

**Investigation of Fall and Fatality
Mississippi Canyon Block 109
August 16, 2000**

**Gulf of Mexico
Off the Louisiana Coast**



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Investigation and Report

Authority

An accident that resulted in one fatality occurred on Helmerich & Payne International Drilling Co.'s (H&P) drilling rig, H&P Rig 91, located on BP Amoco Corporation's (BP Amoco) Amberjack Platform, Mississippi Canyon Block 109, Lease OCS-G 5825 in the Gulf of Mexico, offshore the State of Louisiana, on August 16, 2000, at approximately 2110 hours. Pursuant to section 208, Subsection 22 (d), (e), and (f), of the Outer Continental Shelf Act, as amended in 1978, and the Department of the Interior Regulations 30 CFR Part 250, the Minerals Management Service (MMS) is required to investigate and prepare a public report of this accident. By memorandum dated August 18, 2000, the following MMS personnel were named to the investigative panel (panel):

Frank Pausina, Office of Safety Management, New Orleans,
Louisiana (Chairman)

David Dykes, Office of Safety Management, New Orleans,
Louisiana

Charles Griffin, District Office, New Orleans, Louisiana

Procedures

On August 17, 2000, the panel members visited the scene of the accident and interviewed witnesses.

On August 18, 2000, inspectors from the New Orleans District Office visited the scene of the accident.

On September 5, 2000, panel members examined equipment involved in the accident at H&P's facility in Jackson, Mississippi.

On November 8, 2000, panel members interviewed representatives of H&P and BP Amoco at BP Amoco's offices in Houston, Texas.

The panel received various documents from H&P and BP Amoco during the course of the investigation.

The panel met at various times throughout the investigative effort and, after having considered all of the information available, produced this report.

Introduction

Background

Lease OCS-G 5825 covers approximately 5,760 acres and is located in Mississippi Canyon Block 109, Gulf of Mexico, off the Louisiana Coast. *For lease location, see Attachment 1.* The lease was issued effective July 1, 1983. BP Amoco became Designated Operator of the lease on January 18, 1985. At the time of the accident, H&P was contracted by BP Amoco to perform drilling operations on the lease at the Amberjack Platform.

Brief Description of Accident

On the evening of August 16, 2000, a drilling contractor employee was air-hoisted into the derrick to assist another employee secure a stand of drill pipe that had fallen across the derrick from the fingers and had rested on the monkey board. At a height of approximately 80 feet above the rig floor, the employee's body harness/boatswain's chair became detached from the hook of the air hoist line. The employee fell to the rig floor and sustained fatal injuries.

Findings

Preliminary Activities and Accident

During drilling activities at approximately 2110 hours, a 6 5/8-inch stand of pipe fell across the rig and came to rest between the 5-inch monkey board and the fingers of the 6 5/8-inch pipe rack. *For photographs of the fallen pipe, see Attachments 2 and 3.* The derrickman at that time, henceforth referred to as H&P 1, was standing on the 6 5/8-inch monkey board and was not able to reach the fallen stand of pipe. In an attempt to assist H&P 1, a second H&P employee, henceforth referred to as H&P 2, strapped himself into a body harness with a built-in boatswain's chair (harness) and placed the "D" rings of the harness into the hook attached to the air hoist line. H&P 2 was then lifted, without any personal fall-protection, into the derrick by the air hoist to a stop position height of approximately 80 feet above the rig floor. This position placed H&P 2 approximately 4 to 10 feet below the monkey board level. As H&P 2 attempted to maneuver into a position to board the 5-inch monkey board, the harness "D" rings became detached from the air hoist hook, resulting in H&P 2 falling to the rig floor and sustaining fatal injuries. *For a diagram of the derrick layout, see Attachment 4.*

Air Hoist Lifting System

The body harness used in this incident consists of a full body harness with a built-in boatswain chair. The harness is constructed with leg straps to provide support in a seated position and to prevent the individual from falling out of the harness. The harness is equipped with two D-rings on the front on each side at the waist. The harness is also equipped with a third D-ring located on the upper back of the harness in the center. This D-ring serves the purpose for attaching a fall protection lanyard or for attaching a retrieval line. *For photographs of the harness, see Attachments 5 and 6.*

The hoisting system is a conventional air-operated “tugger.” The tugger is one of two located just to each side of the V-door on the rig floor. The tuggers are equipped with 5/8-inch, 19x7 wire rope with a breaking strength of 33,600 pounds. The lines from the tuggers run up the inside of the derrick to each side of the crown block respectively. The free end of the line is finished with a machined eye and swedge sleeve socket. The Gunnebo OBK 13-8 Hook is attached to the cable eye via a weighted swivel. *For a photograph of the hook assembly, see Attachment 7.* The tuggers are used to lift joints of pipe from the V-door up into the derrick and for lifting and moving tools and other utility equipment around the drill floor.

