

86-0101

OCS REPORT
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**Investigation of September 1984 Blowout and Fire
Lease OCS-G 5893, Green Canyon Block 69
Gulf of Mexico,
Off the Louisiana Coast**

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October 1986

Prepared by

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Investigation of September 1984 Blowout and Fire Lease OCS-G 5893, Green Canyon Block 69 Gulf of Mexico, Off the Louisiana Coast

I. Investigation and Report

A. Authority

A serious blowout and fire occurred on September 14, 1984, on the semisubmersible drilling rig *Zapata Lexington*. The rig was drilling Well No. 1 for Conoco, Inc. in Green Canyon Block 69, Lease OCS-G 5893, in the Gulf of Mexico (GOM) offshore the State of Louisiana. Pursuant to Section 208, Subsection 22 (d), (e), and (f), of the Outer Continental Shelf (OCS) Lands Act Amendments of 1978 and Department of the Interior Regulation 30 CFR Part 250, the Minerals Management Service (MMS) is required to investigate and prepare a public report of this accident. By memorandum dated September 28, 1984, the following MMS personnel were named to the Investigative Panel:

K. W. Blake, Reston, Virginia
D. J. Bourgeois, Metairie, Louisiana
D. C. Howard, Houma, Louisiana
C. J. Schoennagel, Metairie, Louisiana

Lt. Frank Paskewich of the United States Coast Guard (USCG) and Mr. Paul J. Esbensen of the National Transportation Safety Board (NTSB) participated in the investigative proceedings. Both the USCG and the NTSB will prepare and publish separate reports based on their analyses of the testimony and evidence obtained during the investigative proceedings.

B. Procedures

Some of the members of the investigative panel visited the site of the accident, the *Zapata Lexington*, while still located in Green Canyon Block 69, on September 19, 1984. Other panel members visited the drilling rig in a shipyard at Brownsville, Texas, on October 5, 1984. The investigative panel, including the USCG and the NTSB representatives, met in the MMS GOM Regional Office in Metairie, Louisiana, on September 28, 1984, to discuss the details of the accident and the procedures to be used in conducting the investigation. At this meeting, the panel was briefed by Houma District Office personnel who conducted a preliminary investigation on September 15, 1984.

On October 3, 9, and 15, 1984, panel members met with Conoco personnel and Zapata attorneys to discuss the incident and to obtain information concerning the personnel aboard the *Zapata Lexington* on the day of the accident. After determining the location of crew members on the rig at the time of the accident, and reviewing job assignments, the panel developed a witness list.

A meeting to obtain testimony from these witnesses was scheduled for the week of October 22-26, 1984. However, on October 19, 1984, a court order was issued by the United States District Court, Eastern District of Louisiana, temporarily postponing the meeting until certain procedural matters concerning this meeting were revised.

Once procedures were satisfactorily revised, meetings to obtain testimony were convened at the MMS Regional Office, in Metairie, Louisiana, on December 3-7, 1984, at which 23 witnesses testified; at the USCG Building, in New York, New York, on January 23, 1985, at which 1 witness testified; and at the Conoco Petroleum Building, in Houston, Texas, on March 19, 1985, at which 3 witnesses testified (for complete list of witnesses, see appendix, attachment 1).

II. Introduction

A. Background

Lease OCS-G 5893 covers approximately 5,760 acres and is located in Green Canyon Block 69, Gulf of Mexico, off the Central Louisiana Coast (for lease location, see appendix, attachment 2). The lease was issued effective July 1, 1983, for a cash bonus of \$2,015,800 with a 1/8 fixed royalty rate. Conoco, Inc., with 100 percent interest, was the original lessee. On July 1, 1983, Conoco, Inc., assigned unto Cities Service Oil and Gas Corporation an undivided 33.33333 percent interest in the lease. Effective March 1, 1984, Conoco, Inc., assigned unto AGIP Petroleum Company, Inc., an undivided 33.33333 percent interest in the lease. At present, the lessees are:

Conoco, Inc.	33.33334 percent
Cities Service Oil and Gas Corporation	33.33333 percent
AGIP Petroleum Co., Inc	33.33333 percent

A Plan of Exploration to drill four wells was submitted on May 23, 1984, and approved on July 6, 1984. On July 5, 1984, Conoco submitted an Application for Permit to Drill (APD) exploratory Well No.1 in Green Canyon Block 69 to a measured depth (MD) of 14,457 feet (13,000 feet true vertical depth). The District Supervisor for the MMS Houma District approved the APD on July 11, 1984.

On July 15, 1984, the *Zapata Lexington* arrived on location in Green Canyon Block 69. Conoco's Well No. 1 was spudded on July 17, 1984, in 1,465 feet of water (for well location, see appendix, attachment 3).

The conductor hole was drilled using seawater as the drilling fluid. Returns were dispersed at the mudline.

The subsea blowout preventer (BOP) stack and riser were run on July 23, 1984. After installation, the ram-type BOP's and associated equipment were pressure tested to a low of 250 pounds per square inch (psi) and a high of 5,000 psi. The annular preventers and associated equipment were pressure tested to a low of 250 psi and a high of 3,500 psi. The diverter system was function tested.

The last inspection of the *Zapata Lexington* by an MMS representative before the blowout and fire was conducted on August 19, 1984. The results of this inspection indicated that there were no violations of MMS regulatory requirements.

B. Description of Incident

On September 14, 1984, the *Zapata Lexington* was drilling at 9,535 feet MD with 12.5 pounds per gallon (ppg) mud when a kick occurred at approximately 5:20 a.m. The well was shut in with the No. 1 annular preventer (for schematic of subsea BOP stack, see appendix, attachment 4). The shut-in drill pipe pressure (SIDPP) was 200 psi and the shut-in casing pressure (SICP) was 1,000 psi.

The weight of the mud needed to kill the well was calculated to be 13.1 ppg. Barite was then added to the 12.5 ppg mud in the mud pits to increase the mud weight to 13.1 ppg.

At approximately 6:00 a.m., the drilling crew started to circulate the 13.1 ppg kill mud down the drill pipe. Returns were being taken up the annulus and through the choke line. The kick was circulated out of the well by approximately 11:00 a.m., at which time the SIDPP and the SICP were 0 psi.

Once the well was dead, the rig drilling crew needed to evacuate a volume of gas contained in the subsea BOP stack before resuming drilling operations. Ten barrels (bbls) of seawater were pumped down the kill line while 13.1 ppg mud was still pumped down the drill pipe. Returns from both of these operations were taken up the choke line. After the 10 bbls of seawater had been pumped, the No. 3 BOP (variable bore pipe rams) was closed and all circulation halted. Seawater plus some drilling mud were then bled back through the kill line.

The closing pressure on the No. 1 annular preventer was relaxed to allow the original drill mud of 12.5 ppg in the riser to U-tube the gas trapped in the subsea BOP stack up the kill line. After a short period, flow from the riser was observed. The mud pumps were hooked up to the kill line, and the diverter bag was closed. The No. 1 annular preventer was completely opened, and 13.1 ppg mud was pumped down the kill line and circulated up the riser through the gumbo box to the shale shaker.

