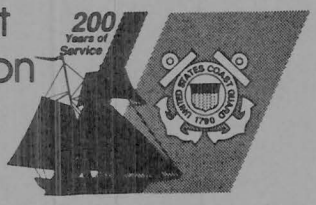
U.S. Department of Transportation

United States Coast Guard



Merchant Marine Deck Examination Reference Material

OPERATING MANUAL FOR COASTAL DRILLER

PLEASE NOTE

This manual has been prepared solely for use with MODU license examinations. The policies and procedures outlined should not be used as a guide for the operation of any specific unit. Use only the policies and procedures outlined in the manual developed specifically for the unit. Because this manual is incomplete, it should *not* be used as a model for preparing MODU operating manuals for compliance with 46 CFR 109.121.

Aug 1989

This publication contains information to be used in examinations for merchant marine licenses and documents.

COMDTPUB P16721.30

U.S. Department of Transportation
United States Coast Guard

Commandant (G-MVP)
United States Coast Guard

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COMDTPUB P16721.30

2 NOV 1989

COMMANDANT PUBLICATION P16721.30

Subj: Merchant Marine Deck Examination Reference Book, OPERATING MANUAL FOR COASTAL DRILLER.

1. PURPOSE. This publication contains reference material that may be needed by an applicant during an examination for a merchant marine deck license.

2. DISCUSSION.

   a. Applicants for merchant marine deck licenses taking an examination to determine their professional qualifications may be required to answer examination questions which are based on the material in this publication.

   b. The Coast Guard has converted to a computerized random generation system for creating examination modules. To streamline the process of creating module test booklets, where possible, the reference material needed to answer exam questions has been incorporated in Deck Examinations Reference Books. This allows applicants to view both the exam question and the reference material at the same time.

   c. Copies of this publication will be provided by the Regional Examination Centers (RECs) when applicants take an examination. This publication is available to the general public but only copies provided by the RECs may be used when completing an examination.

   d. The August 1989 edition of this publication contains all material required by questions in the question bank as of August 1989.

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3. PROCEDURE. This publication will be made available to applicants taking a deck merchant marine examination. Applicants who have purchased copies of this publication from the Government Printing Office (GPO) may not use their personal copies during examinations. Each REC is to allow only the REC copies of this publication to be used in the exam room. The covers of this publication held by the RECs will be gray; the covers of this publication available to the public through GPO will be yellow.

4. ORDERING INFORMATION.

   a. Regional examination centers will be provided with an initial supply of this publication. Replacement and additional copies are available from Commandant (G-MVP-5), FTS 267-2705.

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INSTRUCTIONS

1. Some of the questions in the deck examination booklets require the use of mobile offshore drilling unit (MODU) reference material to answer the question. All of the material necessary to these questions is contained in the appropriate Merchant Marine Deck Examination Reference Book.

2. If a question requires the use of mobile offshore drilling unit reference materials, the stem of the question will make reference to the MODU in question. For example, if the question in your examination booklet is, "The center of flotation for the Coastal Driller is located at the geometric center of the _____.", you must use The Merchant Marine Deck Examination Reference Book, OPERATING MANUAL FOR COASTAL DRILLER to answer the question.

3. The Merchant Marine Deck Examination Reference Book, OPERATING MANUAL FOR COASTAL DRILLER, has been prepared solely for use with MODU license examinations. The policies and procedures outlined should not be used as a guide for the operation of any specific unit. Use only the policies and procedures outlined in the manual developed specifically for the unit. Because this manual is incomplete it should not be used as a model for preparing MODU operating manuals for compliance with 46 CFR 109.121.

4. Applicants taking an examination who wish to make a comment or protest concerning any material in this publication should complete a Comment/Protest form for the question involved and give it to the examiner.

5. Individuals not taking an examination who wish to make a comment on any material in this publication should send a written comment, citing this publication and the appropriate page, and paragraph or illustration commented on, to:

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OPERATING MANUAL FOR COASTAL DRILLER
2100 Second Street SW
Washington, DC 20593-0001

All written comments submitted by the general public will be reviewed prior to revising this publication. A heavy workload precludes the Merchant Marine Examination Branch from discussing comments over the telephone or responding to written comments. Your comments are welcomed and you will receive a letter or postcard indicating your comments were received.

The assistance of the following companies in the development of this manual is gratefully acknowledged:

Marathon LeTourneau Marine Company
Penrod Drilling Corporation

Prepared as a part of Coast Guard contract DTCG23-88-C-10082
by
Houston Marine Training Services

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CHAPTER 1 - GENERAL DESCRIPTION

1. GENERAL INFORMATION

The Coastal Driller is a non-propelled, self-elevating mobile offshore drilling unit inspected and certified by the U.S. Coast Guard and classed by American Bureau of Shipping as

✠ 1A1 SELF ELEVATING UNIT

The unit is designed for operation in water depths of up to 250 feet. The unit is also designed for ocean transit, afloat on its own hull with its legs intact and fully raised so that the spud can tip is 12.38 feet below the bottom of the hull.

The unit consists of a welded steel hull of a modified triangular shape in plan view. It is equipped with three truss-type triangular legs, each fitted with a spud-can type footing at the lower ends. The legs can be lowered to the ocean floor after which the hull can be elevated above the sea surface. The legs are elevated and lowered by means of a rack and pinion jacking system. The bow leg is on the centerline at the forward end of the unit.

Crew accommodations for 72 men are located in the four-level quarters structure on the main deck just aft of the bow leg. The galley and mess area are located on the first level. Also on the first level is a six-man treatment room. Two recreation rooms, laundry, and eleven four-man rooms are located on the second level. The administrative offices, six two-man rooms, and four four-man rooms are located on the third level. The control room is located on the fourth level.

The hull houses the engine room, auxiliary machinery room, mud pump room, sack storage room, workshop, drill tool stores, and tanks for liquids. The helideck, a polygon circumscribed in a 65 ft. diameter circle forward of the bow leg, is designed for a Sikorsky S-61 helicopter.

Just aft of the crew accommodations on the main deck are two longitudinal cantilever beams. Each is located 25 feet off the centerline port and starboard. The drilling structure is mounted on the extreme after end of the beams. The beams can be skidded fore and aft 68.0 feet to place the rotary as much as 40.0 feet aft of the stern. The drilling structure can then skidded as much as 10.0 feet port or starboard.

2. PERSON-IN-CHARGE

The person designated by the Contractor as the Offshore Installation Manager (OIM) has the responsibility for the unit. Normally, when operating in the elevated mode, that person is the senior toolpusher. While lowering the hull in preparation for a move, while underway, and while elevating and preloading at a new location, a person holding a license as OIM Bottom Bearing Unit Underway must be designated as the person-in-charge.

3. PRINCIPAL DIMENSIONS

Length overall (including helideck)	277.30 feet
Length of hull	207.33 feet
Breadth of hull overall	176.00 feet
Depth of hull	20.00 feet
Load line displacement	14,158.31 kips
Load line draft	10'10.5"
Draft mark locations	
Forward marks (38.12 ft AF0, 37.69 ft off CL)	
Aft marks (160.17 ft AF0, 88.0 ft off CL)	
Overall length of legs	360.33 feet
Longitudinal leg spacing	121.67 feet
Transverse leg spacing	120.00 feet
Minimum leg spacing	107.63 feet
Leg projection below hull	
Minimum Tip of Can (TOC) position	1.20 feet
Severe storm TOC	60.50 feet
Depth of cans (including tip)	21.00 feet
Diameter of cans (across flats)	40.00 feet
Projected footing area	1,235.00 sq ft
Length of raw water tower	127.00 feet
Drill floor: transverse travel	±10.00 feet
Cantilever substructure:	
Total longitudinal travel	68.33 feet
Maximum distance rotary aft of transom	40.00 feet

4. LIQUID AND BULK CAPACITIES

Fuel oil	2,276 bbls
Potable water	983 bbls
Drill water	6,631 bbls
Mud Pits	1,320 bbls
P-Tanks	7,700 cuft
Preload	8,708 kips

5. DESIGN DECK LOADING

Main deck	500 psf
Machinery deck	500 psf
Quarters deck & walkways	90 psf
Drill floor	
Within derrick base	500 psf
Outside derrick base	270 psf
Cantilever pipe rack	270 psf

Pipe Rack Area +	500 kips total
Individual Pipe Rack Beam	5 kips per linear foot

+ Pipe to be uniformly distributed in rack area under all conditions.

Drill Package Weight 1471.2 kips

Heliport designed for Sikorsky S-61

Overall length:	72.9 ft (22.2 m)
Rotor size:	62.0 ft (18.9 m)
Gross Weight:	20.5 tons (2,298 kg)
Heliport Size (across flats)	65.0 ft (19.8 m)

6. ENVIRONMENTAL CONSIDERATIONS

This unit was designed with the following environmental considerations:

Temperature:	
Atmospheric	+ 10°F (–12.2°C)
Water	+ 28°F (– 2.2°C)
Snow/ice	Onboard accumulations must be removed as soon as possible.

7. a. Lightweight

The lightweight is the condition of the unit before loading cargo, fuel, water, or stores. For the Coastal Driller, the lightweight consists of the basic hull weight and the fixed weight. The fixed weight is that which is permanently attached to the unit, which includes a portion that is stationary and a portion that can be moved.

The basic hull weight consists of the hull steel and items necessary to maintain the unit in the afloat condition and lower the unit on the legs with the exception of the electric power source.

Items of basic load include the legs, spud cans, gear units, preload piping and eductor piping, control panels and wiring for the elevating systems of the legs, bilge piping, tank vents and sounding tubes, basic lighting in the hull, aids to navigation, cleats, bollards, fairleads, towing brackets, manholes, handrails, ladders, water-tight doors, basic hull painting, mud pit structure, and similar equipment.

Fixed loads consists of equipment more or less continuously attached to the unit. Items of fixed load include cranes, rig skidders, cantilever beams and substructure, helideck, winches, quarters, foundation, bulk mud and cement tanks, drilling machinery, derrick, engines and generators, control panels, pumps, degasser, shale shaker, cementing and logging unit, drill floor equipment, sea water tower and pumps and similar equipment.

b. Variable load

Variable loads are those items that are expendable, readily removable or consumable during drilling operations. They include such items as active mud, bulk mud, cement, chemicals, fuel oil, potable water, drill water, lube oil, casing, drill pipe, drill collars, spare parts, tools, stores, hotel supplies and weight of persons and their effects on board.

c. Preload

Preload is sea water temporarily pumped into tanks during the preloading operation to simulate the increased vertical loading imposed by the environmental forces. After the soil has stabilized following the preloading operation, the sea water is dumped. Any water remaining in the preload tanks must be either removed or its weight and center of gravity locations added to the variable loads.

d. Drilling Loads

Drilling loads are the combined loads arising from the hook, rotary, setback, and conductor tension loads. In the drilling mode, the drilling loads are not considered as part of the variable load of the unit. In the elevated severe storm condition, all drilling loads must be treated as variable loads. When changing from the drilling mode to the severe storm mode, setback must be returned to the pipe racks, and remaining hook loads, rotary, or conductor tension must be accounted for as part of the variable load.

Hook load is the force acting on the hook of the derrick. It includes the weight of the drill string.

Rotary load is the weight of the tubulars hung off in the rotary.

Setback is the weight of tubulars stored in the derrick.

Conductor tension is the vertical tension on the cantilever structure required to support the Conductor/Drive Pipe and BOP.

8. LIGHTWEIGHT AND COMPONENT WEIGHTS

The following describes the weight and the center of gravity locations of the basic hull and stationary load, cantilever beams and subbase, substructure and drill floor, and the legs and spud cans. Weights are measured in kips. LCG is located aft of frame zero (AF0); TCG is starboard (+) or port (–) of the hull centerline; and VCG is measured above (+) the hull baseline. See page 1-9 for a description of the coordinate system used with the Coastal Driller.

a. Summary of Lightweight Condition

Lightweight includes the effect of the three legs (360.33 feet), cantilever substructure, and the drill floor. In the lightweight configuration the spud can tips are located 12.38 feet below the hull baseline with the spud cans free-flooding. The cantilever beam is in the full forward position, with the centerline of the rotary 179.0 feet AF0 and on the hull centerline. The raw water tower is in the full up position and the cranes are in the stowed position.

The following lightweight conditions are based on the inclining experiment and deadweight survey report dated 15 October 1982:

Displacement	11,777.18 kips
LCG (AF0)	120.59 ft
TCG (Starboard of CL)	1.19 ft
VCG (Above hull baseline)	51.88 ft

b. Hull, Basic Load, and Stationary Fixed Load

Weight	7,068.86 kips
LCG (Measured AF0)	111.35 ft
TCG (Starboard of CL)	2.17 ft
VCG (Above BL)	19.54 ft

c. Cantilever Beams and Subbase

Weight	870.00 kips
LCG (Normal stowed position)	
Measured AF0	157.19 ft
Forward of rotary	21.81 ft
TCG (Port of CL)	– 1.75 ft
VCG (Above baseline)	32.85 ft

d. Substructure, Derrick, & Drill Floor

Weight	580.00 kips
LCG (Normal stowed position)	
Measured AF0	184.72 ft
Aft of rotary	5.72 ft
TCG (Starboard of CL)	+ 0.38 ft
VCG (Above baseline)	70.23 ft

e. Legs and Spud Cans

Weight	3,258.31 kips
VCG (Above tip of can, TOC)	136.24 ft

The individual legs are located as follows:

	LCG	TCG
Bow	38.33	0.0
Stbd	160.0	+ 60.0
Port	160.0	– 60.0
Geometric Center	119.44	0.0

9. CHANGES TO LIGHTWEIGHT

Alterations in weight and/or center of gravity location for structure or installed equipment must be kept by the OIM in a permanent record. These changes are to be treated as a variable load until a formal change to lightweight has been approved by the U.S.C.G. and ABS. The most recent weight and center of

gravity location from the permanent record shall be used in the daily calculations in the load form.

WARNING

Increases in lightweight could cause overloading which could overstress the structure and/or raise the unit's KG and reduce its stability.

Changes to lightweight for the Coastal Driller which have taken place since the original inclining experiment (10/15/82) are shown in the formal record: Changes to Lightweight. See page 5-23.

The weights and moments shown in the record will be treated as a variable load until a change to lightship has been approved.

10. MAXIMUM OPERATING VARIABLE LOADS

The weight limit on variable loading is:

Afloat	2,381 kips
Elevating & Preload	2,381 kips
Elevated operating	3,381 kips
Severe storm	2,381 kips

11. PRELOAD REQUIREMENTS

The capacity of the unit's preload tanks (8,708 kips) is greater than the required preload. This excess capability permits additional preload when the variable loads onboard are less than the maximum of 2,381 kips during elevating and preloading.

12. SPUD CAN REACTIONS

When operating (drilling), the total loading on the legs, including static and environmental loading is acceptable provided the unit is preloaded according to the instructions in Chapter 3, and provided the maximum leg reactions shown in the Allowable Wind and Wave charts during drilling, are not exceeded. In a severe storm the additional environmental loading may cause soil failures if the procedures in Chapter 3 are not followed.

In any case, the static loading on each of the legs must be *at least* 7,099 kips on each leg for preloading. In fact, it is better to go over 7,099 kips rather than under, as an extra 200 kips is allowed, distributed with up to 100 kips extra on a leg.

For the elevated storm condition, the maximum static loading is 4,720 kips on each leg. During drilling, the loading must be limited in accordance with the allowable wind and wave charts in Section 5.

13. ELEVATING SYSTEM LOAD CAPACITIES

The elevating system is normally limited to 14,400 kips. This means that normally the unit can be elevated with full variables and some preload on onboard, provided that the limit of 14,400 kips is not exceeded.

In an emergency, the unit is capable of elevating with a loading of 5,760 kips per leg (17,280 kips for the unit).

Elevating capacity	14,400.0 kips
Holding capacity	
Drilling	17,280.0 kips
Severe storm	14,400.0 kips

14. DRILLING COMPONENT CAPACITIES

The cantilever and associated structures are designed to the following structural limits.

Setback load	450 kips
Rotary load	750 kips
Hook load	1,000 kips
Combined drilling load	1,000 kips
Cantilever pipe rack	500 kips

Depending on the placement of the rotary when in the drilling mode, the allowable combined drilling load consisting of the combined hook, rotary, setback, and conductor tension shall not exceed the values shown on page 5-22.

15. SNOW AND ICE

Accumulations of snow or ice cause increased weight loads and increased environmental loads from wind, wave, and currents. Both may combine to overload the legs, elevating system, helideck, derrick, and cantilever. Snow and icing conditions constitute a safety hazard during which the entire unit should be checked regularly for accumulations. Should accumulations be found, it must be removed immediately.

The unit is not ice strengthened; therefore, it should not be operated in areas where significant amounts of solid or flow ice are present.

16. MARINE GROWTH ACCUMULATION

Marine growth may accumulate on the legs when the unit is in service. The effect is twofold. Weight and the environmental forces due to waves and current increase. During transits the legs should be examined, and the marine growth removed as necessary.

17. TESTS AND INSPECTIONS

Emergency, lifesaving, and firefighting systems are to be tested and inspected in accordance with Title 46 of the Code of Federal Regulations, Subchapter I-A.

18. REFERENCE PLANES, UNITS, AND PRECISION STANDARDS

Reference Planes

Distances aboard the rig are measured from the following reference planes:

Vertical measurements are made from an horizontal reference plane, or baseline, passing through the underside of the hull. Distances measured vertically upward are considered positive; distances below the hull are treated as negative quantities.

Longitudinal measurements are made from a transverse vertical plane passing through Frame zero at the bow. Distances aft of frame zero (AF0) are considered positive. Those forward of frame zero (FF0) are considered negative.

Transverse measurements are made from a vertical plane passing through the longitudinal centerline of the vessel. Distances to starboard are considered as positive quantities. Those to port are considered as negative quantities.

Units

Weights (Loads)	kips (1,000 lbs)
Distances	feet
Moments	ft-kips

Precision should be kept to the following standards:

Distances	Two decimal places
Weights	One decimal place
Moments	Nearest whole number

When "rounding", use the next higher number if the digit one place beyond the above standards is 5 or more. Use the next lower number if the digit is 4 or smaller. For example, if the distance is computed to be 52.485 feet, round up to 52.49 feet. If the weight is calculated to be 102.94 kips, use 102.9 kips. If the moments are computed to be 3,456.5 ft-kips, use 3,457 ft-kips.

CHAPTER 2 - AFLOAT OPERATIONS

This chapter provides guidance for afloat operations and for preparing the Coastal Driller for afloat operation.

1. STABILITY CRITERIA

The hull has adequate reserve intact stability for winds up to 70 knots, and up to 100 knots if the legs are lowered so that the tip of the spud cans (TOC) is 60.5 feet below the baseline (keel).

In calm seas and winds to 50 knots, the unit has sufficient reserve stability to withstand flooding due to damage of any one watertight compartment. Damage is considered to be the result of penetration of the hull from the side or bottom. It is assumed that the penetration depth is limited to five feet (1.5 meters), and that watertight closures are secured.

The ability to meet the intact and damage stability criteria depends on maintaining a watertight environment, displacement less than the maximum of 14,158 kips, corrected vertical center of gravity less than the maximum allowed, and a level attitude.

2. PREPARING THE UNIT FOR AFLOAT OPERATIONS

The preparations required to make the unit seaworthy before commencing a wet tow are the same regardless of whether the unit is initially elevated, on a dry tow vessel, or afloat at dockside. These preparations consist of securing all openings to maintain the unit's watertight envelope, properly stowing all loads to prevent their shifting, and using a load form to determine the unit's draft, trim, list, and stability. Additional steps are required when refloating the unit from the elevated condition.

3. MAINTAINING WATERTIGHT INTEGRITY

The following steps are used to help maintain watertight integrity:

a. Close and secure all watertight doors, companionways, cargo hatches, preload hatches, man-holes, ventilation closures, through-bulkhead vents, deadlights, and other watertight fixtures.

b. Install blanks, cap or close all valves for preload dumps, equalizers, through-hull drains, mud pit dumps, fill lines, and sounding tubes.

> **WARNING**
> The mud return line must be blanked off or closed for all afloat operations. Sand trap drains must be opened to prevent water flowing back to the mud pits.

c. Test the bilge pumps. Then close all sump and bilge manifold valves.

d. Close the gear unit motor covers when not in use to reduce environmental damage to electrical equipment.

e. Stow and secure all movable equipment, bulk material, stores, spare parts, tubulars, and other loose articles to prevent a shift in the loading.

4. LOAD FORM

The load form is used to determine the unit's displacement and the three components of the center of gravity location (LCG, TCG, and VCG). When floating, it is necessary to ensure that the load line displacement and maximum allowable KG are not exceeded. LCG and TCG are used to determine the proper load distribution for a level attitude.

The load form is to be completed daily. Additionally, a load form should be completed before making major changes in loading, and prior to lowering the hull into the water. The general procedures for completing the form are described in Chapter 4.

5. OPERATIONAL INSTRUCTIONS - LOWERING THE HULL AND REFLOATING

Lowering the hull and refloating should be done in favorable weather conditions, with wave heights less than five feet.

a. Checklist for going off location

(1) Prepare the unit for afloat condition.

(2) Check that the length of the raw water tower and the water depth is such that the tower does not contact the sea bottom as the hull is lowered. This is especially important when jacking down in shallow water.

(3) Prepare a load form for the afloat condition. Determine expected floating stability, draft, list, and trim.

(4) Check that the motor brake release and gear trains are operable.

(5) Check that weather is acceptable for the time period of lowering the hull, transitting, and elevating at the new location. In particular wave heights as measured from trough to crest should not exceed 5'.

b. Lowering the hull

(1) Start the generators and notify all personnel to report to their proper stations for jacking.

(2) Energize the jacking console and note the level reading on the indicators.

(3) Open all elevating motor covers during jacking to improve cooling of the motors.

(4) Advise all personnel that jacking is about to begin. Instruct the leg observers to lubricate the gear mechanisms, and to monitor the legs as they are elevated following extraction from the soil for excessive marine growth, damage, and status of the cathodic protection anodes.

(5) Begin elevating the hull about one foot to check that the elevating system is operating properly. The legs should be lowered sequentially to allow the generators to recover from the start-up loads. While jacking, maintain the hull level within 0.3° to prevent binding of the legs within the guides.

(6) Contact each leg observer and verify the proper operation of the elevating system.

(7) Begin lowering the hull to about five feet above the wave crests.

(8) Hook up the tugs to the unit.

(9) Lower the unit into the water stopping at about five feet draft and again at ten feet draft. When stopped, check for leaks in all the pre load tanks, inner bottom tanks and voids, mud pits, and machinery deck spaces. If flooding is found, elevate the unit out of the water and correct the malfunction.

(10) Change to internal drill water cooling, raise the raw water tower to its afloat position, secure it, and re-connect the cooling to the raw water system.

(11) Instruct the tow vessels to hold the unit from drifting while the spud cans are being extracted from the soil.

(12) When the legs are free, raise the legs until the reach rod of each spud can drain valve is accessible. Open the drain valves.

(13) After the drain valves have been opened, raise the legs to their towing position.

(14) Secure the jacking console and close all elevating motor covers.

(15) When the hull is refloated and ready for transit, the OIM shall verify that the observed draft, list, and trim agree with the predicted values. Deviations from the predicted values must be accounted for before beginning the tow.

c. Jetting Out

At times the legs cannot be easily extracted from the soil. In this condition the hull will be pulled down into the sea by the jacking system. If this occurs perform the following:

(1) The indication of a stuck leg (or possibly two stuck legs) is a significant change in the inclinometer indications. The "bubble" will tend to move away from the stuck leg. In such cases, stop jacking any free leg. Continue jacking the stuck leg until the draft is one foot deeper than the predicted afloat draft.

(2) When the leg is stuck, avoid placing excessive stresses on the legs and jacking system. At this time the tugs should provide the minimum force to maintain station.

(3) If the legs remain stuck, use the jetting system. Connect the jetting hoses to the jetting system on the stuck leg.

(4) Maintain the one-foot excess draft and operate the jetting system until the leg frees itself. The indication of a free leg is a slow return by the rig to a more level attitude without operating the jacking system.

(5) Maintain equal leg extensions while extracting the three legs from the soil.

(6) When all legs are free of the bottom continue raising the legs without hesitation until the legs are well clear of the bottom.

6. OPERATIONAL INSTRUCTIONS - AFLOAT

a. Normal Transit Types

(1) Field transit

A field transit is a change in location requiring less than 12 hours voyage to a protected location or to a location where the unit could be elevated. The move may be longer than 12 hours if, during the voyage, the unit is always less than six hours from a safe location or from a location where it can be safely elevated. A field transit should be made only when good weather and calm seas are predicted for the duration of move plus the periods for lowering and elevating the unit. Field transits may be made with full legs erected.

(2) Ocean transit

An ocean transit is a longer move not meeting the requirements for a field transit, or short moves in an area in which the weather cannot be accurately predicted.

(3) Floating Conditions

There are two primary floating conditions to consider.

Normal Transit condition means that the wind speeds are 70 knots or less. The jack-up may be in a field or ocean configuration. In either case, the TOC must be in the proper position (1.2 feet for field transit and 12.38 feet for ocean transit). The motions of the jackup during a normal transit are limited by leg strength as shown on the upper curve (B) of the Design Limits of Legs (Afloat) Graph. See page 5-7 for the graph on the motions permitted for the Coastal Driller while afloat.

Severe Storm condition is defined as a weather condition in which the expected winds exceed 70 knots. In this condition the legs must be lowered so that the spud can tips are 60.50 feet below the hull in order to meet the stability and leg strength requirements. (See table below for topside indications of leg positions.) Allowable unit motions are defined by curve A of the Design Limits of Legs (Afloat) Graph.

WARNING
When preparing for afloat operations, check that the unit can meet the severe storm allowable KG by only lowering the legs so that TOC is at 60.50 feet below the hull.

b. Limits of Service Afloat

(1) The load line draft is 10.88' (10' 10.5") feet. Load line marks are found on both sides of the hull approximately 119.5 feet AF0.

(2) At drafts equal to or less than the load line draft, the Allowable KG must be taken from the appropriate Maximum Allowable KG curve. This value must not be exceeded.

(3) While operating in this condition, the appropriate leg horizontal must be aligned in the center of the upper guide structure of the gear units.

	TIP OF CAN (FT. BELOW B.L.)	LEG POSITION DESCRIPTION
a.	1.20	Third horizontal centered in upper clamp. (Clamp bar engaged.)
b.	12.38	Fourth horizontal centered in upper clamp. (Clamp bar engaged.)
c.	60.50	Eighth horizontal centered in upper clamp. (No clamp bar.)

c. Operational recommendations - General Afloat

(1) While underway during a tow, assign trained and experienced personnel to monitor and maintain the seaworthiness of the vessel.

(2) Maintain current and forecast weather information.

(3) Verify that the tugs and towing equipment are adequate for the tow.

(4) Tows should not be made in waters in which floating ice is a hazard, nor should transits be attempted during snow or icing conditions.

(5) The unit's pitch and roll motions must not exceed the limits shown in the Design Limits of legs (Afloat) Graph (page 5-7). If the limits are approached, reduce the motion by altering tow course or speed. If motions cannot be reduced in this manner, place the unit in the Severe Storm mode.

(6) Monitor weights, liquids transferred or consumed and equipment relocated during the transit. The load form will require updating as variables are consumed. The OIM must verify that the corrected KG remains below the allowable KG, and that the unit remains at an approximate level attitude.

d. Operational Recommendations - Severe Storm (Afloat)

(1) Verify that the recommendations for General Afloat (Section C, above) have been performed.

(2) Recheck the afloat weight distribution calculations using the Severe Storm Maximum Allowable KG Curve.

(3) Notify the tugs to maneuver to the best towing position for the storm conditions, to minimize the unit's motion.

(4) Place the unit in the Severe Storm mode. Lowering the legs reduces the wind overturning moments and lowers the KG of the unit, providing greater stability to withstand storm conditions and/or to reduce leg stresses.

e. Changing Modes of Operation Afloat

(1) Refer to the Mode Transition Table, below, for guidelines regarding the time required to complete the various mode-to-mode operations.

CONDITION	TIP OF CAN (FEET) START	END	TIME TO LOWER (MIN.)	APPROX TIME TOTAL*
Normal Transit to Ocean Tow	1.20	12.38	8	23
Normal Transit to Severe Storm	1.20	60.50	40	55
Ocean Tow to Severe Storm	12.38	60.50	32	47

*Includes time to place required generators on-line before lowering legs (approximately 15 minutes).

WARNING

Make any changes in floating mode before the motions become excessive and/or before the wind speed reaches 70 knots.

(2) When jacking the legs up or down, notify the tugs to hold the unit in position at the directed heading until the jacking is complete, Do not attempt to jack the legs while the unit is being towed. Once the leg position change has been accomplished, resume towing.

(3) Notify all personnel that jacking is about to begin. Start lowering the legs sequentially, allowing the generators to recover between each start.

(4) After completion of a mode change, unnecessary generators may be removed from service. Any time involved in reducing the excess generating capacity back to normal is not considered as part of the mode change.

(5) Reverse the above procedure when returning to the previous mode (times will be the same).

7. EMERGENCY PROCEDURES FOR UNEXPECTED LIST OR TRIM

It is vital to the safety of the unit to maintain watertight integrity, to prevent shifting of loads, and to keep the unit level at a draft which does not exceed 10.88 feet.

When unexpected inclination occurs, the OIM should attempt to determine the cause before taking corrective action. The unexpected inclination often falls into one of three categories, in which inclination:

- increases rapidly. This situation is critical; immediate action is required.
- increases slowly. This situation is less critical, nevertheless immediate action is required.
- remains constant. Unless the angle is extreme, this case is usually not as severe as the other two cases.

a. Possible causes of unexpected inclination

(1) Flooding due to external causes. Examples are hull damage or failure of a through-hull fitting.

(2) Flooding due to internal causes. Examples are piping ruptures, an open valve, or rupture of an internal bulkhead.

(3) Transfer of liquid. This may be due to inadvertent transfer by personnel or crossflooding through an open valve.

(4) Shift of load, such as shifting of unsecured cargo in a seaway.

(5) Miscalculation of loads, such as errors in math or measurement.

