

36. That [redacted] had checked the LAU-17/A pylon and the three rocket harnesses on the port side of F-4 #110 for stray voltage using VF-11 procedures. No measurable voltage was detected.

37. That having completed the stray voltage checks on the port side of F-4 #110, HOWARD moved to the starboard side of #110 and at 1051H was preparing to conduct stray voltage checks on the starboard side.

38. That [redacted] along with [redacted], [redacted] and [redacted], had helped load VF-11 F-4's with ordnance the morning of 29 July 1967 in preparation for the scheduled 1100H launch.

39. That after the VF-11 F-4's were loaded, [redacted] proceeded with [redacted] aft on the flight deck to F-4 #110 to ready the loaded ordnance for flight.

40. That after [redacted] had conducted the stray voltage checks on the port side of F-4 #110 as previously described, [redacted] checked the port Sparrow and pulled the pin from the port Sparrow launcher.

41. That [redacted] then visually checked the three LAU-10/A shorting devices to assure that they were on "safe"; checked the TER-7 electrical safety pin visually to assure that it was still installed and "in"; homed the TER-7 and checked that the green light was "on".

42. That having accomplished the preceding steps, [redacted] plugged in the three port rocket harnesses.

43. That at 1051H, after plugging in the port rocket harnesses, [redacted] was kneeling about two feet from the port TER-7 looking the aircraft over to be sure everything had been done right. He had spent about one minute at this task.

44. That [redacted] was following, assisting and observing [redacted] as he went through the preceding steps to prepare F-4 #110 for flight.

All redactions
are B-6

45. That [redacted] asked [redacted] if he had homed the port TER-7 on F-4 #110 and, not understanding the reply, [redacted] actuated the home-step switch on the TER-7. At this time (1051H) he was kneeling with his arm over the inboard LAU-10/A launcher.

46. That at 1051H, [redacted] was standing forward of F-4 #110 awaiting a signal from pilot [redacted] to begin the check of a Sidewinder.

47. That at 1051H, [redacted] was in front of F-4 #110 engaged in removing the tow bar from #110.

48. That at 1051H, plane captain [redacted] (deceased) was in the vicinity of F-4 #110; however, his exact position is not known.

All redactions are B-6.

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FINDINGS OF FACT

SECTION II

SEQUENCE OF PERTINENT EVENTS

49. That at 10-51-21H 29 July 1967, a single ZUNI rocket fired from one of the three LAU-10/A launchers installed on the port inboard wing station of F-4 #110 which was then spotted on the extreme starboard quarter of the flight deck, headed inboard at approximately a 45° angle to the ship's head.

50. That the ZUNI crossed the flight deck and struck A-4 #405, spotted on the port side of the flight deck, some 100 feet distant.

51. That both B-6 and B-6 meeling adjacent to the inboard pylon, under the port wing of F-4 #110, received minor burns from the ZUNI as it fired.

52. That B-6's injuries were almost identical to those received by an ordnanceman aboard USS HANCOCK who was in a position equivalent to B-6's when a ZUNI accidentally fired from a B-6 '8 aircraft on 19 May 1967. See enclosure (143).

53. That the ZUNI passed very close to B-6 AFM, B-6 USN, VA-46, who was standing in line between F-4 #110 and A-4 #405. The blast therefrom knocked B-6 down.

54. That the reflection of the flash created by the ZUNI traveling across the deck was captured and recorded by the PLAT camera, installed on the 08 level of the island. (This was later verified by the Board in a demonstration conducted on 15 August 1967, the details of which are set forth in enclosures (137) and (138). The PLAT camera operator then seeing the flash

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aft, swung his camera to the after portion of the flight deck and locked it in place. He later abandoned the station when the island was sprayed with shrapnel. From this time on, events on the after portion of the flight deck were recorded by the PLAT camera. The clock face showing on the PLAT film on the forenoon of 29 July was synchronized on -8 (HOTEL) zone time.

55. That numerous witnesses either saw or heard what looked or sounded like a rocket firing across the deck from starboard to port.

56. That the ZUNI broke up on impact with A-4 #405.

57. That the full 400 gallon tank on A-4 #405 was ruptured by the ZUNI, spreading the JP-5 fuel under A-4s #405 and #416, igniting the fuel.

58. That the fuel which poured onto the deck was quickly ignited by numerous fragments of burning rocket propellant.

59. That *B-6* USN, VA-46, who was standing near A-4 #405, was struck by the ZUNI or by shrapnel;

60. That *B-6*, ADJ3, *B-6* USN, VA-46, who was standing some 80 to 100 feet forward of A-4 #405, facing aft, was struck by a fragment from the ZUNI M414A1 VT nose fuze. The fragment was traveling essentially horizontally

61. That a fragment, type unknown, punctured the centerline external fuel tank of A-4 #310, which was just aft of the jet blast deflector of catapult #3, allowing fuel to pour onto the deck.

62. That fuel and fire instantaneously spread under A-4s #405 and #416.

63. That the burning fuel was then rapidly spread aft and fanned by 32 knots of wind over the deck from 350° relative and by the exhausts of at least three jets spotted immediately forward.

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64. That at 1052H fire quarters was sounded.
65. That general quarters was sounded at 1053H, immediately following fire quarters.
66. That condition ZEBRA was set throughout the ship at 1059H; however, closure was not made along the routes being used to move injured personnel.
67. That personnel quickly manned high capacity fog foam (HCFE) and salt water fire hoses in the catwalks.
68. That because of the rapid spread of the fire, HCFE and salt water hoses abaft frame 190 on the port side were engulfed in flames and could not be used.
69. That at least one of the AN-M65 1000# bombs on A-4 #405 dropped or was ejected to the deck, due to short circuiting or to the direct impact of the ZUNI.
70. That a bomb which fell to the deck from A-4 #405 came to rest in a pool of burning JP-5 near the nose of A-4 #416, where it was rapidly heated.
71. That there was a longitudinal split in the AN-M65 1000# bomb which was lying on deck. The split bomb was observed to be burning brightly.
72. That 54 seconds after the fire began, B-6, ABHC, B-6 V-1 Division, who was leading petty officer of the ship's crash and salvage crew, arrived at the scene and attempted to extinguish the fire in the vicinity of the above mentioned bomb with a hand held PKP (purple "K" powder) extinguisher.
73. That at approximately one minute 20 seconds after initiation of the flight deck fire the first hose played salt water on the forward boundry of the fire.