At approximately 12:45 p.m., a large volume of mud and gas flowed out of the riser. Almost instantaneously the gas ignited, engulfing the drill floor and surrounding area in flames. The fire raged half way up the derrick and under the substructure of the drill floor.

Almost immediately after the gas ignited, the fire alarm and then the abandon-ship alarm were sounded. All personnel, except for a few who remained to fight the fire, abandoned the rig. The contingent that remained aboard started to fight the fire, but were prevented from continuing when water pressure was lost to the fire hoses. These crew members proceeded to both the bow and starboard side of the rig where they abandoned the rig via Jacob's ladders, rope lines, and stairs into inflatable life rafts.

All personnel that abandoned the rig were picked up by the standby boat, *Chad G.* Most were taken to other rigs in the area. Three personnel that abandoned the rig with the initial group were severely burned when the gas ignited. They were transported by helicopter to West Jefferson General Hospital in Marrero, Louisiana.

Some personnel reboarded the rig at approximately 2:15 p.m. after the fire had subsided. By 2:30 p.m., the fire had been extinguished.

The rig was surveyed and four bodies were found. Damage to the drill floor and equipment on the starboard side of the rig near the shale shaker room was extensive (for photographs of the damage, see appendix, attachment 5).

III. Findings

A. *Preliminary Activities*

A 9 5/8-inch intermediate string of casing was set and cemented on August 31, 1984. The casing shoe was pressure tested to an equivalent of 15.5 ppg. Drilling continued to 8,972 feet MD using 13.7 ppg mud when the drill pipe was stuck. A cement plug was spotted from 8,722 to 8,488 feet MD. The well was then sidetracked below the 9 5/8-inch casing.

On September 12, 1984, the Nos. 2, 3, and 4 ram-type BOP's and associated equipment were pressure tested to a low of 250 psi and a high of 5,000 psi. The Nos. 1 and 2 annular preventers and associated equipment were pressure tested to a low of 250 psi and a high of 3,500 psi. The surface safety equipment -- including the drill string safety valve, inside blowout preventer, and the kelly cock -- were pressure tested to a low of 250 psi and a high of 5,000 psi. No problems were encountered during these tests.

On September 14, 1984, at approximately 5:20 a.m., a drilling break occurred at 9,535 feet MD. The well was shut in with the No. 1 annular preventer with an SIDPP of 200 psi and an SICP of 1,000 psi. Approximately 30 bbls were gained in the mud pits from the kick.

The Conoco drilling engineer aboard the rig calculated that the weight of the mud needed to circulate out the kick and kill the well was 13.1 ppg. A safety factor of 0.1 ppg was included in this calculation. The 12.5 ppg mud used when the kick occurred was weighted-up with barite to 13.1 ppg.

B. *Circulation of Kick*

At approximately 6:00 a.m., with the No. 1 annular preventer closed, the drilling crew started to pump the 13.1 ppg kill mud down the drill pipe. The initial circulating drill pipe pressure was about 1,000 psi with a flow rate of 4.7 barrels per minute (bbls/min) and a pump speed of 40 strokes per minute (SPM).

Mud returns were being taken up the annulus and through the choke line. The flow was directed to the mud degasser before going to the mud pits.

At approximately 7:15 a.m., after 350 bbls of kill mud were circulated, a leak developed in the flowline between the choke manifold and the mud degasser. Operations were shut down while a clamp patch was placed over the cut out in the line. Circulation was resumed at 3.5 bbls/min with a pump speed of 30 SPM and a circulating pressure of 400 psi. After 480 bbls were circulated, operations were shut down to build the mud volume up, as mud was being lost to the formation. The maximum casing pressure recorded was about 3,100 psi.

By 11:00 a.m., after about 760 bbls of 13.1 ppg kill mud were circulated, the well was dead with an SIDPP and an SICP of 0 psi.

C. *Reduction of Pressure of Gas Trapped in the BOP Stack*

In circulating out the well kick it was anticipated that some gas had been trapped in the subsea BOP stack below the No. 1 annular preventer. It was determined that the best method of evacuating this gas would be to bleed it down through the kill line.

The Halliburton cementing unit was routed to the kill line. Ten barrels of seawater were pumped down the kill line by this unit. This was the volume needed to displace the kill line to the subsea BOP stack. During this operation, 13.1 ppg mud was circulated down the drill pipe and up the annulus. Returns from both operations were taken up the choke line.

After the 10 bbls of seawater were pumped, the kill line valve was closed, and circulation of the 13.1 ppg mud was stopped. The drill pipe was spaced so that closure of the No. 3 BOP would not be on a tool joint. The No. 3 BOP was closed. These events occurred at approximately 12:00 noon, the time that the drilling crews changed shifts.

The decision to use the No. 3 BOP to isolate the BOP stack from the well was based on several considerations: the No. 1 BOP was equipped with shear rams; because a piece of metal previously found in the drill cuttings had apparently broken from the No. 2 BOP, it was thought best not to use the No. 2 BOP; since the No. 4 BOP was considered to be the last line of protection, it was decided not to use it for this purpose. Subsequent investigation revealed that the drill pipe tool joint in the vicinity of the No. 3 BOP was badly scoured (for photograph of tool joint, see appendix, attachment 6).

With the No. 1 annular preventer and No. 3 BOP closed, the kill line valve was opened. (The volume of the BOP stack between the No. 1 annular preventer and the No. 3 BOP was 8.16 bbls.) This would allow the gas trapped in the BOP stack to displace the seawater in the kill line, thereby reducing the pressure and removing some of the trapped gas from the stack. Return of the 10 bbls of seawater and some drilling mud was observed at the Halliburton unit. The kill line valve was again closed.

D. Removal of Gas Trapped in the BOP Stack and Kill Line

The fluid in the kill line was then routed through the choke manifold to the degasser into the mud pits. The kill line valve was reopened. At the same time, the closing pressure on the No. 1 annular preventer was relaxed from 1,200 psi to 700 psi. It was thought that the hydrostatic head of the 12.5 ppg mud in the riser would be greater than the reduced pressure of the gas in the BOP stack and the kill line. This would have allowed the gas to U-tube out of the kill line and through the degasser.

E. Loss of Well Control

Approximately five minutes after the closing pressure on the No. 1 annular preventer was reduced, flow was observed from the riser, indicating some gas had entered the riser and had begun to expand. When this occurred, the mud pumps were routed to the kill line, the No. 1 annular preventer was opened, the diverter bag below the drill floor was closed, and 13.1 ppg mud was circulated down the kill line with returns being taken up the riser. The diverter bag was closed to minimize the chance of gas and drilling mud venting to the drill floor. (For photograph of diverter bag, see appendix, attachment 6.) The 13.1 ppg mud was circulated because it was thought that if the riser were voided of fluid by the expanding gas it might have collapsed from the external hydrostatic pressure. In fact, the riser was capable of withstanding the external hydrostatic pressure of seawater at 1,465 feet if voided of fluid, and therefore would not have collapsed.

