

Log M-198C

NATIONAL TRANSPORTATION SAFETY BOARD  
WASHINGTON, D.C.

ISSUED: February 28, 1983

Forwarded to:

Mr. William N. Johnston  
Chairman and President  
American Bureau of Shipping  
65 Broadway  
New York, New York 10006

SAFETY RECOMMENDATION(S)

M-83-36

About 0300 on February 15, 1982, the U.S. mobile offshore drilling unit (MODU) OCEAN RANGER capsized and sank during a severe storm about 166 nautical miles east of St. John's, Newfoundland, Canada; 84 persons were aboard. Twenty-two bodies have been recovered, and the remaining 62 persons are missing and presumed dead. The OCEAN RANGER is currently resting on the bottom in an inverted position in about 260 feet of water; its estimated value was \$125 million. 1/

U.S. Coast Guard and American Bureau of Shipping stability standards applicable to the OCEAN RANGER require that a MODU be able to withstand the flooding of compartments extending within 5 feet of its operating draft. The 1979 IMCO MODU Code has similar requirements. These standards required that the OCEAN RANGER withstand the flooding of compartments within one of its columns near its 80-foot waterline. The OCEAN RANGER was designed with horizontal watertight bulkheads within each column to limit the amount of flooding in case of damage to a column. The USCG, the ABS, and the IMO do not have any standards for flooding of lower hull tanks or compartments on semisubmersible MODU's. Calculations performed after the accident indicated that the flooding of empty or partially empty forward ballast tanks on the OCEAN RANGER at its operating draft of 80 feet could have produced angles of list exceeding its downflooding angle. 2/ The lower hull compartments on MODU's, such as the OCEAN RANGER, can flood in several ways: (1) a piping failure could flood the pumproom; (2) a small structural failure could flood any tank or compartment; or (3) operational errors or electrical malfunctions could result in the flooding of empty tanks. Because the evidence indicated that the lower hull tanks can flood quickly and cause a significant list, the Safety Board believes that the USCG, the ABS, and the IMO should revise their stability standards for

1/ For more detailed information, read Marine Accident Report--"Capsizing and Sinking of the U.S. Mobile Offshore Drilling Unit OCEAN RANGER, Off the East Coast of Canada, 166 Nautical Miles East of St. John's, Newfoundland, on February 15, 1982" (NTSB-MAR-83-2).

2/ Downflooding angle is the static list angle at which flooding of internal compartments within a vessel will first begin. It is assumed that once internal compartments begin to flood, other compartments will progressively flood and the vessel will eventually capsize and sink.

MODU's similar to the OCEAN RANGER to require that MODU's be capable of surviving the flooding of lower hull compartments at their normal operating draft. The revised standard also should include a requirement that there be a capability to dewater lower hull compartments at all angles of list after the assumed flooding.

As a result of its investigation, the National Transportation Safety Board recommends that the American Bureau of Shipping:

Revise the stability criteria contained in the Rules for Building and Classing Mobile Offshore Drilling Units to require that semisubmersible mobile offshore drilling units include the capability to survive the flooding of any two adjacent lower hull compartments or tanks and to pump out any of the lower hull tanks after the assumed flooding.  
(Class II, Priority Action) (M-83-36)

The National Transportation Safety Board is an independent Federal agency with the statutory responsibility ". . . to promote transportation safety by conducting independent accident investigations" (P.L. 93-633). The Safety Board is vitally interested in any actions taken as a result of its safety recommendations. Therefore, we would appreciate a response from you regarding actions taken or contemplated with respect to the recommendation in this letter.

BURNETT, Chairman, GOLDMAN, Vice Chairman, and McADAMS, BURSLEY, and ENGEN, Members, concurred in these recommendations.

  
By: Jim Burnett  
Chairman