(6) Environmental forces. Heel or trim may be the result of external environmental forces acting on the hull or legs.

(7) Consumption of onboard liquids, such as fuel oil or drill water.

b. Corrective actions - inclination rapidly increasing

Unless the cause and corrective action are immediately obvious, elevate the unit if at all possible.

Preloading will be required unless the OIM is certain that repairs can be completed within a mild weather window. Elevating the unit will provide time to find the problem and to determine the proper corrective action. Items (1), (2), (3), and possibly (4) may be causes for the rapidly increasing angle of inclination.

Corrective actions should include:

(1) Sound General Alarm and prepare to evacuate non-essential personnel, if deemed necessary by the OIM.

(2) Check that all watertight doors, valves, and other openings are closed and secured.

(3) Prepare to pump out adjacent compartments containing liquids.

(4) Install appropriate devices or fittings to stop or slow flooding. If successful, pump out damaged compartment.

(5) Consider corrective transfer of onboard liquids.

(6) If flooding becomes uncontrollable, and the unit is in imminent danger of sinking or capsizing, the OIM shall determine if the unit must be abandoned.

c. Corrective actions - inclination slowly increasing

As with rapidly increasing inclination, elevating the unit may be the best immediate action. However, because the inclination is changing slowly, remaining afloat does not pose as great a threat.

Causes (1), (2), (3), (4), (6), or (7) are the possible causes of slowly increasing angle of inclination.

Corrective actions are the same as those for rapidly increasing inclinations, except that shifting loads should be re-secured. Heel or trim due to environmental forces may require no action.

d. Corrective actions - constant inclination

Constant inclination usually results from a miscalculation in the load form. The cause could be a math error or an error in measurement of one or more loads. One corrective action would be to jack up and recheck the load form.

Other causes of constant inclination could be the inadvertent transfer of onboard liquids, a load shift, environmental forces, or a large quantity of soil on one of the spud cans. One corrective action, would be to assess the situation and, if required, re-level the unit by transfer of liquids.

8. BILGE SYSTEM

This unit is equipped with two independently operated bilge systems, each of which may serve as a backup for the other. The bilge pits are located port and starboard on the machinery deck level, extending below the deck level. (See page 5-28 for a diagram of the layout.) Each bilge pit is monitored by a hydrostatic alarm switch connected to the engine alarm panel with a remote panel located in the OIM's office. In addition, each watertight compartment in the machinery deck has a number of sump valves, at least one of which can be remotely operated from the bilge pit if a flooded compartment cannot be entered to activate the sump valves. A cross-over arrangement is also used to connect the two bilge pits in case one of the pits becomes flooded or inoperable.

A start/stop station for the pumps is located in close proximity to each bilge pit, but the motor starters are located in the MCC. Additional versatility is achieved by having one pump on the emergency switchboard buss. Both suction and discharge lines are six-inch lines. All preload and void tanks are connected to the bilge manifold through independent isolation valves.

Both bilge discharge manifolds provide for direct overboard discharge, or in case of flooding with pollutants, discharge to the skimmer tank for temporary storage. A third discharge is used to activate the raw water header while in the afloat mode.

BILGE SYSTEM OPERATION

General Information

1. Keep all valves closed, except when pumping from a tank or compartment.

2. The bilge alarm will sound if the bilge pump located in the forward starboard corner of the engine room is left off suction for an extended period.

3. Check all bilge sumps periodically to prevent overflows.

4. Use the bilge pump located on the same side of the unit as the compartment or sump to be pumped, if possible.

Normal Operation

1. If the compartment or sump is forward of the bilge pits, open the forward valve on the main suction header and close the aft valve. If it is aft of the bilge pump pit, open the aft valve and close the forward valve.

2. Close all isolation valves along the main line.

3. Close the cross-over valve to the other bilge pit and open the suction valve to the bilge pump.

4. If no pollutants are present in the liquid to be pumped, open the overboard discharge valve. If pollutants are present or suspected, open the discharge valve to the skimmer tank.

5. Open the sump valve for the compartment to be pumped.

6. Turn on the bilge pump.

Operation if One Pump Fails

If one pump fails, and a compartment on that side of the unit needs pumping, open the cross-over valve to the other bilge pit and proceed with normal operation.

Alternative Means of Bilge System Operation

1. The salt water eductor may be used as a slower, alternative means of bilge system operation.

2. Operation of the salt water eductor system is similar to the bilge system, except that the bilge pumps are not used, and the cross-over valves to the other bilge pit are not closed.

3. While elevated, the raw water tower pumps supply the water for the salt water eductor system. While afloat, the fire pumps supply the water.

Bilge System Limitations

If the unit is trimmed or heeled and the bilge pump on the low side of the unit has failed, the pump on the high side may not have enough suction to pump the water out. This condition may require the use of the salt water eductor system on the low side of the bilge pit.

CHAPTER 3 - ELEVATED OPERATIONS

1. PREPARATION FOR ELEVATING

Since the unit is floating when going on location, it is assumed that the OIM has complied with the operational instructions for the afloat mode, and that the unit is in a seaworthy condition when it arrives on location. The new elevation site should be surveyed, the bottom conditions determined, and all obstacles removed before jacking up.

a. Geotechnical Investigations

Geotechnical investigations should be conducted in areas of suspected geological hazards to determine leg penetration, punch-through or bearing failure potential, rig stability during drilling, and possible leg extraction or pullout problems.

In sand or silt bottoms, scouring may occur in which the normal current flow is interrupted by the footings. The result is that soil is carried away.

The prime risk is sudden and unexpected penetration through thin sand layers overlying soft clays. A sudden pentration of one leg may lead to excessive inclination and damage to legs and jacking mechanisms.

During extreme storm conditions, the foundation expriences both horizontal and vertical loading which may exceed the bearing capacity of the soil.

In soft to firm clays, spud cans may penetrate to depths which require pullout forces greater than that which can be supplied by the buoyancy of the hull, which may necessitate extensive jetting.

b. Safe Motion for Going-On Location

In the transit condition the legs are nearly fully elevated and supported as long cantilevers in the hull. Any rolling or pitching motion in combination with wind induces large bending moments in the legs and large reaction forces in jackhouses and supporting hull structures.

Before the legs can be jacked down, the weather forecast and sea state must be checked to ensure that rig motions throughout the elevating period will be within acceptable limits. The Safe Motion for Going-On Location curve, Page 5-8 shows the limits of pitch and roll motions for various water depths.

Periodically, during the elevating operation, check the unit's motion against the curve.

Elevating shall be performed when the seas are less than five feet. This limitation should prevent extreme heave motions, and should also prevent environmental forces from overloading the unit during preloading.

c. **Checklist for elevating**

(1) Place generators on line.

(2) Verify that the motor brake release mechanisms and the gear trains are in operable condition.

(3) Open all elevating motor covers to reduce the heat load on the motors.

(4) Advise all personnel that jacking is about to begin. Instruct the leg observers to lubricate the leg racks, guides, and gear mechanisms, and to observe the legs for damage that may have occurred during the tow.

(5) Check each spud can before lowering to ensure that the drain valves are open and that all vents are clear. This will allow the cans to fill completely. The spud cans may collapse if not vented while they are lowered.

(6) Begin lowering the legs sequentially to allow the generators to recover from the start-up loads. Stop lowering the each leg when the top of the spud can is submerged two to three feet. Allow the cans to fill completely. Then close the drain valve to prevent bottom sediments from entering the spud cans.

(7) Lower the legs again until they are about 10 to 15 feet above the sea floor.

(8) Recheck unit motions and location.

WARNING

Damage to the legs and spud cans may result if the unit is allowed to drift as the spud cans contact the bottom.

(9) Change to internal drill water cooling for air compressor, etc.

(10) Lower the legs to the ocean bottom and elevate the hull to the five-foot preload air gap. Maintain the hull level within 0.3° to prevent binding of the legs within the guides.

(11) Prepare the raw water tower for operation in the elevated position.

2. PRELOADING

Preloading tests the soil to the vertical leg footing reaction that would be imposed by the design storm. This test consolidates the soil under the spud cans and reduces the risk of a large or rapid settling, or even a foundation failure (punch-through) occurring during drilling or a storm. The environmental forces due to the design storm are simulated by taking onboard an equivalent weight of preload water. This water is then dumped at the end of the preload operation.

The storm leg reaction is the load imposed on each leg footing by the sum of the weight of the unit, the variable, and the environmental forces (wind, waves, and current) on the unit and its legs. This preload leg reaction is calculated by the operator from the full weight of the unit, including lightship, variable, and preload, as determined in the load form.

Preloading must not be carried out in seas greater than 5 feet, in strong or gusting winds, or in strong current conditions. Preloading in such conditions would result in uneven leg reactions, possibly leading to a punch-through during the preload operation, or during a severe storm.

Because excessive air gap could lead to greater damage and/or injury if a punch-through occurs during the preload operation, the hull bottom should be less than five feet above the wave crests during preloading.

WARNING

Under no circumstances will the unit be preloaded with an air gap greater than five feet.

a. Preloading Procedures

(1) Determine the preload distribution necessary to provide static loading of *at least* 7,099 kips on each of the three legs. In fact, it is better to go over rather than under, as 200 kips extra preload is allowed, with up to 100 kips extra on a single leg.

(2) The capacity of the preload tanks is greater than the required preload. This excess capacity provides the flexibility so that the total elevated load, including preload, can be equally balanced on the three legs.

(3) Add the preload while maintaining equal leg loading and attitude within 0.3° of level. If the total weight is less than 14,400 kips, the low corner of the hull may be raised. At greater weights, the attitude may be controlled by lowering the high corners of the hull.

(4) As settling occurs, the five-foot air gap decreases. Before the hull enters the water, dump the preload to attain a total weight less than 14,400 kips. The jacking motors may be used to elevate the platform if the total weight is less than 14,400 kips.

(5) When the five-foot air gap has been re-established, pump the preload water back onboard. Soft bottoms permit greater settling, and may require that this process be repeated several times.

(6) Maintain final preload for three hours after all settling has taken place and the unit is stabilized.

(7) Discharge all preload so that the preload remains equally distributed on the three legs during the operation.

(8) Close all preload dump valves after the preload has been discharged.

WARNING

As much as 500 kips of water may remain in the preload tanks after the dump valves have been opened. This water must be removed or accounted for as part of the variable load.

b. Elevating Procedures

(1) Elevate the hull to the applicable air gap while maintaining the hull level within 0.3°.

(2) Place a set of horizontal leg braces as near as possible to the center of the lower hull guides.

(3) When the hull is elevated, secure the jacking console, and activate the OUT-OF-LEVEL ALARM, and close all elevating motor covers.

3. ELEVATED OPERATIONS

This section provides guidelines for elevated operations under normal conditions and during a severe storm:

- **Normal Drilling**

In this condition, the unit is on location to perform drilling or related operations, and can operate within the environmental limits of the Allowable Wind and Wave Charts (pages 5-9 through 5-20). The charts give the various combinations of wind, waves, and current in which elevated opera-

tions are permitted for a given leg reaction and water depth. If the predicted weather conditions exceed these combinations, the unit must be placed in the elevated Severe Storm mode.

- **Severe Storm**

  In this condition, the unit is prepared to withstand environmental forces exceeding the normal drilling criteria. This condition requires that drilling operations be suspended, and that leg reactions be made equal. When a severe storm threatens, the procedures listed in Operational Instructions - Severe Storm (page 3-8) must be implemented.

  The Limits of Service - Elevated, page 5-21, shows the maximum wind, wave, and current the unit can withstand for the stated water depths and air gaps.

4. LEG REACTION

The total leg reaction is the load on each leg footing due to unit weight, variable loads, drilling loads, and environmental forces. The environmental forces (wind, waves, and current) on the unit and its legs vary considerably. They are accounted for in the unit's design as a range of environmental limits for a given leg reaction. This leg reaction is calculated in the load form from the lightweight, fixed loads, variables, and drilling loads.

If either the environmental conditions or maximum allowable leg reactions are exceeded, the Coastal Driller and its crew may be placed at risk. The OIM shall monitor the weather and leg reactions daily, and more often if necessary, to ensure that neither the environmental forces nor leg reactions exceed the limits shown in the **Allowable Wind and Wave During Drilling** charts and **Limits of Service Elevated** for the elevated storm condition.

The **Allowable Wind and Wave During Drilling** charts are shown on pages 5-9 through 5-20. These charts give the various combinations of wind, wave, and current in which drilling is permitted. Notice that the highest wind velocity shown on the charts is 70 knots. Should the predicted weather exceed these combinations, the rig must be taken out of the drilling mode and placed in the elevated storm mode.

The **Limits of Service - Elevated** are displayed in a table on page 5-21. These limits show the maximum wind and wave the Coastal Driller can withstand. If higher wind and waves are expected, the OIM must make suitable arrangements for the evacuation of the rig.

5. OPERATIONAL INSTRUCTIONS - NORMAL DRILLING

a. General Elevated Instructions

Before beginning any elevated operations, the OIM shall ensure that the following operations have been completed satisfactorily:

(1) Preloading operations completed and load form calculations checked.

(2) Preload water has been removed, and that the unit is level within 0.3° at the applicable severe storm air gap as stated in the Limits of Service - Elevated, page 5-21.

(3) Verify that the elevating system is ready for emergency use.

(4) Make sure the Out-of-Level Alarm is functional at all times.

(5) Monitor current and predicted weather to evaluate the operating criteria, and to help predict conditions that may require placing the unit in the elevated severe storm mode.

(6) Prepare the unit for drilling operations by placing the drilling assembly in the desired drilling position. Lubricate all skid rails, and skid the assembly using the longitudinal and transverse skidding motors.

> **IMPORTANT**
> Be sure that the drilling structure clamps are released for the skidding operations. After the drill floor is positioned, re-secure the clamps.

(7) Complete load form. Refer to Chapter 4 for guidance on completing the load form.

Record the drilling loads (hook, rotary, setback, and conductor tension), their centers of gravity, and the longitudinal position of the cantilever beams, and drill floor transverse position. Check that each of the drilling loads do not exceed the limits shown in the Cantilever Beam Load Charts, page 5-22.

(8) Calculate the leg reactions for each leg.

(9) Determine the environmental conditions. A high calculated leg reaction reduces the wind, waves, and current in which the unit can safely operate. Calculations should be carried out as necessary to evaluate the condition of the unit, and to take appropriate corrective action.

(10) Develop a procedure for removing excess variable loads in the case a severe storm threatens.

b. Allowable Wind and Wave Charts

The Allowable Wind and Wave Charts, pages 5-9 through 5-20, give the combinations of wind, waves, and current in which the unit can operate for a given leg reaction.

> **WARNING**
> Failure to keep the unit's leg reactions below those permitted by the allowable wind and wave charts, or the appropriate maximum leg reaction values, overloads the unit, and places the personnel at risk.

The following data must be available to use the charts:

- The largest of the three leg reactions.
- The amount of leg penetration. If the penetration exceeds 25 feet, the water depth value must be increased by the amount of penetration greater than 25'.
- Water depth including astronomical and storm tides.

The procedures for using the charts are as follows:

(1) Select the appropriate chart based on leg length, minimum air gap, water depth, and current for the particular site in question. For water depths and current velocities that fall between charts, use the chart with the next highest values.

(2) At the Maximum Leg Reaction, read across the chart to determine wave height and wind speed combinations which are permitted.

(3) Compare the actual or predicted wind and wave values to those shown in the Allowable Wind and Wave Chart. If they are less than the allowable, the unit is in a satisfactory condition. If actual or predicted weather conditions exceed the allowables indicated on the chart, take immediate action to reduce the highest leg reaction. Leg reactions can be lowered by reducing or relocating the variable and/or drilling loads. If leg reactions cannot be reduced sufficiently, prepare the unit for the Severe Storm mode.

6. OPERATIONAL INSTRUCTIONS - SEVERE STORM (ELEVATED)

a. Suspend drilling operations well in advance of the anticipated storm.

b. After suspending drilling operations, the time required to place the unit in Severe Storm mode should not exceed six hours. Complete the following procedures:

(1) Check that the hull is level within 0.3°. Confirm that the unit is at the correct air gap. For stonger support, locate a set of horizontal leg braces as near as possible to the center of each lower hull guide, as footing penetrations permit.

(2) Reduce variable loads to no more than the maximum permitted during elevated severe storm conditions.

(3) Remove all setback from the derrick and account for its weight as a variable load.

(4) Secure the well and drill floor equipment.

(5) Skid the cantilever beams and/or subbase to the full forward storm position and secure.

(6) Change over to drill water cooling and raise the raw water tower to the full up position and secure.

(7) Complete an elevated load form to check the previously prepared storm form. Recompute the new LCG and TCG. If necessary, adjust the loads on the unit so that LCG = 119.44 AF0 and TCG is zero. This insures that the leg reactions are balanced and do not exceed the Maximum Allowable Elevated Storm Leg Reaction.

(8) Check that the unit is storm-ready by:

- Closing all watertight doors, openings, and valves.
- Securing the tubulars in the pipe rack.
- Lashing all derrick lines.
- Securing all movable objects.

(9) Check horn, navigation lights, and other safety equipment.

(10) Take suitable action to provide for the safety of all personnel.

(11) Check that the elevating systems are ready for emergency operations.

(12) Check that the Out-of-Level Alarm is functional.

7. LIMITS OF SERVICE - ELEVATED

The limits shown in the Limits of Service - Elevated (page 5-21) are based on the following:

a. Soil penetration is assumed to be 25 feet. If the penetration exceeds 25 feet, the water depth value must be increased by the amount of additional penetration. For example, if the penetration is 50 feet and the actual water depth is 175 feet, the water depth value is adjusted to 200 feet.

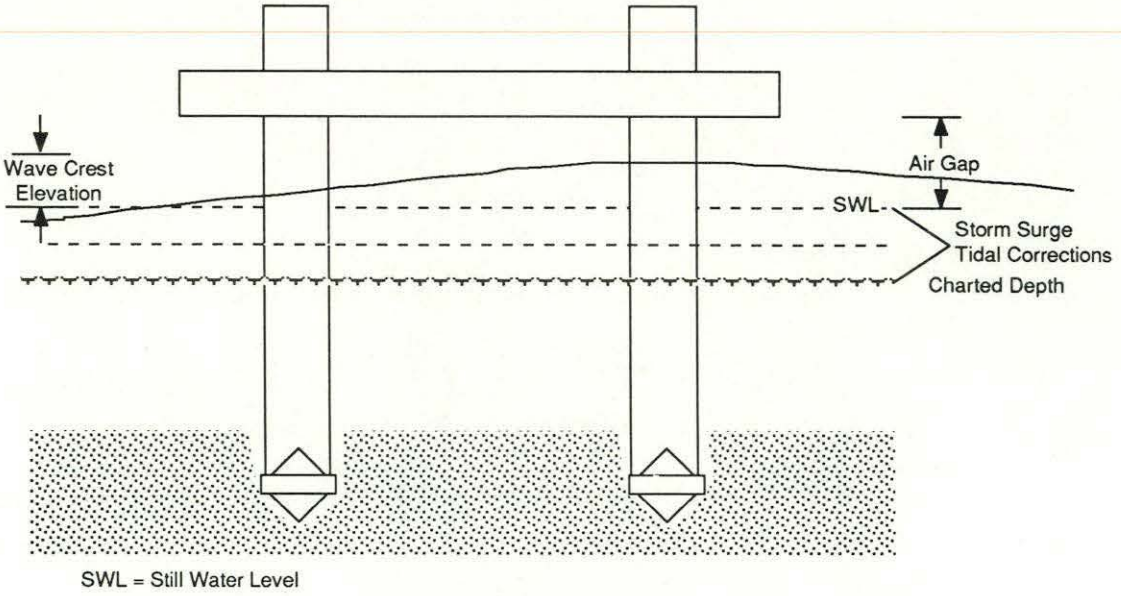
b. When preloaded properly, the reaction on each of the three legs is 7,099 kips. (Total unit weight is 21,297 kips.)

c. During a severe storm, the sum of the solid and liquid variables must not exceed 2,381 kips.

d. The water depth shown in the Limits of Service includes all tides, both astronomical and storm.

e. The air gap shown in the Design Criteria is measured between the charted water depth including allowances for astronomical and storm tides and the bottom of the hull. (Because of the waves, the distance between the wave crests and the hull bottom will be less.) These distances are illustrated in the figure on the following page.

Illustration of Air Gap Computation



WARNING

Use of air gaps other than stated in this manual could result in overloading the unit. Lower air gaps could position the hull in the storm wave zone. Larger air gaps could increase the overturning moments.

8. EMERGENCY INFORMATION

a. It is vital to the safety of the unit and its personnel that the hull be kept above the wave action.

b. In other than afloat conditions, the hull must be maintained level. If inclination exceeds 0.3°, level the unit by:

(1) Lowering the high corner(s), but keep the hull above all wave action.

WARNING
Raise the low corner(s) of the unit only if lowering the high corner(s) places the unit in the wave action.

(2) After the hull is level, raise the unit on all three legs to the proper air gap. Inspect the unit for damage.

(3) Confirm operation of the Out-of-Level Alarm.

9.0 UNIT EVACUATION PROCEDURES

The following procedures apply to evacuating the unit. Because the circumstances which may prevail are so varied, the sequence or appropriateness of each action must be evaluated by the OIM on a case-specific basis.

The guidelines in this section are limited to the actions which are to be performed aboard the unit. For additional guidelines concerning evacuation procedures, refer to the Evacuation Procedure Manual.

1. Secure the unit as in preparation for a severe storm.

2. If the unit is being evacuated under emergency conditions requiring the use of the unit's lifeboats/liferafts, the abandon unit procedures contained in the unit's station bill are applicable. Evacuation routes are indicated on the posted Fire Control/Life Saving Plan.

3. If the unit is being evacuated by helicopter or service boats, perform the following steps:

   a. Perform an accurate headcount.

   b. Determine evacuation craft capacities and arrival times. Organize personnel into groups and designate group leaders. Advise all group personnel of their designated leaders. Group leaders shall:

      1. Make sure that each member of the group has boarded the evacuation craft.

      2. Report that fact (or who is missing) to the OIM.

      3. Board the evacuation craft last.

c. Evacuate non-essential personnel such as galley hands, off tour personnel (unless needed for specific tasks), third party personnel, visitors, etc. If the approach of a severe storm is the reason for evacuating the unit, all non-essential personnel should be off the unit 48 hours in advance of the storm's arrival, if practical.

d. All personnel should be evacuated before sea, wind, or visibility conditions deteriorate to the point that further evacuation efforts become unduly hazardous. In the case of helicopters, the pilot will usually make the decision when he can no longer fly. However, in the case of transfer to boats, the OIM, in consultation with the boat skipper, will decide when wind, sea conditions, the transfer means, and other pertinent factors add up to an unacceptable risk.

e. While one of the purposes of emergency evacuation plans is to ensure a timely evacuation, unforeseen circumstances may arise where there may be less risk to the remaining personnel to remain on the unit than to attempt a transfer to an evacuation craft under extremely hazardous conditions. For example, there may be no way for a boat crew to effectively help personnel being transferred to the open deck of a boat in heavy seas. In such cases, remaining on the unit may be less hazardous.

f. Procedures for evacuating the last person should be discussed in advance. Normally, the OIM would be the group leader for the last group and, therefore, the last man leaving the unit. If the last man off is to evacuate by such means as climbing down a leg or using a slide line, physical ability and willingness should be taken into consideration. If the OIM is not the last man off, he shall oversee personnel accountability activities until he is satisfied that all personnel are accounted for before leaving the unit.

CHAPTER 4 - STABILITY CALCULATIONS

This Chapter describes the manual calculations necessary to assess the afloat and elevated stability of the Coastal Driller. Emphasis is on the use of the Load Form to assist in the calculations. The Chapter is organized as follows:

- Section 1 describes how the Load Form is organized, and how it is completed. The calculations necessary for completing each of the topics on the Load Form are specifically addressed.
- Section 2 describes how afloat stability is assessed.
- Section 3 explains the method for calculating leg reactions.
- Section 4 describes a method for calculating the preload distribution.
- Section 5 provides sample load forms in which the methods and procedures described above are used.

1. LOAD FORM ORGANIZATION

The purpose of the load form is to formalize the collection of inventory data so that a stability assessment can be made. The load form is the basis from which assessments of afloat stability and leg reactions are made. Beginning with lightweight and center of gravity, an accurate accounting is made for every weight added, discharged, or shifted in order to determine the composite weight and the location of the unit's center of gravity. In the afloat condition, weight and all three components of the center of gravity (LCG, TCG, and VCG) are used to predict the unit's stability, draft, list, and trim. In the elevated mode, total weight, LCG, and TCG are used to calculate the leg reactions.

The load form is organized to use moment theory to find the coordinates of the center of gravity for a group of loads by solving in tabular form, the following general equation:

$$CG = \frac{\Sigma (w \times cg)}{\Sigma (w)}$$

In this expression, CG refers to the coordinate of the center of gravity location for a group of weights, "w" is the weight of a component within the group, and "cg" is a coordinate of the center of gravity of that weight. "Σ" means "the sum of".

The Coastal Driller load form consists of three sheets, each of which in practice may consist of one or more pages. The three sheets are:

a. • **Sheet 1 - Summary**

Sheet 1 contains the Load Summary in the upper half and the Stability and Leg Reaction Summary in the lower half.

The upper portion of the Load Summary tabulates the entries for determination of lightweight and its centers of gravity considering the variable position of the cantilever, drill floor, and legs.

The variable loads consisting of the changes to basic hull, cantilever beam assembly, and drill floor, Solid Variables (Sheet 2), and Liquid Variables (upper portion of Sheet 3) are then entered in the table.

The preload, if present, is the next entry in the load form.

The hook load, is then added in the load summary. Because the position of the drill floor influences the stresses in the cantilever beam, the limiting values of drilling loads (combined hook, rotary, conductor tension, and setback) are given in the cantilever beam load chart. See page 5-22 for the cantilever beam chart.

Each of the five moment columns are added to obtain the total LM, TM, VM, FSML, and FSMT. Dividing LM, TM, and VM by displacement yields the components of the center of gravity for the loaded jackup.

$$LCG = \frac{\Sigma LM}{\Sigma W}$$

$$TCG = \frac{\Sigma TM}{\Sigma W}$$

$$VCG = \frac{\Sigma VM}{\Sigma W}$$

The bottom line of the Load Summary (upper table) shows the LCG, TCG, and VCG for the loaded jackup. The VCG is used for afloat stability. LCG and TCG are used for both afloat and elevated calculations. When afloat, LCG and TCG are used for list and trim calculations. When elevated, LCG and TCG are used in the calculations for leg reactions.

Stability assessment for the afloat and elevated modes is discussed in Sections 2 and 3 of this chapter.

b. • **Sheet 2 - Solid Variable Loads**

Sheet 2 is the result of a careful deck survey for the solid variables, such as tubulars, cement, and barite . It serves as "input" data for the solid variable figures in Sheet 1. Note that some of the solid variables are located on the cantilever beam (lower portion of Sheet 2), and therefore, change longitudinal position as the cantilever is skidded fore and aft. Weights and center of gravity locations of all solid variables are entered in Sheet 2.

- For an afloat analysis, enter all three coordinates of the center of gravity (VCG, LCG, and TCG).

- For an elevated analysis, enter only LCG and TCG.

Multiply each weight by its components of the center of gravity coordinates to obtain longitudinal, transverse, and (if afloat) vertical moments.

Sum the weights and moments, and enter the values for solid variables in the summary table on Sheet 1.

c. • **Sheet 3 - Liquid Variable Loads & Preload**

Data for Sheet 3 is also the result of a careful deck survey for the liquids. The upper portion is for liquid variables; the lower is for preload.

Weights, centers of gravity, and free surface moments of all liquids are entered in Sheet 3 according to the following guidance:

(1) Afloat

Enter the three coordinates of the center of gravity (VCG, LCG, and TCG). In addition, for each slack tank, enter the free surface moments (FSML and FSMT) shown in the appropriate tank tables.

(2) Elevated

Enter only LCG and TCG. Because the legs are on the bottom, vertical moments and free surface moments are not necessary.

In each case, afloat or elevated, multiply the weight by its center of gravity component to obtain LM, TM, and if afloat, VM. The weights and moments, including free surface moments, for the liquid loads are then summed and entered on the Load Summary, Sheet 1.

2. AFLOAT STABILITY

a. Hydrostatic Data

For hydrostatic data, use the Table of Hydrostatic Properties, pages 5-4 and 5-5. Interpolation may be required.

(1) Draft

Extract the draft for the calculated displacement from the Hydrostatic Properties Table, pages 5-4 and 5-5.

Compare the calculated draft with the values at the draft marks. The observed draft should not exceed 10.88 feet (10' 10.5"). The calculated displacement must not exceed the maximum load line displacement (14,158.31 kips).

If either the maximum displacement is exceeded or the load line (Plimsoll Mark) is submerged, weight must be removed from the unit.

WARNING

The draft must not exceed 10.88 feet.

(2) LCB

The longitudinal location of the center of buoyancy (LCB) is used in the trim equations. Extract the data from the Table of Hydrostatic Properties, pages 5-4 and 5-5, for the weight in the Loaded Displacement line.

(3) KML and KMT

KML and KMT are used in calculations involving initial stability. They are obtained from the Hydrostatic Properties Table, pages 5-4 and 5-5, for the calculated loaded displacement. Interpolation may be necessary.

b. Stability Data

(1) Maximum Allowable KG

Stability is evaluated by comparing the higher of the two corrected KGs with the maximum allowable KG. The stability limits for the Normal Transit and Severe Storm modes are shown in the maximum Allowable KG Curves, page 5-6. These two curves provide the maximum allowed KG for a specific draft depending on the wind speed (70 or 100 knots). If the corrected KG is less than the maximum allowed, stability is acceptable.