74. That at one minute 34 seconds after the start of the fire, a bomb exploded on the flight deck with approximately 35 personnel in close proximity, including two hose crews (HCCFF station 9 and Salt Water Station 15).

75. That this first bomb explosion decimated the hose teams in the vicinity, causing nine casualties to the ship's crash and salvage crew. There were also eighteen casualties to other on-the-scene fire fighters.

76. That this first explosion spread the fire to the group of three A-4 aircraft spotted across the stern.

77. That immediately after the first explosion, several other hose teams continued to lead their hoses toward the fire.

78. That nine seconds after the first bomb exploded, a second bomb exploded at the after end of the flight deck with even more violence than the first.

79. That this second major explosion hurled bodies and debris as far as the bow and extended the fire along the seven F-4's and toward the three RA-5C's on the starboard side abaft the island.

80. That seven major explosions occurred at times indicated in enclosure (135).

81. That effective fire fighting efforts on the flight deck were interrupted after the second major explosion for approximately five minutes until major explosions had subsided.

82. That during the period of major explosions, activity continued on the forward part of the flight deck and behind the shelter of the island in the form of assistance to the injured, jettisoning of ordnance, and break out of hoses to be led aft.

83. That fuel, spilled from the stricken aircraft, ran over the ship's sides and stern setting fires on the sides, sponsons, fantail, and in hangar bay 3.

84. That a total of approximately 40,000 gallons of JP-5 fuel was aboard the burning aircraft on the flight deck and this fuel fed the flames.

85. That the force of bombs exploding on the flight deck penetrated to hangar bay 3, starting fires on the 03, 02 and 01 decks aft.

86. That the force of bombs which exploded on the flight deck; in penetrating to the 03 deck aft; killed some 50 sleeping night check crew personnel, and others, for a total of 91 killed in the after areas of the ship. (See enclosure (317)).

87. That the sprinkler system in hangar bay 3 was activated in time to prevent spread of fire in hangar bay 3. Fog foam monitors were shortly thereafter activated in hangar bay 3.

88. That fog foam and sprinklers effectively prevented the spread of fire further forward on the hangar deck.

89. That shortly after the fire commenced, personnel began to jettison over the side or to strike below all exposed explosive ordnance on the flight, hangar, and second decks.

90. That after the seven major explosions ceased, aircraft forward of the RA-5C's were moved forward and effective flight deck fire fighting commenced; a fire boundary was established on the flight deck athwartship, at approximately frame 165.

91. That after the major explosions ceased, 3 RA-5C's and 1 A-4E were jettisoned over the side because they were on fire, or were leaking fuel, which could have further spread the fire.

101. That at least 20 men jumped, were blasted, knocked or fell overboard and were recovered, or are missing. (9 were recovered by helos from accompanying ships; 6 were recovered by USS MACKENZIE (DD-836); 1 was recovered by means unknown; and 4 are believed missing.)

102. That 134 personnel are dead or missing as a result of the fire and explosions.

103. That 161 personnel were injured as a result of the fire and explosions.

104. That as of 15 September 1967, the known estimated cost of damage, exclusive of aircraft damage, and costs of the equipments and systems under the cognizance of Naval Air Systems Command, is \$72,103,000.

FINDINGS OF FACT

SECTION III

CIRCUMSTANCES BEARING ON INITIATION OF THE FIRE

105. That LCDR 7-b CVW-17 Senior LSO, was scheduled for a flak suppression/target CAP mission with VF-11 on 29 July 1967 flying F-4B BUNO 153061, modex #110, with launch scheduled for 1100H.
106. That F-4 #110 was flown previously on the morning of 29 July, landing at 0902H. One MK82 500# bomb loaded on TER station 3 on external stores station 8 (starboard wing) did not release and was returned to the ship.
107. That as a result of this discrepancy, an armament release and control system check of station 3 of the TER-7 on external stores station 8 was conducted. The discrepancy was believed to be due to a faulty cartridge in TER station 3.
108. That LCDR 7-b was told some 5 minutes before manning his aircraft for the scheduled 1100H launch that he would be carrying ZUNIs rather than 2.75-inch rockets.
109. That CDR 7-b, CO VF-11, who was Flight Leader of the VF-11 scheduled 1100H flight, briefed LCDR 7-b as to the changes in flight procedures which would be required because of the loading change to ZUNIs. He emphasized particularly sight settings and whether or not to bring the empty launchers back to the ship.
110. That no mention was made during the above briefing as to checking shorting devices on the LAU-10/A launchers during the pre-flight inspection of the aircraft.
111. That F-4 #110 was spotted on the extreme starboard quarter of the flight deck, headed inboard, at approximately a 45 degree angle to the ship's head.

112. That LCDR B. B. in his pre-flight inspection of F-4 #110, noted particularly the following:

- a. LAU-10/A launchers - Frangible firings (forward) -- secure.
- Selector switches -- ripple.
- b. TER-7 - Electrical and mechanical safety pins in; ordnance secure; rocket harnesses unplugged.
- c. Sidewinder - Safety pins in; no cover on port Sidewinder.

113. That neither LCDR B. B. nor LTJG B. B. his RIO, checked the shorting devices on the LAU-10/A launchers loaded on F-4 #110.

114. That upon manning F-4 #110, LCDR B. B. set his armament switches in the following positions:

- a. Missile control panel:
 - (1) Power switch -- Off
 - (2) Arm-safe switch -- Safe
 - (3) Select switch -- Radar
 - (4) Interlock switch -- Out
- b. Bomb control panel:
 - (1) Bomb control switch -- Direct
 - (2) LABS Mode switch -- Instantaneous Over the Shoulder
- c. Weapons control panel:
 - (1) Weapons select switch -- Bull Pup
 - (2) Weapons switch -- Conventional Off, Nuclear On
 - (3) Station selector -- Off
 - (4) Bomb arming switch -- Safe

115. That LCDR B. B. did not check to see that the armament safety override switch was in the safe (out) position.

116. That the change in loading of F-4 #110 from 2.75 inch rockets to ZUNIs was made sufficiently far ahead of loading time for the scheduled 1100H launch that the ordnance crews were not unduly rushed.

