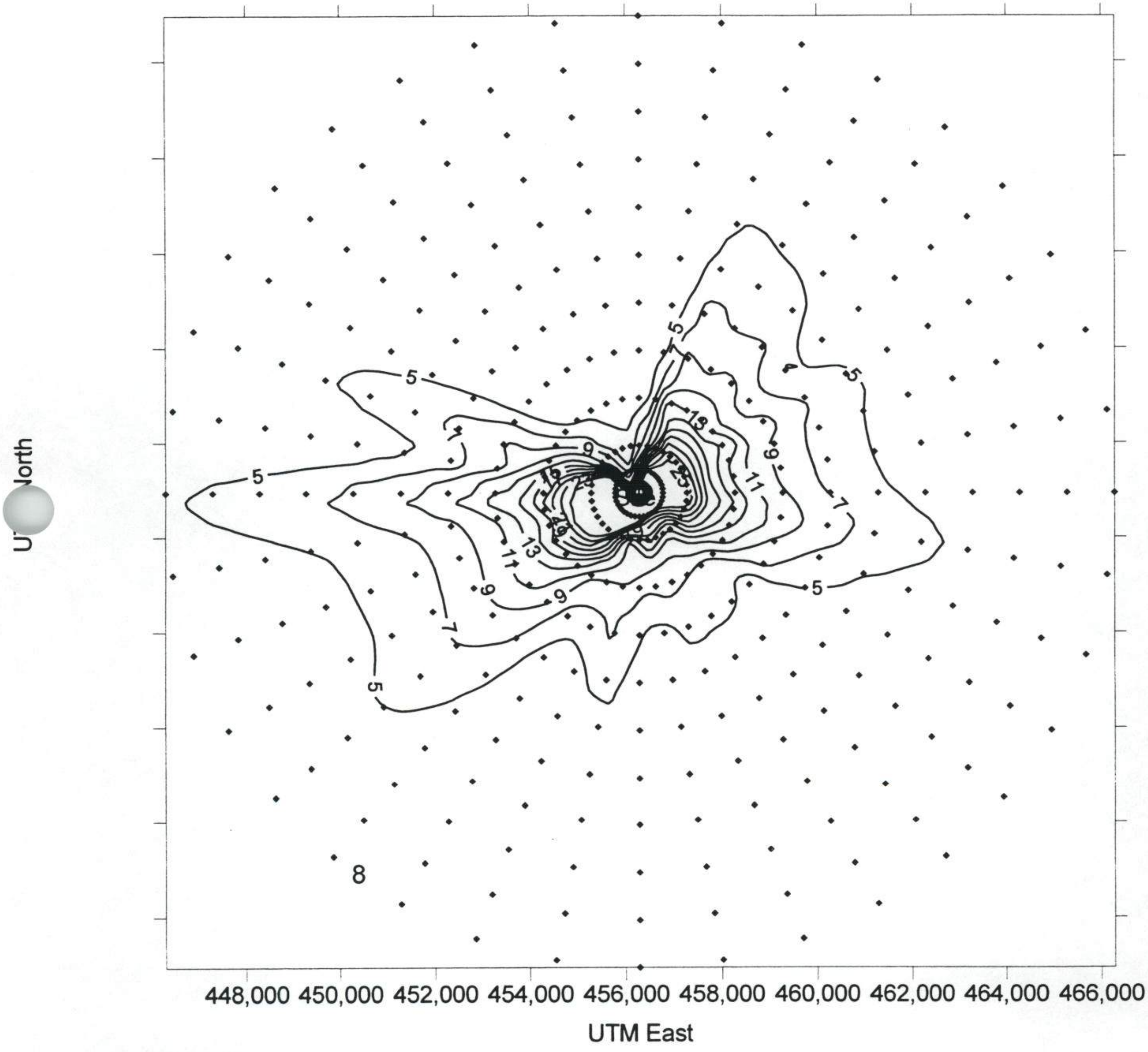
Isopleths show Concentration in Micrograms per Cubic Meter

Figure 5-14

McCovey Prospect 24-hour SOx Impacts
Prudhoe Bay Met Data: 1991-1995

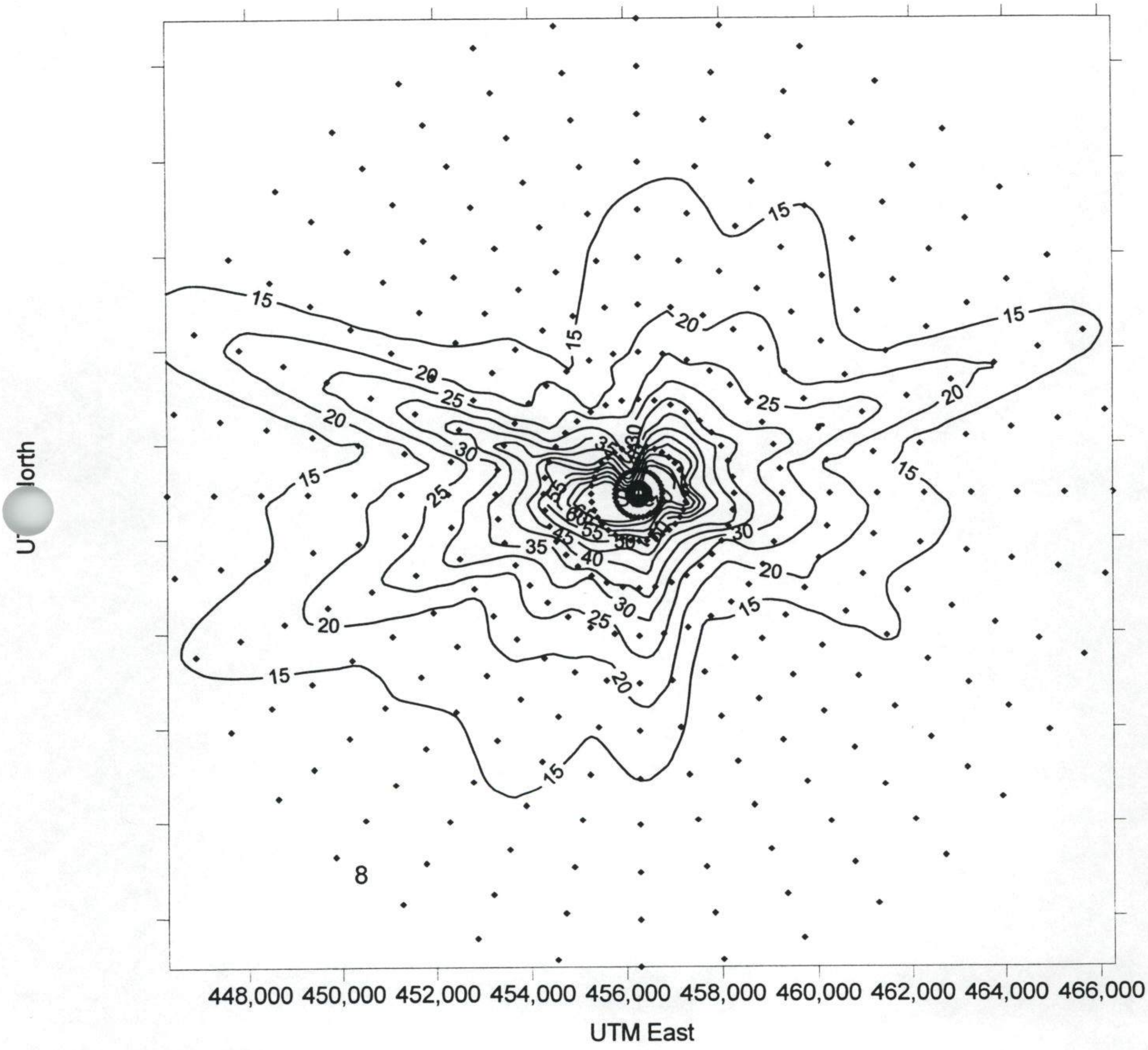


UTM Zone 6

Isopleths show Concentration in Micrograms per Cubic Meter

Figure 5-15

McCovey Prospect 3-hour SOx Impacts
Prudhoe Bay Met Data: 1991-1995



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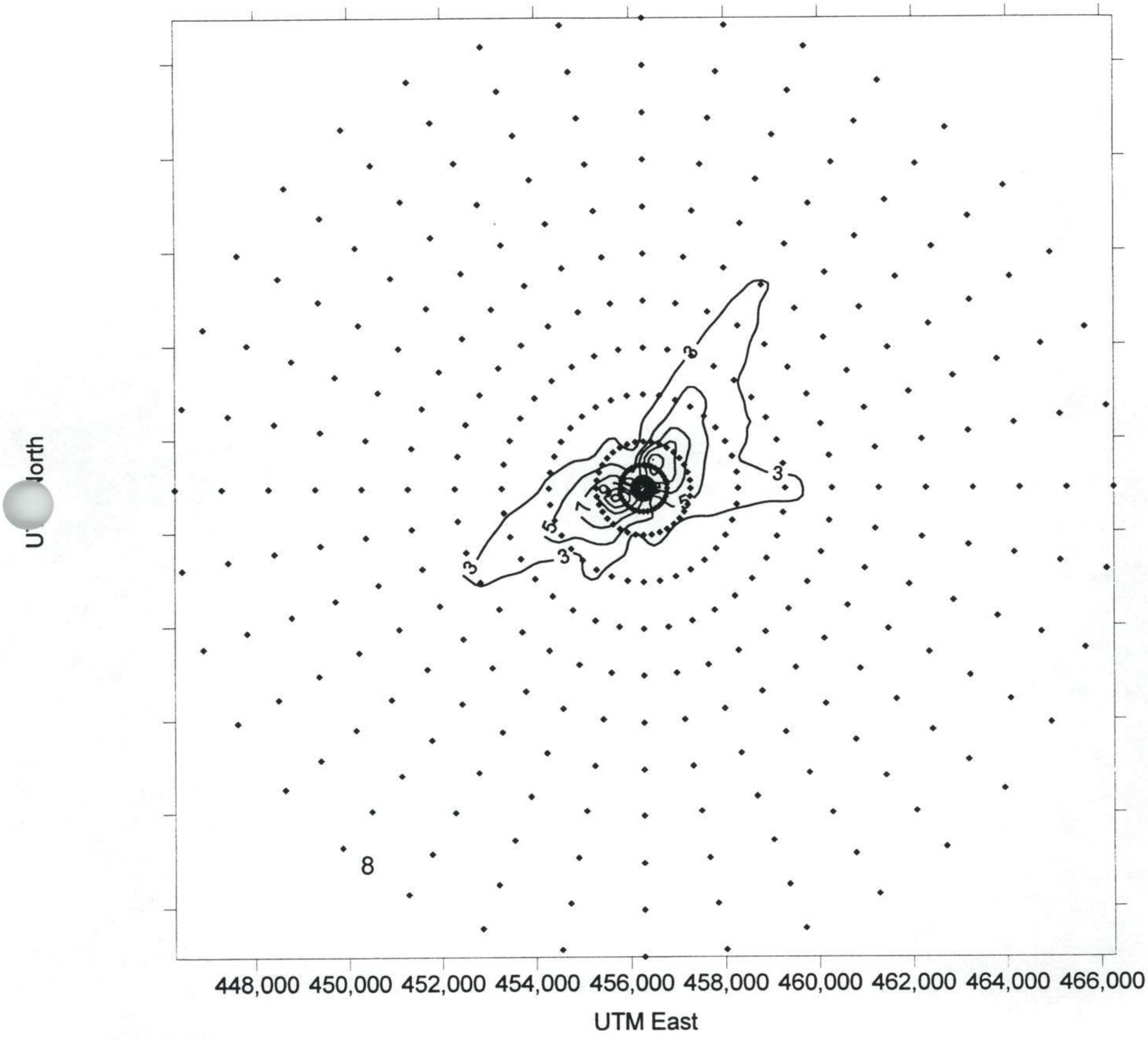
Isopleths show Concentration in Micrograms per Cubic Meter

Figure 5-16

McCovey Prospect 24-hour PM10 Impacts
Prudhoe Bay Met Data: 1991-1995



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Isopleths show Concentration in Micrograms per Cubic Meter

Appendix A

Emissions Calculations for Fuel Burning Equipment

Table A-1. NO_x Emission Calculations - McCovey Prospect Ice Island

No.	Source	Reference	NO_x Emission Factor	Input/Output Parameter	Permitted Operation	NO_x Emission Rate
1	Drilling - Main Engine #1	Cat Data	0.0250 lb/kW-hr	600 kW	2,016 hr/yr	15.1 tpy
2	Drilling - Main Engine #2	Cat Data	0.0250 lb/kW-hr	600 kW	2,016 hr/yr	15.1 tpy
3	Drilling - Main Engine #3	Cat Data	0.0250 lb/kW-hr	600 kW	2,016 hr/yr	15.1 tpy
4	Drilling - Main Engine #4	Cat Data	0.0250 lb/kW-hr	600 kW	2,016 hr/yr	15.1 tpy
5	Drilling - Main Engine #5	Cat Data	0.0250 lb/kW-hr	600 kW	2,016 hr/yr	15.1 tpy
6	Drilling - Sub Engine #6	Cat Data	0.0250 lb/kW-hr	600 kW	0 hr/yr	0.0 tpy
7	Cold Start Generator	Cat Data	0.0104 lb/hp-hr	372 hp	2,016 hr/yr	3.9 tpy
8	Flash Steam Generator #1	AP-42 Table 1.3-1	20 lb/mgal	100 bhp	2,016 hr/yr	0.7 tpy
9	Flash Steam Generator #2	AP-42 Table 1.3-1	20 lb/mgal	100 bhp	2,016 hr/yr	0.7 tpy
10	Steam Generator - #1	AP-42 Table 1.3-1	20 lb/mgal	4.2 MMBtu/hr	2,016 hr/yr	0.6 tpy
11	Steam Generator - #2	AP-42 Table 1.3-1	20 lb/mgal	4.2 MMBtu/hr	2,016 hr/yr	0.6 tpy
12	Air Heater	AP-42 Table 1.3-1	20 lb/mgal	3.5 MMBtu/hr	2,016 hr/yr	0.5 tpy
13	Air Heater	AP-42 Table 1.3-1	20 lb/mgal	3.5 MMBtu/hr	2,016 hr/yr	0.5 tpy
14	Emergency Light Generator - #1	AP-42 Table 3.3-1	0.031 lb/hp-hr	500 kW	2,016 hr/yr	21.0 tpy
15	Emergency Light Generator - #2	AP-42 Table 3.3-1	0.031 lb/hp-hr	500 kW	2,016 hr/yr	21.0 tpy
16	Shop Heater - #1	AP-42 Table 1.3-1	20 lb/mgal	1.5 MMBtu/hr	2,016 hr/yr	0.2 tpy
17	Shop Heater - #2	AP-42 Table 1.3-1	20 lb/mgal	1.5 MMBtu/hr	2,016 hr/yr	0.2 tpy
18	Shop Heater - #3	AP-42 Table 1.3-1	20 lb/mgal	1.5 MMBtu/hr	2,016 hr/yr	0.2 tpy
19	Portable Heat - #1	AP-42 Table 1.3-1	20 lb/mgal	1.085 MMBtu/hr	2,016 hr/yr	0.2 tpy
20	Portable Heat - #2	AP-42 Table 1.3-1	20 lb/mgal	1.085 MMBtu/hr	2,016 hr/yr	0.2 tpy
21a	Portable Light Plant #1	AP-42 Table 3.3-1	0.031 lb/hp-hr	8 kW	2,016 hr/yr	0.3 tpy
21b	Portable Light Plant #2	AP-42 Table 3.3-1	0.031 lb/hp-hr	8 kW	2,016 hr/yr	0.3 tpy
21c	Portable Light Plant #3	AP-42 Table 3.3-1	0.031 lb/hp-hr	8 kW	2,016 hr/yr	0.3 tpy
21d	Portable Light Plant #4	AP-42 Table 3.3-1	0.031 lb/hp-hr	8 kW	2,016 hr/yr	0.3 tpy
21e	Portable Light Plant #5	AP-42 Table 3.3-1	0.031 lb/hp-hr	8 kW	2,016 hr/yr	0.3 tpy
21f	Portable Light Plant #6	AP-42 Table 3.3-1	0.031 lb/hp-hr	8 kW	2,016 hr/yr	0.3 tpy
21g	Portable Light Plant #7	AP-42 Table 3.3-1	0.031 lb/hp-hr	8 kW	2,016 hr/yr	0.3 tpy
21h	Portable Light Plant #8	AP-42 Table 3.3-1	0.031 lb/hp-hr	8 kW	2,016 hr/yr	0.3 tpy
22	Line Heater	AP-42 Table 1.3-1	20 lb/1000 gal	8.4 MMBtu/hr	2,016 hr/yr	1.2 tpy
23	Test Flare	AP-42 Table 13.5-1	0.068 lb/MMBtu	5.E+06 ft^3/day	2,016 hr/yr	14.3 tpy
24	Rig Moving Power - #1	AP-42 Table 3.3-1	0.031 lb/hp-hr	500 kW	0 hr/yr	0.0 tpy
25	Rig Moving Power - #2	AP-42 Table 3.3-1	0.031 lb/hp-hr	500 kW	0 hr/yr	0.0 tpy
26	Welding Generator	AP-42 Table 3.3-1	0.031 lb/hp-hr	90 kW	2,016 hr/yr	3.8 tpy
					Nonroad Engine Total	**127.8 tpy**
					Rig Total	**147.9 tpy**

Table A-2. CO Emission Calculations - McCovey Prospect Ice Island

No.	Source	Reference	CO Emission Factor	Input/Output Parameter	Permitted Operation	CO Emission Rate
1	Drilling - Main Engine #1	Cat Data	0.0042 lb/kW-hr	600 kW	2,016 hr/yr	2.54 tpy
2	Drilling - Main Engine #2	Cat Data	0.0042 lb/kW-hr	600 kW	2,016 hr/yr	2.54 tpy
3	Drilling - Main Engine #3	Cat Data	0.0042 lb/kW-hr	600 kW	2,016 hr/yr	2.54 tpy
4	Drilling - Main Engine #4	Cat Data	0.0042 lb/kW-hr	600 kW	2,016 hr/yr	2.54 tpy
5	Drilling - Main Engine #5	Cat Data	0.0042 lb/kW-hr	600 kW	2,016 hr/yr	2.54 tpy
6	Drilling - Sub Engine #6	Cat Data	0.0042 lb/kW-hr	600 kW	0 hr/yr	0.00 tpy
7	Cold Start Generator	Cat Data	0.0021 lb/hp-hr	372 hp	2,016 hr/yr	0.80 tpy
8	Flash Steam Generator #1	AP-42 Table 1.3-1	5 lb/mgal	100 bhp	2,016 hr/yr	0.16 tpy
9	Flash Steam Generator #2	AP-42 Table 1.3-1	5 lb/mgal	100 bhp	2,016 hr/yr	0.16 tpy
10	Steam Generator - #1	AP-42 Table 1.3-1	5 lb/mgal	4.2 MMBtu/hr	2,016 hr/yr	0.15 tpy
11	Steam Generator - #2	AP-42 Table 1.3-1	5 lb/mgal	4.2 MMBtu/hr	2,016 hr/yr	0.15 tpy
12	Air Heater	AP-42 Table 1.3-1	5 lb/mgal	3.5 MMBtu/hr	2,016 hr/yr	0.13 tpy
13	Air Heater	AP-42 Table 1.3-1	5 lb/mgal	3.5 MMBtu/hr	2,016 hr/yr	0.13 tpy
14	Emergency Light Generator - #1	AP-42 Table 3.3-1	0.00668 lb/hp-hr	500 kW	2,016 hr/yr	4.51 tpy
15	Emergency Light Generator - #2	AP-42 Table 3.3-1	0.00668 lb/hp-hr	500 kW	2,016 hr/yr	4.51 tpy
16	Shop Heater - #1	AP-42 Table 1.3-1	5 lb/mgal	1.5 MMBtu/hr	2,016 hr/yr	0.00 tpy
17	Shop Heater - #2	AP-42 Table 1.3-1	5 lb/mgal	1.5 MMBtu/hr	2,016 hr/yr	0.00 tpy
18	Shop Heater - #3	AP-42 Table 1.3-1	5 lb/mgal	1.5 MMBtu/hr	2,016 hr/yr	0.00 tpy
19	Portable Heat - #1	AP-42 Table 1.3-1	5 lb/mgal	1.085 MMBtu/hr	2,016 hr/yr	0.04 tpy
20	Portable Heat - #2	AP-42 Table 1.3-1	5 lb/mgal	1.085 MMBtu/hr	2,016 hr/yr	0.04 tpy
21a	Portable Light Plant #1	AP-42 Table 3.3-1	0.00668 lb/hp-hr	8 kW	2,016 hr/yr	0.07 tpy
21b	Portable Light Plant #2	AP-42 Table 3.3-1	0.00668 lb/hp-hr	8 kW	2,016 hr/yr	0.07 tpy
21c	Portable Light Plant #3	AP-42 Table 3.3-1	0.00668 lb/hp-hr	8 kW	2,016 hr/yr	0.07 tpy
21d	Portable Light Plant #4	AP-42 Table 3.3-1	0.00668 lb/hp-hr	8 kW	2,016 hr/yr	0.07 tpy
21e	Portable Light Plant #5	AP-42 Table 3.3-1	0.00668 lb/hp-hr	8 kW	2,016 hr/yr	0.07 tpy
21f	Portable Light Plant #6	AP-42 Table 3.3-1	0.00668 lb/hp-hr	8 kW	2,016 hr/yr	0.07 tpy
21g	Portable Light Plant #7	AP-42 Table 3.3-1	0.00668 lb/hp-hr	8 kW	2,016 hr/yr	0.07 tpy
21h	Portable Light Plant #8	AP-42 Table 3.3-1	0.00668 lb/hp-hr	8 kW	2,016 hr/yr	0.07 tpy
22	Line Heater	AP-42 Table 1.3-1	5 lb/mgal	8.4 MMBtu/hr	2,016 hr/yr	0.31 tpy
23	Test Flare	AP-42 Table 13.5-1	0.37 lb/MMBtu	5.E+06 ft^3/day	2,016 hr/yr	77.70 tpy
24	Rig Moving Power - #1	AP-42 Table 3.3-1	0.00668 lb/hp-hr	500 kW	0 hr/yr	0.00 tpy
25	Rig Moving Power - #2	AP-42 Table 3.3-1	0.00668 lb/hp-hr	500 kW	0 hr/yr	0.00 tpy
26	Welding Generator	AP-42 Table 3.3-1	0.00668 lb/hp-hr	90 kW	2,016 hr/yr	0.81 tpy
					Nonroad Engine Total	**23.9 tpy**
					Rig Total	**102.9 tpy**

Table A-3. PM_{10} Emission Calculations - McCovey Prospect Ice Island

No.	Source	Reference	PM_{10} Emission Factor	Input/Output Parameter	Permitted Operation	PM_{10} Emission Rate
1	Drilling - Main Engine #1	Cat Data	0.0002 lb/kW-hr	600 kW	2,016 hr/yr	0.12 tpy
2	Drilling - Main Engine #2	Cat Data	0.0002 lb/kW-hr	600 kW	2,016 hr/yr	0.12 tpy
3	Drilling - Main Engine #3	Cat Data	0.0002 lb/kW-hr	600 kW	2,016 hr/yr	0.12 tpy
4	Drilling - Main Engine #4	Cat Data	0.0002 lb/kW-hr	600 kW	2,016 hr/yr	0.12 tpy
5	Drilling - Main Engine #5	Cat Data	0.0002 lb/kW-hr	600 kW	2,016 hr/yr	0.12 tpy
6	Drilling - Sub Engine #6	Cat Data	0.0002 lb/kW-hr	600 kW	0 hr/yr	0.00 tpy
7	Cold Start Generator	Cat Data	0.0003 lb/hp-hr	372 hp	2,016 hr/yr	0.11 tpy
8	Flash Steam Generator #1	AP-42 Table 1.3-1	2 lb/mgal	100 bhp	2,016 hr/yr	0.07 tpy
9	Flash Steam Generator #2	AP-42 Table 1.3-1	2 lb/mgal	100 bhp	2,016 hr/yr	0.07 tpy
10	Steam Generator - #1	AP-42 Table 1.3-1	2 lb/mgal	4.2 MMBtu/hr	2,016 hr/yr	0.06 tpy
11	Steam Generator - #2	AP-42 Table 1.3-1	2 lb/mgal	4.2 MMBtu/hr	2,016 hr/yr	0.06 tpy
12	Air Heater	AP-42 Table 1.3-1	2 lb/mgal	3.5 MMBtu/hr	2,016 hr/yr	0.05 tpy
13	Air Heater	AP-42 Table 1.3-1	2 lb/mgal	3.5 MMBtu/hr	2,016 hr/yr	0.05 tpy
14	Emergency Light Generator - #1	AP-42 Table 3.3-1	0.0022 lb/hp-hr	500 kW	2,016 hr/yr	1.49 tpy
15	Emergency Light Generator - #2	AP-42 Table 3.3-1	0.0022 lb/hp-hr	500 kW	2,016 hr/yr	1.49 tpy
16	Shop Heater - #1	AP-42 Table 1.3-1	2 lb/mgal	1.5 MMBtu/hr	2,016 hr/yr	0.00 tpy
17	Shop Heater - #2	AP-42 Table 1.3-1	2 lb/mgal	1.5 MMBtu/hr	2,016 hr/yr	0.00 tpy
18	Shop Heater - #3	AP-42 Table 1.3-1	2 lb/mgal	1.5 MMBtu/hr	2,016 hr/yr	0.00 tpy
19	Portable Heat - #1	AP-42 Table 1.3-1	2 lb/mgal	1.085 MMBtu/hr	2,016 hr/yr	0.02 tpy
20	Portable Heat - #2	AP-42 Table 1.3-1	2 lb/mgal	1.085 MMBtu/hr	2,016 hr/yr	0.02 tpy
21a	Portable Light Plant #1	AP-42 Table 3.3-1	0.0022 lb/hp-hr	8 kW	2,016 hr/yr	0.02 tpy
21b	Portable Light Plant #2	AP-42 Table 3.3-1	0.0022 lb/hp-hr	8 kW	2,016 hr/yr	0.02 tpy
21c	Portable Light Plant #3	AP-42 Table 3.3-1	0.0022 lb/hp-hr	8 kW	2,016 hr/yr	0.02 tpy
21d	Portable Light Plant #4	AP-42 Table 3.3-1	0.0022 lb/hp-hr	8 kW	2,016 hr/yr	0.02 tpy
21e	Portable Light Plant #5	AP-42 Table 3.3-1	0.0022 lb/hp-hr	8 kW	2,016 hr/yr	0.02 tpy
21f	Portable Light Plant #6	AP-42 Table 3.3-1	0.0022 lb/hp-hr	8 kW	2,016 hr/yr	0.02 tpy
21g	Portable Light Plant #7	AP-42 Table 3.3-1	0.0022 lb/hp-hr	8 kW	2,016 hr/yr	0.02 tpy
21h	Portable Light Plant #8	AP-42 Table 3.3-1	0.0022 lb/hp-hr	8 kW	2,016 hr/yr	0.02 tpy
22	Line Heater	AP-42 Table 1.3-1	2 lb/mgal	8.4 MMBtu/hr	2,016 hr/yr	0.12 tpy
23	Test Flare	AP-42 Table 13.5-1	0.0264 lb/MMBtu	5.E+06 ft^3/day	2,016 hr/yr	5.54 tpy
24	Rig Moving Power - #1	AP-42 Table 3.3-1	0.0022 lb/hp-hr	500 kW	0 hr/yr	0.00 tpy
25	Rig Moving Power - #2	AP-42 Table 3.3-1	0.0022 lb/hp-hr	500 kW	0 hr/yr	0.00 tpy
26	Welding Generator	AP-42 Table 3.3-1	0.0022 lb/hp-hr	90 kW	2,016 hr/yr	0.27 tpy
					Nonroad Engine Total	**4.1 tpy**
					Rig Total	**10.2 tpy**