The air hoist hook consists of an outward opening, self-locking latch, and a latch release trigger. Pressing the trigger inward releases the latch and allows separation between the latch and the hook. *For a photograph of the hook, see Attachment 8.*

Equipment Analysis The hook was inspected by MMS district personnel at the accident site and by MMS panel members at H&P facilities in Jackson, Mississippi, where the hook and harness were secured. Both inspections revealed that a gap of approximately 4/10 inch between the latch and the hook can be produced by slightly pulling outward on the latch while the hook is in the closed position, i.e., with the latch release trigger not pressed inward. *For a photograph showing the gap, see Attachment 9.*

At the Jackson facilities, panel members suspended the hook from an overhead crane and hung the harness from the hook by placing the chair's "D" rings in the hook. *For a photograph of the harness suspended from the hook, see Attachment 10.* It was revealed that the "D" rings fit into the latch/hook gap. *For photographs of the "D" rings in the gap, see Attachments 11 and 12.*

With the "D" rings in the gap, panel members were unable to physically pull the "D" rings downward from the hook. With the "D" rings in the gap and with the latch release trigger fully depressed, the panel members were still unable to pull the "D" rings downward from the hook. However, with the "D" rings in the gap and with the latch release trigger fully depressed, the "D" rings separated from the hook as soon as the panel members stopped pulling downward on the "D" rings. It should be noted that in both of the above demonstrations with the trigger fully depressed, the trigger was not easily depressed. This indicates that it is possible that the "D" rings can detach from the hook during a personnel lifting operation if the rings are in the latch/hook gap, the trigger is depressed, and the occupant of the chair

either (a) pulls his weight off the chair with his hands placed on or above the hook trigger or (b) again with his hands on or above the hook trigger, pushes his weight off the chair with his feet against a stand of pipe.

Management

H&P's Safety Standards, last revised on January 14, 1998, states in part that personnel being elevated within the derrick in a "bos'n" chair shall wear a full body harness and shall be secured to the derrick with a lanyard upon reaching the work station. It further states that the chair is not considered adequate fall protection if the worker's weight is supported by anything other than the hoisting device. Since H&P 2's weight was supported totally by the hoisting device, it can reasonably be assumed that the standard as written does not require additional fall protection during elevation. This assumption was confirmed through interviews.

During interviews, H&P officials stated that the use of the air hoist for the purpose of only transporting an employee to the monkey board, as was done in the subject accident, is prohibited. They said that the ladder should have been used. However, this prohibition is communicated orally and was included neither in H&P's Safety Standards nor in any other H&P document at the time of the accident.

At the time of the accident H&P had not conducted a Job Safety Analysis (JSA) solely for the operation of lifting an employee into the derrick with an air hoist. However, H&P officials stated that if an operation called for such a lifting, the JSA for that operation would list the lifting as one of the sequence

of basic steps. An example of such a JSA showed that personnel lifting was listed as a basic step and that the corresponding recommended safe procedures included an inspection of the air hoisting equipment and a personnel fall suppression lanyard tie-off at the end of the lift.

Regarding the maintenance and inspection of the hooks used in hoisting operations within the derrick, H&P representatives stated that the hooks are inspected for basic functioning.

BP Amoco officials stated that contractor's safety records and safety plans are reviewed prior to securing the services of the contractor. BP Amoco officials also stated that bimonthly steering committee meetings are conducted that are attended by H&P management and by a BP Amoco representative, who is responsible for all of BP Amoco's company onsite representatives. During the meetings, safety issues are discussed. The BP Amoco attendee at the meeting then communicates those issues with the onsite representatives.

**Regulatory
Considerations**

There currently exist no regulations in 30 CFR 250 that specifically address the lifting of personnel into a derrick.

