TREASURY DEPARTMENT
UNITED STATES COAST GUARD

ADDRESS REPLY TO:
COMMANDANT
U.S. COAST GUARD
HEADQUARTERS
WASHINGTON 25, D.C.

MVI-3
(M/V DIVERSITY a-8 Bd.)
31 JUL 1963

Commandant's Action

on

Marine Board of Investigation; capsizing of the M/V DIVERSITY in the Gulf of Mexico on 23 January 1963 with loss of life

1. The record of the Marine Board of Investigation convened to investigate subject casualty together with the Findings of Fact, Conclusions and Recommendations has been reviewed.

2. The M/V DIVERSITY, O.N. 269278, is an uninspected steel constructed flat bottom barge type supply vessel of 132 gross and 90 net tons used primarily for the transportation of offshore drilling supplies. At the time of the casualty there were 5 persons on board, 4 of whom represented the regularly assigned crew.

3. On 21 January 1963, Offshore Mud Movers Inc., a marine transportation company having a contract to deliver drilling mud to "MOVIBLE RIG 4", an offshore drilling platform in the Gulf of Mexico off the Coast of Louisiana, communicated with Twenty Grand Towing Co. Inc., owners of the DIVERSITY, and requested the services of a vessel to transport the cargo. Twenty Grand Towing Inc., contacted Pan Marine Service Inc., operators of the DIVERSITY, and arranged for the vessel to proceed to Berwick, Louisiana for installation of deck tanks to hold the cargo. The following day three steel tanks measuring 7' x 7' x 18' and three others measuring 8' x 8' x 16', each of which were equipped with two 8 inch I-beams welded to the bottoms, were positioned on the vessel's deck, 4 of which were athwartship immediately abaft the forward deck house while the remaining two were fore and aft near the stern of the vessel. A pump unit was positioned immediately forward of the two after tanks. When positioned, each corner of the skids beneath the tanks were welded to the deck using a single bead approximately 3-1/2 inches long at each corner. In addition, a 2" x 2" x 1/4" angle was welded to the deck in a

vertical position at each tank corner and welded to the tanks. The pump unit was also secured by means of welding. It is estimated that the combined weight of tanks and pump was 22.4 tons. Upon completion of this installation, the vessel proceeded to Southwest Pass, Vermillion Bay, Louisiana where approximately 565 barrels of drilling mud were transferred to 4 or possibly 5 of the deck tanks. This caused the vessel to trim approximately 6 feet by the stern.

4. The DIVERSITY departed Southwest Pass at about 1730, 22 January 1963 and arrived at "MOVIBLE RIG 4", bearing approximately west southwest and 60 miles distant, at about 0600 hours on 23 January 1963. After repositioning the vessel to more effectively cope with worsening weather, efforts were made to pump used mud from a tank on the platform to an empty tank on board the DIVERSITY. However, after receiving approximately 100 barrels of old mud, the master of the vessel reported to the platform that he had a loose tank on deck and would have to seek shelter at Cameron, Louisiana, some 30 miles northwest. Upon departure, the vessel was observed to be laboring heavily on a northwesterly heading with a rolling motion. Radio communication was maintained with the vessel at about half hourly intervals until met by the M/V MOVIBLE S-4, another supply vessel on an outbound course. The two vessels communicated by radio telephone concerning the DIVERSITY's destination and, upon determining that the magnetic steering compass had been affected by the positioning of the deck tanks, the master of the DIVERSITY was advised to head more into the sea in order to make shore and then to remain close inshore until arrival at Cameron. The MOVIBLE S-4 then proceeded to the drilling platform and the DIVERSITY continued on, seeking a safe haven.

5. At about 1645, 23 January 1963, the MOVIBLE S-4, inbound from the drilling platform, sighted an overturned hull, later identified as the DIVERSITY, in a position approximately 8-1/2 miles west by north from the platform and approximately 27 miles from the nearest land. One of the empty deck tanks was subsequently found floating in an upright position approximately 1/2 mile distant from the vessel. Despite an immediate and extensive search no additional equipment or parts were located. The body of one crewman was recovered on 15 February 1963 while the remaining 4 persons known to have been on board are still missing. The DIVERSITY was salvaged on 5 February 1963 at which time all of the deck tanks and the pump unit were found to be missing. Subsequent examination revealed evidence of severe battering by heavy objects and the deck plating was torn or fractured in several areas.

