

UNITED STATES COAST GUARD

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COMMANDANT
U.S. COAST GUARD
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MVI
(AMOCO VIRGINIA a-8 Bd)
22 August 1960

Commandant's Action

on

Marine Board of Investigation; explosion and fire on board the SS AMOCO VIRGINIA, tank barges H. T. CO. NO. 40 and 46 and GISSSEL 1601 and 2001, Houston Ship Channel, 8 November 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. At about 0025, 8 November 1959, while the SS AMOCO VIRGINIA was loading at the Hess terminal, Houston, Texas, fire occurred on the surface of the water in the Houston Ship Channel and moved toward the vessel and to two barges alongside. Three or more explosions followed involving Numbers 5 and 6 cargo tanks on the AMOCO VIRGINIA and after rake compartment of the tank barge H. T. CO. NO. 40. Fire spread over a major portion of the vessel and to Hess Terminal dock facilities. Six crew members including the master died of burns and one died of smoke inhalation. Eighteen crew members were treated for injuries. One fireman from the Houston Fire Department drowned in gasoline as a result of falling into Number 6 port wing tank. In addition to the damage to shore facilities the damage to vessels involved was in excess of \$2,000,000.
3. The SS AMOCO VIRGINIA, a tank vessel certificated for the carriage of Grade A cargo, arrived at the Hess Terminal at approximately 0415, 7 November 1959 and moored portside to Ship Dock No. 2, heading downstream. Ballast discharge began on arrival and was completed at 0750. The cargo inspector together with the day loading mate examined all cargo tanks and issued a dry certificate. The loading mate claimed that at this point he checked the overboard discharges in the pumproom to insure they were closed, set them up with a wrench, then chained and sealed them.
4. Loading of the cargo of Amoco water white gasoline, Housebrand gasoline and No. 2 heating oil was commenced at 0830. The cargo came at various times from Hess Terminal tanks and from barges moored to Ship Dock No. 1 located approximately 550 feet upstream of the Ship Dock No. 2 where the AMOCO VIRGINIA was moored and Barge Dock No. 2 located approximately 800 feet downstream of Ship Dock No. 2. At about 1635 7 November 1959 the tug PAN SIX moored the barges H. T. CO. NO. 40 and H. T. CO. NO. 46 in tandem

stern to stern along the starboard side of the AMOCO VIRGINIA with barge 46 downstream. The tug then moored starboard side to the upstream barge. At 1815 the H. T. CO. NO. 40 and H. T. CO. NO. 46 began discharging Housebrand gasoline direct to the AMOCO VIRGINIA through a common line.

5. By 2400 7 November loading of tanks 1, 2 and 3 across with Amoco gasoline was nearing completion. This cargo was coming through shore lines from the barge GISSEL 1601 moored downstream at Barge Dock No. 2. Number 4 tanks across were loaded with Housebrand but were not topped off; 7 and 8 across were topped off with No. 2 heating oil; tanks 5 and 6 were partially filled with Housebrand but no cargo was going into those tanks at this time; 9 across was being loaded with Housebrand through the stripping line from the barges alongside to starboard. No cargo was being pumped from the terminal to the vessel, having previously been secured at 2330 7 November.

6. The weather was described as clear with light northerly air and vapor was observed rising from the channel. The tidal current was slack or ebbing slightly.

7. At 0010 8 November Number 9 tanks across were full. The hose connection from the barges H. T. CO. NO. 40 and 46 was then disconnected from the stripping line. Preparations were being made to reconnect the hose to the 4-5-6 loading line at the manifold when suddenly at about 0025 fire was observed broad on the starboard bow on the surface of the water near mid-channel approximately 200 to 300 feet away. In the vicinity of the fire the diesel tug MAYE was observed push-towing a loaded sand barge upstream. The fire, variously described as a wick or golden ribbon of flame approximately one foot wide and two to four feet high, burned toward the AMOCO VIRGINIA and set fire to the water area between the ship and the barges. There followed a flash on the starboard side of the AMOCO VIRGINIA's midship house, referred to by some as an explosion and others as a "whoosh," which shot flame high into the air and spread the fire over the entire midship house along the starboard side and on the water area completely surrounding the vessel. As far as can be determined at least three explosions occurred within the next ten minutes, the first of which was the least severe and appears to have occurred in the after rake compartment of the H. T. CO. NO. 40. The other explosions occurred in Numbers 5 and 6 cargo tanks of the AMOCO VIRGINIA. In the meantime the fire had continued to spread over the water area on the eastern side of the channel from Ship Dock No. 1 upstream of the AMOCO VIRGINIA to Barge Dock No. 2 downstream of the vessel.