Conclusions

Accident

It is the conclusion of the panel that, at some point in his elevation into the derrick, H&P 2's harness "D" rings fell into the latch/hook gap. While maneuvering into position to board the 5-inch monkey board, H&P 2 accidentally depressed the latch release trigger of the air hoist hook and simultaneously either pulled or pushed his weight off the boatswain's chair. At that point, the harness "D" rings slipped out of the hook, resulting in H&P 2 fatally falling approximately 80 feet to the rig floor.

Causes

- ◆ Using the air hoist hook with a latch/hook gap.

- ◆ The failure of H&P's inspection/maintenance program to identify the latch/hook gap as a potential hazard by a more in-depth inspection of the hook.

- ◆ Using an air hoist hook with an outward opening latch.

- ◆ The lack of fall protection during the lift.

- ◆ H&P's inadequate safety standard regarding the elevation of personnel into a derrick (specifically, not requiring fall protection when the employee's weight is supported only by the hoisting device).

- ◆ The failure of H&P to have performed a JSA solely for the operation of lifting personnel into the derrick.

- ◆ The failure of H&P to document their prohibition against using the air hoist for the sole purpose of lifting personnel to the monkey board.

- ◆ The failure of BP Amoco in reviewing H&P's safety standards to identify the inadequacy of the aforementioned standard regarding the elevation of personnel into the derrick.

It should be noted that while the accident was indeed preventable, the mechanics by which the accident occurred were very difficult to physically recreate by the panel members during their examination of the equipment involved in the accident.