Below the diverter bag there were a number of possible flow paths for the mud and gas being circulated out of the riser (for schematic of flow paths, see appendix, attachment 7). The mud and gas could be diverted overboard on either the port or starboard side of the

rig, or both, or could flow through the gumbo box, shale shakers, and degasser into the mud pits. The latter flow path was selected. One consideration used in this decision was that the 12.5 ppg mud in the riser contained 6 percent mineral oil, and pollution would have occurred if the mud and gas had been diverted overboard.

The volume of 13.1 ppg mud needed to circulate the kill line and riser was calculated to be 555 bbls. At one point, circulation pressure was approximately 3,000 psi with a flow rate of 12 bbls/min and a pump speed of 40 SPM. Returns were being visually monitored at the gumbo box, shale shakers, and mud pits (for photograph of gumbo box, see appendix, attachment 8).

At the gumbo box, personnel were spraying water with a fire hose across the box to reduce the possibility of ignition of gas that was flowing from the riser. The gumbo box was the first point at which the returning mud was open to the atmosphere, and therefore the most likely place that gas would break out of the system.

During this time the flow was erratic; the units of gas being monitored at the shale shaker were also erratic, reaching a maximum of 1,200 units at one time.

F. Explosion and Fire

At approximately 12:45 p.m., after about 455 bbls of 13.1 ppg mud had been pumped, personnel working in the vicinity of the drill floor head a loud rumbling sound and felt the rig shake. At about the same time, personnel located at the gumbo box noticed a tremendous increase in the flow of mud and gas out of the return line. The fire hose was shut off and the personnel at the gumbo box turned and started to abandon the area. Almost instantaneously, an explosion and fire occurred. The fire completely engulfed the drill floor and its substructure and the areas surrounding the gumbo box and the shale shaker room.

G. Emergency Warning, Evacuation, and Firefighting

Immediately after the explosion and fire occurred, the fire alarm and then the abandon-ship alarm were sounded. Personnel aboard the rig proceeded to their abandon-ship stations. Some of the personnel in the quarters at the time of the fire did not feel that it was safe to go to their assigned location at the aft lifeboat (for schematic of rig, see appendix, attachment 9). These personnel went to the escape capsules located at the bow of the rig.

Before personnel proceeded to the escape capsules at the bow of the rig, the standby boat, *Chad G*, was alerted, Conoco's onshore office was apprised of the situation, and the No. 1 BOP (shear rams) and riser disconnect controls were activated. Subsequent investigation revealed that the No. 1 BOP and the riser disconnect did not function because hydraulic lines had been severed by the initial explosion and fire.

Most personnel who had assembled at the bow boarded the escape capsules and lowered them to the water. Eleven personnel, including the Conoco company representative and the Zapata junior toolpusher, remained aboard the rig to extinguish the fire, secure equipment, and assure evacuation of all personnel.

Some of this contingent made their way toward the stern near the drill floor where they started to spray the fire with the available firefighting equipment. Shortly thereafter water pressure was lost, so a decision was made to abandon the rig. Subsequent investigation revealed that a valve on the lower sea chest, from where the fire pump takes suction, closed when power to the rig was lost. The closure of the lower sea chest valve probably accounted for the loss in water pressure.

When the decision was made for these remaining personnel to abandon the rig, they proceeded to the aft lifeboat. Attempts were made to launch the boat, but it would not launch. Some of these personnel then made their way back to the bow where they abandoned the rig via a Jacob's ladder into an inflatable life raft. Others proceeded to the starboard side, where they abandoned the rig via a Jacob's ladder, rope lines, and stairs into an inflatable life raft.

All personnel that abandoned the rig were picked up by the standby boat, *Chad G*. Aboard this boat, the first personnel accountability check was taken to determine who was present. Of the 68 people aboard the rig at the time of the accident, 64 were accounted for at this time (for list of personnel aboard the rig, see appendix, attachment 10).

Other standby boats in the area arrived and directed water at the fire with their fire monitors. All but nine of the rig personnel aboard the *Chad G* were transferred to other boats and taken to the rigs *Zapata Saratoga* and *Penrod 78*.

H. *Fatalities and Damages*

The nine personnel that remained on the *Chad G* reboarded the *Zapata Lexington* at about 2:15 p.m. At this time, the major portion of the fire had subsided and only several small fires and hotspots were noticeable. The fire pumps on the rig were restarted and the fires were extinguished by approximately 2:30 p.m. Subsequent reentry into the well bore revealed that the well had apparently bridged over.

Upon reboarding, the barge operator went to his station to try to correct a list to the port bow of the semisubmersible rig. This list was noticed by the rig personnel while aboard the standby boat *Chad G*. Subsequent investigation revealed that the loss of barite overboard and damage to the riser tensioners caused the list. When the initial alarm was sounded, personnel evacuating the rig did not turn off the pump to the barite tank in use at the time of the accident, allowing its contents to be pumped overboard.

A search of the rig turned up the personnel unaccounted for when the head count was taken on the *Chad G*. The bodies of David Fletcher, Zapata floorhand; Gilbert Jones, Zapata assistant driller; and Dalton Walker, Zapata senior toolpusher; were found on the drill floor. The fourth body, that of Johnnie Calton, Zapata driller, was found on the riser deck. The bodies were flown by helicopter to West Jefferson General Hospital.

Three personnel that were badly burned when the gas ignited abandoned the platform in the escape capsules. The two more seriously injured -- Paul Buckman, Zapata cleaner/painter, and Joe Smith, Zapata floorhand -- were taken to West Jefferson General Hospital on the first available helicopter. Rusty Huckabaa, Zapata floorhand, was taken to West Jefferson General Hospital by a USCG helicopter. The locations of the three injured personnel when the fire occurred were as follows: Paul Buckman was just inside the drill floor near the stairs on the starboard side and was preparing to clean up mud near the drill

floor; Rusty Huckabaa was just outside the drill floor on the stairs on the starboard side and was cleaning up mud in this area; Joe Smith was inside the shale shaker room and was monitoring mud returns.

The rig sustained severe fire damage in the vicinity of the drill floor. The entire drill floor and associated equipment, including the derrick, had to be replaced. Costs to repair the damages to the *Zapata Lexington* are estimated at \$15 million.

IV. Conclusions

A. *Probable Cause of Incident*

The loss of well control that occurred when gas that was trapped in the BOP stack rapidly expanded as it migrated up the riser was the probable cause of the accident. If the BOP stack between the No. 1 annular preventer and the No. 3 BOP had been completely filled with gas (8.16 bbls), an estimated volume of 725 bbls of gas were possible at the drill floor.

B. *Possible Causes of Ignition*

Several possible causes of ignition existed:

1. Metal grating from the gumbo box striking against metal (for photograph of metal grating, see appendix, attachment 8).
2. Mud and debris striking against fluorescent lights in the area of the gumbo box.
3. Drill cuttings entrained in the mud striking against metal.
4. A coffee pot located on the drill floor in the driller's office.
5. Static electricity.
6. Electrical junction box located overhead of the gumbo box.