Table A-4. VOC Emission Calculations - McCovey Prospect Ice Island

No.	Source	Reference	VOC Emission Factor	Input/Output Parameter	Permitted Operation	VOC Emission Rate
1	Drilling - Main Engine #1	Cat Data	0.0003 lb/kW-hr	600 kW	2,016 hr/yr	0.16 tpy
2	Drilling - Main Engine #2	Cat Data	0.0003 lb/kW-hr	600 kW	2,016 hr/yr	0.16 tpy
3	Drilling - Main Engine #3	Cat Data	0.0003 lb/kW-hr	600 kW	2,016 hr/yr	0.16 tpy
4	Drilling - Main Engine #4	Cat Data	0.0003 lb/kW-hr	600 kW	2,016 hr/yr	0.16 tpy
5	Drilling - Main Engine #5	Cat Data	0.0003 lb/kW-hr	600 kW	2,016 hr/yr	0.16 tpy
6	Drilling - Sub Engine #6	Cat Data	0.0003 lb/kW-hr	600 kW	0 hr/yr	0.00 tpy
7	Cold Start Generator	Cat Data	0.0001 lb/hp-hr	372 hp	2,016 hr/yr	0.02 tpy
8	Flash Steam Generator #1	AP-42 Table 1.3-1	0.2 lb/mgal	100 bhp	2,016 hr/yr	0.0066 tpy
9	Flash Steam Generator #2	AP-42 Table 1.3-1	0.2 lb/mgal	100 bhp	2,016 hr/yr	0.0066 tpy
10	Steam Generator - #1	AP-42 Table 1.3-1	0.2 lb/mgal	4.2 MMBtu/hr	2,016 hr/yr	0.0062 tpy
11	Steam Generator - #2	AP-42 Table 1.3-1	0.2 lb/mgal	4.2 MMBtu/hr	2,016 hr/yr	0.0062 tpy
12	Air Heater	AP-42 Table 1.3-1	0.2 lb/mgal	3.5 MMBtu/hr	2,016 hr/yr	0.0052 tpy
13	Air Heater	AP-42 Table 1.3-1	0.2 lb/mgal	3.5 MMBtu/hr	2,016 hr/yr	0.0052 tpy
14	Emergency Light Generator - #1	AP-42 Table 3.3-1	0.00247 lb/hp-hr	500 kW	2,016 hr/yr	1.67 tpy
15	Emergency Light Generator - #2	AP-42 Table 3.3-1	0.00247 lb/hp-hr	500 kW	2,016 hr/yr	1.67 tpy
16	Shop Heater - #1	AP-42 Table 1.3-1	0.2 lb/mgal	1.5 MMBtu/hr	2,016 hr/yr	0.0001 tpy
17	Shop Heater - #2	AP-42 Table 1.3-1	0.2 lb/mgal	1.5 MMBtu/hr	2,016 hr/yr	0.0001 tpy
18	Shop Heater - #3	AP-42 Table 1.3-1	0.2 lb/mgal	1.5 MMBtu/hr	2,016 hr/yr	0.0001 tpy
19	Portable Heat - #1	AP-42 Table 1.3-1	0.2 lb/mgal	1.085 MMBtu/hr	2,016 hr/yr	0.0016 tpy
20	Portable Heat - #2	AP-42 Table 1.3-1	0.2 lb/mgal	1.085 MMBtu/hr	2,016 hr/yr	0.0016 tpy
21a	Portable Light Plant #1	AP-42 Table 3.3-1	0.00247 lb/hp-hr	8 kW	2,016 hr/yr	0.0267 tpy
21b	Portable Light Plant #2	AP-42 Table 3.3-1	0.00247 lb/hp-hr	8 kW	2,016 hr/yr	0.0267 tpy
21c	Portable Light Plant #3	AP-42 Table 3.3-1	0.00247 lb/hp-hr	8 kW	2,016 hr/yr	0.0267 tpy
21d	Portable Light Plant #4	AP-42 Table 3.3-1	0.00247 lb/hp-hr	8 kW	2,016 hr/yr	0.0267 tpy
21e	Portable Light Plant #5	AP-42 Table 3.3-1	0.00247 lb/hp-hr	8 kW	2,016 hr/yr	0.0267 tpy
21f	Portable Light Plant #6	AP-42 Table 3.3-1	0.00247 lb/hp-hr	8 kW	2,016 hr/yr	0.0267 tpy
21g	Portable Light Plant #7	AP-42 Table 3.3-1	0.00247 lb/hp-hr	8 kW	2,016 hr/yr	0.0267 tpy
21h	Portable Light Plant #8	AP-42 Table 3.3-1	0.00247 lb/hp-hr	8 kW	2,016 hr/yr	0.0267 tpy
22	Line Heater	AP-42 Table 1.3-1	0.2 lb/mgal	8.4 MMBtu/hr	2,016 hr/yr	0.0124 tpy
23	Test Flare	AP-42 Table 13.5-1	0.063 lb/MMBtu	5.E+06 ft^3/day	2,016 hr/yr	13.23 tpy
24	Rig Moving Power - #1	AP-42 Table 3.3-1	0.00247 lb/hp-hr	500 kW	0 hr/yr	0.0000 tpy
25	Rig Moving Power - #2	AP-42 Table 3.3-1	0.00247 lb/hp-hr	500 kW	0 hr/yr	0.0000 tpy
26	Welding Generator	AP-42 Table 3.3-1	0.00247 lb/hp-hr	90 kW	2,016 hr/yr	0.3005 tpy
					Nonroad Engine Total	**4.7 tpy**
					Rig Total	**17.9 tpy**

Table A-5. SO_2 Emission Calculations - McCovey Prospect Ice Island

No.	Source	Reference	SO_2 Emission Factor	Input/Output Parameter	Permitted Operation	SO_2 Emission Rate
1	Drilling - Main Engine #1	Engineering Calc.	0.25 % sulfur	600 kW	83,682 gal/yr	1.47 tpy
2	Drilling - Main Engine #2	Engineering Calc.	0.25 % sulfur	600 kW	83,682 gal/yr	1.47 tpy
3	Drilling - Main Engine #3	Engineering Calc.	0.25 % sulfur	600 kW	83,682 gal/yr	1.47 tpy
4	Drilling - Main Engine #4	Engineering Calc.	0.25 % sulfur	600 kW	83,682 gal/yr	1.47 tpy
5	Drilling - Main Engine #5	Engineering Calc.	0.25 % sulfur	600 kW	83,682 gal/yr	1.47 tpy
6	Drilling - Sub Engine #6	Engineering Calc.	0.25 % sulfur	600 kW	0 gal/yr	0.00 tpy
7	Cold Start Generator	Engineering Calc.	0.25 % sulfur	372 hp	38,690 gal/yr	0.68 tpy
8	Flash Steam Generator #1	Engineering Calc.	0.25 % sulfur	100 bhp	65,670 gal/yr	1.16 tpy
9	Flash Steam Generator #2	Engineering Calc.	0.25 % sulfur	100 bhp	65,670 gal/yr	1.16 tpy
10	Steam Generator - #1	Engineering Calc.	0.25 % sulfur	4.2 MMBtu/hr	61,804 gal/yr	1.09 tpy
11	Steam Generator - #2	Engineering Calc.	0.25 % sulfur	4.2 MMBtu/hr	61,804 gal/yr	1.09 tpy
12	Air Heater	Engineering Calc.	0.25 % sulfur	3.5 MMBtu/hr	51,504 gal/yr	0.91 tpy
13	Air Heater	Engineering Calc.	0.25 % sulfur	3.5 MMBtu/hr	51,504 gal/yr	0.91 tpy
14	Emergency Light Generator - #1	Engineering Calc.	0.25 % sulfur	500 kW	69,735 gal/yr	1.23 tpy
15	Emergency Light Generator - #2	Engineering Calc.	0.25 % sulfur	500 kW	69,735 gal/yr	1.23 tpy
16	Shop Heater - #1	Engineering Calc.	0.25 % sulfur	1.5 MMBtu/hr	22,073 gal/yr	0.39 tpy
17	Shop Heater - #2	Engineering Calc.	0.25 % sulfur	1.5 MMBtu/hr	22,073 gal/yr	0.39 tpy
18	Shop Heater - #3	Engineering Calc.	0.25 % sulfur	1.5 MMBtu/hr	22,073 gal/yr	0.39 tpy
19	Portable Heat - #1	Engineering Calc.	0.25 % sulfur	1.085 MMBtu/hr	15,966 gal/yr	0.28 tpy
20	Portable Heat - #2	Engineering Calc.	0.25 % sulfur	1.085 MMBtu/hr	15,966 gal/yr	0.28 tpy
21a	Portable Light Plant #1	Engineering Calc.	0.25 % sulfur	8 kW	1,116 gal/yr	0.02 tpy
21b	Portable Light Plant #2	Engineering Calc.	0.25 % sulfur	8 kW	1,116 gal/yr	0.02 tpy
21c	Portable Light Plant #3	Engineering Calc.	0.25 % sulfur	8 kW	1,116 gal/yr	0.02 tpy
21d	Portable Light Plant #4	Engineering Calc.	0.25 % sulfur	8 kW	1,116 gal/yr	0.02 tpy
21e	Portable Light Plant #5	Engineering Calc.	0.25 % sulfur	8 kW	1,116 gal/yr	0.02 tpy
21f	Portable Light Plant #6	Engineering Calc.	0.25 % sulfur	8 kW	1,116 gal/yr	0.02 tpy
21g	Portable Light Plant #7	Engineering Calc.	0.25 % sulfur	8 kW	1,116 gal/yr	0.02 tpy
21h	Portable Light Plant #8	Engineering Calc.	0.25 % sulfur	8 kW	1,116 gal/yr	0.02 tpy
22	Line Heater	Engineering Calc.	0.25 % sulfur	8.4 MMBtu/hr	123,609 gal/yr	2.18 tpy
23	Test Flare	Engineering Calc.	16.9 lb/MMscf	5,000,000 ft^3/day	84 day/year	3.5 tpy
24	Rig Moving Power - #1	Engineering Calc.	0.25 % sulfur	500 kW	0 gal/yr	0.00 tpy
25	Rig Moving Power - #2	Engineering Calc.	0.25 % sulfur	500 kW	0 gal/yr	0.00 tpy
26	Welding Generator	Engineering Calc.	0.25 % sulfur	90 kW	12,552 gal/yr	0.22 tpy
					Nonroad Engine Total	**10.9 tpy**
					Rig Total	**24.7 tpy**

Appendix B

Emission Calculations for Hydrocarbon Tanks

TANKS 4.0
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification:	500 bbl
City:	North Slope
State:	Alaska
Company:	Phillips McCovey
Type of Tank:	Horizontal Tank
Description:	

Tank Dimensions

Shell Length (ft):	53.60
Diameter (ft):	9.30
Volume (gallons):	21,000.00
Turnovers:	29.00
Net Throughput (gal/yr):	609,000.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition:	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig):	0.03

Meteorological Data used in Emissions Calculations: Barrow, Alaska (Avg Atmospheric Pressure = 14.73 psia)

TANKS 4.0
Emissions Report - Summary Format
Liquid Contents of Storage Tank

		Daily Liquid Surf. Temperatures (deg F)			Liquid Bulk Temp.	Vapor Pressures (psia)			Vapor Mol.	Liquid Mass	Vapor Mass		
Mixture/Component	Month	Avg.	Min.	Max.	(deg F)	Avg.	Min.	Max.	Weight	Fract.	Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Jet kerosene	All	10.28	7.62	12.94	9.44	0.0041	0.0041	0.0041	130.0000			162.00	Option 1: VP40 = .0041

TANKS 4.0
Emissions Report - Summary Format
Individual Tank Emission Totals

Annual Emissions Report

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Jet kerosene	7.73	1.66	9.39

TANKS 4.0
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification:	572 bbl
City:	North Slope
State:	Alaska
Company:	Phillips McCovey
Type of Tank:	Vertical Fixed Roof Tank
Description:	

Tank Dimensions

Shell Height (ft):	17.90
Diameter (ft):	15.20
Liquid Height (ft):	17.80
Avg. Liquid Height (ft):	17.80
Volume (gallons):	24,161.85
Turnovers:	4.00
Net Throughput (gal/yr):	96,647.42
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Dome
Height (ft):	0.00
Radius (ft) (Dome Roof):	0.00

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig):	0.03

Meteorological Data used in Emissions Calculations: Barrow, Alaska (Avg Atmospheric Pressure = 14.73 psia)

TANKS 4.0
Emissions Report - Summary Format
Liquid Contents of Storage Tank

		Daily Liquid Surf. Temperatures (deg F)			Liquid Bulk Temp.	Vapor Pressures (psia)			Vapor Mol.	Liquid Mass	Vapor Mass		
Mixture/Component	Month	Avg.	Min.	Max.	(deg F)	Avg.	Min.	Max.	Weight	Fract.	Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Crude oil (RVP 5)	All	10.28	7.62	12.94	9.44	0.9774	0.9166	1.0415	50.0000			207.00	Option 4: RVP=5

TANKS 4.0
Emissions Report - Summary Format
Individual Tank Emission Totals

Annual Emissions Report

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Crude oil (RVP 5)	84.35	18.94	103.29

Appendix C

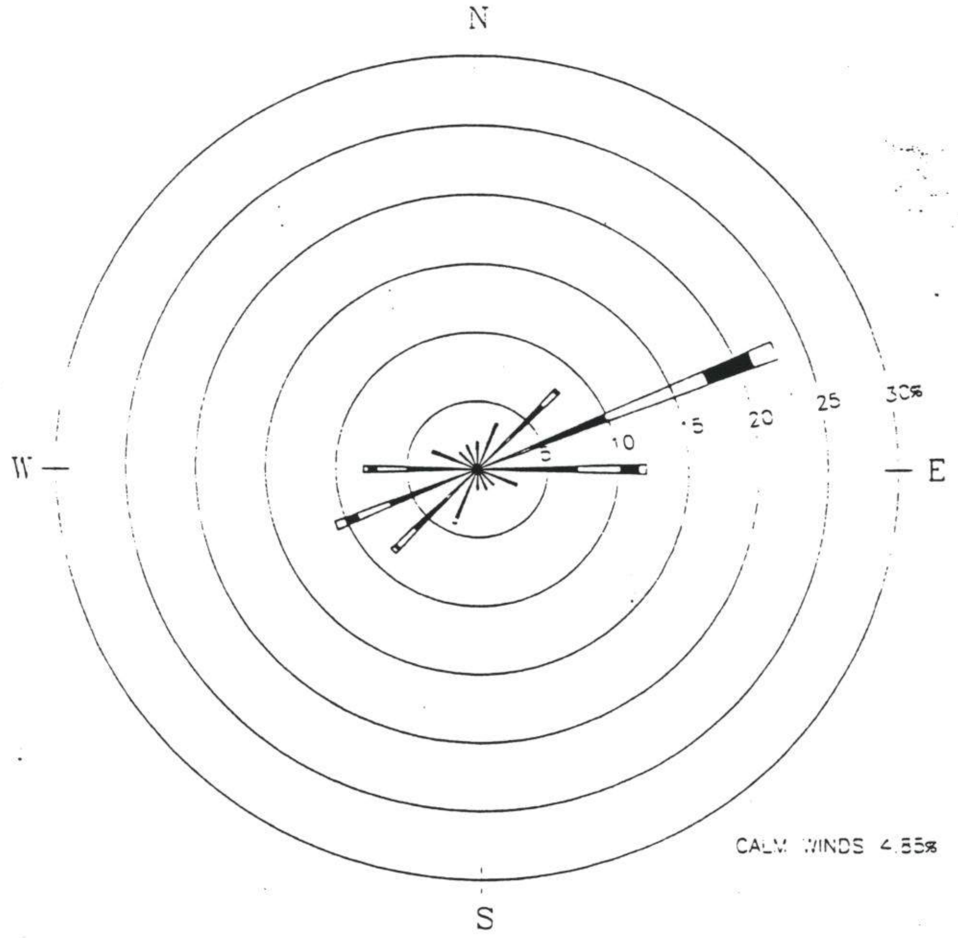
Emission Calculations for Hazardous Air Pollutants

Table C-1. Hazardous Air Contaminant Emissions - McCovey Prospect Ice Island

No.	Source	Source Description	Calculated Fuel Use		Input/Output Parameter		Reference	Benzene (tpy)	Toluene (tpy)	Xylenes (tpy)	1,3-Butadiene (tpy)	Formaldehyde (tpy)	Acetaldehyde (tpy)	Acrolein (tpy)	Naphthalene (tpy)	Reference	As (tpy)	Be (tpy)	Cd (tpy)	Cr (tpy)	Co (tpy)	Hg (tpy)	Pb (tpy)	Mn (tpy)	Ni (tpy)
1	Caterpillar D-398 Engine	Drilling - Main Engine #1	83,682	gallons	600	kW	AP-42 3.4-3, 3.4-4	0.00445	0.00161	0.00111		0.00045	0.00014	0.00005	0.00075	No AP-42 metals factors									
2	Caterpillar D-398 Engine	Drilling - Main Engine #2	83,682	gallons	600	kW	AP-42 3.4-3, 3.4-4	0.00445	0.00161	0.00111		0.00045	0.00014	0.00005	0.00075	No AP-42 metals factors									
3	Caterpillar D-398 Engine	Drilling - Main Engine #3	83,682	gallons	600	kW	AP-42 3.4-3, 3.4-4	0.00445	0.00161	0.00111		0.00045	0.00014	0.00005	0.00075	No AP-42 metals factors									
4	Caterpillar D-398 Engine	Drilling - Main Engine #4	83,682	gallons	600	kW	AP-42 3.4-3, 3.4-4	0.00445	0.00161	0.00111		0.00045	0.00014	0.00005	0.00075	No AP-42 metals factors									
5	Caterpillar D-398 Engine	Drilling - Main Engine #5	83,682	gallons	600	kW	AP-42 3.4-3, 3.4-4	0.00445	0.00161	0.00111		0.00045	0.00014	0.00005	0.00075	No AP-42 metals factors									
6	Caterpillar D-398 Engine	Drilling - Sub Engine #6	0	gallons	600	kW	AP-42 3.4-3, 3.4-4	0.00000	0.00000	0.00000		0.00000	0.00000	0.00000	0.00000	No AP-42 metals factors									
7	Caterpillar 3406 Engine	Cold Start Generator	38,690	gallons	372	hp	AP-42 Table 3.3-2	0.00247	0.00108	0.00076	0.00010	0.00313	0.00203	0.00025	0.00022	No AP-42 metals factors									
8	Kewanee Boiler	Flash Steam Generator #1	65,670	gallons	100	bhp	AP-42 Table 1.3-8	0.00096	0.02789	0.00049		0.14845			0.00508	AP-42 Table 1.3-10	0.00004	0.00000	0.00001	0.00003	0.00020	0.00000	0.00005	0.00010	0.00028
9	Kewanee Boiler	Flash Steam Generator #2	65,670	gallons	100	bhp	AP-42 Table 1.3-8	0.00096	0.02789	0.00049		0.14845			0.00508	AP-42 Table 1.3-10	0.00004	0.00000	0.00001	0.00003	0.00020	0.00000	0.00005	0.00010	0.00028
10	Hurst Boiler	Steam Generator #1	61,804	gallons	4	MMBtu/hr	AP-42 Table 1.3-8	0.00091	0.02625	0.00046		0.13971			0.00478	AP-42 Table 1.3-10	0.00004	0.00000	0.00001	0.00003	0.00019	0.00000	0.00005	0.00009	0.00026
11	Hurst Boiler	Steam Generator #2	61,804	gallons	4	MMBtu/hr	AP-42 Table 1.3-8	0.00091	0.02625	0.00046		0.13971			0.00478	AP-42 Table 1.3-10	0.00004	0.00000	0.00001	0.00003	0.00019	0.00000	0.00005	0.00009	0.00026
12	Tioga Heater	Air Heater	51,504	gallons	4	MMBtu/hr	AP-42 Table 1.3-8	0.00075	0.02187	0.00038		0.11642			0.00399	AP-42 Table 1.3-10	0.00003	0.00000	0.00001	0.00002	0.00016	0.00000	0.00004	0.00008	0.00022
13	Tioga Heater	Air Heater	51,504	gallons	4	MMBtu/hr	AP-42 Table 1.3-8	0.00075	0.02187	0.00038		0.11642			0.00399	AP-42 Table 1.3-10	0.00003	0.00000	0.00001	0.00002	0.00016	0.00000	0.00004	0.00008	0.00022
14	Generator Engine	Emergency Light Generator #1	69,735	gallons	500	kW	AP-42 3.4-3, 3.4-4	0.00371	0.00134	0.00092		0.00038	0.00012	0.00004	0.00062	No AP-42 metals factors									
15	Generator Engine	Emergency Light Generator #2	69,735	gallons	500	kW	AP-42 3.4-3, 3.4-4	0.00371	0.00134	0.00092		0.00038	0.00012	0.00004	0.00062	No AP-42 metals factors									
16	Shop Heater	Shop Heater #1	22,073	gallons	2	MMBtu/hr	AP-42 Table 1.3-8	0.00032	0.00937	0.00016		0.04990			0.00171	AP-42 Table 1.3-10	0.00001	0.00000	0.00000	0.00001	0.00007	0.00000	0.00002	0.00003	0.00009
17	Shop Heater	Shop Heater #2	22,073	gallons	2	MMBtu/hr	AP-42 Table 1.3-8	0.00032	0.00937	0.00016		0.04990			0.00171	AP-42 Table 1.3-10	0.00001	0.00000	0.00000	0.00001	0.00007	0.00000	0.00002	0.00003	0.00009
18	Shop Heater	Shop Heater #3	22,073	gallons	2	MMBtu/hr	AP-42 Table 1.3-8	0.00032	0.00937	0.00016		0.04990			0.00171	AP-42 Table 1.3-10	0.00001	0.00000	0.00000	0.00001	0.00007	0.00000	0.00002	0.00003	0.00009
19	1 MMBtu Heater with 9 kW Engine	Portable Heater #1	15,966	gallons	1	MMBtu/hr	AP-42 Table 1.3-8	0.00023	0.00678	0.00012		0.03609			0.00124	AP-42 Table 1.3-10	0.00001	0.00000	0.00000	0.00001	0.00005	0.00000	0.00001	0.00002	0.00007
20	1 MMBtu Heater with 9 kW Engine	Portable Heater #2	15,966	gallons	1	MMBtu/hr	AP-42 Table 1.3-8	0.00023	0.00678	0.00012		0.03609			0.00124	AP-42 Table 1.3-10	0.00001	0.00000	0.00000	0.00001	0.00005	0.00000	0.00001	0.00002	0.00007
21a	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #1	1,116	gallons	8	kW	AP-42 Table 3.3-2	0.00007	0.00003	0.00002	0.00000	0.00009	0.00006	0.00001	0.00001	No AP-42 metals factors									
21b	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #2	1,116	gallons	8	kW	AP-42 Table 3.3-2	0.00007	0.00003	0.00002	0.00000	0.00009	0.00006	0.00001	0.00001	No AP-42 metals factors									
21c	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #3	1,116	gallons	8	kW	AP-42 Table 3.3-2	0.00007	0.00003	0.00002	0.00000	0.00009	0.00006	0.00001	0.00001	No AP-42 metals factors									
21d	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #4	1,116	gallons	8	kW	AP-42 Table 3.3-2	0.00007	0.00003	0.00002	0.00000	0.00009	0.00006	0.00001	0.00001	No AP-42 metals factors									
21e	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #5	1,116	gallons	8	kW	AP-42 Table 3.3-2	0.00007	0.00003	0.00002	0.00000	0.00009	0.00006	0.00001	0.00001	No AP-42 metals factors									
21f	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #6	1,116	gallons	8	kW	AP-42 Table 3.3-2	0.00007	0.00003	0.00002	0.00000	0.00009	0.00006	0.00001	0.00001	No AP-42 metals factors									
21g	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #7	1,116	gallons	8	kW	AP-42 Table 3.3-2	0.00007	0.00003	0.00002	0.00000	0.00009	0.00006	0.00001	0.00001	No AP-42 metals factors									
21h	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #8	1,116	gallons	8	kW	AP-42 Table 3.3-2	0.00007	0.00003	0.00002	0.00000	0.00009	0.00006	0.00001	0.00001	No AP-42 metals factors									
22	Boiler, line heater	Line Heater	123,609	gallons	8	MMBtu/hr	AP-42 Table 1.3-8	0.00181	0.05250	0.00092		0.27942			0.00957	AP-42 Table 1.3-10	0.00008	0.00000	0.00002	0.00005	0.00037	0.00001	0.00009	0.00019	0.00052
23	Flare	Test Flare	420	MMcf	5.E+06	ft^3/day	AP-42 Section 1.4	0.00044	0.00071			0.01575			0.00013	AP-42 Section 1.4	0.00004	0.00000	0.00023	0.00029	0.00002	0.00005	0.00011	0.00008	0.00044
24	Rig Engine	Rig Moving Power #1	0	gallons	500	kW	AP-42 3.4-3, 3.4-4	0.00000	0.00000	0.00000		0.00000	0.00000	0.00000	0.00000	No AP-42 metals factors									
25	Rig Engine	Rig Moving Power #2	0	gallons	500	kW	AP-42 3.4-3, 3.4-4	0.00000	0.00000	0.00000		0.00000	0.00000	0.00000	0.00000	No AP-42 metals factors									
26	Welding Generator	Welding Generator	12,552	gallons	90	kW	AP-42 Table 3.3-2	0.00080	0.00035	0.00025	0.00003	0.00101	0.00066	0.00008	0.00007	No AP-42 metals factors									
							Total Organic HAPS	**0.04244**	**0.25934**	**0.01288**	**0.00016**	**1.33407**	**0.00412**	**0.00068**	**0.05032**	**Total Metals**	**0.00042**	**0.00001**	**0.00035**	**0.00054**	**0.00176**	**0.00009**	**0.00054**	**0.00095**	**0.00289**
							TOTAL ORGANIC PTE	**1.70402**								**TOTAL METAL PTE**	**0.00755**								

Appendix D

Annual Windroses for Prudhoe Bay Pad A Meteorological Station 1991 - 1995

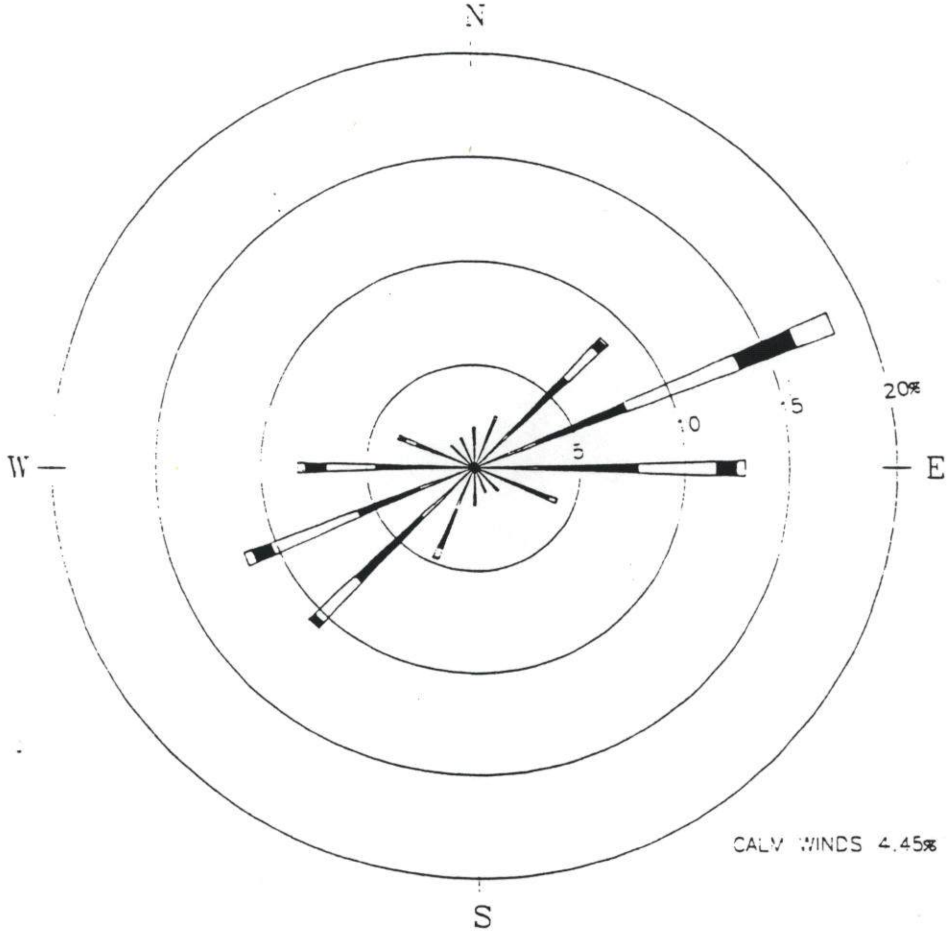


WIND SPEED CLASS BOUNDARIES
(METERS/SECOND)

Prudhoe Bay
Monitoring Station
STATION NO: Pad A
PERIOD: 1991

NOTES:
DIAGRAM OF THE FREQUENCY OF OCCURRENCE OF EACH WIND DIRECTION. WIND DIRECTION IS THE DIRECTION FROM WHICH THE WIND IS BLOWING. EXAMPLE - WIND IS BLOWING FROM THE NORTH 2.1 PERCENT OF THE TIME.