117. That the jet starter tractor driven by AN . B-b , V-1 Division, was positioned forward of the starboard wing of F-4 #110 rather than forward of the port wing, as was normal, because of the close proximity of A-4 #410 on the port side of F-4 #110.

118. That the jet starter tractor which had started A-4 #410 had been moved prior to the start of the fire.

119. That LCDR B-b started his starboard engine, deselected air at 45% RPM, and, as the engine stabilized at 65%, selected both generators.

120. That as LCDR B-b selected both generators, a mild explosion shook his aircraft, appearing to LCDR B-b to come from the starboard side of F-4 #110.

121. That LCDR B-b , looking up at the time of the mild explosion saw an object flying across the deck. It appeared to him to be small, issuing a yellow-orange flame. The object struck an A-4 parked on the port side of the ship directly in front of LCDR B-b airplane.

122. That the A-4 struck was #405.

123. That LCDR B-b's immediate impression was that one of the ZUNI rockets had fired from his aircraft when he switched from external to internal power.

124. That LCDR B-b then rechecked his cockpit armament switches after the object hit the A-4, and found all switches to be in the positions previously described.

125. That as a general safety measure, each rocket harness is checked by a voltmeter to assure that there is no stray voltage in the circuit which would fire a rocket when the harness is connected.

126. That it is current practice aboard attack carriers operating on Yankee Station conducting combat strikes, to plug in rocket launchers in the initial spot (in the pack) prior to being taxied to the catapults.
127. That the practice of plugging in rocket launchers prior to reaching the catapults, though not documented, was well known and tacitly approved.
128. That on the morning of 29 July 1967, *Bib* was conducting the stray voltage check on F-4 #110 in preparation for plugging in the rocket launchers, which was to be accomplished by WILSON.
129. That *Bib* had conducted a stray voltage check on the port TER-7 of F-4 #110 and at 1051H had proceeded to the starboard side of #110 preparatory to conducting a stray voltage check on the starboard TER-7.
130. That the stray voltage check conducted by *Bib* on the port TER-7 of F-4 #110 was as described in Section VI hereof. The procedures he used were those employed in VF-11 and were undocumented.
131. That the above mentioned stray voltage check on the port side of F-4 #110 was, however, conducted while the aircraft engines were being started and while F-4 #110 was still on external electrical power; hence, before the aircraft electrical system had stabilized.
132. That no official documentation from any source, was known to exist prior to 29 July, as to precisely when, how, or why this stray voltage check should be conducted prior to plugging in LAU-10/A ZUNI launchers on the TER-7 installed on F-4B aircraft.
133. That no official documentation from any source was available prior to 29 July which specified that the stray voltage check and subsequent rocket plug in must be conducted after an F-4B aircraft is started and has switched to internal electrical power.

134. That measurable transient voltages occur in the F-4B aircraft when switch is made from external to internal electrical power.

135. That VF-11 had two conventional weapons loading teams; one under A01 LIGHTSEY and the other under A01 ROGERS.

136. That the VF-11 ordnance CPO, *B. L.*, and the two VF-11 conventional weapons loading team leaders, *T. L.* and *B. L.*, considered it safe to conduct stray voltage checks and to plug in rockets while the aircraft was still on external electrical power.

137. That Commander *B. L.*, CO of VF-11, considered it safe to plug in rockets while the F-4 was still on external electrical power but stated that it was squadron policy not to do so.

138. That VF-11 squadron policy and procedures with regard to conducting stray voltage checks and plugging in rockets were not documented.

139. That the stray voltage check as normally conducted by VF-11 ordnancemen measured only the voltage that might be present in the rocket harness and the short wire inside the TER-7 which leads to the open select rocket solenoid switch therein.

140. That the stray voltage check as conducted by VF-11 did not check the firing circuitry upstream of the select rocket solenoid switch in the TER-7.

141. That after *B. L.* conducted his stray voltage check of the port TER-7 of F-4 #110, *B. L.* visually checked the position of the TER-7 electrical safety pin, checked the three LAU-10/A shorting devices, homed the TER-7, checked the green light which indicated that the TER-7 was homed, and then plugged in the three LAU-10/A ZUNI launchers attached thereto. The preceding actions were accomplished while F-4 #110 was still on external power.

142. That having plugged in the port LAU-10/A's, *Bb* spent about one minute checking the port TER-7 and LAU-10/A's of F-4 #110 and was so engaged when, at 10-51-21H, the ZUNI fired from that aircraft.

143. That on the morning of 29 July, *Bb* was following, observing and helping *Bb* ready the TER-7 and LAU-10/A's under the port wing of F-4 #110.

144. That *Bb* asked *Bb* if he had homed the port TER-7 of F-4 #110.

145. That *Bb* was unable to understand *Bb*'s reply so he actuated the home-step switch of the port TER-7 of F-4 #110. This occurred after the three LAU-10/A launchers had been plugged in by *Bb*.

146. That after *Bb* actuated the home-step switch, the ZUNI fired from F-4 #110.

147. That a ZUNI can fire from an F-4B configured as was F-4 #110 preparatory to the scheduled 1100H launch on 29 July, even though all cockpit armament switches are in the prescribed (safe) positions, if the following conditions exist simultaneously:

- a. If current is present at the TER-7 in the stepping and firing circuit.
- b. If the select rockets solenoid switch in the TER-7 is closed (in the firing position).
- c. If the TER-7 electrical safety switch is in the armed position.
- d. If the TER-7 rocket harness is connected to the LAU-10/A.
- e. If the LAU-10/A shorting device is not grounding the launcher circuitry.