Recommendations

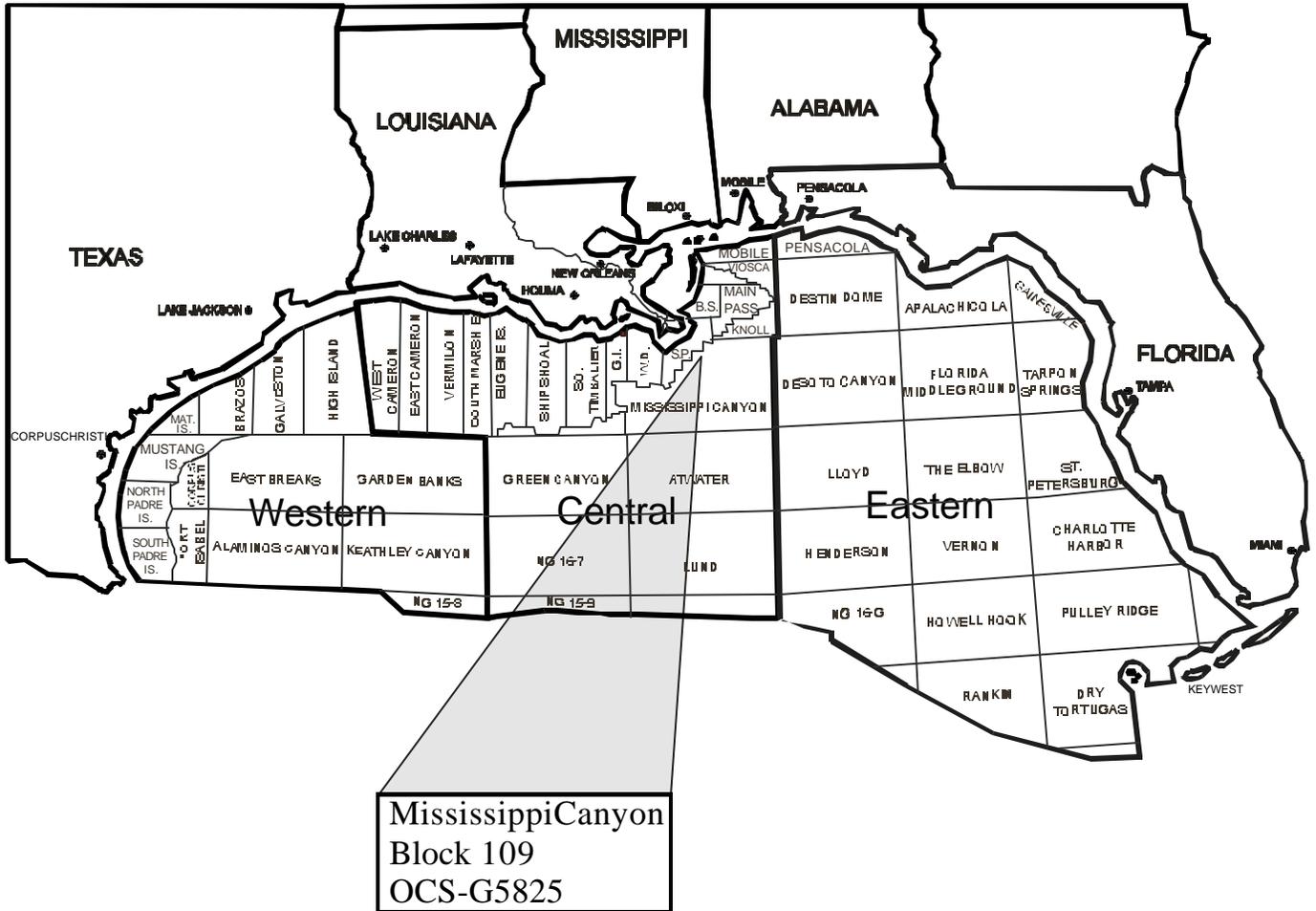
Safety Alert

The MMS issued a Safety Alert (No. 190) on September 22, 2000, regarding the subject accident. A Safety Alert was issued prior to the completion of this report because of the routine nature of the activity involving the accident and MMS's concern for the potential for similar such accidents. The panel has evaluated the recommendations of that Safety Alert as still being