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EXPLORATION PLAN

**OCS LEASE SALE 87 AREA
DIAPIR FIELD
BEAUFORT SEA, ALASKA**

SHELL WESTERN E&P INC.

RECEIVED

Anchorage, Alaska

MAR 14 1985

REGIONAL SUPERVISOR
FIELD OPERATION
MINERALS MANAGEMENT SERVICE

EXPLORATION PLAN
FOR
OCS SALE 87 AREA
BEAUFORT SEA, ALASKA

SHELL WESTERN EXPLORATION AND PRODUCTION, INC.

OPERATOR FOR SWEPI, UNOCAL AND AMOCO

MARCH 1985

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1.0 Introduction

As operator for Shell Western Exploration and Production Inc., (SWEPI), Union Oil Company of California (UNOCAL), and Amoco Production Company (AMOCO) (hereinafter "parties"), SWEPI submits its Exploration Plan for drilling exploratory wells on Federal leases acquired at the OCS Beaufort Sale No. 87. The parties have conducted or participated in geophysical surveys and geological studies in the area. Available geologic information from other wells drilled in the area has also been considered. The interpretation of these data encourages the parties that significant accumulations of hydrocarbons may exist under the acquired leases. The parties propose to drill a number of exploratory wells to evaluate these prospects. SWEPI, UNOCAL and AMOCO each plan to be operator, at different times for the different tracts acquired.

The Exploration Plan is composed of several documents. The main body of the plan is contained in this report. In addition, two stand-alone appendices have been submitted. Appendix 1 contains proprietary and confidential geologic information. Appendix 2 is Oil Spill Contingency Plan for the operator's Sale 87 area activities. The Environmental Report is also submitted as a separate document in support of this Exploration Plan. The Oil Spill Contingency Plan and the Environmental Report have been prepared to address an area of interest as defined by the parties (Figure 1).

2.0 Location of Drilling Activity

Beginning in the summer of 1985, several exploratory wells in the Beaufort Sea are proposed to be drilled from an arctic-designed drillship. The wells will be located on tracts on which the parties were high bidders at OCS Sale 87 held in August, 1984 (Figures 2 and 3). With submission of this document, the parties are initiating the permitting process so that exploratory activities can commence as soon as possible.