HCG, INC.
Anchorage, Alaska



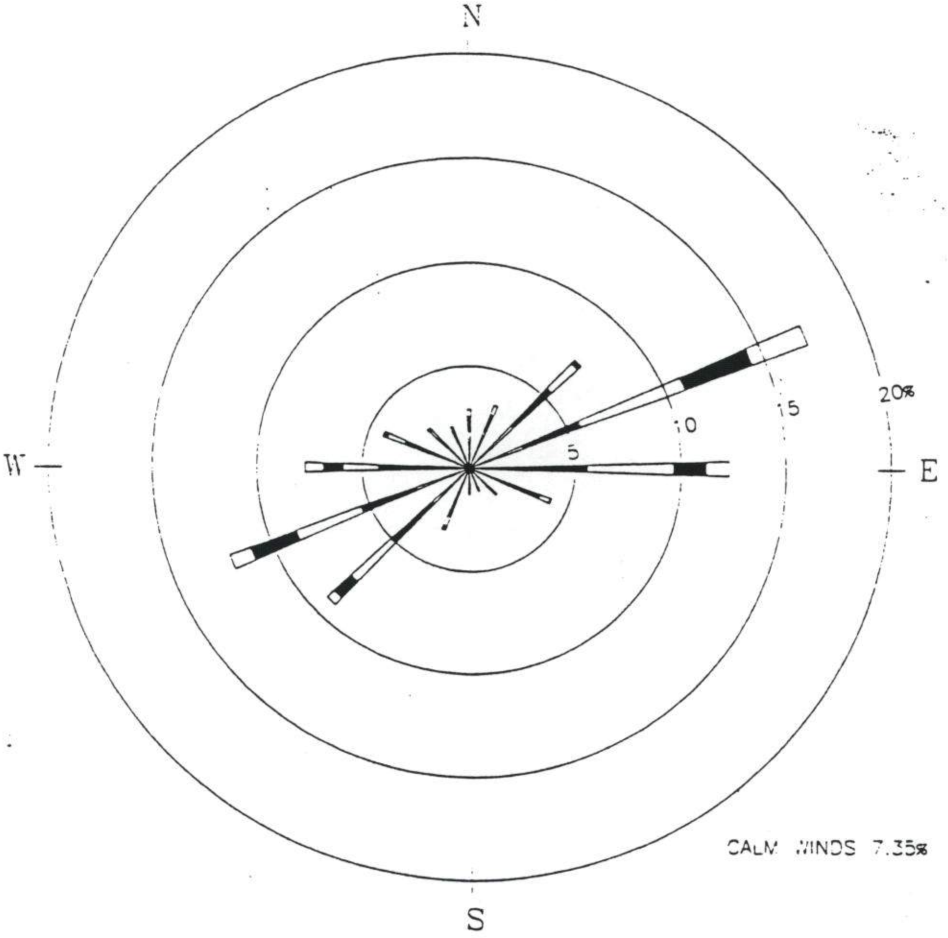
WIND SPEED CLASS BOUNDARIES
(METERS/SECOND)

Prudhoe Bay Monitoring Station

STATION NO: Pad A
PERIOD: 1992

NOTES:
DIAGRAM OF THE FREQUENCY OF OCCURRENCE OF EACH WIND DIRECTION. WIND DIRECTION IS THE DIRECTION FROM WHICH THE WIND IS BLOWING. EXAMPLE - WIND IS BLOWING FROM THE NORTH 2.0 PERCENT OF THE TIME.

HCG, INC.
Anchorage, Alaska



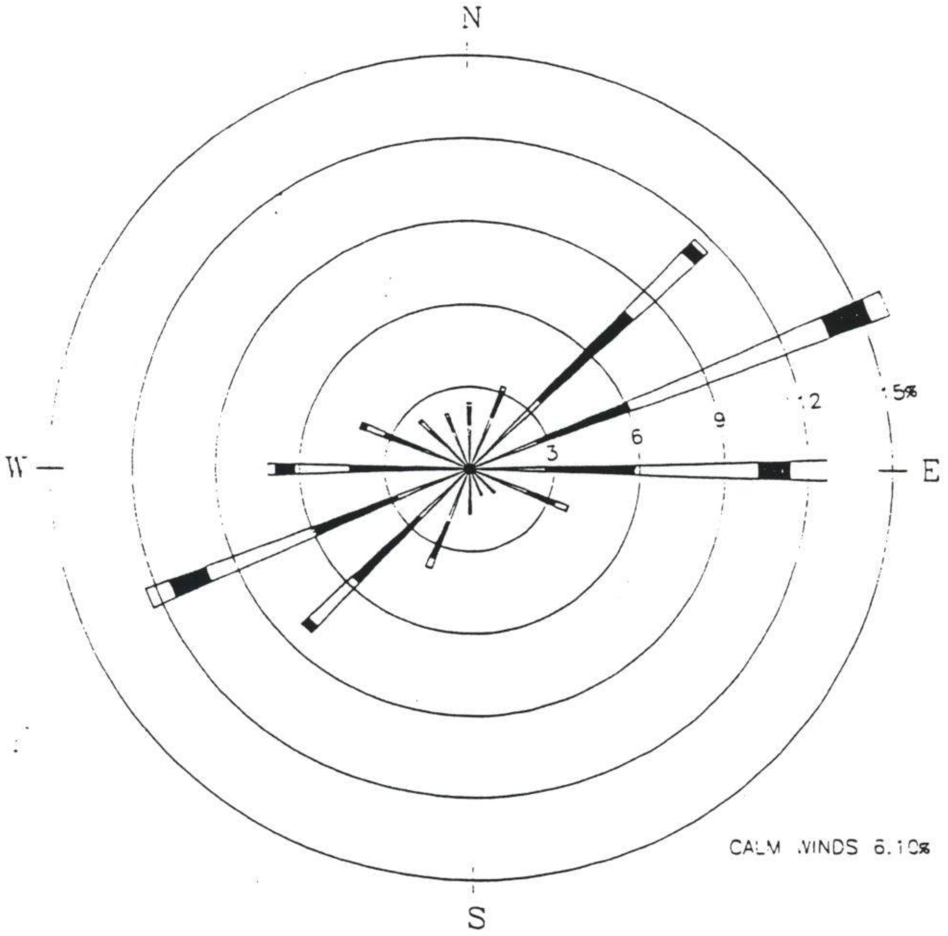
WIND SPEED CLASS BOUNDARIES
(METERS/SECOND)

Prudhoe Bay Monitoring Station

STATION NO: Pad A
PERIOD: 1993

NOTES:
DIAGRAM OF THE FREQUENCY OF OCCURRENCE OF EACH WIND DIRECTION. WIND DIRECTION IS THE DIRECTION FROM WHICH THE WIND IS BLOWING. EXAMPLE - WIND IS BLOWING FROM THE NORTH 2.9 PERCENT OF THE TIME.

HCG, INC.
Anchorage, Alaska



CALM WINDS 6.10%

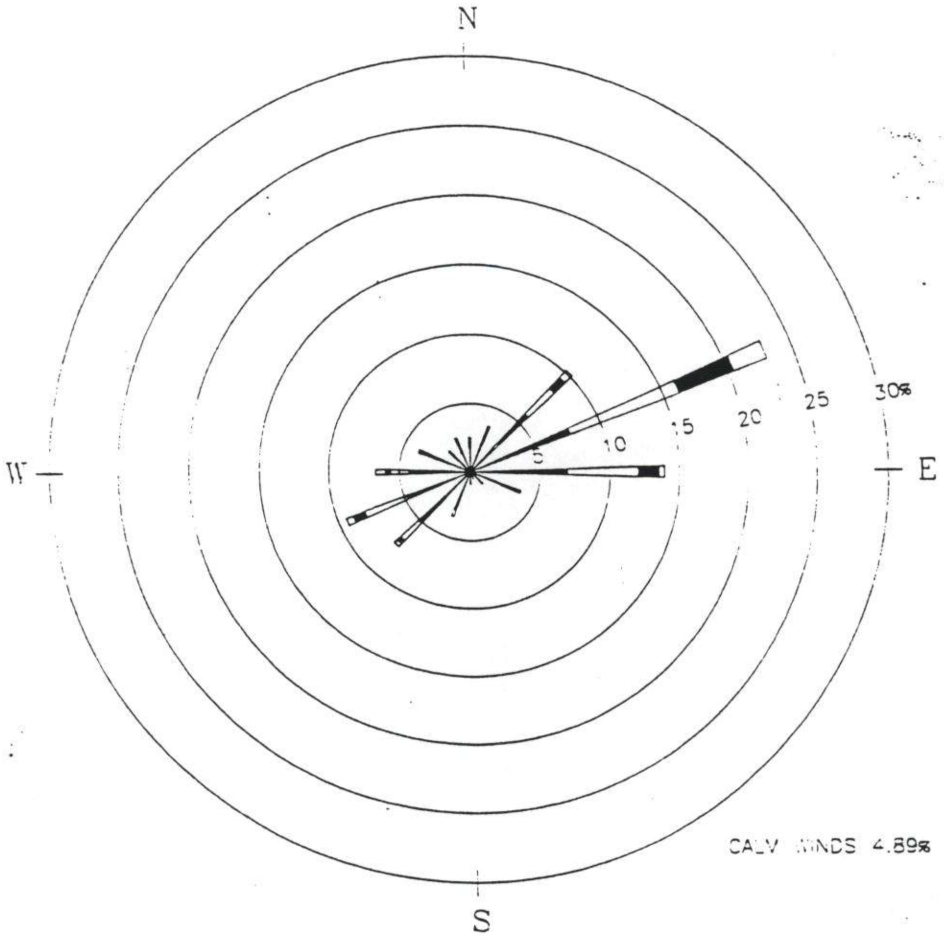
WIND SPEED CLASS BOUNDARIES
(METERS/SECOND)

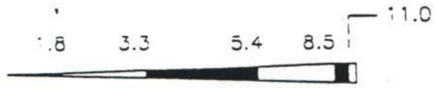
Prudhoe Bay
Monitoring Station

STATION NO: Pad A
PERIOD: 1994

NOTES:
DIAGRAM OF THE FREQUENCY OF OCCURRENCE OF EACH WIND DIRECTION. WIND DIRECTION IS THE DIRECTION FROM WHICH THE WIND IS BLOWING. EXAMPLE – WIND IS BLOWING FROM THE NORTH 2.4 PERCENT OF THE TIME.

HCG, INC.
Anchorage, Alaska





WIND SPEED CLASS BOUNDARIES
(METERS/SECOND)

NOTES:
DIAGRAM OF THE FREQUENCY OF OCCURRENCE OF EACH WIND DIRECTION. WIND DIRECTION IS THE DIRECTION FROM WHICH THE WIND IS BLOWING. EXAMPLE – WIND IS BLOWING FROM THE NORTH 2.5 PERCENT OF THE TIME.

Prudhoe Bay Monitoring Station

STATION NO: Pad A
PERIOD: 1995

HCG, INC.
Anchorage, Alaska

Appendix E

Electronic Files

Electronic files not included in this copy.

Appendix F

Modeling Source Parameters

Table F-1. Modeled Emission Rates - Annual and Short-term Averaging Periods

Source Information					Modeled Emission Rates											
					NO_x		CO			PM_{10}			SO_2			
No.	Source	Source Description	On Coincident Peak (Y/N)?	Permitted Operation (hr/yr)	Annual Potential (tpy)	Modeled Annualized (g/sec)	Annual Potential (tpy)	1-hr Modeled (g/sec)	8-hr Modeled (g/sec)	Annual Potential (tpy)	Modeled Annualized (g/sec)	24-hr Modeled (g/sec)	Annual Potential (tpy)	Modeled Annualized(g/sec)	24-hr Modeled (g/sec)	3-hr Modeled (g/sec)
1	Caterpillar D-398 Engine	Drilling - Main Engine #1	Y	2,016	15.10	0.4348	2.54	0.3176	0.3176	0.1200	0.0035	0.0150	1.4749	0.0425	0.1845	0.1845
2	Caterpillar D-398 Engine	Drilling - Main Engine #2	Y	2,016	15.10	0.4348	2.54	0.3176	0.3176	0.1200	0.0035	0.0150	1.4749	0.0425	0.1845	0.1845
3	Caterpillar D-398 Engine	Drilling - Main Engine #3	Y	2,016	15.10	0.4348	2.54	0.3176	0.3176	0.1200	0.0035	0.0150	1.4749	0.0425	0.1845	0.1845
4	Caterpillar D-398 Engine	Drilling - Main Engine #4	Y	2,016	15.10	0.4348	2.54	0.3176	0.3176	0.1200	0.0035	0.0150	1.4749	0.0425	0.1845	0.1845
5	Caterpillar D-398 Engine	Drilling - Main Engine #5	Y	2,016	15.10	0.4348	2.54	0.3176	0.3176	0.1200	0.0035	0.0150	1.4749	0.0425	0.1845	0.1845
6	Caterpillar D-398 Engine	Drilling - ***Sub*** Engine #6	N	0												
7	Caterpillar 3406 Engine	Cold Start Generator	Y	2,016	3.92	0.1128	0.80	0.1000	0.1000	0.1099	0.0032	0.0138	0.6819	0.0196	0.0853	0.0853
8	Kewanee Boiler	Flash Steam Generator #1	Y	2,016	0.66	0.0189	0.16	0.0205	0.0205	0.0657	0.0019	0.0082	1.1574	0.0333	0.1448	0.1448
9	Kewanee Boiler	Flash Steam Generator #2	Y	2,016	0.66	0.0189	0.16	0.0205	0.0205	0.0657	0.0019	0.0082	1.1574	0.0333	0.1448	0.1448
10	Hurst Boiler	Steam Generator #1	Y	2,016	0.62	0.0178	0.15	0.0193	0.0193	0.0618	0.0018	0.0077	1.0893	0.0314	0.1363	0.1363
11	Hurst Boiler	Steam Generator #2	Y	2,016	0.62	0.0178	0.15	0.0193	0.0193	0.0618	0.0018	0.0077	1.0893	0.0314	0.1363	0.1363
12	Tioga Heater	Air Heater	Y	2,016	0.52	0.0148	0.13	0.0161	0.0161	0.0515	0.0015	0.0064	0.9078	0.0261	0.1136	0.1136
13	Tioga Heater	Air Heater	Y	2,016	0.52	0.0148	0.13	0.0161	0.0161	0.0515	0.0015	0.0064	0.9078	0.0261	0.1136	0.1136
14	Generator Engine	Emergency Light Generator #1	Y	2,016	20.95	0.6033	4.51	0.5649	0.5649	1.4869	0.0428	0.1860	1.2291	0.0354	0.1538	0.1538
15	Generator Engine	Emergency Light Generator #2	Y	2,016	20.95	0.6033	4.51	0.5649	0.5649	1.4869	0.0428	0.1860	1.2291	0.0354	0.1538	0.1538
16	Shop Heater	Shop Heater #1	Y	2,016	0.22	0.0064	2.46E-03	0.0003	0.0003	0.0010	0.00003	0.00012	0.3890	0.0112	0.0487	0.0487
17	Shop Heater	Shop Heater #2	Y	2,016	0.22	0.0064	2.46E-03	0.0003	0.0003	0.0010	0.00003	0.00012	0.3890	0.0112	0.0487	0.0487
18	Shop Heater	Shop Heater #3	Y	2,016	0.22	0.0064	2.46E-03	0.0003	0.0003	0.0010	0.00003	0.00012	0.3890	0.0112	0.0487	0.0487
19	1 MMBtu Heater with 9 kW Engine	Portable Heat #1	Y	2,016	0.16	0.0046	0.04	0.0050	0.0050	0.0160	0.0005	0.0020	0.2814	0.0081	0.0352	0.0352
20	1 MMBtu Heater with 9 kW Engine	Portable Heat #2	Y	2,016	0.16	0.0046	0.04	0.0050	0.0050	0.0160	0.0005	0.0020	0.2814	0.0081	0.0352	0.0352
21a	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #1	Y	2,016	0.34	0.0097	0.07	0.0090	0.0090	0.0238	0.0007	0.0030	0.0197	0.0006	0.0025	0.0025
21b	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #2	Y	2,016	0.34	0.0097	0.07	0.0090	0.0090	0.0238	0.0007	0.0030	0.0197	0.0006	0.0025	0.0025
21c	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #3	Y	2,016	0.34	0.0097	0.07	0.0090	0.0090	0.0238	0.0007	0.0030	0.0197	0.0006	0.0025	0.0025
21d	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #4	Y	2,016	0.34	0.0097	0.07	0.0090	0.0090	0.0238	0.0007	0.0030	0.0197	0.0006	0.0025	0.0025
21e	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #5	Y	2,016	0.34	0.0097	0.07	0.0090	0.0090	0.0238	0.0007	0.0030	0.0197	0.0006	0.0025	0.0025
21f	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #6	Y	2,016	0.34	0.0097	0.07	0.0090	0.0090	0.0238	0.0007	0.0030	0.0197	0.0006	0.0025	0.0025
21g	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #7	Y	2,016	0.34	0.0097	0.07	0.0090	0.0090	0.0238	0.0007	0.0030	0.0197	0.0006	0.0025	0.0025
21h	Portable Light Plants, 8 @ 8 kW	Portable Light Plant #8	Y	2,016	0.34	0.0097	0.07	0.0090	0.0090	0.0238	0.0007	0.0030	0.0197	0.0006	0.0025	0.0025
22	Boiler, line heater	Line Heater	Y	2,016	1.24	0.0356	0.31	0.0387	0.0387	0.1236	0.0036	0.0155	2.1786	0.0627	0.2726	0.2726
23	Flare	Test Flare	Y	2,016	14.28	0.4112	77.70	9.7211	9.7211	5.5440	0.1596	0.6936	3.5490	0.1022	0.4440	0.4440
24	Rig Engine	Rig Moving Power #1	N	0												
25	Rig Engine	Rig Moving Power #2	N	0												
26	Welding Generator	Welding Generator	Y	2,016	3.77	0.1086	0.81	0.1017	0.1017	0.2676	0.0077	0.0335	0.2212	0.0064	0.0277	0.0277

Table F-2. Nabors 16E Emission Point Information

No.	Source	Relative Location		Stack Height (m)	Rain Cap?	Exhaust Gas Velocity (m/s)	Stack Temperature (K)	Stack Diameter (m)
		X (m)	Y (m)					
1	Drilling - Main Engine #1	-54.7	-4.4	12.16	No	28.4	750	0.30
2	Drilling - Main Engine #2	-51.8	-4.4	12.16	No	28.4	750	0.30
3	Drilling - Main Engine #3	-48.8	-4.4	12.16	No	28.4	750	0.30
4	Drilling - Main Engine #4	-45.9	-4.4	12.16	No	28.4	750	0.30
5	Drilling - Main Engine #5	-43.0	-4.4	12.16	No	28.4	750	0.30
6	Drilling - Sub Engine #6			8.69	No	28.4	750	0.30
7	Cold Start Generator	-46.2	1.7	11.98	No	33.3	833	0.20
8	Flash Steam Generator #1	-60.4	2.6	12.25	No	12.5	590	0.36
9	Flash Steam Generator #2	-60.4	-8.2	12.25	No	12.5	590	0.36
10	Steam Generator #1	-56.5	0.6	12.53	No	19.2	590	0.30
11	Steam Generator #2	7.6	-3.0	12.53	No	19.2	590	0.30
12	Air Heater	2.3	29.8	12.09	No	16.0	590	0.30
13	Air Heater	16.8	29.8	12.09	No	16.0	590	0.30
14	Emergency Light Generator #1	-43.7	4.1	8.53	No	23.7	750	0.30
15	Emergency Light Generator #2	-42.7	4.1	8.53	No	23.7	750	0.30
16	Shop Heater #1	-35.7	3.0	4.72	No	13.7	590	0.15
17	Shop Heater #2	-35.7	0.0	4.72	No	13.7	590	0.15
18	Shop Heater #3	-35.7	-3.0	4.57	No	13.7	590	0.15
19	Portable Heat #1	-36.6	9.1	6.10	No	19.8	590	0.15
20	Portable Heat #2	36.6	-9.1	6.10	No	19.8	590	0.15
21a	Portable Light Plant #1	0.0	91.4	6.10	No	16.3	750	0.05
21b	Portable Light Plant #2	64.6	64.6	6.10	No	16.3	750	0.05
21c	Portable Light Plant #3	91.4	0.0	6.10	No	16.3	750	0.05
21d	Portable Light Plant #4	64.6	-64.6	6.10	No	16.3	750	0.05
21e	Portable Light Plant #5	0.0	-91.4	6.10	No	16.3	750	0.05
21f	Portable Light Plant #6	-64.6	-64.6	6.10	No	16.3	750	0.05
21g	Portable Light Plant #7	-91.4	0.0	6.10	No	16.3	750	0.05
21h	Portable Light Plant #8	-64.6	64.6	6.10	No	16.3	750	0.05
22	Line Heater	0.0	12.2	12.19	No	21.6	590	0.41
23	Test Flare	24.4	-24.4	21.34	No	20.0	1273	1.52
24	Rig Moving Power #1	-36.6	0.0	6.10	No	23.7	750	0.30
25	Rig Moving Power #2	-36.6	0.0	6.10	No	23.7	750	0.30
26	Welding Generator	36.6	36.6	6.10	No	38.3	750	0.10

Table F-3. Nabors 14E Emission Point Information

No.	Source	Relative Location		Stack Height (m)	Rain Cap?	Exhaust Gas Velocity (m/s)	Stack Temperature (K)	Stack Diameter (m)
		X (m)	Y (m)					
1	Drilling - Main Engine #1	18.29	-22.86	12.16	No	28.4	750	0.30
2	Drilling - Main Engine #2	15.24	-22.86	12.16	No	28.4	750	0.30
3	Drilling - Main Engine #3	12.19	-22.86	12.16	No	28.4	750	0.30
4	Drilling - Main Engine #4	9.14	-22.86	12.16	No	28.4	750	0.30
5	Drilling - Main Engine #5	6.10	-22.86	12.16	No	28.4	750	0.30
6	Drilling - Sub Engine #6			8.69	No	28.4	750	0.30
7	Cold Start Generator	9.91	-28.19	11.98	No	33.3	833	0.20
8	Flash Steam Generator #1	23.47	-22.10	12.25	No	12.5	590	0.36
9	Flash Steam Generator #2	23.47	-24.77	12.25	No	12.5	590	0.36
10	Steam Generator #1	19.81	-23.62	12.53	No	19.2	590	0.30
11	Steam Generator #2	4.42	-2.74	12.53	No	19.2	590	0.30
12	Air Heater	2.29	29.72	12.09	No	16.0	590	0.30
13	Air Heater	19.81	29.72	12.09	No	16.0	590	0.30
14	Emergency Light Generator #1	6.10	-32.00	8.53	No	23.7	750	0.30
15	Emergency Light Generator #2	7.62	-32.00	8.53	No	23.7	750	0.30
16	Shop Heater #1	-0.76	-22.10	4.72	No	13.7	590	0.15
17	Shop Heater #2	-0.76	-26.67	4.72	No	13.7	590	0.15
18	Shop Heater #3	-0.76	-31.24	4.57	No	13.7	590	0.15
19	Portable Heat #1	-36.58	9.14	6.10	No	19.8	590	0.15
20	Portable Heat #2	36.58	-9.14	6.10	No	19.8	590	0.15
21a	Portable Light Plant #1	0.00	91.44	6.10	No	16.3	750	0.05
21b	Portable Light Plant #2	64.62	64.62	6.10	No	16.3	750	0.05
21c	Portable Light Plant #3	91.44	0.00	6.10	No	16.3	750	0.05
21d	Portable Light Plant #4	64.62	-64.62	6.10	No	16.3	750	0.05
21e	Portable Light Plant #5	0.00	-91.44	6.10	No	16.3	750	0.05
21f	Portable Light Plant #6	-64.62	-64.62	6.10	No	16.3	750	0.05
21g	Portable Light Plant #7	-91.44	0.00	6.10	No	16.3	750	0.05
21h	Portable Light Plant #8	-64.62	64.62	6.10	No	16.3	750	0.05
22	Line Heater	0.76	15.24	12.19	No	21.6	590	0.41
23	Test Flare	24.38	-24.38	21.34	No	20.0	1273	1.52
24	Rig Moving Power #1	-36.58	0.00	6.10	No	23.7	750	0.30
25	Rig Moving Power #2	-36.58	0.00	6.10	No	23.7	750	0.30
26	Welding Generator	36.58	36.58	6.10	No	38.3	750	0.10

PHILLIPS ALASKA, INC.

Exploration Plan
McCovey #1 Well

Beaufort Sea, Alaska

APPENDIX VII
MUD SYSTEM BIOASSAY REPORT

September 19, 2000

BAROID DRILLING FLUIDS, INC.

FLUIDS RESEARCH AND ENGINEERING

BIOASSAY LABORATORY

BL-0618

BIOASSAY TESTING OF TWO ARCO ALASKA, INC. MUD FORMULATIONS

(CUSTOM POTASSIUM MUD AND MODIFIED GENERIC MUD #2 WITH TORQ-TRIM II)

By

G. Vieaux

November 12, 1993

Distribution:

J. Rose

Approved by:____________________
G. Vieaux

A. A. Hinds, Vice President
Environmental Services

Jeff Kirsner, Manager
Bioassay Laboratory

TABLE OF CONTENTS

INTRODUCTION

The purpose of these tests was to determine the seawater toxicity of two Arco Alaska, Inc. mud formulations, which were supplied by John Rose of Baroid. Sample 31105-2 was a Modified Generic Mud #2 containing TORQ TRIM®II and the sample 31105-3 was a Custom Potassium Mud .

The muds was prepared by the Baroid Bioassay Laboratory and hot rolled at 150°F for 16 hours before testing. The sample was void of odor and black spots.

Each mud sample was diluted with seawater and the suspended particulate phase (SPP) was tested. Four and five day old Mysidopsis bahia shrimp were used to determine the 96 Hour LC_{50} (lethal concentration where 50% of the mysids die).

SUMMARY OF RESULTS

96 Hour LC_{50}

The 96 Hour LC_{50} for Custom Potassium Mud (Sample No. 31105-3) was 130,400 ppm SPP. The 95% confidence limits were 11.6 to 14.96% SPP.

The 96 Hour LC_{50} for Modified Generic Mud #2 (Sample No. 31105-2) was 245,700 ppm SPP. The 95% confidence limits were 18.8 to 37.0% SPP.

Age of the M. bahia used for the test were 4 and 5 days old.

Sample Condition

The samples were cooled to room temperature after hot rolling prior to preparing the suspended particulate phase.

Reference Toxicant Test

The 96 Hour LC_{50} for the reference toxicant, sodium lauryl sulfate (SLS), test was 14.5 ppm SLS. The 95% confidence limits were 12.9 to 16.1 ppm SLS. A SLS from Sigma Chemical Co. was used Lot No. 82H0749.

METHODS AND MATERIALS

The methods and materials to determine the toxicity of the submitted sample, was performed in accordance with U.S. EPA Protocol (1993).

Artificial Seawater Preparation

The twenty parts/thousand (ppt) artificial seawater used for tests was prepared using deionized water and synthetic sea salt (Hawaiian Marinemix). The artificial seawater was aerated for two weeks before being used.

Test Animals

The Mysidopsis bahia used for tests were cultured at the Baroid Bioassay Laboratory in Houston, Texas. The base stock of animals were obtained from the University of Arizona in 1987. The mysids were grown and tested in seawater maintained at 20°C ± 2°C with a salinity of 20 ± 2 ppt.