appropriate. However, the panel recommends that an additional Safety Alert be issued containing the following:

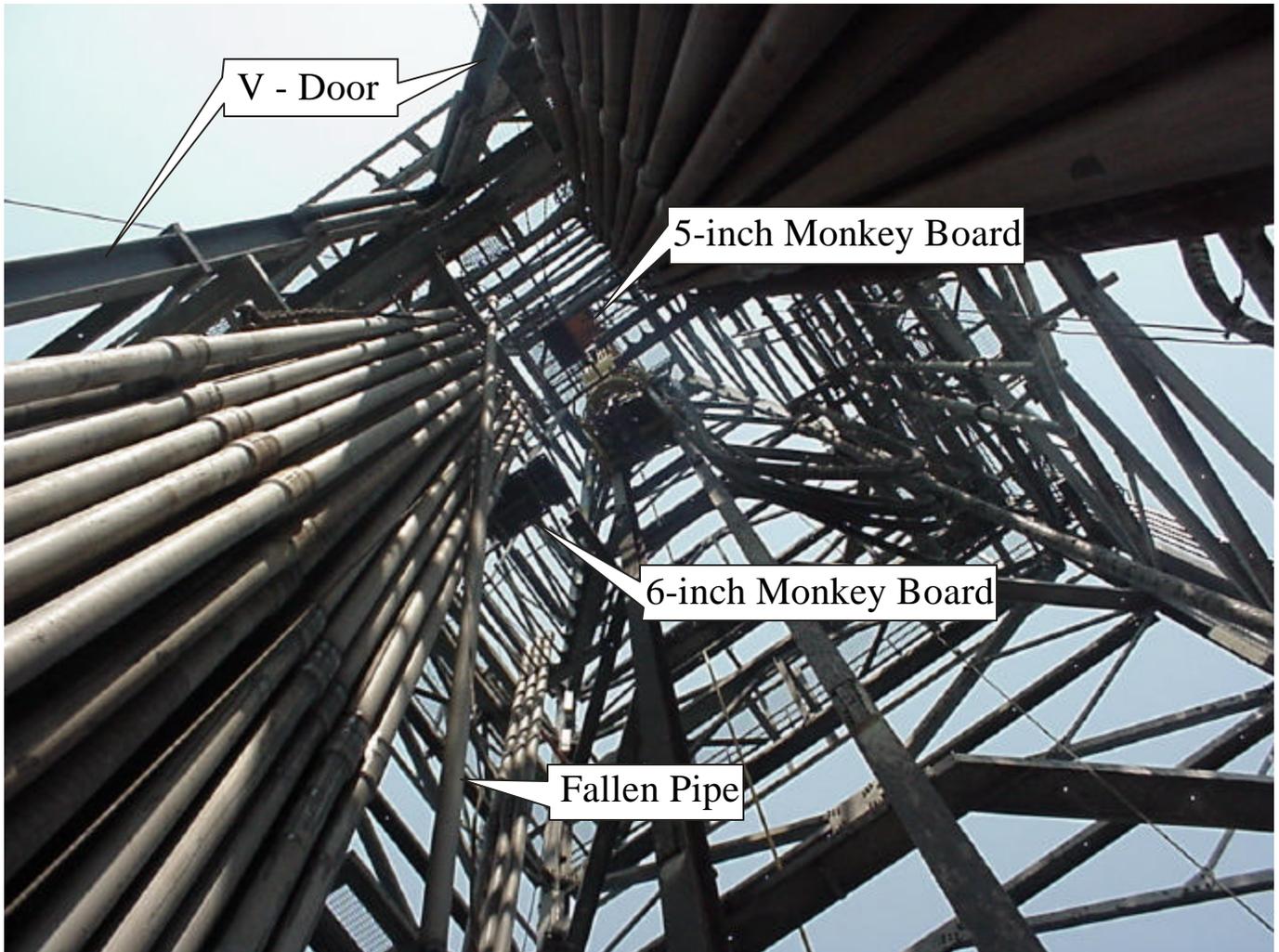
1. A summarization of the first Safety Alert for reference purposes.
2. A recommendation that designated operators and their contractors perform a JSA specifically for the operation of lifting personnel and that the results of that analysis be incorporated as a requirement into their official safety procedures.