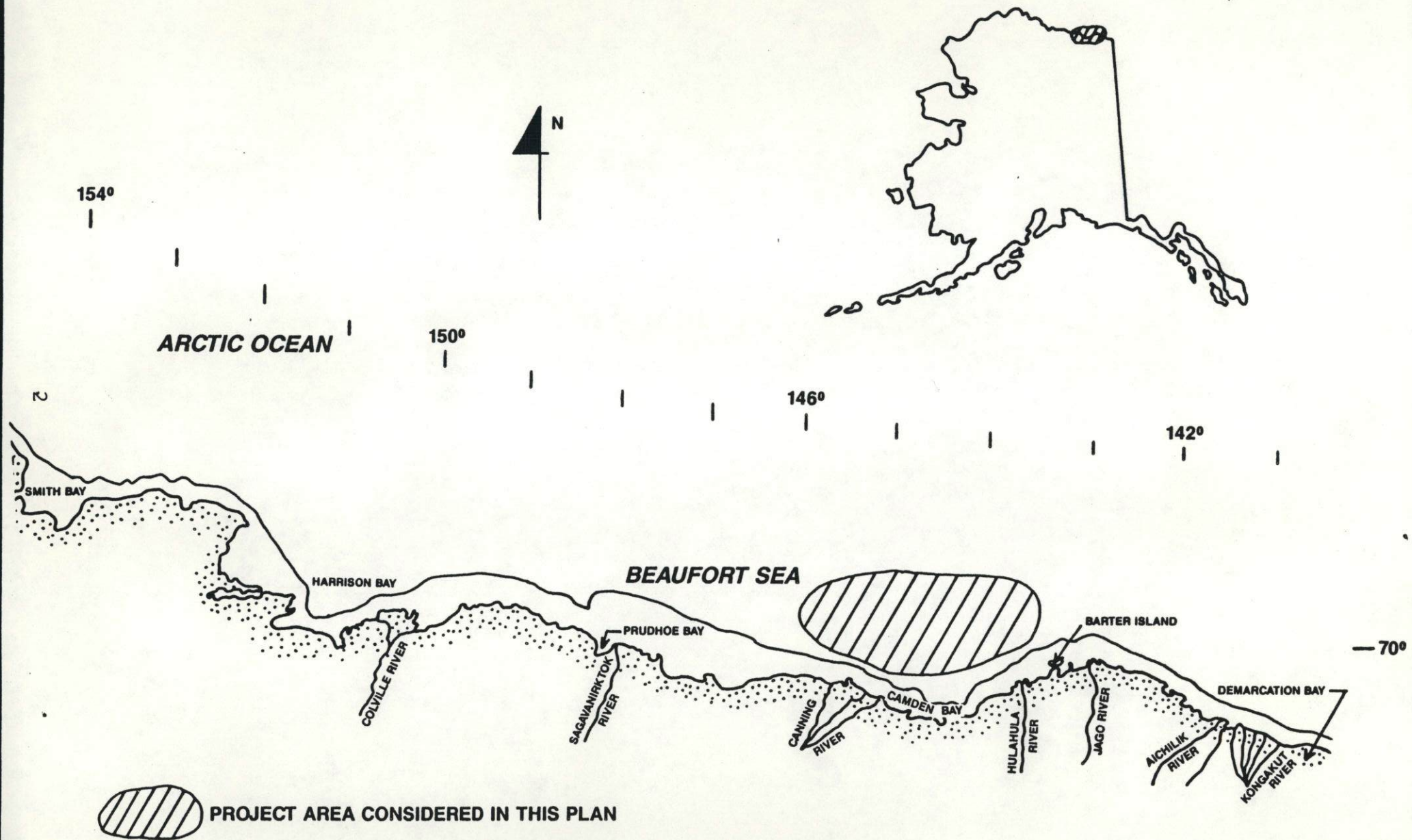


Figure 1. Area of Interest for Proposed Exploration

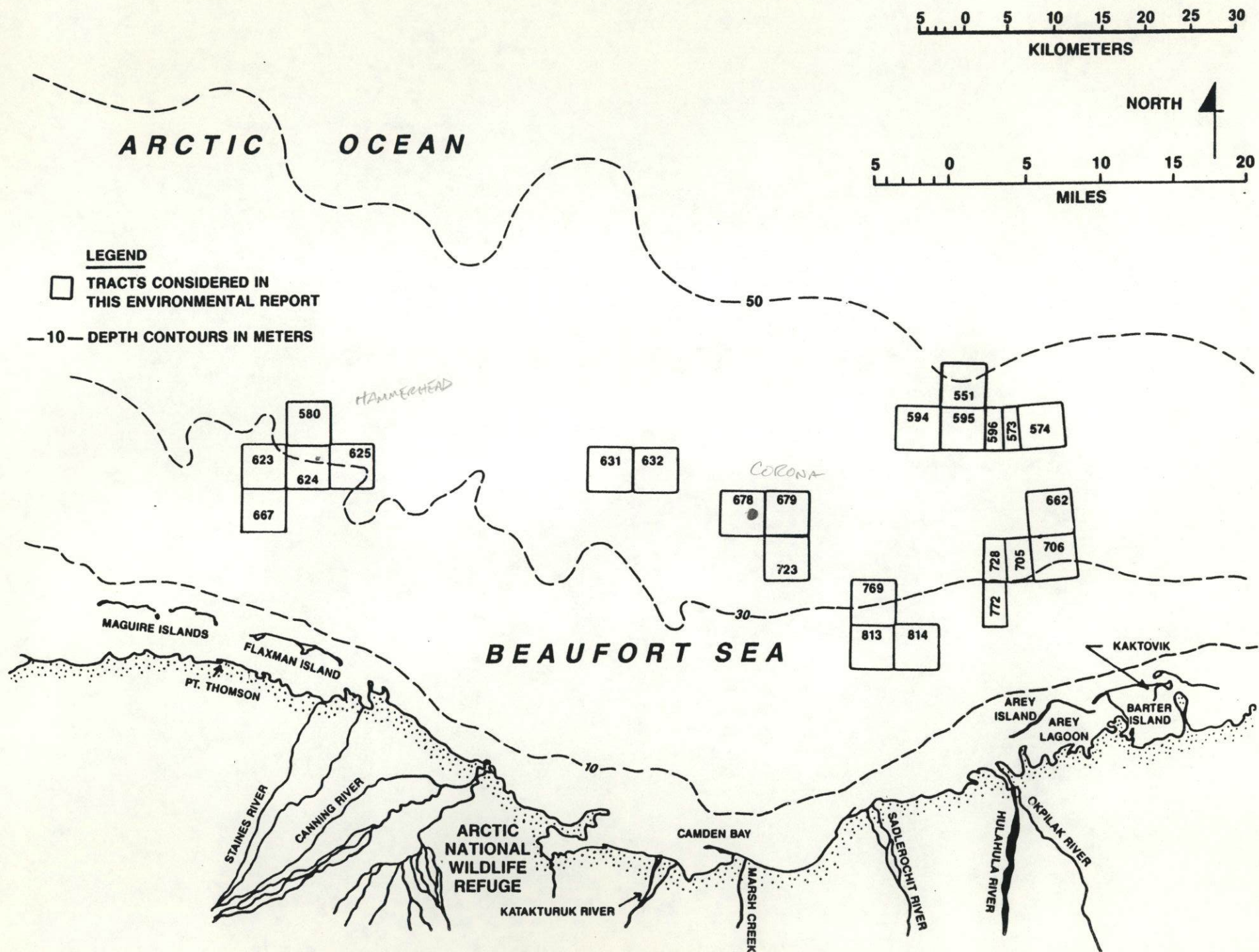


Figure 2. Index Map - Tract Locations

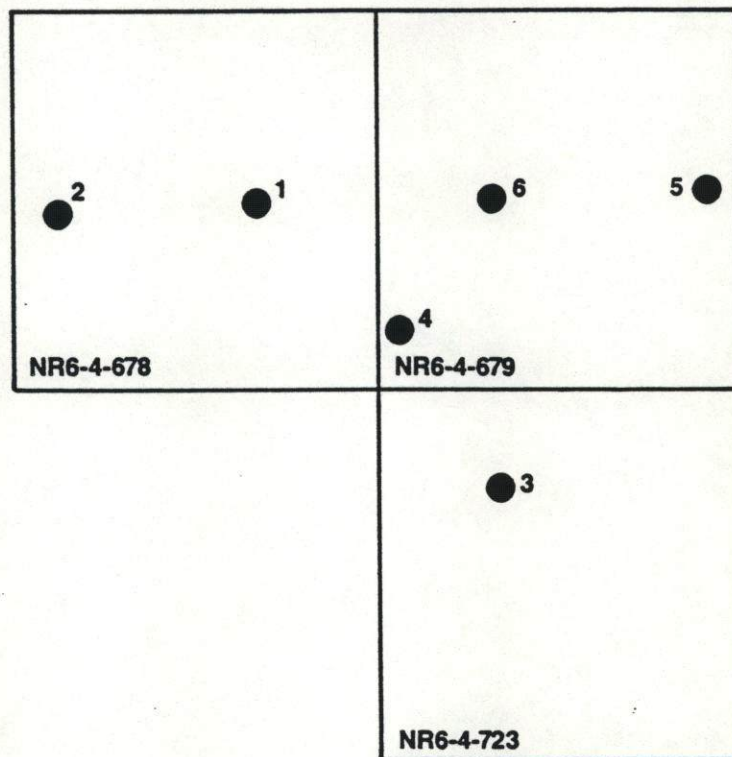


Figure 3. Corona Prospect Area - Proposed Drilling Locations

3.0 Proprietary Data

All proprietary data in the exploration plan has been placed in Appendix 1, which is a separate volume. These data are provided for the exclusive use of MMS. Included in Appendix 1 is a brief geologic description of drilling prospect Corona with regard to structural and stratigraphic elements; a structural map, based on seismic data; a seismic section; and two schematic cross-sections.

4.0 Description and Schedule of Proposed Activity

SWEPI, as operator for the parties, proposes to drill, evaluate and test one or more exploratory wells whose tentative locations are listed in Table 1, and approximate locations shown in Figure 3. These locations, if all are drilled, would test and define one distinct prospect.

The first exploratory well SWEPI plans to drill is Corona No. 1 (location 1 on Table 1 and, in Figure 3, NR 6-4, Block 678). Depending upon ice conditions and the results from any wells drilled earlier, drilling could begin in the 1985 open-water season. The locations, timing and sequence of the second and subsequent wells listed in Table 1 would be contingent on results of the first well and those that follow. Additional exploratory wells on the same prospect may be required or the rig moved to a second prospect in the Sale 87 area, depending on information obtained from drilling.

Sea ice conditions in the project area will require ice management support for the drillship. Three support vessels will be used for anchor handling and ice management. The Robert Lemeur is a 9600 HP Class 3 icebreaking supply vessel which will be used to open the route to the drillsite. It will be used for ice management, supply transport and picket duty in support of the Explorer II. The Supplier I and Supplier VII are smaller

TABLE 1: TENTATIVE EXPLORATION WELL LOCATIONS FOR CORONA PROSPECT
OCS LEASE SALE 87
BEAUFORT SEA, ALASKA
OPERATOR SWEPI

WELL SITE No.	NR 6-4 BLOCK No.	LEASE OCS-Y	WATER DEPTH (Ft.)	WELL DEPTH* (Ft.)	COORDINATES	
					Latitude Longitude	UTM Zone (M)
1	678	871	120	10,000	70°18'52.518"N 144°45'31.522"W	X= 584,247.36 Y= 7,802,333.34
2	678	871	120	10,000	70°18'52.297"N 144°48'49.428"W	X= 582,181.95 Y= 7,802,251.31
3	723	882	120	10,000	70°16'58.714"N 144°39'32.931"W	X= 588,125.63 Y= 7,798,951.04
4	679	872	120	10,000	70°18'03.892"N 144°41'30.798"W	X= 586,816.98 Y= 7,800,921.87
5	679	872	120	10,000	70°18'53.233"N 144°34'59.185"W	X= 590,846.14 Y= 7,802,608.20
6	679	872	120	10,000	70°18'53.104"N 144°39'23.431"W	X= 588,088.48 Y= 7,802,496.29

Total vertical depth and measured depth

ice-class supply vessels which will share picket duty, ice management, anchor handling and supply transport duties with the Robert Lemeur. At least two of these three vessels will be on picket duty with the drillship at all times.