C. *Probable Cause of Fatalities*

Injuries sustained in the fire caused the fatalities of Messrs. Calton, Fletcher, Jones, and Walker.

D. *Contributing Causes of Incident*

Causes that contributed to the blowout and fire were:

1. Circulation of the 30-bbls kick that was taken at 9,535 feet MD out of the well.
2. The locating of outlets for the choke and kill lines on the subsea BOP stack in such a manner that circulation of the stack while isolated from the well could not be accomplished.
3. Lack of experience on the part of the drilling personnel in the method used to reduce the pressure of and remove the gas trapped in the BOP stack, as evidenced by the failure of the personnel to:
 - a. Closely monitor the amount, type, and pressure of the returns that were taken at the Halliburton unit.
 - b. Allow time for the pressure of the trapped gas to be sufficiently reduced to a point where the hydrostatic pressure of the 12.5 ppg mud in the riser could U-tube the gas out the kill line.

4. Circulation of the 13.1 ppg mud down the kill line and up the riser when flow was noticed on the drill floor. In pumping this mud, the gas bubble rose to the surface more rapidly rather than being allowed to slowly percolate up.
5. Not diverting the flow from the riser overboard in a timely manner.

E. Concerns Developed from Incident

A number of concerns have developed as a result of the incident:

1. Lack of coverage in well-control schools of methods that may be used to remove gas trapped in subsea BOP stacks during well-killing operations.
2. An apparent complacency on the part of drilling personnel about the seriousness of the operations being conducted when the fire occurred, as evidenced by nonessential personnel performing routine duties.
3. A failure of the the aft lifeboat release mechanism to function properly, resulting in several personnel abandoning the rig via Jacob's ladders, rope lines, and stairs into inflatable life rafts.
4. The widespread acceptance and apparent usage of the U-tube method for reducing the pressure of and removing gas from a subsea BOP stack. Sufficient performance data does not exist to affirm the reliability of the process.

V. Recommendations

A. Safety Alerts

The Gulf of Mexico Region should issue Safety Alerts concerning the following:

1. Lessees and contractors should determine that the configuration of the choke and kill lines on the subsea BOP stack allows for circulation of the BOP stack when one of the annular preventers and one of the BOP's (pipe rams) are closed.
2. Lessees and contractors should review drilling operation manuals to determine if a method for removal of gas in a subsea BOP stack is included. If not, consideration should be given to adding a section that addresses this operation.
3. Lessees and contractors should determine if the riser can withstand the external hydrostatic pressure of seawater at the water depth it will be used in if it is voided of fluid. If it cannot withstand the pressure, consideration should be given to using riser-fill valves instead of pumping mud to prevent riser collapse when the riser is unloading.

B. OCS Order No. 2

OCS Order No. 2 should be revised to include the following:

1. A requirement for gas-sensing devices on the drill floor and at the shale shaker to sound an alarm.
2. A requirement for diverter systems for wells drilled with subsea BOP stacks until drilling operations are completed.
3. A requirement that a determination be made of the maximum water depth at which the riser, if it is voided of fluid, can be used before collapsing from the external hydrostatic pressure of seawater, and that this determination be included in the APD and posted on the drill floor.

C. MMSS-OCS-T 1

The OCS Standard "Training and Qualifications of Personnel in Well-Control Equipment and Techniques for Drilling on Offshore Locations" should be revised so that it addresses the following requirements for subsea well-control schools:

1. The configuration and usage of the choke and kill-line inlets to subsea BOP stacks when drilling in deep water.
2. The procedures for minimizing and removing gas that may be trapped in a subsea BOP stack during circulation of a kick out of a well.
3. The usage of the diverter when gas is flowing up the riser.

D. Research

Minerals Management Service should fund a research project to evaluate the procedures and parameters involved in removing gas from subsea deepwater BOP stacks and the effects this gas has when it flows up the riser.

List of Witnesses

MMS Regional Office - Metairie, Louisiana - December 3-7, 1984

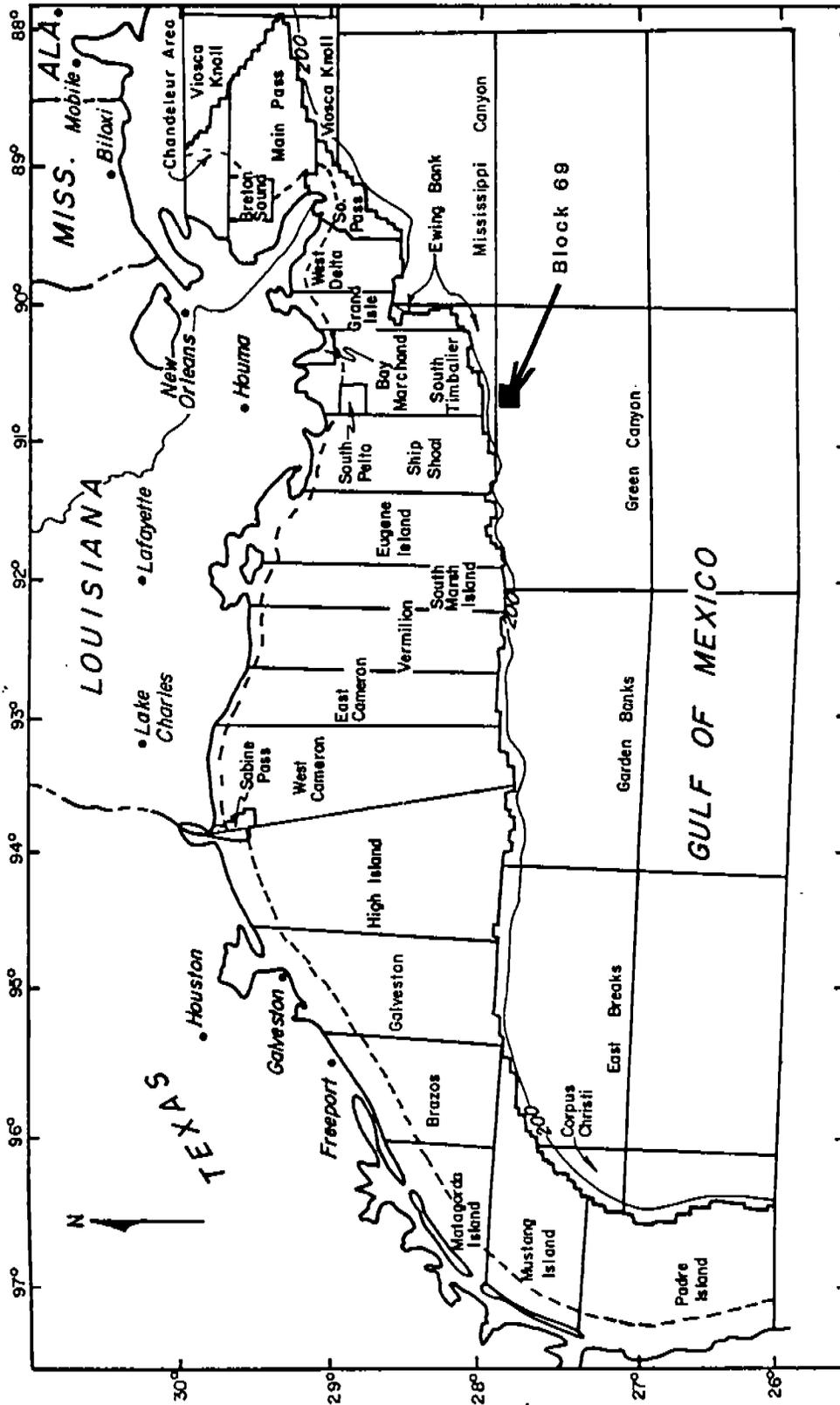
G. A. Walker	Zapata Offshore Company
D. D. Warlow	Zapata Offshore Company
G. R. Aderholt	Zapata Offshore Company
R. E. McQuinn	J. D. Boyle and Associates
C. J. Gregoria	Gulf Coast Catering
W. James, Jr.	Halliburton Services
J. Filipcic	The Analyst
J. C. Kidd	Guilbeau Marine
T. H. Ballard	Zapata Offshore Company
G. Mullikin	Regan Enterprises
R. London	Zapata Offshore Company
T. G. Mayberry	Zapata Offshore Company
M. K. Hightower	Zapata Offshore Company
S. J. Billiot	Zapata Offshore Company
G. C. Worley	Zapata Offshore Company
R. J. Morris	U.S. Coast Guard
R. S. Fussell	Zapata Offshore Company
D. Melton	Zapata Offshore Company
R. G. Bowman	Zapata Offshore Company
D. L. Farr	Zapata Offshore Company
D. J. Griffin	Minerals Management Service
L. J. Griffin	Conoco
M. P. Stockinger	Conoco