8. The majority of the crew members abandoned the vessel over the gangway and the mooring lines. Seven men took refuge in the lower machinery space and one in the lower main pumproom until the fire subsided sufficiently to permit going ashore via the mooring lines aft. The tug PAN SIX was able to get underway from alongside the H. T. CO. NO. 40 before the fire reached her.

9. Responding to the fire were the Houston Fire Department, U. S. Corps of Engineers, Coast Guard and regular and volunteer fire departments from all adjacent communities. Other emergency and law enforcement agencies also contributed their efforts. By 2000 8 November the fire was under control.

10. In the course of the investigation by the Board it was learned that at 0350 on 7 November while the tug SAN ANTONIO was shifting the barges GISSEL 1601 and the GISSEL 2001 the barges collided. The 1601, loaded with Amoco gasoline, sustained a vertical crack about 12 inches long and 1/2 inch wide in the Number 5 port cargo tank extending from 24 to 36 inches below the main deck. The tug personnel drove wedges in the hole and succeeded in reducing the resultant leak to a seepage. The barge was then moored to Ship Dock No. 1 and was pumped out until the level of the cargo within the tank was below the leak. This was accomplished by about 1000 7 November. It was also determined that a cargo hose conveying No. 2 heating oil from the H. T. CO. NO. 50 to manifold on Ship Dock No. 1 was leaking onto the dock and into the water until pumping was secured at 1830 7 November.

11. The Board elicited testimony from the chief engineer of the PAN SIX to the effect that about 2000 7 November he became aware of increasingly heavy accumulation of gasoline fumes. With the aid of a flashlight he inspected the barges H. T. CO. NO. 40 and 46 for possible leaks and although he found none, he noted gasoline on the water along the side of the AMOCO VIRGINIA as far fore and aft as he could see with his flashlight as well as between both barges. The gasoline appeared to have a reddish cast. According to the chief engineer the attention of the night loading mate was then directed to the gasoline in the water and when he asked where he thought the gasoline was coming from the night loading mate replied that he did not know. At sometime during the period the chief engineer observed liquid bubbling up in way of the AMOCO VIRGINIA's main pumproom and from the quantity he assumed the vessel was pumping something overboard. The chief engineer claimed that at approximately 2330 he again saw the night loading mate and inquired if the source of the gasoline had been located. He received the reply that it had not. The gasoline appeared to be moving downstream and spreading out forward of the AMOCO VIRGINIA. The chief engineer noticed no gasoline outboard of the barges nor around the PAN SIX.

12. The master of the PAN SIX testified that he also had noticed a heavy concentration of gasoline on the water between the ship and the barges and was aware that the chief engineer had reported this situation to the night loading mate on the AMOCO VIRGINIA. He stated further that at sometime after 2300 7 November he personally reported to the night loading mate that the gasoline was getting thick and further called his attention to the bubbling up of liquid which he presumed to be water alongside of the ship in way of the main pumproom. The night loading mate indicated that this was an overboard discharge. Not being familiar with tankers the master did not pursue the matter further.

13. An able bodied seaman, crew member of the AMOCO VIRGINIA, also testified that he saw red gasoline on the water alongside to starboard at about 2000 and that he called it to the attention of the night mate.

14. The Board took notice of the commendable action on the part of George W. Davis, chief mate on the AMOCO VIRGINIA who saved the life of Emanuel Gatica, galleyman. Davis, upon finding Gatica in a state of shock on the mess deck, persuaded him to follow through the heavy smoke and down the mooring lines and into the water. When Davis discovered that Gatica could not swim he kept him afloat until a life preserver and other assistance was received from shore.

REMARKS

1. It is apparent that the fire resulted from the accumulation of a large quantity of inflammable liquid on the surface of the water, then spread to the AMOCO VIRGINIA and to shore facilities. Concurring with the Board, the evidence adduced indicates that this liquid material in all probability was Housebrand gasoline which had entered upon the water through the overboard discharge on the starboard side of the main pumproom. Had this liquid been water, as presumed by the master of the PAN SIX, a small quantity of bubbles might have appeared on the surface, but due to the depth of the overboard discharge below the waterline, the welling-up of fluid as described by the master and chief engineer of the PAN SIX suggests a liquid of lesser specific gravity. Since the Number 9 tanks across were filled through the stripping line, accidental discharge could occur if valves to the overboard discharge were left open or were not fully closed. When the vessel was in drydock after the casualty these valves were examined and found to be in good condition.

