National Transportation Safety Board

Marine Accident Brief

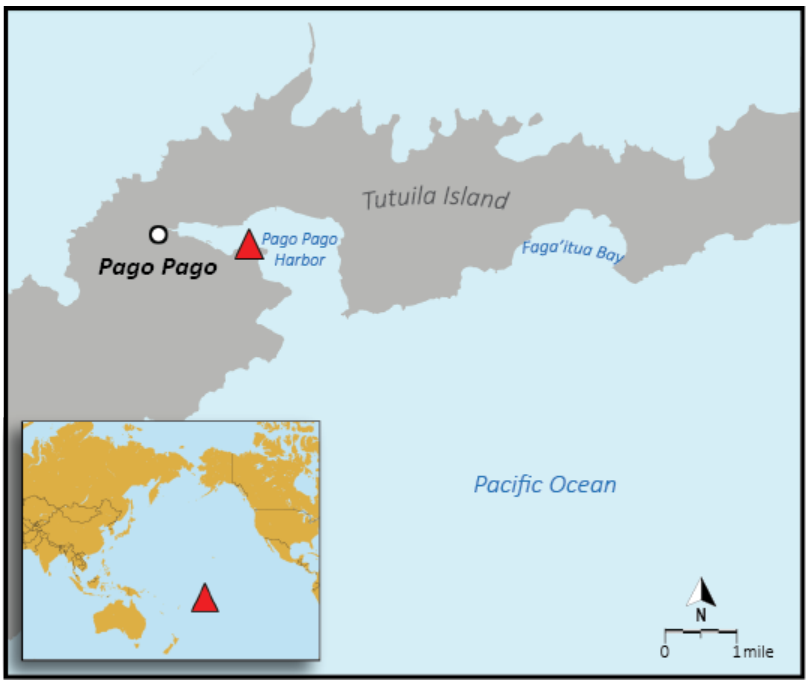
Fire and Sinking of Fishing Vessel *Jeanette*

Accident type	Fire/Explosion	**No.** DCA19FM010
Vessel name	*Jeanette*	
Location	December 5, 2018 (Fire) Pago Pago Harbor, American Samoa December 6, 2018 (Sinking) Pacific Ocean, 14°33.98' S, 170°34.15' W	
Date	December 5, 2018	
Time	1130 Samoa standard time (coordinated universal time – 11 hours)	
Injuries	None reported	
Property damage	$15 million	
Environmental damage	Minimal, slight sheen after the vessel sank	
Weather	Partly Cloudy, visibility of 10 miles, winds southeast at 15 mph, air temperature 84°F, water temperature 80°F	
Waterway information	Pago Pago Harbor is located on Tutuila Island in American Samoa. It is one of the world's largest natural deepwater harbors. The area of the Pacific Ocean where the vessel sank has a depth of approximately 6,500 feet.	

About 1130 local time on December 5, 2018, a fire started within the dry stores locker on board the fishing vessel *Jeanette*, which was pier side at the American Samoa Government (ASG) container facility in the Port of Pago Pago, Tutuila Island, American Samoa, with 18 crewmembers and one shoreside vessel representative on board. The crew and the local shoreside fire department attempted to extinguish the fire, but with the fire worsening and the vessel's load of fuel, lube oil, and ammonia deemed a hazard to the port, the port authority ordered the vessel to be towed offshore. While under tow and still on fire, the vessel sank about 15 miles south of the island at 1039 on December 6.[1] The estimated property damage exceeded $15 million.

The fishing vessel *Jeanette* prior to the fire.