Test Animal Selection and Feeding

Test animals of the same age (6 days), size, randomly selected and placed in each 1000 ml of test mixture (20 animals per crystallizing dish). The mysids were fed 48 hour old Artemia nauplii twice daily.

Suspended Particulate Phase (SPP) Preparation

The mud sample was thoroughly stirred at 1000 rpm before preparing the SPP. The SPP of the drilling fluid was prepared by pouring 800 ml of filtered artificial seawater into a 2000 ml Erlenmeyer flask followed by 200 ml of mixed mud and 1000 ml of seawater. This solution (1 + 9 v/v mixture) was stirred for 5 minutes with a magnetic stirrer. While stirring, the pH was adjusted to 7.8 ± 0.2 with 6N HCL. The mixture was allowed to settle for one hour before the SPP was decanted. At this point, the pH and dissolved oxygen (D.O.) were measured and adjusted. If the D.O. was below 4.9 ppm, the SPP was aerated for five additional minutes.

Test Set-up

One thousand milliliters test solutions were prepared by diluting the 100% SPP with 20 ppt artificial seawater to obtain the required concentrations. The range finding test was made up of five concentrations with only one replicate per concentration. The definitive test was conducted with five concentrations using three replicates per concentration.

Test Room Conditions

The test room was lighted with cool-white fluorescent lights having a 14 hour light and 10 hour dark photo period. Temperature was kept at 20°C ± 2°C. Air was supplied with a commercial oil-free air pump to each test dish using disposable plastic tubes at the rate of 50 to 140 cubic centimeters per minute.

Observations and Measurements

The number of survivors was determined daily, where possible, and at the very least at 0 and 96 hours. The temperature, salinity, dissolved oxygen and pH were measured daily.

Results and Discussion

The 96 Hour LC_{60} for Custom Potassium Mud (Sample No. 31105-3) was 130,400 ppm SPP. The 95% confidence limits were 11.6 to 14.9% SPP.

The 96 Hour LC_{60} for Modified Generic Mud #2 (Sample No. 31105-2) was 245,700 ppm SPP. The 95% confidence limits were 18.8 to 37.0% SPP.

References

U.S Environmental Protection Agency, 1993 Drilling Fluids Toxicity Test, Federal Register, Vol. 58 No. 41, Thursday, March 4, 1993, pages 12507-12509.

U.S. Environmental Protection Agency, 1988 Procedure for Conducting Static, Acute Toxicity Test with Mysids (Mysidopsis bahla) and Drilling Fluids. Oct. 1988, pages 1-6.

Stephan C.E. 1983. Computer program for calculation of LC_{60} values. U.S. Environmental Protection Agency, Duluth, Minnesota.

Probit Program - U.S. EPA, June, 1988, Cincinnati, Ohio.

Standard Methods For the Examination of Water and Wastewater, 1985, 16th Edition, pages 95-97.

Sample No: 31105-3

Test Concentration ppm SPP	Total Number Mysids Exposed	Survived
Control	60	60
32,000	60	54
56,000	60	52
100,000	60	40
180,000	60	36
320,000	60	0

96 Hour LC_{60}, 130,400 ppm SPP Moving Average
95% Confidence limit 11.6 to 14.9% SPP

Mud Formulation	lb/bbl
Bentonite (AQUAGEL)	30.0
Barite (BAROID)	522.0
Chrome-Free Ligno. (ENVIRO-THIN)	6.0
Potassium Chloride	11.9 (18.4 lb/bbl equiv.)
Potassium Hydroxide	2.0
Soda Ash	2.0
Sodium Bicarbonate	2.0
Lime	2.0
Cellulose Polymer (Drispac-SL)	3.0
Xanthan Gum (BARAZAN)	3.0
BARANEX	8.0
Soltex	6.0
BOREPLATE	6.0
Calcium Carbonate	178.5
BARADEFOAM HP	0.75
Desco	1.0
DEXTRID NT	7.0
EZ-MUD DP	2.0
Potassium Bromide	2.0
X-TEND II	0.1
ALDACIDE-G	0.2
BAROFIBER	12.0
POLYAC	2.0
THERMA-THIN	4.0
CARBONOX	10.0
Miltemp	1.8
PH6	3.0
LD8	0.06
Tap Water	0.631 bbl

APPENDIX A

Sample No: 31105-2

Test Concentration ppm SPP	Total Number Mysids Exposed	Survived
Control	60	60
32,000	60	55
56,000	60	51
100,000	60	43
180,000	60	35
320,000	60	26

96 Hour LC$_{60}$, 245,700 ppm SPP Probit
95% Confidence limit 18.8 to 37.0% SPP

Mud Formulation	lb/bbl
Bentonite (AQUAGEL)	50.0
Barite (BAROID)	575.0
Lignosulfonate (Q-BROXIN)	15.0
Lignite (CARBONOX)	10.0
Sodium Hydroxide	5.0
Soda Ash	2.0
Lime	2.0
Cellulose Polymer (Drispac-SL)	5.0
Xanthan Gum (BARAZAN)	3.0
Aluminum Stearate	0.2
BARANEX	10.0
Soltex	6.0
BOREPLATE	6.0
Calcium Carbonate	100.0
CON DET	0.4
BARADEFOAM HP	0.75
Desco CF	1.0
DEXTRID NT	7.0
EZ-MUD DP	2.0
Sodium Bromide	2.0
TORQ-TRIM II	6.0
X-TEND II	1.0
ALDACIDE-G	0.2
BAROFIBER	12.0
POLYAC	2.0
THERMA-THIN	4.0
PH6	3.0
LD8	0.06
Miltemp	1.8
Tap Water	0.638 bbl

DISCLAIMER

LC$_{50}$ testing by Baroid Drilling Fluids, Inc. is performed for company use only and is not intended to be used for permit compliance.

```
CONC.             NUMBER          NUMBER          PERCENT          BINOMIAL
                  EXPOSED         DEAD            DEAD             PROB.(%)
 32                60              34              56.66667         18.3147
 18                60              25              41.66666         12.25304
 10                60              17              28.33333         5.328829E-02
 5.6               60              9               15               1.542518E-06
 3.2               60              5               8.333334         5.191332E-10
THE BINOMIAL TEST SHOWS THAT  10 AND + INFINITY CAN BE
USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT
CONFIDENCE LIMITS SINCE THE ACTUAL CONFIDENCE LEVEL
ASSOCIATED WITH THESE LIMITS IS  99.94671  PERCENT.
AN APPROXIMATE LC50 FOR THIS SET OF DATA IS  24.78532

>>>>>>>>RESULTS CALCULATED USING THE MOVING AVERAGE METHOD
SPAN            G              LC50           95 PERCENT CONFIDENCE LIMITS
 1              1.447052       24.78532          0           + INFINITY

>>>>>>>RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS     G               H               GOODNESS OF FIT PROBABILITY
 2             9.159038E-02                    1               .994186

SLOPE  =       1.562605
95 PERCENT CONFIDENCE LIMITS = 1.0897    AND    2.035511

LC50  =        24.56946
95 PERCENT CONFIDENCE LIMITS  =   18.79185    AND    37.03001
LC1    =       .7968019
95 PERCENT CONFIDENCE LIMITS  =   .2365465    AND    1.549709
```

```
CONC.           NUMBER          NUMBER          PERCENT          BINOMIAL
                EXPOSED         DEAD            DEAD             PROB.(%)
 32              60              60              100              8.673617E-17
 18              60              24              40               7.750095
 10              60              20              33.33334         .6744647
 5.6             60              8               13.33333         2.602846E-07
 3.2             60              6               10               4.861481E-09
THE BINOMIAL TEST SHOWS THAT  10 AND  32  CAN BE
USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT
CONFIDENCE LIMITS SINCE THE ACTUAL CONFIDENCE LEVEL
ASSOCIATED WITH THESE LIMITS IS  99.32554  PERCENT.
AN APPROXIMATE LC50 FOR THIS SET OF DATA IS  19.29473

>>>>>>>>RESULTS CALCULATED USING THE MOVING AVERAGE METHOD
SPAN            G               LC50            95 PERCENT CONFIDENCE LIMITS
 4               2.284671E-02                    13.04453         11.58982
 14.86322

>>>>>>>RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS      G               H               GOODNESS OF FIT PROBABILITY
 5               1.037748        9.66956         0

A PROBABILITY OF 0 MEANS THAT IT IS LESS THAN 0.001

SINCE THE PROBABILITY IS LESS THAN 0.05, RESULTS CALCULATED
USING THE PROBIT METHOD PROBABLY SHOULD NOT BE USED.

SLOPE  =          2.695332
95 PERCENT CONFIDENCE LIMITS =-5.040001E-02    AND     5.441064

LC50   =          13.7753
95 PERCENT CONFIDENCE LIMITS  =   .9189176   AND   + INFINITY
LC1    =          1.887271
```

APPENDIX B

BAROID BIOASSAY LABORATORY

Product Mud Generic #2 Sample ID 31105-2

Well Name______ Area______ Block____ Depth____

Start Date & Time 11-8-93 Date Completed 11-12-93

Organisms Mysidopsis bahia Age 3, 4, 5, 6 days old Mud pH — Mud Wt. — ppg

SPP: Temp. 21 °C, S o/oo 19.9, pH 8.6, DO 5.1, Adjusted pH 7.9

	Control			Percent 3.2			Percent 5.6			Percent 10			Percent 18			Percent 32		
0 Hours	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Survival	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Temp	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Salinity	19.2			19.2			19.3			19.4			19.4	19.4		19.9		
DO	7.8			7.8			7.6			7.6			7.5			7.1		
pH	7.9			7.9			7.9			7.9			7.9			7.8		
24 Hours																		
Temp		20			20			20			20			20			20	
Salinity		19.2			19.2			19.3			19.4			19.4			19.4	
DO		7.8			7.7			7.6			7.5			7.3			6.2	
pH		7.9			7.8			7.9			7.9			7.8			7.8	
48 Hours																		
Temp			20			20			20			20			20			20
Salinity			19.2			19.2			19.3			19.4			19.4			19.4
DO			7.8			7.7			7.7			7.6			7.4			7.1
pH			7.9			7.9			7.9			7.9			7.8			7.8
72 Hours																		
Temp		20			20			20			20			20			20	
Salinity		19.2			19.3			19.3			19.4			19.5			19.5	
DO		7.8			7.8			7.8			7.7			7.5			7.1	
pH		7.9			7.9			7.9			7.9			7.8			7.8	
96 Hours	20	20	20	18	18	19	18	16	17	14	14	15	12	11	12	9	8	9
Temp	20			20			20			20			20			20		
Salinity	19.3			19.4			19.4			19.5			19.6			19.6		
DO	7.9			7.9			7.8			7.7			7.5			7.2		
pH	7.9			7.9			7.9			7.9			7.8			7.8		

NUMBER DEAD 0 5 9 17 25 39

____ Range Finder ____ Full Test ____ Hours Observer(s)

Results of LC50 245,100 Probit SPP Preparer

95% Confidence Limits 18.8 to 37.0

HGI = 0.5 ml

[redacted]

BAROID BIOASSAY LABORATORY

Product Custom Potassium Mud Sample ID 31105-3

Well Name ________ Area ________ Block ____ Depth ____

Start Date & Time 11-8-93 Date Completed ________

Organisms Mysidopsis bahia Age 3, [✓ 4, 5] 6 days old Mud pH – Mud Wt. – ppg

SPP: Temp. 21 °C, S o/oo 22.5, pH 7.8, DO 7.8, Adjusted pH 7.9

	Control			Percent 3.2			Percent 5.6			Percent 10			Percent 18			Percent 32		
0 Hours	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Survival	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Temp	20			20			20			20			20			20		
Salinity	19.2			19.5			19.6			19.8			19.9			20.1		
DO	7.8			7.8			7.8			7.8			7.8			7.8		
pH	7.9			7.9			7.9			7.9			7.9			7.9		
24 Hours																		
Temp		20			20			20			20			20			20	
Salinity		19.2			19.5			19.6			19.8			19.9			20.1	
DO		7.8			7.8			7.8			7.8			7.7			7.4	
pH		7.9			7.9			7.9			7.9			7.8			7.8	
48 Hours																		
Temp			20			20			20			20			20			20
Salinity			19.2			19.5			19.6			19.8			19.9			20.1
DO			7.8			7.8			7.8			7.8			7.7			7.7
pH			7.9			7.9			7.9			7.9			7.9			7.8
72 Hours																		
Temp		20			20			20			20			20			20	
Salinity		19.2			19.5			19.6			19.8			20.0			20.1	
DO		7.8			7.8			7.8			7.8			7.7			7.5	
pH		7.9			7.9			7.9			7.9			7.8			7.8	
96 Hours	20	20	20	17	18	19	17	17	18	12	14	16	12	13	11	0	0	0
Temp	20			20			20			20			20			20		
Salinity	19.3			19.6			19.7			19.9			20.0			20.2		
DO	7.9			7.9			7.9			7.2			7.7			7.5		
pH	7.9			7.9			7.9			7.9			7.8			7.8		

NUMBER DEAD 0 6 8 20 24 60

____ Range Finder ✓ Full Test 96 Hours Observer(s) ________

Results of LC₅₀ 130,400 Mov. Avg. SPP Preparer ________

95% Confidence Limits 11.6 to 14.9

PHILLIPS ALASKA, INC.

Exploration Plan
McCovey #1 Well

Beaufort Sea, Alaska

APPENDIX VIII
NORTH SLOPE BOROUGH AND COMMUNITY MEETING INFORMATION

September 19, 2000

Summary of McCovey Community Meetings/Key Contacts
as of September 13, 2000

__January 28, 2000: Anchorage, Alaska__
PAI (i.e. AAI before the purchase by Phillips) met with George Ahmaogak (Mayor, North Slope Borough), Maggie Ahmaogak (Executive Director, AK Eskimo Whaling Commission), and Thomas Napageak (Chairman, AK Eskimo Whaling Commission) to discuss preparation for and drilling of an exploration well at the McCovey prospect. The on-ice shallow hazards work, movement and use of the CIDS, and general timeline for drilling was reviewed. There were no concerns expressed regarding the on-ice shallow hazard work. The timing for movement of the CIDS was a concern. The main issues on CIDS movement timing were ensuring that this work was done as soon as possible in the open water season and minimization of potential impacts during the bowhead whale migration. General concerns were also expressed regarding offshore drilling. (Neither the North Slope Borough (NSB) nor the AK Eskimo Whaling Commission supports offshore oil exploration and development.) Use of a conflict avoidance agreement was also discussed.

__May 25, 2000: Seattle, Washington__
PAI attended the 2000 Arctic Peer Review Workshop hosted by the National Marine Fisheries Service. PAI presented information regarding its change in plans for use of the CIDS at the McCovey prospect. PAI also presented information regarding use of an ice island for McCovey prospect exploration drilling. Key attendees present at this meeting were George Ahmaogak (Mayor, NSB), Maggie Ahmaogak (Executive Director, AK Eskimo Whaling Commission), Dr. Tom Albert (NSB, Wildlife Management Dept.), Jessica LeFevre (AK Eskimo Whaling Commission legal counsel), Tom Lohman (North Slope Borough), Thomas Napageak (Chairman, AK Eskimo Whaling Commission), and Todd O'Hara (NSB, Wildlife Management Dept.). There were general concerns expressed by the AK Eskimo Whaling Commission and by the NSB regarding offshore exploration drilling and development. There was also a concern raised by the NSB regarding the fate of the ice island after well drilling. PAI agreed to examine methods for tracking of the ice island remnant to address this concern.

__August 8, 2000: Kaktovik, Alaska__
PAI was scheduled to discuss the McCovey Exploration Prospect and the up-coming CIDS move with the Kaktovik Community Council. However, due to a lack of council membership being away from town due to a local funeral, the council meeting was canceled. Lisa Pekich (PAI) and Oliver Smith (PAI) met with Lon Sonsalla, the Mayor of Kaktovik instead and reviewed the basic project information (included in Attachment A). The Mayor did not express any specific concerns with the McCovey Prospect and stated that he would hand out the information and the rescheduled Council meeting and have them contact us if there were any questions.

__August 11, 2000: Barrow, Alaska__
PAI met with the North Slope Borough (NSB) Permitting and Zoning Staff, Wildlife Department, the Inupiut Community of the Arctic Slope (ICAS) and Alaska Eskimo Whaling Commission (AEWC) in a pre-application meeting for McCovey. A representative of MMS was in attendance at this meeting. A copy of the attendance list

and associated handouts are in Attachment B. The AEWC also handed out a copy of the letter submitted by the Village of Nuiqsut to the State of Alaska commenting on the formation of the McCovey Exploration Unit.

Comments/Concerns:

- The NSB, ICAS, and AEWC expressed support for the Village of Nuiqsut's comments. For some reason, they were unaware of the proposed unit comment period and were concerned that they had not submitted comments. The NSB, ICAS and the AEWC expressed concern over the potential of another offshore oil and gas facility and the effects on the subsistence whaling.

- NSB and the ICAS asked a number of questions concerning MMS's review process for the McCovey Project in order to ensure that they will be able to submit their comments within the required review cycle.

- NSB expressed concern regarding the impacts of the McCovey Project on BPX's Northstar monitoring programs. They felt that additional work in the offshore before fully gathering the data on Northstar is premature.

  PAI Proposed Action: PAI has already contacted BP and discussed the potential for any interference of McCovey activities on Northstar monitoring. BP will be conducting noise surveys during the solid ice season, plus seal surveys. Both companies felt that the studies would not impacted by the presence of McCovey work; however, additional coordination meetings will be held to ensure the integrity of the Northstar monitoring studies.

- NSB expressed a concern regarding the capabilities of North Slope operators to clean up a spill offshore, especially in broken ice conditions.

  PAI Response: The McCovey Project is being conducted during solid ice conditions to mitigate the potential for a spill event occurring during broken ice. The North Slope Operators have demonstrated that we can meet the oil spill planning standards during solid ice and open water conditions and are working together to research and improve the ability to respond to spill during broken ice conditions.

- NSB inquired about the potential of the well leaking after it had been plugged and abandoned and cut-off below the mudline. They were concerned about detection and clean up of such an event under the ice.

  PAI Response: The procedures required in order to plug and abandon an offshore well were developed to ensure that no leaking would occur. To our knowledge, none of the previous wells that have been abandoned in the Beaufort Sea have ever had any leaks. Should an oil sheen be tracked to plugged and abandoned well, the operator of that well would be responsible for clean-up and corrective action.

- The NSB expressed concern over the ability to drill a relief well at the McCovey location.

PAI Response: PAI described the risks of blow-out being very remote due to the strict procedures applied during drilling. Both PAI and MMS explained that a detailed relief well plan would be contained in both the McCovey Exploration Plan and the Oil Discharge Prevention and Contingency Plan which the NSB will be provided the opportunity to comment.

- The ICAS inquired about the need for an Environmental Impact Statement EIS) for this project.

  PAI Response: An EIS was prepared for the MMS lease sale. A Lease Sale EIS is intended to address issues associated with exploration activities. Should the exploration prove successful, then an EIS would be prepared for any development activities.

- The NSB asked that that application documents be available electronically (via email or web sites) in order to allow them the full time to review and comment to MMS.

- The NSB also discussed their permitting timing requirements for the sea ice road portion within their jurisdiction (e.g., three-mile line).

August 22, 2000: Nuiqsut, Alaska

PAI included the McCovey Project during a presentation to the Kuukpik Subsistence Oversight Panel (KSOP) on PAI's 2000-2001 exploration activities. A copy of the material distributed and an attendance list is included in Attachment 3. PAI also mentioned that a site visit to Reindeer Island conducted the previous week showed that the island had been subject to substantial erosion and is little more than a shoal.

Concerns Comments:

- The KSOP requested GPS coordinates and buoys for Reindeer Island so that boaters can find it.

  PAI Response: GPS coordinates were provided. PAI cannot place buoys without Coast Guard approval. PAI will mention this situation to the Coast Guard Marine Safety Office.

- The KSOP expressed general concern over the potential for additional oil and gas development offshore and impacts on their subsistence whaling activities and lifestyle.

August 31, 2000: Barrow, Alaska

PAI met with the NSB Planning Commission regarding the McCovey Prospect. Copies of the attendance list and information distributed are contained in Attachment 4.

- A question was asked regarding the lease sale stipulation restricting any oil and gas development facilities within 10 miles of Cross Island.

PAI Response: PAI is aware of this stipulation; however, this stipulation was not developed during the lease sale for which the leases were obtained in the proposed McCovey Exploration Unit.

- The NSB expressed concern over the stability of the ice island and the potential of ice override.

  PAI Response: The ice island will be subject to a Platform Verification Process that will include strict quality control monitoring. This is done by a qualified third-party and must be approved by the MMS. In addition, a Critical Operations and Curtailment Plan is being developed which will outline ice, weather and drilling monitoring requirements and associated operations slow/shut down procedures should the monitoring indicate any potential stability or safety issues.

- A suggestion was made to ensure the extensive ice studies done near Barrow be incorporated into the design considerations.

  PAI Response: The ice island engineering firm has extensive history of ice design work in the Beaufort Sea and will be using all available data for design considerations.

- The Planning Commission requested that information regarding the McCovey Prospect be presented to all whaling communities prior to permitting.

  PAI Response: A community meeting will be held in Nuiqsut at the end of September, after whaling season. A communications plan to distribute the information to other whaling communities is currently being developed and will shared with the Planning Commission.

- The Planning Commission requested a project update at every monthly planning commission meeting.

  PAI Response: A monthly update will be provided to the Planning Commission as requested.

- NSB expressed concern regarding the impacts of the McCovey Project on BPX's Northstar monitoring programs. They felt that additional work in the offshore before fully gathering the data on Northstar is premature.

  PAI Proposed Action: PAI has already contacted BP and discussed the potential for any interference of McCovey activities on Northstar monitoring. BP will be conducting noise surveys during the solid ice season, plus seal surveys. Both companies felt that the studies would not impacted by the presence of McCovey work; however, additional coordination meetings will be held to ensure the integrity of the Northstar monitoring studies.

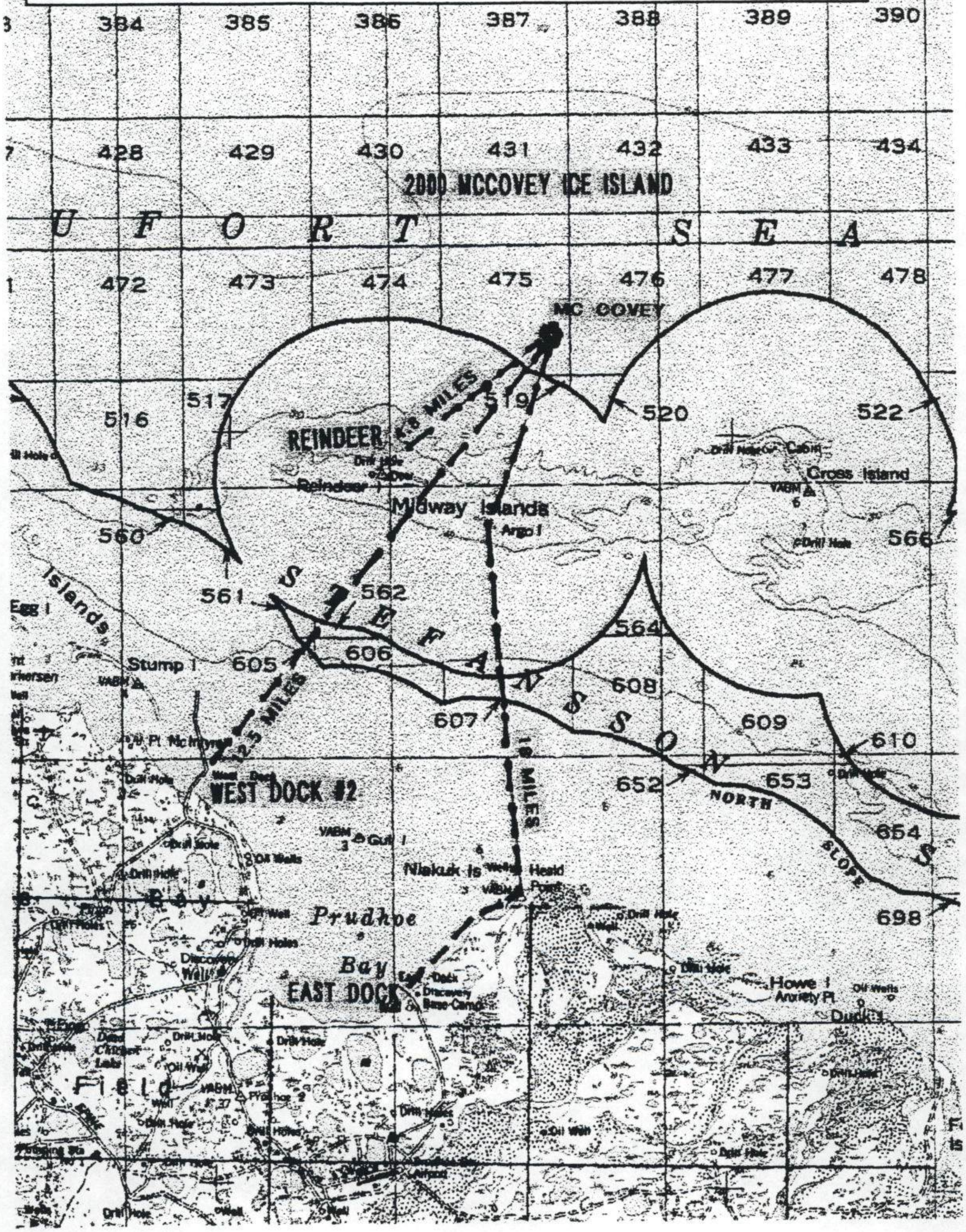
Attachment 1

August 8, 2000
Kaktovik, Alaska
Meeting with Mayor Sonsalla
McCovey Prospect Exploration Well

Phillips Alaska, Inc.
McCovey Prospect
2000-2001

- McCovey location is shown on attached map.
- Project will consist of construction of an ice island.
- Pre-staging of materials on Reindeer Island may occur prior to freeze-up using a barge.
- Ice island construction will begin when ice is thick enough to support rolligons (December 2000).
- Drilling should be begin in late February 2001.
- All operations complete by early May 2001.