2. The possibility that the leaking gasoline from the damaged barge GISSEL 1601 contributed to this casualty is considered remote. There is no evidence of any gasoline leaking into the water from the GISSEL 1601 after about 1000 7 November. By the time the casualty occurred fourteen hours later this gasoline would in all probability have completely dissipated. The No. 2 heating oil leaking from the cargo hose at Number 1 Ship Dock, although constituting prohibited contamination, does not appear to have contributed greatly to the hazard in view of the limited quantity which entered the water.

3. The preponderance of the testimony places the source of ignition near midchannel in the vicinity of the tow consisting of the diesel tug MAYE pushing the loaded sand barge. The three open flame oil lanterns used as running lights on the bow of the barge are a likely source of ignition; however, other possible sources would also be present.

4. The explosion which occurred in the after rake compartment of the H. T. CO. NO. 40 appears to have been caused by an accumulation of vapors in that compartment ignited by the fire outside. Since an examination of the barge after the casualty disclosed no leaking tanks, the gasoline or vapors probably entered the compartment, as suggested by the Board, through previously sustained collision damage which had resulted in a fracture of the shell plating just below the stern log.

5. The flash which occurred on the starboard side of the midship house of the AMOCO VIRGINIA appears to have been the ignition of the vapors generated by the loading and which hung over the vessel due to the stable atmospheric conditions obtaining.

6. The direct cause of the first explosion in cargo tanks 5 and 6 could not be determined. The testimony of pertinent witnesses indicates that all tank tops were closed and flame screens were in place over all ullage openings. Of course, had one been ajar or failed to fit snugly, or been dirty, its purpose would have been defeated. On the other hand, there is also the possibility that a flame screen may have been dislodged by the explosion on the barge. In this connection it was noted that several flame screens on the vessel's after tanks had apparently been dislodged by explosions.

7. Concerning the Board's recommendations, it is considered that the failure of the night loading mate when notified of the presence of gasoline on the water to attempt to determine the source of the gasoline or otherwise take necessary precautions to insure himself that the loading could be continued with safety constitutes evidence of negligence. The failure of the master of the Tug PAN SIX as officer in charge of the pumping operations of the barges H.T. CO. NO. 40 and 46, to take timely and adequate precautions to insure the safety of the persons and vessels under his command when he became aware of the dangerous situation presented by the gasoline on the water, is also considered to constitute evidence of negligence. Accordingly, the Commander, 8th Coast Guard District is hereby directed to refer this case to the Officer in Charge, Marine Inspection, Houston, Texas, for further investigation of the failures of these officers and such other action as provided for in Title 46 CFR Part 137 as may be deemed appropriate.

8. With respect to the oil pollution aspects of the case, the Commander, 8th Coast Guard District is further directed to forward one copy of the Board's report to the District Engineer, U. S. Army Corps of Engineers for possible action in connection with the discharge of gasoline from the AMOCO VIRGINIA and the uncorrected leak in the discharge hose which conveyed Number 2 heating oil from the H. T. CO. NO. 50 to the manifold on Ship Dock No. 1.

9. The Board's recommendation that the J. B. Gissel & Co., owners of the barge SAN ANTONIO and tank barge GISSSEL 1601, be cited for violation of 33 USC 361 for failure to report the collision which resulted in damage to the GISSSEL 1601 and spillage of gasoline is not concurred in. The provisions of 33 USC 361 require reporting of accidents for investigation and inspection purposes to determine cause and insure seaworthiness. There is no evidence in this instance that the Coast Guard did not receive sufficiently timely notice to meet these requirements. It is agreed, however, that this casualty points up the need for the earliest possible notification of accidental spillage of any commodity which might create a hazard to safety. The Merchant Marine Council presently has such a matter under consideration and accordingly this case will be referred to that body for study in this connection.

10. Recognition of the commendable action by the chief mate, George W. Davis, who assisted galleyman Emanuel Gatica to safety will be given.