148. That the CA42282 pylon electrical disconnect (commonly called the 101 pin connector), which connects the F-4 airframe electrical system to the LAU-17/A pylon, has a history of shorting due to the presence of unwanted moisture contamination and subsequent corrosion.

149. That shorting of pin #23 within the CA42282 pylon electrical disconnect can provide firing and stepping current to the TER-7.

150. That shorting of pin #73 within the CA42282 pylon electrical disconnect can provide current to close the select rockets solenoid switch in the TER-7.

151. That as discussed in detail in ensuing findings, an armament electrical system check conducted on the starboard TER-7 of F-4B BUNO 152278 and subsequent can damage the electrical safety switch in the port TER-7 model -527 due to direct grounding of high magnitude current, thereby causing this switch to fail.

152. That the LAU-10/A shorting device is unreliable and, even though apparently in the safe position, can allow firing current to pass from the rocket harness through the LAU-10/A to the ZUNI.

153. That the model -527 TER-7 racks aboard *B.6* are not wired as indicated in NAVAIR 11-75A-40 of 15 August 1966. They are actually wired with the safety switch shorted to ground, instead of in series as shown in the schematic.

154. That the change dated 15 April 1967 to NAVAIR 11-75A-40 of 15 August 1966 indicating the correct wiring of the -527 TER-7 was not received aboard FORRESTAL until after 29 July 1967.

155. That no one in FORRESTAL was aware of the above wiring change and its impact on F-4B firing circuitry.

156. That since the wiring of F-4 #110 (BUNO 153061) was such that power was directed to both inboard and outboard stations in pairs, the firing circuit continuity check made on the TER-7 on Station 8 (starboard wing) would have sent 28 volt DC current to Station 2 (port wing). Since the -527 TER-7 safety switch is shorted to ground, this test

could have damaged the safety switch of the TER-7 on Station 2, causing it to malfunction.

157. That the -527 TER-7 safety switch can also be damaged by a high magnitude current through a shorted #23 pin in the CA42282 pylon electrical disconnect.

158. That during the period 25-29 July, F-4 aircraft had arrived at the catapults with one or more TER-7 electrical safety pins missing.

159. That TER electrical safety pins had been found adrift on the flight deck which had presumably been pulled out by the wind and jet blast acting on the long red warning flag attached thereto.

160. That the ordnance crew working around F-4 #110 at 1050H on 29 July 1967 was not one of the two previously mentioned conventional weapons loading teams that were headed by A01 and A01, but was composed of members of both teams.

161. That team leader was preparing to check a Sidewinder on F-4 #110 at 1051H on 29 July but was not in charge of the crew composed of and then working on #110.

162. That team leader was in charge of the crew working on F-4 #110 at 1051H on 29 July but he, was not present at the aircraft to observe the operations.

163. That at no time were hand signals given to pilot to indicate to him that ordnancemen were at work on his aircraft.

164. That a VF-11 squadron policy, newly established, prior to 29 July, eliminated the safety ordnance petty officer in the pack and gave the responsibility to the plane captain of giving all hand signals to the pilot.

165. That as a result of this policy, no provision was made for informing the pilot that ordnancemen were working under his aircraft.

All redactions
are B-6

FINDINGS OF FACT

SECTION IV

SHIP ORGANIZATION, RESPONSIBILITIES, TRAINING AND OPERATING PROCEDURES

166. That the following officers attached to USS FORRESTAL (CVA-59) were made parties to the investigation into the circumstances surrounding the fire on FORRESTAL on 29 July 1967, because of their responsibilities at that time as set forth below:

a. Captain *Bb* USN, *Bb* Commanding Officer, USS FORRESTAL (CVA-59) was, as set forth in U. S. Navy Regulations, 1948, Chapter 7, charged with absolute responsibility for the safety, well being, and efficiency of his command.

b. Commander *Bb* ID, USN, *Bb* Engineering Officer, USS FORRESTAL (CVA-59) was assigned the following duties, among others, by NAVAIRLANT/NAVAIRPAC CV SHIP INST 5400.1:

(1) Supervise and direct the control of damage in the ship caused by casualty, flooding, or fire.

(2) Supervise and direct the fighting of fires in the ship, except aircraft fires.

c. Lieutenant Commander *Jc Bb* USNA, *B-6*, Damage Control Assistant, USS FORRESTAL (CVA-59) was assigned to the following duties, among others, by NAVAIRLANT/NAVAIRPAC CV ENG INST 5400.1:

(1) Direct damage control and fire fighting operations during emergencies or drills.

(2) Train ship's personnel in damage control including fire fighting and emergency repairs.

(3) Coordinate and supervise the routine testing of fire fighting equipment and other damage control equipment by all divisions.

d. CWO2 ~~B-2~~ , USN, B.6 Fire Marshall,
USS FORRESTAL (CVA-59) was assigned the following duties, among others,
by NAVAIRLANT/NAVAIRPAC CV ENG INST 5400.1:

(1) As Fire Marshall, conduct inspections, analyze conditions, make recommendations, conduct training, take corrective action, and perform such other duties as may be assigned for fire prevention, fire protection, and fire fighting on board the vessel.

e. Commander B.6 USN, B.6 Air Officer,
USS FORRESTAL (CVA-59) was assigned the following duties, among others,
by NAVAIRLANT/NAVAIRPAC CV SHIP INST 5400.1:

(1) Supervise and direct aircraft fire fighting, crash removal, and salvage operations, including the organization and training of personnel concerned with these operations.

f. Lieutenant Commander B.6 USN, B.6 Hangar
Deck Officer, USS FORRESTAL (CVA-59) was assigned the following duties,
among others, by NAVAIRLANT/NAVAIRPAC CV AIR INST 5400.1:

(1) Maintain assigned hangar deck fire fighting equipment, including CO2, Foamite, and salt water outlets, and supervise the fighting of hangar deck fires until properly relieved.

g. Lieutenant B.6 USN, B.6 Flight Deck
Officer, USS FORRESTAL (CVA-59) was assigned the following duties, among
others, by NAVAIRLANT/NAVAIRPAC CV AIR INST 5400.1:

(1) Supervise flight deck crash crews and fire parties during the removal of plane crashes, plane salvage, pilot rescue, plane jettisoning, or flight deck fires.

h. WO1 *Bb* BN, *Bb* Aviation Ordnance
Gunner, USS FORRESTAL (CVA-59) was assigned the following duties, among
others, by NAVAIRLANT/NAVAIRPAC CV GUN INST 5400.1:

(1) Supervise, as required, the arming and de-arming of
embarked aircraft insuring the observance of safety precautions and
proper procedures.