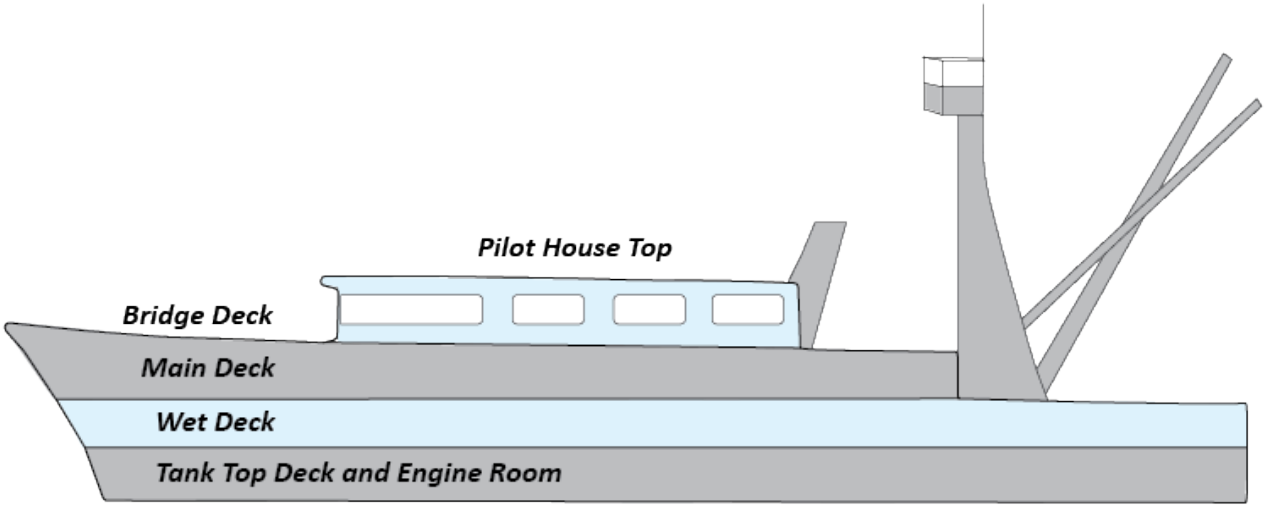
[1] All miles in this report are nautical miles (1.15 statute miles).



Area of American Samoa where the *Jeanette* caught fire, as indicated by the red triangle. (Background Source: Google Maps)

Background

The *Jeanette* was a single propeller, steel hulled commercial fishing vessel built in 1975 for tuna fishing utilizing purse seine netting. The vessel was owned by C & F Fishing LTD and maintained a 22-member crew. The *Jeanette* had five decks, including the wet deck, where the crew emptied fishing nets and processed catch for storage, and the main deck, which housed the crew quarters, galley, storage lockers, and skiffs and ramps for the nets.



Simplified profile of *Jeanette* (not drawn to scale).

Accident Events

The *Jeanette* departed American Samoa on October 31, 2018, to conduct fishing operations. On November 18, after catching 1,330 metric tons of tuna valued at $1.75 million, the captain decided to return to Pago Pago. The vessel docked at the ASG container facility on November 22 to await its turn to offload its catch at the Starkist Tuna Canning facility (located across the harbor from where the vessel was docked). The vessel had on board an estimated 90,000 gallons of diesel fuel, 300 gallons of aviation fuel, and 12,000 pounds of anhydrous ammonia for its cargo refrigeration system.

Prior to December 5, the captain, chief engineer, and the mate departed the *Jeanette* and left Tutuila Island to attend medical appointments and take vacation time for 2–4 weeks until the vessel was ready to return to operations. It was not uncommon for the senior officers to depart when the *Jeanette* was awaiting its turn to offload its catch. During this time, the remaining crew planned to conduct scheduled maintenance, including hull repairs and engine upkeep, so before leaving the island, the captain and chief engineer worked together to prioritize the worklist items that the crew would perform during the next few days. The company had a shoreside vessel representative whose primary responsibility while the senior officers were away was to arrange the unloading of the catch and coordinate the replenishment of spare parts and stores to prepare the vessel to return to sea. The representative had 20 years of shoreside support experience with the accident vessel and knew some of the emergency equipment onboard; however, he stated he was not aware of the daily operations of the vessel. The responsibility for the vessel's work and personnel assignments was coordinated by the "deck boss" and the assistant engineer.[2]

One of the worklist items scheduled to be conducted during this time period was to remove wasted sections of the overhead frames on the wet deck and weld in new sections. On December 5, 2018, this task was assigned to three crewmembers: two who would conduct the welding, or "hot work," and one who would serve as the fire watch.[3] The welders reported to the assistant engineer, and the fire watch reported to the deck boss.

Before the hot work began on the wet deck, the crewmember assigned as fire watch conducted a walkthrough of the main deck area located above the worksite. The crewmember entered and inspected each unlocked space that would be affected by the hot work to ensure there was nothing flammable but did not enter the dry stores locker located directly above the worksite because it was locked. The cook was the only one who had the key to unlock the door to the space, which contained flammable items such as toilet paper, paper napkins, and charcoal briquettes. The crewmember did not seek out the cook to unlock the locker to ensure it was safe for the hot work. There is no indication that the crewmember informed the welders or the deck boss that he could not access the dry stores locker. The deck boss, the assistant engineer, and the welders did not conduct their own inspection of the areas above the worksite.