An inclining experiment and stability study were performed based upon loading conditions assumed to have existed prior to the casualty.

REMARKS

1. Concurring with the Board, it is concluded that the DIVERSITY capsized as the result of one or more deck tanks breaking loose from their fastenings and, due to the vessel's rolling in the seaway, moving athwartships and bringing about the capsizing moment.

2. The Board's conclusion that the method used to secure the tanks to the deckplates was a poor and potentially dangerous practice is concurred in and further qualified in that the placing of 4 of the tanks with their long axes athwartships was also a dangerous practice since liquid mud free surface effect of the tanks was thereby increased to the detriment of the vessel's stability.

3. The Board's findings (paragraph 5) that a charter to transport the drilling mud was arranged between the operating company (Pan Marine Service Inc.) and Offshore Mud Movers Inc., is not supported by the record and cannot be concurred in. The record shows that the arrangements for use of the DIVERSITY were made verbally between the Secretary-Treasurer of Offshore Mud Movers Inc., and the Vice President of Twenty Grand Towing Inc., owners of the vessel. The latter then communicated with Pan Marine Service Inc., which maintained and operated the vessel for the owners, requesting that the vessel be moved to Berwick, Louisiana to make a trip for Offshore Mud Movers Inc. The record also shows that the crew, supplies, fuel and insurance were all furnished by Pan Marine Service Inc. It is concluded that the arrangement did not constitute a bareboat charter of the vessel to Offshore Mud Movers Inc.

4. The record further shows that the mud being transported was owned by Baroid, a division of National Lead. Whether the vessel was operating under a bareboat charter or not it was therefore "carrying freight for hire" and, being in excess of 15 gross tons, was required to be inspected and certificated under the provisions of R.S. 4426 as amended (46 USC 404).

5. Since the above is considered to constitute evidence of a violation on the part of the owners of the M/V DIVERSITY, the matter is hereby referred to Commander, Eighth Coast Guard District for possible assessment of monetary penalties as provided by R.S. 4499 (46 USC 497).

6. While not determined by the Board, nor contained in the record of investigation, the records in the Office of the Commandant indicate that only two of the crewmembers on board the M/V DIVERSITY at the time of the casualty possessed Merchant Mariners' Documents as required by R.S. 4451, as amended (46 USC 643) and section 13 of the Act of March 4, 1915, as amended (46 USC 672(i)). Therefore, since this is considered to constitute evidence of violation on the part of the operators, this matter is also referred to Commander, Eighth Coast Guard District for possible assessment of monetary penalties against Pan Marine Service Inc.

7. Where not in conflict to the foregoing, the record of the Marine Board of Investigation is approved.

D. McL. Morison

D. McL. Morison
Vice Admiral, U. S. Coast Guard
Acting Commandant

UNITED STATES COAST GUARD

ADDRESS REPLY TO:
309 Customhouse
New Orleans 16, Louisiana

A17-6/4 DIVERSITY
(Marine Bd. of Investigation)
17 May 1963

From: Chairman, Marine Board of Investigation
To: Commandant (MVI)

Subj: MV DIVERSITY, O.N. 269278; capsizing in the Gulf of Mexico, with loss of life, 23 January 1963

FINDINGS OF FACT

1. At some time between 1:30 and 4:00 P.M. during the afternoon of 23 January 1963 the M/V DIVERSITY, a supply vessel used in the oil drilling industry on the Outer Continental Shelf, off the coast of Louisiana, capsized and the crew of 4 and 1 passenger are presumed to be lost. The vessel was in rough weather and was seeking to return to shelter from a drilling platform in the Gulf of Mexico.

2. The M/V DIVERSITY, O.N. 269278, is a steel flat bottomed deck cargo, barge type supply vessel of 132 gross and 90 net tons with a speed of approximately 9 knots in fair weather. It is used primarily in the transportation of drill pipe and other supplies. It was built in 1955 and measures 120' x 30' x 8.5'; it is longitudinally framed with 59.5' wall sided midbody of 6" dead rise, 32.5' full U section forebody and 29.8' transom stern afterbody. It is twin screw with two pilot house controlled diesel engines of 600 H.P. each. The vessel was not built under Coast Guard supervision and was not inspected or certificated at any time.