(2) Free Surface Corrections

The free surface corrections (FSCL and FSCT) are obtained by dividing the sum of the free surface moments in both the transverse and longitudinal modes (FSMT and FSML) by displacement. Because the tanks are wall-sided with rectangular cross-section, the free surface moments are constant over the range of soundings, unless the tanks are pressed or empty. FSML and FSMT are tabulated in the tank tables.

$$FSCL = \frac{\Sigma\, FSML}{\Delta}$$

$$FSCT = \frac{\Sigma\, FSMT}{\Delta}$$

(3) Corrected Height of the Center of Gravity

The uncorrected KG is listed in the bottom line of the Load Summary. The free surface correction from above is then added to KG to obtain KGL and KGT.

$$KGL = KG + FSCL$$

$$KGT = KG + FSCT$$

(4) Metacentric Height

GMT and GML is used to evaluate initial stability, and to compute the predicted value of trim and list. It is computed by subtracting the corrected KGs from the appropriate KMs.

$$GMT = KMT - KGT$$

$$GML = KML - KGL$$

c. Trim and List

Trim

Inclination in the longitudinal mode is called trim. It may be measured in feet as the difference in drafts at the forward and aft draft marks, or in degrees as an angle of inclination in the longitudinal sense. The equations for calculating trim in either feet or degrees are shown below. Although the accuracy of the formula for finding trim in *degrees* diminishes as angles of inclination increase above 15°, this method is sufficient at small angles. Trim by the stern (stern down or bow up) is considered positive. Thus, trim by the head (bow down) is considered negative.

$$\text{Trim} = \frac{(\text{LCG} - \text{LCB})\ \text{L}}{\text{GML}} \qquad \text{(Feet)}$$

$$\text{Trim} = \frac{(\text{LCG} - \text{LCB})\ 57.3}{\text{GML}} \qquad \text{(Degrees)}$$

List

Inclination in the transverse mode, if caused by off-center loading, is called list. If caused by an external force, it is called heel. Either may be expressed in feet or degrees. As feet, it is the difference between drafts at the extreme starboard and port draft marks. In the formula below, B is the extreme transverse distance between draft marks. The second formula, below, gives the angle of transverse inclination. Although the accuracy of the formula for finding list in *degrees* diminishes as angles of inclination increase above 15°, this method is sufficient at small angles.

For the Coastal Driller, inclinations which result in the starboard side being down (port side up) are considered positive.

$$\text{List} = \frac{\text{TCG} \times \text{B}}{\text{GMT}} \qquad \text{(Feet)}$$

$$\text{List} = \frac{\text{TCG} \times 57.3}{\text{GMT}} \qquad \text{(Degrees)}$$

d. Drafts

Drafts at each of the four draft marks are calculated by proportioning the trim and list values (in feet) as draft corrections at the draft marks. The equations for the draft at each of the four draft marks are:

$$\text{Draft}_{\text{SFDM}} = \text{Draft}_{\text{CF}} - 0.666 \times \text{Trim} + 0.214 \times \text{List}$$
$$\text{Draft}_{\text{PFDM}} = \text{Draft}_{\text{CF}} - 0.666 \times \text{Trim} - 0.214 \times \text{List}$$

$$Draft_{SADM} = Draft_{CF} + 0.334 \times Trim + 0.500 \times List$$
$$Draft_{PADM} = Draft_{CF} + 0.334 \times Trim - 0.500 \times List$$

The forward draft marks are on each side of the hull, 38.12 feet AF0, and 37.69 feet port and starboard of the centerline. The aft draft marks are also on each side of the hull, 160.17 feet AF0, and 88.0 feet port and starboard of the centerline. From the hydrostatic tables, LCF is 119.44 feet AF0, and TCF is zero.

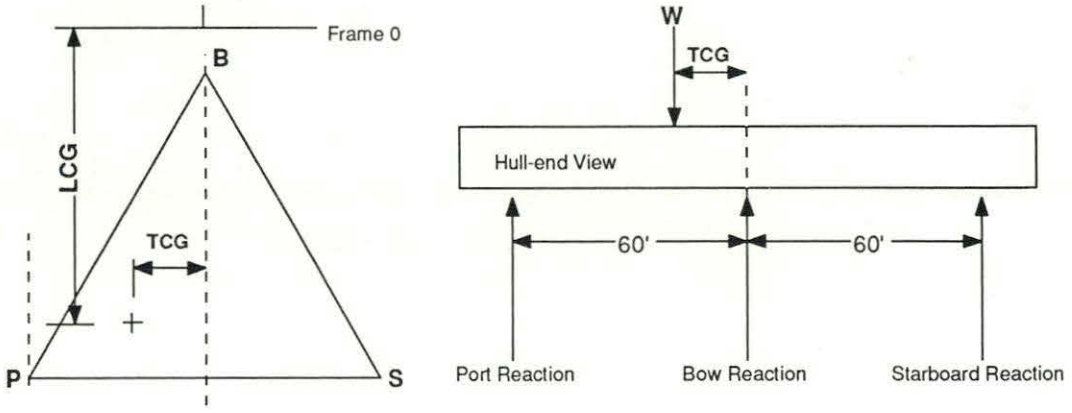
3. LEG REACTION CALCULATION

Once the Total Calculated Weight and its LCG and TCG are determined, the leg reactions can be easily calculated using the formulas below. For convenience, the Leg Reaction Calculation Form, shown on page 5-24, may be used to organize the computations.

Taking moments about an axis connecting the aft legs results in the following expression for the bow leg reaction:

$$\text{Bow Leg Reaction} = \frac{W\,(160 - LCG)}{121.67}$$

The calculation for the aft leg reactions is based on taking moments about an axis parallel to the longitudinal axis through one of the aft legs as shown in the sketch below:



Taking moments about the port leg results in the following equation for the reaction in the starboard leg:

$$\text{Starboard Leg Reaction} = \frac{W\,(60 + TCG) - (Bow \times 60)}{120}$$

When moments are taken about the starboard leg, the following expression for the port leg reaction is obtained:

$$\text{Port Leg Reaction} = \frac{W\,(60 - TCG) - (Bow \times 60)}{120}$$

EXAMPLE: Find the leg reactions for the elevated Coastal Driller when the following conditions exist:

$$W = 15{,}000 \text{ kips}$$
$$LCG = 125.0 \text{ feet AFO}$$
$$TCG = -1.0 \text{ feet (port of centerline)}$$

$$\text{Bow Leg Reaction} = \frac{W\,(160 - LCG)}{121.67}$$

$$= \frac{15{,}000\,(160 - 125)}{121.67}$$

$$= 4{,}315 \text{ kips}$$

$$\text{Starboard Leg Reaction} = \frac{W\,(60 + TCG) - (Bow \times 60)}{120}$$

$$= \frac{15{,}000\,[60 + (-1)] - (Bow \times 60)}{120}$$

$$= 5{,}217 \text{ kips}$$

$$\text{Port Leg Reaction} = \frac{W\,(60 - TCG) - (Bow \times 60)}{120}$$

$$= \frac{15{,}000\,[60 - (-1)] - (Bow \times 60)}{120}$$

$$= 5{,}468 \text{ kips}$$

4. PRELOAD DISTRIBUTION CALCULATION

The following method illustrates a method to determine the preload distribution so that the leg reactions are equal at 7,099 kips.

With twelve preload tanks and many combinations of initial list and trim, the problem can be complex. To reduce the problem to a level that can be handled easily, several simplifying conditions are established.

First, the jackup should have zero list. This condition is not difficult to meet, and in all likelihood exists, in any event, when going on location. Had there been some list in transit, fuel oil or drill water would have been transferred to level the vessel. The advantage to using fuel oil or drill water to level the vessel transversely is that the preload water can be loaded symmetrically.

Second, the problem of distributing the preload can be simplified further by using the concept of core tanks. The core tanks are defined as tanks 8, 9, 15, 16, 21A, 22A, 21B, and 22B. They are always filled to 20.0 feet sounding during preloading. When full, the sea water in the core tanks weighs 4,991.5 kips, and provides longitudinal moments of 616,946 ft-kips. Because these tanks are not exactly symmetrical, some transverse moments (– 1,946 ft-kips) will be created. These unbalanced moments will be reduced later.

Third, the problems can be simplified even more by treating the two forward tanks (tanks 2 and 3) and the two aft tanks (tanks 28 and 29) as single tanks located on the centerline. The LCG of the forward pair is 28.87 ft AF0, and the LCG of the aft pair is assumed is 188.82 ft AF0.

Since the core tanks provide a fixed amount of weight and LM, the problem of distributing the preload is reduced to loading sufficient weight in the "combined" tanks so that the total reaction of the three legs is 21,297 kips, and the total longitudinal moments are 2,543,714 ft-kips. When these conditions are met, each of the three leg reactions will be 7,099 kips.

The specific steps to calculate the ballast distribution are:

a. Using a blank preload calculation sheet similar to that shown on page 5-25, enter the floating displacement and longitudinal moments in the appropriate blanks.

b. Subtract the sum of the weights in the first two lines from 21,297 kips. Enter the result on the third line under Weight. This value is the weight needed to place the total unit weight in the required preload condition.

c. Subtract the sum of the LM in the first two lines from 2,543,714 ft-kips. Enter the result on the third line under LM. These are the LM needed to place the total unit LM at 119.44 feet AF0.

d. The needed weights and moments must be supplied by the proper combination of preload in the two "combined" fore and aft tanks.

e. Using the equation below, the weight in the forward combination can be calculated.

$$\text{Wt Fwd} = \frac{(188.82 \times \text{Wt Needed} - \text{LM Needed})}{159.95}$$

f. The weight calculated for the forward combination is then evenly split between tanks 2 and 3. The sounding level is easily calculated by dividing by the weight per foot of preload in that tank.

Tank 2	Weight	= 0.5 x Wt Fwd
	Sounding	= $\frac{\text{Weight}}{49.596}$
Tank 3	Weight	= 0.5 x Wt Fwd
	Sounding	= $\frac{\text{Weight}}{50.356}$

g. The weight needed in the aft combination is obtained by subtracting the weight in the forward combination from the total needed.

$$\text{Wt Aft} = \text{Wt Needed} - \text{Wt Fwd}$$

h. Because the preload tanks are not exactly symmetrical, a small unbalanced transverse moment to port is created which can be eliminated by transferring 29 kips from tank 29 to tank 28. The weight and sounding levels in the two aft tanks now become:

Tank 28	Weight	= 0.5 x Wt Aft + 29
	Sounding	= $\frac{\text{Weight}}{42.554}$
Tank 29	Weight	= 0.5 x Wt Aft - 29
	Sounding	= $\frac{\text{Weight}}{43.314}$

7. SAMPLE LOAD FORMS

The following sample load forms are provided in the following pages:

a. #1 (Rig Move)

Displacement	14,158.3 kips
Draft	10.88 ft
Variable Load	2,381.1 kips
Cantilever	28.33 ft fwd of transom
Level Attitude	

b. #2 (Preload)

Total Weight	21,296.7 kips
Variable Loads	2,381.0 kips
Preload	7,138.4 kips
Cantilever	28.33 ft fwd of transom
Water Depth	250.0 ft

c. #3 (Drilling)

Total Weight	15,435.9 kips
Variable Loads	3,381.0 kips
Cantilever	40.0 ft aft of transom, 8.0 ft to port
Water Depth	250.0 ft

d. #4 (Elevated Severe Storm)

Total Weight	15,158.3 kips
Variable Loads	2,381.0 kips
Cantilever	28.33 ft fwd of transom
Water Depth	250.0 ft

COASTAL DRILLER
Load Calculation Form

FORM #1 RIG MOVE

Rotary fwd of transom = 28.33 feet
Rotary relative to C/L = 0.00 feet on centerline
TOC below baseline = 1.20 feet

SHEET 1 - SUMMARY SHEET

SUMMARY - LOAD TABLE

Item	Weight kips	LCG feet	LM ft-kips	TCG feet	TM ft-kips	VCG feet	VM ft-kips	FSML ft-kips	FSMT ft-kips
Hull - Basic & Fixed Loads	7068.90		787118		15339		138126		
Cantilever Beam Loading	870.00		136755		-1523		28580		
Drill Floor & Equipment	580.00		107138		220		40733		
Legs 360.33 ft	3258.30		389173		0	135.04	440002		
LIGHTWEIGHT	11777.20		1420184		14037		647441		
Changes to basic hull	77.30		10896		1757		1675		
Changes to cant. beam assembly	10.00	160.00	1600		-190		280		
Changes to drill floor	11.20	196.89	2211	-17.75	-199		400		
SOLID VARIABLES	1123.40		151524		-19851		33433		
LIQUID VARIABLES	1159.20		104595		4443		2195	31677	25098
PRELOAD	0.00		0		0		0	0	0
HOOK LOAD	0.00	0.00	0	0.00	0		0		
LOADED DISPLACEMENT	14158.30		1691010		-4		685424	31677	25098
CG Location		119.44		0.00		48.41			

STABILITY & LEG REACTION SUMMARY

AFLOAT STABILITY

HYDRO DATA

Draft (feet)	10.88
LCB (feet)	119.44
KML (feet)	249.09
KMT (feet)	134.40

TRIM & LIST

Trim	0.00	deg
Trim	0.00	feet
List	0.00	deg
List	0.00	feet

STAB DATA

KGmax 70 Kts (feet)	65.00
KGmax 100 Kts (feet)	39.00
FSCL (feet)	2.24
FSCT (feet)	1.77
KGL (feet)	50.65
KGT (feet)	50.18
GML (feet)	198.44
GMT (feet)	84.21

DRAFTS

Stbd-Fwd	10.88	feet
Port-Fwd	10.88	feet
Stbd-Aft	10.88	feet
Port-Aft	10.88	feet

LEG REACTIONS

BOW LEG Reaction	NA	kips
STBD LEG Reaction	NA	kips
PORT LEG Reaction	NA	kips
Water depth	NA	feet
TOTAL WEIGHT	14158	kips
VARIABLE LOADS	2381	kips
VAR LOADS MARGIN	0	kips

FORM #1
RIG MOVE

SHEET 2 - SOLID VARIABLE LOADS

Item	Ullage feet	Weight kips	LCG feet	LM ft-kips	TCG feet	TM ft-kips	VCG feet	VM ft-kips		
Bulk tank #1 (Port)	0.00	188.10	128.00	24077	-67.00	-12603	30.50	5737		
Bulk tank #2 (Port)	5.78	133.70	128.00	17119	-53.00	-7088	28.00	3745		
Bulk tank #3 (Stbd)	6.00	68.20	128.00	8727	53.00	3614	27.50	1875		
Bulk tank #4 (Stbd)	17.35	12.90	128.00	1652	67.00	865	24.00	310		
Mud pump room		6.00	77.00	462	0.00	0	7.50	45		
Engine room		5.00	156.00	780	0.00	0	7.50	38		
Mechanic's shop		5.00	156.00	780	30.00	150	7.50	38		
Haliburton room		0.00	131.00	0	35.00	0	8.00	0		
Mud logging unit		10.00	190.00	1900	39.00	390	41.00	410		
Port storage		10.00	67.60	676	-32.00	-320	7.00	70		
Sack room		106.00	138.00	14628	-40.00	-4240	8.50	901		
Crew and effects		18.00	78.00	1404	0.00	0	35.00	630		
Casing		0.00	126.25	0	0.00	0	0.00	0		
Misc under radiators		8.00	195.00	1560	-50.00	-400	22.00	176		
Misc		8.00	156.00	1248	-52.00	-416	22.00	176		
Paint locker & contents		8.00	51.00	408	-32.00	-256	23.00	184		
Storage under cantilever		6.00	170.00	1020	0.00	0	22.50	135		
Risers		7.00	172.00	1204	-40.00	-280	32.00	224		
Drums 22 @425 lbs		9.40	170.00	1590	-60.00	-561	21.50	201		
Misc equip @ shaker		15.00	189.00	2835	58.00	870	24.50	368		
Containers (2)		25.00	138.00	3450	40.00	1000	23.50	588		
Misc scrap		10.00	160.00	1600	52.00	520	20.00	200		
Total Port & Stbd Loading		659.30		87119		-18756		16048		
Cantilever Beam Loading										
Port pipe rack		134.60	128.00	17229	-11.75	-1582	39.00	5249		
Stbd pipe rack		89.20	128.00	11418	15.00	1338	39.00	3479		
Port drill collar rack		75.50	128.00	9664	-23.75	-1793	37.50	2831		
Stbd drill collar rack		64.80	128.00	8294	20.75	1345	37.50	2430		
Hydrill		15.00	179.00	2685	20.75	311	28.00	420		
BOPs		55.00	179.00	9845	-13.00	-715	29.00	1595		
Misc		20.00	179.00	3580	0.00	0	51.00	1020		
Subs		10.00	169.00	1690	0.00	0	36.00	360		
Total Cantilever Loading		464.10		64405		-1096		17384		
TOTAL SOLID VARIABLES		1123.40		151524		-19851		33433		

FORM #1
RIG MOVE

SHEET 3 - LIQUID VARIABLE LOADS

Tank	Sound feet	Weight kips	LCG feet	LM ft-kips	TCG feet	TM ft-kips	VCG feet	VM ft-kips	FSML ft-kips	FSMT ft-kips
Potable water - Tk 4	4.58	157.80	65.36	10311	14.22	2243	2.29	361	1707	1965
Potable water - Tk 5	4.58	157.80	65.36	10311	-14.22	-2243	2.29	361	1707	1965
Drill water - #1	4.81	120.50	4.63	558	0.00	0	2.41	290	181	4580
Drill water - #6	4.81	160.70	78.30	12585	33.51	5386	2.41	387	4464	932
Drill water - #7	1.89	63.20	78.30	4945	-33.51	-2116	0.95	60	4464	932
Drill water - #10	0.61	16.00	85.30	1361	12.08	193	0.31	5	725	1345
Drill water - #11	0.61	16.00	85.30	1361	-12.08	-193	0.31	5	725	1345
Drill water - #17	0.00	0.00	126.16	0	-13.00	0	0.00	0	0	0
Drill water - #18	0.00	0.00	126.91	0	12.17	0	0.00	0	0	0
Drill water - #23	0.94	48.30	156.00	7539	-13.00	-628	0.47	23	4708	2982
Drill water - #24	0.94	48.30	156.00	7539	13.00	628	0.47	23	4708	2982
Drill water - #25	4.08	123.90	154.62	19153	-34.00	-4212	2.04	253	3045	777
Drill water - #26	1.75	53.10	154.62	8215	34.00	1806	0.88	46	3045	777
Diesel oil - #13	2.74	48.90	105.94	5184	-41.41	-2026	1.37	67	404	1034
Diesel oil - #14	5.00	122.00	104.12	12702	39.16	4777	2.50	305	0	0
Diesel oil - #19	0.00	0.00	126.37	0	-42.69	0	0.00	0	0	0
Diesel oil - #20	0.48	16.70	126.71	2110	41.20	686	0.24	4	1774	3474
Dirty oil tank	2.10	6.10	117.16	720	23.00	141	1.00	6	20	8
Mud pit #1 (Stbd)	0.00	0.00	103.66	0	19.50	0	5.00	0	0	0
Mud pit #2 (Stbd)	0.00	0.00	104.67	0	5.85	0	5.00	0	0	0
Mud pit #3 (Port)	0.00	0.00	103.66	0	-6.50	0	5.00	0	0	0
Mud pit #4 (Port)	0.00	0.00	103.66	0	-19.50	0	5.00	0	0	0
Slugging pit	0.00	0.00	97.70	0	10.25	0	5.00	0	0	0
Skimmer tank	0.00	0.00	185.00	0	54.00	0	0.00	0	0	0
Sand traps		0.00	190.00	0	40.00	0	25.00	0	0	0
TOTAL LIQUID VARIABLES		1159.20		104595		4443		2195	31677	25098

PRELOAD TANKS

Tank	Sound feet	Weight kips	LCG feet	LM ft-kips	TCG feet	TM ft-kips	VCG feet	VM ft-kips	FSML ft-kips	FSMT ft-kips
Preload Tank # 2	0.00	0.00	28.89	0	23.28	0	0.00	0	0	0
Preload Tank # 3	0.00	0.00	28.85	0	-23.35	0	0.00	0	0	0
Preload Tank # 8	0.00	0.00	69.17	0	44.46	0	0.00	0	0	0
Preload Tank # 9	0.00	0.00	68.17	0	-43.71	0	0.00	0	0	0
Preload Tank #15	0.00	0.00	103.66	0	-59.26	0	0.00	0	0	0
Preload Tank #16	0.00	0.00	103.66	0	59.26	0	0.00	0	0	0
Preload Tank #21A	0.00	0.00	141.75	0	-74.95	0	0.00	0	0	0
Preload Tank #22A	0.00	0.00	141.65	0	74.98	0	0.00	0	0	0
Preload Tank #21B	0.00	0.00	184.06	0	-65.02	0	0.00	0	0	0
Preload Tank #22B	0.00	0.00	184.05	0	65.77	0	0.00	0	0	0
Preload Tank #28	0.00	0.00	188.86	0	36.10	0	0.00	0	0	0
Preload Tank #29	0.00	0.00	188.79	0	-36.28	0	0.00	0	0	0
TOTAL PRELOAD		0.00		0		0		0	0	0

COASTAL DRILLER
Load Calculation Form

FORM #2 PRELOAD

Rotary fwd of transom = 28.33 feet
Rotary relative to C/L = 0.00 On centerline
TOC below baseline = Legs on bottom

SHEET 1 - SUMMARY SHEET

SUMMARY - LOAD TABLE

Item	Weight kips	LCG feet	LM ft-kips	TCG feet	TM ft-kips	VCG feet	VM ft-kips	FSML ft-kips	FSMT ft-kips
Hull - Basic & Fixed Loads	7068.90		787118		15339		#N/A		
Cantilever Beam Loading	870.00		136755		-1523		#N/A		
Drill Floor & Equipment	580.00		107138		220		#N/A		
Legs 360.33 ft	3258.30		389173		0	#N/A	#N/A		
LIGHTWEIGHT	11777.20		1420184		14037		#N/A		
Changes to basic hull	77.30		10896		1757		#N/A		
Changes to cant. beam assembly	10.00	160.00	1600		-190		#N/A		
Changes to drill floor	11.20	196.89	2211	-17.75	-199		#N/A		
SOLID VARIABLES	1123.40		151524		-19851		#N/A		
LIQUID VARIABLES	1159.20		104595		4443		#N/A	#N/A	#N/A
PRELOAD	7138.40		852709		87		#N/A	#N/A	#N/A
HOOK LOAD	0.00	0.00	0	0.00	0		#N/A		
LOADED DISPLACEMENT	21296.70		2543719		84		#N/A	#N/A	#N/A
CG Location		119.44		0.00		#N/A			

STABILITY & LEG REACTION SUMMARY

AFLOAT STABILITY

HYDRO DATA

Draft (feet)	#N/A
LCB (feet)	#N/A
KML (feet)	#N/A
KMT (feet)	#N/A

STAB DATA

KGmax 70 Kts (feet)	#N/A
KGmax 100 Kts (feet)	#N/A
FSCL (feet)	#N/A
FSCT (feet)	#N/A
KGL (feet)	#N/A
KGT (feet)	#N/A
GML (feet)	#N/A
GMT (feet)	#N/A

TRIM & LIST

Trim	#N/A	deg
Trim	#N/A	feet
List	#N/A	deg
List	#N/A	feet

DRAFTS

Stbd-Fwd	#N/A	feet
Port-Fwd	#N/A	feet
Stbd-Aft	#N/A	feet
Port-Aft	#N/A	feet

LEG REACTIONS

BOW LEG Reaction	7099	kips
STBD LEG Reaction	7100	kips
PORT LEG Reaction	7098	kips
Water depth	250	feet
TOTAL WEIGHT	21297	kips
VARIABLE LOADS	2381	kips
VAR LOADS MARGIN	0	kips

FORM #2
PRELOAD

SHEET 2 - SOLID VARIABLE LOADS

Item	Ullage feet	Weight kips	LCG feet	LM ft-kips	TCG feet	TM ft-kips	VCG feet	VM ft-kips		
Bulk tank #1 (Port)	0.00	188.10	128.00	24077	-67.00	-12603	30.50	5737		
Bulk tank #2 (Port)	5.78	133.70	128.00	17119	-53.00	-7088	28.00	3745		
Bulk tank #3 (Stbd)	6.00	68.20	128.00	8727	53.00	3614	27.50	1875		
Bulk tank #4 (Stbd)	17.35	12.90	128.00	1652	67.00	865	24.00	310		
Mud pump room		6.00	77.00	462	0.00	0	7.50	45		
Engine room		5.00	156.00	780	0.00	0	7.50	38		
Mechanic's shop		5.00	156.00	780	30.00	150	7.50	38		
Haliburton room		0.00	131.00	0	35.00	0	0.00	0		
Mud logging unit		10.00	190.00	1900	39.00	390	41.00	410		
Port storage		10.00	67.60	676	-32.00	-320	7.00	70		
Sack room		106.00	138.00	14628	-40.00	-4240	8.50	901		
Crew and effects		18.00	78.00	1404	0.00	0	35.00	630		
Casing		0.00	126.25	0	0.00	0	0.00	0		
Misc under radiators		8.00	195.00	1560	-50.00	-400	22.00	176		
Misc		8.00	156.00	1248	-52.00	-416	22.00	176		
Paint locker & contents		8.00	51.00	408	-32.00	-256	23.00	184		
Storage under cantilever		6.00	170.00	1020	0.00	0	22.50	135		
Risers		7.00	172.00	1204	-40.00	-280	32.00	224		
Drums 22 @425 lbs		9.40	170.00	1590	-60.00	-561	21.50	201		
Misc equip @ shaker		15.00	189.00	2835	58.00	870	24.50	368		
Containers (2)		25.00	138.00	3450	40.00	1000	23.50	588		
Misc scrap		10.00	160.00	1600	52.00	520	20.00	200		
Total Port & Stbd Loading		659.30		87119		-18756		16048		
Cantilever Beam Loading										
Port pipe rack		134.60	128.00	17229	-11.75	-1582	39.00	5249		
Stbd pipe rack		89.20	128.00	11418	15.00	1338	39.00	3479		
Port drill collar rack		75.50	128.00	9664	-23.75	-1793	37.50	2831		
Stbd drill collar rack		64.80	128.00	8294	20.75	1345	37.50	2430		
Hydrill		15.00	179.00	2685	20.75	311	28.00	420		
BOPs		55.00	179.00	9845	-13.00	-715	29.00	1595		
Misc		20.00	179.00	3580	0.00	0	51.00	1020		
Subs		10.00	169.00	1690	0.00	0	36.00	360		
Total Cantilever Loading		464.10		64405		-1096		17384		
TOTAL SOLID VARIABLES		1123.40		151524		-19851		33433		

FORM #2
PRELOAD

SHEET 3 - LIQUID VARIABLE LOADS

Tank	Sound feet	Weight kips	LCG feet	LM ft-kips	TCG feet	TM ft-kips	VCG feet	VM ft-kips	FSML ft-kips	FSMT ft-kips
Potable water - Tk 4	4.58	157.80	65.36	10311	14.22	2243	2.29	361	1707	1965
Potable water - Tk 5	4.58	157.80	65.36	10311	-14.22	-2243	2.29	361	1707	1965
Drill water - #1	4.81	120.50	4.63	558	0.00	0	2.41	290	181	4580
Drill water - #6	4.81	160.70	78.30	12585	33.51	5386	2.41	387	4464	932
Drill water - #7	1.89	63.20	78.30	4945	-33.51	-2116	0.95	60	4464	932
Drill water - #10	0.61	16.00	85.30	1361	12.08	193	0.31	5	725	1345
Drill water - #11	0.61	16.00	85.30	1361	-12.08	-193	0.31	5	725	1345
Drill water - #17	0.00	0.00	126.16	0	-13.00	0	0.00	0	0	0
Drill water - #18	0.00	0.00	126.91	0	12.17	0	0.00	0	0	0
Drill water - #23	0.94	48.30	156.00	7539	-13.00	-628	0.47	23	4708	2982
Drill water - #24	0.94	48.30	156.00	7539	13.00	628	0.47	23	4708	2982
Drill water - #25	4.08	123.90	154.62	19153	-34.00	-4212	2.04	253	3045	777
Drill water - #26	1.75	53.10	154.62	8215	34.00	1806	0.88	46	3045	777
Diesel oil - #13	2.74	48.90	105.94	5184	-41.41	-2026	1.37	67	404	1034
Diesel oil - #14	5.00	122.00	104.12	12702	39.16	4777	2.50	305	0	0
Diesel oil - #19	0.00	0.00	126.37	0	-42.69	0	0.00	0	0	0
Diesel oil - #20	0.48	16.70	126.71	2110	41.20	686	0.24	4	1774	3474
Dirty oil tank	2.10	6.10	117.16	720	23.00	141	1.00	6	20	8
Mud pit #1 (Stbd)	0.00	0.00	103.66	0	19.50	0	5.00	0	0	0
Mud pit #2 (Stbd)	0.00	0.00	104.67	0	5.85	0	5.00	0	0	0
Mud pit #3 (Port)	0.00	0.00	103.66	0	-6.50	0	5.00	0	0	0
Mud pit #4 (Port)	0.00	0.00	103.66	0	-19.50	0	5.00	0	0	0
Slugging pit	0.00	0.00	97.70	0	10.25	0	5.00	0	0	0
Skimmer tank	0.00	0.00	185.00	0	54.00	0	0.00	0	0	0
Sand traps		0.00	190.00	0	40.00	0	25.00	0	0	0
TOTAL LIQUID VARIABLES		1159.20		104595		4443		2195	31677	25098

PRELOAD TANKS

Tank	Sound feet	Weight kips	LCG feet	LM ft-kips	TCG feet	TM ft-kips	VCG feet	VM ft-kips	FSML ft-kips	FSMT ft-kips
Preload Tank # 2	10.69	530.20	28.89	15317	23.28	12342	5.35	2834	8768	4494
Preload Tank # 3	10.53	530.20	28.85	15298	-23.35	-12381	5.27	2792	8765	4511
Preload Tank # 8	20.00	581.10	69.17	40191	44.46	25833	10.00	5811	0	0
Preload Tank # 9	20.00	620.60	68.17	42303	-43.71	-27124	10.00	6206	0	0
Preload Tank #15	20.00	638.30	103.66	66164	-59.26	-37824	10.00	6383	0	0
Preload Tank #16	20.00	638.30	103.66	66164	59.26	37824	10.00	6383	0	0
Preload Tank #21A	20.00	706.80	141.75	100189	-74.95	-52975	10.00	7068	0	0
Preload Tank #22A	20.00	720.90	141.65	102121	74.98	54056	10.00	7209	0	0
Preload Tank #21B	20.00	559.20	184.06	102926	-65.02	-36359	10.00	5592	0	0
Preload Tank #22B	20.00	526.40	184.05	96888	65.77	34623	10.00	5264	0	0
Preload Tank #28	13.47	573.20	188.86	108254	36.10	20692	6.74	3860	3966	1600
Preload Tank #29	11.85	513.20	188.79	96895	-36.28	-18620	5.93	3041	7328	2413
TOTAL PRELOAD		7138.40		852709		87		62442	28827	13018

