

UNITED STATES COAST GUARD

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



Commandant's Action

MVI
(DERRICK NO. 2 - a-2 Bd)

20 OCT 1959

on

Marine Board of Investigation; boiler explosion aboard
barge DERRICK NO. 2, on the Mississippi River, 30 January
1959, with loss of life

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

2. On the morning of 30 January 1959 the DERRICK NO. 2, an undocumented, uninspected, non self-propelled derrick barge was moored to Island 63 Dike, Miller Point, Mississippi, at about Mile 637, lower Mississippi River, in preparation for logging operations. To provide power for the derrick machinery the barge was equipped with an oil-fired, single pass, vertical fire tube boiler of unknown age and make. While attempting to raise steam to begin work, the safety valve lifted at 30 psi instead of 135 psi for which it had been set. The boiler was then allowed to cool to the point where the safety valve could be adjusted. When steam was raised the second time the gauge needle was observed by a surviving deckhand to be fluttering at 30 psi. This was called to the attention of one of the men working on the boiler who advised that the gauge was fluctuating because of low heat. A few minutes later at about 1000 CST, 30 January, the boiler exploded, killing six persons and injuring two. In addition, one man is missing and presumed dead. None of the persons working on the boiler at the time of the explosion survived.

REMARKS

1. Due to the complete destruction of the boiler and the death of the operating personnel, the Board was unable to determine the principal cause of the explosion. However, an examination of the boiler parts recovered after the casualty disclosed evidence of fatigue and wastage which led the Board to conclude that faulty maintenance was at least one of the principal contributing factors.

2. Since this vessel was not subject to inspection by the Coast Guard and there was no evidence of violation of any Federal law, no further action is indicated.

MVI

(DERRICK NO. 2 - a-2 Bd)

3. Subject to the foregoing remarks, the record of the Marine Board of Investigation is approved.

A. C. Richmond
A. C. RICHMOND
Vice Admiral, U. S. Coast Guard
Commandant

UNITED STATES COAST GUARD

Commander
2nd Coast Guard District
815 Olive Street
St. Louis 1, Mo.

A17-6
2 July 1959

From: Captain P. B. MAVOR, Chairman, Marine Board of Investigation
To: Commandant (MVI)

Subj: Barge DERRICK NO. 2; boiler explosion, Island 63 Dike, Miller Point, Mile 637 Lower Mississippi River, 30 January 1959 with loss of life

FINDINGS OF FACT

1. At about 1000 CST, 30 January 1959, the main steam boiler on board the non self-propelled derrick barge DERRICK NO. 2 (no official number) exploded while the vessel was moored to Island 63 Dike, Miller Point, Mississippi at about Mile 637 (Lower Mississippi River). The bodies of six (6) known dead were recovered, one is missing and presumed dead and two (2) were injured. As a result of this casualty, DERRICK NO. 2 sank at her moorings.

2. DERRICK NO. 2 was an undocumented, uninspected, non self-propelled derrick barge, 100.5 x 28.1 x 3.8, owned and operated by the Choctaw Transportation Company, P.O. Box 482, Greenville, Mississippi. The date and place of build and the name of the builders of the barge could not be determined. The deck house situated on the after end of the barge contained the living quarters and immediately forward of these quarters on the centerline was located the main steam boiler. As nearly as could be ascertained, this boiler was of the oil fired, single pass, vertical fire tube design; 58" diameter, 130" in height, 250 - 2" x 58" fire tubes; shell thickness 3/8" and other plates 1/4". The principal use of this boiler was to furnish steam for the operation of the hoisting machinery located on the forward end of the barge.

3. On the starboard side forward of the main boiler was located a small auxiliary boiler used principally as a feed water heater for the main boiler. As nearly as could be ascertained, this boiler was of the wood fired, single pass, vertical fire tube design, 30" diameter, 54" in height with an undetermined number of 2 1/2" x 5 1/4" fire tubes.

4. These boilers were properly fitted with pet cocks for determining the water level inside, pressure gauges and safety valves. The main boiler was fitted with a fusible plug. The name plate, manufacturer and builder data of either boiler was not obtained.

5. The weather at the time of this casualty was cloudy with light rain, good visibility with a calm river surface. Neither the weather nor the current of the river was a factor in this casualty.

6. As a result of this casualty:

a. The following persons lost their lives:

Maury G. Weeks, age 53, 832 Lotus Street, Greenville, Mississippi.