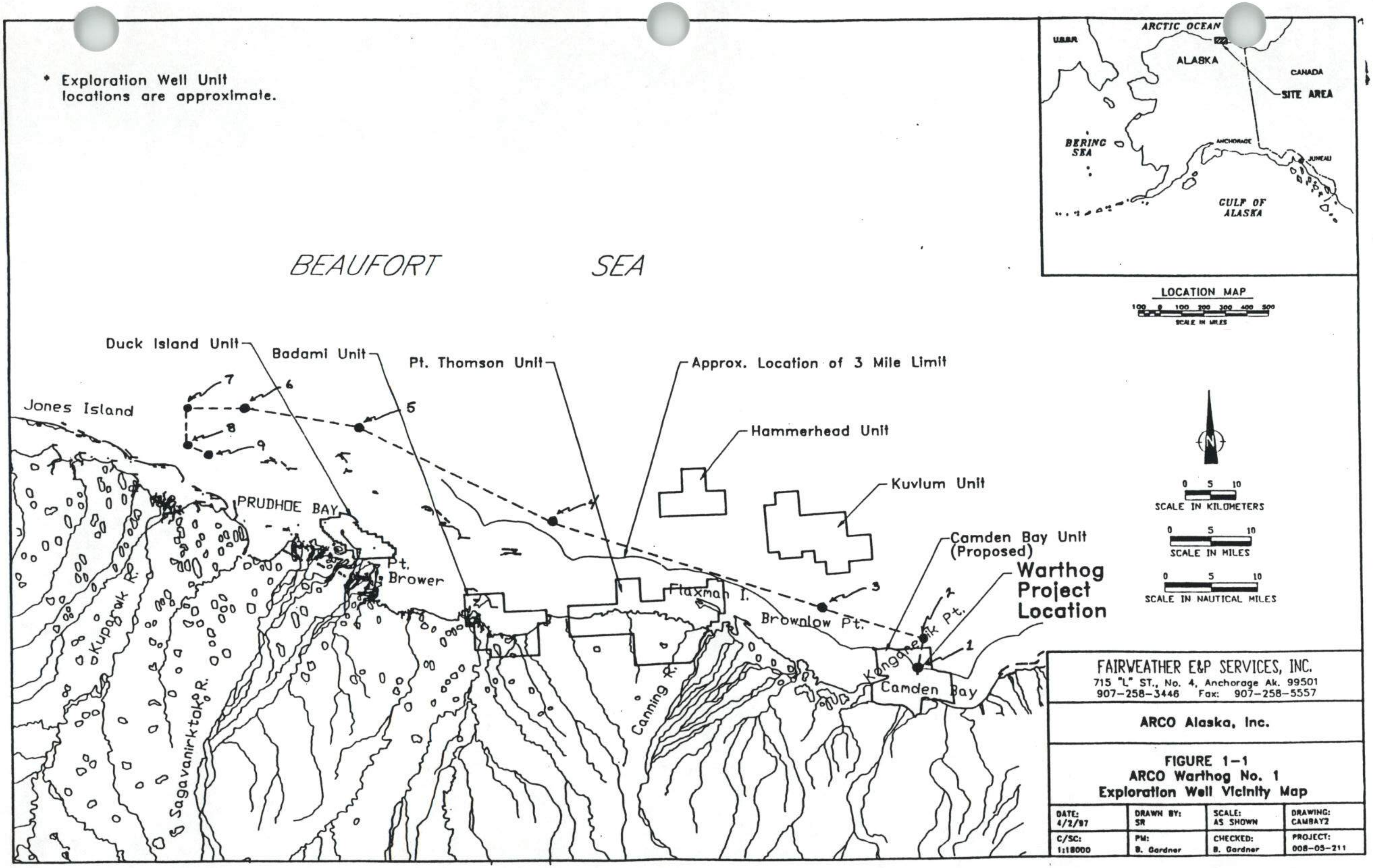
AREA OF OPERATIONS



McCOVEY ICE ISLAND
2000-2001

CIDS MOVE FROM WARTHOG LOCATION

- CIDS is being moved from Warthog location to its old stackout location.
- Tugs should be at Barrow by August 12, 2000
- Depending on ice, the tugs should be at the CIDS by August 13, 2000
- CIDS should be beginning move by August 16, 2000
- CIDS should be at stack-out location by August 19, 2000
- CIDS will not be moving to new drilling location, it will be cold-stacked.
- After CIDS moves off Warthog location, a small boat will confirm nothing left on seafloor with side scan sonar. This should take 1-2 days.
- If there any questions regarding the CIDS move, contact Fairweather E&P Services, Inc. (Bill Penrose- 258-3446)



* Exploration Well Unit locations are approximate.

FAIRWEATHER E&P SERVICES, INC.
715 "L" ST., No. 4, Anchorage Ak. 99501
907-258-3446 Fax: 907-258-5557

ARCO Alaska, Inc.

FIGURE 1-1
ARCO Warthog No. 1
Exploration Well Vicinity Map

DATE: 4/2/97
DRAWN BY: SR
SCALE: AS SHOWN
DRAWING: CAMBAY2
C/SC: 1:18000
PM: B. Gardner
CHECKED: B. Gardner
PROJECT: 008-05-211

Attachment 2

August 11, 2000
Barrow, Alaska
North Slope Borough Pre-application Meeting
McCovey Prospect Exploration Well

8/10/00

Kuparuk / McCovey Pre-application

Gordon Brower,	Permitting
Charles Okakok,	ICAS
Rex A. Okakok Sr	NSB Planning
Johnny L. [illegible]	PERMITTING
Entre L. Jarmer Sr.	Permitting
Elfreda Lord –	AEWC
Kyle Monkelien	MMS
Craig George	Wildlife
Robert Suydam	NSB Wildlife
MARK MAJOR	PHILLIPS AK
Lisa Pekich	PAI

NSB Pre-application Meeting

Phillips Alaska, Inc.
McCovey Prospect
2000-2001

- McCovey location is 14 miles north of Prudhoe Bay.
- Project will consist of drilling one well from an ice island. Well testing may also occur depending on results and weather conditions.
- Pre-staging of materials on Reindeer Island may occur prior to freeze-up using a barge.
- Ice island construction will begin when ice is thick enough to support rolligons (December 2000). Construction will be supported by an ice road either from West Dock or East Dock depending on the ice conditions.
- Ice island will be grounded in 37' of water. The island will be 600' diameter working surface, and 850' diameter at the water line. Construction of the ice island should take 50 days (weather dependent).
- Drilling should be begin in late February 2001 and completed in early April.
- All operations complete by early May 2001.

*EIS lease sale
carry through
Exploration plan

* BP noise study (add discussion in Exp. Plan)

*Best / timing of relief well. / how long.

· get Johnny (amount of paid for leases)

* web sites / fed ex to NSB

NSB - Permitting
1617 Okipak

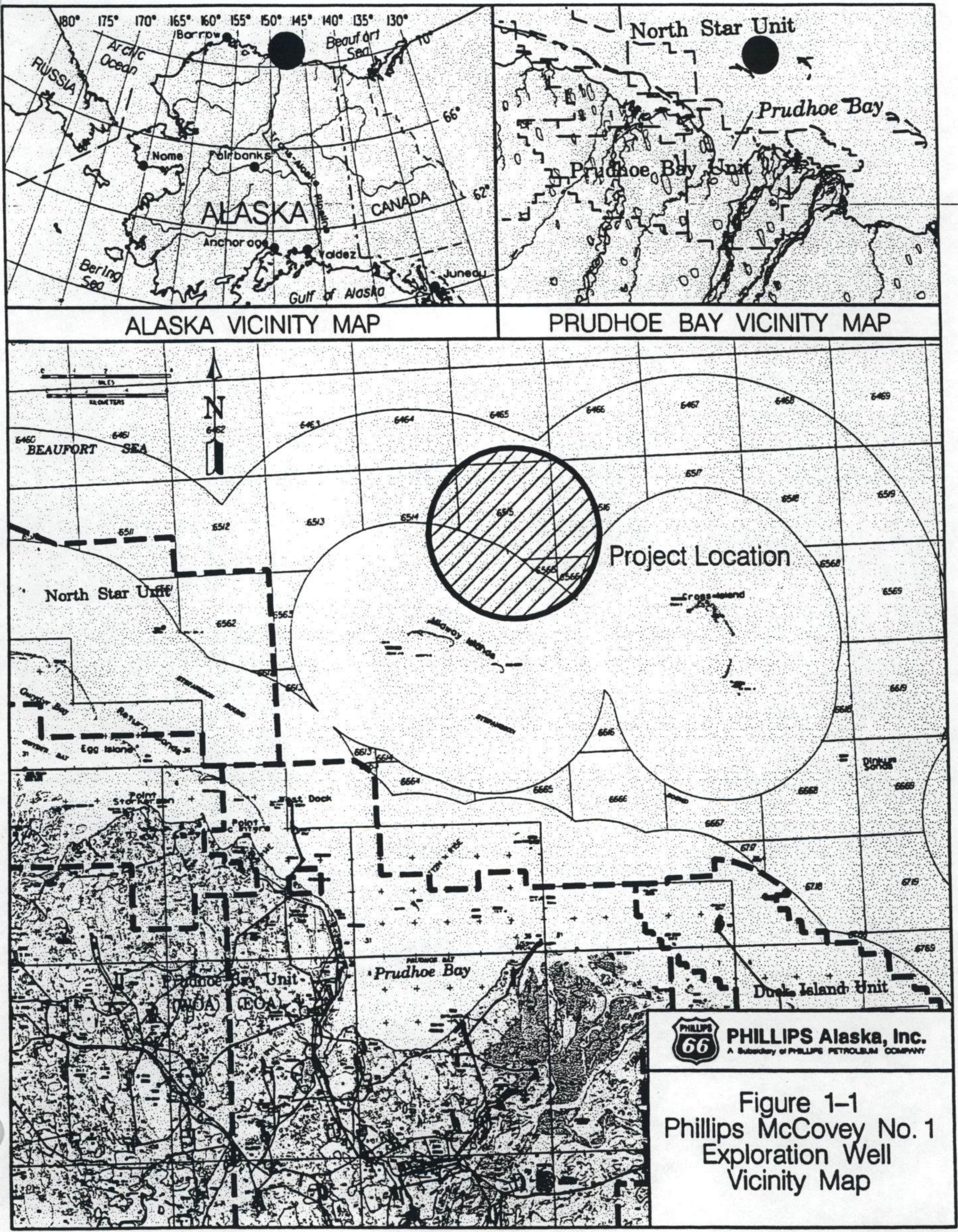


Figure 1–1
Phillips McCovey No. 1
Exploration Well
Vicinity Map

00050803A00
5-9-00

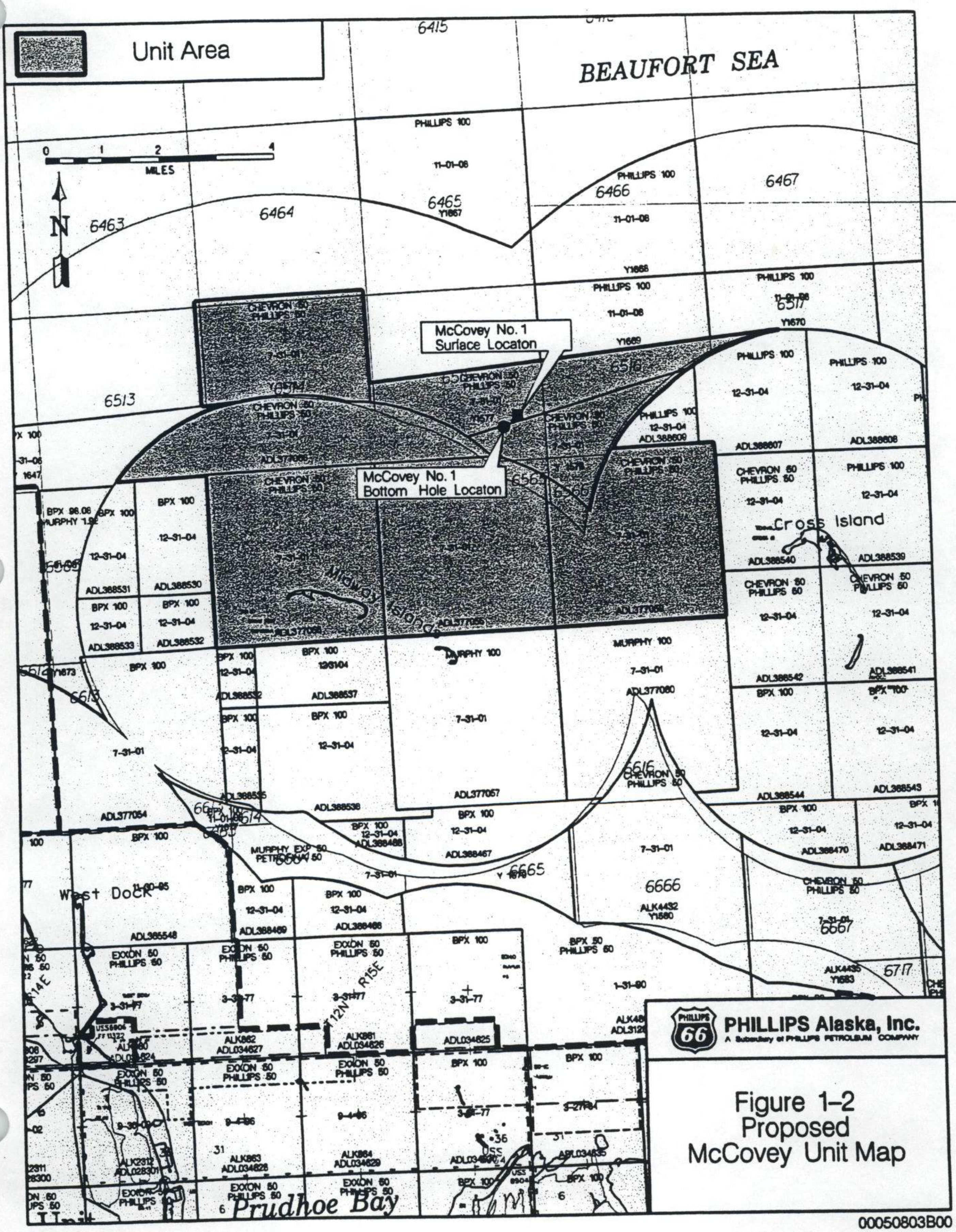
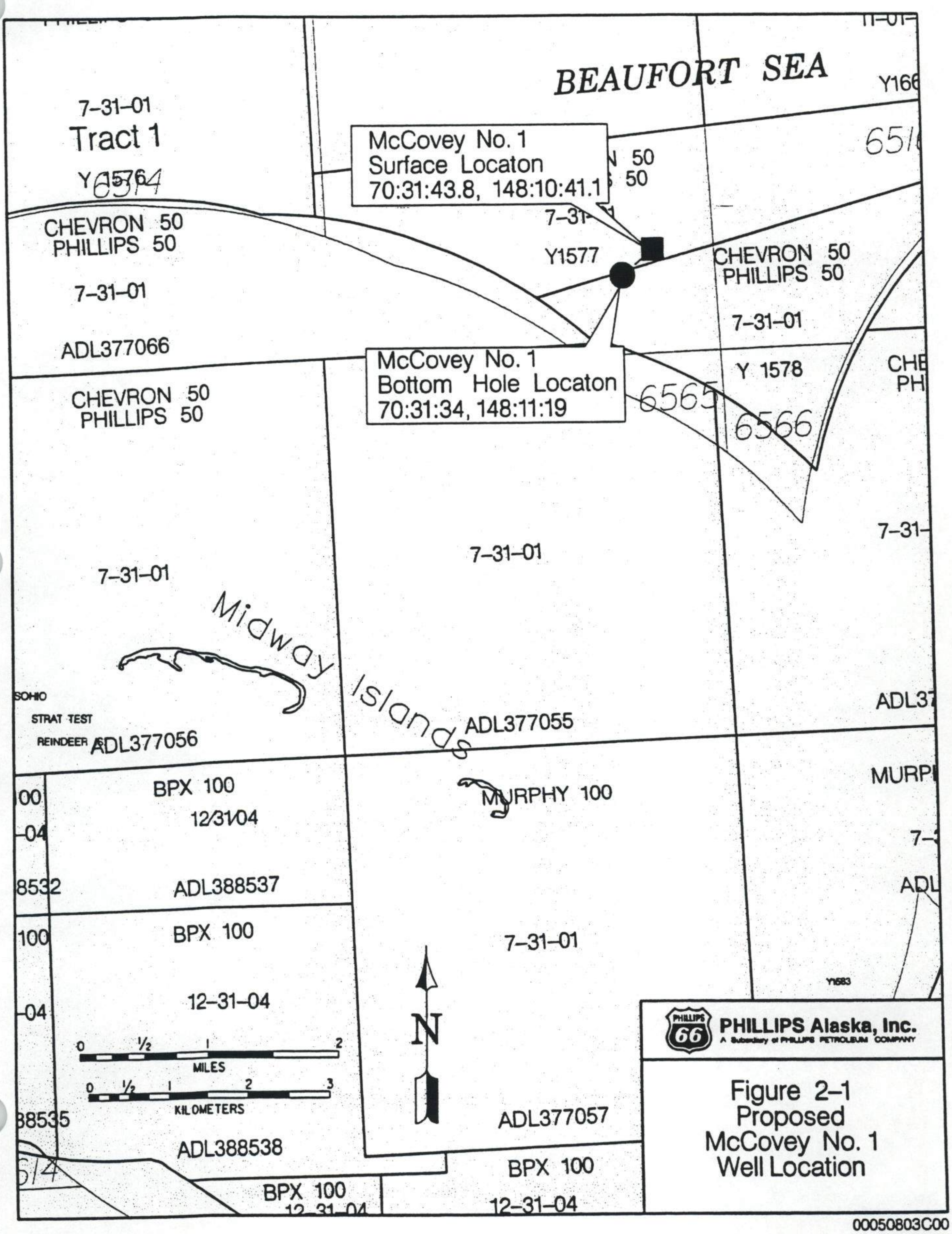


Figure 1–2
Proposed
McCovey Unit Map



PHILLIPS Alaska, Inc.
A Subsidiary of PHILLIPS PETROLEUM COMPANY

Figure 2–1
Proposed
McCovey No. 1
Well Location

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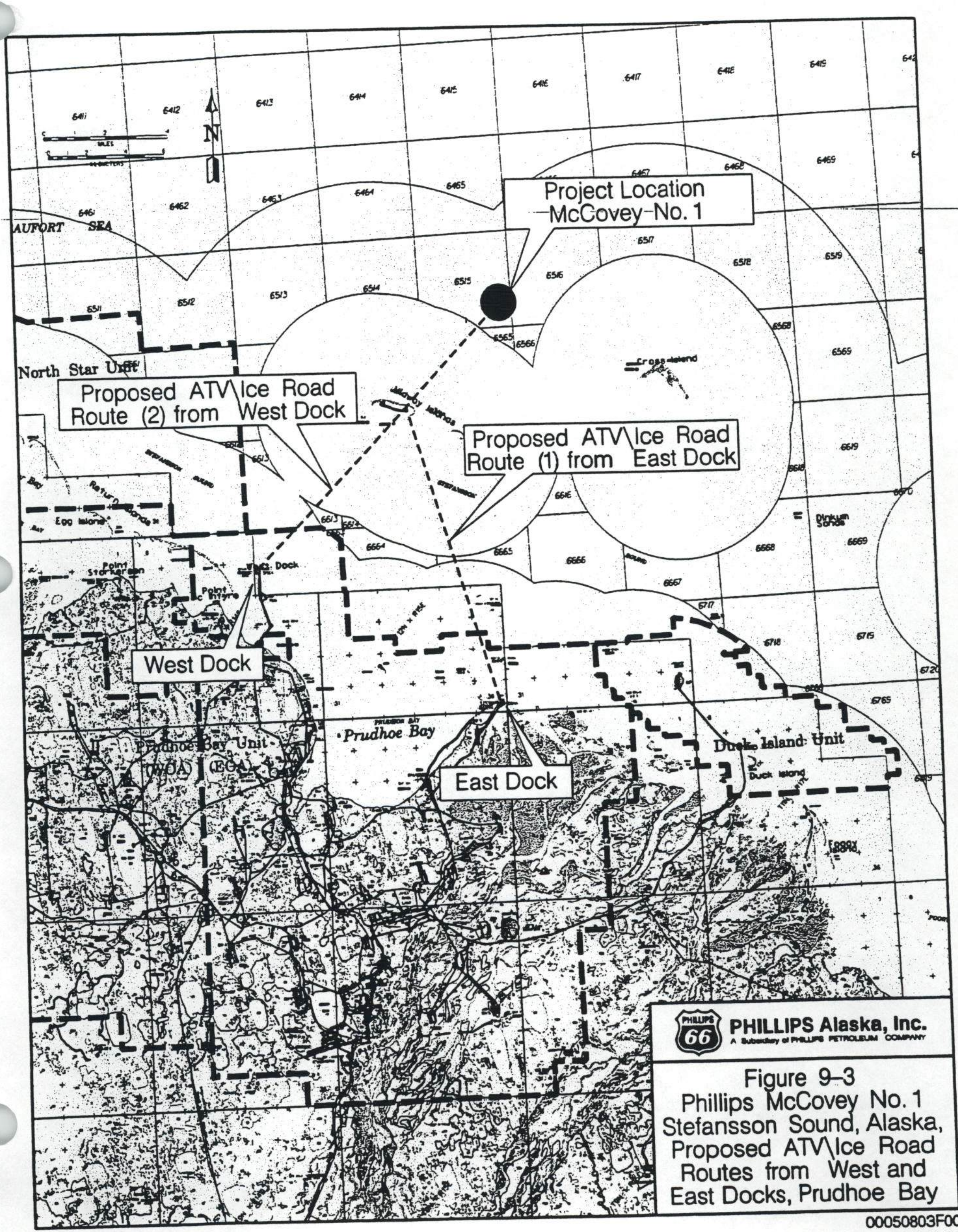
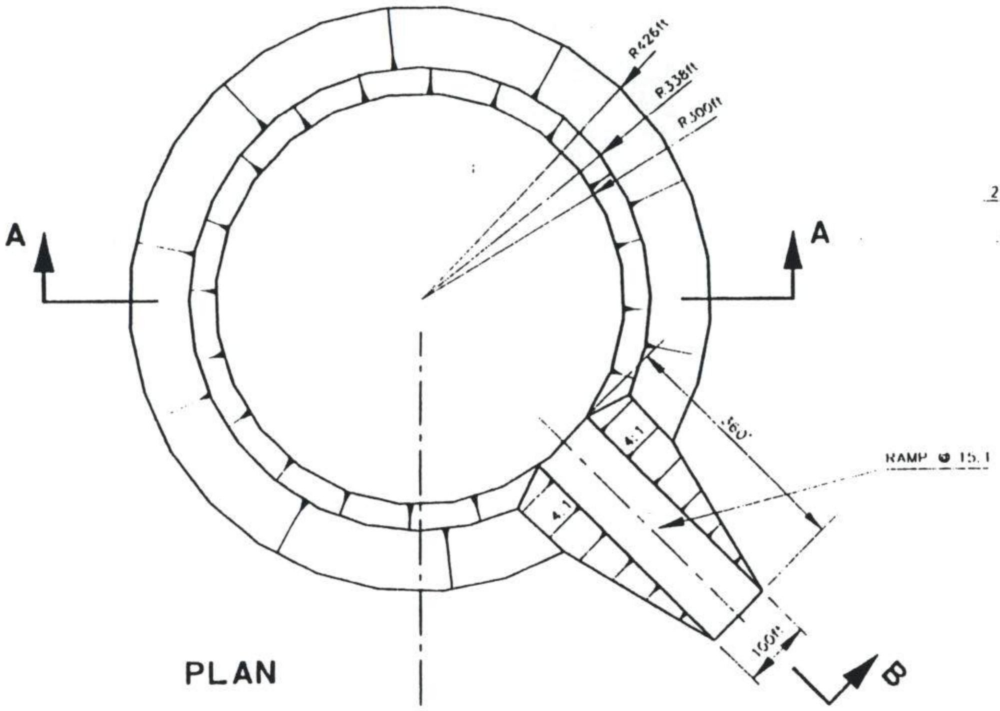


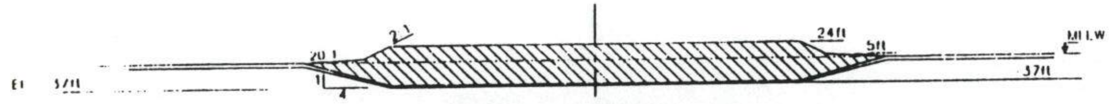
PHILLIPS Alaska, Inc.
A Subsidiary of PHILLIPS PETROLEUM COMPANY

Figure 9–3
Phillips McCovey No. 1
Stefansson Sound, Alaska,
Proposed ATV\Ice Road
Routes from West and
East Docks, Prudhoe Bay

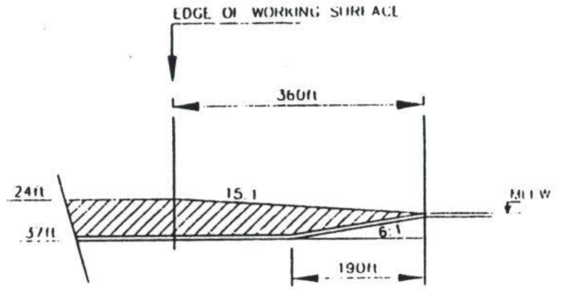
00050803F00
5–9–00



PLAN



SECTION A-A



RAMP ONTO ISLAND

SECTION -B

REV	BY	DATE	REVISION	APP'D

BY DATE PRELIMINARY ISSUE REV

CAD FILE NO. FILE

APPROVED

DATE

B. SAN-DWG-NO

SCALE	SCALE	YR.	MO.	DAY
DRAWN	BG	00	06	09
CHECK	CHECK	-	-	-
DESIGN	DMM	-	-	-
DES. CHK	PS			

Sandwell

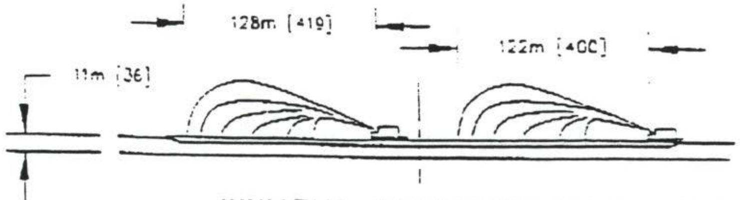
McCOVEY ICE ISLAND
600ft DIA. CORE DIAMETER
600ft DIA. WORKING SURFACE

Phillips Alaska, Inc.