(2) Insure the strict observance of all safety procedures and
regulations relative to the handling of ordnance materials.

167. That Captain *Bb* took command of USS FORRESTAL on 7 May 1966
at Norfolk Naval Shipyard, Portsmouth, Virginia.

168. That FORRESTAL, having returned from an extended Mediterranean
deployment, entered the NNSY on 15 April 1966 with an experienced crew.

169. That FORRESTAL underwent extensive overhaul at the NNSY, from
15 April 1966 to 23 January 1967.

170. That FORRESTAL's employment subsequent to completing overhaul
23 January 1967 until arrival on Yankee Station, 24 July 1967, was as
follows:

a. NNSY to Virginia Capes Operating Area: Individual Ship's
Exercise, 23 to 27 January 1967.

b. At anchorage, Norfolk, Virginia, 27 to 30 January 1967.

c. Norfolk Naval Station to Virginia Capes Operating Area:
INSURV Trials, 30 January through 1 February 1967. Trials continued at
Pier 12 until 3 February.

d. Norfolk Naval Station, Pier 12: On-load of equipment and
aircraft, 1 February to 14 February 1967.

e. Enroute Norfolk to Guantanamo Bay, Cuba: 14 to 17 February
1967.

f. At Guantanamo: Refresher Training, 17 February to
18 March 1967.

- g. Enroute Guantanamo to Atlantic Fleet Weapons Range, 18 to 19 March 1967.
- h. Type training at AFWR, 20 to 24 March 1967.
- i. Enroute AFWR to Norfolk, 25 to 27 March 1967.
- j. Restricted availability at NNSY, 28 March to 11 April 1967.
- k. Enroute Norfolk to AFWR, 12 to 14 April 1967.
- l. Type training at AFWR, 14 April to 3 May 1967 participating in Exercise CLOVE HITCH III from 21 to 24 April and NPPI 3 to 5 May 1967.
- m. Enroute from AFWR to Norfolk, 3 to 6 May 1967.
- n. At Pier 12/anchorage, Norfolk, 6 to 11 May 1967.
- o. Carrier qualifications and ACLS trials in the Virginia Capes Operating Area, 11 to 18 May 1967.
- p. At anchorage, Norfolk, 19 May 1967.
- q. Family day cruise, 20 May 1967.
- r. Prepared for overseas movement at Norfolk, 21 May to 5 June 1967.
- s. Departed Norfolk for WESTPAC, 6 June 1967.
- t. Type training at AFWR, 9 to 13 June 1967.
- u. Operational Readiness Inspection, 14 to 16 June 1967.
- v. Enroute Rio de Janeiro, 16 to 23 June 1967.
- w. Port visit Rio de Janeiro, 23 to 26 June 1967.
- x. Enroute WESTPAC, 26 June to 18 July 1967.
- y. Chopped to COMSEVENTHFLT, 8 July 1967.
- z. Arrived Subic Bay, R. P., 18 July 1967.
- aa. Enroute Subic Bay to Yankee Station, 22 to 23 July 1967.
- bb. Arrived on Yankee Station, 24 July 1967.

171. That since completing overhaul on 23 January 1967, FORRESTAL has had an average on-board count of 140 officers and 2775 men belonging to ship's company. FORRESTAL allowance is 126 officers; 2508 men.

172. That upon completion of post repair trials an INSURV inspection of FORRESTAL, as requested by the CO, was conducted during the period 30 January to 3 February 1967 to identify material discrepancies. Enclosure (386) summarizes the overall condition of damage control within the ship as barely satisfactory.

173. That during the period 14 to 17 February 1967 enroute to Guantanamo Bay, Cuba, FORRESTAL conducted training preparatory to refresher training.

174. That during the period 17 February to 18 March 1967, FORRESTAL underwent refresher training at Guantanamo. Upon completion of this training COMFLETRAGRU Guantanamo conducted an Operational Readiness Inspection and assigned the following grades for Damage Control.

a. Battle Problem.

- | | |
|--------------------------------|------------------|
| (1) Setting Material Condition | - Unsatisfactory |
| (2) Damage Control | - Excellent |
| (3) NBC | - Satisfactory |
| (4) Medical | - Excellent |

b. Operational Exercises.

- | | |
|---------------------------------|----------------|
| (1) Damage Control | - Good |
| (2) Fire Drill (In port) | - Good |
| (3) Fire at Sea | - Excellent |
| (4) Rescue and Assistance Drill | - Good |
| (5) Collision Drill | - Satisfactory |

c. Specialty Phase.

- | | |
|----------------------------|-------------|
| (1) HCCF Injector Sections | - Excellent |
|----------------------------|-------------|

Complete listing of all grades assigned by COMFLETRAGRU Guantanamo is attached as enclosure (387).

175. That USS FORRESTAL departed Norfolk, Virginia, for deployment to WESTPAC on 6 June 1967.

690106-3011

176. That during the period 14 to 16 June 1967, FORRESTAL with embarked CVW-17 participated in its Operational Readiness Inspection (ORI), conducted by COMCARDIV TWO, at the AFWR. Pertinent grades and comments were:

a. The 5MC could not be heard in some areas of the flight deck.
b. Nozzles were not installed on hangar deck fire hoses.
c. Overall performance of damage control parties above the main deck was weak.

d. Conventional Weapons Loading was graded OUTSTANDING. Crews were quick, alert, and adaptable to changing situations.

e. Flight Deck Fires was graded OUTSTANDING. Quick and effective response to extinguish a simulated tail pipe fire resulted in a grade of 99 for this exercise.

A complete listing of all grades assigned is attached as enclosure (388).