In the event that encroaching ice may be detrimental to the drilling operation, the support vessel(s) will break up the ice around the drillship. Large floes will be broken, towed, or pushed so that their drift trajectories miss the drillship. In heavy ice, the support vessels will continuously steam around the drillship to keep the ice sufficiently broken up so that it will produce minimal lateral forces on the drillship hull and easily flow around it.

Drilling and testing time for an 8,000 to 10,000 ft. well is expected to be about 65 days. Drilling depth and weather will have an effect on this time-frame. Moves between wells should require about 2 to 3 days. A tentative time table is shown in Figure 4. A delay in starting would result in a shift of the entire schedule. Because of timing, drilling results, and uncertainties due to contingencies related to ice conditions, an extended schedule is not available.

5.0 Drilling Vessel and Rig Description

A moored ice class drillship, the CANMAR Explorer II, will be utilized in the proposed drilling program. Vessel design specifications and drilling equipment are outlined in this section. An outboard profile of the drillship is shown in Figure 5.

5.1 Environmental Capability

- 5.1.1 Drilling Operations Capability - concurrent 17.5 foot waves and winds at 65 knots in 85 foot water depth.

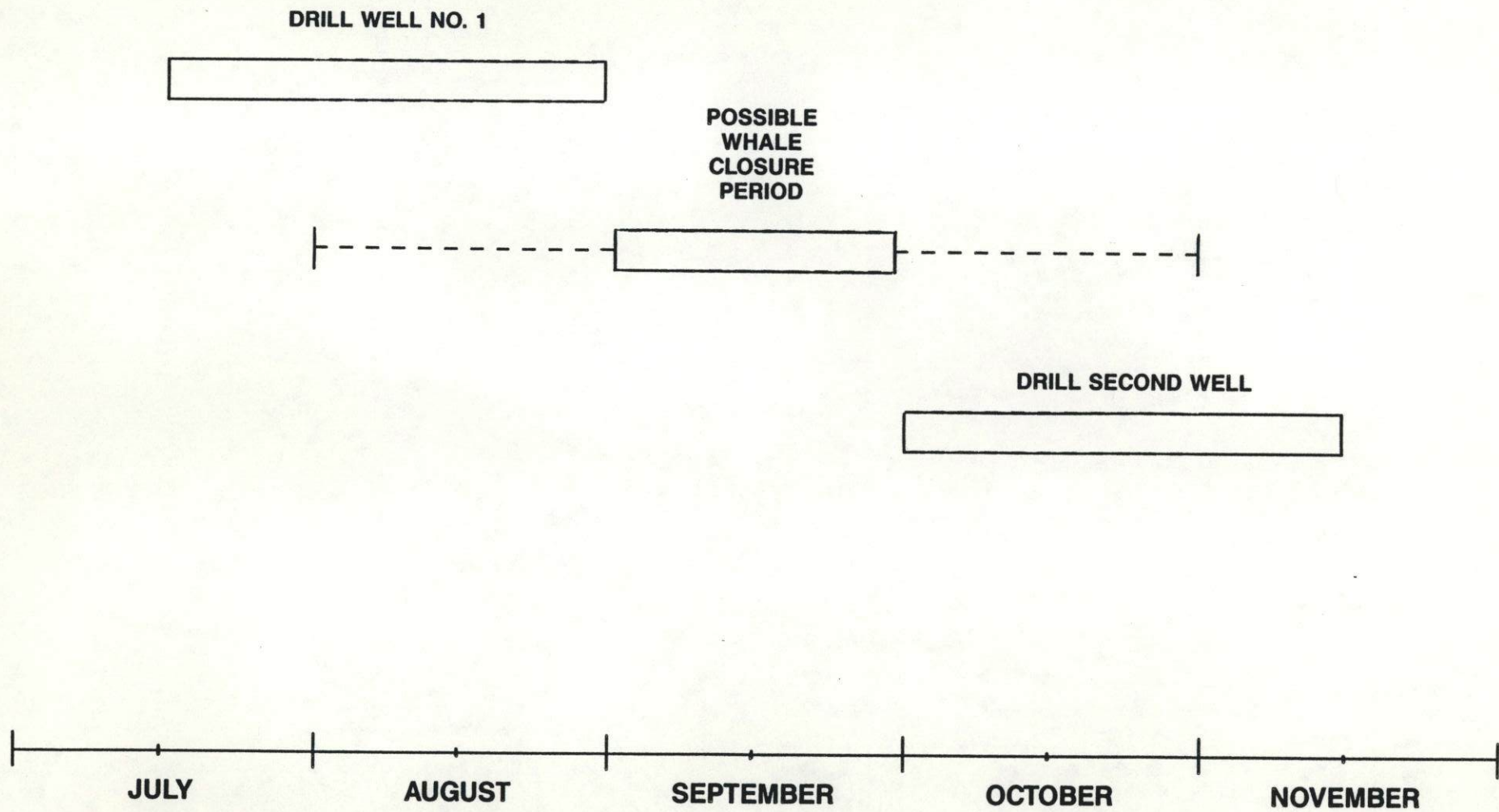


Figure 4. Proposed Schedule of Drilling Activities for Exploration Program

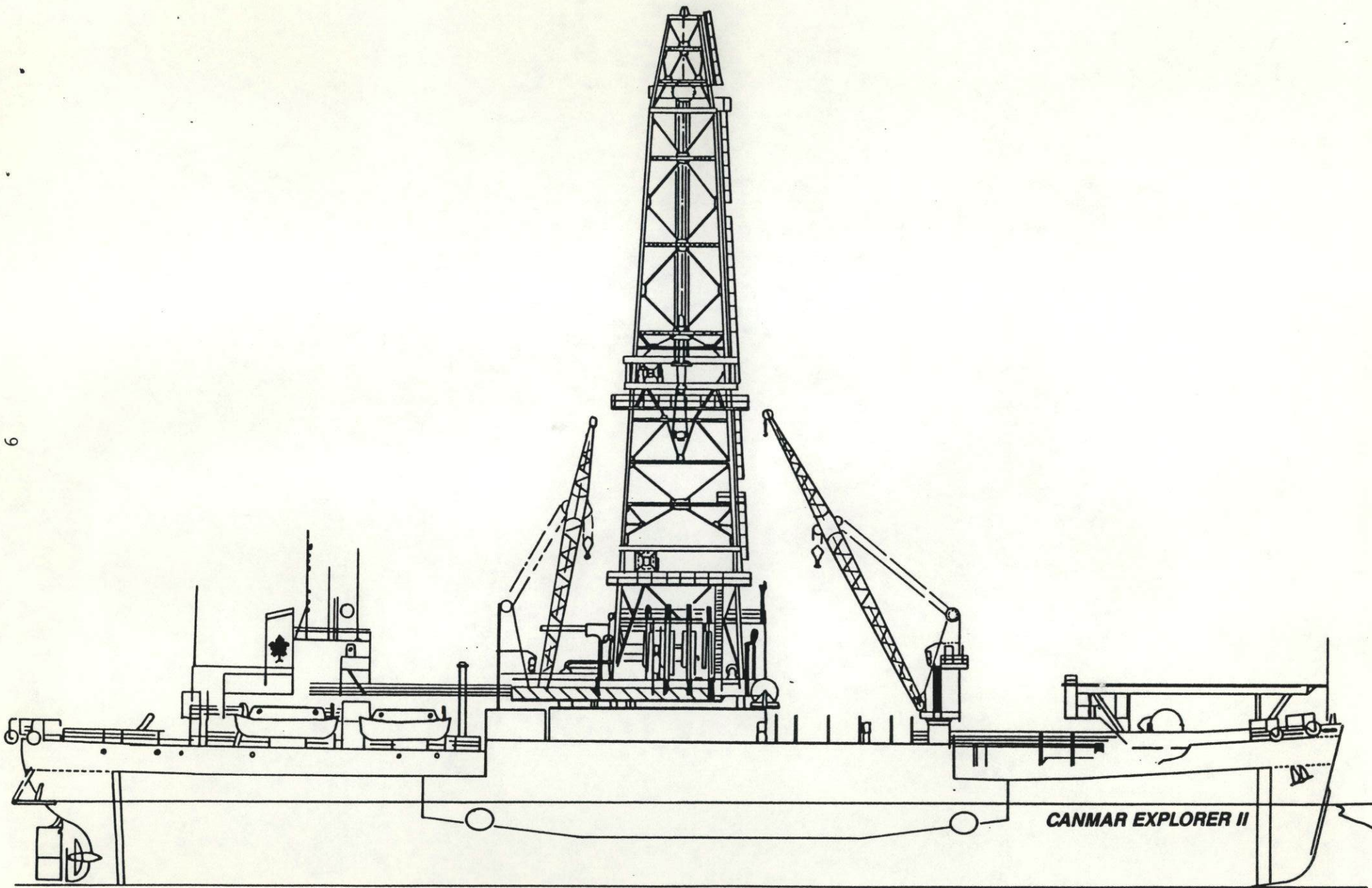


Figure 5. Outboard Profile of CANMAR EXPLORER II

5.1.2 Cold Weather Capability - enclosed rig (no cold weather restrictions).

5.1.3 Water Depth Capability - 600' maximum depth capability.

5.2 Drilling Capability

5.2.1 Depth rating - 20,000'

5.2.2 Major Drilling Equipment -
Derrick - 160' with 1,330,000 lb capacity,
designed to withstand 86 kt winds.

Drawworks - IDECO Model 2100 with Baylor Elmagco Model 6032 auxiliary brake, driven by two GE Model 752R motors.

Rotary Table - IDECO Model LR-375 (37½").

Maximum support load of 700 tons.

Mud Pumps - Two National 12P-160 triplex pumps each driven by two GE 752R DC motors.

5.3 Subsea Equipment

5.3.1 Blowout Preventers - 18 3/4", 10,000 psi WP system,
one - triple ram,
one - single ram,
one - unitized double spherical (5,000 psi WP).

5.3.2 Marine Riser - 22" riser with 10,000 psi kill/choke/booster lines.

5.3.3 All accessory and control equipment necessary to complement the primary subsea equipment represents state-of-art design.

5.4 Mooring System

The CANMAR EXPLORER II utilizes an eight point system with acoustic quick release modules on all eight lines. Four Skagit model DMW-250 double drum winches with collapsible pawls and 2 3/4" wires. Eight Bruce 6.5 ton moorfast anchors are employed.

5.5 Power Plant -

5.5.1 Main engines - Seven Caterpillar D-399Ta, (1125 BHP each)

5.5.2 AC Generators - Four GE 1162.5 KVA-600VAC - three Tamper 1250 KVA - 6000VAC

5.5.3 DC Conversion - Seven GE SCR's, 1000 AMP @ 750VDC, two Marine & Industrial SCR's, 700 AMP @ 750VDC

5.5.4 Emergency Power - One caterpillar D-343, 250 kw (360 BHP)

5.6 Cranes - One Liebherr Model BOS 35/360 (100' boom, 35 ton)
One Leibherr Model BOS 80/1800 (95' boom, 80 ton)
One Skagit (35 tons)

5.7 Heliport - Capable of handling Sikorsky S-61, Puma, and all smaller helicopters - complete fuel system, aircraft fire fighting system, and flight navigation system (DME type),