Regulatory Review

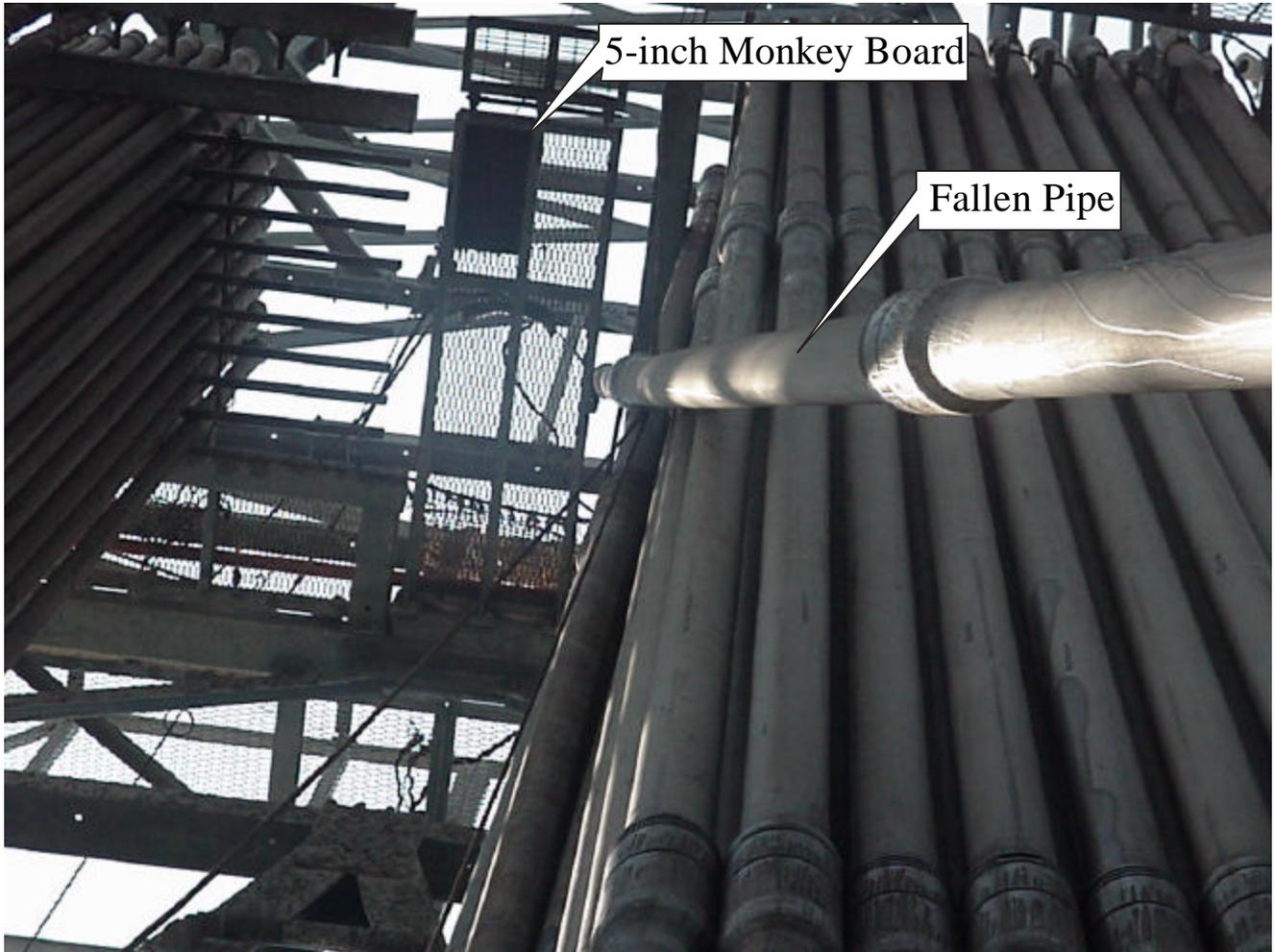
The panel further recommends that MMS review their regulations and those of other agencies, which do reference personnel lifting, for the purpose of evaluating the possible need to add a specific MMS regulation(s) to 30 CFR 250 regarding the lifting of personnel. Specifically, the evaluation should consider the types of hooks used and the need for fall-arrest systems.