177. That during the transit from AFWR to Cubi Point, R. P., FORRESTAL conducted extensive training in damage control and fire fighting. These efforts are depicted in enclosure (89).

178. That FORRESTAL's average on board count during overhaul was 2,796 men.

179. That during the overhaul period, 1,496 enlisted men were transferred from FORRESTAL, representing 54 percent of the average on board count.

180. That during the overhaul period, FORRESTAL received on board 1,500 enlisted men from other ships and stations.

181. That during the overhaul period, 261 supervisory personnel (E-5 through E-9) were transferred from FORRESTAL; 192 supervisory personnel were received.

182. That since overhaul, from January through July 1967, FORRESTAL received 1,039 enlisted men and transferred 988 for a net gain of 51 enlisted men.

183. That during the period from January through July 1967, FORRESTAL received 241 supervisory personnel, and transferred 207 for a net gain of 34 supervisory personnel.

184. That during the period following refresher training and prior to deployment to WESTPAC, 19 March to 6 June 1967, 717 personnel were transferred from FORRESTAL, of which 151 were supervisory personnel.

185. That, in summary, the following enlisted personnel transfers occurred:

a. Shipyard, 15 April 1966 to 23 January 1967 - total: 1,496

Supervisory: 261

b. Post-shipyard, 23 January to 6 June 1967 - total: 951

Supervisory: 197

186. That the following percentage of on board count versus allowance of supervisory personnel existed for the following selected rates:

(Data for all ratings contained in enclosure (89)).

	<u>% JAN 67</u>	<u>% JUL 67</u>
a. SF	78	39
b. DC	79	57
c. AO	46	103

187. That subsequent to overhaul, during the period January through July 1967, FORRESTAL conducted general quarters training periods as shown below:

a. JAN	6	e. MAY	9
b. FEB	11	f. JUN	10
c. MAR	14	g. JUL	4
d. APR	3		
		Total:	<u>57</u>

188. That subsequent to overhaul, during the period January to July 1967, FORRESTAL conducted training in fire fighting evolutions as shown below:

	<u>MONTH</u>	<u>DRILL</u>	<u>ACTUAL FIRES</u>	<u>TOTAL</u>
a.	JAN	1	4	5
b.	FEB	12	6	18
c.	MAR	21	5	26
d.	APR	11	6	17
e.	MAY	11	2	13
f.	JUN	6	9	15
g.	JUL	1	10	11
		<hr/>	<hr/>	<hr/>
		63	42	105

189. That during the period from 15 April 1966, when the ship entered NNSY, until 29 July 1967, 1,332 officers and men graduated from fire fighting schools of at least 2 days duration; of these 1,332, 327 had been transferred by 29 July 1967.

190. That responsibilities for the control and handling of conventional (and nuclear) weapons aboard FORRESTAL were documented in USS FORRESTAL Instruction 03510.2E of 2 May 1967. Enclosure (89).

191. That by the preceding instruction, a Weapons Planning Board was established. A pertinent portion of the establishing directive is quoted: "within the parameters assigned by the Commanding Officer, make detailed plans for utilization of FORRESTAL as a weapon system in prosecuting all combat operations tactical or simulated, including attack, defense, deception weapons utilization, and movement".

192. That the Weapons Planning Board is comprised of the following officers:

- a. Operations Officer (chairman)
- b. Strike Operations Officer
- c. Air Wing Commander
- d. Air Wing Operations Officer
- e. Surface Systems Supervisor
- f. Weapons Officer
- g. Air Officer
- h. Air Operations Officer

193. That subordinate to the Weapons Planning Board is the Weapons Coordination Board which, "is a division level board instituted to work out all details necessary to execute the loading of ordnance as directed by the Weapons Planning Board".

194. That the Weapons Coordination Board is comprised of the following members:

- a. Strike Operations Officer (chairman)
- b. Aircraft Handling Officer
- c. Weapons Loading Director
- d. Nuclear Weapons Technical Supervisor
- e. Squadron Weapons Coordinators
- f. Air Wing Operations Officer
- g. Commanding Officer, Marine Detachment

195. That Captain ³⁶ authorized the Weapons Coordination Board and Weapons Planning Board to establish procedures for ordnance handling which would vary as little as possible from Atlantic Fleet peacetime procedures, using known WESTPAC procedures as a guide.

196. That based on the foregoing authorization, ordnance handling procedures intended for use in WESTPAC deployment had been developed and were validated by inspectors during the Operational Readiness Inspection, 14-16 June 1967.

197. That on 29 June 1967 the Weapons Coordination Board, augmented by key members of the Weapons Planning Board, met to document those ordnance handling procedures which were in use and which had been validated during the Operational Readiness Inspection. These were the procedures to be used in WESTPAC.

198. That this 29 June meeting was also attended by experienced Warrant Officers and Chief Petty Officers from the squadrons, and, representatives from all ordnance handling divisions in the ship.

199. That CDR ~~7-6~~ CO, VF-11, who was acting COMCVW-17, did not attend the 29 June meeting.

200. That the following doctrines and procedures applying to handling and arming LAU-10/A ZUNI launchers on the flight deck were embodied in the minutes of this meeting, as follows:

- a. Allow ordnance personnel to connect pigtails "in the pack", prior to taxi, leaving only safety pin removal on the cat.
- b. Strictest adherence to existing safety precautions provide the very minimum possibility of inadvertent firing.
- c. Ordnancemen must receive positive identification of awareness of pilot (and crewman, where applicable) that connection is being made, and "hands off" signal given and acknowledged.
- d. Stray voltage check must be scrupulously performed prior to connecting pigtail.
- e. Safety pin will not be removed prior to aircraft being positioned on the catapult, nor in the case of the LAU-10 will the arm lever be cocked.

201. That minutes of the 29 June meeting were taken and these minutes were read and agreed to by all attendees at the conclusion of the meeting.

202. That it was also stated at the conclusion of the 29 June meeting that a double spaced copy of the agreements reached would be distributed to squadrons and divisions for their correction of any ambiguous statement. Enclosure (83) is a copy of this document.