3. The following persons were on board the M/V DIVERSITY on the trip in question and presumably when she capsized; one body was recovered, all the others are presumed lost:

Drowned (body recovered)

Hervis Anthony Lenain (MMD unknown)

Presumed lost

Joseph Henry Mahfouz, MMD 207758
Willie J. Morrison, Jr. (MMD unknown)
Joseph Elton Boudoin (MMD unknown)
George Owens (MMD unknown)

4. On 21 January 1963 the Offshore Mud Movers, Inc., Morgan City, Louisiana, had an order to deliver approximately 650 barrels of fresh drilling "mud" mixture to MOVIBLE RIG 4, a stationary drilling platform in the Gulf of Mexico off the coast of Louisiana in 29°22' N. Lat. and 92°59' W. Long., in what is designated as Block 64 East Cameron Area on the Outer Continental Shelf. The "mud" was in a barge which was in tow of an uninspected tug.

The tug and barge proceeded to their rig but were unable to effect the transfer of the drilling "mud" inasmuch as drilling operations had not progressed as scheduled and a swap of the old "mud" for the fresh supply could not be made immediately. As inclement weather was expected, the tow proceeded to shelter at Southwest Pass, Vermillion Bay, Louisiana.

5. The Pan Marine Service, Inc., operators of the M/V DIVERSITY, were contacted by telephone on 21 January 1963 and a charter for transporting the drilling "mud" the tug and tow had failed to deliver to MOVIBLE RIG 4 was arranged between the operating company and the Offshore Mud Movers, Inc.; no written copy of this charter nor any affidavits in conjunction therewith were submitted to the Coast Guard. A crew was made up for the DIVERSITY and the vessel was taken to a dock in Berwick, Louisiana for installation of deck tanks to hold cargo.

6. On 22 January 1963 three steel tanks 7' x 7' x 18' and three others measuring 8' x 8' x 16' were placed on the DIVERSITY's deck; four of these were athwartship behind the forward deckhouse and close to each other while the remaining two were positioned fore and aft at or near the stern of the vessel. A pump unit weighing 1.4 tons was placed forward of the two aft tanks. The combined weight of tanks and pump before the drilling "mud" was loaded, was approximately 22.4 tons. At the bottom of each deck tank were two 8" I-beams serving as skids and welded to the under side of the tank. After positioning the tanks on the deck of the DIVERSITY and cleaning off, as required, the protective paint covering of the deck, the corners of each skid were welded to secure the tank. One bead approximately 3½" long on each leg was effected at each corner of the skids. In addition, a 2" x 2" x ¼" piece of angle about the same length as the height of the skid was welded to the deck and to the underside of each tank corner in way of the I-beam skid in a virtually upright position. The pump unit was secured by means of welding a section of pipe between the pump base and the base of the aftermost transverse deck mud tank. No bracing of any type was provided for the deck tanks nor were the tanks additionally secured by any cables or chains with turnbuckles.

7. The DIVERSITY then proceeded to rendezvous the tug and barge that had previously returned from MOVIBLE RIG 4 at Southwest Pass, Vermillion Bay, Louisiana, arriving there at 1430 hours, 22 January 1963. Approximately five hundred and sixty-five barrels of drilling "mud" were transferred to four, possibly five, of the tanks on the deck of the DIVERSITY. This caused the vessel to trim some seven feet by the stern. However, two ballast tanks in the forward hull of the vessel were to be filled in order to bring her to a more even keel and to thus be able to negotiate the passage through shallow water into the Gulf. It is not known whether this was ever carried out.

8. The DIVERSITY left Southwest Pass, Vermillion Bay, Louisiana, at about 1730 hours, 22 January 1963, and arrived at MOVIBLE RIG 4, bearing approximately WSW and about sixty miles distant, at approximately 0600 hours, 23 January 1963. Evidence to the contrary lacking, the outward passage is presumed to have been uneventful. On arrival at the drilling platform the sea was beginning to get rough. The vessel was trimmed deep by the stern, as indicated by one of the witnesses, and with the stern turned into the waves the water washed over the transom.