SAWRS (Certified) weather station onboard to meet FAA rules for IFR aircraft operations.

5.8 Survival Equipment

5.8.1 Personnel Safety - all USCG, SOLAS, ABS, and OSHA required equipment

5.8.2 Fire Safety - All firefighting equipment and sensors as required by the USCG

5.8.3 Evacuation - covered power life boats as required by the USCG

5.8.4 H₂S safety - Equipment for detection and personnel safety as required by the H₂S contingency plan

5.9 Storage Capacities:

5.9.1 Drilling Water - 2,000 bbls

5.9.2 Potable Water - 400 bbls (on board water maker capable of producing 9,600 gal. per day)

5.9.3 Diesel Fuel - 7,000 bbls

5.9.4 Liquid Drilling Mud - 3,800 bbls

5.9.5 Bulk Cement - 9,600 cu. ft.

5.9.6 Bulk Mud - 9,600 cu. ft.

5.9.7 Sacked Material - 313 tons

The drilling vessel will provide self-contained facilities for housing about 100 persons. The vessel will provide the necessary

utilities, including a potable water supply and sewage treatment plant.

Storage tanks will be provided for fuel and contaminated fluids produced during production testing. Small quantities of produced hydrocarbons will be incinerated in the ship's boiler system; larger quantities will be flared outboard.

Additional details specific to the rig will be submitted with the Application for Permit to Drill (APD), as required by the MMS. Discussions of the rig safety, monitoring and support systems are included in the Environmental Report.

Shallow geohazard surveys have been conducted to assess the drill site conditions at anticipated well locations and the results will be submitted with or prior to the APD in compliance with MMS guidelines.

6.0 Pollution Prevention and Control Equipment and Procedures

Pollution prevention is assigned a high priority, exceeded only by the protection and safety of personnel. Proper equipment is provided on the rig and on support vessels in order to minimize the potential for environmental harm. Good housekeeping practices are emphasized. The equipment and procedures for responding to a potential oil spill in Beaufort Sea waters are detailed in the Oil Spill Contingency Plan (see Appendix 2, separate volume).

7.0 Fresh Water Source, Treatment of Sewage and Other Discharges

Fresh water for rig use will be provided by a desalinization plant installed on the drilling vessel. A sewage plant on the vessel will process sewage before discharge. All discharges will comply with the conditions of the Environmental Protection Agency

(EPA) National Pollutant Discharge Elimination System (NPDES) general permit for the Beaufort Sea.

An application will be filed to operate under the general NPDES permit for the Beaufort Sea. All drill site equipment and procedures for discharges will comply with applicable lease stipulations and permits. Estimated discharge volumes are shown in Table 2.

8.0 Training and Drills

8.1 Well Control Training

As required by OCS Order 2 Company and contractor personnel involved directly in drilling operations (including rotary helpers and derrickmen) will be trained in well control methods and detection of abnormal pressures. Such training will be completed in approved company or industry schools before drilling is commenced. A list of personnel and their completed training will be maintained on the drilling vessel and will be available on request.

Blowout prevention drills will be conducted as outlined in MMSS-OCS-T1.