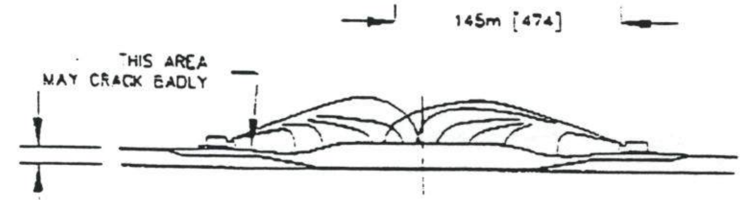
DWG. 142401 C 003 REV 1

850' Dia @ water surface

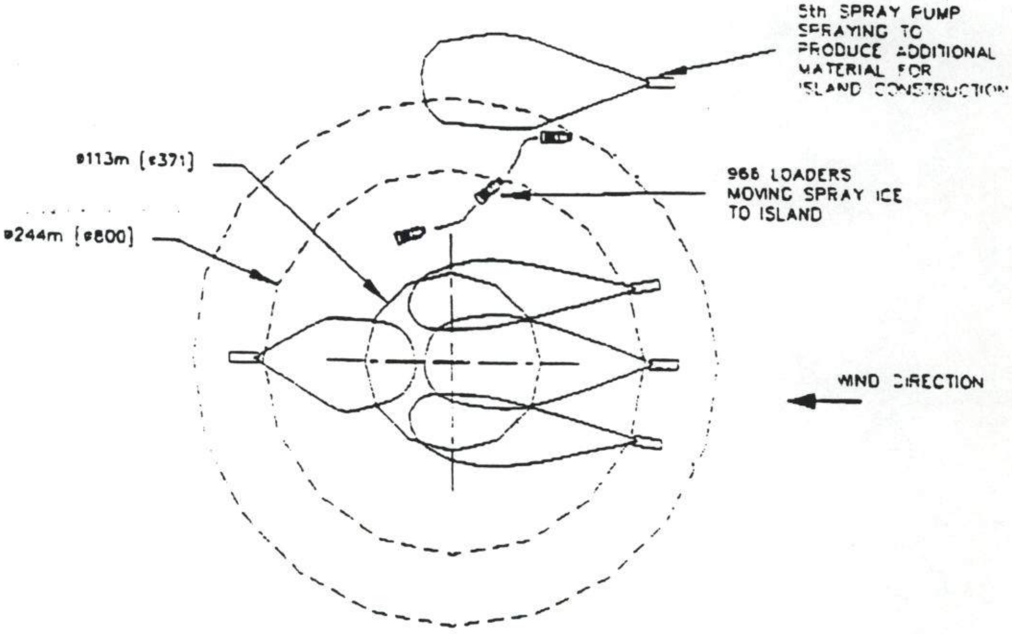
ISLAND SPRAYING - A



INNIATIAL THICKENING TO 2 - 3m

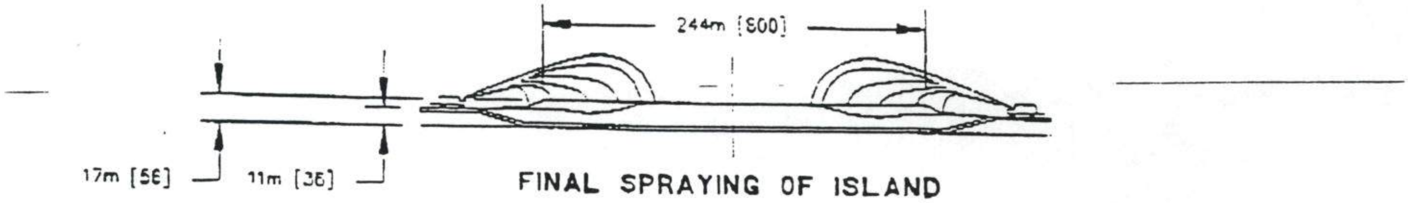


GROUNDING OF ISLAND CORE

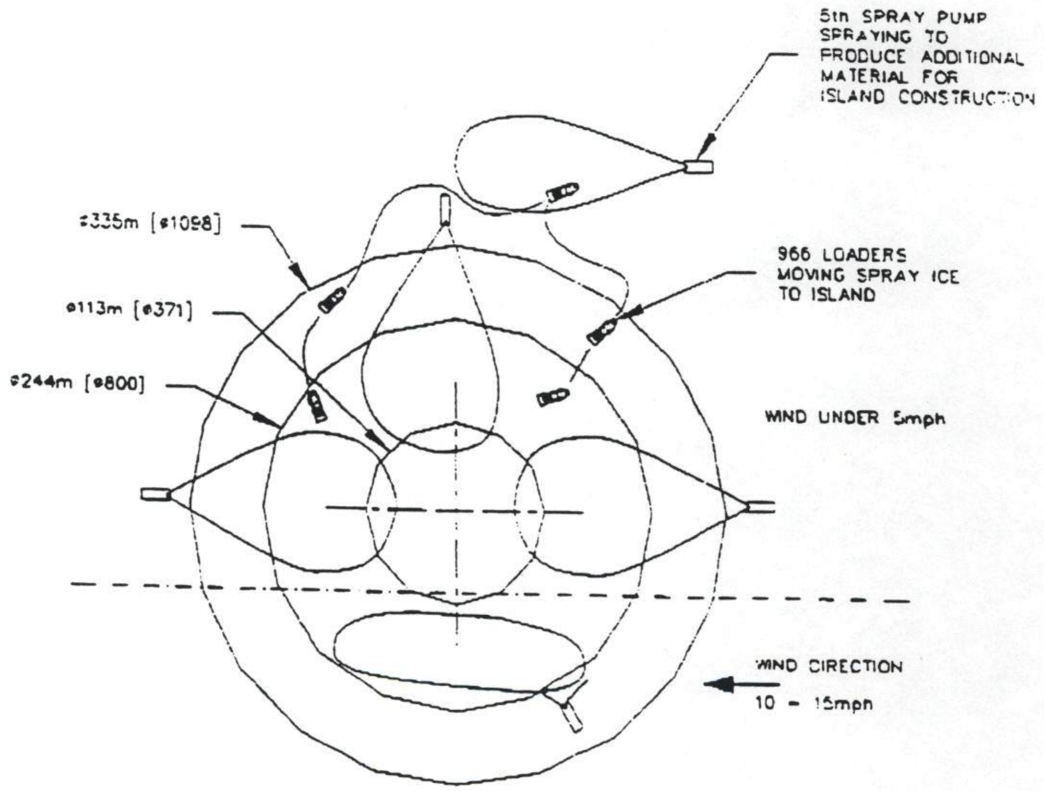


GROUNDING OF ISLAND CORE

ISLAND SPRAYING - B



FINAL SPRAYING OF ISLAND

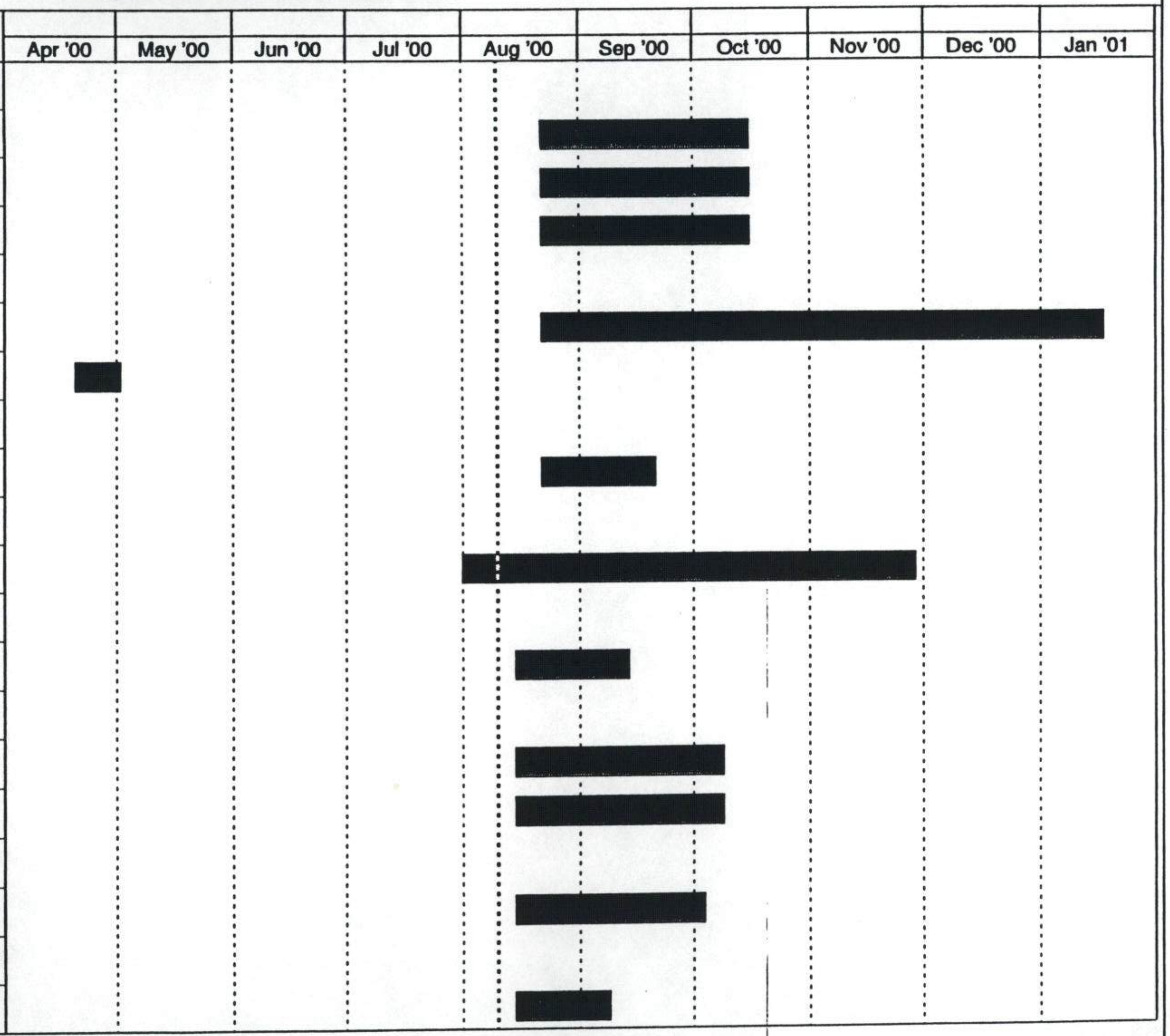


FINAL SPRAYING OF ISLAND

SPRAY-B.DWG

McCovey Prospect Permit Timeline
Ice Island Alternative
Regulation Timeline

ID	Task Name	Duration
1	**Minerals Management Service**	**55 days**
2	MMS Exploration Plan/Env Report	55 days
3	MMS Oil Spill Contingency Plan	55 days
4	MMS Geological and Geophysical	55 days
5	**Environmental Protection Agency**	**273 days**
6	EPA OCS Air Permit	149 days
7	EPA NPDES Permit	12 days
8	**US Fish and Wildlife Service**	**30 days**
9	USF&WS Polar Bear LOA	30 days
10	**National Marine Fisheries Service**	**120 days**
11	NMFS Ringed Seal IHA	120 days
12	**AK Dept. of Natural Resources**	**30 days**
13	ADNR Land Use Permit (Reindeer Is)	30 days
14	**AK Dept of Environmental Conservation**	**55 days**
15	*?ADEC Oil Spill Contingency Plan (Reindeer I*	55 days
16	*?ADEC Operating Permit (Reindeer Is)*	55 days
17	**AK Dept of Governmental Coordination**	**50 days**
18	ADGC Consistency Determination	50 days
19	**North Slope Borough**	**25 days**
20	NSB Development Permit	25 days



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Book No. I0296F — 1990

KARLUK ICE ISLAND

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ABSTRACT

In 1988, Chevron U.S.A., Inc., as operator, with Mobil Exploration & Producing U.S., Inc., as a 50/50 joint venture partner, drilled an offshore well near Prudhoe Bay, Alaska, using a grounded ice island as the drilling structure. The island was located 7 miles ENE of Cape Brower in about 23 feet (7 m) of water. The island was built by spraying sea water using 5000 gpm (20 m^3/min.), 200 psi (1400 kPa) pressure pumps equipped with nozzles and swivels. An island with a total thickness of 46 feet (14 m) and a diameter of 890 feet (270 m) was designed and built. A lateral design ice load of 92 kips/ft. (1370 kn/m) was used for the stability analysis. Ice loading was the dominant design force. The ability of the ice island to support the rig and associated supplies and equipment in bearing was also assessed. The design included mechanical systems to protect against thawing of the ice by heat generated by the drilling activity.

Construction of the island began on December 13, 1988 and was completed January 20, 1989. Access to the island during construction and drilling was achieved by means of a 12.2 mile (20 km) ice road. After preparation of the island surface, installation of the instrumentation during drilling and rig up, drilling began February 20, 1989 and rig release was April 7, 1989. During construction, ice build-up, ice volume constructed, pump moves and position, water volume pumped, ice temperature and ice density were monitored. Daily progress was reported and daily contour maps were plotted to help in planning the next day's activity. During drilling, horizontal ice movement, vertical ice movement, ice temperature under the rig and meteorological conditions were monitored. Most of the data was logged in real time using a custom-built data acquisition system.

The island construction was completed on schedule and within budget and the well was subsequently drilled without incident. This paper describes the major design issues, construction of the island, monitoring during drilling and performance and evaluation of the performance of the island.

INTRODUCTION

Ice structures have been used to drill exploratory wells in the offshore Arctic since 1974. Thirty-four exploratory wells were drilled using floating ice platforms but only two using grounded ice islands[1,2,3,4].

In 1988, Chevron U.S.A., Inc., as operator, with Mobil Exploration & Producing U.S., Inc., as a 50/50 joint venture partner, drilled an offshore well near Prudhoe Bay, Alaska. The well was drilled from a grounded spray ice island. Ice Construction and Engineering (I.C.E.), a Joint Venture between CATCO, a division of Crowley Maritime, and Sandwell Swan Wooster (SSW) were contracted for the design and construction of the ice island.

The island was located 7 miles ENE of Cape Brower in about 23 feet (7 m) of water. The island was constructed by spraying sea water using large, skid mounted pumps equipped with nozzles and swivels. An island with a total thickness of 46 feet (14 m) and a diameter of 890 feet (271 m) was designed and built. Ice loading controlled the design. The ice island was also designed to support the rig and associated supplies and equipment.

During construction a comprehensive quality assurance and control program was conducted. Daily strategic planning was conducted to ensure optimum use and placement of pumps. A verification program was carried out to ensure that the as-built island met or exceeded specifications. Instrumentation was installed that continuously monitored the performance of the island during drilling.

Drilling began February 20, 1989 and rig release was April 7, 1989.

The cost to design, construct and monitor the spray ice island was about $5.0 million. This is less than one-fourth the cost of a comparable gravel island.

This paper describes the project.

DESIGN

The ice island was designed for a water depth of 24 feet (7.3 m) with 22 feet (6.7 m) of freeboard over a core (top) diameter of 650 feet (198 m). The overall diameter of the island at waterline was 890 feet (271 m).

The principal dimensions of the island were controlled by lateral stability under ice loading. The critical failure plane was through the silty sand base, which was a granular material with a minimum friction angle of 36°.

The maximum horizontal design load was 82.5 x 10^3 kips (367 MN). A load factor of 1.5 was used with this load in sizing the island for lateral stability.

The horizontal load was calculated using a Monte Carlo simulation, assuming an interaction area power-law model[5]. The 82.5 x 10^3 kips (367 MN) corresponds to a return period of 20 years. This load specification is within guidelines set by API Recommended Practice 2N, 1988.

The minimum required density of the spray ice above waterline was 40 pcf (641 kgm^{-3}) and below waterline was specified as 64 pcf (1030 kgm^{-3}). In assessing the lateral stability of the island, a load factor of 0.9 was used on self-weight. A load factor of 1.1 was applied to the vertical loads when overall bearing integrity of the island was evaluated. A finite element analysis confirmed the basic assumption of uniform shear distribution under global loading.

The shear strength of the spray ice above the waterline is assumed to be cohesive in nature, with a design strength of 21.2 psi (146 kPa). The shear strength behavior of the spray ice below waterline was taken as Mohr-Coulomb (c, ϕ) in nature with $c = 2.78$ psi (19.2 kPa) and $\phi = 30^\circ$. There is strong evidence to support the fact that spray ice below waterline is cohesive with shear strengths in excess of 5.8 psi (40 kPa). This has significant implications for the use of spray ice as an engineering material.

Design issues included bearing integrity and creep settlement under the drill rig. Design calculations showed that if the average ice temperature was maintained under 23°F (-5°C.), bearing capacity and creep settlements would be satisfactory. A thermal simulation showed a 6 in. (150 mm) layer of insulation would be adequate to ensure thermal integrity.

A brine circulation system was designed to minimize heat transfer from the conductor casing to the island. This system continuously circulated cooled brine through an annulus between the conductor pipe and the surface casing.

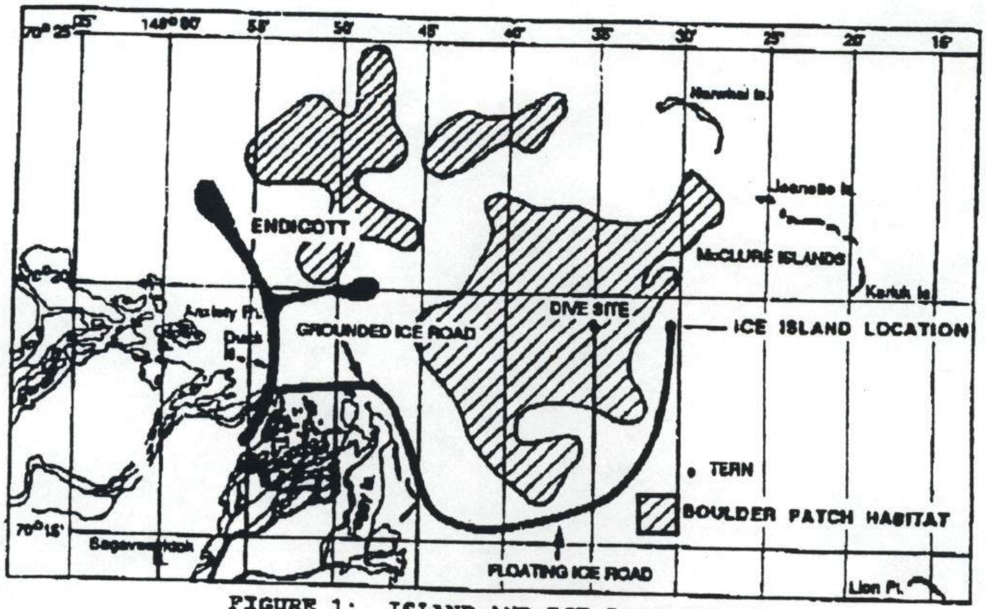


FIGURE 1: ISLAND AND ICE ROAD LOCATION

CONSTRUCTION

Support

Existing facilities at Deadhorse were used as a support base for administration and maintenance. During peak construction, 35 people were accommodated. Access to the island site was via existing roads, including a portion of the Endicott Causeway and from the causeway via an ice road to the island.

The preferred, direct route crossed an environmentally sensitive area known as the boulder patch. The ice road was routed to the south around the boulder patch, as shown in Figure 1.

Construction of the 12.6 mile ice road, 4.6 miles of which was grounded and 8.0 miles floating, commenced on December 1, 1988. By December 12, the ice was thick enough to mobilize construction equipment to the island site. By January 20th the floating portion of the ice road had been flooded to the design thickness of 72 in. (1.82 m) required for the rig move.

Pump Modifications

The pump units, which had been used on a previous project, each contained a 5,000 gpm (20 m^3/min) vertical turbine pump and weighed 82,000 lbs (37 tonnes). The units required 40 in. (1 m) of ice for mobilization and were difficult to move about the island. To increase the mobility, and to enable earlier mobilization, two of the four pump units were modified by replacing the vertical turbines with centrifugal pumps. This, with other weight saving methods, reduced the skids to 43,000 lbs (19.5 tonnes).

Daily Strategy

At the beginning of each shift, a strategy was developed which laid out the pump locations, spray duration and cure time, if any. The strategy was based on four factors:

1) Existing pump positions

Even though the strategy was updated on a shift-by-shift basis, a general plan for the next 24 hours was always considered. Thus, pumping could normally be continued while the shift strategy was planned. This allowed the oncoming shift to evaluate the situation without interfering with the spraying operation.

2) Existing weather conditions

The existing weather conditions determined the spray duration at a location and how far to move the pumps.

3) Existing island thicknesses

One of the concerns when building an ice island is cracking. Experience has shown that severe cracking occurs if the island is grounded without due care. For this reason, prior to grounding, the island was built in layers of 1 foot (300 mm) to 2 feet (600 mm). The overall thickness was maintained uniform over the island area prior to grounding. Ice thicknesses determined where the pumps would be located to maintain this uniform ice thickness.

4) Weather forecast

The weather forecast (for the Prudhoe Bay area) was used to predict the temperature and the wind speed direction expected over the next 24 hours.

Based on this information, the expected pump moves were planned for the shift. As the forecast was not always correct (it proved less than 50% accurate), a lot of flexibility was built in. Temperature readings at the site were often quite different from those forecast from land.

Once the strategy was in place, each individual pump spray pattern and duration were constantly monitored to ensure that the required quality of ice was being deposited at the required thickness and in the desired location.

The spray pattern and ice quality were monitored by a ground survey using the grid stakes as reference. Alterations to the vertical angle sweep and duration were made accordingly. Distances between locations could also be altered.

The nozzle size was another variable. A smaller nozzle increases the ice content in the spray. If the correct nozzle is used, the increase in ice content will more than compensate for the reduction in water volume sprayed. At Karluk, a smaller 2-1/2 inch (64 mm) nozzle yielded greater ice content at warmer temperatures.

Construction Sequence

The construction progress can be divided into two phases:

1) pre-grounding, warm weather phase; and
2) grounding and post-grounding, cold weather phase.

These are plotted on Figure 2.

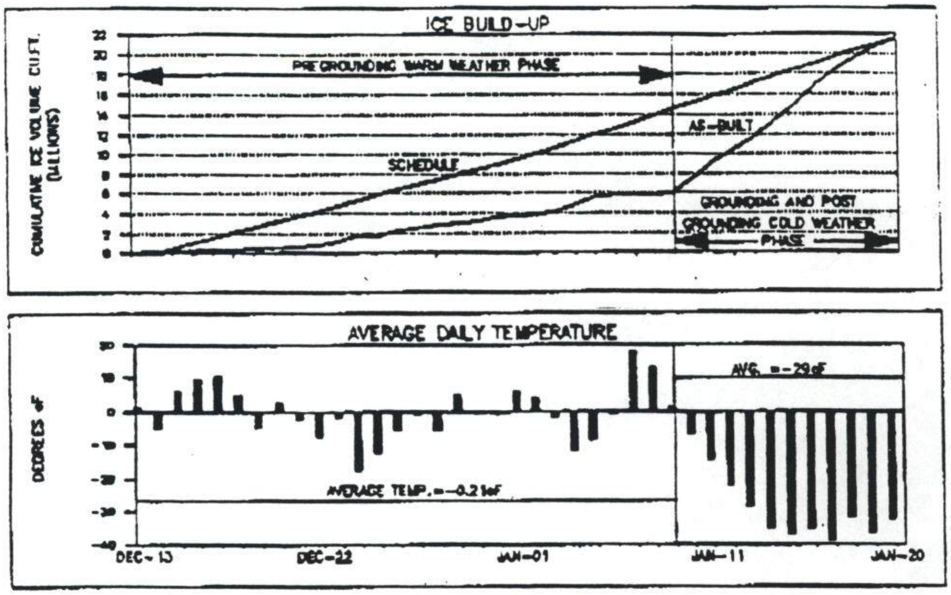


FIGURE 2: COMPARISON OF CUMULATIVE ICE VOLUME BUILD-UP AND AMBIENT TEMPERATURE

From December 13 to January 9, the temperatures were extremely mild. This approximately coincided with the pre-grounding phase. The procedure during pre-grounding was to move the pumps across the island and lay down a layer of ice, as shown in Figure 3. This process was repeated until the bottom of the ice was within 4 feet (1.2 m) to 5 feet (1.5 m) of the sea floor.

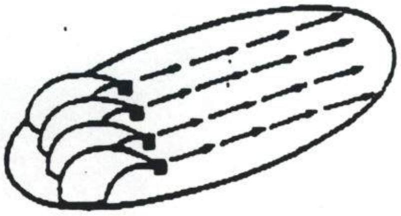


FIGURE 3: GENERAL SCENARIO USING FOUR PUMPS (PRE-GROUNDING PHASE)

Between January 10 - 11, the island was grounded, and by January 20, the required volume of ice had been sprayed. During this phase the temperature averaged -29°F (-34°C.) and about 3 feet/day (0.9 m/day) of ice was deposited.

Completion

Final completion and preparation of the island took place between January 20th and February 2nd. Once sufficient ice was in place, two D-6 dozers began levelling the surface and moving ice to locations which were low. A 14-G grader was then used to complete levelling the island. This surface was flooded and graded repeatedly to provide a hard working surface.

General Summary

Figure 4 shows that between 10% and 12% of the available time was used for moving the pumps and mechanical downtime. If lighter equipment is utilized, this percentage will decrease.

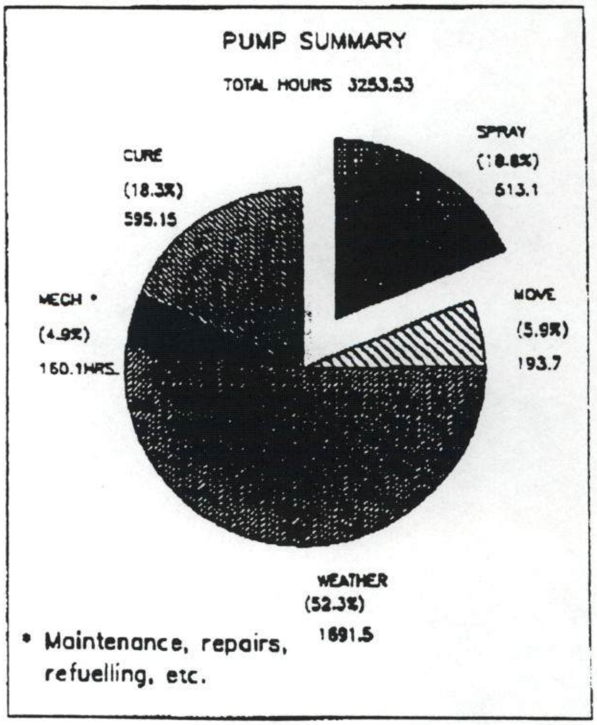


FIGURE 4: PUMP SUMMARY

The weather downtime accounted for 52% of the total time. This is about the same percentage of time that the temperature was above -5°F (-20°C.). Below -5°F (-20°C.), a significant increase in freezing was noted.

The following formula for time required for spraying (for this particular site, at the prevailing weather conditions and equipment used) may be stated as follows:

$$T_{spray} = (0.9T_{Total} - T_{Weather})/2$$

where T = time.

The efficiency during the project, defined as the volume of ice produced/volume of water pumped, was in average 90%. This is higher than the 70% expected. The higher efficiency than expected was due to:

- Low winds during spraying resulting in less loss of frozen spray. For 93% of the time, the speed was less than 20 knots ($10ms^{-1}$) and less than 10 knots ($5 ms^{-1}$) for 70% of the time. The wind direction also remained steady from a given direction for a number of days at a time.

- On-site planning and decision making to take best advantage of the current environmental conditions and to make optimal use of available equipment.

QUALITY CONTROL

A quality control program was used to measure build-up, density, salinity, temperature and calorimetry during construction. Build-up, density and ice temperature were used to direct construction procedures.

Build-Up

Using the north-south and east-west axes as staked by the surveyors, a radial build-up stake grid shown in Figure 5 was laid out on December 8th and 9th.

The readings at these locations were used to plot daily contour maps and cross-sections, as shown in Figure 6. Decisions were then made on where to deposit the sprayed ice. During the pregrounding portion, this decision making tool was most important to maintain an even thickness across the island, thus preventing cracking on set-down.

Once the island was grounded the stakes were used to control its topography to insure that a sufficient volume of ice was in place to complete the project. Measurements showed that the required volume was sprayed by January 20th. Dozers did the final shaping and smoothing of the island.

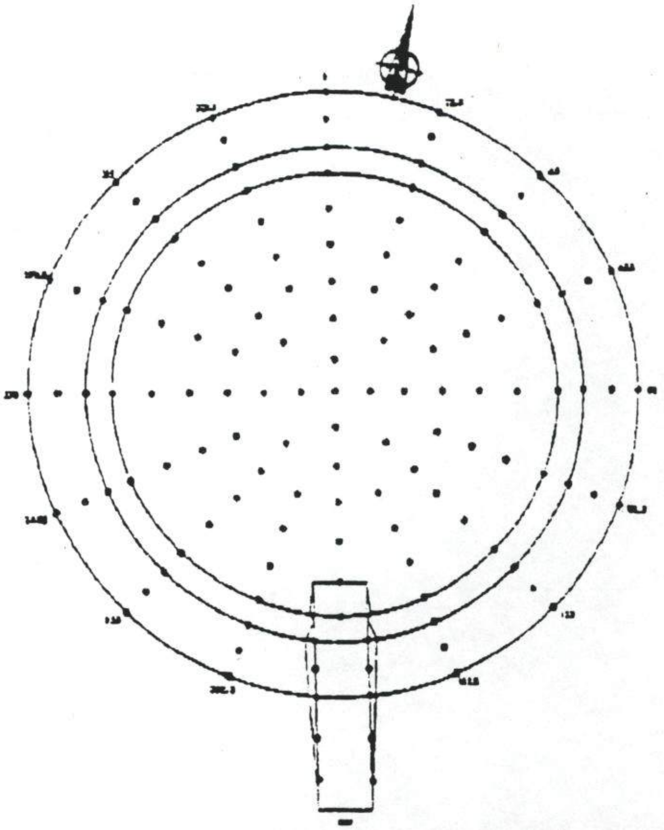


FIGURE 5: BUILD-UP MEASUREMENT STAKE LAYOUT

Density

Ice densities were continuously monitored during construction. The average pregrounding ice density was 47.3 lb/ft^3 (760 kg/m^3) while the post-grounding density was 38.7 lb/ft^3 (620 kg/m^3). Construction was not interrupted or delayed by density results.

Accumulation of overspray during construction in the rig area resulted in low ice densities. Because the heaviest loads would be placed here, the top 8 feet of ice was excavated using D-6 dozers. After the cellar was in place, this material was replaced with a better quality (higher cohesion), very cold ice placed in layers and compacted.

Ice Temperature

The thermistor strings were installed on December 26. The strings provided the daily ice temperature readings, which were compared to the specifications.