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



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

Subj: Marine Board of Investigation to investigate into the fire and explosion on board the SS AMOCO VIRGINIA, and the tank barges H. T. CO. NO. 40 and 46, and GISSEL 2001 and 1601, which occurred at or about 0030, 8 November 1959 at Hess Terminal Corporation, Houston, Texas

Findings of Fact:

1. The SS AMOCO VIRGINIA facts:

a. At about 0830, 7 November 1959, loading of the tank vessel AMOCO VIRGINIA, O.N. 243518, was commenced. Vessel was moored alongside ship dock #2 headed downstream, port side to Hess Terminal, Houston, Texas.

b. At about 0025, 8 November 1959, two tank barges H. T. CO. NO. 40 and H. T. CO. NO. 46, which were moored on the starboard side of the AMOCO VIRGINIA, had stopped discharging into the AMOCO VIRGINIA while a cargo hose was being changed to another manifold. The tug PAN SIX, O.N. 241125, was moored alongside tank barge H. T. CO. NO. 40.

c. The tank barge GISSEL 1601 was moored alongside ship dock #1 and was discharging gasoline through Hess pipe line to AMOCO VIRGINIA. The tank barge GISSEL 2001 was moored at barge dock #2 and had completed discharging through Hess pipe line to AMOCO VIRGINIA.

d. The surface of the water around the AMOCO VIRGINIA, barges, and from the Hess Terminal docks out into the ship channel, was polluted with gasoline and petroleum products.

e. The surface of the water at about mid-channel opposite the AMOCO VIRGINIA caught on fire. The fire moved along the surface of the water towards the Hess Terminal docks, the AMOCO VIRGINIA, and all the barges alongside the vessel and docks. The fire on the surface of the water set fire to the two Higman barges alongside the AMOCO VIRGINIA.

f. Explosion occurred in the after rake compartment of the H. T. CO. NO. 40, throwing a sheet of flaming gasoline up on the deck of the AMOCO VIRGINIA, and the whole starboard side of the deck then burst into flame, fire extending from the forecastle to the fantail and as high as the top of the masts.

g. Numbers 5 and 6 port wing tanks exploded with a large section of the deck blowing open and on to the dock exposing the burning gasoline to the atmosphere. Explosion occurred in numbers 5 and 6 center and starboard wing tanks fracturing bulkheads, bulging out sides and main deck, making a common hold out of all numbers 5 and 6 tanks across. All numbers 5 and 6 cargo tank expansion trunk hatches except #5 starboard were blown off.

h. Seven crew members of the AMOCO VIRGINIA and one City of Houston fireman lost their lives as a result of this casualty.

i. Seventeen crew members and the night engineer of the AMOCO VIRGINIA were treated for injuries as a result of this casualty.

j. Heavy structural damage by fire and explosion occurred to the AMOCO VIRGINIA, barges and Hess Terminal docks and loading facilities.

2. The vessels involved were:

a. AMOCO VIRGINIA, O.N. 243518, a steam tank vessel of 12,527 gross tons and 8,298 net tons, 552 feet in length, built of steel in 1943, Jumboized in 1957, certificated for grade "A" cargo, 173,975 barrels, home port Wilmington, Delaware, owned by First Tanker Corporation of Dover, Delaware, R. R. COMBS, deceased, of master, last inspected Galveston, Texas 24 July 1959.

b. GISSEL 1601, O.N. 262594, tank barge, 961 gross and net tons, length 210 feet, capacity 16,000 barrels, grade "B", owned by J. S. Gissel & Company of Houston, Texas, last inspected Houston, Texas 12 September 1958.

c. GISSEL 2001, undocumented, tank barge, 1248 gross and net tons, length 258 feet, capacity 21,500 barrels, grade "B", owned by J. S. Gissel & Company, Houston, Texas, last inspected 11 November 1958, Houston, Texas.

d. H. T. CO. NO. 40, undocumented, tank barge, 802 gross and net tons, length 205 feet, capacity 12,500 barrels, grade "B", owned by Higman Towing Company, Orange, Texas, last inspected Port Arthur, Texas 17 June 1959.

e. H. T. CO. NO. 46, undocumented, tank barge, 800 gross and net tons, length 199 feet, capacity 12,728 barrels, grade "B", owned by Higman Towing Company, Orange, Texas, last inspected Port Arthur, Texas 3 April 1959.

f. MAYE, O.N. 208290, tug, 12 gross tons and 8 net tons, 52 feet in length, owned by Horton & Horton, Houston, Texas. Pushing barge H. H. III loaded with wet sand.