At 0730, the three crewmembers entered the vessel's wet deck, and the welders began conducting their hot work, welding sections on the overhead longitude and transverse beams on the port and starboard sides midship, near the center line of the vessel. In addition to serving as the fire watch, the third crewmember was also expected to assist the welders by removing paint and rust so that the welders could see and remove the corroded metal and weld the new steel inserts. Because only one fire watch was assigned to monitor the two decks (wet deck and main deck) affected by the hot

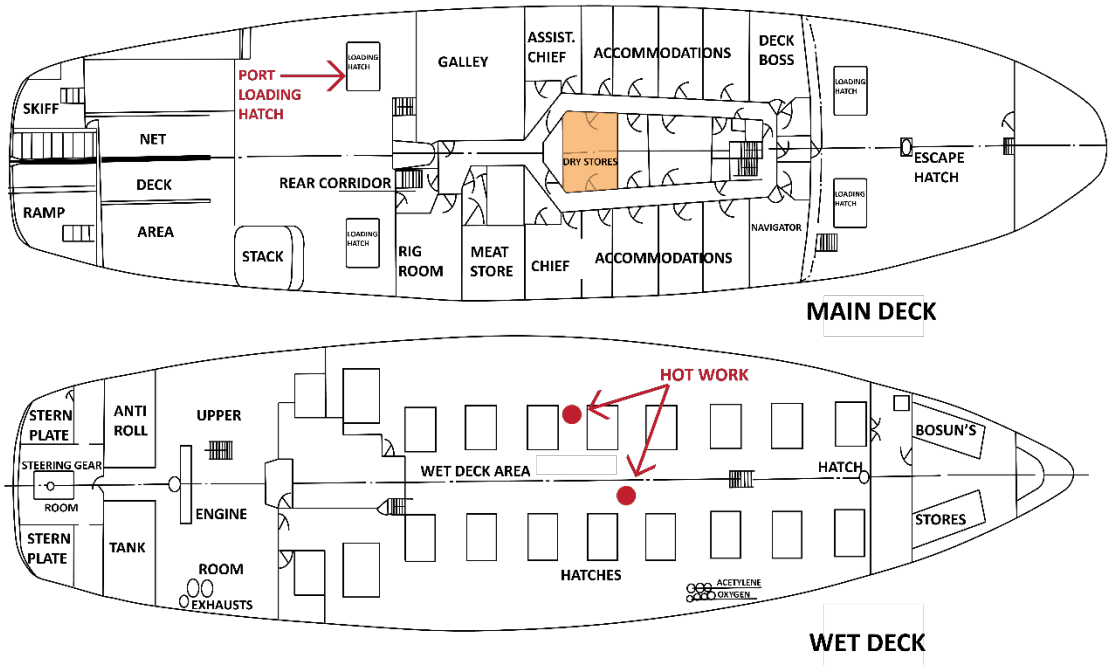
[2] *Deck boss* is a title commonly used on fishing vessels to refer to the senior non-licensed deck supervisor.

[3] *Hot work* includes any work that involves using fire or spark-producing tools.

work, the fire watch had to periodically leave the hot work area to go up the ladder to check the main deck area directly affected by the heat of the welding.

The crewmembers took their morning break from 0900 to 0930. During the 30-minute break, the fire watch left the area of the hot work, with no one relieving him. After the break, the crewmembers returned to the wet deck and continued to replace wasted overhead beams. The fire watchstander inspected the main deck two or three times prior to lunch.

At 1055, the crewmembers stopped working to clean up for lunch. Shortly afterwards, a smoke detector located in the cabin across from the dry stores locker began to alarm. When the crew investigated the cause of the alarm, they observed smoke emitting from the dry stores locker, and the cook was called to unlock the door so they could investigate the source.



Vessel deck plans modified for clarity and to show the location where the hot work occurred on the wet deck (represented by red circles) and the location of the dry stores locker where the fire was discovered (shaded in orange). Note the port loading hatch on the main deck, where water entered and caused listing.

Upon opening the door to the locker, the crewmembers saw that the items stored in the space were on fire. The crew responded by utilizing handheld dry chemical extinguishers to try to put out the fire. Initially, the crew was successful in their effort to extinguish the fire, but the smoke soon began to overwhelm them, so they retreated from the interior of the vessel. The door to the dry stores locker was left open, which allowed the fire to re-ignite and spread.