9. The DIVERSITY tied up with fore and aft lines, but not actually alongside

the framework of the structure, with the bow away from the oncoming seas. This position proved untenable as the seas washed over the low transom making it virtually impossible for George Owens, the pumpman, to work on deck; he was almost washed overboard when trying to insert a hose from the platform into one of the tanks on the vessel. The DIVERSITY was then turned with bow into the sea, the hose was placed in position and approximately one hundred barrels of old "mud" was pumped from a tank on MOVIBLE RIG 4 into one of the deck tanks of the DIVERSITY. This was the beginning of the "swap-out" process by which a fresh drilling mixture is substituted for a stale, unusable one. The weather was worsening all this time and the vessel heaved and tossed at her moorings.

10. However, after transfer of the 100 barrels from the platform into what must be assumed from the testimony to be the farthest forward athwartships tank on the DIVERSITY, the master, J. H. Mahfouz, passed the word to the platform that he had a loose tank on deck and that he would have to seek shelter in shallow water by going to Cameron, Louisiana some 30 miles away and bearing about NW. This was agreed to by Mr. J. H. Wallace, the tool-pusher on the oil rig who, generally, is the man in charge of operations. Meanwhile, the wind had picked up blowing from the NW at about forty miles per hour and the seas had worked up to about ten feet. The DIVERSITY left the scene and headed toward the shore in a northwesterly direction laboring heavily with a rolling motion; the nearest land from the platform is 21 miles away.

11. During the entire stay of the DIVERSITY at MOVIBLE RIG 4 all conversation between the vessel and the rig had to be carried on by means of shortwave radiotelephone because of the considerable distance between the two; this is the normal practice except in cases of dead calm when a person's voice can be heard. However, because the DIVERSITY's radiophone frequency was different from that of the platform's all the conversation had to be relayed through a crewboat lying nearby, the M/B MOVIBLE C-1, who had both radiophone frequencies. V. J. Segura, the master of this crewboat, was an eye-witness to the difficulties encountered by the DIVERSITY in its attempt to transfer the drilling "mud" and, later on, offerred the master to follow that vessel on its trip to shelter to be able to assist in the event help was needed. However, the DIVERSITY's master fatefully told him that "there was nothing much you can do" and added that although his vessel was listed, "if he doesn't get any worse we are in pretty good shape." Nevertheless, Segura kept a radiophone check with the DIVERSITY, calling about every 30 minutes but was assured that everything was "all right" and "riding O.K." This went on until the M/V MOVIBLE S-4, a supply type vessel on the way out to MOVIBLE RIG 4, met the DIVERSITY some distance off. The two vessels communicated by radiotelephone; the conversation was about the DIVERSITY's destination and was overheard by Segura on the M/B MOVIBLE C-1, which was still at the platform. It appears that there was some misunderstanding about the DIVERSITY's course. Segura cut into the talking and both he and the S-4's master advised the DIVERSITY to head more into the sea in order to make shore, skirt along the coast, and get into the port of Cameron, Louisiana. The S-4 continued on and arrived at MOVIBLE RIG 4.

12. It is indicated b the testimony that the DIVERSITY's magnetic steering compass had been affected by the positioning of the deck tanks and that the master was not aware of the deviation added to the previous compass error.

Also, considerable difficulty had been experienced with the vessel's radiophone transmitter since early morning of the date of the capsizing. It appears that this trouble was mainly with the microphone and was in the nature of a short. However, communication could be and was maintained without too much difficulty; the last message heard from this vessel was one to the marine operator at Delcambre, Louisiana.