3. Vessels that handled barges prior to the fire, and barges that discharged cargo to AMOCO VIRGINIA and departed prior to the fire:

a. H. T. CO. NO. 49, tank barge, undocumented, grade "B", capacity 20,700 barrels, owned by Higman Towing Company, Orange, Texas.

b. H. T. CO. NO. 50, tank barge, undocumented, grade "B", capacity 20,700 barrels, owned by Higman Towing Company, Orange, Texas.

c. PAN SIX, tug, O.N. 241125, 94 gross tons, owned by Higman Towing Company, Orange, Texas.

d. SOUTHERN III, tug, O.N. 273673, 228 gross tons, owned by Southern Towing Company, Port Arthur, Texas.

e. SAN ANTONIO, tug, O.N. 239617, 73 gross tons, owned by J. S. Gissel & Company, Houston, Texas.

f. SAN BENITO, tug, O.N. 241803, 26 gross tons, owned by J. S. Gissel & Company, Houston, Texas.

4. D. H. Chandler, Jr., a member of the Houston Fire Department, died during firefighting after falling into a cargo tank #6 port wing, full of gasoline. The tank top (main deck) had been torn off by an explosion. Cause of death: Asphyxia, due to drowning in gasoline.

5. The following crew members of the AMOCO VIRGINIA lost their lives in the fire:

Raymond Rufus COMBS, master, cause of death 3rd and 4th degree burns of 100% of body, location of body, foot of after cat-walk ladder near #7 center cargo hatch on main deck.

Harry Matison WALLING, Jr., A.B., cause of death 4th degree burns of 100% of body, location of body, port side of main deck abreast #7 center cargo hatch trunk. Body reduced to ashes.

Calvin Clyde THOMAS, A.B., cause of death 3rd and 4th degree burns of 100% of body, location of body, after main deck in way of #8 center tank cargo hatch.

Francis J. RILEY, 1st asst. engineer, cause of death 3rd and 4th degree burns of 80% of body, location of body, forward starboard upper officers passageway port side at turn of fireroom.

Euligio C. GALLARDO, chief cook, cause of death 3rd and 4th degree burns of 95% of body surfaces, location of body, upper port passageway in way of officers quarters aft.

Jimmie L. BROWN, 2nd cook & baker, cause of death 3rd and 4th degree burns of 100% of body, location of body, outboard after corner of cooks' room port side.

Arvid Juluis HILL, oiler, cause of death asphyxia due to smoke inhalation, location of body, after lower crew's passageway port side at turn of fireroom.

6. The following crew members of the AMOCO VIRGINIA received treatment for injuries as a result of being exposed to fire and leaving the ship over mooring lines, etc.:

George W. DAVIS, Chief Mate, Z-224722
Julius SPAIN, 2nd Mate, Z-558508
Edwin R. KREMER, 3rd Mate, Z-169156
William G. McBETH, A.B., Z-822231
Howard SERCY, A.B., Z-301763
Rudolph OZOL, Bos'n, Z-311980
Joseph R. DALEY, O.S., Z-880449
Robert S. DIVERS, 3rd Asst. Engineer, Z-556161
Norman E. HARRIS, Oiler, Z-647604
Leonard CRISP, Oiler, Z-489699
William E. RICH, Jr., FWT, Z-unknown
John McCABE, Wiper, Z-332533
Giullermo GUILLEN, Wiper, Z-1100059
Nick Cambourakis, Wiper, Z-unknown
Julio J. CRUZ, Chief Steward, Z-250777
Leonard Wesley PARDEE, Messman, Z-364668
Emmanuel Catica, Galleyman, Z-733573
Bruce ROGERS, Night Engineer, Z-unknown

7. Weather and current conditions were:

Wind North, light

Tide, practically none or very light ebb

Weather, clear with scattered vapor rising from channel

8. Berths at the Hess Terminal Corporation, Houston, Texas are located as follows: The drum dock is about 100 feet upstream from barge dock #2; 700 feet upstream from the drum dock is ship dock #2; ship dock #1 is about 550 feet upstream from ship dock #2.

9. At about 0350 (zone 6 time) on 7 November 1959, when the tug SAN ANTONIO was shifting the barges GISSEL 1601 and GISSEL 2001 at the Hess Terminal Barge Dock #2, the barges collided, GISSEL 1601 loaded with Amoco gasoline (white) was holed in the #5 port cargo tank near the bulkhead to #4 approximately 24 to 36 inches down from the main deck; the opening being about 12 inches by 1/2 inch, with consequent spillage of cargo resulting. (Neither the damage nor the spillage were reported to any local or federal authorities) SAN ANTONIO towed GISSEL 1601 to the opposite side of the Houston Ship Channel and the tug's personnel drove pieces of wood crating into the crack as wedges. This operation was completed after about 45 minutes.