Location of Lease OCS-G 5825,
Mississippi Canyon Block 109



Photograph of Fallen Pipe



Photograph of Fallen Pipe

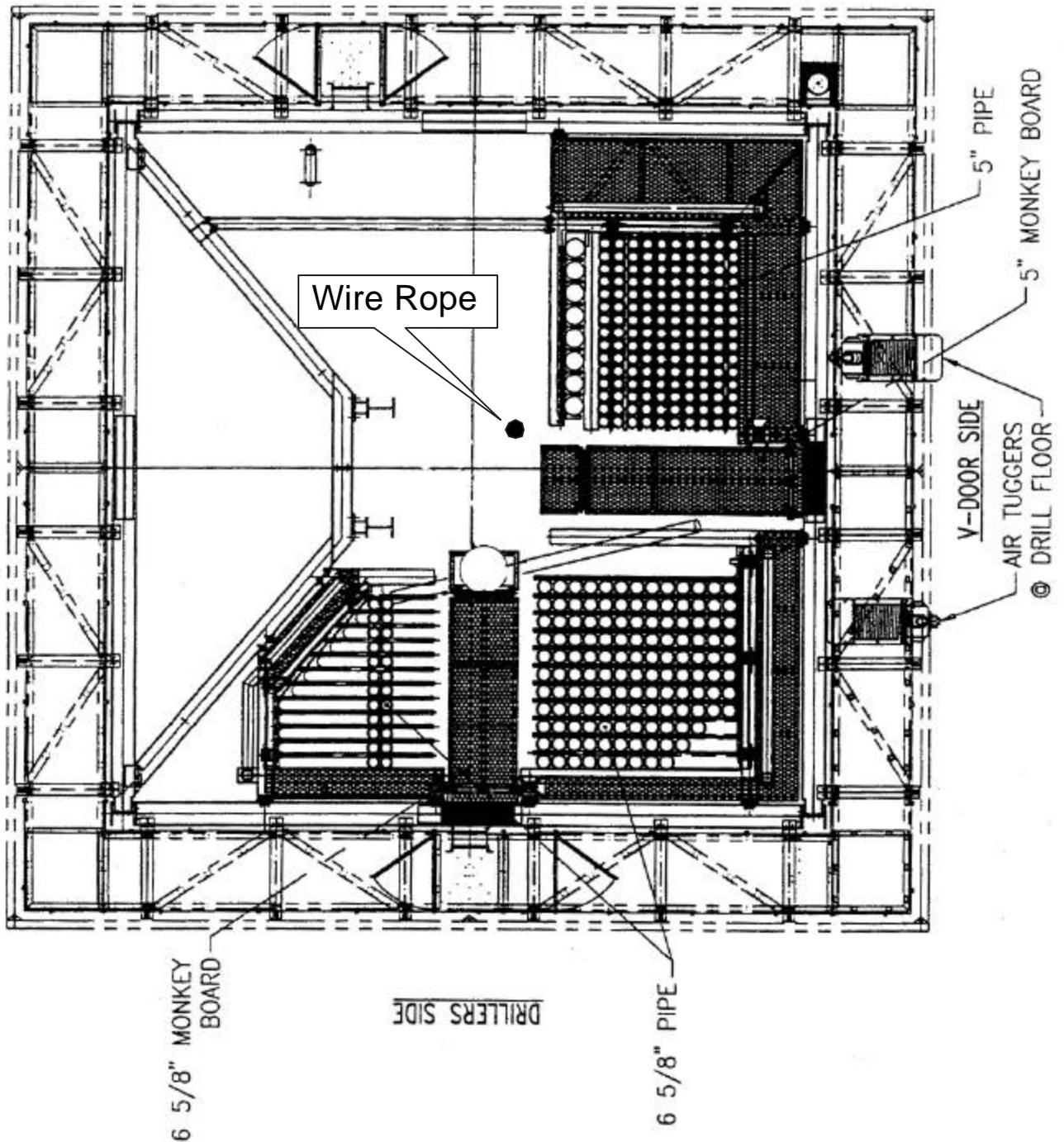
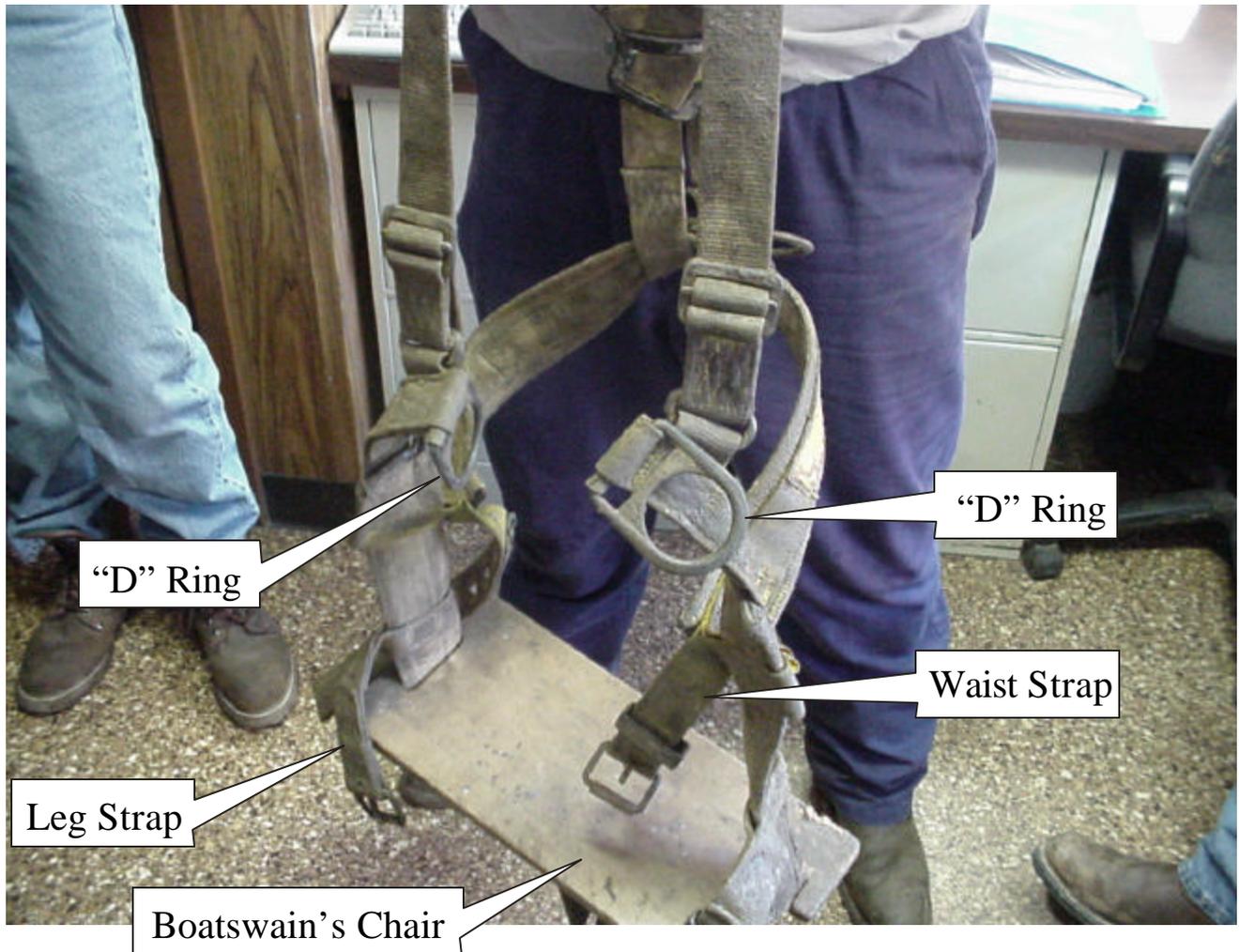