COASTAL DRILLER
Load Calculation Form

FORM #3 DRILLING

Rotary aft of transom = 40.00 feet
Rotary relative to C/L = –8.00 feet port of centerline
TOC below baseline = Legs on bottom

SHEET 1 - SUMMARY SHEET

SUMMARY - LOAD TABLE

Item	Weight kips	LCG feet	LM ft-kips	TCG feet	TM ft-kips	VCG feet	VM ft-kips	FSML ft-kips	FSMT ft-kips
Hull - Basic & Fixed Loads	7068.90		787118		15339		#N/A		
Cantilever Beam Loading	870.00		196202		-1523		#N/A		
Drill Floor & Equipment	580.00		146769		-4420		#N/A		
Legs 360.33 ft	3258.30		389173		0	#N/A	#N/A		
LIGHTWEIGHT	11777.20		1519262		9397		#N/A		
Changes to basic hull	77.30		10896		1757		#N/A		
Changes to cant. beam assembly	10.00	228.33	2283		-190		#N/A		
Changes to drill floor	11.20	265.22	2978	-25.75	-289		#N/A		
SOLID VARIABLES	1029.40		144220		-17414		#N/A		
LIQUID VARIABLES	2253.10		181648		4291		#N/A	#N/A	#N/A
PRELOAD	0.00		0		0		#N/A	#N/A	#N/A
HOOK LOAD	277.80	247.33	68708	-8.00	-2222		#N/A		
LOADED DISPLACEMENT	15436.00		1929997		-4671		#N/A	#N/A	#N/A
CG Location		125.03		-0.30		#N/A			

STABILITY & LEG REACTION SUMMARY

AFLOAT STABILITY

HYDRO DATA

Draft (feet)	#N/A
LCB (feet)	#N/A
KML (feet)	#N/A
KMT (feet)	#N/A

STAB DATA

KGmax 70 Kts (feet)	#N/A
KGmax 100 Kts (feet)	#N/A
FSCL (feet)	#N/A
FSCT (feet)	#N/A
KGL (feet)	#N/A
KGT (feet)	#N/A
GML (feet)	#N/A
GMT (feet)	#N/A

TRIM & LIST

Trim	#N/A	deg
Trim	#N/A	feet
List	#N/A	deg
List	#N/A	feet

DRAFTS

Stbd-Fwd	#N/A	feet
Port-Fwd	#N/A	feet
Stbd-Aft	#N/A	feet
Port-Aft	#N/A	feet

LEG REACTIONS

BOW LEG Reaction	4436	kips
STBD LEG Reaction	5461	kips
PORT LEG Reaction	5539	kips
Water depth	250	feet
TOTAL WEIGHT	15436	kips
VARIABLE LOADS	3381	kips
VAR LOADS MARGIN	0	kips

FORM #3 DRILLING

SHEET 2 - SOLID VARIABLE LOADS

Item	Ullage feet	Weight kips	LCG feet	LM ft-kips	TCG feet	TM ft-kips	VCG feet	VM ft-kips		
Bulk tank #1 (Port)	0.00	188.10	128.00	24077	-67.00	-12603	30.50	5737		
Bulk tank #2 (Port)	5.78	133.70	128.00	17119	-53.00	-7088	28.00	3745		
Bulk tank #3 (Stbd)	6.00	68.20	128.00	8727	53.00	3614	27.50	1875		
Bulk tank #4 (Stbd)	17.35	12.90	128.00	1652	67.00	865	24.00	310		
Mud pump room		6.00	77.00	462	0.00	0	7.50	45		
Engine room		5.00	156.00	780	0.00	0	7.50	38		
Mechanic's shop		5.00	156.00	780	30.00	150	7.50	38		
Halliburton room		0.00	131.00	0	35.00	0	0.00	0		
Mud logging unit		10.00	190.00	1900	39.00	390	41.00	410		
Port storage		10.00	67.60	676	-32.00	-320	7.00	70		
Sack room		106.00	138.00	14628	-40.00	-4240	8.50	901		
Crew and effects		18.00	78.00	1404	0.00	0	35.00	630		
Casing		238.80	126.25	30149	0.00	0	0.00	0		
Misc under radiators		8.00	195.00	1560	-50.00	-400	22.00	176		
Misc		8.00	156.00	1248	-52.00	-416	22.00	176		
Paint locker & contents		8.00	51.00	408	-32.00	-256	23.00	184		
Storage under cantilever		6.00	170.00	1020	0.00	0	22.50	135		
Risers		7.00	172.00	1204	-40.00	-280	32.00	224		
Drums 22 @425 lbs		9.40	170.00	1590	-60.00	-561	21.50	201		
Misc equip @ shaker		15.00	189.00	2835	58.00	870	24.50	368		
Containers (2)		25.00	138.00	3450	40.00	1000	23.50	588		
Misc scrap		10.00	160.00	1600	52.00	520	20.00	200		
Total Port & Stbd Loading		898.10		117267		-18756		16048		
Cantilever Beam Loading										
Port pipe rack		8.20	196.33	1610	-11.75	-96	39.00	320		
Stbd pipe rack		89.20	196.33	17513	15.00	1338	39.00	3479		
Port drill collar rack		8.90	196.33	1747	-23.75	-211	37.50	334		
Stbd drill collar rack		0.00	196.33	0	20.75	0	37.50	0		
Hydrill		15.00	247.33	3710	20.75	311	28.00	420		
BOPs		0.00	247.33	0	-13.00	0	29.00	0		
Misc		0.00	247.33	0	0.00	0	51.00	0		
Subs		10.00	237.33	2373	0.00	0	36.00	360		
Total Cantilever Loading		131.30		26953		1342		4912		
TOTAL SOLID VARIABLES		1029.40		144220		-17414		20961		

FORM #3
DRILLING

SHEET 3 - LIQUID VARIABLE LOADS

Tank	Sound feet	Weight kips	LCG feet	LM ft-kips	TCG feet	TM ft-kips	VCG feet	VM ft-kips	FSML ft-kips	FSMT ft-kips
Potable water - Tk 4	4.58	157.80	65.36	10311	14.22	2243	2.29	361	1707	1965
Potable water - Tk 5	4.58	157.80	65.36	10311	-14.22	-2243	2.29	361	1707	1965
Drill water - #1	18.00	451.00	4.63	2088	0.00	0	9.00	4059	181	4580
Drill water - #6	5.00	167.10	78.30	13082	33.51	5599	2.50	418	0	0
Drill water - #7	4.67	156.10	78.30	12219	-33.51	-5229	2.34	364	4464	932
Drill water - #10	3.00	78.40	85.30	6691	12.08	948	1.50	118	725	1345
Drill water - #11	4.58	119.80	85.30	10215	-12.08	-1447	2.29	274	725	1345
Drill water - #17	2.00	85.00	126.16	10721	-13.00	-1105	1.00	85	2659	2464
Drill water - #18	2.48	97.30	126.91	12345	12.17	1184	1.24	121	2340	2090
Drill water - #23	0.50	25.70	156.00	4010	-13.00	-334	0.25	6	4708	2982
Drill water - #24	0.50	25.70	156.00	4010	13.00	334	0.25	6	4708	2982
Drill water - #25	0.50	15.20	154.62	2347	-34.00	-516	0.25	4	3045	777
Drill water - #26	0.00	0.00	154.62	0	34.00	0	0.00	0	0	0
Diesel oil - #13	2.75	49.10	105.94	5203	-41.41	-2034	1.38	68	404	1034
Diesel oil - #14	5.00	122.00	104.12	12702	39.16	4777	2.50	305	0	0
Diesel oil - #19	0.50	23.40	126.37	2952	-42.69	-997	0.25	6	2870	4485
Diesel oil - #20	0.00	0.00	126.71	0	41.20	0	0.00	0	0	0
Dirty oil tank	2.00	5.90	117.16	686	23.00	135	1.00	6	20	8
Mud pit #1 (Stbd)	5.00	96.20	103.66	9970	19.50	1875	7.50	721	633	328
Mud pit #2 (Stbd)	5.00	82.00	104.67	8588	5.85	480	7.50	615	481	263
Mud pit #3 (Port)	6.50	121.70	103.66	12611	-6.50	-791	8.25	1004	633	328
Mud pit #4 (Port)	6.50	121.70	103.66	12611	-19.50	-2372	8.25	1004	633	328
Slugging pit	0.00	0.00	97.70	0	10.25	0	5.00	0	0	0
Skimmer tank	0.00	0.00	185.00	0	54.00	0	0.00	0	0	0
Sand traps		94.60	190.00	17974	40.00	3784	25.00	2365	0	0
TOTAL LIQUID VARIABLES		2253.10		181648		4291		12271	32643	30201

PRELOAD TANKS

Tank	Sound feet	Weight kips	LCG feet	LM ft-kips	TCG feet	TM ft-kips	VCG feet	VM ft-kips	FSML ft-kips	FSMT ft-kips
Preload Tank # 2	0.00	0.00	28.89	0	23.28	0	0.00	0	0	0
Preload Tank # 3	0.00	0.00	28.85	0	-23.35	0	0.00	0	0	0
Preload Tank # 8	0.00	0.00	69.17	0	44.46	0	0.00	0	0	0
Preload Tank # 9	0.00	0.00	68.17	0	-43.71	0	0.00	0	0	0
Preload Tank #15	0.00	0.00	103.66	0	-59.26	0	0.00	0	0	0
Preload Tank #16	0.00	0.00	103.66	0	59.26	0	0.00	0	0	0
Preload Tank #21A	0.00	0.00	141.75	0	-74.95	0	0.00	0	0	0
Preload Tank #22A	0.00	0.00	141.65	0	74.98	0	0.00	0	0	0
Preload Tank #21B	0.00	0.00	184.06	0	-65.02	0	0.00	0	0	0
Preload Tank #22B	0.00	0.00	184.05	0	65.77	0	0.00	0	0	0
Preload Tank #28	0.00	0.00	188.86	0	36.10	0	0.00	0	0	0
Preload Tank #29	0.00	0.00	188.79	0	-36.28	0	0.00	0	0	0
TOTAL PRELOAD		0.00		0		0		0	0	0

COASTAL DRILLER
Load Calculation Form

FORM #4 STORM

Rotary fwd of transom = 28.33 feet
Rotary relative to C/L = 0.00 feet
TOC below baseline = Legs on bottom

SHEET 1 - SUMMARY SHEET

SUMMARY - LOAD TABLE

Item	Weight kips	LCG feet	LM ft-kips	TCG feet	TM ft-kips	VCG feet	VM ft-kips	FSML ft-kips	FSMT ft-kips
Hull - Basic & Fixed Loads	7068.90		787118		15339		#N/A		
Cantilever Beam Loading	870.00		136755		-1523		#N/A		
Drill Floor & Equipment	580.00		107138		220		#N/A		
Legs 360.33 ft	3258.30		389173		0	#N/A	#N/A		
LIGHTWEIGHT	11777.20		1420184		14037		#N/A		
Changes to basic hull	77.30		10896		1757		#N/A		
Changes to cant. beam assembly	10.00	160.00	1600		-190		#N/A		
Changes to drill floor	11.20	196.89	2211	-17.75	-199		#N/A		
SOLID VARIABLES	1123.40		151524		-19851		#N/A		
LIQUID VARIABLES	1159.20		104595		4443		#N/A	#N/A	#N/A
PRELOAD	0.00		0		0		#N/A	#N/A	#N/A
HOOK LOAD	0.00	0.00	0	0.00	0		#N/A		
LOADED DISPLACEMENT	14158.30		1691010		-4		#N/A	#N/A	#N/A
CG Location		119.44		0.00		#N/A			

STABILITY & LEG REACTION SUMMARY

AFLOAT STABILITY

HYDRO DATA

Draft (feet)	#N/A
LCB (feet)	#N/A
KML (feet)	#N/A
KMT (feet)	#N/A

TRIM & LIST

Trim	#N/A	deg
Trim	#N/A	feet
List	#N/A	deg
List	#N/A	feet

STAB DATA

KGmax 70 Kts (feet)	#N/A
KGmax 100 Kts (feet)	#N/A
FSCL (feet)	#N/A
FSCT (feet)	#N/A
KGL (feet)	#N/A
KGT (feet)	#N/A
GML (feet)	#N/A
GMT (feet)	#N/A

DRAFTS

Stbd-Fwd	#N/A	feet
Port-Fwd	#N/A	feet
Stbd-Aft	#N/A	feet
Port-Aft	#N/A	feet

LEG REACTIONS

BOW LEG Reaction	4720	kips
STBD LEG Reaction	4719	kips
PORT LEG Reaction	4719	kips
Water depth	250	feet
TOTAL WEIGHT	14158	kips
VARIABLE LOADS	2381	kips
VAR LOADS MARGIN	0	kips

FORM #4
STORM

SHEET 2 - SOLID VARIABLE LOADS

Item	Ullage feet	Weight kips	LCG feet	LM ft-kips	TCG feet	TM ft-kips	VCG feet	VM ft-kips		
Bulk tank #1 (Port)	0.00	188.10	128.00	24077	-67.00	-12603	30.50	5737		
Bulk tank #2 (Port)	5.78	133.70	128.00	17119	-53.00	-7088	28.00	3745		
Bulk tank #3 (Stbd)	6.00	68.20	128.00	8727	53.00	3614	27.50	1875		
Bulk tank #4 (Stbd)	17.35	12.90	128.00	1652	67.00	865	24.00	310		
Mud pump room		6.00	77.00	462	0.00	0	7.50	45		
Engine room		5.00	156.00	780	0.00	0	7.50	38		
Mechanic's shop		5.00	156.00	780	30.00	150	7.50	38		
Haliburton room		0.00	131.00	0	35.00	0	0.00	0		
Mud logging unit		10.00	190.00	1900	39.00	390	41.00	410		
Port storage		10.00	67.60	676	-32.00	-320	7.00	70		
Sack room		106.00	138.00	14628	-40.00	-4240	8.50	901		
Crew and effects		18.00	78.00	1404	0.00	0	35.00	630		
Casing		0.00	126.25	0	0.00	0	0.00	0		
Misc under radiators		8.00	195.00	1560	-50.00	-400	22.00	176		
Misc		8.00	156.00	1248	-52.00	-416	22.00	176		
Paint locker & contents		8.00	51.00	408	-32.00	-256	23.00	184		
Storage under cantilever		6.00	170.00	1020	0.00	0	22.50	135		
Risers		7.00	172.00	1204	-40.00	-280	32.00	224		
Drums 22 @425 lbs		9.40	170.00	1590	-60.00	-561	21.50	201		
Misc equip @ shaker		15.00	189.00	2835	58.00	870	24.50	368		
Containers (2)		25.00	138.00	3450	40.00	1000	23.50	588		
Misc scrap		10.00	160.00	1600	52.00	520	20.00	200		
Total Port & Stbd Loading		659.30		87119		-18756		16048		
Cantilever Beam Loading										
Port pipe rack		134.60	128.00	17229	-11.75	-1582	39.00	5249		
Stbd pipe rack		89.20	128.00	11418	15.00	1338	39.00	3479		
Port drill collar rack		75.50	128.00	9664	-23.75	-1793	37.50	2831		
Stbd drill collar rack		64.80	128.00	8294	20.75	1345	37.50	2430		
Hydrill		15.00	179.00	2685	20.75	311	28.00	420		
BOPs		55.00	179.00	9845	-13.00	-715	29.00	1595		
Misc		20.00	179.00	3580	0.00	0	51.00	1020		
Subs		10.00	169.00	1690	0.00	0	36.00	360		
Total Cantilever Loading		464.10		64405		-1096		17384		
TOTAL SOLID VARIABLES		1123.40		151524		-19851		33433		

FORM #4
STORM

SHEET 3 - LIQUID VARIABLE LOADS

Tank	Sound feet	Weight kips	LCG feet	LM ft-kips	TCG feet	TM ft-kips	VCG feet	VM ft-kips	FSML ft-kips	FSMT ft-kips
Potable water - Tk 4	4.58	157.80	65.36	10311	14.22	2243	2.29	361	1707	1965
Potable water - Tk 5	4.58	157.80	65.36	10311	-14.22	-2243	2.29	361	1707	1965
Drill water - #1	4.81	120.50	4.63	558	0.00	0	2.41	290	181	4580
Drill water - #6	4.81	160.70	78.30	12585	33.51	5386	2.41	387	4464	932
Drill water - #7	1.89	63.20	78.30	4945	-33.51	-2116	0.95	60	4464	932
Drill water - #10	0.61	16.00	85.30	1361	12.08	193	0.31	5	725	1345
Drill water - #11	0.61	16.00	85.30	1361	-12.08	-193	0.31	5	725	1345
Drill water - #17	0.00	0.00	126.16	0	-13.00	0	0.00	0	0	0
Drill water - #18	0.00	0.00	126.91	0	12.17	0	0.00	0	0	0
Drill water - #23	0.94	48.30	156.00	7539	-13.00	-628	0.47	23	4708	2982
Drill water - #24	0.94	48.30	156.00	7539	13.00	628	0.47	23	4708	2982
Drill water - #25	4.08	123.90	154.62	19153	-34.00	-4212	2.04	253	3045	777
Drill water - #26	1.75	53.10	154.62	8215	34.00	1806	0.88	46	3045	777
Diesel oil - #13	2.74	48.90	105.94	5184	-41.41	-2026	1.37	67	404	1034
Diesel oil - #14	5.00	122.00	104.12	12702	39.16	4777	2.50	305	0	0
Diesel oil - #19	0.00	0.00	126.37	0	-42.69	0	0.00	0	0	0
Diesel oil - #20	0.48	16.70	126.71	2110	41.20	686	0.24	4	1774	3474
Dirty oil tank	2.10	6.10	117.16	720	23.00	141	1.00	6	20	8
Mud pit #1 (Stbd)	0.00	0.00	103.66	0	19.50	0	5.00	0	0	0
Mud pit #2 (Stbd)	0.00	0.00	104.67	0	5.85	0	5.00	0	0	0
Mud pit #3 (Port)	0.00	0.00	103.66	0	-6.50	0	5.00	0	0	0
Mud pit #4 (Port)	0.00	0.00	103.66	0	-19.50	0	5.00	0	0	0
Slugging pit	0.00	0.00	97.70	0	10.25	0	5.00	0	0	0
Skimmer tank	0.00	0.00	185.00	0	54.00	0	0.00	0	0	0
Sand traps		0.00	190.00	0	40.00	0	25.00	0	0	0
TOTAL LIQUID VARIABLES		1159.20		104595		4443		2195	31677	25098

PRELOAD TANKS

Tank	Sound feet	Weight kips	LCG feet	LM ft-kips	TCG feet	TM ft-kips	VCG feet	VM ft-kips	FSML ft-kips	FSMT ft-kips
Preload Tank # 2	0.00	0.00	28.89	0	23.28	0	0.00	0	0	0
Preload Tank # 3	0.00	0.00	28.85	0	-23.35	0	0.00	0	0	0
Preload Tank # 8	0.00	0.00	69.17	0	44.46	0	0.00	0	0	0
Preload Tank # 9	0.00	0.00	68.17	0	-43.71	0	0.00	0	0	0
Preload Tank #15	0.00	0.00	103.66	0	-59.26	0	0.00	0	0	0
Preload Tank #16	0.00	0.00	103.66	0	59.26	0	0.00	0	0	0
Preload Tank #21A	0.00	0.00	141.75	0	-74.95	0	0.00	0	0	0
Preload Tank #22A	0.00	0.00	141.65	0	74.98	0	0.00	0	0	0
Preload Tank #21B	0.00	0.00	184.06	0	-65.02	0	0.00	0	0	0
Preload Tank #22B	0.00	0.00	184.05	0	65.77	0	0.00	0	0	0
Preload Tank #28	0.00	0.00	188.86	0	36.10	0	0.00	0	0	0
Preload Tank #29	0.00	0.00	188.79	0	-36.28	0	0.00	0	0	0
TOTAL PRELOAD		0.00		0		0		0	0	0

CHAPTER 5 - OPERATING DATA

1. Hydrostatic tables

(Pages 5-4 and 5-5)

Abbreviations used in the hydrostatic tables:

LCB Longitudinal location of the Center of Buoyancy, measured in feet aft of frame zero (AF0). The Center of Buoyancy is located at the geometric center of the underwater volume.

LCF Longitudinal location of the Center of Flotation, measured in feet aft of frame zero (AF0). The Center of Flotation is located at the geometric center of the waterplane area.

KM Height of the metacenter measured in feet above the keel. Metacenter may be longitudinal (L) or transverse (T).

$$KML = KB + BML$$
$$KMT = KB + BMT$$

KB Vertical height of the Center of Buoyancy measured in feet above the baseline (keel). KB is located at half-draft.

BM Metacentric Radius; the vertical distance in feet between the Center of Buoyancy and the Metacenter. The metacenter may be longitudinal (L) or transverse (T).

$$BML = \frac{I_T}{V} \qquad BMT = \frac{I_L}{V}$$

I Moment of Inertia of the waterplane area about axis through the Center of Flotation. Longitudinal = 53,900,752 ft^4; transverse = 28,527,995 ft^4.

V Displacement volume.

KPI The load change in kips which results in a draft change of one inch.

2. Maximum allowable KG (Page 5-6)

Two curves provide the maximum allowed KG for a specific draft depending on the mode of operation and wind speed (70 or 100 knots).

Stability is acceptable if neither the KGL nor the KGT, obtained through the load form calculations, exceeds the value shown on the curves.

3. Design limits of legs (afloat) (Page 5-7)

The motions of the jackup during a normal transit when wind speeds are less than 70 knots are limited by leg strength as shown on the upper curve (B) of the Design Limits of Legs (Afloat) Graph. The jack-up may be in a field or ocean transit. In either case, the TOC should be the proper distance (1.2 feet for field transit and 12.38 feet for ocean transit) below the hull.

In weather conditions in which the expected winds exceed 70 knots, the legs must be lowered so that the spud can tips must be lowered to 60.50 feet below the hull in order to meet the stability and leg strength requirements defined by curve A of the Design Limits of Legs (Afloat) Graph.

4. Safe motion for going on location (Page 5-8)

For the appropriate water depth, enter the chart with the observed inclination in degrees and the period for the motion. The observed inclination for pitch, roll, or combined pitch-roll is the angle from level to maximum inclination. This is the maximum angle read from the control room inclinometers. The period is timed for a complete cycle. For example: the period in seconds between successive instances of maximum port side down. Any combination of angle and period which lies below the appropriate water depth curve is considered acceptable.

5. Allowable wind and wave charts (Pages 5-9 through 5-20)

These charts give the various combinations of wind, waves, and current in which elevated operations are permitted for a given leg reaction and water depth.

The following data must be available to use the charts:

- The largest of the three leg reactions.
- The amount of leg penetration. If the penetration exceeds 25 feet, the water depth value must be increased by the amount of additional penetration.
- Water depth including astronomical and storm tides.

The procedures for using the charts are as follows:

(1) Select the appropriate chart based on leg length, minimum air gap, water depth, and current for the particular site in question. For water depths and current velocities that fall between charts, use the chart with the next highest values.

(2) At the "highest leg reaction" calculated value, read across the chart to determine wave height and wind speed combinations which are permitted.

(3) Compare the actual or predicted wind and wave values to those shown in the Allowable Wind and Wave Chart. If they are less than the allowable, the unit is in a satisfactory condition.

6. Limits of Service (Page 5-21)

The limits of service for afloat and elevated conditions show the configuration necessary to withstand winds greater than 70 knots.

7. Cantilever beam loading chart (Page 5-22)

The Cantilever Beam Load Charts show the limits in the drilling loads (hook, rotary, setback, and conductor tension). Any increase in drill package weight and centers of gravity specified in the basic weight will cause an equivalent decrease in the allowable drilling loads.

8. Changes to Lightweight (Page 5-23)

Changes to lightweight for the Coastal Driller which have taken place since the original inclining experiment (10/15/82) are shown in the formal record: Changes to Lightweight.

The weights and moments shown in the record will be treated as a variable load until a change to lightweight has been approved.

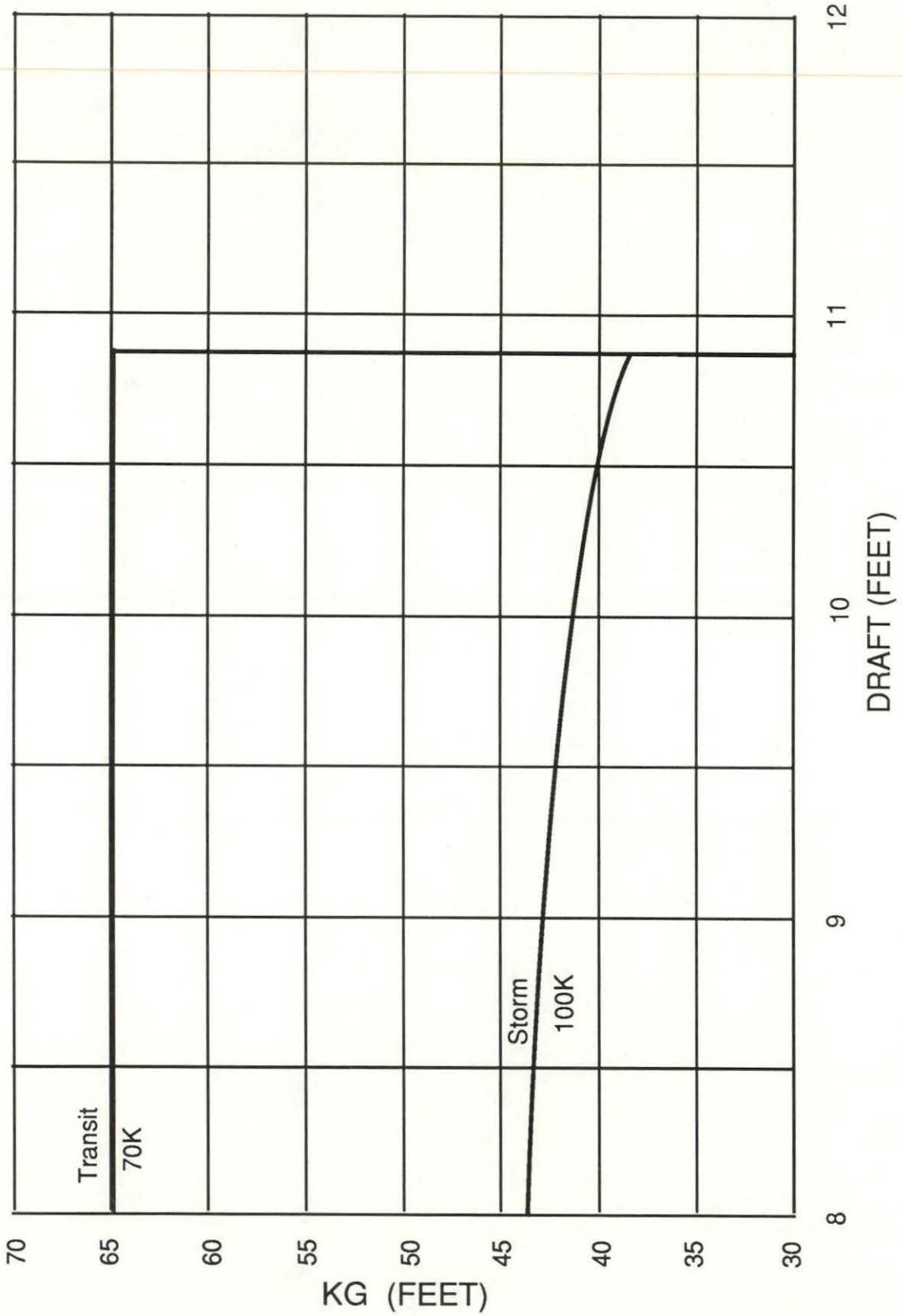
TABLE OF HYDROSTATIC PROPERTIES
COASTAL DRILLER

Draft ft-in	Displacement Kips	LCB ft	LCF ft	KML ft	KMT ft	KPI kips/in
7 0	9107.68	119.44	119.44	382.26	203.97	108.43
1	9216.11	119.44	119.44	377.85	201.65	108.43
2	9324.53	119.44	119.44	373.54	199.39	108.43
3	9432.96	119.44	119.44	369.33	197.18	108.43
4	9541.38	119.44	119.44	365.21	195.02	108.43
5	9649.81	119.44	119.44	361.19	192.91	108.43
6	9758.23	119.44	119.44	357.26	190.85	108.43
7	9866.66	119.44	119.44	353.42	188.84	108.43
8	9975.08	119.44	119.44	349.66	186.87	108.43
9	10083.51	119.44	119.44	345.98	184.94	108.43
10	10191.93	119.44	119.44	342.39	183.06	108.43
11	10300.36	119.44	119.44	338.86	181.21	108.43
8 0	10408.78	119.44	119.44	335.42	179.41	108.43
1	10517.21	119.44	119.44	332.04	177.64	108.43
2	10625.63	119.44	119.44	328.74	175.91	108.43
3	10734.06	119.44	119.44	325.50	174.22	108.43
4	10842.48	119.44	119.44	322.33	172.56	108.43
5	10950.91	119.44	119.44	319.22	170.93	108.43
6	11059.33	119.44	119.44	316.17	169.34	108.43
7	11167.76	119.44	119.44	313.19	167.78	108.43
8	11276.18	119.44	119.44	310.26	166.25	108.43
9	11384.61	119.44	119.44	307.38	164.75	108.43
10	11493.03	119.44	119.44	304.57	163.28	108.43
11	11601.46	119.44	119.44	301.80	161.83	108.43
9 0	11709.88	119.44	119.44	299.09	160.42	108.43
1	11818.31	119.44	119.44	296.43	159.03	108.43
2	11926.73	119.44	119.44	293.82	157.67	108.43
3	12035.16	119.44	119.44	291.26	156.33	108.43
4	12143.58	119.44	119.44	288.74	155.02	108.43
5	12252.01	119.44	119.44	286.27	153.73	108.43
6	12360.43	119.44	119.44	283.84	152.46	108.43
7	12468.86	119.44	119.44	281.45	151.22	108.43
8	12577.28	119.44	119.44	279.11	150.00	108.43
9	12685.71	119.44	119.44	276.81	148.80	108.43
10	12794.13	119.44	119.44	274.54	147.62	108.43
11	12902.56	119.44	119.44	272.32	146.46	108.43

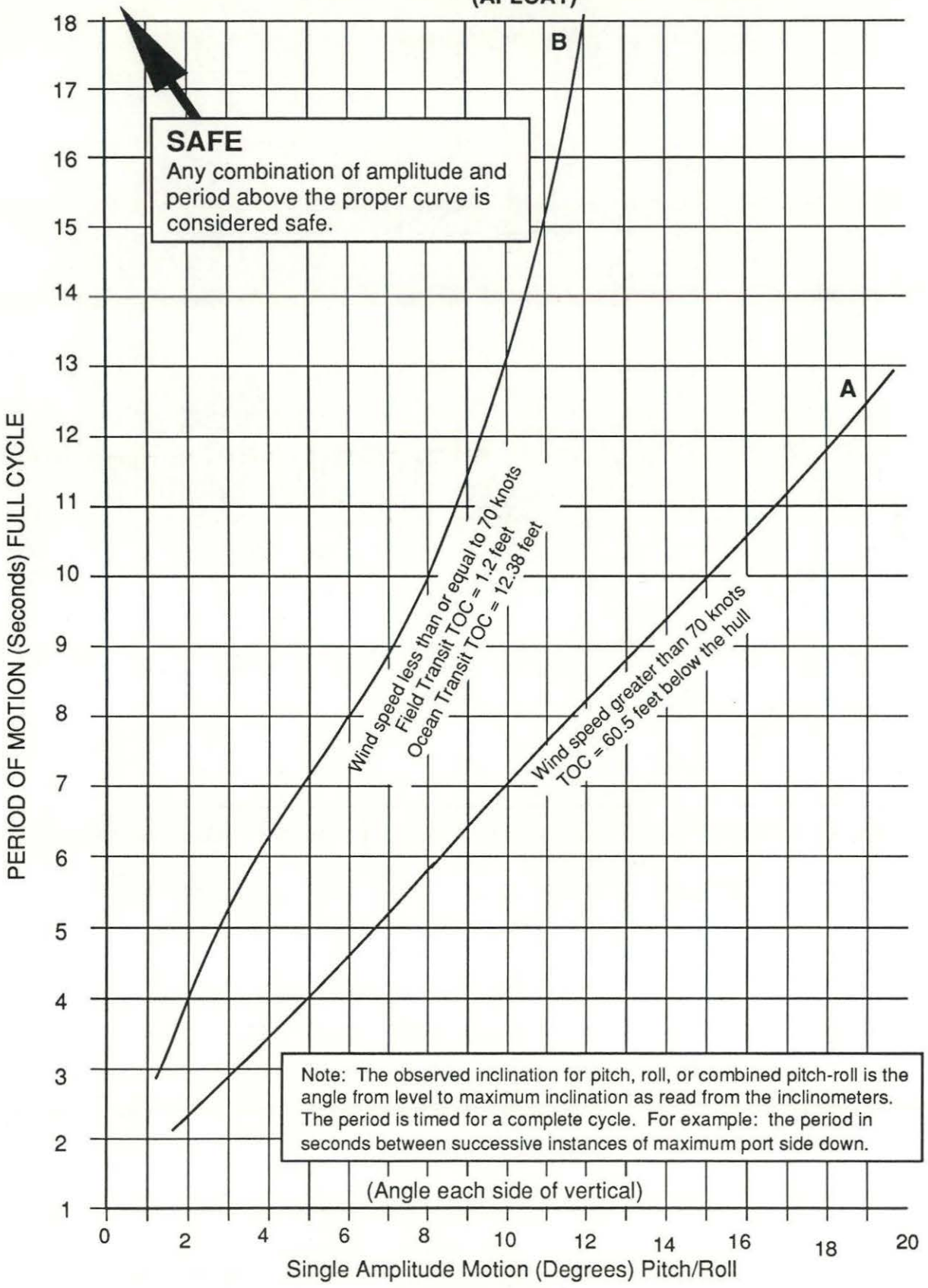
Continued on next page.