10. At about 0415, 7 November 1959, AMOCO VIRGINIA moored, bow downstream, port side to ship dock #2 and prepared to pump out ballast.

11. At about 0540, 7 November 1959, tug SAN ANTONIO moored GISSEL 1601 (the damaged barge) alongside H. T. CO. NO. 49 which was lying at ship dock #1.

12. At about 0750, 7 November 1959, AMOCO VIRGINIA completed discharging ballast. At about 0830 loading of the AMOCO VIRGINIA was commenced through shore pipelines.

13. At about 0930, 7 November 1959, barges H. T. CO. NO. 49 and H. T. CO. NO. 50, lying at ship dock #1, commenced pumping Amoco white gasoline and #2 heating oil, respectively to Amoco Virginia through shore pipelines.

14. At about 0930, 7 November 1959, J. S. Gissel & Company barge GISSEL 1601 connected cargo hose to H. T. CO. NO. 49 manifold and commenced discharging Amoco white gasoline to AMOCO VIRGINIA.

In the cargo hoses used from the Higman Towing Company barge No. 50, the section connected to the shore pipeline leaked a small amount during the discharge of cargo #2 heating oil. During the discharging from GISSEL 1601, difficulty was experienced with the pumps because of broken packing gland flange which required replacement, with renewal of packing. Pressure on the pumps of H. T. CO. NO. 49 was reduced so the pumps of GISSEL 1601 could discharge cargo through the manifold of H. T. CO. NO. 49 and common cargo hose to the shoreline, which was lined up to the AMOCO VIRGINIA.

15. At about 1145, 7 November 1959, barge GISSEL 2001 commenced discharging House Brand gasoline to AMOCO VIRGINIA through shore pipelines.

16. At about 1635, 7 November 1959, tug PAN SIX moored the barges H. T. CO. NO. 40 and H. T. CO. NO. 46 in tandem stern to stern to the outboard side of AMOCO VIRGINIA, with barge 46 downstream. Tug PAN SIX tied up outboard of barge 40 on its port bow.

17. At about 1815, 7 November 1959, H. T. CO. NO. 40 and H. T. CO. NO. 46 commenced discharging House Brand gasoline direct to AMOCO VIRGINIA. Cargo was discharged from these barges to the AMOCO VIRGINIA through a cargo hose from barge No. 46. The cargo hose from barge No. 40 was connected to the cargo line on barge No. 46. One section of cargo hose from barge No. 40 to barge No. 46 was found to leak in the vicinity of the flange, and was disconnected and replaced with another hose section.

18. At about 2200, 7 November 1959, H. T. CO. NO. 49 and H. T. CO. NO. 50, having completed discharging cargo were removed from ship dock #1 and from the area by tug SOUTHERN III. Barge GISSEL 1601 was then moored directly to ship dock #1 and the cargo was being discharged directly to a shore line.

19. At about 2210, 7 November 1959, barge GISSEL 2001 had completed discharging to AMOCO VIRGINIA.

20. At about 0025, 8 November 1959, the tug MAYE, pushing Horton & Horton Barge III, loaded with wet sand, up the Houston Ship Channel, passed the Hess Terminal. The barge had 3 open flame, unscreened, oil lanterns; one red, one green and one white, on the bow.

21. At about 0025, 8 November 1959, there was a large quantity of gasoline on the surface of the water, particularly in the vicinity of the AMOCO VIRGINIA and the barges alongside.

22. At about 0025, 8 November 1959, #5 and #6 cargo tanks across, port, center, and starboard, of the AMOCO VIRGINIA were not completely filled with House Brand gasoline. The other cargo tanks of the AMOCO VIRGINIA were filled as follows: #1, #2 and #3 across, Amoco (white) gasoline; #4 across, House Brand gasoline; #7 and #8 across heating oil (#2); #9 across, House Brand gasoline. The cargo filling hose on the vessel from H. T. CO. NO. 46 had been disconnected and was being moved prior to being connected to another manifold on the AMOCO VIRGINIA.

23. At about 0025, 8 November 1959, there occurred, from some unknown source, ignition of combustible and or inflammable petroleum products on the surface of the water near midchannel, in the vicinity of the passing tug MAYE and its tow. The fire progressed along the surface of the water to Higman Towing Company Barge No. 40 and No. 46, thence to the side of the AMOCO VIRGINIA. The fire also found its way to other Hess dock facilities and barges moored to same.

