



TREASURY DEPARTMENT
UNITED STATES COAST GUARD

Address reply to:
COMMANDANT
U.S. COAST GUARD
WASHINGTON, D.C. 20226

MVI-3
5943/PALMER
A-12 Bd
21 MAR 1964

Commandant's Action

on

Marine Board of Investigation; explosion of the rail car barge PALMER at Alameda, California, on 19 March 1964, 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. On 19 March 1964, the inspected, unmanned, freight barge PALMER of 3768 gross and net tons, 352 ft. in length, was moored to the fitting-out dock in the builder's yard. At approximately 1350 PST, an explosion occurred in the Number 7 void.
3. The PALMER was constructed to carry railway cars on its weather deck. The hull consists of seven watertight compartments, each approximately 50 ft. in length, 76 ft. in width and 19 ft. in depth. The only openings into each void consist of one weather deck manhole at the forward port corner of the void and one weather deck manhole at the after starboard corner of the void. These openings are designed to be closed with a bolted manhole cover.
4. On the date of the casualty, the PALMER had completed its Coast Guard inspection for certification and the tug COLUMBIA was standing by to tow the vessel from the builder's yard to Seattle. During the morning hours of 19 March 1964, workmen were completing the painting of the Number 7 void. At about noon, the painting was completed. The exhaust blower which had been used in the starboard manhole and all lighting and painting gear which had been inside the void were removed. Thereafter, the installation of the two manhole covers was commenced. The starboard manhole cover was put in place without difficulty. The port manhole cover did not line up with the studs and an acetylene cutting torch was obtained from the dock to elongate the holes in the cover. The two shipfitters performing the work placed the manhole cover against a deck rail about 3 ft. forward of the manhole opening and one of them was seen with the cutting torch in his hand. Shortly thereafter, a low-order explosion occurred in the Number 7 void.



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5. The two shipfitters were killed as a result of the explosion and 19 other persons were injured. The barge sustained major damage. Other vessels and shore facilities in the vicinity suffered considerable damage.

6. Prior to the explosion, a gas chemist had not checked the void to determine if it was gas-free. Following the explosion, a gas analysis was made in the remaining voids and four were found to be beyond acceptable limits. A Cleveland open-cup test was made of the paint used in the Number 7 void and it flashed at 580F.

REMARKS

1. Concurring with the Board, it is considered that this casualty was caused by an explosion of paint vapors in the Number 7 void which were ignited by a lighted acetylene cutting torch.

2. Although the Coast Guard exercises jurisdiction over inspected vessels, their crew, and the scope and methods of repair to inspected vessels, the safety practices of the employers of ship repairmen are under the cognizance of the Department of Labor. A copy of this report will be made available to that office.


W. D. SMITHS
Vice Admiral, U. S. Coast Guard
Acting Commandant

TREASURY DEPARTMENT
UNITED STATES COAST GUARD



ADDRESS REPLY TO:

Commander
Twelfth Coast Guard District
630 Sansome Street
San Francisco, California

5943/C-6848
8 May 1964

From: Marine Board of Investigation
To: Commandant (MVI)
Via: Commander, Twelfth Coast Guard District

Subj: Barge PALMER, O/N 294 288; explosion on 19 March 1964 with loss of life

Ref: (a) COMDT(MVI-3) ltr 5943 PALMER A-12 Bd of 25 Mar 1964 convening
Marine Board of Investigation

The Board, having thoroughly inquired into all the facts and circumstances connected with the incident which occasioned the inquiry, and having considered the evidence adduced, finds as follows:

FINDINGS OF FACT

1. On 19 March 1964, at approximately 1350 (zone plus 8), an explosion occurred in number 7 void on subject barge. As a result of this explosion, two persons lost their lives, 19 persons were injured, and the barge sustained extensive damage.
2. The only vessel involved was the rail-car barge PALMER, official number 294 288; 3768 gross and net tons; 352' in length, 76' in breadth, and 19' molded depth; built of steel in 1964 at Alameda, California. The vessel's document lists the owners as Harbor Tug and Barge Company, the operators as Puget Sound Alaska Van Lines, and the home port as San Francisco. At the time of the casualty, the custodian of the barge was, in fact, Pacific Coast Engineering Company, Alameda, California, inasmuch as the building contract called for final delivery in the port of Seattle, Washington.
3. At the time of the casualty the weather was as follows: calm sea, clear sky, sunny, no wind.
4. The Barge PALMER is constructed with standard-gauge rail tracks on the weather deck, and the hull consists of a series of seven watertight compartments. The compartments are approximately 50 feet fore and aft, 76 feet wide, and 19 feet in depth. The only openings into each void consist of one main deck manhole at the forward port corner and one main deck manhole at the after starboard corner. The manhole construction is conventional, consisting of a doubler ring welded to the deck, into which the studs are inserted, and a manhole cover which fits over the studs and is secured by nuts. There are no other openings in the voids, and no vent or bilge system is provided. The barge is conventionally raked at bow and stern, and the

forecastlehead is raised. Two lockers are provided in the forecastlehead for storage of acetylene bottles for the forward running lights. A non-watertight centerline bulkhead runs the full length of the vessel throughout the voids.

5. The stern light of the barge was powered by acetylene, the acetylene bottle being located in a small compartment directly beneath the light on the centerline, at the extreme after end of the barge.