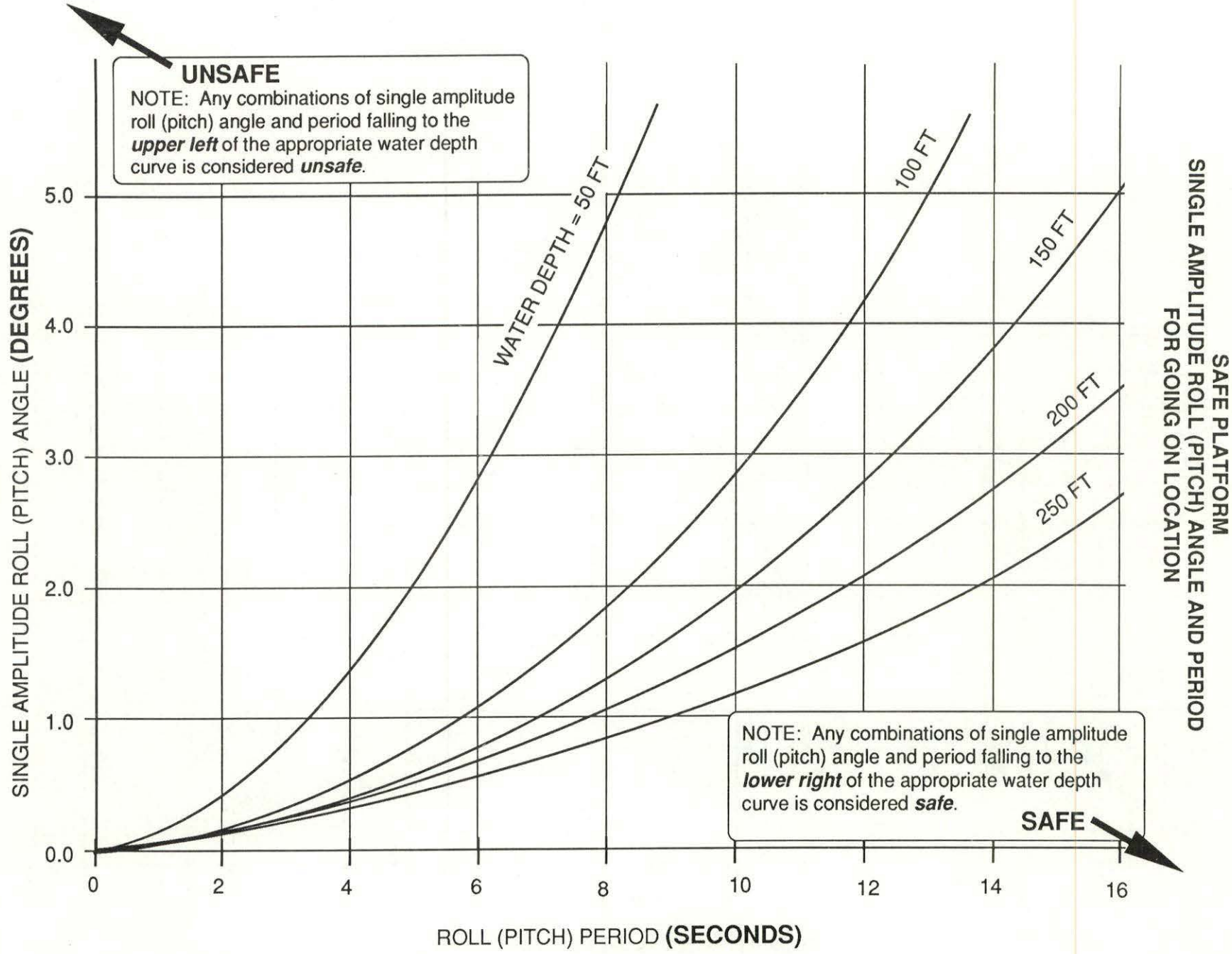
Draft ft-in	Displacement Kips	LCB ft	LCF ft	KML ft	KMT ft	KPI kips/in
10 0	13010.98	119.44	119.44	270.13	145.33	108.43
1	13119.41	119.44	119.44	267.98	144.21	108.43
2	13227.83	119.44	119.44	265.87	143.11	108.43
3	13336.26	119.44	119.44	263.79	142.03	108.43
4	13444.68	119.44	119.44	261.75	140.97	108.43
5	13553.11	119.44	119.44	259.74	139.92	108.43
6	13661.53	119.44	119.44	257.76	138.89	108.43
7	13769.96	119.44	119.44	255.81	137.88	108.43
8	13878.38	119.44	119.44	253.90	136.89	108.43
9	13986.81	119.44	119.44	252.01	135.91	108.43
10	14095.23	119.44	119.44	250.16	134.95	108.43
11	14203.66	119.44	119.44	248.33	134.00	108.43
11 0	14312.08	119.44	119.44	246.53	133.07	108.43
1	14420.51	119.44	119.44	244.76	132.15	108.43
2	14528.93	119.44	119.44	243.02	131.25	108.43
3	14637.36	119.44	119.44	241.30	130.36	108.43
4	14745.78	119.44	119.44	239.61	129.48	108.43
5	14854.21	119.44	119.44	237.94	128.62	108.43
6	14962.63	119.44	119.44	236.30	127.77	108.43
7	15071.06	119.44	119.44	234.68	126.94	108.43
8	15179.48	119.44	119.44	233.09	126.11	108.43
9	15287.91	119.44	119.44	231.52	125.30	108.43
10	15396.33	119.44	119.44	229.97	124.50	108.43
11	15504.76	119.44	119.44	228.45	123.72	108.43
12 0	15613.18	119.44	119.44	226.94	122.94	108.43

COASTAL DRILLER
MAXIMUM ALLOWABLE KG



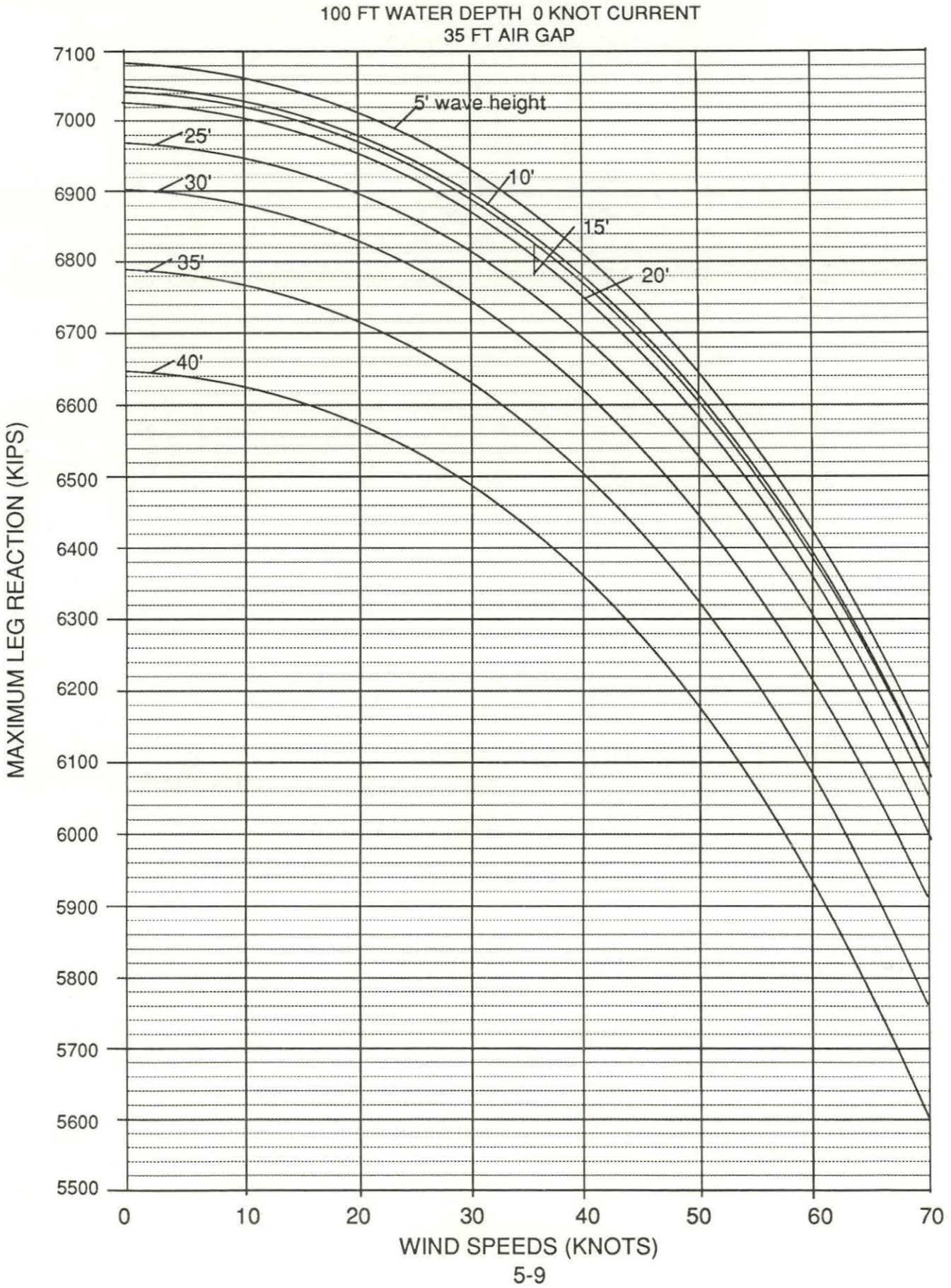
COASTAL DRILLER DESIGN LIMITS OF LEGS (AFLOAT)





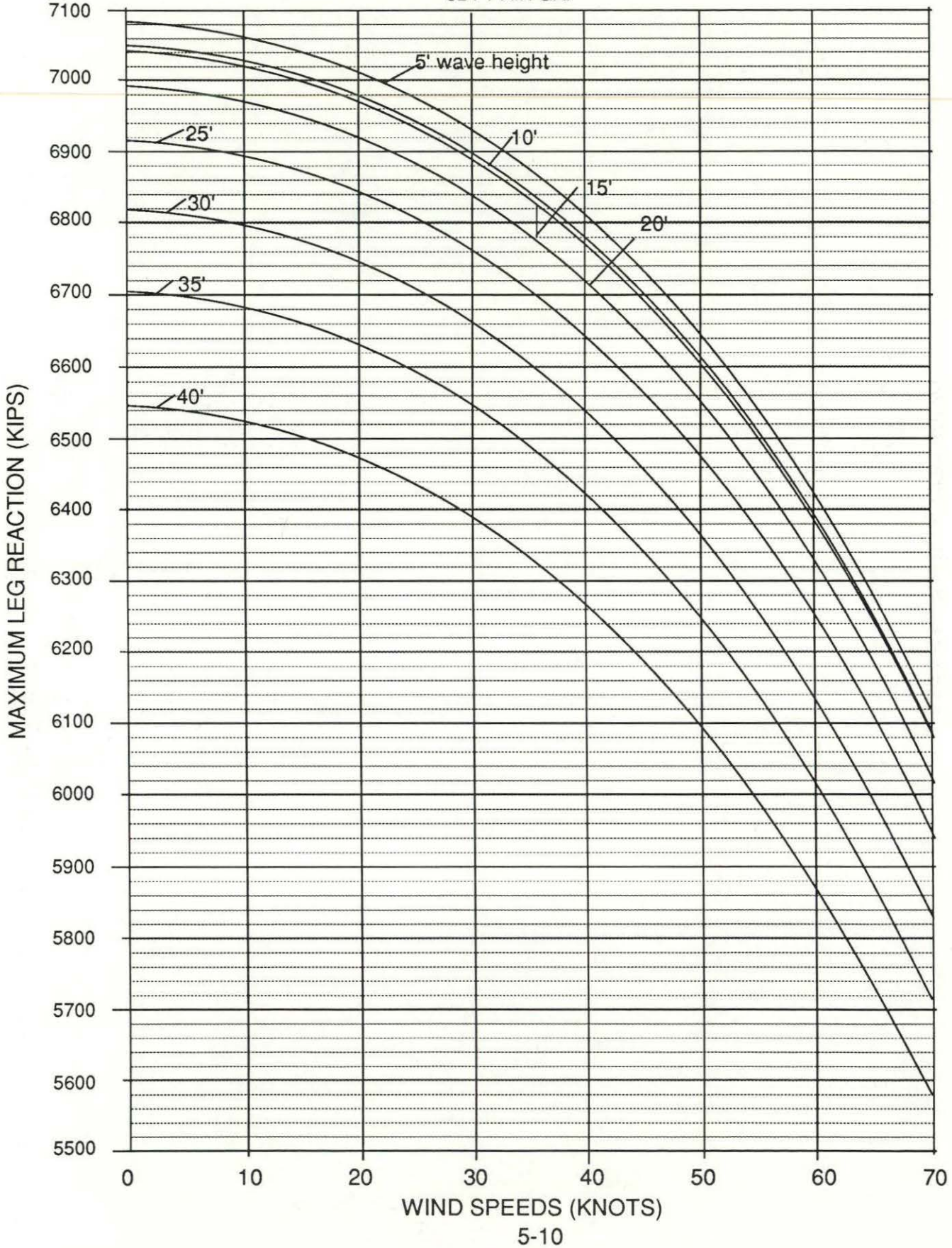
SAFE PLATFORM
SINGLE AMPLITUDE ROLL (PITCH) ANGLE AND PERIOD
FOR GOING ON LOCATION