13. At approximately 4 o'clock in the afternoon of 23 January 1963 the M/B MOVIBLE C-1 left the drilling platform and the master signified that he was to attempt to find and follow the DIVERSITY into Cameron, Louisiana. After traveling approximately 6 miles the MOVIBLE C-1 caught up with the M/V MOVIBLE S-4 which had started toward shore from the rig some 30 minutes before; Mr. Wallace, the toolpusher, and a number of others from the platform were on board. At approximately this time or about 1645 hours the master of the MOVIBLE S-4 found an overturned hull. At first it was not known that this was the DIVERSITY. The hull was some 8½ miles west by north from MOVIBLE RIG 4 and about 27 miles from the nearest land. Because of the rough seas the M/B MOVIBLE C-1 could not remain on the scene to assist in any search or in an investigation of the capsized hull; her skipper asked Mr. Wallace on the M/V MOVIBLE S-4 for permission to continue on his trip to shore and was told to go on. The master of the MOVIBLE S-4 advised the Coast Guard of the find and then proceeded on a planned zig zag search pattern of the area. One of the empty deck tanks of the DIVERSITY was found floating, with the manhole opening up, approximately a half mile away. Despite good lookouts and the covering by the M/V MOVIBLE S-4 of a wide area no persons, equipment or parts other than the capsized hull and the deck tank of the M/V DIVERSITY were found by this vessel.

14. An intensive and prolonged search by the Coast Guard also failed to turn up any additional parts or any of the crew. This search was made by air and, as soon as the weather moderated by surface craft and was carried on for 16 days. Reported sightings of a lifefloat, life preservers and other possible clues were investigated with negative results.

15. On 15 February 1963 Hervis Anthony Lenain's body, with a life preserver still on, was found off the coast of Texas. No other body has been recovered to date.

16. The capsized hull was towed by a commercial tug to shallower water where it was righted on 5 February 1963 by a floating derrick and pumped out. The lifefloat, the only one carried by the DIVERSITY, was still on board as were several life preservers. All the deck tanks and the pump unit that had been secured to the deck were missing. The bulwark, on the starboard side in way of the athwartship tanks, and more particularly the first of these tanks counting from the bow, bore strong evidence of battering by heavy objects for a fore and aft distance of about thirty feet; also, opposite the former location of the first tank, the bottom weld connection of this bulwark to the main deck was torn for a distance of some four feet and the plating in way of this pushed outward. The engine controls in the pilothouse were found set on "Stop." In

the engineroom, the clutches were found disengaged indicating that the vessel had been stopped. The DIVERSITY then was towed to a repair yard in Port Arthur, Texas, arriving there on 9 February 1963. The vessel was drydocked at which time a hawser was found entwined loosely in the starboard propeller. It could not be determined whether this hawser had previously jammed the propeller. Engine temperature gauges in the pilothouse and in the engineroom were at variance; the remote controlled gauges in the pilothouse were jammed at maximum temperatures while those attached directly to the engines registered normal. Two deck manhole covers on the starboard side of the vessel leading into the #3 and #4 internal tanks and one on the port side leading into the #2 tank were missing. Deep gouges and two substantial fractures or tears in the deck plating, one 5" and the other 9" long, presumably caused by the breaking loose of the deck tanks, were noted. It could not be determined whether they occurred before or after the capsizing; they would have allowed ingress of sea water into the hull.

17. An inclining experiment on the DIVERSITY was agreed to by the owners; this was carried out by them with their representative and a Coast Guard officer present. The calculations of LCDR Gerald G. Brown, Jr. from the Merchant Marine Technical Branch, 8th Coast Guard District, show the following:

CONDITION ITEM	1 LIGHT SHIP	2 ASSUMED CONDITION 1/23/63 DEP. FM RIG 5 DK TKS LOADED	3 ASSUMED CONDITION 1/23/63 DEP. FM RIG 4 DK TKS LOADED	4 ASSUMED CONDITION 1/23/63 DEP. FM RIG 4 DK TKS UNBALLASTED	5 ASSUMED CONDITION 1/23/63 DEP.FM BARGE CHUCKY 4 TKS UNBALLASTED	6 COND. 3 WITH #1 & 3 HULL TANKS F.F.S.
DISPL.TONS	211	571	560	415	388	560
KG (FT)	7.66	8.24	8.33	9.64	9.06	8.86
LCG (FT)	-4.1	-0.1	-2.5	-13.12	-15.75	-2.5
MEAN (FT) DRAFT SW	2.88	6.7	6.6	5.04	4.7	6.6
GM UNCORRECTED (FT)	23.3	6.86	6.87	8.48	10.14	6.87
GM CORRECTED (FT)	23.3	4.84	5.10	6.86	8.40	4.17
F.S.CORRECTION	--	-2.02'	-1.77'	-1.62'	-1.74'	-2.70'
DECK CARGO(TONS)						
4 TANKS LOADED	--	--	172.5	172.5	172.5	172.5
5 TANKS LOADED	--	183	--	--	--	--
#2 P/S BALLAST (TONS)	--	145	145	NONE	NONE	145
EMPIRICAL GM REQUIRED	--	6.3'	6.2'	5.5'	5.35'	6.2'
d (FWD)	2'-2"	6'-6"	6'-4"	1'-11"	1'-1"	6'-4"
d (AFT)	3'-6"	6'-10"	6'-10½"	8'-2"	8'-4"	6'-10½"