203. That on 8 July another draft of the agreements of the 29 June meeting was written, incorporating corrections which had been recommended. This draft was not distributed to either squadrons or divisions. Enclosure (84) is a copy of this document.

204. That in so far as CO, FORRESTAL, ship's Operations Officer, and COMCVW-17 were concerned, the procedures as used in the ORI relating to the ZUNI, remained in effect.

FINDINGS OF FACT

SECTION V

CARRIER AIR WING SEVENTEEN ORGANIZATION, RESPONSIBILITIES,
TRAINING, AND OPERATING PROCEDURES

205. That the following officers and men attached to Carrier Air Wing 17 were made parties to the investigation into the circumstances surrounding the fire on FORRESTAL because of their responsibilities or duties at that time as set forth below:

a. CDR *B-b*, Jr., USN, *B-b*, Commander, Carrier Air Wing 17, embarked in USS FORRESTAL (CVA-59), was responsible to the Commanding Officer, USS FORRESTAL (CVA-59), for, among other things:

(1) The coordination and supervision of all activities of the squadrons and detachments in the Air Wing.

(2) The actual loading of conventional munitions on Air Wing 17 aircraft. This included the responsibility for the observance of ordnance safety precautions by Air Wing personnel with regard to handling, dearming and maintenance of aircraft ordnance and equipment (FORRINST 03510.2E of 2 May 1967).

b. LCDR *B-b*, USN, *B-b* was the Carrier Air Wing 17 Senior LSO (Landing Signal Officer). At 1051H on the morning of 29 July 1967, he was in the forward cockpit of F-4B #110 of VF-11, starting the starboard engine in preparation for a scheduled launch.

c. LT *B-b*, USN, *B-b*, Carrier Air Wing 17 Ordnance Officer, was responsible to the Commander Carrier Air Wing 17 for the performance of the following duties:

(1) Advise COMCVW-17 in ordnance matters.

(2) Act as point of liaison between ship/squadrons/COMCVW-17 on ordnance matters, with particular regard to safety, and timely load-out of squadron aircraft.

(3) Perform quality control checks of ordnance loading of CVW-17 aircraft.

(4) Make spot checks of general flight deck ordnance evolutions.

d. CDR B-6 USN, B-6 Commanding Officer, Fighter Squadron 11 (VF-11), attached to Carrier Air Wing 17 in USS FORRESTAL (CVA-59), was responsible to the Commander, Carrier Air Wing 17 for, among other things:

- (1) The overall operational readiness of his squadron.
- (2) The effective preparation of his squadron for all missions.
- (3) The actual loading of conventional munitions on VF-11 aircraft. This included the responsibility for the observance of ordnance safety precautions by VF-11 personnel with regard to handling, dearming and maintenance of aircraft ordnance and equipment (FOHRINST 03510.2E of 2 May 1967).

e. LCDR B-6 Jr., USN, B-6 was Aircraft Maintenance Officer, VF-11. As Department Head, he was responsible to the Commanding Officer, VF-11, for the accomplishment of the mission of his department. The Avionics/Weapons Division and the Weapons Branch were in the Aircraft Maintenance Department.

f. LT B-6, USN, B-6 was Avionics/Weapons Division Officer, Aircraft Maintenance Department, VF-11. He was responsible to the Aircraft Maintenance Officer for the performance of the tasks assigned his division with maximum effectiveness. His duties included:

- (1) Ensure compliance, by all personnel of his division, with all safety precautions issued by higher authority.
- (2) Prepare and submit for promulgation such additional safety precautions as required.

g. WO1 B-6, USN, B-6 was Assistant Avionics/Weapons Division Officer, Aircraft Maintenance Department, VF-11. He assisted the Avionics/Weapons Division Officer in the performance of all of his assigned duties.

h. LTJG B-6 Jr., USNR, B-6 was the Weapons Branch Officer, Avionics/Weapons Division, Aircraft Maintenance Department, VF-11. He was responsible in accordance with paragraph 1044, chapter 10, U.S. Navy Regulations 1948, to the Avionics/Weapons Division Officer for the proper performance of the duties assigned to the Weapons Branch, including the training of the ordnancemen attached to the Weapons Branch.

i. Chief Aviation Ordnanceman (AOC) B-6 N, B-6 Aviation Ordnance Supervisor, was the senior petty officer attached to the Weapons Branch, Avionics/Weapons Division, Aircraft Maintenance Department, VF-11. He assisted LTJG ROWAN in the supervision and performance of all duties assigned to the Weapons Branch.

j. Aviation Ordnanceman First Class (AOL) B-6 SN B-6 attached to the Weapons Branch, VF-11, was in charge of one of the conventional weapons loading teams in the Weapons Branch, which were organized in accordance with COMCVW-17 NOTICE 8000 of 17 June 1967. Members of his team were: A02 B-6, A03 B-6, A03 B-6, AOAN B-6, AOAA B-6 and AA B-6. He was responsible for proper and safe performance of duty by the members of his team.

k. Aviation Ordnanceman Second Class (AO2) B-6 USN, B-6 attached to the Weapons Branch, VF-11, was a member of the conventional weapons loading team headed by AOL B-6. At 1051H on the morning of 29 July 1967, he was under the port wing of F-4B #110 of VF-11. WILSON had completed homing the TER-7 on external stores station 2 and had just plugged in the three LAU-10/A rocket launchers loaded on the TER.

l. Aviation Ordnanceman Airman Apprentice (AOAA), B-6, USN, B-6 attached to the Weapons Branch, VF-11, was a member of the conventional weapons loading team headed by AOL B-6. At 1051H on the morning of 29 July 1967, he was under the starboard wing of F-4B

#110 of VF-11, conducting stray voltage tests on the rocket harness of the TER-7 on external stores station 8, having just completed these tests on the TER on external stores station 2.

206. That CVW-17 (Carrier Air Wing Seventeen) was commissioned on 1 November 1966.

207. That CDR *B-6* assumed command of CVW-17 on 22 December 1966.

208. That LT *B-6* had recent previous experience as an Air Wing Ordnance Officer with CVW-9 in WESTPAC in USS ENTERPRISE (CVA-65) and USS RANGER (CVA-61).