ALLOWABLE WIND & WAVE DURING DRILLING



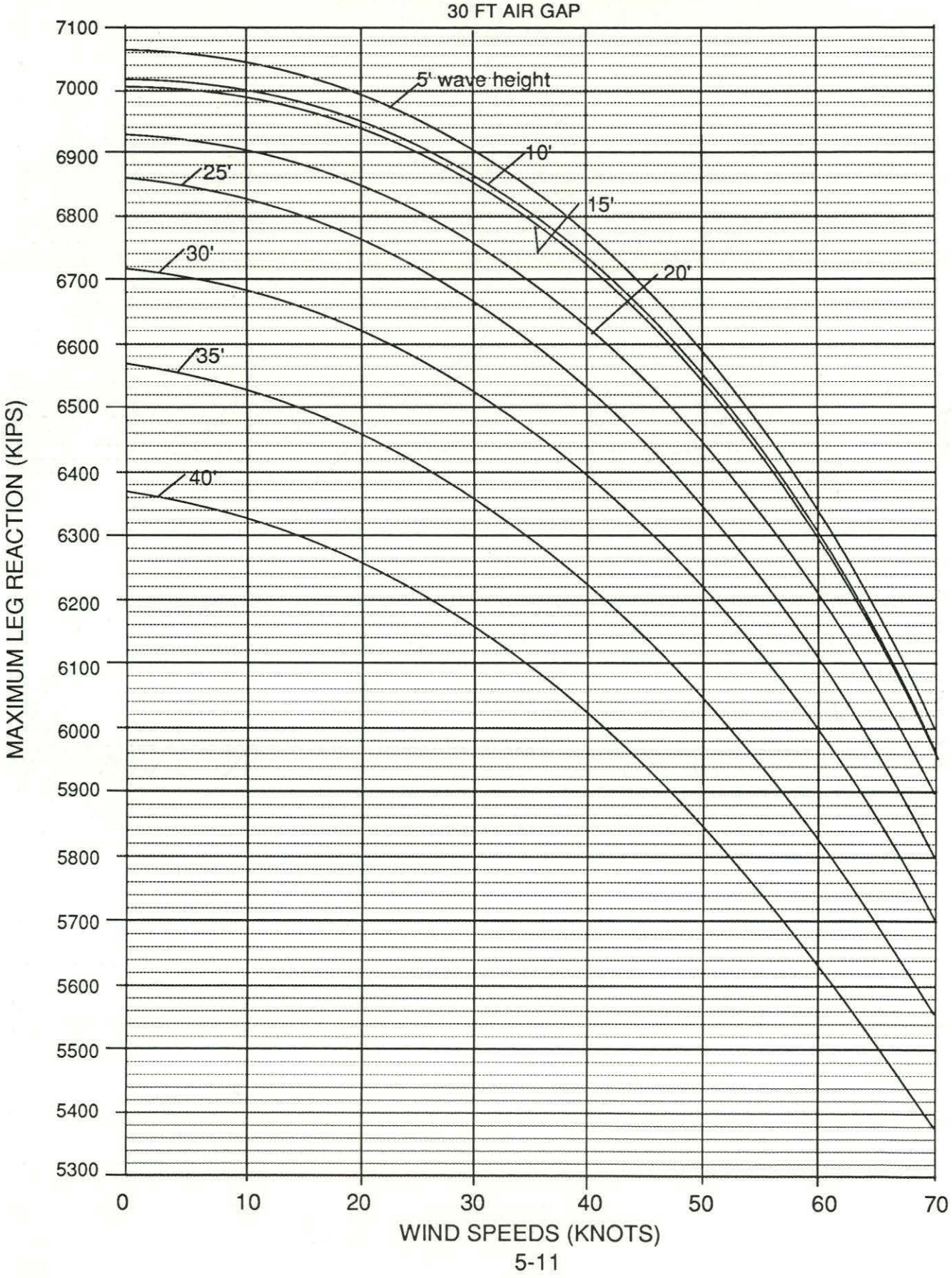
ALLOWABLE WIND & WAVE DURING DRILLING

150 FT WATER DEPTH 0 KNOT CURRENT
32 FT AIR GAP



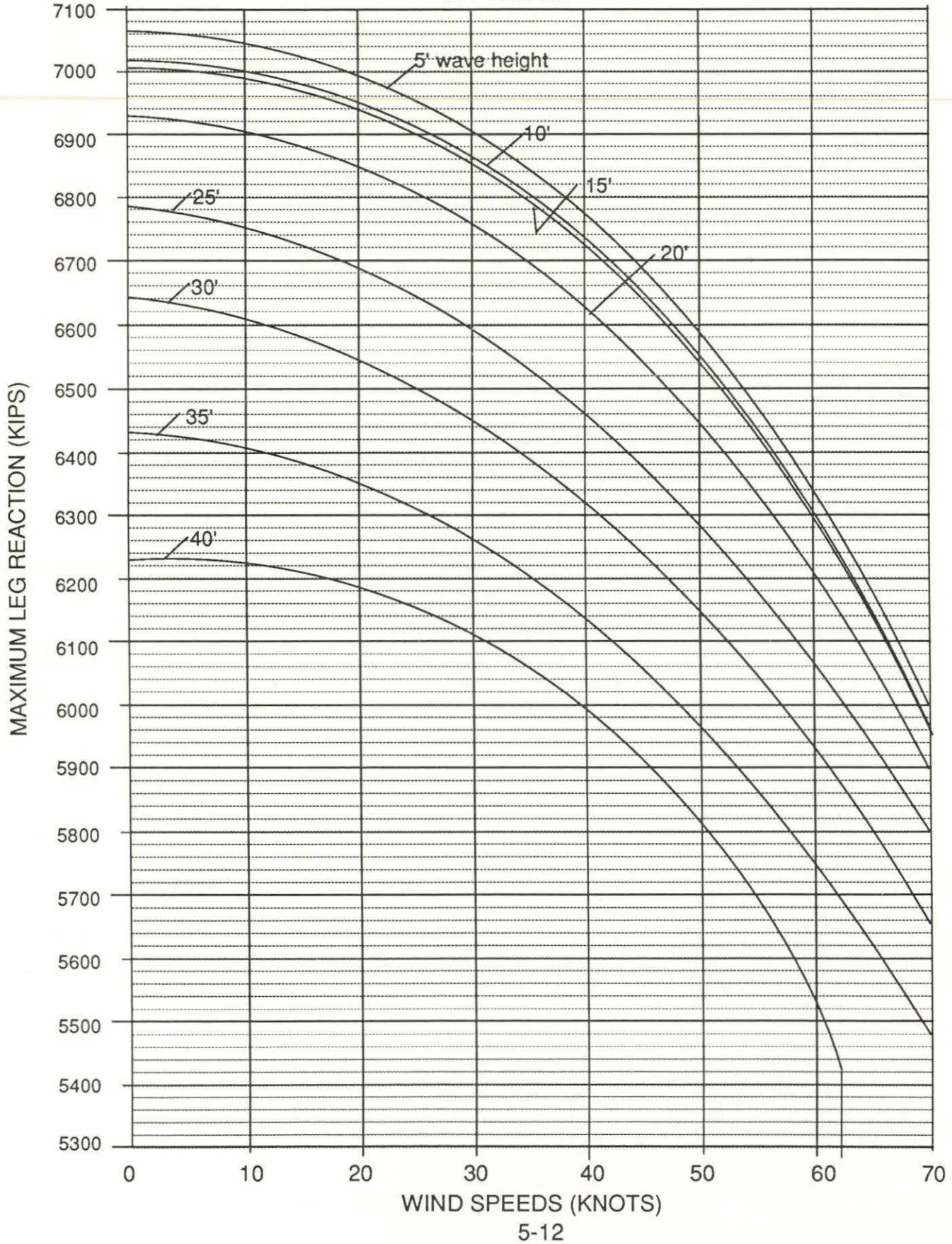
ALLOWABLE WIND & WAVE DURING DRILLING

200 FT WATER DEPTH 0 KNOT CURRENT
30 FT AIR GAP



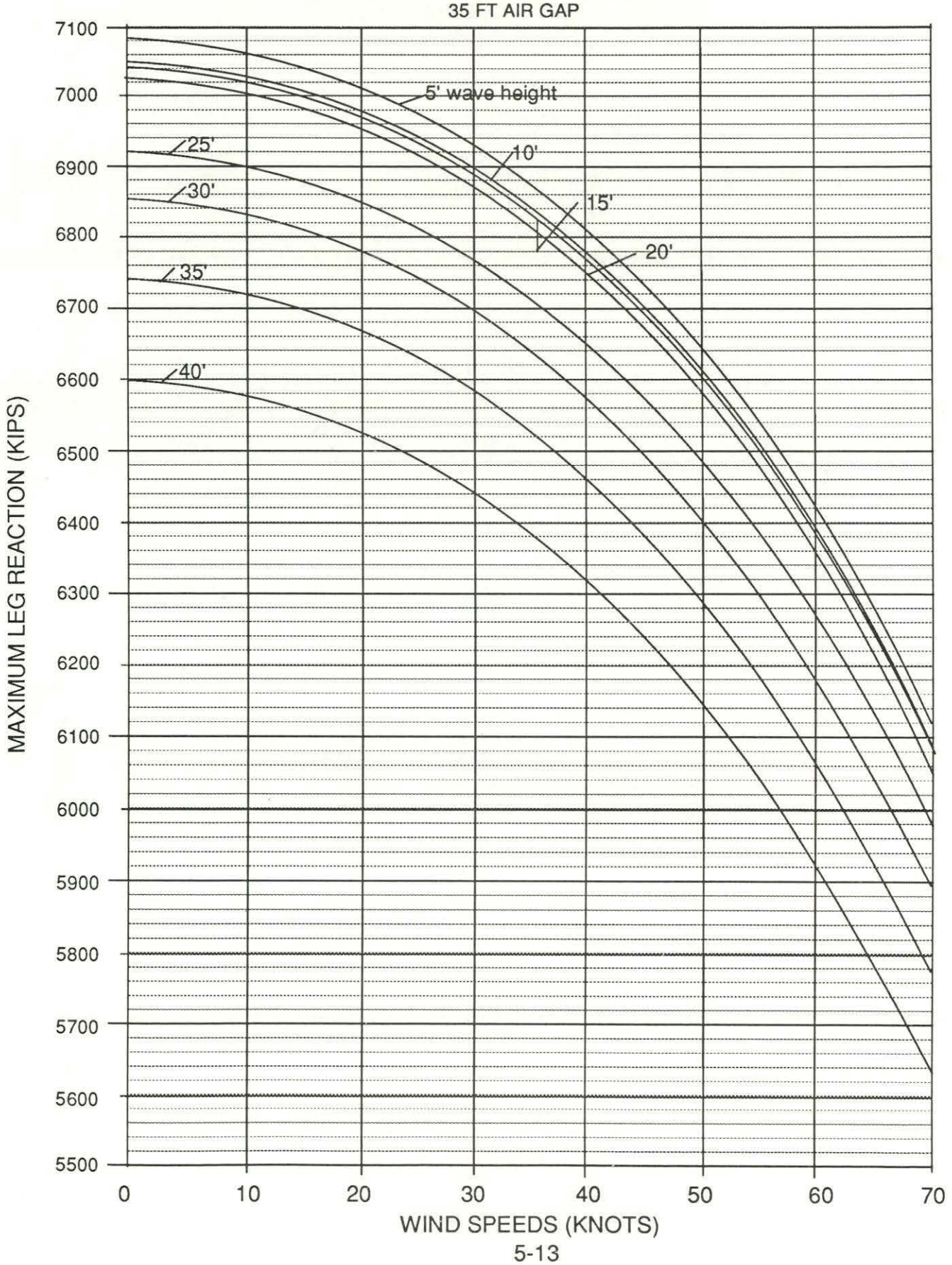
ALLOWABLE WIND & WAVE DURING DRILLING

250 FT WATER DEPTH 0 KNOT CURRENT
25 FT AIR GAP



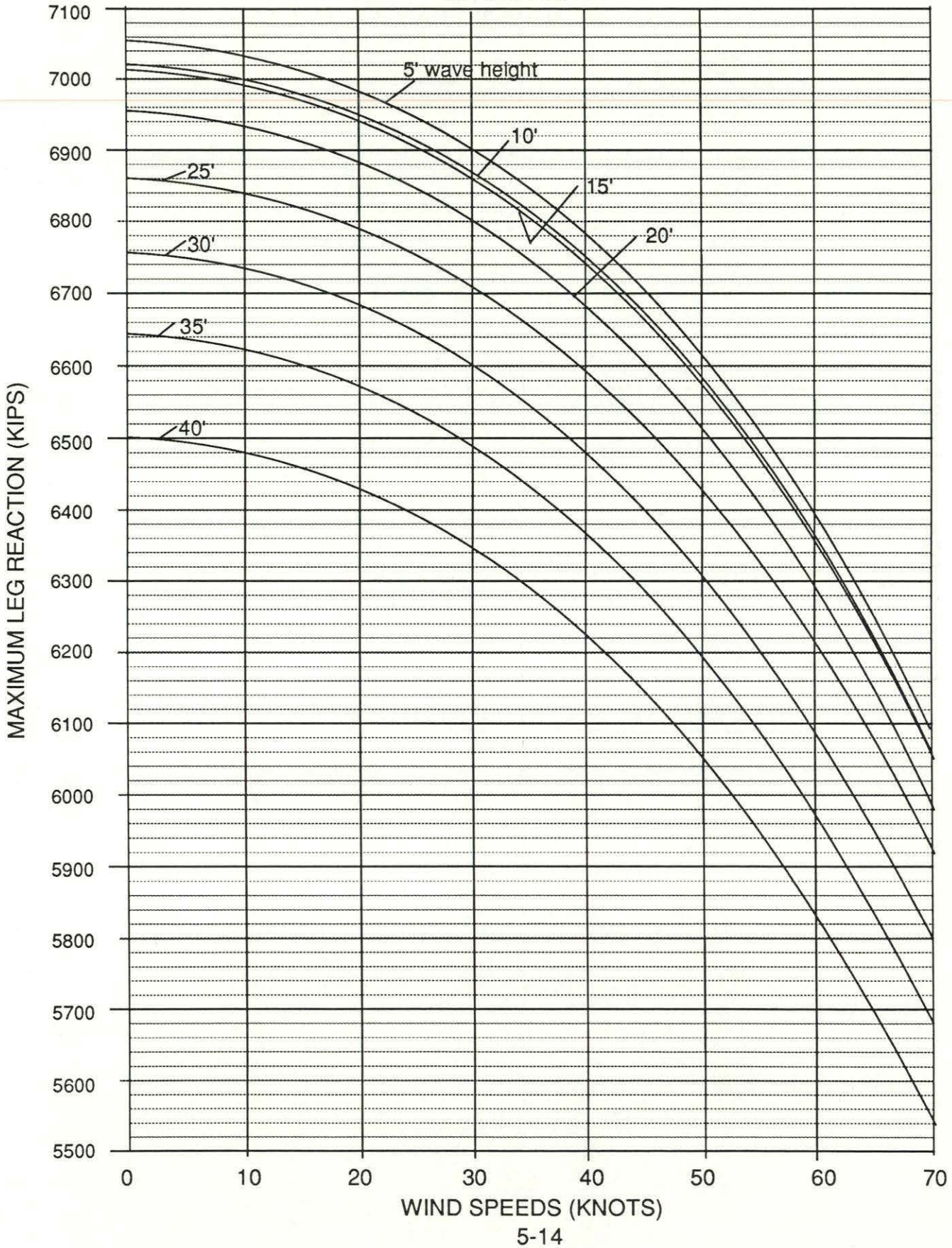
ALLOWABLE WIND & WAVE DURING DRILLING

100 FT WATER DEPTH 1 KNOT CURRENT
35 FT AIR GAP



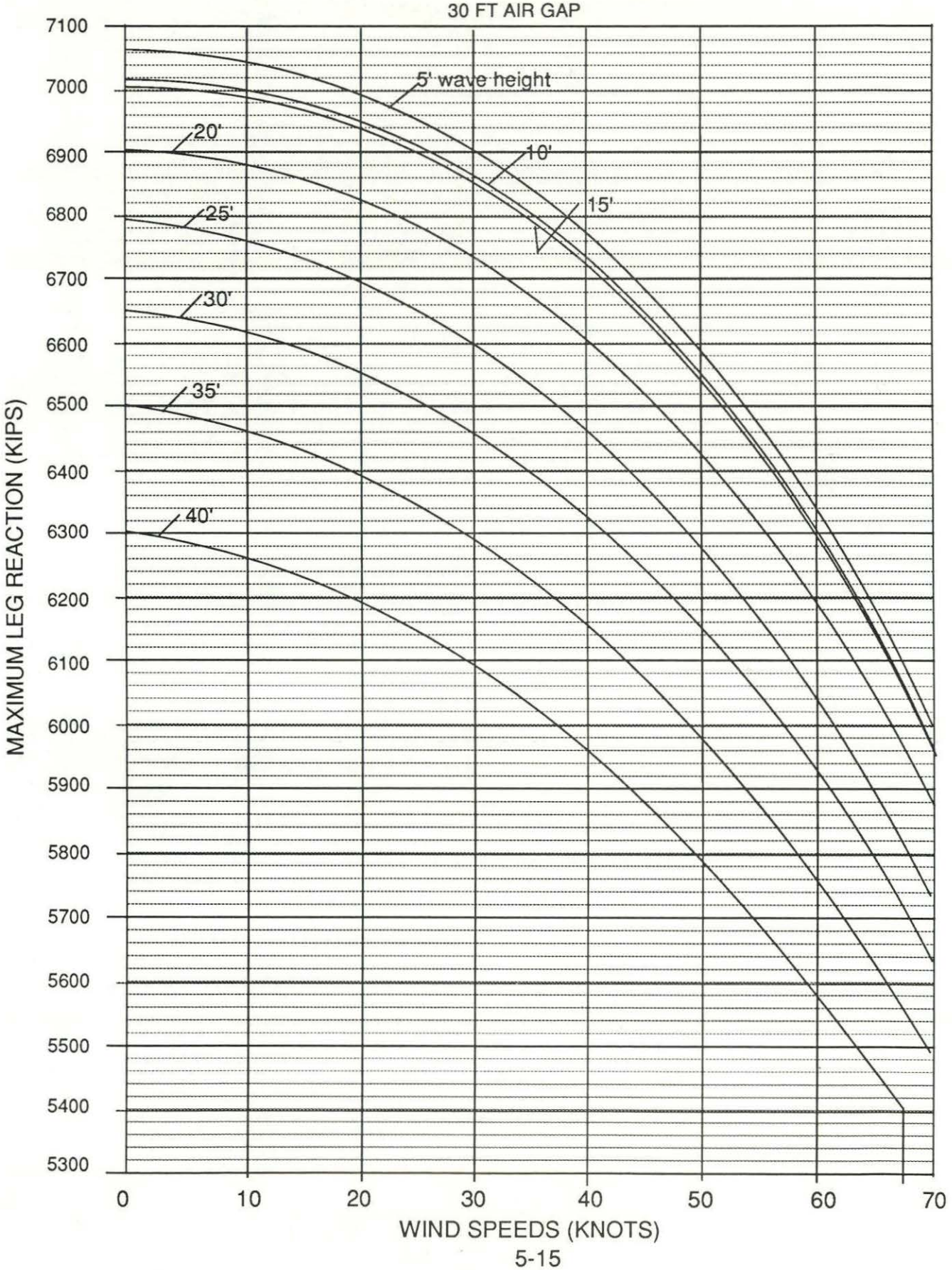
ALLOWABLE WIND & WAVE DURING DRILLING

150 FT WATER DEPTH 1 KNOT CURRENT
32 FT AIR GAP



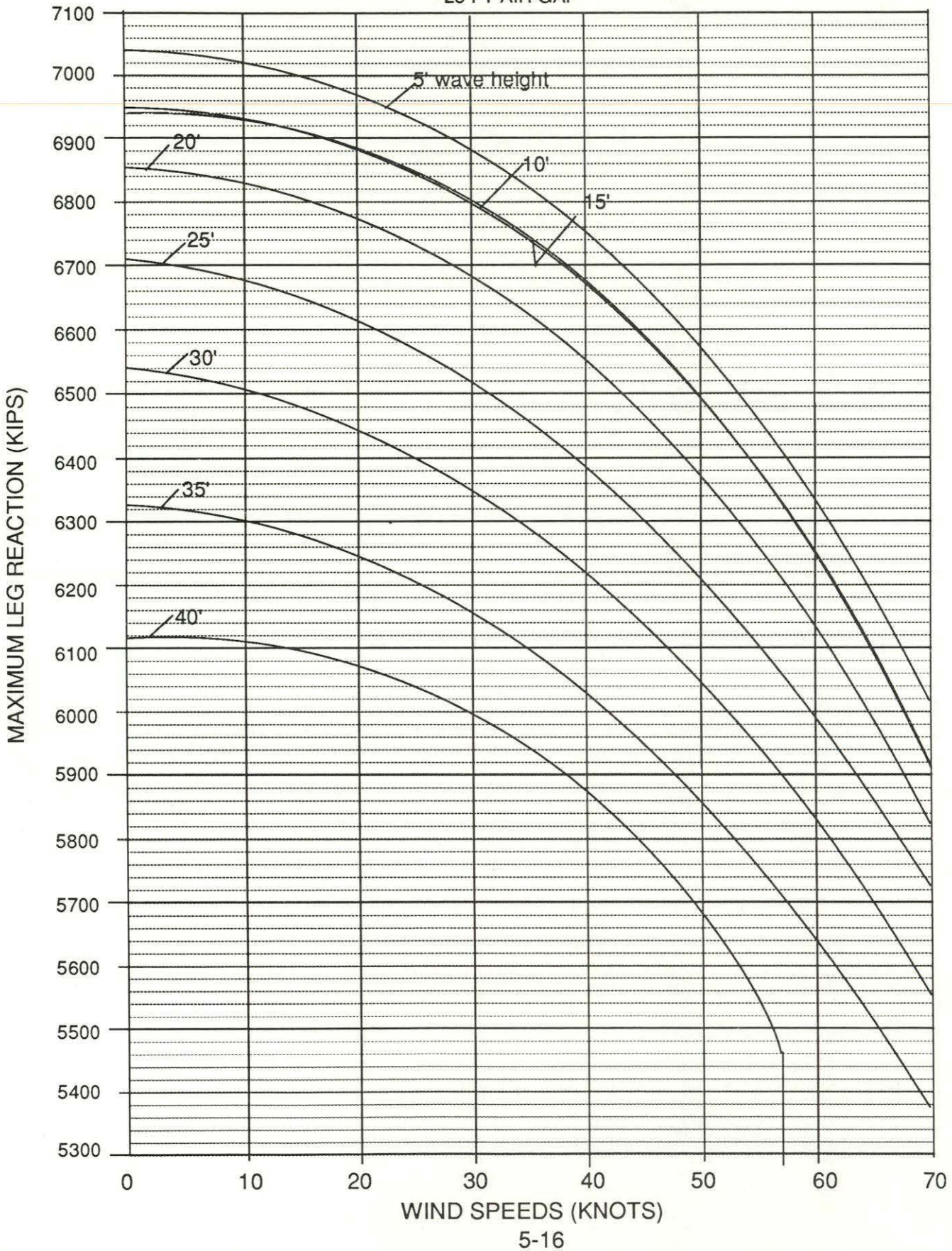
ALLOWABLE WIND & WAVE DURING DRILLING

200 FT WATER DEPTH 1 KNOT CURRENT
30 FT AIR GAP



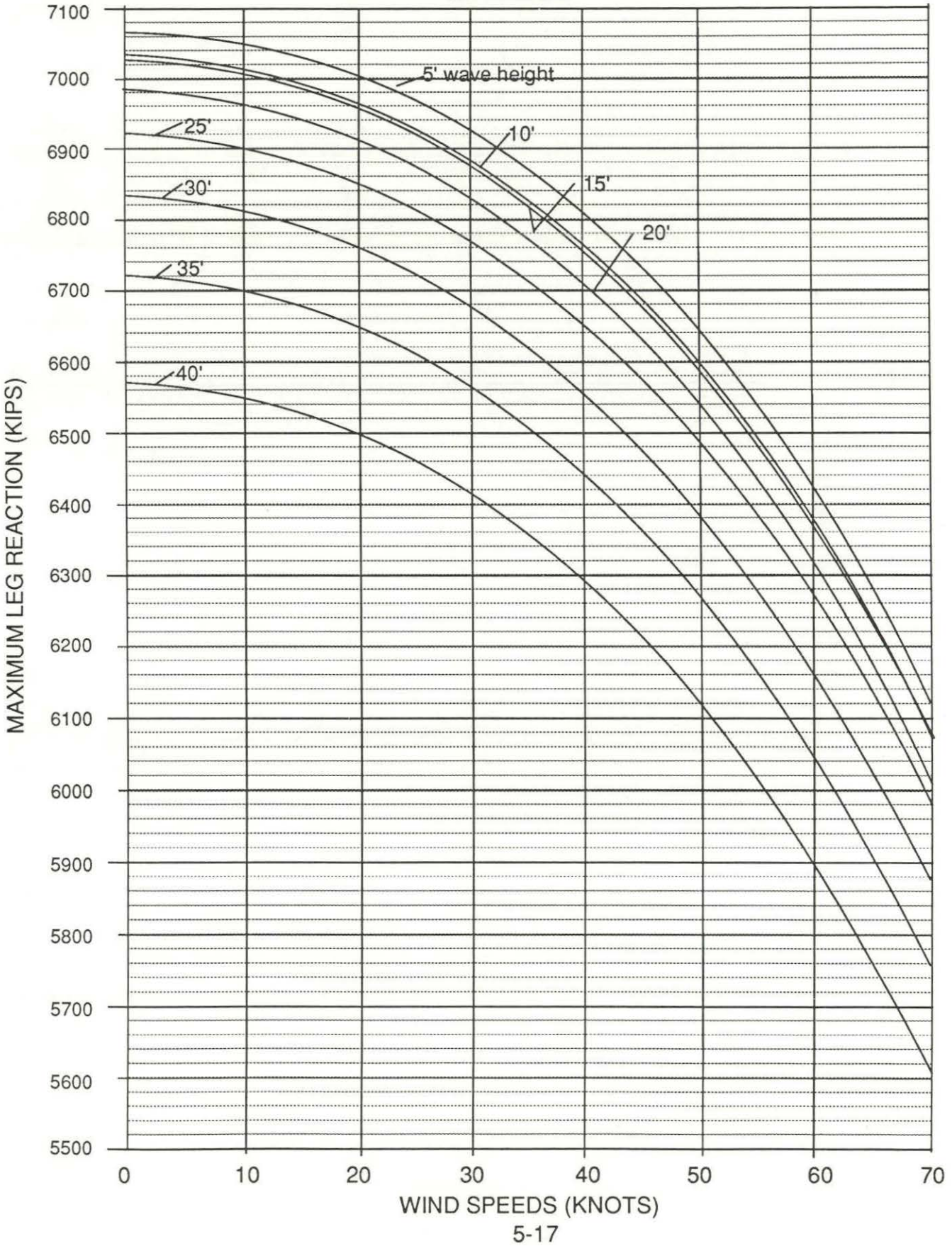
ALLOWABLE WIND & WAVE DURING DRILLING

250 FT WATER DEPTH 1 KNOT CURRENT
25 FT AIR GAP

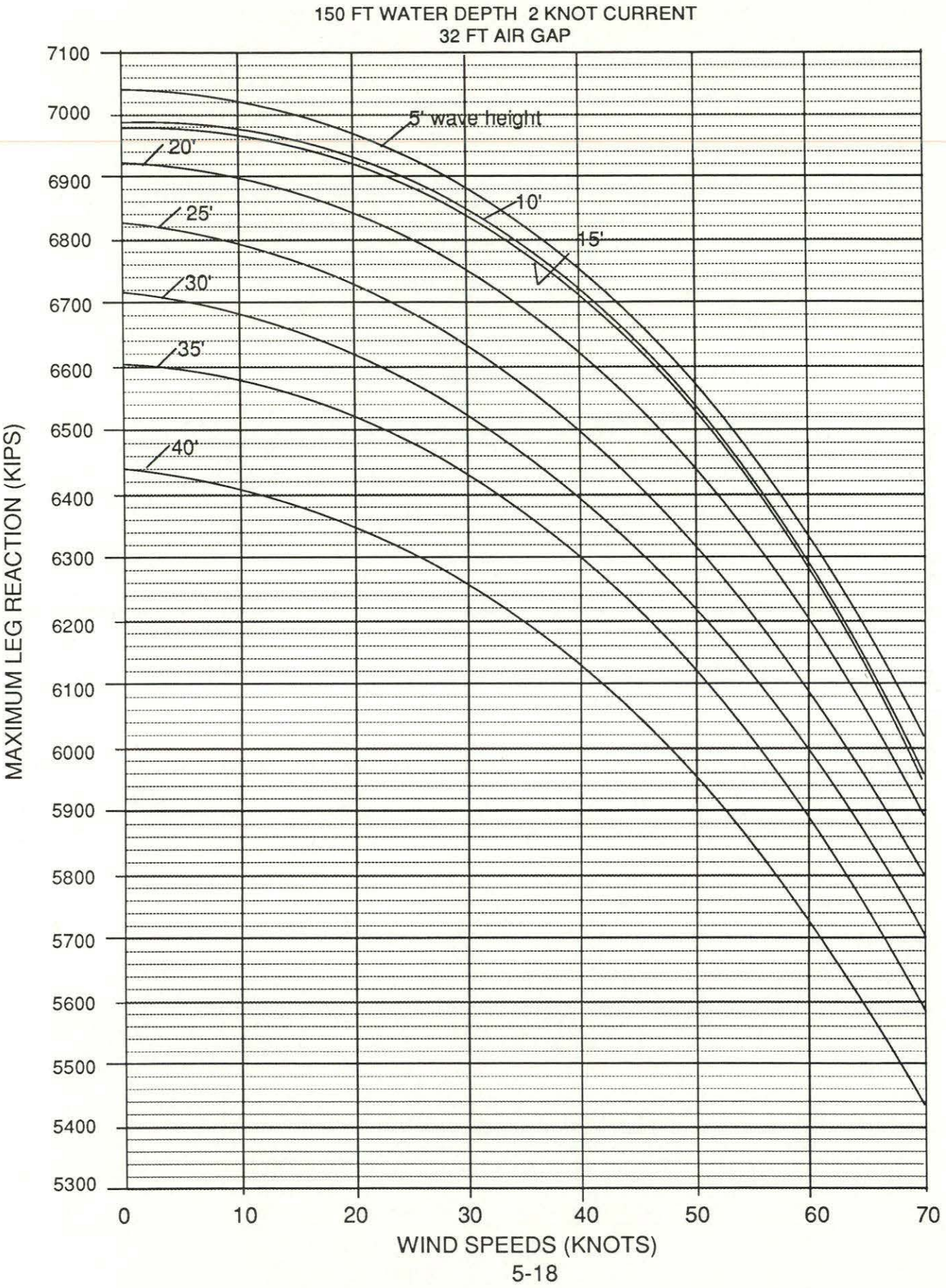


ALLOWABLE WIND & WAVE DURING DRILLING

100 FT WATER DEPTH 2 KNOT CURRENT
35 FT AIR GAP

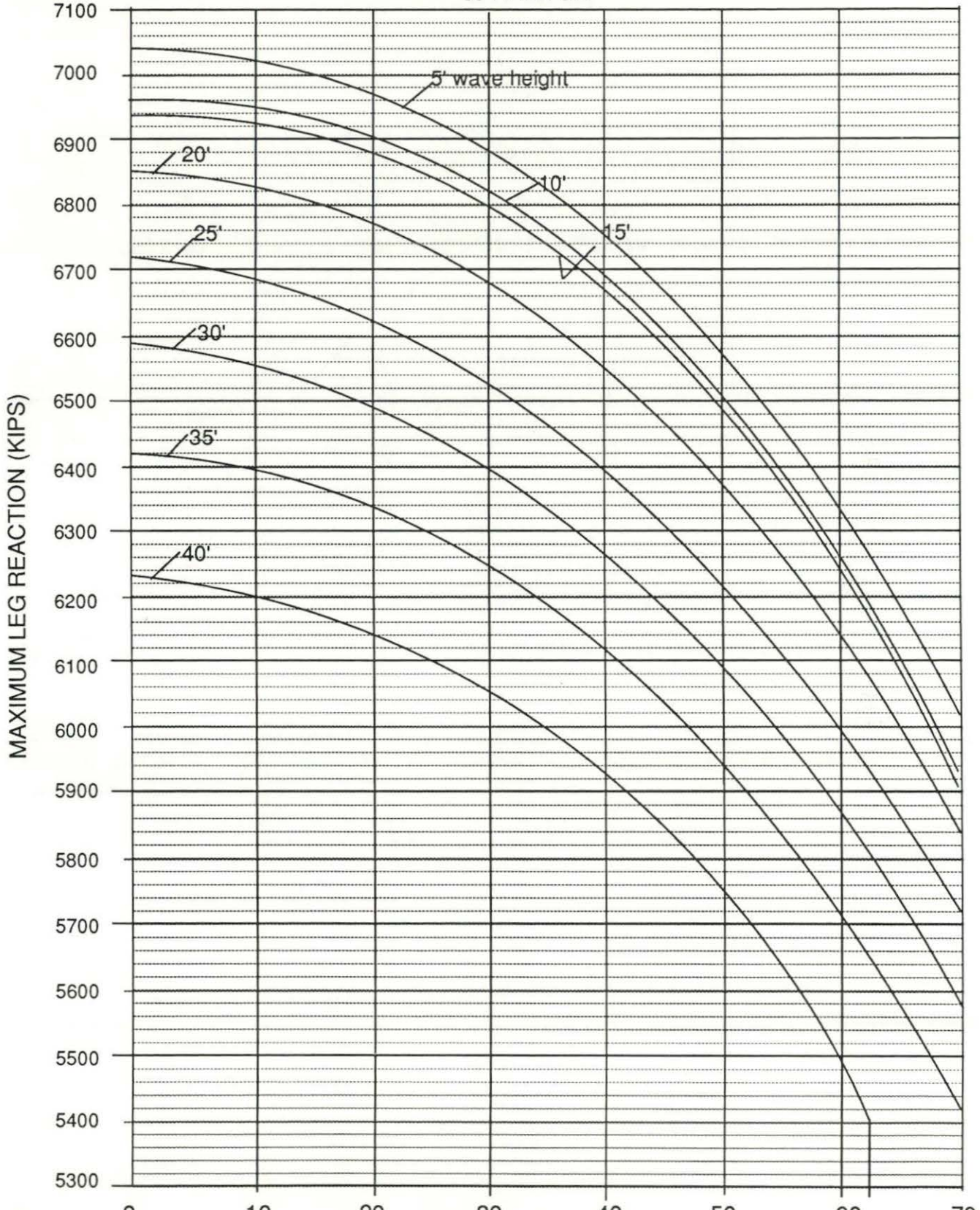


ALLOWABLE WIND & WAVE DURING DRILLING

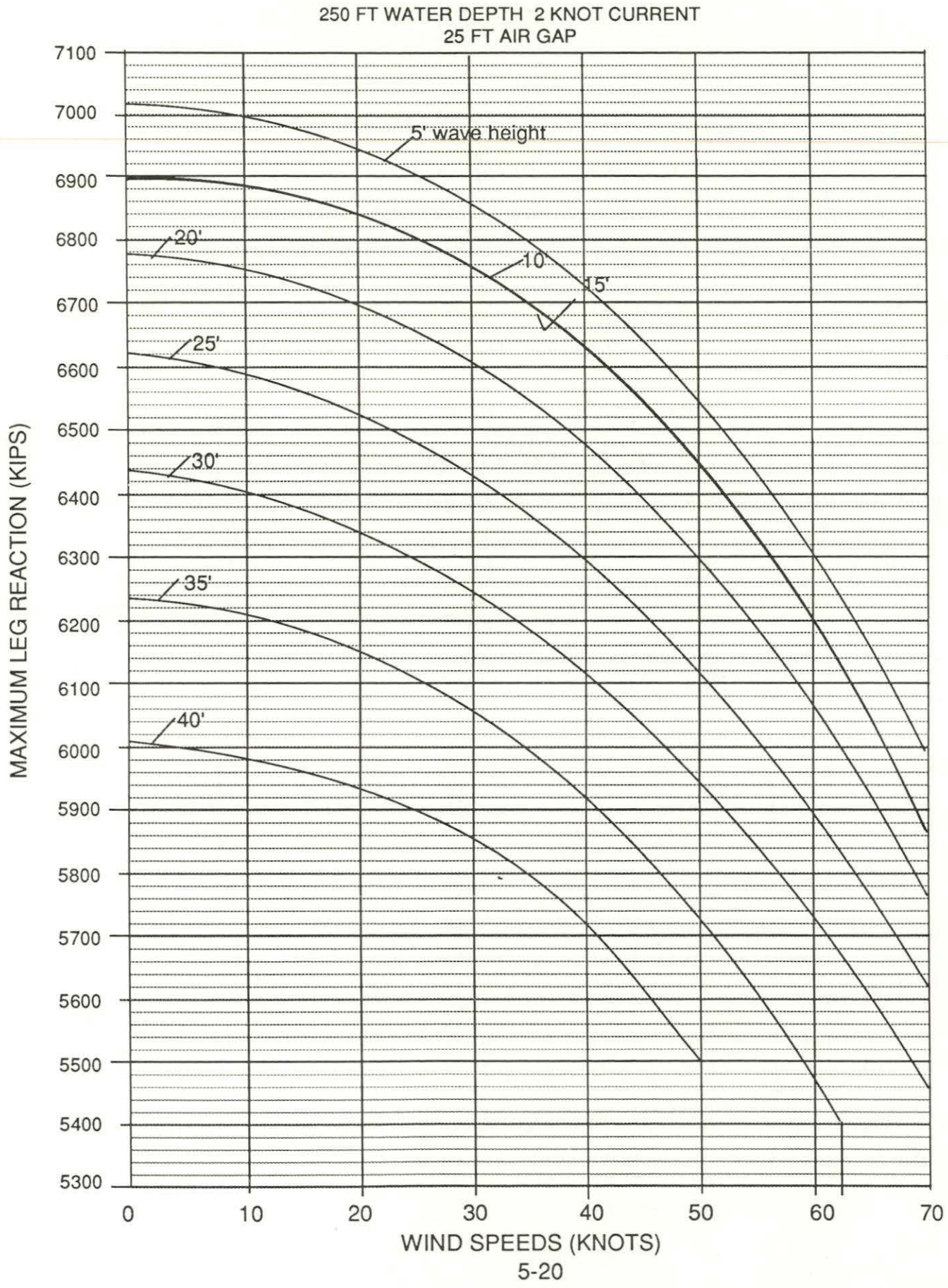


ALLOWABLE WIND & WAVE DURING DRILLING

200 FT WATER DEPTH 2 KNOT CURRENT
30 FT AIR GAP



ALLOWABLE WIND & WAVE DURING DRILLING



LIMITS OF SERVICE
Coastal Driller

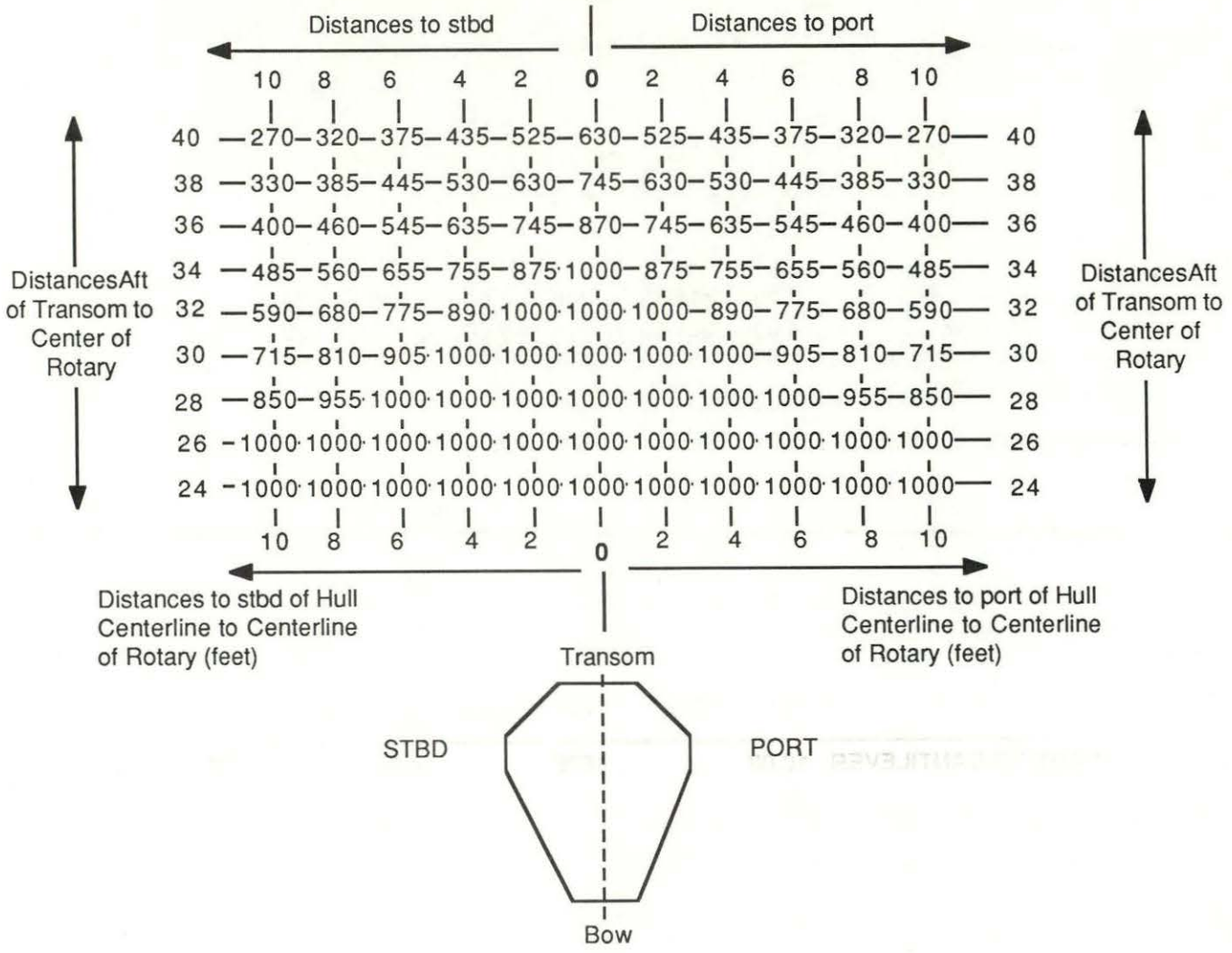
LIMITS OF SERVICE AFLOAT See page 2-6				
Condition	**Max Draft**	**Wind Speed**	**TOC**	**Max KG**
Normal	10.88	70	1.20	65.00
Ocean Tow	10.88	70	12.38	65.00
Storm	10.88	100	60.50	38.75

LIMITS OF SERVICE ELEVATED See page 3-10 **Wind velocity = 100 knots** **Wave period = 12 seconds**			
Water Depth (feet)	Air Gap (feet)	Wave Height (feet)	Surface Current (knots)
100	35	40	0
		37	1
		34	2
150	32	46	0
		43	1
		40	2
200	30	42	0
		39	1
		36	2
250	25	38	0
		34	1
		30	2

COASTAL DRILLER
CANTILEVER BEAM LOADING CHART

NOTE: Allowable drilling loads indicated are the sum of setback, hook and rotary loads in kips based on the drill package weight and center of gravity specified in the basic weight section of this operating manual.