Diagram of Derrick Layout



Photograph of Harness



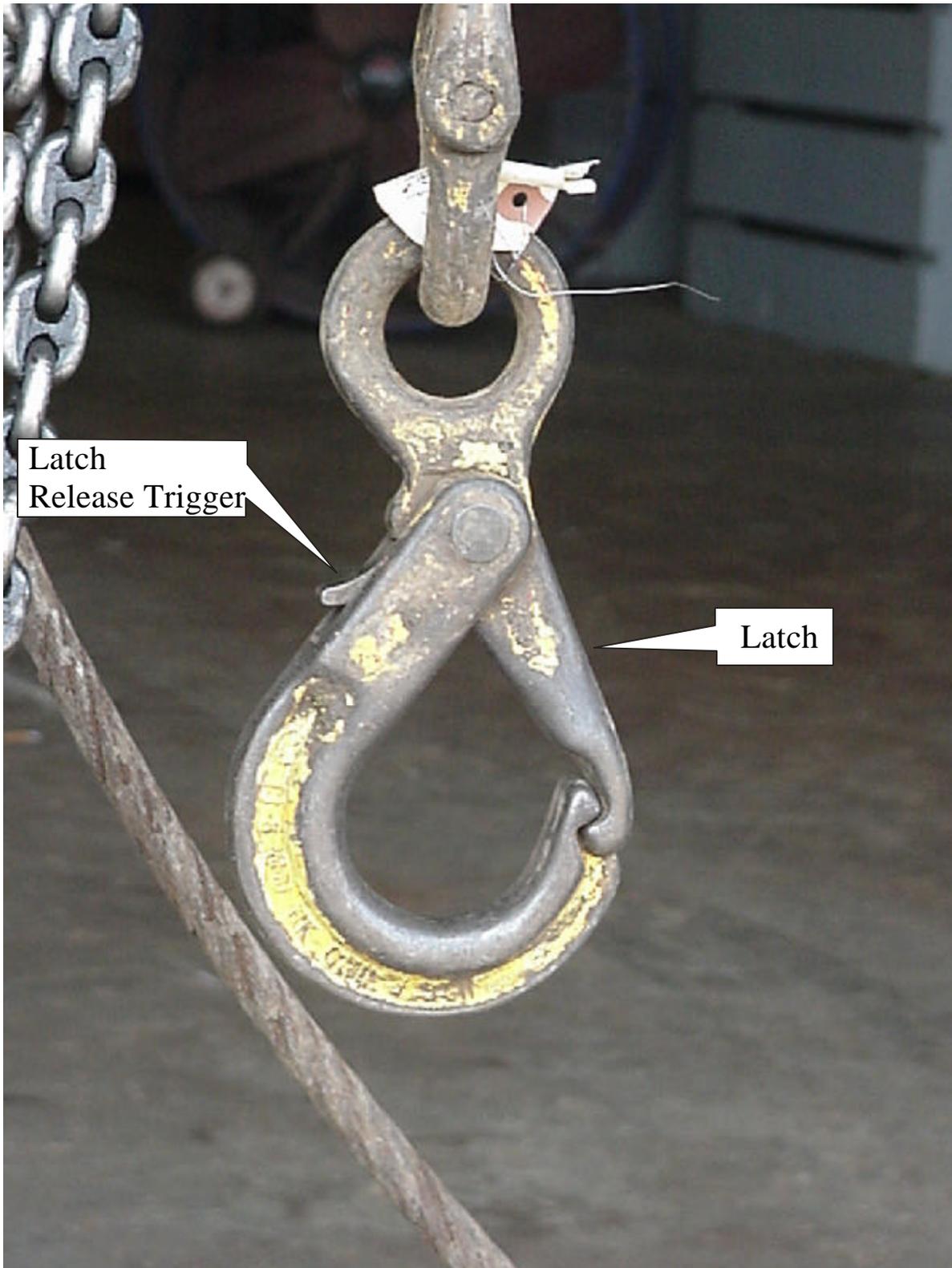
Hook

Leg Strap
(Would Normally be
Strapped)

Photograph of Man in Harness



Photograph of Hook Assembly



Photograph of Hook



Photograph of Hook/Latch Gap



Photograph of Harness Suspended from Hook



Photograph of “D”Rings in Hook/Latch Gap



Photograph of "D" Rings in Hook/Latch Gap