USCG Building - New York, New York - January 23, 1985

J. A. Mauro	Zapata Offshore Company
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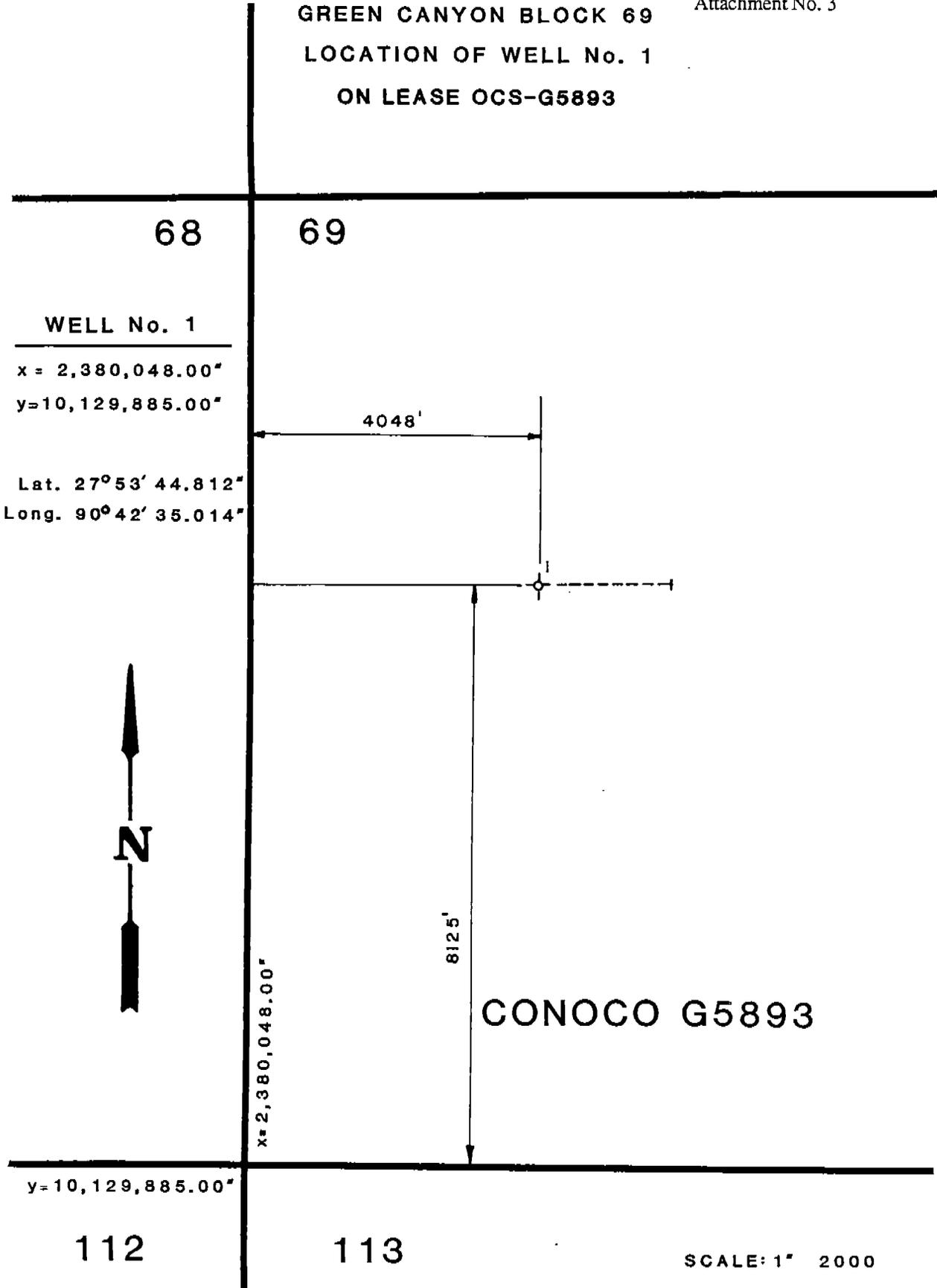
Conoco Petroleum Building - Houston, Texas - March 19, 1985