24. Tug PAN SIX unmoored from Higman Barge No. 40 and was underway before the fire reached her.

25. During the fire, explosions occurred in the after rake compartment of the H. T. CO. NO. 40 and in #5 and #6 cargo tanks of the AMOCO VIRGINIA. Severe fire extended to a large portion of the vessel from the forecandle to the fantail and at times, the flames reached the top of the masts. The fire was later confined to the mid-section of the AMOCO VIRGINIA.

26. Seven crew members of AMOCO VIRGINIA remained in the lower machinery space for about one hour before escaping over the after mooring lines when the flames and smoke had subsided aft. Others of the crew abandoned the vessel over the mooring lines and over the gangway. One swam to the opposite bank of the Houston Ship Channel. One escaped from the fire on deck by going to the lower main pump room and remaining until fire in the vicinity subsided; he then escaped over the stern lines.

27. None of the AMOCO VIRGINIA'S firefighting equipment was used because of the rapid spread of flame. Firefighting was conducted by Houston Fire Department, U. S. Coast Guard, The Navigation District Fireboat CAPTAIN CROTTY, and many other various fire departments and military units. The fire to Hess dock facilities and barges moored to same with the exception of ship dock #2 was extinguished first. The fire on the AMOCO VIRGINIA subsided at the forward and after ends of the vessel after about an hour,

but burned severely in way of #5 and #6 cargo tanks for about 18 hours before being extinguished. The water alongside the AMOCO VIRGINIA also kept catching on fire from the leaking of gasoline cargo and the overflowing of the open tanks from so much water being used to fight the fire. Water and foam in large quantities were used to fight the fire.

28. Prior to the casualty, and during the night several members of the crew of AMOCO VIRGINIA and tug PAN SIX told the loading mate, Elmer A. Alford, License #212346, MMD Z-242055, that the odor of gasoline was unusually heavy and red gasoline was on the surface of the water between the AMOCO VIRGINIA and barges H. T. CO. NO. 46 alongside.

29. Before midnight, two members of the crew of the tug PAN SIX saw a discharge bubbling up alongside the AMOCO VIRGINIA, starboard side outboard, at the cofferdam. This discharging was mentioned to the night loading mate, Elmer A. Alford.

30. Mr. Elmer A. Alford, the night loading mate, took no action other than permitting routine pumping operations, after these reports had been made to him.

31. During the fire, George W. Davis, Chief Mate of AMOCO VIRGINIA, Z-224722, License - Master, Ocean, any gross tons, assisted Emmanuel Gatica, Galleyman, by guiding him from the mess deck to safety.

32. Damages to property occurred as follows:

a. AMOCO VIRGINIA, approximately.....	\$2,000,000.
b. Higman Barges:	
H. T. CO. NO. 40.....	14,782.
H. T. CO. NO. 46.....	none
c. Gissel Barges:	
GISSEL 1601.....	400.
GISSEL 2001.....	13,000.
d. Hess Terminal:	
Facilities -	
Complete renewal of docks and loading headers required.	Unknown

Conclusions:

1. It is concluded that inflammable and or combustible petroleum products that were present on the surface of the water of the Houston Ship Channel at or near Hess Terminal Docks on the 7th and 8th of November 1959, came from the following sources:

a. Tank Barge GISSEL 1601, leaking gasoline from the fracture caused by collision with barge GISSEL 2001 until cargo discharged to a level below the fracture.

b. Leaking cargo hose at ship dock #1, conveying heating oil #2 from Higman Towing Company Barge No. 50 to the shoreline.

c. It was probable that part of the AMOCO VIRGINIA'S cargo, house-brand gasoline, in cargo tank #9 was discharged overboard through the stripping line passing through the cofferdam when the level of the cargo in tank #9 was raised above the waterline. This would occur if the valves in the stripping line from the tank to the overboard discharge were left open or not fully closed. Testimony indicates that #9 tanks were being filled through stripping line. The bilges can be pumped through this same overboard discharge line. A witness testified that bilges were not being pumped. Two crew members of the tug PAN SIX testified that something was being discharged through this overboard discharge.