8.2 Fire Drills

Procedures for emergencies such as fires will be spelled out in a Station Bill and, together with the specific emergency responsibilities for crew members, will be posted at appropriate conspicuous places on the drilling vessel. Fire drills will be conducted on a regular basis for all crew members.

TABLE 2. Estimated Discharges for one (1) exploratory well.

Discharge	Estimate Volume
Drill mud (daily dump)	11,500 GPD
+ Excess mud	42,000 gals 3 times
Drill cuttings and wash water	3,500,000 GPD
Deck Drainage	1,000 GPD
Sanitary & Domestic waste discharge	3,500 GPD
Desalinization unit discharge	3,700 GPD
Blowout prevention (BOP) fluid discharge	50 GPD
Non-contact cooling water	3,500,000 GPD
Uncontaminated ballast water	18,000 GPD
Excess cement	7,500 gals, 4 times
Oil/water separator	1,400 GPD

8.3 Safety Measures

Safety meetings will be conducted periodically to make crews aware of safety procedures and to review potential sources of accidents, and the means of preventing them. Accident causes and corrective measures to be taken to prevent recurrence will be discussed in the event of accidents.

9.0 Mud Systems

Sea water will be the base of the mud used to spud and for drilling prior to the setting point of the first two casing strings. Fresh-water/salt-water gel mud will be used for drilling the hole for surface casing. Below surface casing dispersed lignosulfonate mud will be used. Components for these will all be EPA approved for discharge. Specific mud programs will be provided at the time the individual well APD's are submitted to the MMS for approval. Discharges will comply with the conditions of the Beaufort Sea General NPDES permit.

Mud testing and monitoring will be carried out as prescribed by OCS Order No. 2. A description of the mud logging and monitoring system to be used in the drilling operation will be submitted with the APD.

10.0 Formation Sampling Program

Formation cutting samples may be collected during drilling operations and cores will be taken at selected depths in each well. Descriptions of sample intervals and planned core intervals will be described in the APD's filed for specific wells.

11.0 Environmental Training

An environmental training program (ETP) is being prepared jointly by Sale 87 successful bidders for operations in the Sale 87 area.

The program is designed to comply with OCS Sale 87 stipulations and will be given to all personnel directly involved in the exploratory activities covered by this plan. The purpose of the program is to provide managers, supervisors and employees, together with their agents, contractors and subcontractors, an awareness of the Beaufort Sea Sale 87 area environmental, cultural and sociological systems. A general presentation will be prepared for use by all personnel who will be working on, or visiting the operations. All presentations will be conducted under the direction of a qualified instructor. The Environmental Training Program, when completed, will be submitted to the MMS for review and approval before drilling activities in the Sale 87 area are initiated.

12.0 Coastal Zone Management Consistency

The activities proposed in this Exploration Plan are consistent with Alaska's Coastal Zone Management Program and will be conducted in a manner consistent with the purposes of that program. A copy of the certification of consistency is contained in the Environmental Report for the Sale 87 area which accompanies this document.

13.0 Emergency Situation Provisions

Plans for dealing with emergency situations involving oil spills are presented in Appendix 2, Sale 87 Beaufort Sea Oil Spill Contingency Plan. A contingency plan for Hydrogen Sulfide hazards will be included with the APD's filed for each well. Other emergency situations are discussed in the following sections.

13.1 Critical Operations and Curtailment Plan

The factors that could result in the curtailment of drilling operations on location in the Beaufort Sea Sale 87 area will be

wind, waves, ice and the presence of migratory bowhead whales. This section addresses wind, waves, and whales; ice conditions are addressed in Section 13.5.

13.1.1 Wind and Wave Factors

Any drilling operation will be critical when the wind and waves either singly or in combination exceed limits expressed below. Critical operations are: drilling, coring, running and cementing casing or riser, cutting and recovering casing, logging or other wireline operations, and drill stem testing. As a general rule, no operation will commence or be conducted when the significant wave height exceeds 17.5 feet and/or the wind velocity exceeds 65 knots. Specific curtailment limits for each of these critical operations with the design characteristics of the actual drilling vessel to be used will be included with a more detailed curtailment plan to be submitted with each APD.

13.1.2 Other Conditions

No drilling operations will commence or be conducted when any of the following conditions exist:

1. When there is an insufficient supply of drilling fluid materials on board to control the well.
2. When there are not enough boats in the area to deploy the necessary booms or skimmers.
3. When sufficient emergency containment and cleanup equipment is not on location or is not maintained in good working order.
4. When the manpower required to safely conduct the drilling operation is not available.

5. When any critical machinery needed to assure a normally safe operation is not operative.
6. When shutdown is directed by MMS in response to bowhead whales migrating through the area.

IMPORTANT: The above list is only a guideline. The decision as to what action to take during a given emergency, no matter what the cause, must be based on the judgement of the operator's Drilling Supervisor, the Contract Tool Pusher and the ship captain.

13.2 Loss or Disablement of the Drilling Unit

If the drilling unit becomes partially or totally disabled while under contract to the parties in Alaskan waters, the priorities for action in all cases will be:

1. Personnel safety and evacuation, if required.
2. Prevention of pollution from well in progress.
3. Minimize property and rig damage.
4. Regulatory agency and operator management notification.

All contingency plans are developed with these priority objectives in mind. If the drilling unit is damaged to the point where it cannot be repaired on location, then, after evacuation of personnel (if necessary) and securing or plugging the well in progress, the rig would be towed to the nearest suitable harbor (or dry dock) facility for repairs. If the rig is damaged beyond repair, a similar rig could be brought in as soon as possible to continue drilling or plug and abandon the well. Debris would be removed from the seafloor in accordance with Coast Guard regulations and other agency requirements. Relief well plans are included in the accompanying OSCP.

13.3 Loss or Damage to Support Craft

The same priorities for emergency response in the event of a support boat or helicopter accident will be followed as for a rig mishap. Since there will be at least three boats and one helicopter dedicated to our operation at all times, there will be strong back-up capability to provide assistance in the event any one of these support craft requires help. Additional assistance for search and rescue operations would be expected to come from the Prudhoe Bay operators and equipment available at Deadhorse. If any support craft is lost from service to our operation, a suitable replacement for that support craft will be acquired before proceeding with any segment of the operation which depends for its safety in that support craft.

13.4 Environmental Hazards Unique to the Site of the Drilling Operations

The environmental hazards in the Beaufort Sea include sea ice and superstructure icing (potentially a problem for both rig and support craft).

Sea ice may be present during the proposed program, depending on wind and temperature conditions. If the support vessel(s) cannot prevent drifting ice from moving the anchored drillship, critical operations will be curtailed and, in the extreme, down hole equipment and anchors be pulled, allowing the drillship to retreat from the drillsite until ice conditions become negotiable. Helicopter observation, ship-mounted radar and Side-Looking Airborne Radar observations will be performed to monitor ice floe positions, size and movement. These data will be used to direct the ice management vessels and determine the need for early curtailment of operations. A careful estimate of the time required to curtail ongoing operations and move the rig off location will be maintained and updated every four hours while the rig is on location.

Meteorological data for the area indicate that moderate to heavy superstructure icing can occur during the months of planned operation. The occurrence of icing conditions is dependent upon air temperature, surface water temperature and wind speed. The drilling rig will be instrumented with meteorological and oceanographic monitoring systems that will accurately monitor wind speed, air temperature and water temperature. Meteorological and oceanographic forecasts will be made on a routine basis in Tuktoyuktuk and relayed by satellite or radio to the drill ship. Conditions at the well drill sites will be monitored, recorded and information disseminated to supervisory personnel on a routine basis. Also, routine reports will be disseminated to the supply boats. By utilization of weather data and forecasts, impending superstructure icing conditions can be predicted and proper mitigating measures can be employed.