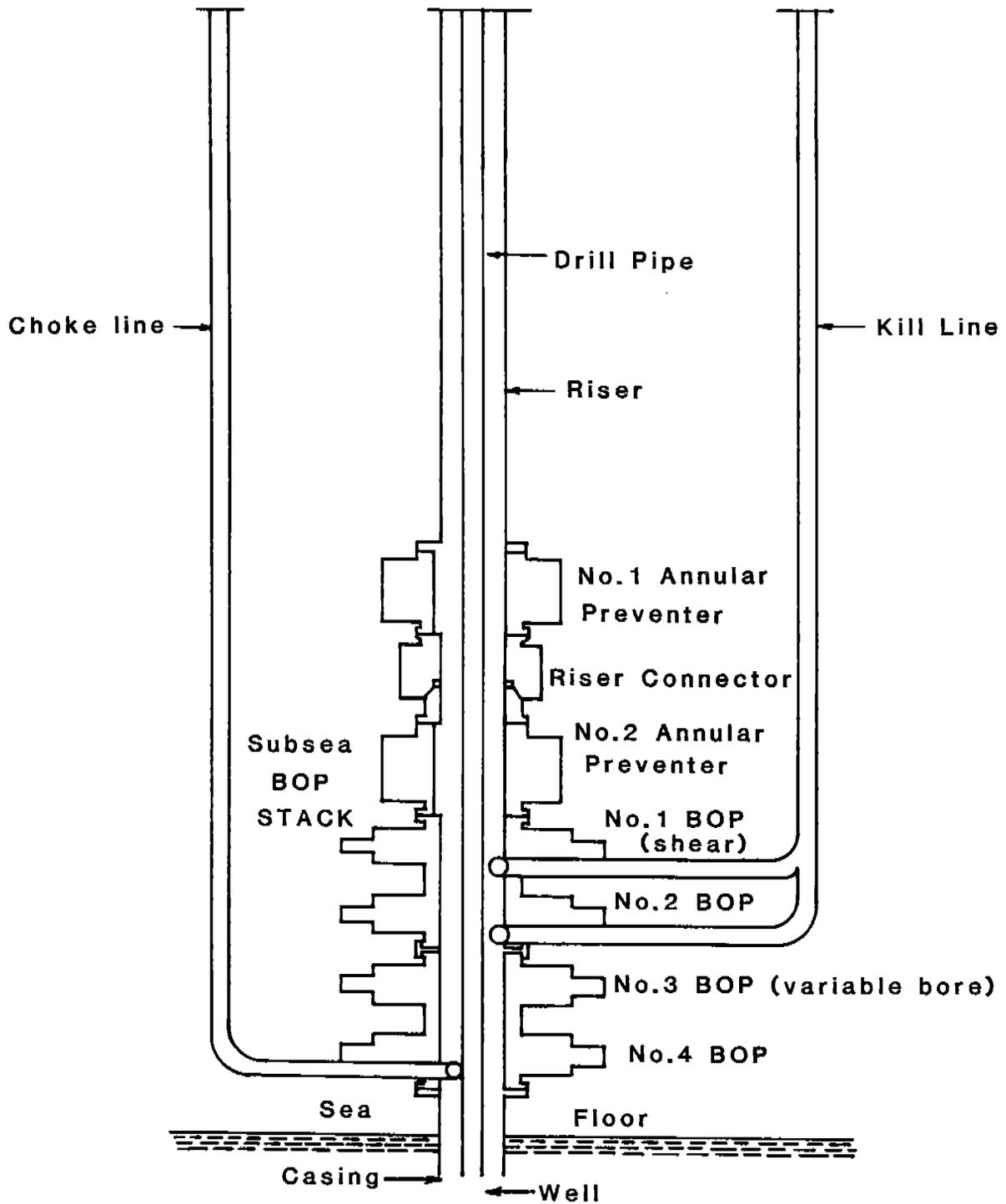
J. L. Smith	Zapata Offshore Company
R. L. Huckabaa	Zapata Offshore Company
P. J. Buckman	Zapata Offshore Company



Location of Lease OCS-G 5893, Gulf of Mexico. Dashed lines indicate boundary between State and Federal waters, solid line indicates 200-meter water depth.

GREEN CANYON BLOCK 69
LOCATION OF WELL No. 1
ON LEASE OCS-G5893

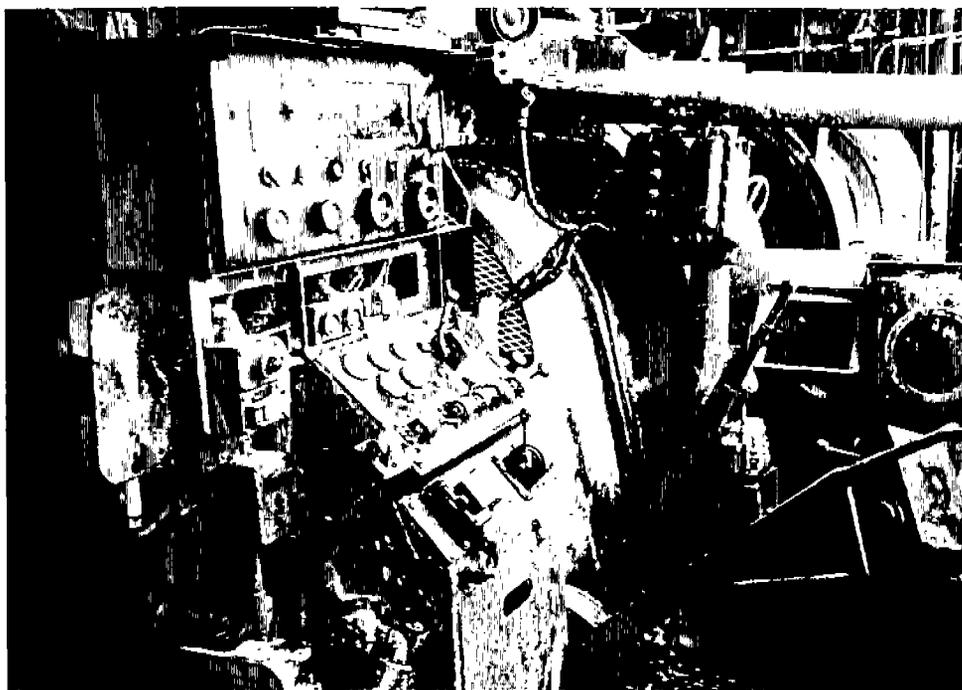




SCHEMATIC OF SUBSEA BOP STACK ZAPATA LEXINGTON

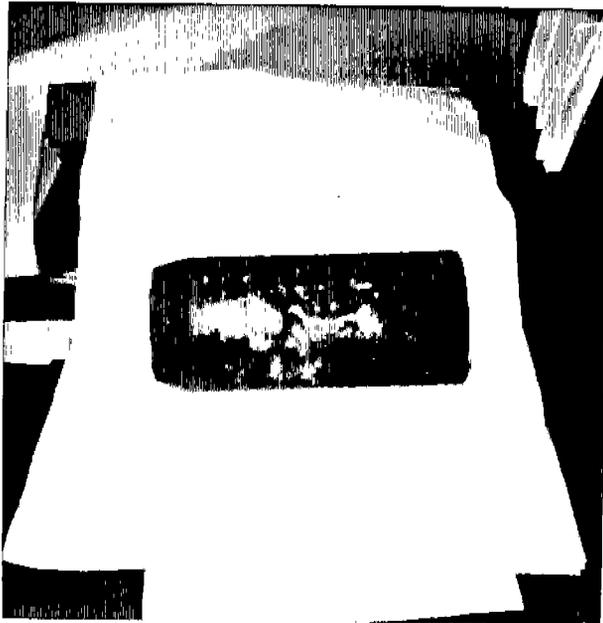
(Not to Scale)