THE VALUES BELOW MUST BE ADJUSTED FOR ANY CHANGES TO LIGHTWEIGHT



Within the limits above, the maximum component loadings are:

HOOK LOAD	1000 kips
ROTARY LOAD	750 kips
SETBACK	450 kips

COASTAL DRILLER - CHANGES TO LIGHTWEIGHT

	Weight kips	LCG ft	LM ftkips	TCG ft	TM ftkips	VCG ft	VM ftkips
Lightship (10/15/82)	11777.18		1420184		14037		611010
11/18/85							
Fuel Oil Day Tank (70% Full)	12.76	123.50	1576	-22.50	– 287	14.00	179
Lube Oil Day Tank (60% Full)	5.37	126.25	678	23.00	124	13.75	74
Mud Pump Lube Oil Tank (60% Full)	5.37	56.50	303	-27.00	– 145	13.00	70
2/1/87							
Grating in Bow Leg Well P&S	8.00	30.00	240	0.00	0	19.50	156
Grating in Stbd Leg Well - Aft	4.00	176.50	706	60.00	240	19.50	78
Grating in Stbd Leg Well - Outbd	4.00	154.00	616	72.00	288	19.50	78
Grating in Port Leg Well - Aft	4.00	176.50	706	–60.00	– 240	19.50	78
Add Extra Hold-Down Claw	4.00	201.00	804	0.00	0	21.25	85
Add Port Crane Control Platform	1.50	92.00	138	–60.00	– 90	35.00	53
Add Welder's Hut and Workbench	1.50	30.00	45	10.00	15	22.00	33
Add Desander Platform	4.00	190.00	760	60.00	240	26.50	106
Remove Trip Tank (To Cantilever)	– 8.00	185.00	-1480	0.00	0	23.00	-184
1/21/88							
Add Derrick Platform & Piping	26.01	189.00	4916	58.00	1509	27.74	722
Raise Shakers & Walkways	8.81	187.00	1647	39.00	344	28.87	254
Remove Desander Platform	-4.00	190.00	–760	60.00	– 240	26.50	-106
TOTAL CHANGES TO BASIC HULL	**77.32**		**10896**		**1757**		**1675**
Add Trip Tanks and Supports	10.00	160.00	1600	-19.00	-190	28.00	280
TOTAL CHANGES TO CANTILEVER	**10.00**		**1600**		**-190**		**280**
Add Water in Brake Cooling Tank	11.23	196.89	2211	-17.75	-199	35.61	400
TOTAL CHANGES IN DRILL FLOOR	**11.23**		**2211**		**-199**		**400**
TOTAL LIGHTSHIP CHANGES	**98.55**		**14707**		**1367**		**2355**

LEG REACTION CALCULATION FORM

Given: Weight = _____ kips
LCG = _____ ft AF0
TCG = _____ ft port/stbd from CL

$$\text{Bow Leg Reaction} = \frac{W\,(160 - LCG)}{121.67}$$

$$= \frac{\_\_\_\_\_\,(160 - \_\_\_\_\_)}{121.67}$$

$$= \_\_\_\_\_ \text{ kips}$$

$$\text{Starboard Leg Reaction} = \frac{W\,(60 + TCG) - (Bow \times 60)}{120}$$

$$= \frac{\_\_\_\_\_\,(60 + \_\_\_\_\_) - (\_\_\_\_\_ \times 60)}{120}$$

$$= \_\_\_\_\_ \text{ kips}$$

$$\text{Port Leg Reaction} = \frac{W\,(60 - TCG) - (Bow \times 60)}{120}$$

$$= \frac{\_\_\_\_\_\,(60 - \_\_\_\_\_) - (\_\_\_\_\_ \times 60)}{120}$$

$$= \_\_\_\_\_ \text{ kips}$$

PRELOAD CALCULATION SHEET
Coastal Driller

		Weight		LM
Preloaded		21,297.0		2,543,946
Core Tanks	–	4,991.5	–	616,946
Displacement	–	_____	–	_____
Need		_____		_____

Wt Fwd = $\frac{(188.82 \times \text{Wt Needed} - \text{LM Needed})}{159.95}$

= $\frac{(188.82 \times \_\_\_\_\_ - \_\_\_\_\_)}{159.95}$

= _____ kips

Wt Aft = Wt Needed – Wt Fwd

= _____ – _____

= _____ kips

Tank 2	Weight	=	0.5 x Wt Fwd	= _____	kips
	Sounding	=	Weight/49.596	= _____	ft
Tank 3	Weight	=	0.5 x Wt Fwd	= _____	kips
	Sounding	=	Weight/50.356	= _____	ft
Tank 28	Weight	=	0.5 x Wt Aft + 29	= _____	kips
	Sounding	=	Weight/42.554	= _____	ft
Tank 29	Weight	=	0.5 x Wt Aft - 29	= _____	kips
	Sounding	=	Weight/43.314	= _____	ft

Figure 1
Side View - Coastal Driller

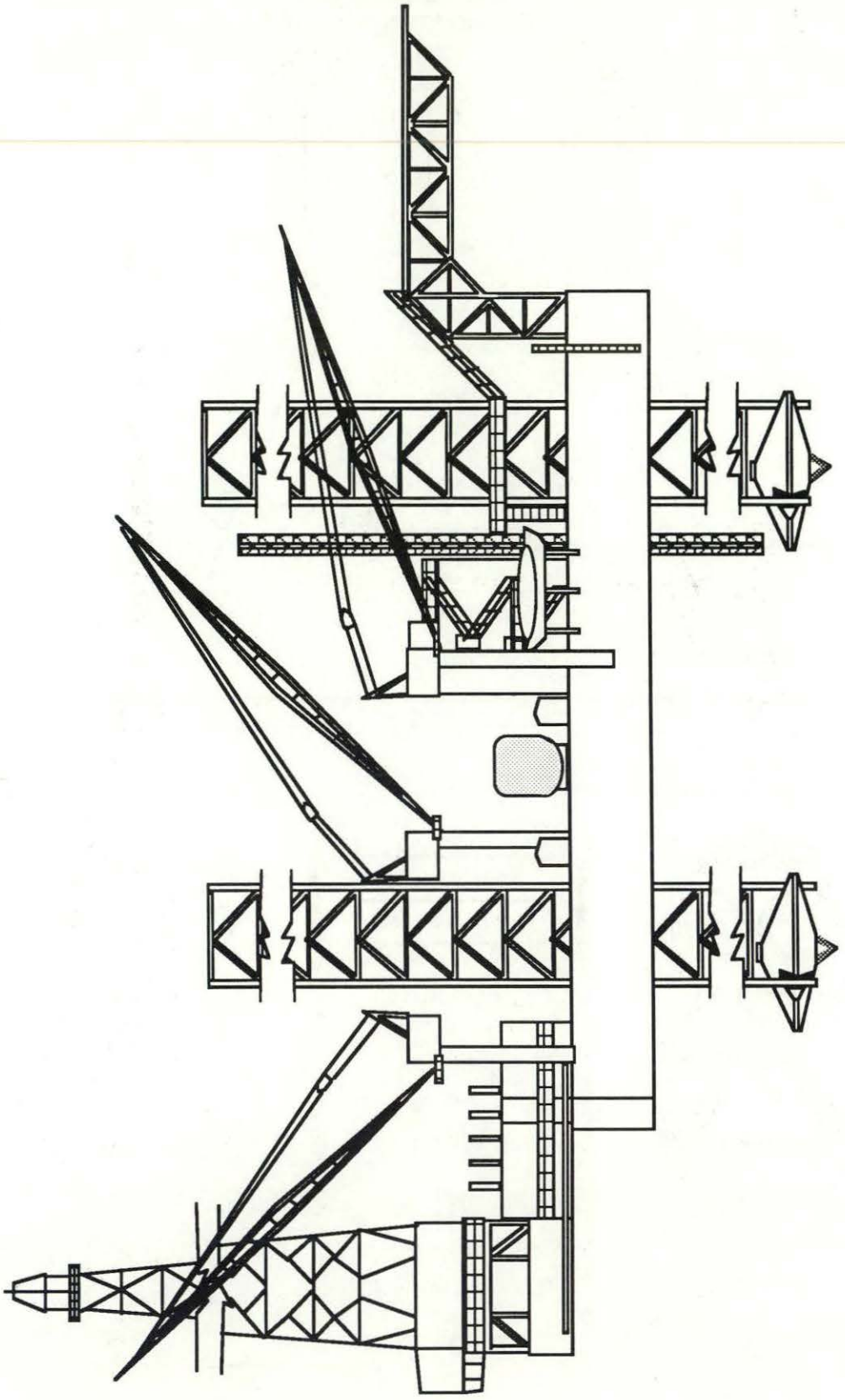


Figure 2
Main Deck - Coastal Driller

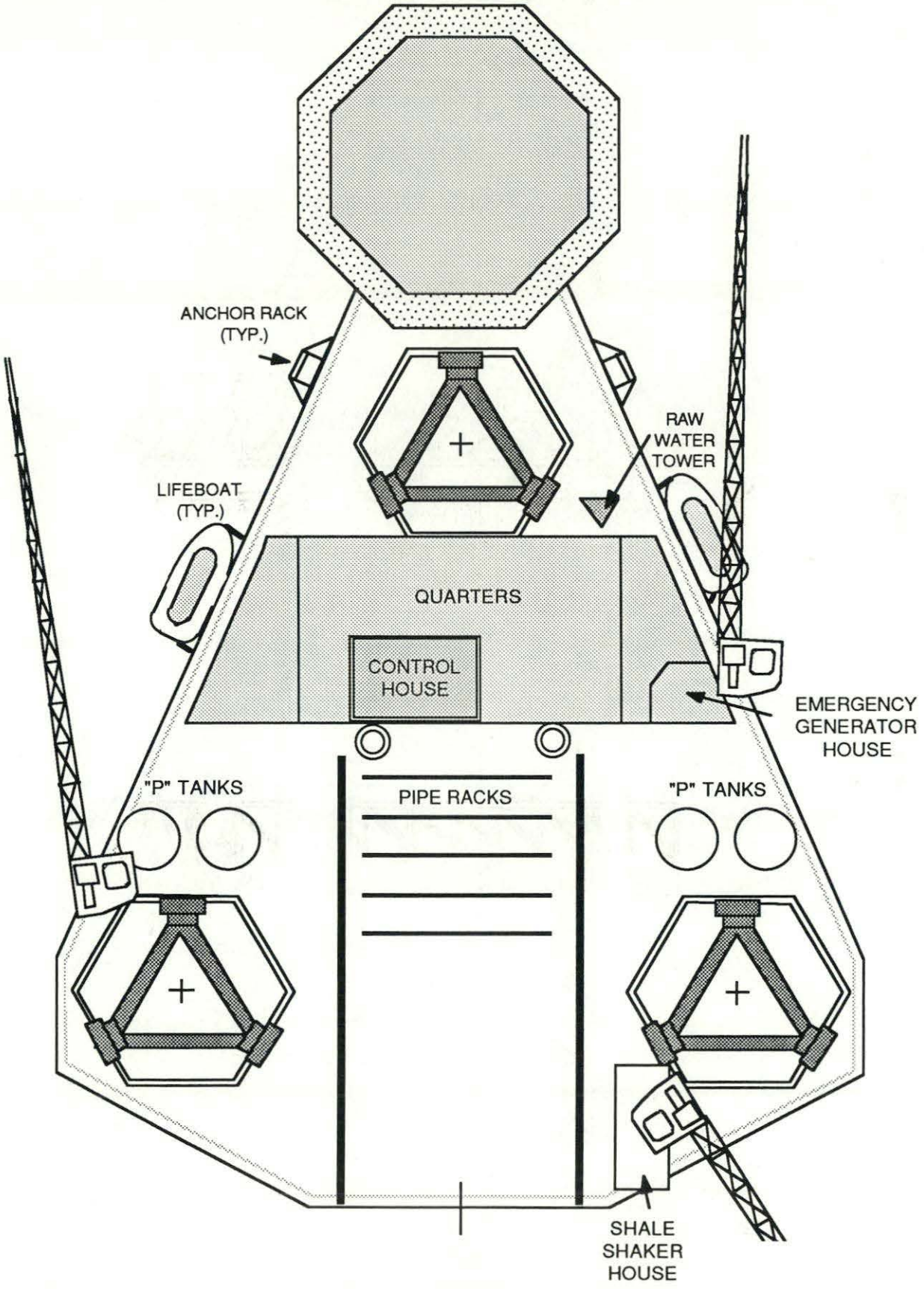


Figure 3
INNER BOTTOM TANK LAYOUT
BILGE SUCTION PIPING

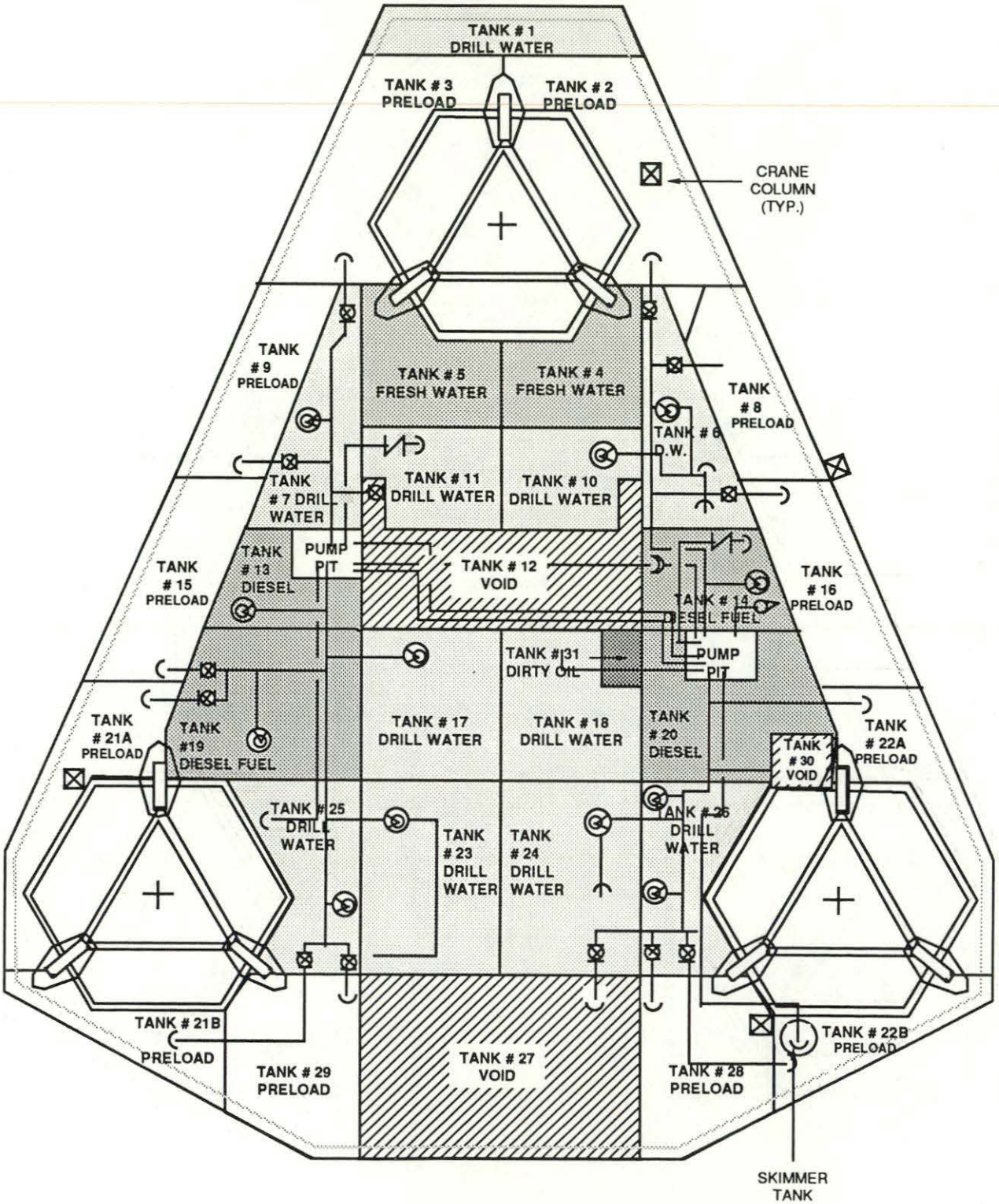
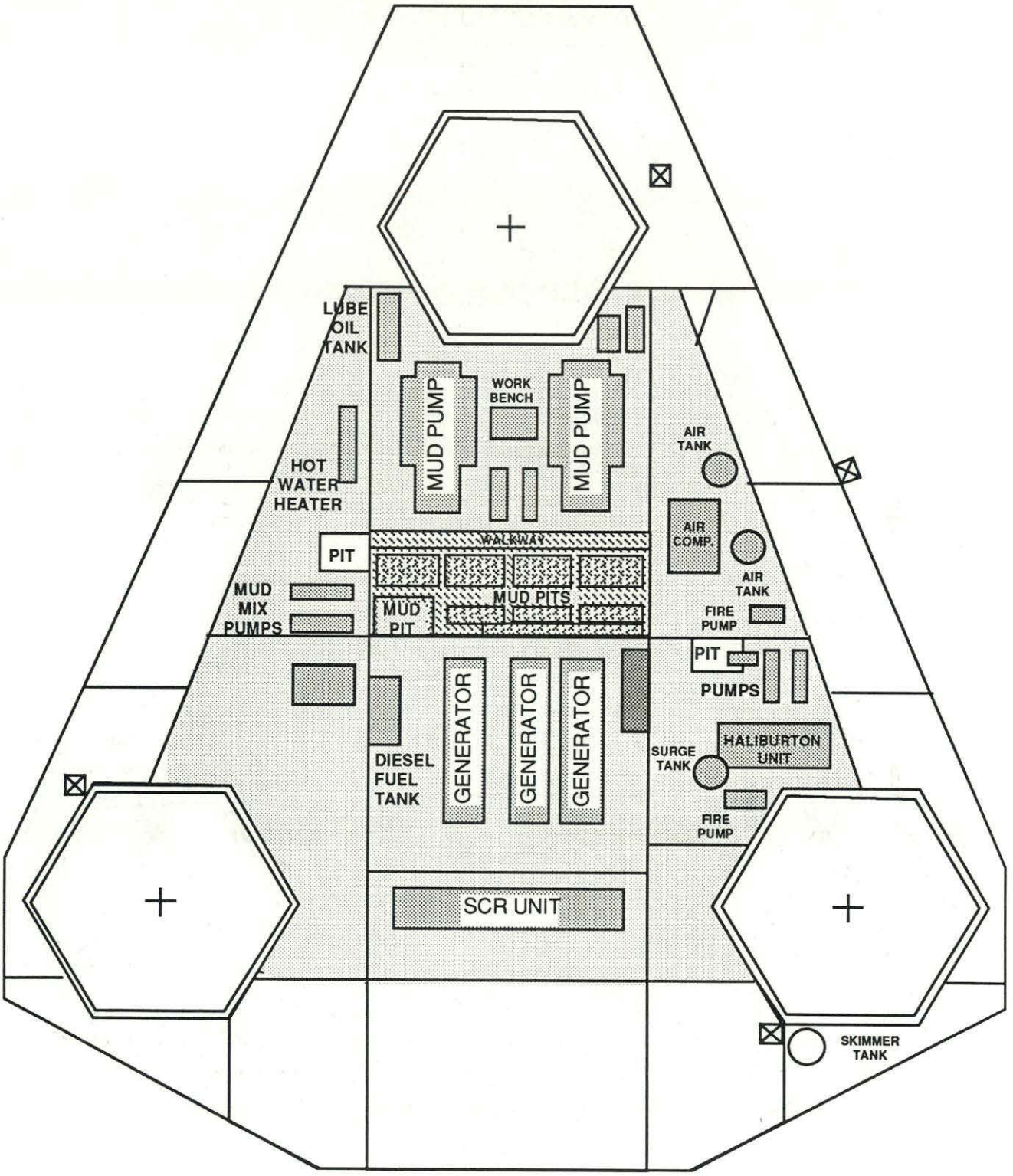


Figure 4
MACHINERY DECK LAYOUT



CHAPTER 6 - TANK CAPACITY TABLES

Tanks which are part of the hull are provided for storage of preload, potable water, drill water, and fuel oil. Active mud pits are also part of the hull. P-tanks are provided on the main deck for bulk mud and cement and are part of the fixed weight. Refer to the following tank tables for weight capacities, center of gravity locations, and free surface moments.

1. Densities used:

Drill water	62.40 lbs/cuft
Potable water	62.40 lbs/cuft
Sea water	64.00 lbs/cuft
Fuel oil	54.00 lbs/cuft
Lube oil	54.00 lbs/cuft
Drilling mud	100.00 lbs/cuft (Approx. 13.4 lbs/gal mud)

2. Free surface moments shown in the tank tables were calculated using the following formulas:

$$FSML = \frac{L^3 B}{12000} \times p_T$$

$$FSMT = \frac{L B^3}{12000} \times p_T$$

where p_T is the density of the liquid in the tank. See Section 1, above.

3. Reference axis and signs

LCG: (+) Aft of the bow

TCG: (+) Starboard of hull centerline (-) Port of hull centerline

VCG: (+) Above hull baseline (keel)

4. Weight of mud to be added to the load form:

The weight in kips in each of the mud pits shown in the mud pit tables is based on a mud density of 100.00 lbs per cubic feet. This equates to a mud weight of 13.368 lbs per gallon. The kips may be adjusted for the actual mud weight used using the following equation:

$$\text{Actual Weight in kips} = \frac{\text{Weight from table x Actual mud weight}}{13.368}$$

Example: Compute the actual weight in mud pit 1S for a sounding level of 5.0 feet and an actual mud weight of 17.0 lbs per gallon.

Solution: The mud pit 1S table shows a weight of 115.83 kips for a sounding of 5.0 feet. The weight is adjusted as follows:

$$\text{Actual Weight} = \frac{17.0}{13.368} \times 115.83 = 147.30 \text{ kips}$$

TANK CAPACITY TABLES

4. Tank Tables Summary:

Tank #	Liquid Content	Depth feet	Volume cuft	Barrels bbls	Weight kips	LCG ft	TCG ft	VCG ft
1	Drill water	20.00	8029.81	1430.11	501.06	4.63	0.00	10.00
2	Preload	20.00	15498.58	2760.30	991.91	28.89	23.28	10.00
3	Preload	20.00	15726.22	2802.62	1007.12	28.85	- 23.35	10.00
4	Potable water	5.00	2760.14	491.58	172.23	65.35	14.22	2.50
5	Potable water	5.00	2760.14	491.58	172.23	65.35	- 14.22	2.50
6	Drill water	5.00	2677.64	476.89	167.08	78.30	33.51	2.50
7	Drill water	5.00	2677.64	476.89	167.08	78.30	- 33.51	2.50
8	Preload	20.00	9078.87	1616.95	581.05	69.17	44.46	10.00
9	Preload	20.00	9696.09	1726.87	620.55	68.17	- 43.71	10.00
10	Drill water	5.00	2095.20	373.16	130.74	85.30	12.08	2.50
11	Drill water	5.00	2095.20	373.16	130.74	85.30	- 12.08	2.50
13	Diesel fuel	5.00	1669.17	297.28	89.30	105.94	- 41.41	2.50
14	Diesel fuel	5.00	2280.27	406.12	121.99	104.12	39.16	2.50
15	Preload	20.00	9973.14	1776.22	638.28	103.66	- 59.26	10.00
16	Preload	20.00	9973.14	1776.22	638.28	103.66	59.26	10.00
17	Drill water	5.00	3404.70	606.38	212.45	126.16	- 13.00	2.50
18	Drill water	5.00	3142.80	559.73	196.11	126.91	12.17	2.50
19	Diesel fuel	5.00	4366.31	777.64	233.60	126.37	- 42.69	2.50
20	Diesel fuel	5.00	3242.75	577.53	173.49	126.71	41.20	2.50
21A	Preload	20.00	11043.73	1966.89	706.80	141.75	- 74.35	10.00
21B	Preload	20.00	8737.47	1556.14	559.20	184.06	- 65.02	10.00
22A	Preload	20.00	11264.62	2006.23	720.94	141.65	74.98	10.00
22B	Preload	20.00	8225.36	1464.94	526.42	184.04	65.77	10.00
23	Drill water	5.00	4119.69	733.72	257.07	156.00	- 13.00	2.50
24	Drill water	5.00	4119.69	733.72	257.07	156.00	13.00	2.50
25	Drill water	5.00	2432.63	433.25	151.80	154.62	- 34.00	2.50
26	Drill water	5.00	2432.63	433.25	151.80	154.62	34.00	2.50
28	Preload	20.00	13298.03	2368.38	851.07	188.36	36.10	10.00
29	Preload	20.00	13535.68	2410.70	866.23	188.79	- 36.28	10.00
31	Dirty oil	5.00	261.90	46.64	14.64	117.16	23.00	2.50
	Skim tank	18.63	526.77	93.82	32.87	185.00	54.00	9.31
	MudPit 1S	8.00	1853.28	330.07	185.33	103.66	19.50	9.00
	MudPit 2S	8.00	1581.03	281.58	158.10	104.67	5.85	9.00
	MudPit 3P	8.00	1853.28	330.07	185.33	103.66	- 6.50	9.00
	MudPit 4P	8.00	1853.28	330.07	185.33	103.66	- 19.50	9.00
	Slugging Pit	8.00	272.25	48.49	27.23	97.70	10.25	9.00

COASTAL DRILLER
DRILL WATER TANK 1

LCG	4.63	ft	FSML 181	ft-kips
TCG	0.00	ft	FSMT 4580	ft-kips

Sounding ft	Weight kips	VCG ft
0.50	12.53	0.25
1.00	25.05	0.50
1.50	37.58	0.75
2.00	50.11	1.00
2.50	62.63	1.25
3.00	75.16	1.50
3.50	87.69	1.75
4.00	100.21	2.00
4.50	112.74	2.25
5.00	125.27	2.50
5.50	137.79	2.75
6.00	150.32	3.00
6.50	162.84	3.25
7.00	175.37	3.50
7.50	187.90	3.75
8.00	200.42	4.00
8.50	212.95	4.25
9.00	225.48	4.50
9.50	238.00	4.75
10.00	250.53	5.00
10.50	263.06	5.25
11.00	275.58	5.50
11.50	288.11	5.75
12.00	300.64	6.00
12.50	313.16	6.25
13.00	325.69	6.50
13.50	338.22	6.75
14.00	350.74	7.00
14.50	363.27	7.25
15.00	375.80	7.50
15.50	388.32	7.75
16.00	400.85	8.00
16.50	413.37	8.25
17.00	425.90	8.50
17.50	438.43	8.75
18.00	450.95	9.00
18.50	463.48	9.25
19.00	476.01	9.50
19.50	488.53	9.75
20.00	501.06	10.00

COASTAL DRILLER
PRELOAD TANK 2

LCG 28.89 ft
TCG 23.28 ft

FSML 8768 ft-kips
FSMT 4494 ft-kips

Sounding ft	Weight kips	VCG ft
0.50	24.80	0.25
1.00	49.60	0.50
1.50	74.39	0.75
2.00	99.19	1.00
2.50	123.99	1.25
3.00	148.79	1.50
3.50	173.58	1.75
4.00	198.38	2.00
4.50	223.18	2.25
5.00	247.98	2.50
5.50	272.78	2.75
6.00	297.57	3.00
6.50	322.37	3.25
7.00	347.17	3.50
7.50	371.97	3.75
8.00	396.76	4.00
8.50	421.56	4.25
9.00	446.36	4.50
9.50	471.16	4.75
10.00	495.96	5.00
10.50	520.75	5.25
11.00	545.55	5.50
11.50	570.35	5.75
12.00	595.15	6.00
12.50	619.94	6.25
13.00	644.74	6.50
13.50	669.54	6.75
14.00	694.34	7.00
14.50	719.13	7.25
15.00	743.93	7.50
15.50	768.73	7.75
16.00	793.53	8.00
16.50	818.33	8.25
17.00	843.12	8.50
17.50	867.92	8.75
18.00	892.72	9.00
18.50	917.52	9.25
19.00	942.31	9.50
19.50	967.11	9.75
20.00	991.91	10.00

COASTAL DRILLER
PRELOAD TANK 3

LCG 28.85 ft FSML 8765 ft-kips
TCG –23.35 ft FSMT 4511 ft-kips

Sounding ft	Weight kips	VCG ft
0.50	25.18	0.25
1.00	50.36	0.50
1.50	75.53	0.75
2.00	100.71	1.00
2.50	125.89	1.25
3.00	151.07	1.50
3.50	176.25	1.75
4.00	201.42	2.00
4.50	226.60	2.25
5.00	251.78	2.50
5.50	276.96	2.75
6.00	302.14	3.00
6.50	327.31	3.25
7.00	352.49	3.50
7.50	377.67	3.75
8.00	402.85	4.00
8.50	428.03	4.25
9.00	453.20	4.50
9.50	478.38	4.75
10.00	503.56	5.00
10.50	528.74	5.25
11.00	553.92	5.50
11.50	579.09	5.75
12.00	604.27	6.00
12.50	629.45	6.25
13.00	654.63	6.50
13.50	679.81	6.75
14.00	704.98	7.00
14.50	730.16	7.25
15.00	755.34	7.50
15.50	780.52	7.75
16.00	805.70	8.00
16.50	830.87	8.25
17.00	856.05	8.50
17.50	881.23	8.75
18.00	906.41	9.00
18.50	931.59	9.25
19.00	956.76	9.50
19.50	981.94	9.75
20.00	1007.12	10.00