F.O. 7000 GALS)
L.O. 300 GALS) ALL CONDITIONS EXCEPT LIGHT SHIP
F.W. 2000 GALS)

CONCLUSIONS

After due deliberation the Board concludes as follows:

1. That the M/V DIVERSITY turned over primarily as a consequence of one and perhaps more than one temporary deck tanks breaking loose from their fastenings, slewing across her deck to apparently the starboard side, and during the pronounced rolling of the vessel, bringing about the capsizing moment.

2. That all four (4) persons on board the M/V DIVERSITY at the time of capsizing whose bodies have not yet been found are to be presumed lost and that the fifth person on board met death through accidental drowning.

3. That although construed in retrospect the Master of the M/V DIVERSITY exercised poor judgment when he decided against accepting the offer to follow him to shelter proferred by the Master of the M/B MOVIBLE C-1.

4. That the lack of prudence shown by the Master of the M/V DIVERSITY in his refusal of the offer by the M/B MOVIBLE C-1 did not necessarily contribute to the ensuing loss of life, as the Master of the M/B,V. J. Segura, signified that because of the rough sea he did not believe he could have gotten anyone out of the water (page 268) nor did this necessarily contribute to the capsizing of the M/V DIVERSITY.

5. That the M/V DIVERSITY appears to have had adequate stability when she left Southwest Pass, Cameron, Louisiana, although possessed of an excessive drag of 6.3 feet producing a minimal ten inches freeboard at the stern.

6. That the M/V DIVERSITY appears to have had questionable stability when she left MOVIBLE RIG 4 for land when considered on the basis of the empirical statical stability criteria of the Coast Guard and in the light of the assumed loading conditions.

7. That in the weather conditions shown to have prevailed at the time of the casualty and in view of the course stated to have been steered by the M/V DIVERSITY her stability at that time appears to have been at least marginal so that one adverse moment brought on by a combination of roll and a boarding sea could quite well have tipped the scales in favor of capsizing.

8. Going back to the installation of the temporary deck tanks, the manner of securing them by flimsy tack welds at their lowest point without supplementary bracing or without stout lashings was an extremely poor and a potentially dangerous practice and that this forged the first links in the chain of circumstances leading to the capsizing of the vessel.

9. That had the M/V DIVERSITY been an inspected and certificated vessel the temporary deck tanks should not have been welded on board without first notifying the Officer in Charge, Marine Inspection of the inspection zone affected.

10. That had such Officer in Charge, Marine Inspection been made cognizant under the circumstances set forth in paragraph 9 above he would have been duty bound to have:

a. Looked into the matter of securing the tanks, or

b. Sent a field inspector to check such fastenings, or

c. Had a prearranged and agreed upon manner with the owner and/or operator-charterer of securing such temporary deck tanks.

11. That no inspected or certificated materials or equipment were involved in this marine casualty.

12. That the search conducted in attempts to locate survivors was most thorough.

RECOMMENDATIONS

1. The Coast Guard lacks jurisdiction over the M/V DIVERSITY in the sense that it is not inspected and certificated under its regulations, therefore no definite corrective recommendations can be made in the instant case other than informing interested parties of the need for adequate supervision over the proper fastenings of deck tanks such as were carried on the M/V DIVERSITY.

2. Since special care and knowledge are required in the loading of these Broadshoal type oil industry supply vessels it is recommended that information in this case be publicized in an issue of the Proceedings of the Merchant Marine Council.

PAUL POLLATT, CAPT, USCG
Chairman

GEORGE J. BODIE, CDR, USCG
Member

WARREN F. STEVENSON, CDR, USCG
Member & Recorder