Dennis Vickery, age 42, P. O. Box 482, Greenville, Mississippi.

Charles W. Anderson, Sr., age 25, 411 Central Street, Greenville, Mississippi.

James Mooney Anderson, age 29, 411 Central Street, Greenville, Mississippi.

Cecil E. Smith, age 51, 209 S. Theobald Street, Greenville, Mississippi.

Tommie Gilliland, age 44, Route #1, Box 100, Clarksdale, Mississippi.

b. The following person is missing and presumed dead:

Jerry Bradham, age 20, Glen Allen, Mississippi.

c. The following persons received personal injuries:

Mrs. Lucille Weeks, age 51, 832 Lotus Street, Greenville, Mississippi.

Mrs. Ceola Hutchison, age 50, 324 Holt Collier Street, Greenville, Mississippi.

7. The DERRICK NO. 2 had lain idle in Greenville, Mississippi, from May 1958 until 26 January 1959. On the latter date the main boiler was washed out by the operating personnel and a steam pressure test of 75 psi was applied for the purpose of determining whether any leaks existed. No fires were lighted under this boiler; steam pressure for the test was obtained from the boiler of DERRICK NO. 3, another derrick barge owned by the same company.

8. On 27 January 1959, DERRICK NO. 2 and an unnamed open barge departed Greenville, Mississippi, under tow of the oil screw vessels JAMES E., O.N. 263126 and SHARON GAIL, O.N. 263219 en route Island 63 Dikes, near

Mile 637 LMR where they arrived during the early morning hours of 30 January 1959. DERRICK NO. 2 was moored starboard side to the east bank of the river with the open barge on her offshore side. The JAMES E and SHARON GAIL were moored outboard of the open barge.

9. After breakfasting on board the DERRICK NO. 2, her crew and the crew of the SHARON GAIL prepared to raise steam in the boiler for the day's logging operations while the JAMES E proceeded to Old Town Landing, Arkansas, where they embarked an official of the Choctaw Transportation Company, Mr. Maury Weeks, his wife Mrs. Lucille Weeks, and Tommie Gilliland who was to serve as fireman aboard the DERRICK NO. 2. The JAMES E returned and moored outboard of the open barge at about 0915. Her crew and passengers boarded the DERRICK NO. 2 where it was learned that steam had not been raised on the boiler because upon first raising steam the safety valve had lifted at 30 psi instead of at 135 psi for which it had been set. The boiler had been permitted to cool and Charles Anderson, Mooney Anderson and Jerry Bradham were attempting to adjust the safety valve. Mr. and Mrs. Weeks entered the dining room where they were served coffee by the cook, Mrs. Hutchison; Tommie Gilliland went to change his clothes, while Dennis Vickery, Cecil Smith and Bobby Ainsworth watched the activity around the boiler. According to Ainsworth, after adjustments were made to the safety valve, steam was again raised and when the pressure gauge indicated 30 psi "it just set there and jumped." He advised the workman of this and was told that the gauge was unsteady because of low heat on the boiler. Shortly thereafter Ainsworth went to the JAMES E to perform his routine duties and while on board heard a loud explosion. He returned to the open barge and saw Mrs. Weeks and Mrs. Hutchison, then the bodies of Mr. Weeks and Cecil Smith on the deck of DERRICK NO. 2. Mrs. Weeks was bleeding profusely and nearly hysterical but Mrs. Hutchison did not appear to be seriously injured. He and Mrs. Hutchison attempted to fight the fire which had started in the debris from the living quarters. They threw burning mattresses overboard and dipped water from the river to apply to the burning debris. Ainsworth sighted the U. S. Corps of Engineers launch ANGLE approaching. He and Mrs. Hutchison helped Mrs. Weeks aboard the open barge and waved for the ANGLE to come alongside.

10. Prior to the casualty the ANGLE had delivered a 5 man survey party to a beach site approximately 1200 feet up river from the barges. When the explosion was heard 4 men including the operator departed immediately for the scene of the casualty. Upon arrival the operator gave first aid to Mrs. Weeks while the other men began fighting the fire. The ANGLE then departed for Old Town Landing carrying Mrs. Weeks, Mrs. Hutchison and Ainsworth, leaving behind the fire fighting party. En route a passing tug (the SUSAN HOGLAND) was hailed to request an ambulance at Old Town Landing. About five minutes after arrival at Old Town Landing,

the injured were removed to a Helena, Arkansas, hospital by ambulance and the ANGLE returned to the barge with orders from her supervisor to recover any bodies and secure any equipment which might be in danger. Upon arrival at the site of the barges, the fire fighting team reported that DERRICK NO. 2 had sunk.