Following the discovery of the fire, the crew never sounded the general alarm, nor did the crew muster and organize to fight the fire per the station bill. The crewmembers who were on board at the time were told verbally that there was a fire. After becoming aware of the fire, crewmembers located on the bow attempted to access the bow entrance corridor within the main deck to move aft, but were pushed back by heavy smoke and instead had to go up and around the pilothouse to the stern of the vessel, where hoses were being setup. A crewmember notified Tutuila Island emergency services of

the fire at approximately 1122, and while the first fire truck arrived on scene at 1136, the firefighters were not equipped with self-contained breathing apparatus (SCBA) to enter the smoke-filled vessel. One of the vessel's crew donned an SCBA from the aft fire equipment locker, but since the crewmember was not wearing a firefighting suit, he was unable to approach and attempt to extinguish the growing fire due to its heat.

The bridge of the *Jeanette* engulfed in fire. (Source: US Coast Guard)

About two hours after the first fire truck arrived on scene, a second fire truck arrived at 1320 with six SCBAs and two spare air bottles. The shoreside firefighters made initial entry through the rear corridor (aft of the dry stores locker on the main deck) using their SCBAs and began firefighting efforts using a 1½ inch fire hose supplied from the shore firetruck. The assistant engineer shut down electrical power from the main deck to the wheelhouse at the direction of the chief engineer, who was communicating with him by cell phone, and left the engine room, generators, and bilge pumps operational. The tugboat *Iseula* responded on scene and applied their water monitor to the starboard side wheelhouse of the *Jeanette* to suppress the flames.

As a result of firefighting efforts, the *Jeanette*'s wet deck began to flood, and the vessel began to list slightly to the port side. Crewmembers used the vessel's pumps, as well as portable pumps provided by other vessels in the harbor, to remove the water from the vessel and were able to keep pace with the water applied during firefighting efforts. A second fire team from the shoreside fire department entered the vessel and was able to extinguish the fire located in the dry stores locker, but the fire team had to exit the space due to low air alarms on their SCBAs. Fire continued to burn in the rest of the vessel, and due to the lack of spare air bottles for the SCBAs, the decision was made to abandon onboard firefighting efforts, and the vessel was evacuated.

Since the fire on board the *Jeanette* could not be controlled, and the vessel's ammonia, fuel, and lube oil posed a significant hazard to the port, the American Samoa Port Authority, in consultation with the Coast Guard, ordered the vessel to be towed out of the harbor. The tugboat *Iseula* was able to attach its towing line to the *Jeanette's* bow, and firefighters used fire axes to sever the vessel's mooring lines at the dockside bollards. At 1552, more than four hours after the fire was discovered, the tug

Iseula towed the burning *Jeanette* out of the harbor and headed south into the Pacific Ocean at about 2 knots, with the tug *Sailele* escorting.

The fishing vessel *Jeanette* being towed by the tugboat *Iseula* while on fire. (Source: US Coast Guard)

On December 6 at 0102, while the *Jeanette* was still on fire and under tow, the purse seine netting burned away underneath the skiff, and the skiff slid off the stern of the vessel, causing the fishing vessel's crane boom and power block to swing to port and rest on the port side bulwark, and the vessel listed to port. Over the next nine hours, the vessel's port list increased as water entered the open 8-by-8-foot port loading deck hatch. At 1032, the *Iseula* released the tow line as the *Jeanette* listed further to port, and at 1039, almost twenty-three hours after the fire was discovered, the fishing vessel sank in open water about 15 miles offshore. A slight oil sheen was observed in the area following the sinking.

Additional Information

The Occupational Safety and Health Administration (OSHA) provides standards for safely conducting hot work, which require a fire watch to be posted when crewmembers are conducting hot work in areas close enough to cause ignition through heat radiation.[4] As per OSHA, a fire watch is considered to be the primary means to protect crewmembers and the vessel from harm during hot work. OSHA states that an effective fire watch should wet down the area or cover combustible material with fire-resistant blankets while maintaining a clear view of and access to areas of hot work. The fire watch should not perform any other duties while acting as fire watch and must remain on-site for at least 30 minutes after crewmembers have completed hot work, unless relieved by a crewmember or the area is determined to be safe.

C & F Fishing, the *Jeanette*'s owner and operator, required the vessel's captain to conduct monthly emergency preparedness drills, during which the crew responded to various emergency situations, including flooding, fire, man overboard, and abandon ship. Interviewed crewmembers told investigators that they performed these drills (always with senior officers aboard), but since the logs were lost during the sinking, investigators were unable to confirm. C & F Fishing also maintained a

[4] See Title 29 *Code of Federal Regulations* (CFR) 1950.504.

standard written safety policy for responding to and extinguishing a fire, which was destroyed in the fire.