6. Construction was completed at Pacific Coast Engineering Company, Alameda, California, on 17 March 1964, and the vessel was certificated by the San Francisco Marine Inspection Office and documented by Collector of Customs, San Francisco. At that time, construction was complete with the exception of a few minor details and the painting of the interior of number 7 void. On 18 March 1964, the painting of number 7 void was begun. This work was contracted out by the builder to the Eureka Marine Painting Company, 262 Spear Street, San Francisco, California, and the contract called for two coats of red lead paint. All paint was to be supplied by the builder.

7. In anticipation of delivering the vessel at Seattle, the Tug COLUMBIA had been dispatched from Seattle and arrived at the builder's yard on 12 March 1964, and she lay at this yard awaiting the final completion of the barge.

8. At approximately 1130, 19 March 1964, the burner head of the after stern light was replaced and the lamp was relit in the presence of Coast Guard Inspector, Chief Carpenter [REDACTED]. The light was in good condition and was working satisfactorily.

9. On the morning of 19 March 1964, the painting of number 7 void had been completed, but only one coat of red lead had been applied. It was decided to omit the scheduled second coat of red lead in order to expedite the delivery of the barge. The painters employed in number 7 void were supplied by the paint contractor, and were augmented by yard painters.

10. At approximately 1200, 19 March 1964, the tank painting was considered completed, the exhaust blower which had been operating in the starboard after manhole was removed, and all lighting and painting gear which had been inside the void was removed. The yard electrician removed all the electrical equipment from the barge and final arrangements were being made for getting underway.

11. At this time the work of installing two manhole covers in number 7 void was commenced. The starboard manhole cover was put in place without difficulty, and work begun to secure the cover. Difficulty was experienced with the port manhole cover, in that the holes in the cover did not line up with the studs. The work on this cover was being performed by two yard shipfitters, Mr. Paul Kramer and Mr. William S. Sauer, under the direction of Mr. [REDACTED] yard foreman. Mr. [REDACTED] obtained an acetylene cutting torch

from [REDACTED], a burner who was employed on the dock, and gave the torch to Sauer, to be used to elongate the holes in the manhole cover which was two to three feet forward of the manhole opening. Sauer commenced working in the presence of Mr. [REDACTED]. Shortly thereafter, [REDACTED] proceeded to the starboard manhole to assist the workmen there. Mr. [REDACTED], yard maintenance electrician, and Mr. [REDACTED], an electrical contractor, were standing on the fore deck of the barge. No other persons were on board the barge at the time.

12. Shortly after [REDACTED] arrived at the starboard manhole, a low-order explosion occurred in the vicinity of the port manhole. The main deck of the barge over number 7 void fractured on the port side from the force of the explosion and peeled up and to starboard, protecting the three men at the starboard manhole from the blast.

13. Mr. Kramer and Mr. Sauer were killed as a result of the explosion, and 19 other persons were injured in varying degrees (see Exhibit 12).

14. The barge suffered major damage abaft the forward bulkhead of number 7 void. Considerable damage was suffered by other vessels moored at the yard, and by shipyard buildings and shops. In addition, the surrounding area of Alameda suffered minor damage from concussion.

15. Subsequent examination was made of the part of the hull structure which had contained the stern light assembly and bottle. The bottle was found to be missing. No scorching of paint or deflection of steel was found which would indicate that the stern light had been the source of ignition or that the acetylene gas from the stern light assembly had exploded.

16. At no time prior to the explosion had a certified chemist checked the voids for gas-free condition. On 19 March 1964, at 1615 hours, a gas analysis was conducted in all remaining voids. Number one and number six voids were found to be within acceptable limits (safe for men or fire) as required by the U.S. Department of Labor. Voids 2, 3, 4 and 5 were found to be beyond the acceptable limits and portable blowers were installed. Tests on the following day showed all voids to be within acceptable limits, after ventilation.

17. A Cleveland open-cup test to determine the flash point of the paint being used in number 7 void revealed that the paint flashed first at 58°F., and had a secondary flashpoint of 100°F. to 110°F., (Enclosure 4, lab report).

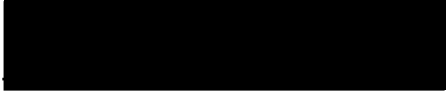
CONCLUSIONS

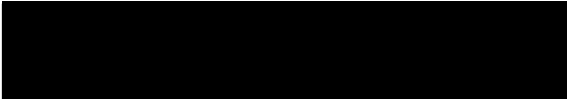
1. The explosion occurred as the direct result of the ignition of paint vapors contained in number seven void, and present in the vicinity of the entrance to the port manhole.
2. The source of ignition was a lighted acetylene cutting torch being used near the port manhole.
3. Due to haste in making the barge ready for sea, steps were taken to secure number seven void, and the ventilating equipment removed, before the void was free of explosive paint vapor.
4. As a result of the explosion, two persons lost their lives, 19 persons were injured, and there was considerable damage, not only to the barge itself, but also to surrounding property.
5. The casualty did not result from the failure of any Coast Guard inspected or approved materiel, nor were any licensed or unlicensed personnel involved.
6. The Coast Guard does not have jurisdiction over the industrial safety practices of the Pacific Coast Engineering Company.

RECOMMENDATIONS

It is, therefore, recommended that:

1. No further action be taken by the Coast Guard and that this case be closed.


CAPT RICHARD BAXTER, USCG
Chairman


CDR BAINBRIDGE B. LELAND, USCG
Member


LCDR ROSS L. MOORE, USCG
Member and Recorder

- Encl:
- (1) Form CG-2692
 - (2) Death Certificate (Sauer)
 - (3) Death Certificate (Kramer)
 - (4) Chemical Analysis of Paint
 - (5) Transcript of proceedings