PHOTOGRAPHS OF DAMAGE

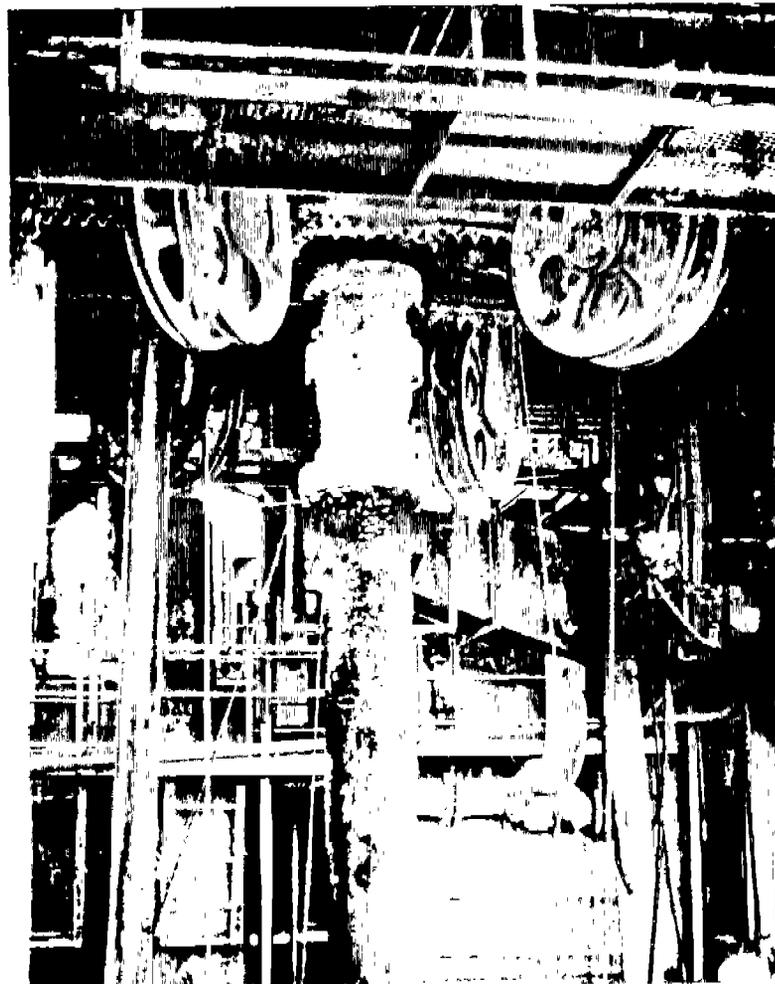


BEST AVAILABLE COPY

PHOTOGRAPHS OF TOOL JOINT AND DIVERTER BAG

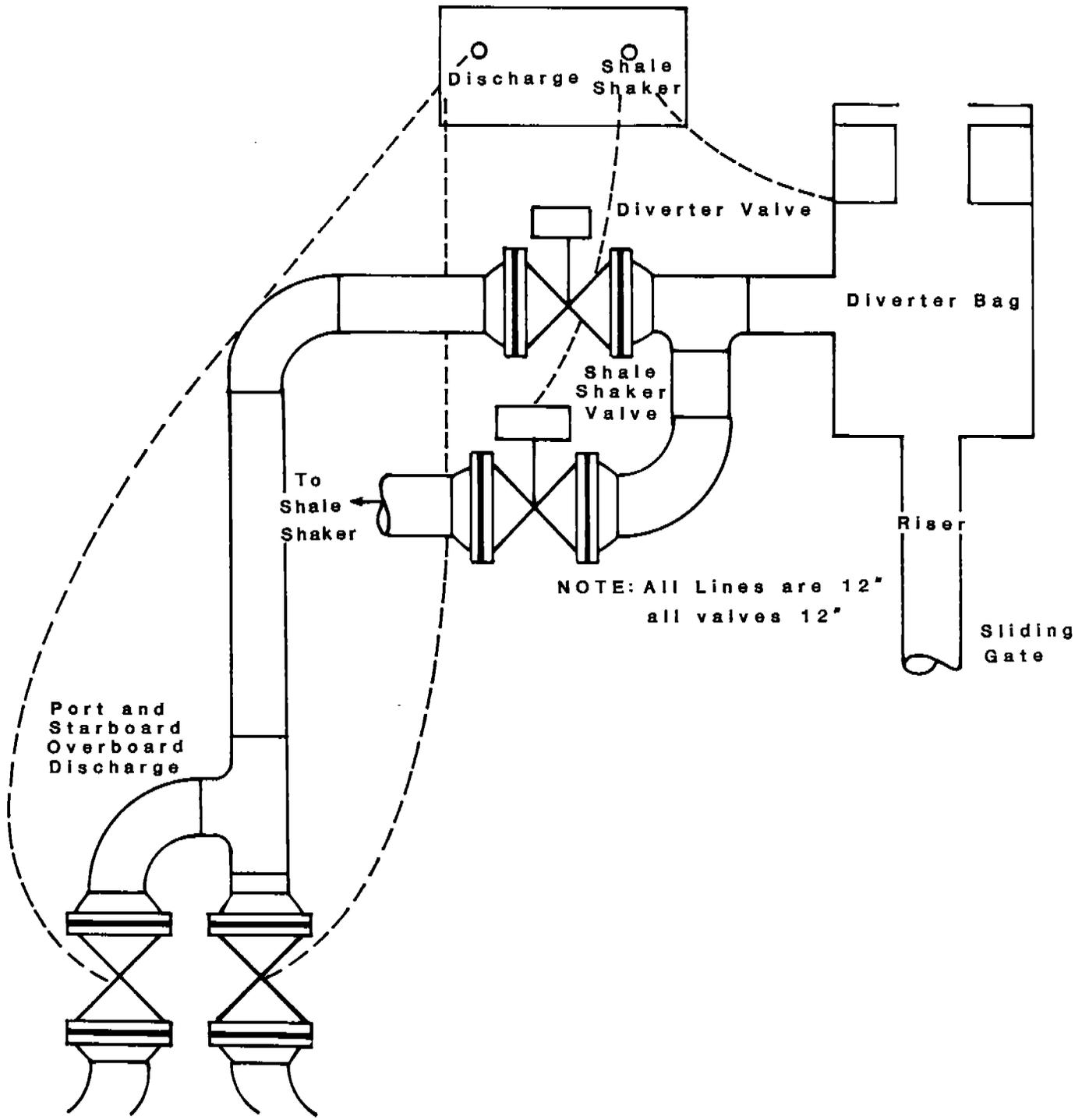


Tool Joint



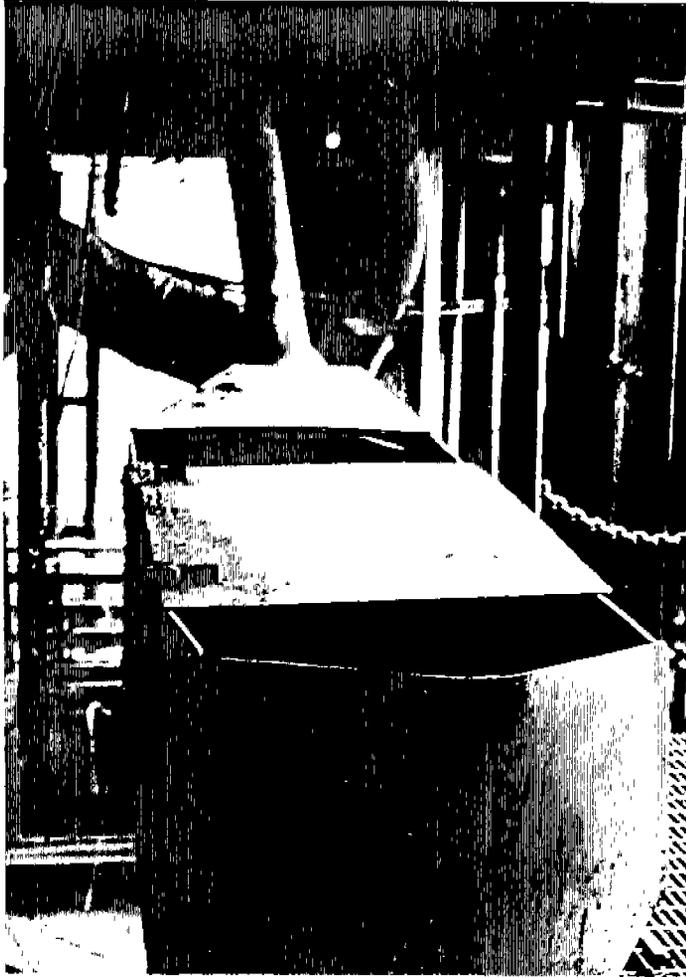
Diverter Bag

BEST AVAILABLE COPY



SCHEMATIC OF FLOW PATHS ZAPATA LEXINGTON

PHOTOGRAPHS OF GUMBO BOX AND METAL GRATING



Gumbo Box

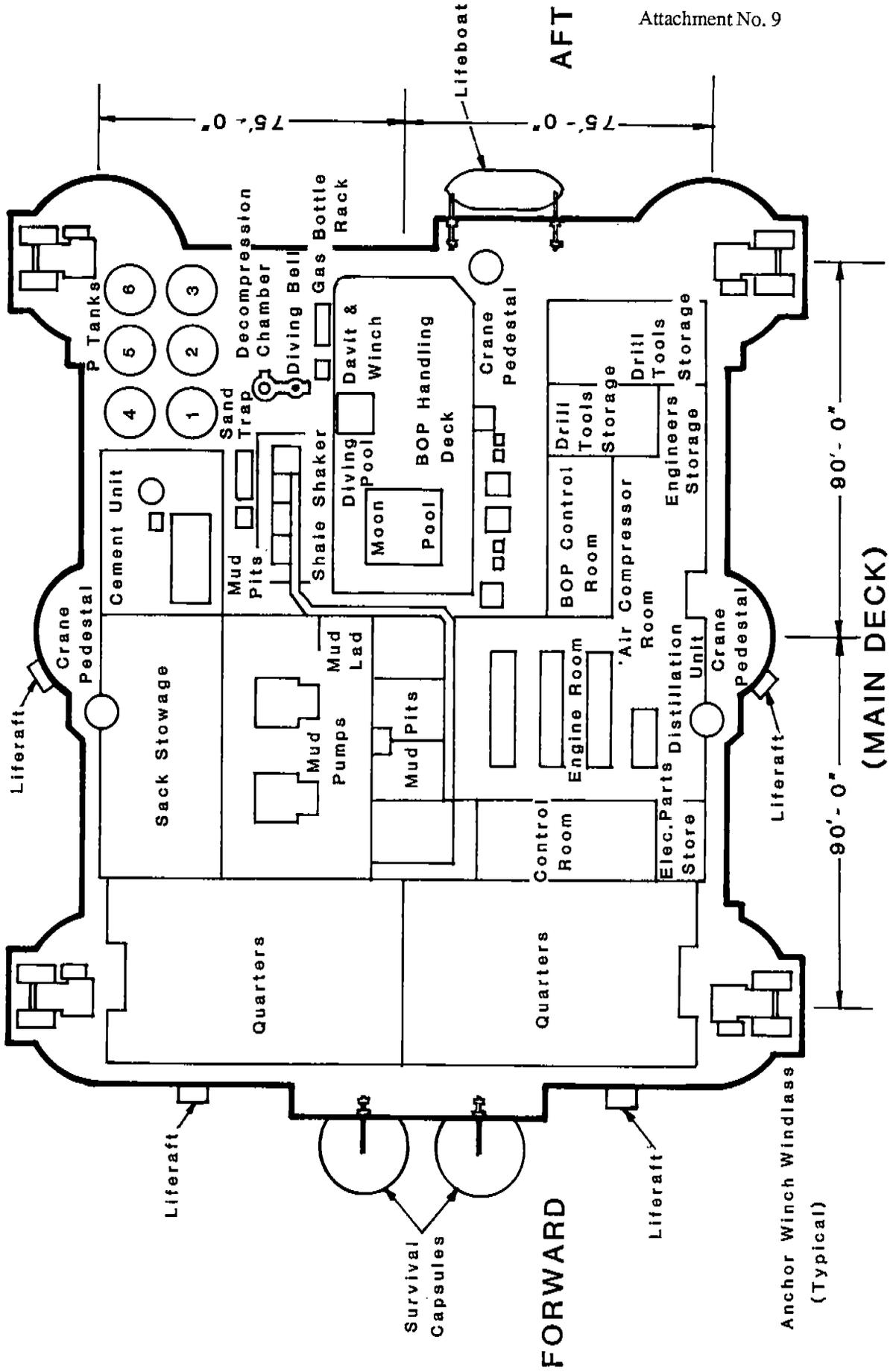


Metal Grating

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SCHEMATIC OF RIG ZAPATA LEXINGTON

Attachment No. 9



**List of Personnel Aboard the *Zapata Lexington*
at the Time of the Blowout and Fire**

Zapata Offshore Company

D. Walker*
D. Warlow
J. Page
I. Reed
G. Patterson
M. Bennett
M. Wooding
D. Duncan
J. Turner
G. Aderholt
T. Seale
R. Fussell
T. Ballard
D. Melton
G. Robbins
R. Bailey
M. Hamil
G. Worley
M. Koenig
J. Mauro
R. Barnes
R. Bowman
S. Billiot
L. Gartman
R. Clark
T. Mayberry
G. Walker
J. Calton*
G. Jones*
M. Hightower
J. Curtis
R. Huckabaa**
D. Fletcher*
J. Smith**
O. Wambles
J. Qualls
J. Alsmeyer
R. Hobbs
R. London
A. Hymes
L. Ekwelum
P. Buckman

Conoco Inc.

L. Griffin
P. Santos

*Fatality

**Burn Victim

DuPont

L. Clark

J. D. Boyle and Associates

K. Catt
T. Welker
M. Woods
L. Baynard
R. McQuinn

Halliburton Services

W. James

Directional Enterprises, Inc.

D. Simmons

Teleco

J. Stafsholt
M. Duhon

The Analyst

J. Abelghani
D. Barber
R. Davis
J. Filipic

Oceaneering

T. Gros
D. Perevrzoff

Regan Enterprises

G. Mullikin

Gulf Coast Catering

C. Gregoria
A. Landry
M. Batiste
C. Cullinan
B. Cormier
K. Cahee
T. Malos