To aid in fire response, the *Jeanette* had three Self-Contained Breathing Apparatus (SCBA) with fire suits stored on board. Two of the SCBAs were located on main deck: one in a forward fire equipment locker and other in the aft fire equipment locker. The third SCBA was located in the pilothouse. All of the SCBAs were stored with spare air bottles.

Analysis

Investigators found several issues that contributed to the fire and its growth, including insufficient preparation for hot work and inadequate implementation of a fire watch. In addition, the disorderly response by the crew to the fire indicated that the crew was not prepared for an emergency situation.

Investigators found that the vessel had no written safety policy or procedure in place for the crew to review and follow when preparing for and conducting hot work. All directions regarding the responsibilities of the fire watch were passed verbally to a crewmember only if serving in this role for the first time. There was no formalized or follow-up training to ensure that the crewmember knew the responsibilities of a fire watch before hot work commenced. The crewmembers were welding the overhead adjacent to a space containing charcoal and paper goods, which presented a substantial fire risk. They either were unaware of or did not understand their responsibilities to assess the risk of fire and take steps to mitigate or remove it.

As per OSHA policy, there should have been two crewmembers serving as fire watch: one on the wet deck and one on the main deck. Because there was only one fire watch assigned to monitor both the wet deck and the main deck during the hot work, the fire watch could not effectively monitor both decks. In addition, the fire watch was assisting the welders by chipping paint and preparing the surface, when he should have been focused solely on preventing and detecting a fire. Further, the welding crew and fire watch left immediately for lunch instead of ensuring that the affected welding areas were safe and that there was no potential for a fire.

The shortcomings of the crew in preparing for and monitoring hot work demonstrate a lack of understanding of the risk that hot work posed to the vessel. All areas adjacent to the hot work should have been accessible. While the designated fire watch conducted an inspection of the compartments located above the hot work area before welding, he only entered spaces that were unlocked. He did not enter the locked dry stores space, which contained the combustible materials that eventually ignited and caused the fire. If the vessel owner had provided the crew with a policy or formal training for conducting hot work, the crew likely would have been more aware of their responsibility to properly prepare and monitor the spaces adjacent to the location of hot work.

Contributing to the growth and spread of the fire was the ineffective response by the crew. Without the senior officers on board providing leadership, and without a knowledgeable crewmember designated as being the person in charge, the crew did not respond effectively to the emergency and failed to follow the fire muster procedure and properly utilize critical fire equipment, such as the fire suits and the SCBAs. This allowed the fire to spread to the point where it could not be contained, and the vessel became a hazard to the port. Although a shoreside vessel representative was on board, he did not train for emergency response with the crew and therefore did not have detailed knowledge of

the emergency response procedures, the type of emergency equipment on board, or the positions to which the crewmembers were assigned in case of a fire.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the fire and sinking of the fishing vessel *Jeanette* was inadequate crew training and oversight by the company to ensure safe hot work practices were followed on board the vessel. Contributing to the spread and growth of the fire was the lack of a clearly designated person in charge during the response, which resulted in an ineffective firefighting effort by the crew.

Fire Protection

Before conducting hot work, it is critical to evaluate work areas for fire hazards to ensure that adequate protection is in place. In addition, crewmembers involved in hot work should be trained to identify possible hazards and take action to remove or mitigate these potential risks to the vessel and crew. The fire watch should not perform any other duties while acting as fire watch and should remain on-site until the area is deemed to be safe, unless relieved by another crewmember.

Vessel Particulars

Vessel	*Jeanette*
Owner/operator	C & F Fishing LTD
Port of registry	Pago Pago, American Samoa
Flag	United States
Type	Fishing vessel
Year built	1975
Official/IMO number	565986 / 750865
Classification Society	N/A
Construction	Steel
Length	228 ft (69.5 m)
Draft	18.2 ft (5.5 m)
Beam/width	43.1 ft (13.1 m)
Gross tonnage	1,498 GT
Engine power; manufacturer	1 Caterpillar diesel engine, 5700 Hp (4250 kW)
Persons on board	19

NTSB investigators worked closely with our counterparts from Coast Guard Marine Safety Detachment America Samoa throughout this investigation.

For more details about this accident, visit www.ntsb.gov and search for NTSB accident ID DCA19FM010.

Issued: November 8, 2019