

SP-20
Log M-301

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: November 5, 1985

Forwarded to:

Admiral James S. Gracey
Commandant
U.S. Coast Guard
Washington, D.C. 20593

SAFETY RECOMMENDATION(S)

M-85-102

About 1230 on September 14, 1984, the U.S.-flag mobile offshore drilling unit (MODU) ZAPATA LEXINGTON suffered an explosion and fire while moored and conducting drilling operations in 1,465 feet of water in the Gulf of Mexico. The accident occurred while procedures were being employed to evacuate a gas bubble from the subsea blowout preventer stack on the sea floor. Instead, gas trapped in the blowout preventer entered the base of the marine riser, rose to the surface, and escaped into the atmosphere, expelling a large volume of drilling mud out of the riser. The gas infiltrated the areas above and below the drill floor at the base of the derrick and was ignited. The explosion and fire that followed resulted in the deaths of four persons and severe injuries to three persons. Sixty-four persons abandoned the MODU using two survival capsules and three inflatable liferafts. The gas fire burned itself out about 30 minutes after the rig was evacuated. The cost of repairs was estimated at \$12 million. ^{1/}

An electrically driven fire pump was located in each pumphoom and was remotely controlled from the ballast control room. Each pump took suction from a low seachest in each pumphoom through pneumatically operated valves. A motor-driven crossover valve, also controlled from the ballast control room, enabled each pump to take suction from a high seachest in each pumphoom in the event of a loss of air pressure to the pneumatically operated valves.

The ballast control operator on duty in the ballast control room had sounded a fire signal on the general alarm. Using the controls on the ballast control board, he then opened the necessary valves and started the drill rig's two fire pumps located in the pump room of each pontoon to charge the fire hydrants. The barge engineer reported to the ballast control room, checked the ballast control panel, donned a fire suit, and attempted to fight the fire with a fire extinguisher.

Three firefighting parties were organized to fight the fire. Two parties manned the firehoses while the third group closed hatches and ventilators. After firefighting had been in progress about 10 minutes, water pressure on the fire main was lost. The investigation revealed that the compressed air supply to both pumphooms had been lost, causing the

^{1/} For more detailed information read Marine Accident Report—"Explosion and Fire Aboard the U.S. Mobile Offshore Drilling Unit ZAPATA LEXINGTON, Gulf of Mexico, September 14, 1984" (NTSB/MAR-85/11).

pneumatically operated suction valves for the fire pumps to close and thereby shutting off the water supply to the pumps. The ballast control operator noticed that the valves had closed, but because of his lack of knowledge of the system, he did not open the two motor-driven crossover valves that would have connected the fire pumps with the high seachests. The barge engineer, who was more knowledgeable about the firefighting system, did not react to the loss of water pressure in the fire mains.

When the water pressure in the fire mains was lost, the volunteers who remained aboard were unable to continue their firefighting efforts. When the ballast control operator noticed the valves close, he could have opened a motor-driven crossover valve to the high seachest and restored suction to the pumps. Each pumproom had an arrangement permitting actuation of the motor-driven valve from the control panel. Not only did the ballast control operator, because of his lack of knowledge, fail to open the two crossover valves, but also the barge engineer who knew the system failed to direct the use of the crossover valves when the loss of water pressure from the fire pumps became apparent. Although his actions of donning a fire suit and engaging in the firefighting activities are commendable, the fact remains that the barge engineer's fire station assignment, as stated on the station bill, was the ballast control room. Had he been there, it is possible that the damage to the drilling rig could have been reduced by action he might have taken to restore water pressure to the fire mains. The Safety Board believes that the U.S. Coast Guard should amend the regulations for MODU's (46 CFR 108.170) to include a requirement that pneumatically operated valves on the suction side of the fire pumps remain open in the event of a loss of air pressure so long as electrical power to the pump has not failed, so as to ensure a continuous supply of water to the system.

Therefore, the National Transportation Safety Board recommends that the U.S. Coast Guard:

Amend U.S. Coast Guard regulations for mobile offshore drilling units (46 CFR 108.170) to include a requirement that pneumatically operated valves on the suction side of fire pumps remain open during a loss of air pressure so long as electrical power to the pump has not failed so as to ensure a continuous supply of water to the fire main system. (Class II, Priority Action) (M-85-102)

BURNETT, Chairman, GOLDMAN, Vice Chairman, and BURSLEY, Member, concurred in this recommendation.

By: Jim Burnett
Chairman

Patricia A. Goldman
for