

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: April 17, 1979

Forwarded to:
Admiral John B. Hayes
Commandant
U.S. Coast Guard
Washington, D.C. 20590

SAFETY RECOMMENDATION(S)
M-79-39 through -47

About 1100 c.s.t. on April 14, 1976, the self-elevating mobile offshore drilling unit OCEAN EXPRESS departed a drilling site near the Texas coast in the Gulf of Mexico under tow for a new drilling site about 33 nmi northeast. The OCEAN EXPRESS arrived at the new site about 2330, but was not set in place because of adverse seas. Three tugs held the OCEAN EXPRESS in position awaiting better weather, but the seas continued to increase. About 1530 on April 15, one tug became partially disabled because of a reduction gear failure. At 1930, another tug's towline broke. With only one effective tug remaining, the OCEAN EXPRESS turned broadside to the wind and seas, drifted, grounded, capsized, and sank about 2115. The vessel was valued at \$20 million. 1/

The bargemover was rescued by a Coast Guard helicopter. The crew abandoned the OCEAN EXPRESS in the unit's survival capsules. The 14 persons in one capsule were rescued without incident. The other capsule capsized with 20 persons inside; 7 persons escaped and 13 persons drowned.

The Safety Board's analysis of this accident indicated that the OCEAN EXPRESS' operating manual did not provide adequate guidance regarding the unit's stability characteristics, towing arrangements, severe weather operations, transit preparations, and operational limitations. The bargemover was not aware that the unit's stability was affected by the position of the mat. No provisions were made for towing emergencies, and the tugs were not repositioned after one tug's starboard reduction gear failed. When the OCEAN EXPRESS arrived at the new drilling site, the mat probably could have been set on the bottom and the platform jacked out of the water with minor damage to the columns, but the operating manual did not indicate the expected results of exceeding the design jacking limits. The OCEAN EXPRESS did not have on-board motion sensing and recording instruments, and the bargemover subjectively evaluated the sea state to determine when the jacking limits were approached.

1/ For more detailed information read "Marine Accident Report - Capsizing and Sinking of the Self-Elevating Mobile Offshore Drilling Unit OCEAN EXPRESS near Port O'Connor, Texas, April 15, 1976" (NTSB-MAR-79-5).

The Whittaker survival capsules were approved under the Coast Guard's lifeboat regulations, but those standards were developed specifically for open lifeboats using traditional concepts. The unique capabilities and weaknesses of survival capsules were not adequately considered in the approval process; for example, the capsule's capsizing and righting characteristics in a seaway were not determined. Persons' escape from an overturned capsule was not addressed, and the capsules did not have accessible towing and mooring fittings or proper fendering. Even though the survival capsules were the best available equipment for use by inexperienced industrial personnel and were successfully launched, performance standards which consider the unique capabilities and weaknesses of survival capsules should be developed.

As a result of its analysis of this accident, the National Transportation Safety Board recommends that the U.S. Coast Guard:

Require that operating manuals for self-elevating mobile offshore drilling units include guidance regarding:

1. The stability of the unit for the complete range of mat-platform separations;
2. the number of tugs and the horsepower required for towing the unit, and the recommended towing arrangements and equipment;
3. contingency plans for emergencies afloat, including towing mishaps and severe weather;
4. transit preparations, including an appropriate checklist;
5. the expected results of exceeding the design limits for jacking operations; and
6. the minimum wind speeds, sea conditions, and unit motions which would result in instability or structural failure. (Class II, Priority Action) (M-79-39)

Require self-elevating mobile offshore drilling units to be equipped with a recording fathometer and a recording anemometer. (Class II, Priority Action) (M-79-40)

Require that critical operating limits for self-elevating mobile offshore drilling units be specified in terms of motion amplitudes and periods, and require on-board motion sensing and recording instruments to determine the actual unit motions. (Class III, Longer Term Action) (M-79-41)

Study the feasibility of predicting self-elevating mobile offshore drilling unit motions by on-board computer analysis of data from motion sensors and wave-measuring instruments. (Class III, Longer Term Action) (M-79-42)

Expedite the promulgation of regulations for personnel qualifications and manning standards for self-elevating mobile offshore drilling units, and require that industrial personnel who perform seafaring duties obtain appropriate training and licenses. (Class II, Priority Action) (M-79-43)

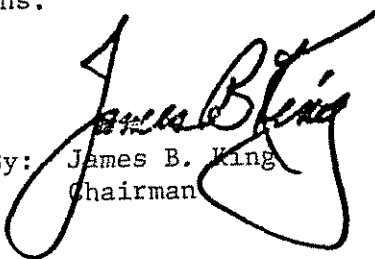
Determine and require a functional chain of command on mobile offshore drilling units to effectively cope with extreme situations. (Class II, Priority Action) (M-79-44)

Develop appropriate survival capsule performance standards, including standards for safe towing. (Class II, Priority Action) (M-79-45)

Conduct model tests and computer simulations with Whittaker Corporation to determine the survival capsule's capsizing characteristics and behavior in storm seas. (Class II, Priority Action) (M-79-46)

Require that survival capsules be equipped with accessible towing and mooring fittings, proper fendering, and markings to indicate the location of the towing and mooring points. (Class II, Priority Action) (M-79-47)

KING, Chairman, DRIVER, Vice Chairman, McADAMS and HOGUE, Members, concurred in the above recommendations.

By:  James B. King
Chairman