2. It is further concluded:

a. That the after rake compartment of barge H. T. CO. NO. 40 exploded throwing fire up on the deck of the AMOCO VIRGINIA, which set fire to cargo tanks causing internal explosions in #5 and #6 cargo tanks across, blowing the deck open over #5 and #6 port wing tanks, showering burning gasoline over the vessel. Fire and smoke entered the after quarters through the ventilating and heating system.

b. That the presence of gasoline vapor and gasoline on the surface of the water, alongside, was known to crew members of the AMOCO VIRGINIA and PAN SIX and had been reported to Elmer A. Alford, the night loading mate, on duty on the AMOCO VIRGINIA. Alford was inattentive to duty in not investigating the source and taking proper precautionary action.

c. That the damage to tank barge GISSEL 1601 should have been reported promptly to the Coast Guard by Orville Allen Tharp, relief captain of the tug SAN ANTONIO or R. L. Kelley, captain of the tug SAN ANTONIO or Mr. M. W. McCauley, dispatcher for J. S. Gissel & Company, all who had knowledge of the hull damage to GISSEL 1601 and spillage of gasoline on the Houston Ship Channel.

d. That the action of George W. Davis, chief mate AMOCO VIRGINIA, in assisting Emmanuel Gatica, galleyman, to safety is worthy of commendation. The calm, resourceful and deliberate action taken by chief mate Davis saved the life of Emmanuel Gatica, galleyman on the AMOCO VIRGINIA. He persuaded Gatica, who was in a state of shock, to crawl from the mess deck by following the beam of his flashlight through the heavy smoke. After helping him to the after port side of the AMOCO VIRGINIA, and down the lines into the water, he discovered Gatica could not swim, and floated face down. It was necessary to hold Gatica's face above water to prevent drowning. Davis shouted for a life preserver and assistance from the shore. He then swam to shore with Gatica in the life preserver, where they were helped from the water.

e. That the rapidity with which the fire spread prevented the use of the AMOCO VIRGINIA'S firefighting equipment.

f. That no evidence was available from which to determine the fault which permitted the possible discharge of gasoline from AMOCO VIRGINIA into the water alongside the starboard side of the vessel.

g. That no failure of inspected material was found except:

(1) Packing gland flange broke on one of the cargo pumps on barge GISSEL 1601, causing some leakage of cargo and renewal of packing and gland.

(2) That the after rake end compartment of barge H. T. CO. NO. 40 shell plating just below stern log had been fractured in two places sometime prior to this casualty, this could have been the source of entry of gasoline from the surface of the water into the rake compartment.

h. That no Coast Guard personnel or any representative or employee of any other government agency caused or contributed to the cause of the casualty.

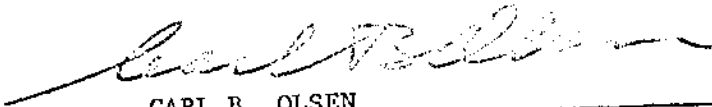
Recommendations:

1. It is recommended that action under R. S. 4450, as amended, and 46 CFR 137, be undertaken against the license of Elmer A. Alford, Z-242055-D1, license #263789, Master, S&M vessels, any gross tons, oceans, on a charge of inattention to duty, while serving under authority of his license as night loading mate of the SS AMOCO VIRGINIA, and having been advised on the night of 7 November 1959, of the presence of exceptionally strong gasoline fumes about the vessel and of gasoline on the water alongside the vessel. He failed to take any proper precautionary measures. This contributed to the fire aboard the vessel, loss of life and severe property damage.

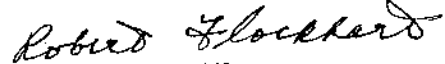
2. It is recommended that a commendation be given to George W. Davis, Chief Mate, for his prompt and timely action in assisting Emmanuel Gatica, galleyman, to safety.

3. It is recommended that J. S. Gissel & Company, owners of the Tug SAN ANTONIO and tank barge GISSEL 1601, be cited for failure to report the collision which resulted in hull damage to GISSEL 1601 and spillage of gasoline into the Houston Ship Channel. (33 USC 361).


4. It is recommended that L. E. McNay, captain of the tug MAYE, which had in tow Barge H. H. III, and owners Horton & Horton, 621 Live Oak Street, Houston, Texas, be cited for a violation of the Rules of the Road, CFR 80.16a (i) and (j), (33 USC 172); navigating Barge H. H. III on waters of the Houston Ship Channel with unscreened improper navigation lights.


CARL B. OLSEN

Rear Admiral, U. S. Coast Guard, Chairman


ROBERT FLOCKHART

Commander, U. S. Coast Guard, Member


CHARLES F. KAMINSKI

Commander, U. S. Coast Guard, Member and Recorder