Operations on the drilling vessel should not be affected unless a storm of significant magnitude and duration occurring simultaneously with low surface water temperature develops. Such a forecast might result in securing the well until the storm subsides.

APPENDIX 1
GEOLOGICAL DATA
(Proprietary and Confidential)
(Separate Volume)

Appendix 1 contains a brief geologic description of the prospects with regard to structural and stratigraphic elements; a structural map, based on seismic data; a seismic section; and two schematic cross-sections.

APPENDIX 2
OIL SPILL CONTINGENCY PLAN
(Separate, stand-alone volume)



EXPLORATION PLAN
OCS LEASE SALE 87 AREA
DIAPIR FIELD
BEAUFORT SEA, ALASKA
0871
APPENDIX I
GEOLOGICAL DATA

Released to public file
Name: ISS Date: NOV 1 2018

~~Private & Confidential~~

APPENDIX I
GEOLOGIC DATA
~~PRIVATE AND CONFIDENTIAL~~

The "Corona" Prospect is an upthrown fault trap (Figure 1). The objective section consists of Miocene shallow marine clastics (Figures 2 through 5). Several separate pay zones are anticipated.

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Name: ISS Date: NOV 1 2018

1984 BEAUFORT SEA OCS SALE
NORTH ALASKA

CORONA PROSPECT

DARK BLUE STRUCTURE MAP (DEPTH)

C.I. = 500'