COASTAL DRILLER
POTABLE WATER TANKS 4 OR 5

LCG 65.36 ft
TCG – 14.22 ft

FSML 1707 ft-kips
FSMT 1965 ft-kips

Sounding ft	Weight kips	VCG ft
0.25	8.61	0.13
0.50	17.22	0.25
0.75	25.83	0.38
1.00	34.45	0.50
1.25	43.06	0.63
1.50	51.67	0.75
1.75	60.28	0.88
2.00	68.89	1.00
2.25	77.50	1.13
2.50	86.12	1.25
2.75	94.73	1.38
3.00	103.34	1.50
3.25	111.95	1.63
3.50	120.56	1.75
3.75	129.17	1.88
4.00	137.78	2.00
4.25	146.40	2.13
4.50	155.01	2.25
4.75	163.62	2.38
5.00	172.23	2.50

COASTAL DRILLER
DRILL WATER TANK 6 OR 7

LCG 78.30 ft
TCG 33.51 ft (Tank 6)
–33.51 ft (Tank 7)

FSML 4464 ft-kips
FSMT 932 ft-kips

Sounding ft	Weight kips	VCG ft
0.25	8.35	0.13
0.50	16.71	0.25
0.75	25.06	0.38
1.00	33.42	0.50
1.25	41.77	0.63
1.50	50.12	0.75
1.75	58.48	0.88
2.00	66.83	1.00
2.25	75.19	1.13
2.50	83.54	1.25
2.75	91.89	1.38
3.00	100.25	1.50
3.25	108.60	1.63
3.50	116.96	1.75
3.75	125.31	1.88
4.00	133.66	2.00
4.25	142.02	2.13
4.50	150.37	2.25
4.75	158.73	2.38
5.00	167.08	2.50

COASTAL DRILLER
PRELOAD TANK 8

LCG 69.17 ft
TCG 44.46 ft

FSML 2779 ft-kips
FSMT 900 ft-kips

Sounding ft	Weight kips	VCG ft
0.50	14.53	0.25
1.00	29.05	0.50
1.50	43.58	0.75
2.00	58.11	1.00
2.50	72.63	1.25
3.00	87.16	1.50
3.50	101.68	1.75
4.00	116.21	2.00
4.50	130.74	2.25
5.00	145.26	2.50
5.50	159.79	2.75
6.00	174.32	3.00
6.50	188.84	3.25
7.00	203.37	3.50
7.50	217.89	3.75
8.00	232.42	4.00
8.50	246.95	4.25
9.00	261.47	4.50
9.50	276.00	4.75
10.00	290.53	5.00
10.50	305.05	5.25
11.00	319.58	5.50
11.50	334.10	5.75
12.00	348.63	6.00
12.50	363.16	6.25
13.00	377.68	6.50
13.50	392.21	6.75
14.00	406.74	7.00
14.50	421.26	7.25
15.00	435.79	7.50
15.50	450.31	7.75
16.00	464.84	8.00
16.50	479.37	8.25
17.00	493.89	8.50
17.50	508.42	8.75
18.00	522.95	9.00
18.50	537.47	9.25
19.00	552.00	9.50
19.50	566.52	9.75
20.00	581.05	10.00

COASTAL DRILLER
PRELOAD TANK 9

LCG 68.17 ft
TCG 43.71 ft

FSML 3266 ft-kips
FSMT 1168 ft-kips

Sounding ft	Weight kips	VCG ft
0.50	15.51	0.25
1.00	31.03	0.50
1.50	46.54	0.75
2.00	62.06	1.00
2.50	77.57	1.25
3.00	93.08	1.50
3.50	108.60	1.75
4.00	124.11	2.00
4.50	139.62	2.25
5.00	155.14	2.50
5.50	170.65	2.75
6.00	186.17	3.00
6.50	201.68	3.25
7.00	217.19	3.50
7.50	232.71	3.75
8.00	248.22	4.00
8.50	263.73	4.25
9.00	279.25	4.50
9.50	294.76	4.75
10.00	310.28	5.00
10.50	325.79	5.25
11.00	341.30	5.50
11.50	356.82	5.75
12.00	372.33	6.00
12.50	387.84	6.25
13.00	403.36	6.50
13.50	418.87	6.75
14.00	434.39	7.00
14.50	449.90	7.25
15.00	465.41	7.50
15.50	480.93	7.75
16.00	496.44	8.00
16.50	511.95	8.25
17.00	527.47	8.50
17.50	542.98	8.75
18.00	558.50	9.00
18.50	574.01	9.25
19.00	589.52	9.50
19.50	605.04	9.75
20.00	620.55	10.00

COASTAL DRILLER
DRILL WATER TANK 10 OR 11

LCG 85.30 ft
TCG 12.08 ft (Tank 10)
– 12.08 ft (Tank 11)

FSML 725 ft-kips
FSMT 1345 ft-kips

Sounding ft	Weight kips	VCG ft
0.25	6.54	0.13
0.50	13.07	0.25
0.75	19.61	0.38
1.00	26.15	0.50
1.25	32.69	0.63
1.50	39.22	0.75
1.75	45.76	0.88
2.00	52.30	1.00
2.25	58.83	1.13
2.50	65.37	1.25
2.75	71.91	1.38
3.00	78.44	1.50
3.25	84.94	1.63
3.50	91.52	1.75
3.75	98.06	1.88
4.00	104.59	2.00
4.25	111.13	2.13
4.50	117.67	2.25
4.75	124.20	2.38
5.00	130.74	2.50

COASTAL DRILLER
DIESEL FUEL TANK 13

LCG 105.94 ft
TCG –41.41 ft

FSML 404 ft-kips
FSMT 1034 ft-kips

Sounding ft	Weight kips	VCG ft
0.25	4.47	0.13
0.50	8.93	0.25
0.75	13.40	0.38
1.00	17.86	0.50
1.25	22.33	0.63
1.50	26.79	0.75
1.75	31.26	0.88
2.00	35.72	1.00
2.25	40.19	1.13
2.50	44.65	1.25
2.75	49.12	1.38
3.00	53.58	1.50
3.25	58.05	1.63
3.50	62.51	1.75
3.75	66.98	1.88
4.00	71.44	2.00
4.25	75.91	2.13
4.50	80.37	2.25
4.75	84.84	2.38
5.00	89.30	2.50

COASTAL DRILLER
DIESEL FUEL TANK 14

LCG 104.12 ft
TCG 39.16 ft

FSML 674 ft-kips
FSMT 1492 ft-kips

Sounding ft	Weight kips	VCG ft
0.25	6.10	0.13
0.50	12.20	0.25
0.75	18.30	0.38
1.00	24.40	0.50
1.25	30.50	0.63
1.50	36.60	0.75
1.75	42.70	0.88
2.00	48.80	1.00
2.25	54.90	1.13
2.50	61.00	1.25
2.75	67.09	1.38
3.00	73.19	1.50
3.25	79.29	1.63
3.50	85.39	1.75
3.75	91.49	1.88
4.00	97.59	2.00
4.25	103.69	2.13
4.50	109.79	2.25
4.75	115.89	2.38
5.00	121.99	2.50

COASTAL DRILLER
PRELOAD TANK 15 OR 16

LCG 103.66 ft
TCG –59.26 ft (Tank 15)
59.26 ft (Tank 16)

FSML 3548 ft-kips
FSMT 1239 ft-kips

Sounding ft	Weight kips	VCG ft
0.50	15.96	0.25
1.00	31.91	0.50
1.50	47.87	0.75
2.00	63.83	1.00
2.50	79.79	1.25
3.00	95.74	1.50
3.50	111.70	1.75
4.00	127.66	2.00
4.50	143.61	2.25
5.00	159.57	2.50
5.50	175.53	2.75
6.00	191.48	3.00
6.50	207.44	3.25
7.00	223.40	3.50
7.50	239.36	3.75
8.00	255.31	4.00
8.50	271.27	4.25
9.00	287.23	4.50
9.50	303.18	4.75
10.00	319.14	5.00
10.50	335.10	5.25
11.00	351.05	5.50
11.50	367.01	5.75
12.00	382.97	6.00
12.50	398.93	6.25
13.00	414.88	6.50
13.50	430.84	6.75
14.00	446.80	7.00
14.50	462.75	7.25
15.00	478.71	7.50
15.50	494.67	7.75
16.00	510.62	8.00
16.50	526.58	8.25
17.00	542.54	8.50
17.50	558.50	8.75
18.00	574.45	9.00
18.50	590.41	9.25
19.00	606.37	9.50
19.50	622.32	9.75
20.00	638.28	10.00

COASTAL DRILLER
DRILL WATER TANK 17

LCG 126.16 ft FSML 2659 ft-kips
TCG –13.00 ft FSMT 2464 ft-kips

Sounding ft	Weight kips	VCG ft
0.25	10.62	0.13
0.50	21.25	0.25
0.75	31.87	0.38
1.00	42.49	0.50
1.25	53.11	0.63
1.50	63.74	0.75
1.75	74.36	0.88
2.00	84.98	1.00
2.25	95.60	1.13
2.50	106.23	1.25
2.75	116.85	1.38
3.00	127.47	1.50
3.25	138.09	1.63
3.50	148.72	1.75
3.75	159.34	1.88
4.00	169.96	2.00
4.25	180.58	2.13
4.50	191.21	2.25
4.75	201.83	2.38
5.00	212.45	2.50

COASTAL DRILLER
DRILL WATER TANK 18

LCG 126.91 ft
TCG 12.17 ft

FSML 2340 ft-kips
FSMT 2090 ft-kips

Sounding ft	Weight kips	VCG ft
0.25	9.81	0.13
0.50	19.61	0.25
0.75	29.42	0.38
1.00	39.22	0.50
1.25	49.03	0.63
1.50	58.83	0.75
1.75	68.64	0.88
2.00	78.44	1.00
2.25	88.25	1.13
2.50	98.06	1.25
2.75	107.86	1.38
3.00	117.67	1.50
3.25	127.47	1.63
3.50	137.28	1.75
3.75	147.08	1.88
4.00	156.89	2.00
4.25	166.69	2.13
4.50	176.50	2.25
4.75	186.30	2.38
5.00	196.11	2.50

COASTAL DRILLER
DIESEL FUEL TANK 19

LCG 126.37 ft FSML 2870 ft-kips
TCG –42.69 ft FSMT 4485 ft-kips

Sounding ft	Weight kips	VCG ft
0.25	11.68	0.13
0.50	23.36	0.25
0.75	35.04	0.38
1.00	46.72	0.50
1.25	58.40	0.63
1.50	70.08	0.75
1.75	81.76	0.88
2.00	93.44	1.00
2.25	105.12	1.13
2.50	116.80	1.25
2.75	128.48	1.38
3.00	140.16	1.50
3.25	151.84	1.63
3.50	163.52	1.75
3.75	175.20	1.88
4.00	186.88	2.00
4.25	198.56	2.13
4.50	210.24	2.25
4.75	221.92	2.38
5.00	233.60	2.50

COASTAL DRILLER
DIESEL FUEL TANK 20

LCG 126.71 ft
TCG 41.20 ft

FSML 1774 ft-kips
FSMT 3474 ft-kips

Sounding ft	Weight kips	VCG ft
0.25	8.67	0.13
0.50	17.35	0.25
0.75	26.02	0.38
1.00	34.70	0.50
1.25	43.37	0.63
1.50	52.05	0.75
1.75	60.72	0.88
2.00	69.40	1.00
2.25	78.07	1.13
2.50	86.75	1.25
2.75	95.42	1.38
3.00	104.09	1.50
3.25	112.77	1.63
3.50	121.44	1.75
3.75	130.12	1.88
4.00	138.79	2.00
4.25	147.47	2.13
4.50	156.14	2.25
4.75	164.82	2.38
5.00	173.49	2.50

COASTAL DRILLER
PRELOAD TANK 21A

LCG 141.75 ft
TCG –74.95 ft

FSML 7328 ft-kips
FSMT 2413 ft-kips

Sounding ft	Weight kips	VCG ft
0.50	17.67	0.25
1.00	35.34	0.50
1.50	53.01	0.75
2.00	70.68	1.00
2.50	88.35	1.25
3.00	106.02	1.50
3.50	123.69	1.75
4.00	141.36	2.00
4.50	159.03	2.25
5.00	176.70	2.50
5.50	194.37	2.75
6.00	212.04	3.00
6.50	229.71	3.25
7.00	247.38	3.50
7.50	265.05	3.75
8.00	282.72	4.00
8.50	300.39	4.25
9.00	318.06	4.50
9.50	335.73	4.75
10.00	353.40	5.00
10.50	371.07	5.25
11.00	388.74	5.50
11.50	406.41	5.75
12.00	424.08	6.00
12.50	441.75	6.25
13.00	459.42	6.50
13.50	477.09	6.75
14.00	494.76	7.00
14.50	512.43	7.25
15.00	530.10	7.50
15.50	547.77	7.75
16.00	565.44	8.00
16.50	583.11	8.25
17.00	600.78	8.50
17.50	618.45	8.75
18.00	636.12	9.00
18.50	653.79	9.25
19.00	671.46	9.50
19.50	689.13	9.75
20.00	706.80	10.00

COASTAL DRILLER
PRELOAD TANK 21B

LCG 184.06 ft
TCG –65.02 ft

FSML 1069 ft-kips
FSMT 3950 ft-kips

Sounding ft	Weight kips	VCG ft
0.50	13.98	0.25
1.00	27.96	0.50
1.50	41.94	0.75
2.00	55.92	1.00
2.50	69.90	1.25
3.00	83.88	1.50
3.50	97.86	1.75
4.00	111.84	2.00
4.50	125.82	2.25
5.00	139.80	2.50
5.50	153.78	2.75
6.00	167.76	3.00
6.50	181.74	3.25
7.00	195.72	3.50
7.50	209.70	3.75
8.00	223.68	4.00
8.50	237.66	4.25
9.00	251.64	4.50
9.50	265.62	4.75
10.00	279.60	5.00
10.50	293.58	5.25
11.00	307.56	5.50
11.50	321.54	5.75
12.00	335.52	6.00
12.50	349.50	6.25
13.00	363.48	6.50
13.50	377.46	6.75
14.00	391.44	7.00
14.50	405.42	7.25
15.00	419.40	7.50
15.50	433.38	7.75
16.00	447.36	8.00
16.50	461.34	8.25
17.00	475.32	8.50
17.50	489.30	8.75
18.00	503.28	9.00
18.50	517.26	9.25
19.00	531.24	9.50
19.50	545.22	9.75
20.00	559.20	10.00

COASTAL DRILLER
PRELOAD TANK 22A

LCG 141.65 ft FSML 7348 ft-kips
TCG 74.98 ft FSMT 2415 ft-kips

Sounding ft	Weight kips	VCG ft
0.50	18.02	0.25
1.00	36.05	0.50
1.50	54.07	0.75
2.00	72.09	1.00
2.50	90.12	1.25
3.00	108.14	1.50
3.50	126.16	1.75
4.00	144.19	2.00
4.50	162.21	2.25
5.00	180.24	2.50
5.50	198.26	2.75
6.00	216.28	3.00
6.50	234.31	3.25
7.00	252.33	3.50
7.50	270.35	3.75
8.00	288.38	4.00
8.50	306.40	4.25
9.00	324.42	4.50
9.50	342.45	4.75
10.00	360.47	5.00
10.50	378.49	5.25
11.00	396.52	5.50
11.50	414.54	5.75
12.00	432.56	6.00
12.50	450.59	6.25
13.00	468.61	6.50
13.50	486.63	6.75
14.00	504.66	7.00
14.50	522.68	7.25
15.00	540.71	7.50
15.50	558.73	7.75
16.00	576.75	8.00
16.50	594.78	8.25
17.00	612.80	8.50
17.50	630.82	8.75
18.00	648.85	9.00
18.50	666.87	9.25
19.00	684.89	9.50
19.50	702.92	9.75
20.00	720.94	10.00

COASTAL DRILLER
PRELOAD TANK 22B

LCG 184.05 ft FSML 1069 ft-kips
TCG See right column FSMT 3950 ft-kips

Sounding ft	Weight kips	VCG ft	TCG ft
0.50	13.16	0.25	65.02
1.00	26.32	0.50	65.02
1.50	39.48	0.75	65.11
2.00	52.64	1.00	65.28
2.50	65.80	1.25	65.39
3.00	78.96	1.50	65.46
3.50	92.12	1.75	65.51
4.00	105.28	2.00	65.55
4.50	118.44	2.25	65.58
5.00	131.61	2.50	65.60
5.50	144.77	2.75	65.62
6.00	157.93	3.00	65.64
6.50	171.09	3.25	65.65
7.00	184.25	3.50	65.67
7.50	197.41	3.75	65.68
8.00	210.57	4.00	65.69
8.50	223.73	4.25	65.69
9.00	236.89	4.50	65.70
9.50	250.05	4.75	65.71
10.00	263.21	5.00	65.71
10.50	276.37	5.25	65.72
11.00	289.53	5.50	65.72
11.50	302.69	5.75	65.73
12.00	315.85	6.00	65.73
12.50	329.01	6.25	65.74
13.00	342.17	6.50	65.74
13.50	355.33	6.75	65.75
14.00	368.49	7.00	65.75
14.50	381.65	7.25	65.75
15.00	394.82	7.50	65.75
15.50	407.98	7.75	65.75
16.00	421.14	8.00	65.76
16.50	434.30	8.25	65.76
17.00	447.46	8.50	65.76
17.50	460.62	8.75	65.76
18.00	473.78	9.00	65.76
18.50	486.94	9.25	65.77
19.00	500.10	9.50	65.77
19.50	513.26	9.75	65.77
20.00	526.42	10.00	65.77

COASTAL DRILLER
DRILL WATER TANK 23 OR 24

LCG 156.00 ft FSML 4708 ft-kips
TCG –13.00 ft (Tank 23) FSMT 2982 ft-kips
13.00 ft (Tank 24)

Sounding ft	Weight kips	VCG ft
0.25	12.85	0.13
0.50	25.71	0.25
0.75	38.56	0.38
1.00	51.41	0.50
1.25	64.27	0.63
1.50	77.12	0.75
1.75	89.97	0.88
2.00	102.83	1.00
2.25	115.68	1.13
2.50	128.54	1.25
2.75	141.39	1.38
3.00	154.24	1.50
3.25	167.10	1.63
3.50	179.95	1.75
3.75	192.80	1.88
4.00	205.66	2.00
4.25	218.51	2.13
4.50	231.36	2.25
4.75	244.22	2.38
5.00	257.07	2.50

COASTAL DRILLER
DRILL WATER TANK 25 OR 26

LCG 154.62 ft FSML 3045 ft-kips
TCG –34.00 ft (Tank 25) FSMT 777 ft-kips
34.00 ft (Tank 26)

Sounding ft	Weight kips	VCG ft
0.25	7.59	0.13
0.50	15.18	0.25
0.75	22.77	0.38
1.00	30.36	0.50
1.25	37.95	0.63
1.50	45.54	0.75
1.75	53.13	0.88
2.00	60.72	1.00
2.25	68.31	1.13
2.50	75.90	1.25
2.75	83.49	1.38
3.00	91.08	1.50
3.25	98.67	1.63
3.50	106.26	1.75
3.75	113.85	1.88
4.00	121.44	2.00
4.25	129.03	2.13
4.50	136.62	2.25
4.75	144.21	2.38
5.00	151.80	2.50

COASTAL DRILLER
PRELOAD TANK 28

LCG 188.86 ft
TCG 36.10 ft

FSML 3966 ft-kips
FSMT 1600 ft-kips

Sounding ft	Weight kips	VCG ft
0.50	21.28	0.25
1.00	42.55	0.50
1.50	63.83	0.75
2.00	85.11	1.00
2.50	106.38	1.25
3.00	127.66	1.50
3.50	148.94	1.75
4.00	170.21	2.00
4.50	191.49	2.25
5.00	212.77	2.50
5.50	234.04	2.75
6.00	255.32	3.00
6.50	276.60	3.25
7.00	297.87	3.50
7.50	319.15	3.75
8.00	340.43	4.00
8.50	361.70	4.25
9.00	382.98	4.50
9.50	404.26	4.75
10.00	425.54	5.00
10.50	446.81	5.25
11.00	468.09	5.50
11.50	489.37	5.75
12.00	510.64	6.00
12.50	531.92	6.25
13.00	553.20	6.50
13.50	574.47	6.75
14.00	595.75	7.00
14.50	617.03	7.25
15.00	638.30	7.50
15.50	659.58	7.75
16.00	680.86	8.00
16.50	702.13	8.25
17.00	723.41	8.50
17.50	744.69	8.75
18.00	765.96	9.00
18.50	787.24	9.25
19.00	808.52	9.50
19.50	829.79	9.75
20.00	851.07	10.00

COASTAL DRILLER
PRELOAD TANK 29

LCG 188.79 ft
TCG –36.28 ft

FSML 7328 ft-kips
FSMT 2413 ft-kips

Sounding ft	Weight kips	VCG ft
0.50	21.66	0.25
1.00	43.31	0.50
1.50	64.97	0.75
2.00	86.63	1.00
2.50	108.29	1.25
3.00	129.94	1.50
3.50	151.60	1.75
4.00	173.26	2.00
4.50	194.91	2.25
5.00	216.57	2.50
5.50	238.23	2.75
6.00	259.88	3.00
6.50	281.54	3.25
7.00	303.20	3.50
7.50	324.86	3.75
8.00	346.51	4.00
8.50	368.17	4.25
9.00	389.83	4.50
9.50	411.48	4.75
10.00	433.14	5.00
10.50	454.80	5.25
11.00	476.45	5.50
11.50	498.11	5.75
12.00	519.77	6.00
12.50	541.43	6.25
13.00	563.08	6.50
13.50	584.74	6.75
14.00	606.40	7.00
14.50	628.05	7.25
15.00	649.71	7.50
15.50	671.37	7.75
16.00	693.02	8.00
16.50	714.68	8.25
17.00	736.34	8.50
17.50	758.00	8.75
18.00	779.65	9.00
18.50	801.31	9.25
19.00	822.97	9.50
19.50	844.62	9.75
20.00	866.28	10.00

COASTAL DRILLER
DIRTY OIL TANK 31

LCG	117.16 ft	FSML	20 ft-kips
TCG	23.00 ft	FSMT	8 ft-kips

Sounding ft	Weight kips	VCG ft
0.25	0.73	0.13
0.50	1.46	0.25
0.75	2.20	0.38
1.00	2.93	0.50
1.25	3.66	0.63
1.50	4.39	0.75
1.75	5.12	0.88
2.00	5.86	1.00
2.25	6.59	1.13
2.50	7.32	1.25
2.75	8.05	1.38
3.00	8.78	1.50
3.25	9.52	1.63
3.50	10.25	1.75
3.75	10.98	1.88
4.00	11.71	2.00
4.25	12.44	2.13
4.50	13.18	2.25
4.75	13.91	2.38
5.00	14.64	2.50

COASTAL DRILLER
SKIM TANK

LCG	185.00 ft	FSML	1 ft-kip
TCG	54.00 ft	FSMT	1 ft-kip

Sounding ft	Weight kips	VCG ft
0.50	0.88	0.25
1.00	1.76	0.50
1.50	2.65	0.75
2.00	3.53	1.00
2.50	4.41	1.25
3.00	5.29	1.50
3.50	6.18	1.75
4.00	7.06	2.00
4.50	7.94	2.25
5.00	8.82	2.50
5.50	9.71	2.75
6.00	10.59	3.00
6.50	11.47	3.25
7.00	12.35	3.50
7.50	13.24	3.75
8.00	14.12	4.00
8.50	15.00	4.25
9.00	15.88	4.50
9.50	16.77	4.75
10.00	17.65	5.00
10.50	18.53	5.25
11.00	19.41	5.50
11.50	20.30	5.75
12.00	21.18	6.00
12.50	22.06	6.25
13.00	22.94	6.50
13.50	23.83	6.75
14.00	24.71	7.00
14.50	25.59	7.25
15.00	26.47	7.50
15.50	27.35	7.75
16.00	28.24	8.00
16.50	29.12	8.25
17.00	30.00	8.50
17.50	30.88	8.75
18.00	31.77	9.00
18.50	32.65	9.25
18.63	32.87	9.31

COASTAL DRILLER
MUDPIT 1S

LCG 103.66 ft
TCG 19.50 ft

FSML 633 ft-kips
FSMT 328 ft-kips

Sounding ft	Weight kips	VCG ft
0.25	5.79	5.13
0.50	11.58	5.25
0.75	17.37	5.38
1.00	23.17	5.50
1.25	28.96	5.63
1.50	34.75	5.75
1.75	40.54	5.88
2.00	46.33	6.00
2.25	52.12	6.13
2.50	57.92	6.25
2.75	63.71	6.38
3.00	69.50	6.50
3.25	75.29	6.63
3.50	81.08	6.75
3.75	86.87	6.88
4.00	92.67	7.00
4.25	98.46	7.13
4.50	104.25	7.25
4.75	110.04	7.38
5.00	115.83	7.50
5.25	121.62	7.63
5.50	127.41	7.75
5.75	133.21	7.88
6.00	139.00	8.00
6.25	144.79	8.13
6.50	150.58	8.25
6.75	156.37	8.38
7.00	162.16	8.50
7.25	167.96	8.63
7.50	173.75	8.75
7.75	179.54	8.88
8.00	185.33	9.00

COASTAL DRILLER
MUDPIT 2S

LCG 104.67 ft
TCG 5.85 ft

FSML 481 ft-kips
FSMT 263 ft-kips

Sounding ft	Weight kips	VCG ft
0.25	4.94	5.13
0.50	9.88	5.25
0.75	14.82	5.38
1.00	19.76	5.50
1.25	24.70	5.63
1.50	29.64	5.75
1.75	34.58	5.88
2.00	39.53	6.00
2.25	44.47	6.13
2.50	49.41	6.25
2.75	54.35	6.38
3.00	59.29	6.50
3.25	64.23	6.63
3.50	69.17	6.75
3.75	74.11	6.88
4.00	79.05	7.00
4.25	83.99	7.13
4.50	88.93	7.25
4.75	93.87	7.38
5.00	98.81	7.50
5.25	103.75	7.63
5.50	108.69	7.75
5.75	113.63	7.88
6.00	118.58	8.00
6.25	123.52	8.13
6.50	128.46	8.25
6.75	133.40	8.38
7.00	138.34	8.50
7.25	143.28	8.63
7.50	148.22	8.75
7.75	153.16	8.88
8.00	158.10	9.00

COASTAL DRILLER
MUDPIT 3P

LCG	103.66 ft	FSML	633 ft-kips
TCG	– 6.50 ft	FSMT	328 ft-kips

Sounding ft	Weight kips	VCG ft
0.25	5.79	5.13
0.50	11.58	5.25
0.75	17.37	5.38
1.00	23.17	5.50
1.25	28.96	5.63
1.50	34.75	5.75
1.75	40.54	5.88
2.00	46.33	6.00
2.25	52.12	6.13
2.50	57.92	6.25
2.75	63.71	6.38
3.00	69.50	6.50
3.25	75.29	6.63
3.50	81.08	6.75
3.75	86.87	6.88
4.00	92.67	7.00
4.25	98.46	7.13
4.50	104.25	7.25
4.75	110.04	7.38
5.00	115.83	7.50
5.25	121.62	7.63
5.50	127.41	7.75
5.75	133.21	7.88
6.00	139.00	8.00
6.25	144.79	8.13
6.50	150.58	8.25
6.75	156.37	8.38
7.00	162.16	8.50
7.25	167.96	8.63
7.50	173.75	8.75
7.75	179.54	8.88
8.00	185.33	9.00

COASTAL DRILLER
MUDPIT 4P

LCG 103.66 ft
TCG – 19.50 ft

FSML 633 ft-kips
FSMT 328 ft-kips

Sounding ft	Weight kips	VCG ft
0.25	5.79	5.13
0.50	11.58	5.25
0.75	17.37	5.38
1.00	23.17	5.50
1.25	28.96	5.63
1.50	34.75	5.75
1.75	40.54	5.88
2.00	46.33	6.00
2.25	52.12	6.13
2.50	57.92	6.25
2.75	63.71	6.38
3.00	69.50	6.50
3.25	75.29	6.63
3.50	81.08	6.75
3.75	86.87	6.88
4.00	92.67	7.00
4.25	98.46	7.13
4.50	104.25	7.25
4.75	110.04	7.38
5.00	115.83	7.50
5.25	121.62	7.63
5.50	127.41	7.75
5.75	133.21	7.88
6.00	139.00	8.00
6.25	144.79	8.13
6.50	150.58	8.25
6.75	156.37	8.38
7.00	162.16	8.50
7.25	167.96	8.63
7.50	173.75	8.75
7.75	179.54	8.88
8.00	185.33	9.00

COASTAL DRILLER
SLUGGING PIT

LCG	97.76 ft	FSML	11 ft-kips
TCG	10.25 ft	FSMT	8 ft-kips

Sounding ft	Weight kips	VCG ft
0.25	0.85	5.13
0.50	1.70	5.25
0.75	2.55	5.38
1.00	3.40	5.50
1.25	4.25	5.63
1.50	5.11	5.75
1.75	5.96	5.88
2.00	6.81	6.00
2.25	7.66	6.13
2.50	8.51	6.25
2.75	9.36	6.38
3.00	10.21	6.50
3.25	11.06	6.63
3.50	11.91	6.75
3.75	12.76	6.88
4.00	13.62	7.00
4.25	14.47	7.13
4.50	15.32	7.25
4.75	16.17	7.38
5.00	17.02	7.50
5.25	17.87	7.63
5.50	18.72	7.75
5.75	19.57	7.88
6.00	20.42	8.00
6.25	21.27	8.13
6.50	22.12	8.25
6.75	22.98	8.38
7.00	23.83	8.50
7.25	24.68	8.63
7.50	25.53	8.75
7.75	26.38	8.88
8.00	27.23	9.00

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