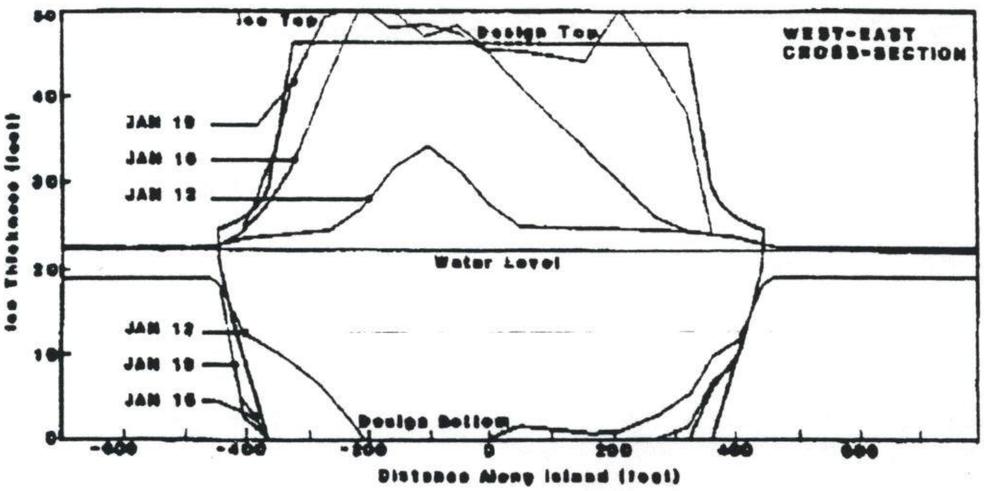


FIGURE 6: ICE ISLAND CROSS-SECTIONS

VERIFICATION

The as-built geometry, density, temperature, and strength of the island were measured. On February 2, 1989, the island was verified as a safe foundation for drilling.

Geometry

Geometry was determined by a topographic elevation survey and thermal drilling. The thermal drilling also showed 100% grounding over the core. A comparison of design and actual parameters for the island is as follows:

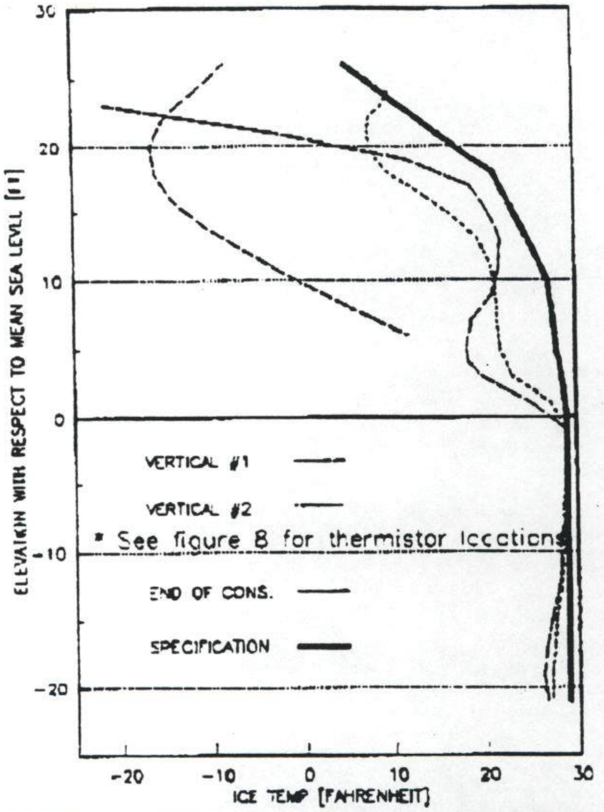
	DESIGN	ACTUAL
TOTAL ICE VOLUME	21.8×10^6 ft^3 (617×10^3 m^3)	24.6×10^6 ft^3 (697×10^3 m^3)
AVG. CORE THICKNESS	46 feet (14 m)	46.8 feet (14.3 m)

Density

The average above water (or post-grounding) density of 38.3 lbs/ft^3 (614 kg/m^3) was determined from two cores. This is about the same as the 38.7 lbs/ft^3 (620 kg/m^3) measured during construction. This measured value is lower than the design specification of 40 lbs/ft^3 (641 kg/m^3). However, the combination of more volume and lower density provided a net overburden pressure that was 15% greater than required for lateral stability.

Ice Temperature

A temperature profile taken at the end of construction is shown in Figure 7 along with the specified maximum allowable design temperatures. The actual temperatures were generally colder than specified.



* See figure 8 for thermistor locations

FIGURE 7: TYPICAL ICE TEMPERATURE PROFILE

Cone Penetrometer Tests

Cone penetrometer tests were conducted at 20 points over the core of the island. Tip resistances in the spray ice averaged 35.7 tsf (3.4 MPa) above waterline and 39.5 tsf (3.8 MPa) below waterline.

The cone traces indicated a continuous material through the island depth. Weaker layers were noncontinuous and interlocked with the stronger ones preventing the formation of a preferential shear plane. They also indicated 100% grounding of the island.

PERFORMANCE OF THE ISLAND

The temperature, horizontal and vertical movement of the ice and the weather were monitored during drilling. This was done to ensure a safe drilling operation.

Temperature

Vertical and horizontal thermistor strings located under the rig determined the temperature. Their locations are shown on Figure 8. A vertically installed thermistor string, VT#1, located away from the rig provided a reference temperature profile of the ice island unaffected by any rig heat.

Ice temperatures were monitored continuously during drilling. This was necessary to ensure that drilling operations did not undermine the thermal integrity of the ice. The main areas of concern were directly under the rig and around the conductor and cellar.

The first 24 bead thermistor string, 46 feet (14 m) long, was placed one foot (300 mm) below the ice surface beneath the generators; the second below the mud tanks; and the third below the substructure. Their locations are shown in Figure 8. The specifications required that the temperature should not rise above 23°F (-5°C.). The warmest temperature measured during the course of drilling was 2.5°F (-16.4°C.) with the average at the end of drilling being approximately -2°F (-18.9°C.).

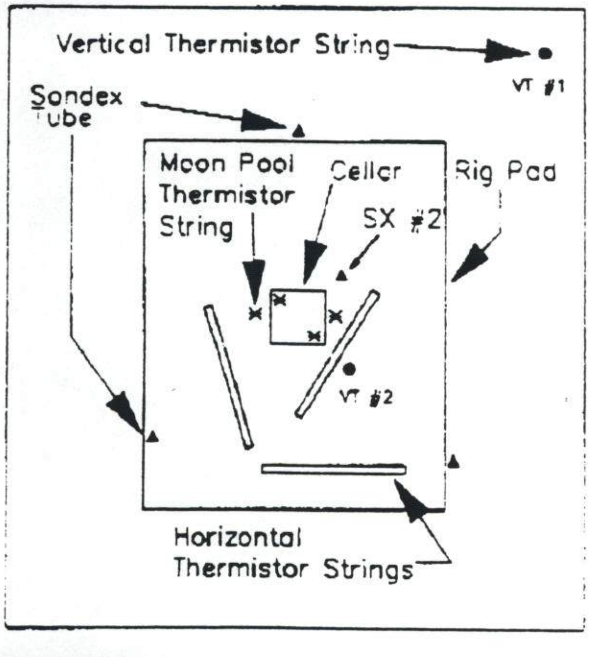


FIGURE 8: SUBSTRUCTURE INSTRUMENTATION THERMISTOR STRINGS

The brine cooling system was designed to minimize heat transfer from the conductor. It required periodic maintenance.

Horizontal Movement

Five in-place inclinometers (IPI's) were located at three places around the perimeter of the ice island to monitor horizontal movement. Six manually read inclinometer stations were located on the island to provide a continuous profile of lateral deflection; three of the six were also located at the IPI stations to provide redundancy. The locations are shown on Figure 9.

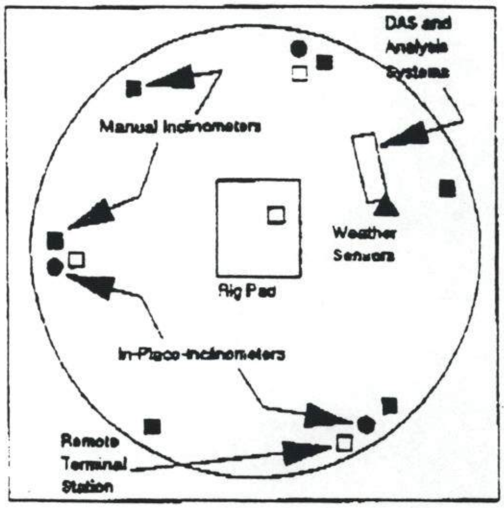


FIGURE 9: INCLINOMETERS

The in-place inclinometers showed maximum movements as shown in Figure 10. The ice moved radially away from the island center. The manual inclinometers showed the same bulging effect. A probable explanation for the bulging is due to the settlement and consequential outward radial movement of the island under self-weight.

Vertical Movement

Vertical movement of the ice was detected by manually-read Sondex instruments. There were three Sondex instruments located on the perimeter of the rig and one located close to the cellar. The locations are shown in Figure 8.

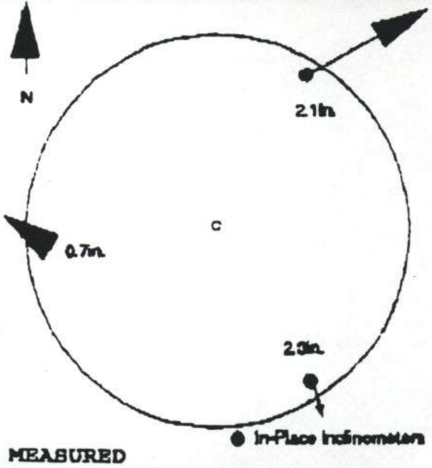


FIGURE 10: MEASURED LATERAL MOVEMENTS OF THE ICE ISLAND

The Sondex instruments were installed close to the rig. The readings from the Sondex closest to the rig substructure for February 23, March 10, March 19, and March 28, 1989, are shown in Figure 11.

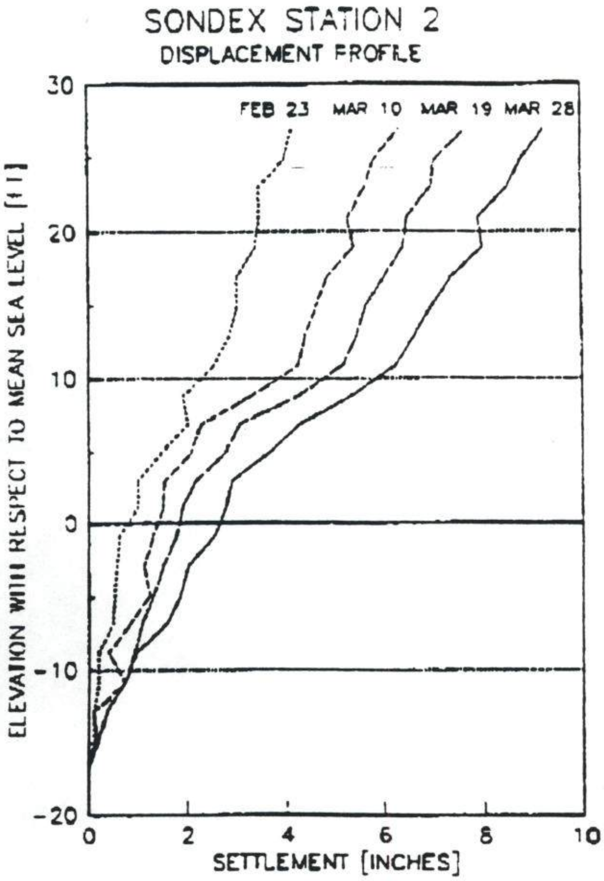


FIGURE 11: ICE SETTLEMENT NEAR RIG SUBSTRUCTURES

Using actual ice temperatures and load duration, the design model predicts a maximum vertical movement of 9.7 in. to 13.75 in. (246 mm to 349 mm).

Weather

The wind speed and direction at an elevation of approximately 36 feet (11 m.) above the island and the air temperature at an elevation of approximately 30 feet (9.2 m.) above the island were measured.

Data Acquisition and Analysis

The data acquisition system automatically recorded temperature and horizontal movement and warned of out-of-limit parameters. The system allowed a quick evaluation of all data and possible unsafe operating conditions. It also provided the performance reporting. The system is shown schematically in Figure 12.

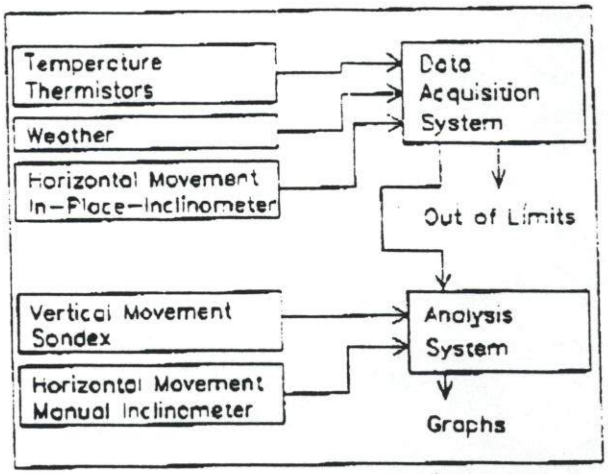


FIGURE 12: INSTRUMENTATION OF THE ICE ISLAND

CONCLUSION

1. Construction of the island was completed on schedule in a safe and efficient manner.
2. Island design and construction costs were within budget.
3. Two pumps were modified to reduce their weight to less than one-half the original. These units were easier to move around the island and construction efficiency was increased.
4. Verification testing after construction revealed that the island met or exceeded all design specifications.
5. Instrumentation for monitoring the horizontal and vertical movement of the island during drilling was successfully installed. There was no excessive movement.
6. Cooled brine was circulated in the annulus between the conductor pipe and surface casing to maintain the ice integrity.
7. Placing the rig on mats underlain by insulation, along with good practice with heat and water on the rig floor, prevented ice melting under the rig.
8. Monitoring during drilling showed that the island performance met or exceeded design requirements.

In summary, the Karluk project has demonstrated that spray ice islands are safe and cost effective platforms for offshore arctic exploration.

ACKNOWLEDGEMENTS

Acknowledgement and appreciation is given to the management of Chevron and Mobil for permission to publish this paper.

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Attachment 3

August 22, 2000
Nuiqsut, Alaska
Meeting with Kuukpik Subsistence Oversight Panel
McCovey Prospect Exploration Well

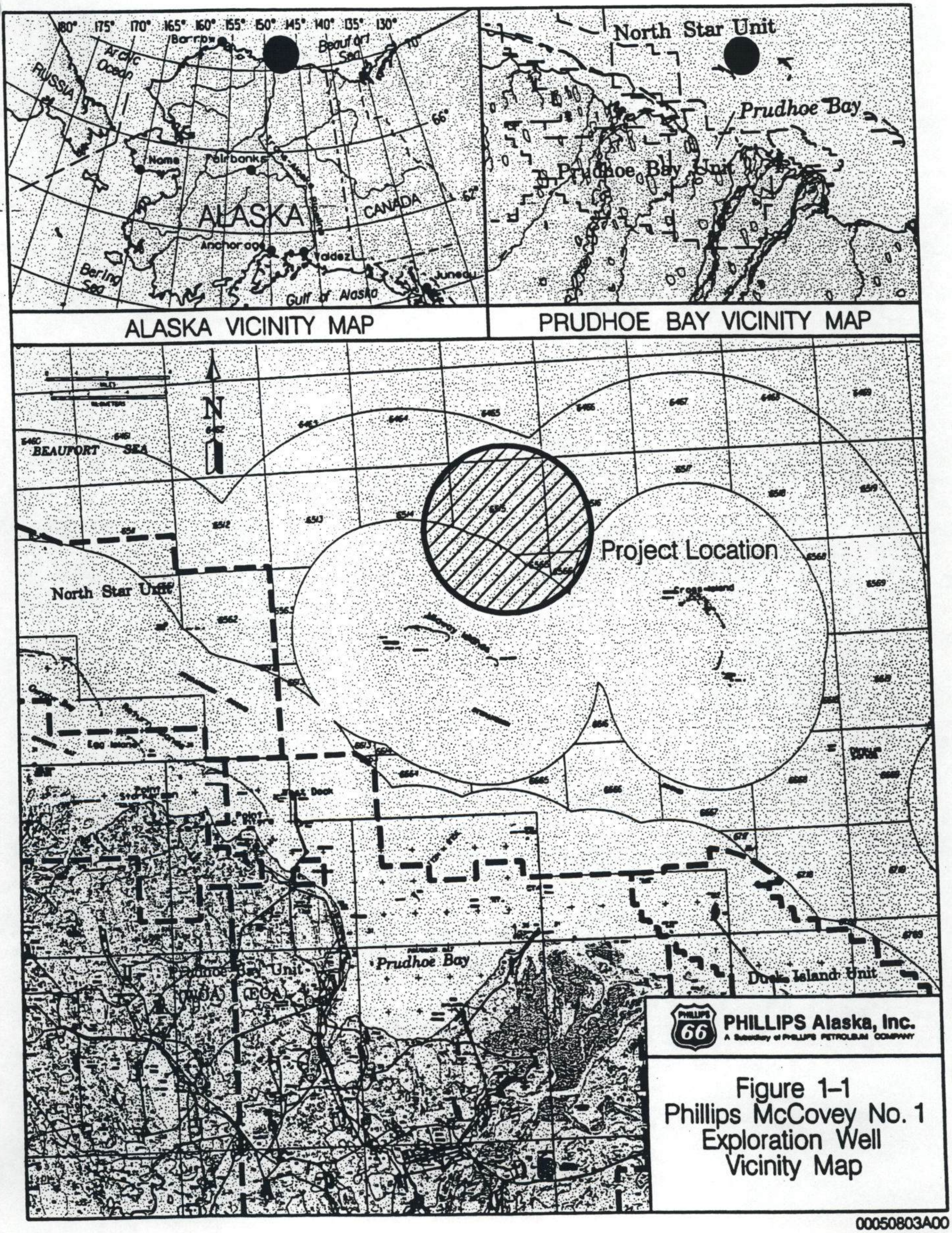
August 22, 2000
Kuukpik Subsistence Oversight Panel Meeting
Nuiqsut, Alaska

Attendee List:

- Thomas Napageak; KSOP Chairman
- Archie Ahkiviana; KSOP Member
- Gordon Brown; KSOP Member
- Isaac Nukapigak; Kuukpik Corporation President
- Joe Nukapigak; Kuukpik Corporation Vice President
- Leonard Lampe; Mayor of Nuiqsut
- Sally Rothwell, PAI
- Mark Major, PAI

Description of McCovey Project

- McCovey location is 14 miles north of Prudhoe Bay, 4.5 miles from Reindeer Island
- One well from a grounded ice island. Well testing will depend on results and weather.
- Pre-staging materials on Reindeer Island prior to freeze-up...(?)
- Ice Road from either West Dock or East Dock
- Support Camp on ice pad at Reindeer Island or at on gravel at West Dock.



PHILLIPS Alaska, Inc.
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Figure 1–1
Phillips McCovey No. 1
Exploration Well
Vicinity Map

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5–9–00

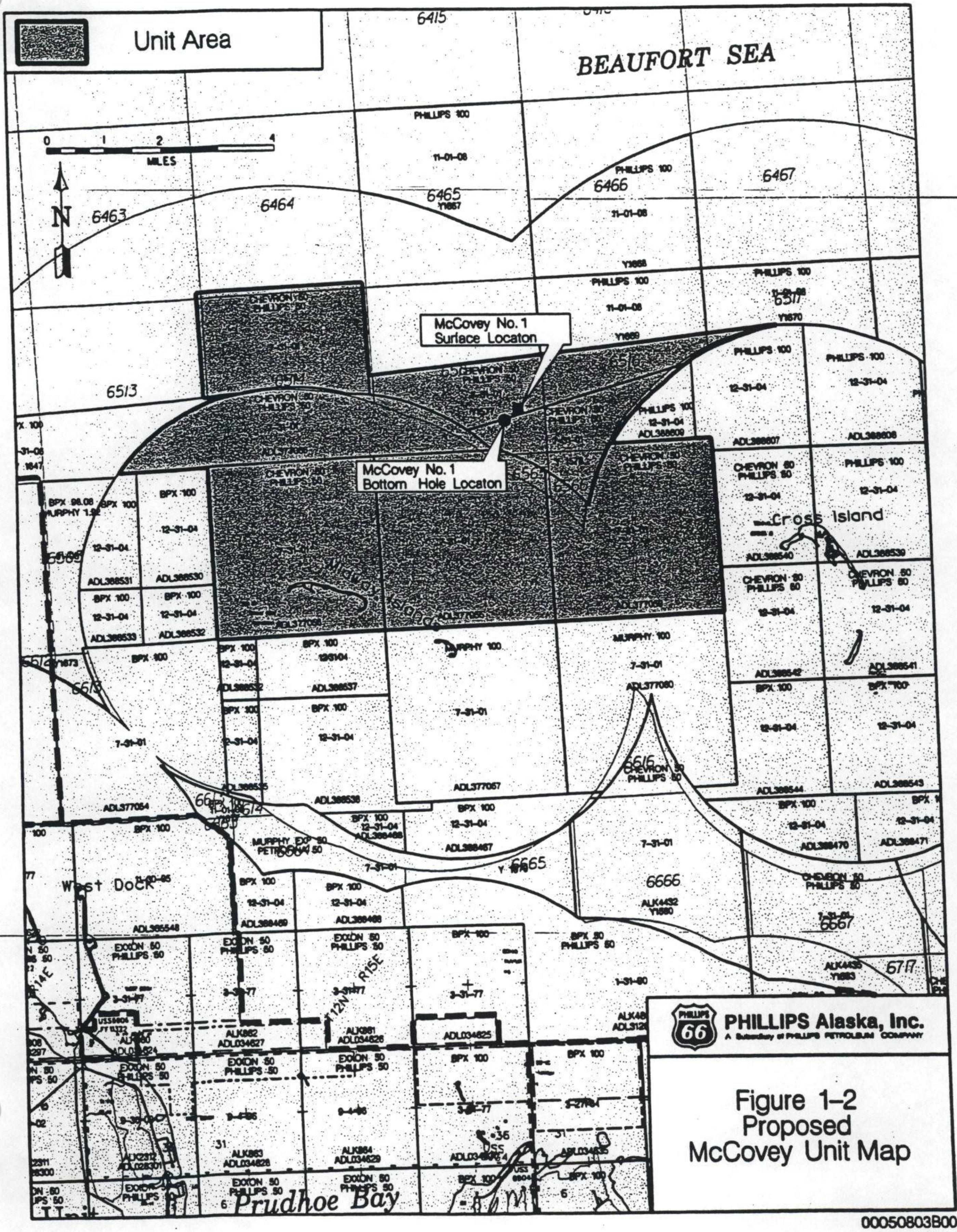

Figure 1–2
Proposed
McCovey Unit Map

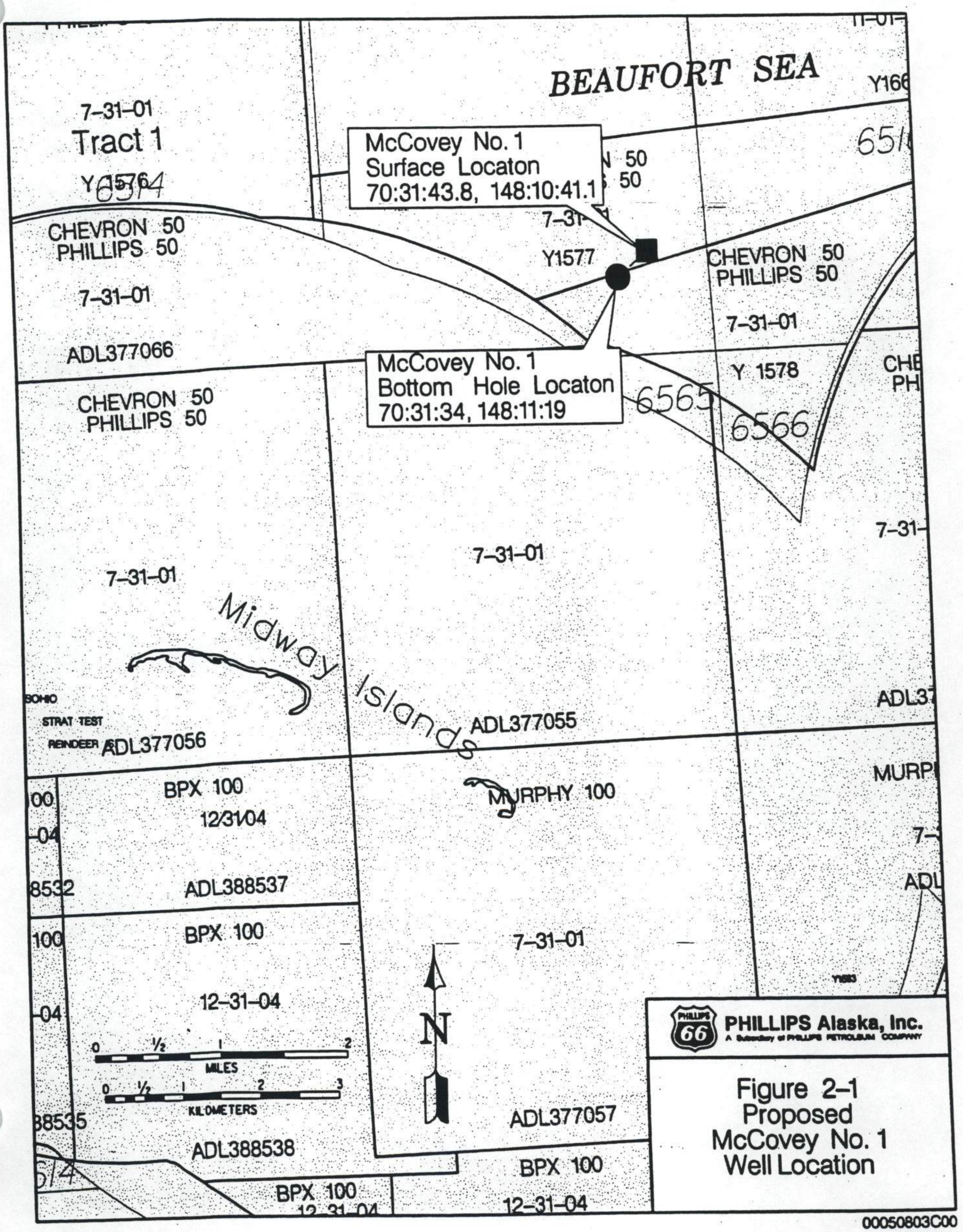

Figure 2–1
Proposed
McCovey No. 1
Well Location

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McCovey Ice Island

- Spray ice construction in 37’ of water. Island will be grounded.
- Island will be 600’ diameter working surface, and 850’ diameter at water line.
- Island design/construction will be review by MMS under a platform verification process.
- QA/QC Monitoring will be preformed during construction and ice/weather monitoring will continue thoughout operations.