11. No evidence of the smaller boiler was found after the casualty; however, an inspection of the remains of the main boiler indicated the shell was constructed of two courses of steel plate each approximately 65 $\frac{1}{2}$ " in height made of a single rolled plate and joined by a single riveted circumferential lap seam having a rivet pitch of 2 $\frac{1}{2}$ ". The butts were joined by a double butt strap, the outer strap having a rivet pitch of 3" and the water-side strap having a rivet pitch of 6-7/8". Seal welding of rivets and strength welding of seams was evident. The shell plate measured thickness was .350"; however, areas in the fire box plate showed thicknesses of less than .100".

12. The fire tubes in the lower tube sheet were fitted with copper ferrules to compensate for oversized tube holes in the tube sheet. All tubes were rolled and beaded. The fire box to shell plate support consisted of 3/4 inch threaded solid staybolts having a pitch of 5" x 5". All staybolts showed signs of fatigue and considerable wastage was concentrated in the portions threaded to the plate. The boiler plate showed spider cracks around all staybolt holes.

13. The Choctaw Transportation Co. had no routine inspection made of the boiler by qualified boiler inspectors during their ownership. Any repairs that may have been necessary were reported to the management by the derrick operator or the fireman. The management would then decide what repairs were necessary. Approximately 2 or 3 years ago (1955-56) all 250 fire tubes of this boiler were renewed by the Gilbert Boiler Co., Greenville, Mississippi. Following the completion of these repairs a hydrostatic test of 150% of the operating pressure was applied. The operating pressure was stated to have been 125 psi or 130 psi.

CONCLUSIONS

1. It is concluded that this casualty resulted from the explosion of the main steam generating boiler of the barge DERRICK NO. 2 as evidenced by distorted parts that were recovered. The fact that no trace of the smaller boiler was found appears to indicate that it was blown overboard more or less intact.

2. Although the direct cause of this casualty cannot be determined due to the complete destruction of the boiler and the death of all the responsible operating personnel, it is considered that in all probability,

faulty maintenance was at least one of the principal contributing factors. This conclusion appears to be supported by the wasted condition of the staybolts and fire box plate, the spider webbing of the boiler plate around the staybolt holes, the seal welding of rivets, and the strength welding of seams.

3. The testimony of Bobby Gene Ainsworth raises an added possibility that the steam gauge may have been defective and that the safety valve was in fact working properly when steam was raised on the boiler the first time. The subsequent adjustments to the safety valve may then have permitted the steam to exceed safe pressure. This is purely conjecture, however, since Ainsworth was not sufficiently experienced to accurately evaluate the activities of those performing the work.

4. It is further concluded that this casualty might have been prevented had the boiler been subjected to routine inspections by competent engineering personnel. Although the vessel was not subject to inspection by the Coast Guard, the Board took notice of the fact that the laws of the State of Mississippi require annual inspections of boilers by qualified boiler inspectors. Since there was no evidence that the boilers on the DERRICK NO. 2 were ever inspected by Mississippi authorities, a violation of state law may have occurred.

5. It is the opinion of the Board that the over-all responsibility for establishing and maintaining safe operating procedures rests squarely with the Choctaw Transportation Company, and the failure of the company to require a periodic check of the boiler by competent and qualified personnel reflects unfavorably on the discharge of that responsibility. However, since the responsibility for the actual upkeep and repair had apparently been delegated to the operating personnel, there is no probative evidence that this failure on the part of the Company had any causal connection with the casualty.

RECOMMENDATIONS

1. Since it appears that a violation of the laws of the State of Mississippi may have occurred, it is recommended that a duplicate original record of the investigation of this casualty be furnished the Attorney General, State of Mississippi, for information and such action as he may deem appropriate.

2. There being no evidence of violation of any Federal law or regulation, it is recommended that no further action be taken and the case be closed.

/s/ P. B. MAVOR, Captain, U. S. Coast Guard
Chairman

/s/ J. W. FINNEGAN
LCDR, U. S. Coast Guard
Member

/s/ E. G. TAYLOR, LCDR, U. S. Coast Guard
Member and recorder