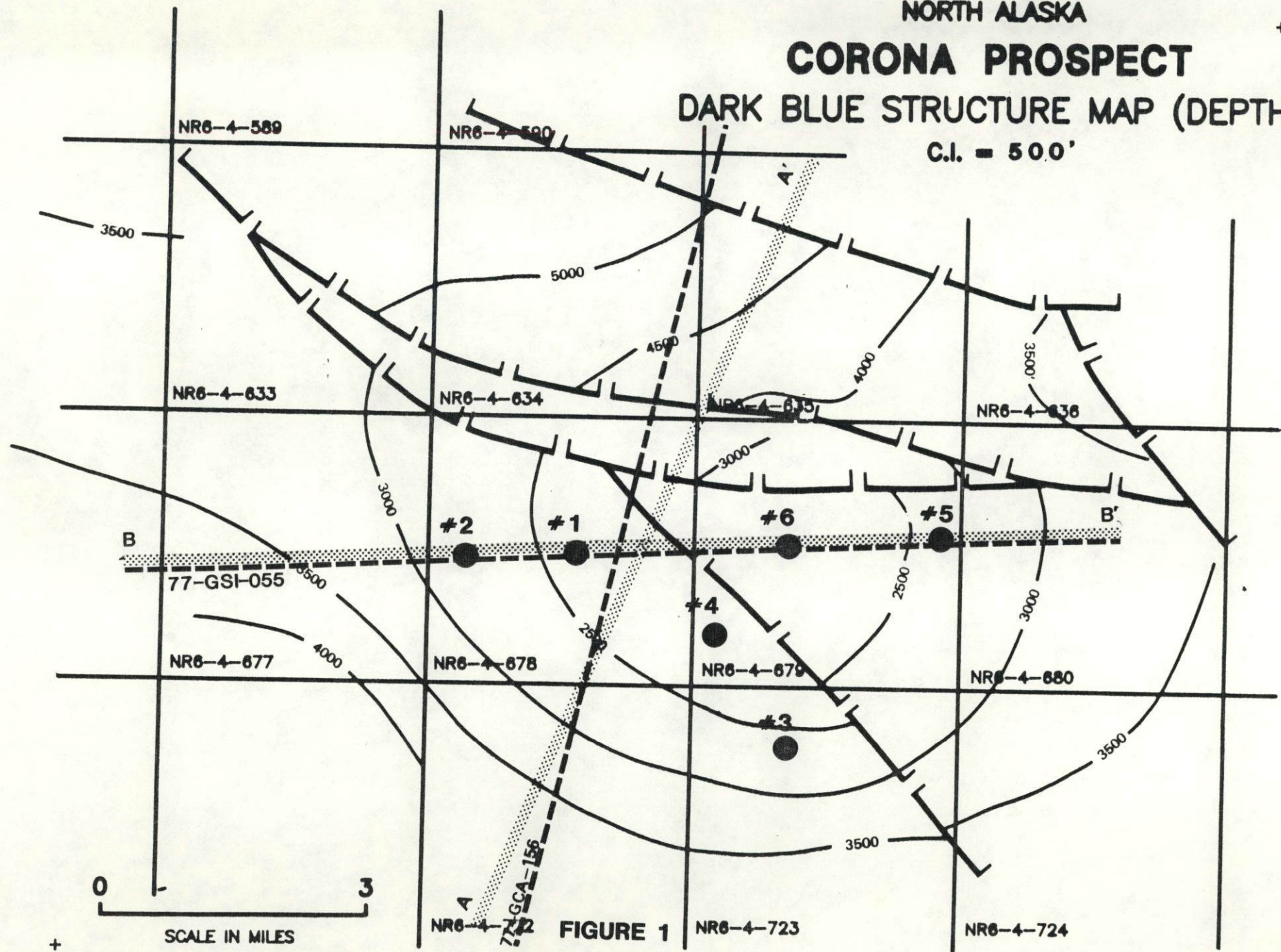


FIGURE 1

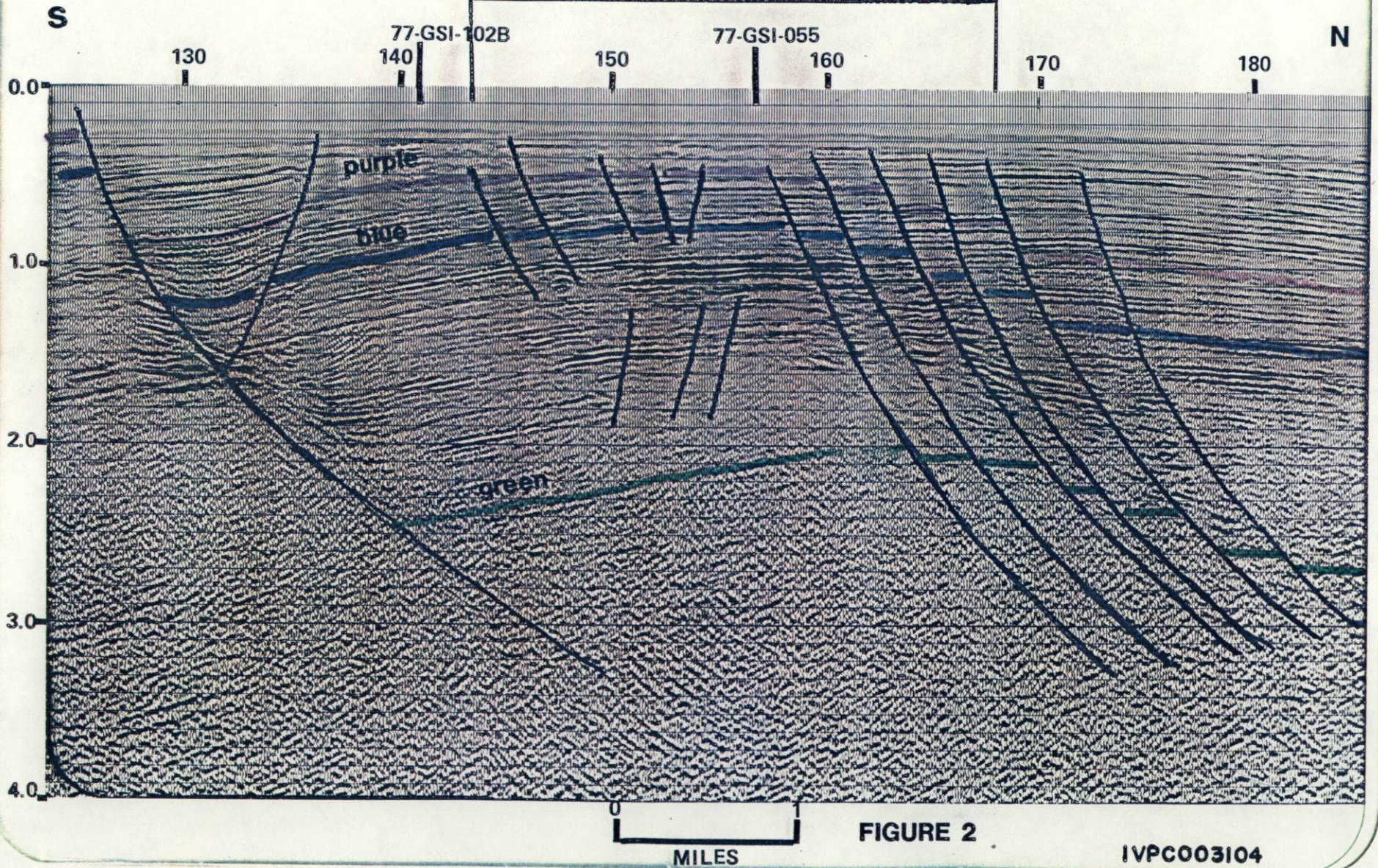
1984 BEAUFORT SEA OCS SALE
NORTH ALASKA

CORONA

LINE 77-GCA-156

WD 117'

NR 6-4-678



1984 BEAUFORT SEA OCS SALE
NORTH ALASKA
CORONA PROSPECT
GEOLOGIC CROSS SECTION

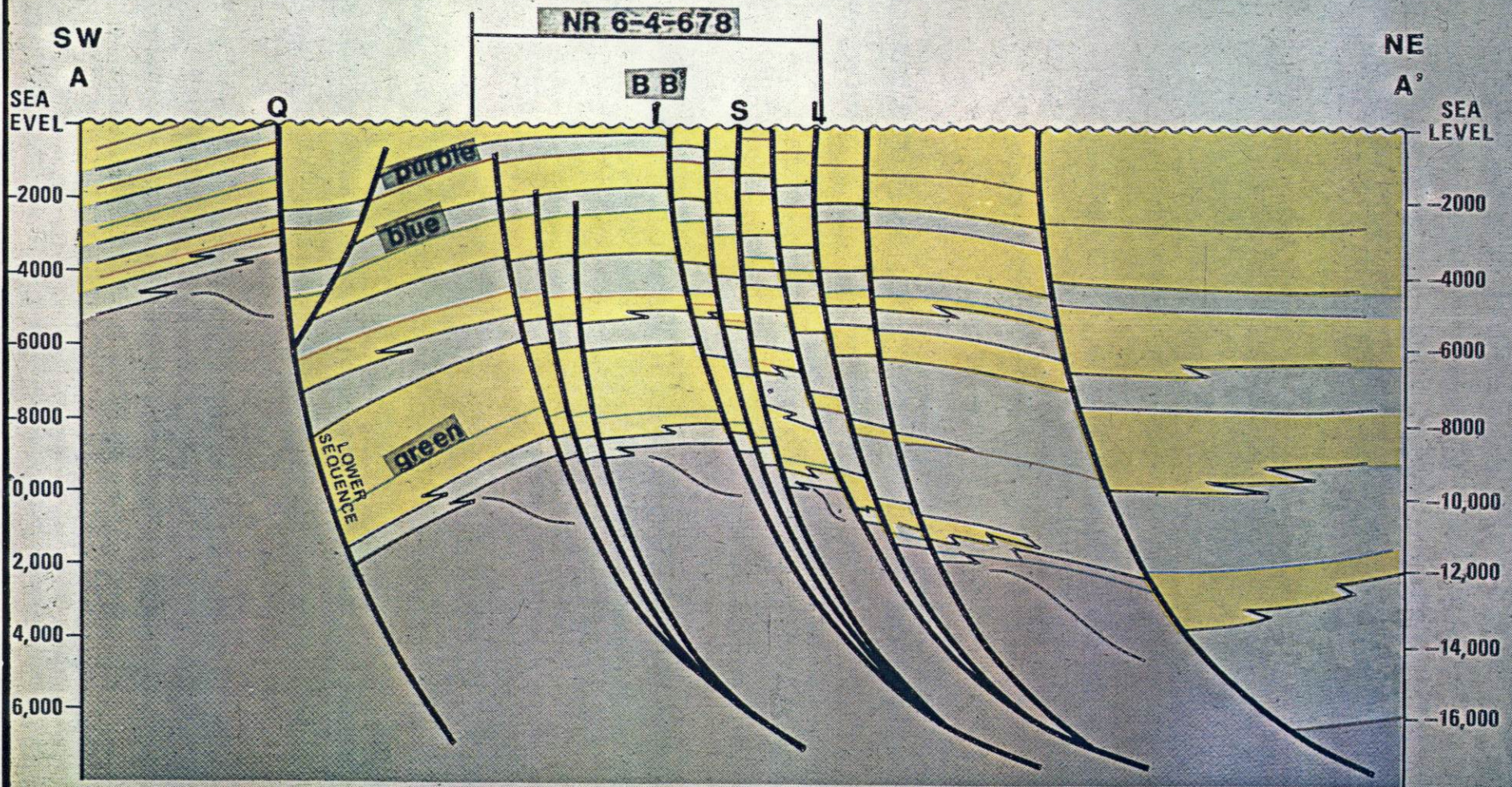


FIGURE 3

0 4000'
V.E. = 2X

S. ZIGAN
7/84
1VPC004096

1984 BEAUFORT SEA OCS SALE NORTH ALASKA

CORONA

WD 117'