McCovey Ice Road

- Ice Road will be from West Dock or East Dock depending on ice conditions
- If camp on Reindeer Island, a short spur to an ice pad location will be constructed.
- Ice Road and Ice Island locations will be surveyed for ringed seals using trained dogs (if available) (IHA application)

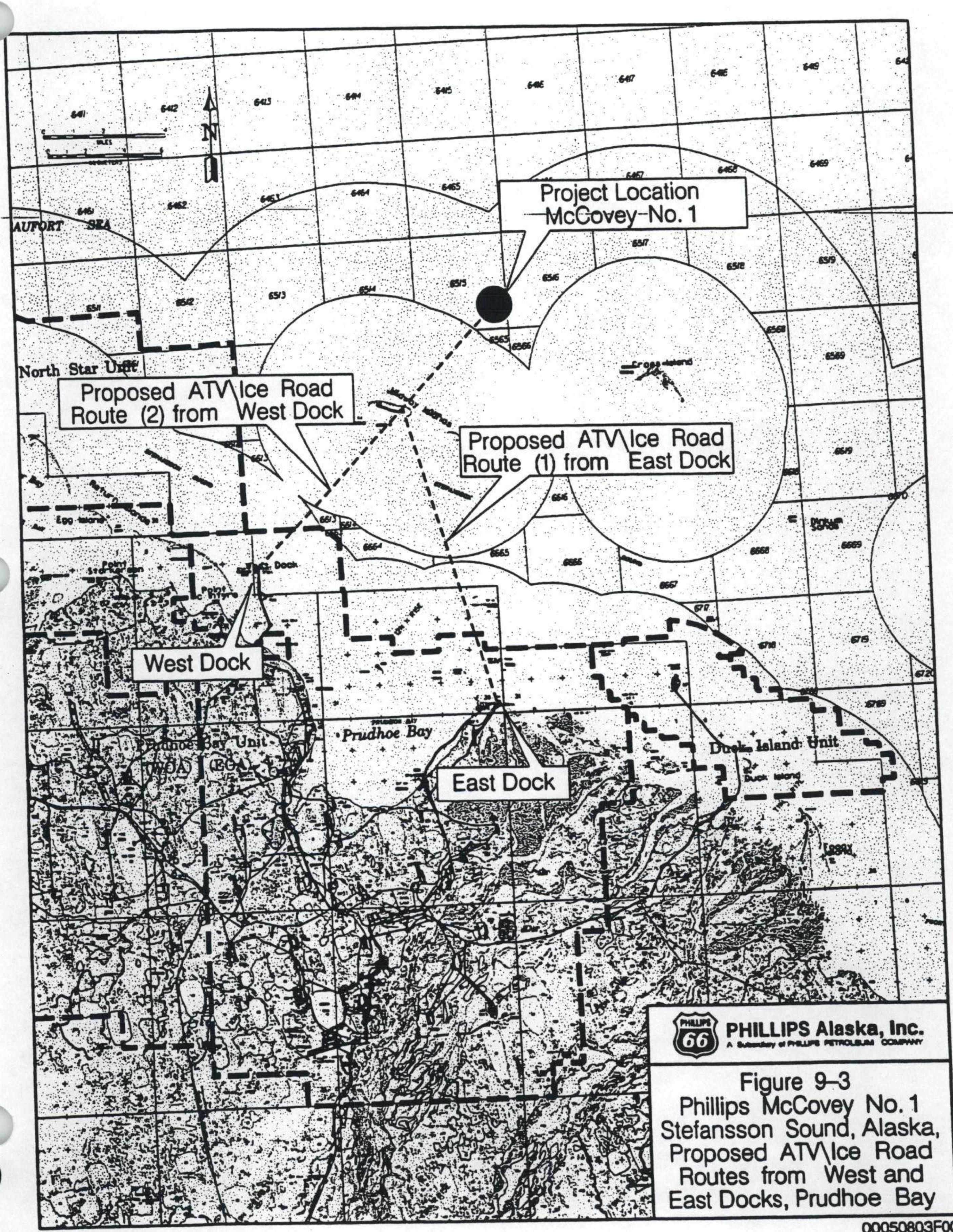

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Figure 9–3
Phillips McCovey No. 1
Stefansson Sound, Alaska,
Proposed ATV\Ice Road
Routes from West and
East Docks, Prudhoe Bay

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5–9–00

Attachment 4

August 31, 2000
Barrow, Alaska
North Slope Borough Planning Commission Meeting
McCovey Prospect Exploration Well

Aug ~~30~~, 2000
31

1.	Matilda Adams	Planning
2.	Rex A. Okakok Sr	"
3.	Johnny L. Aiken	"
4	Peter Nagel	Alyeska Pipeline
5.	Don Mark Anthony	Alyeska Pipeline
6.	Travis Cardwell, Inupiat Community of the Arctic Slope	
7.	Johnny Adams	DMS/VO
8.	Doreen Lampe	Economic Dev/Planning
9.	NED T. AREY, SR	Permitting
10.	Sheldon Adams Sr.	Permitting
11.	Cindy Bailey	BP
12.	CONCE ROCK	BP
13	NORM GOLDSTEIN	KBRW
14.	Gordon Brower	NSB permitting
15.	MARK MAJOR	PHILLIPS AK
16.	Lisa Pekich	Phillips AK
17.	Chris Gibson	BLM
18.	Don Meares	BLM
19.	Kay LaBau	Phillips AK
20	STEVE CROPSEY	N.S.B.S.D.
21.		
22.		
23.		
24.		
25.		
26.		
27.		
28.		

North Slope Borough Planning Commission
2000-2001 McCovey Exploration Drilling

PHILLIPS 66

PHILLIPS Alaska, Inc.
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August 31, 2000

Barrow, Alaska

McCovey Pre-Application Meeting
Presentation Overview

- Description of Project
  - Ice Island
  - Ice Road from West Dock or East Dock
  - Camp on Reindeer Island or West Dock
- Project Schedule
- Permits Required/Timelines
- Questions & Answers

Description of McCovey Project

- McCovey location is 14 miles north of Prudhoe Bay, 4.5 miles from Reindeer Island
- One well from a grounded ice island. Well testing will depend on results and weather.
- Pre-staging materials on barge prior to freeze-up...(?)
- Ice Road from either West Dock or East Dock

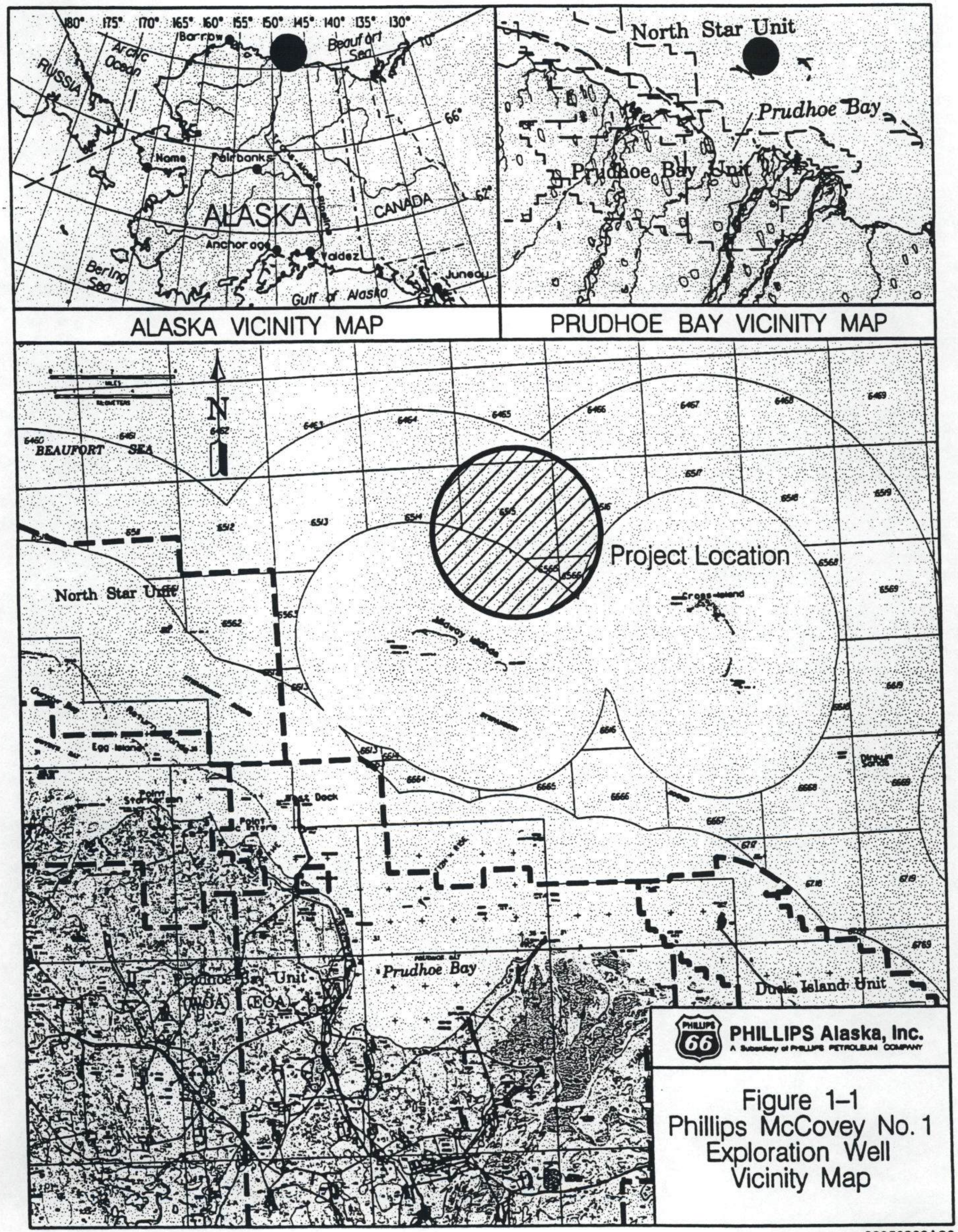

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Figure 1–1
Phillips McCovey No. 1
Exploration Well
Vicinity Map

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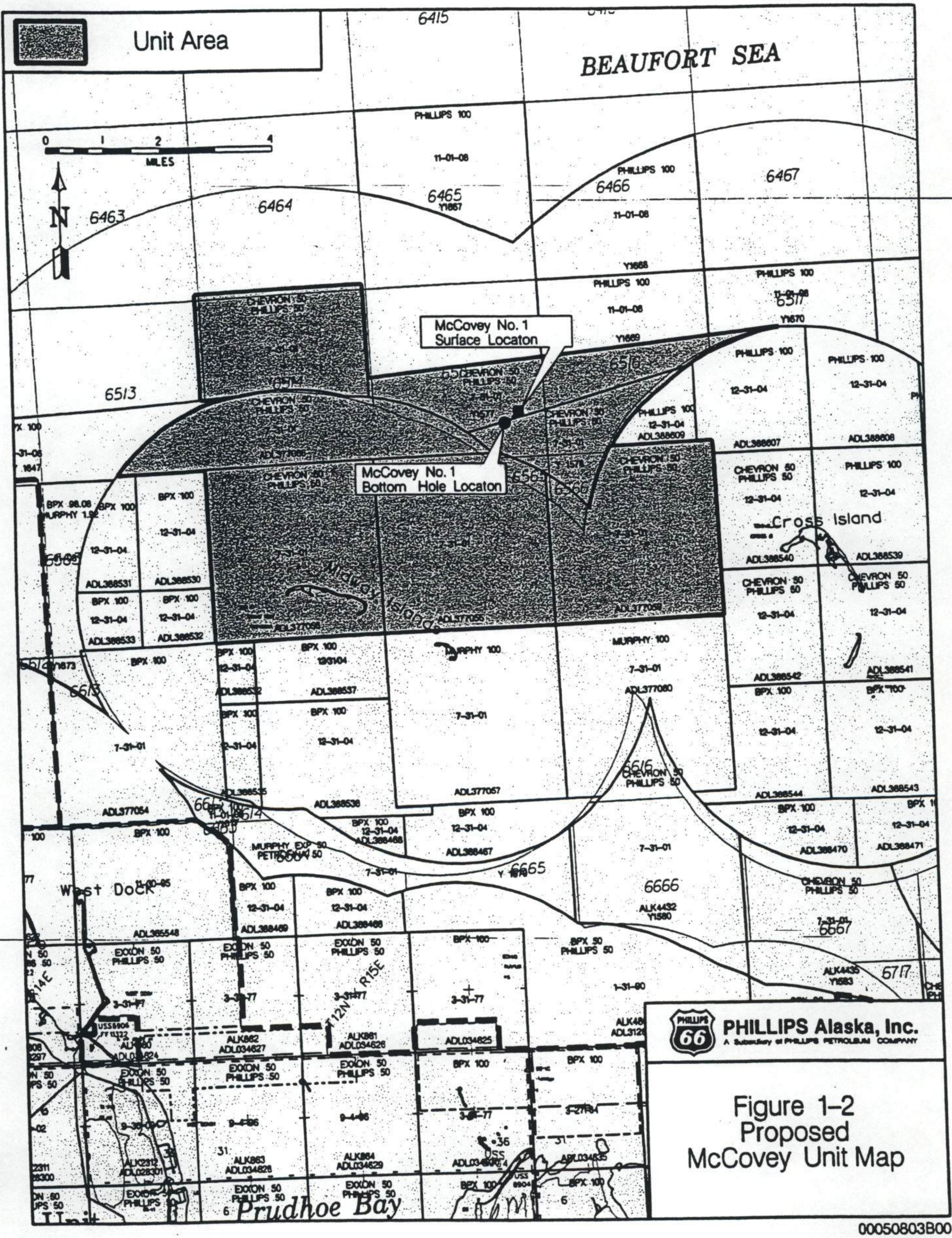

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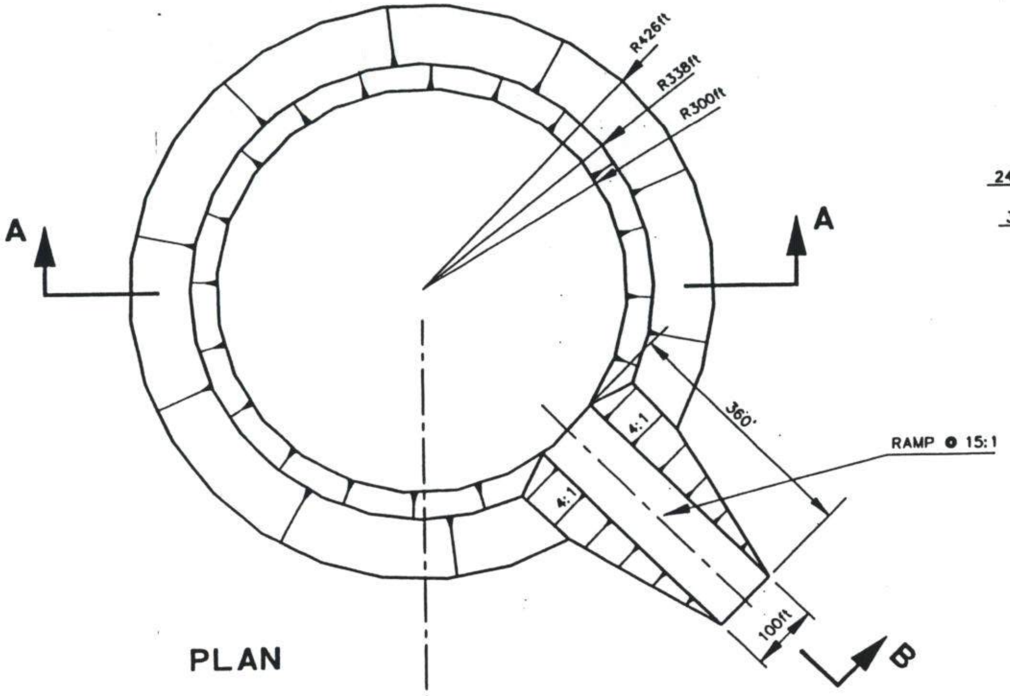
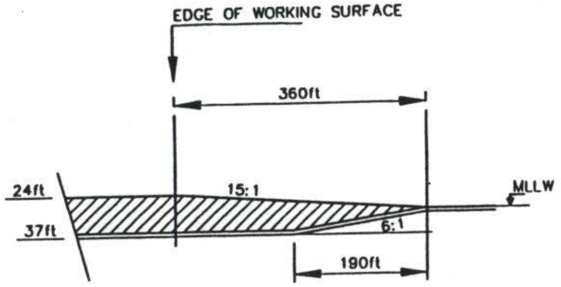
Figure 1–2
Proposed
McCovey Unit Map

McCovey Ice Island

- Spray ice construction in 37' of water. Island will be grounded.
- Island will be 600' diameter working surface, and 850' diameter at water line.
- Island design/construction will be reviewed by MMS under a platform verification process.
- QA/QC Monitoring will be preformed during construction and ice/weather monitoring will continue thoughout operations.

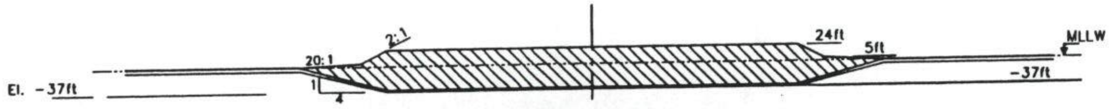


PLAN



RAMP ONTO ISLAND

SECTION -B



SECTION A-A

REV.	BY DATE	REVISION	APP'D	BY DATE	PRELIMINARY ISSUE	REV.
				CAD FILE NO. FILE		

APPROVED –	SCALE	SCALE	YR.	MO.	DAY
	DRAWN	BG	00	06	09
DATE –	CHECK	CHECK	–	–	–
B. SAN-DWG-NO	DESIGN	DMM	–	–	–
	DES. CHK.	PS	–	–	–

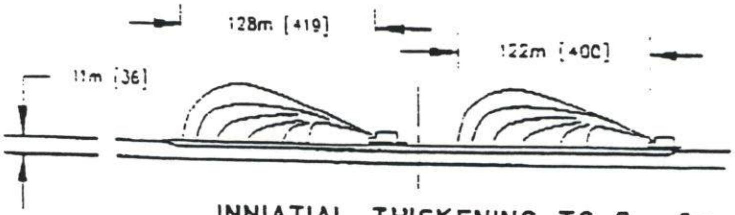
Sandwell

McCOVEY ICE ISLAND
600ft DIA. CORE DIAMETER
600ft DIA. WORKING SURFACE

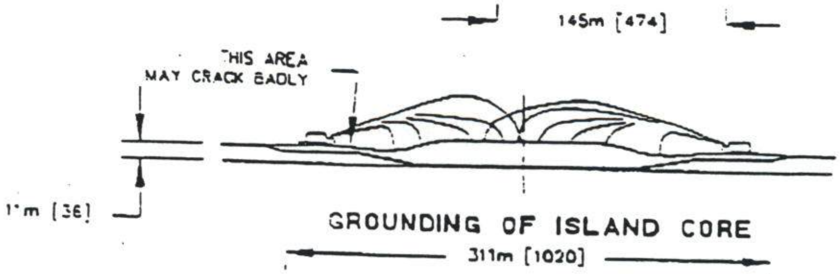
Phillips Alaska, Inc.

DWG. 142401 C 003 REV 1

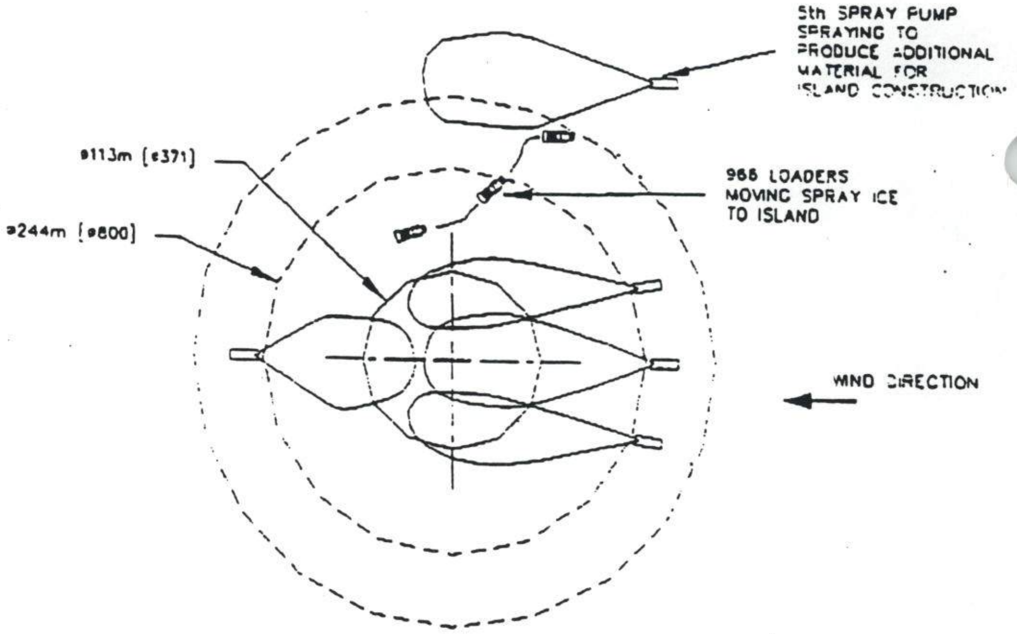
ISLAND SPRAYING - A



INNIATIAL THICKENING TO 2 - 3m

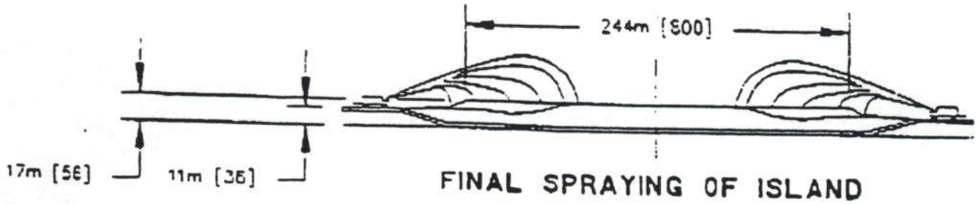


GROUNDING OF ISLAND CORE

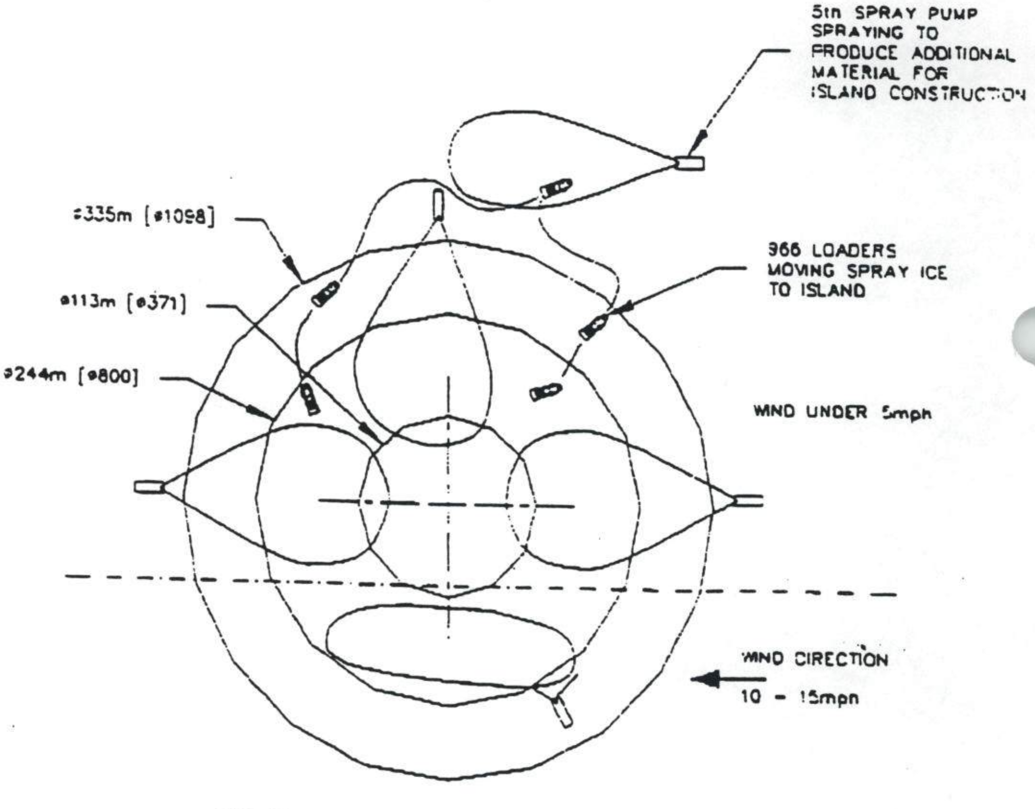


GROUNDING OF ISLAND CORE

ISLAND SPRAYING - B



FINAL SPRAYING OF ISLAND



FINAL SPRAYING OF ISLAND

SPRAY-B.DWG

McCovey Ice Road

- Ice Road will be from West Dock or East Dock depending on ice conditions
- Ice Road and Ice Island locations will be surveyed for ringed seals using trained dogs (if available) (IHA application)

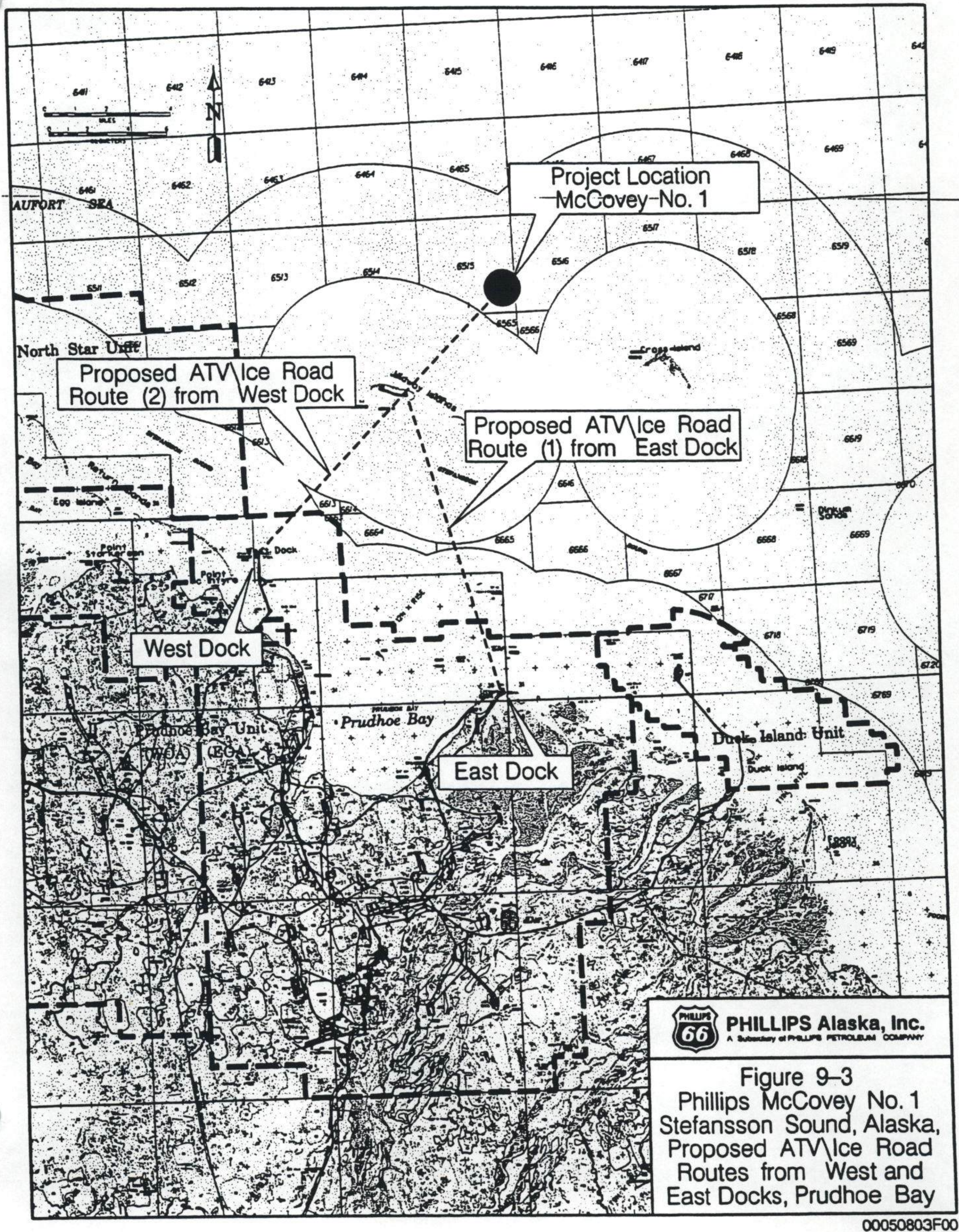


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Figure 9–3
Phillips McCovey No. 1
Stefansson Sound, Alaska,
Proposed ATV\Ice Road
Routes from West and
East Docks, Prudhoe Bay

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5-9-00

Support Camp

- Support camp may be located at West Dock or on ice pad at Reindeer Island during construction
- Rig camp will also be at West Dock location or on ice pad at Reindeer Island
- Small camp for essential personnel at ice island location.

McCovey Project - Critical Timeline & Milestones

Action Item / Milestone	Target Date
YEAR 2000	
Submit IHA on Ring Seals	August 1
Shallow Hazard Survey Field Work Completion	August 22
Submit Permits	August 28
Premobilize / Stage Pumps, etc. at Reindeer Island	Late Sept
Present Shallow Hazard Survey to MMS	Oct 15
Submit APD to MMS	Oct 20
Initiate Sea Ice Road Construction	Dec 1
Mobilize to Island Site for Island Construction	Dec 15
Initiate Ice Island Construction (56’ thick island at 1’/day = approx 50 days)	Dec 20
YEAR 2001 - DATES ARE ESTIMATES ONLY AT THIS TIME	
Mobilize Nabors 14E Rig to Reindeer Island	Feb 15
Mobilize / Rig Up Rig on Ice Island	Feb 15 - March 3
Spud Well	March 3
Drill Well (40 days +/-)	March 3 - April 12
Log Production Hole at TD	April 12 - April 15
Run Casing / Run Completion	April 15 - April 20
Complete / Test Well if Success	April 20 - April 30
P&A Well / Release Rig	April 30 - May 2
Final Demobilization From Ice Island	May 10