LINE 77-GSI-055

NR 6-4-678

NR 6-4-679

SW

NE

SECS
0.0

1500

77-GSI-022

77-GCA-054

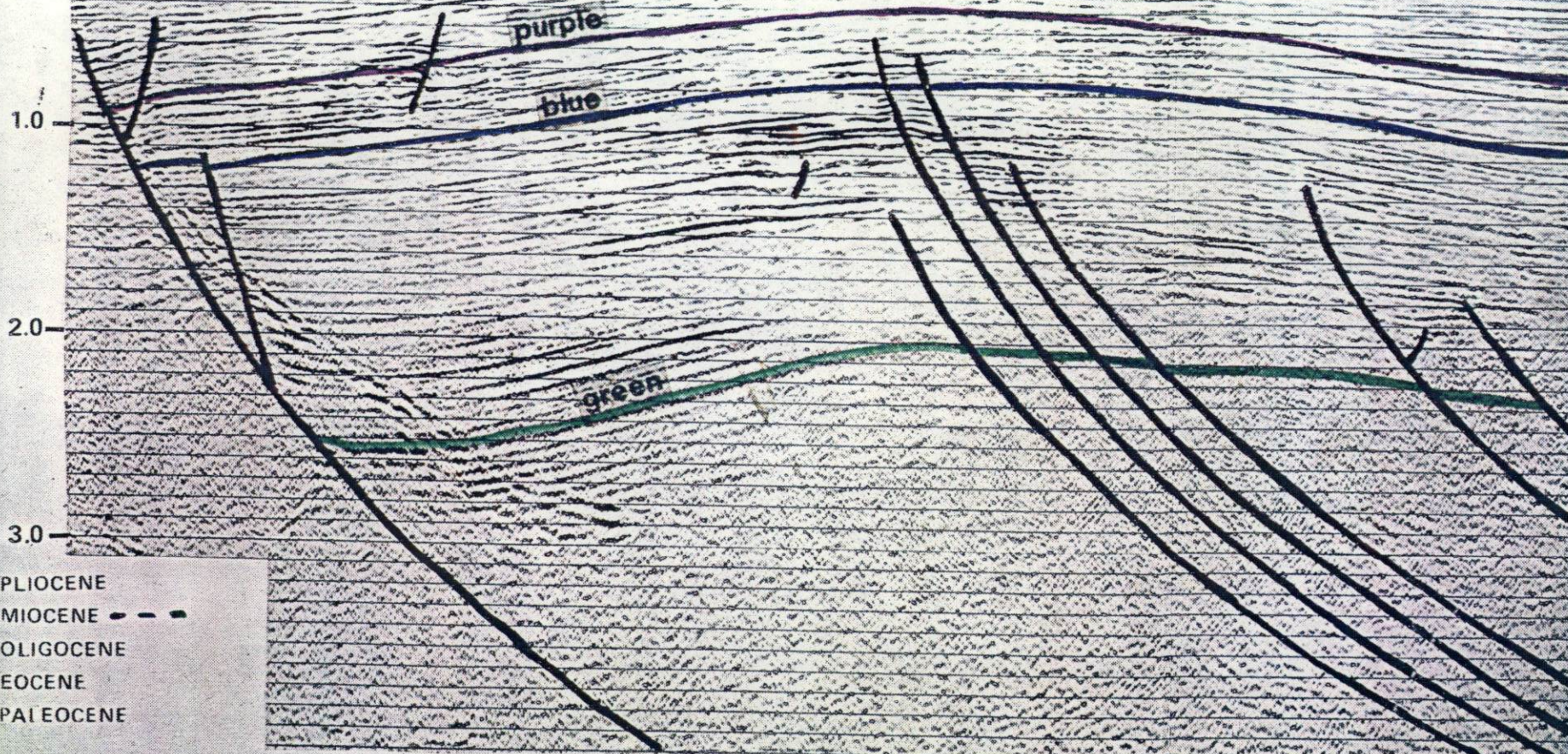
1400

77-GCA-156

1300

77-GCA-055

1200



PLIOCENE
MIOCENE - - -
OLIGOCENE
EOCENE
PALEOCENE

0 1
MILES

FIGURE 4

1984 BEAUFORT SEA OCS SALE
NORTH ALASKA
CORONA PROSPECT
GEOLOGIC CROSS SECTION B-B'

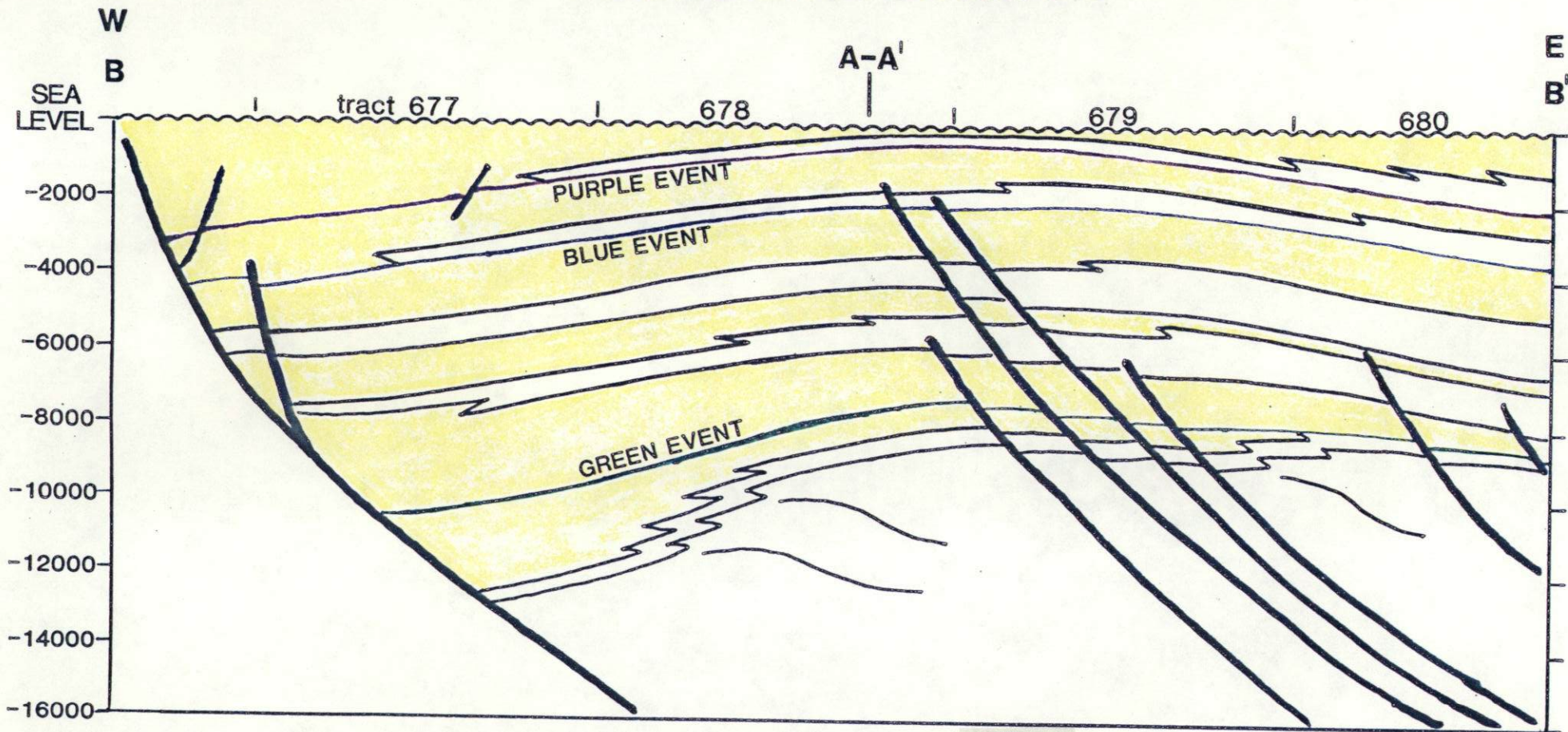


FIGURE 5