209. That CVW-17 was assigned as the USS FORRESTAL Air Wing for the 1967 Southeast Asia Deployment.

210. That the homeports of the squadrons and detachment of CVW-17 are as follows:

VF-11	NAS, Oceana
VF-74	NAS, Oceana
VA-65	NAS, Oceana
VA-46	NAS, Cecil Field
VA-106	NAS, Cecil Field
RVAH-11	NAS, Sanford
VAW-123	NAS, Norfolk
VAH-10 Det 59	NAS, Whidbey Island

211. That all of the squadrons and detachment of CVW-17 were never joined together for operations as a Carrier Air Wing until the departure of FORRESTAL from Norfolk, Virginia on 6 June 1967.

212. That during the transit to WESTPAC, all air wing personnel were trained in location of alternate escape routes from their living and berthing spaces and their work areas.

213. That training of the air wing in use of OBA's and firefighting was started during the REFTRA period and continued during the transit to WESTPAC, but was by no means completed.

214. That some 102 air wing Ensigns, LTJG's and Warrant Officers, who stood the aircraft integrity watches, were indoctrinated in the locations, activation and procedures for operation of hangar bay divisional doors, sprinkler systems, and the associated fire fighting equipment on the hangar and flight decks.

215. That all squadrons and detachment of CVW-17 were embarked in USS FORRESTAL for the ORI (Operational Readiness Inspection), conducted by COMCARDIV TWO 14-16 June 1967.

216. That the squadrons of CVW-17 received the following numerical and adjective grades on the ORI:

VF-11	90.8	EXCELLENT
VF-74	90.5	EXCELLENT
VA-106	92.7	EXCELLENT
VA-46	91.1	EXCELLENT
VA-65	96.4	OUTSTANDING
RVAH-11	90.4	EXCELLENT
VAW-123	88.5	EXCELLENT
VAH-10 Det 59	92.2	EXCELLENT

217. That CDR ~~B-6~~ COMCVW-17, departed USS FORRESTAL (CVA-59), on 16 June 1967 on an advance liaison trip to the Far East to the carriers on Yankee Station. He returned to FORRESTAL on 15 July 1967.

218. That before departure, CDR ~~B-6~~ discussed with Captain BELING the desirability of having a Weapons Coordination Board meeting during the ship's transit to WESTPAC, in order to conduct a detailed study and documentation of CVA-59/CVW-17 weapons handling procedures, as developed before and as used during the ORI.

219. That CDR ~~B-6~~ R also directed LT ~~B-6~~ to organize composite Air Wing catapult arming crews in order to comply with the ORI recommendation to reduce the numbers of personnel between the catapults.

220. That CDR B-6 USN, CO, VF-11, as senior squadron commander remaining in FORRESTAL, became acting COMCVW-17.

221. That CDR B-6 instructed LCDR B-6, Air Wing Operations Officer, to brief CDR DERRICK on any items of unfinished business or continuing business which might come up during his, B-6's, absence.

222. That on 29 June 1967, the Weapons Coordination Board, augmented by key members of the Weapons Planning Board, met to document those ordnance handling procedures which had been validated during the OR

223. That several attendees at this meeting were not members of the board, but were Warrant Officers and Chief Petty Officers from several of the squadrons and representatives from ordnance handling divisions of the ship, who were invited as experienced individuals.

224. That LT B-6 attended the 29 June meeting as the representative of COMCVW-17.

225. That the following personnel from VF-11 attended the 29 June

LTJG B-6 - Weapons Branch Officer
AOC B-6 - Aviation Ordnance Supervisor

226. That CDR B-6 USN, CVA-59 Operations Officer, who attended the 29 June meeting, had the minutes read to all attendees at the conclusion of the meeting to ensure there would be no doubt in anyone's mind as to the procedures covered.

227. That the minutes of the meeting were given to all squadron divisions in a double-spaced rough draft for their correction of ambiguous statements. Any changes of substance would have to be made at a subsequent meeting.

228. That after the double-space rough drafts were returned to the CVA-59 Operations Officer, a draft of the procedures in effect was prepared as a memorandum from the Operations Officer to the Commanding Officer dated 8 July 1967.

229. That the draft memorandum dated 8 July was not disseminated outside the Operations Department of the ship and was not seen by the ship's Commanding Officer.

230. That the aforementioned double-spaced rough and the draft memorandum read, in paragraph 1d:

"d. Plug-in of Rocket Pack Pigtails

(1) Required Procedures (Ref: OP-2210) - "Do not arm launcher armament until just prior to takeoff." On carriers this has been traditionally interpreted as "on the catapult".

(2) Effects of Following Required Procedures - Since the development of the TER rack, and its use for carrying LAU-10/LAU-3 series rocket packs, it is commonplace on Yankee Station for a single aircraft to launch with six or more rocket packs. If the ordnanceman is forced to wait until the aircraft is on the catapult before plugging in the pigtail, the launch rate will inevitably decrease. In those frequent cases where a connection proves to be difficult and requires several attempts to accomplish, this delay will become prohibitively long.

(3) Recommended Deviations - Allow ordnance personnel to connect pigtails "in the pack", prior to taxi, leaving only safety pin removal on the cat.

(4) Additional Safety Precautions - Strictest adherence to existing safety precautions provide the very minimum possibility of inadvertent firing. Ordnancemen must receive positive identification of awareness of pilot (and crewman, where applicable) that connection is being made, and "hands off" signal given and acknowledged. Stray voltage check must be scrupulously performed prior to connecting pigtail. Safety pin will not be removed prior to aircraft being positioned on the catapult, nor

in the case of the LAU-10 will the arm lever be cocked.

(5) Final Recommendation - Allow connection of rocket pack pigtail prior to aircraft taxi to catapult."

231. That LTJG _____ gave the VF-11 copy of the double-spaced rough to AOC _____. He told _____ to insert a change which he, _____ had proposed and to return it to Lt _____ for further transmittal to the Ship's Operations Officer.

232. That neither LTJG _____ nor any other officer senior to him in VF-11 saw the changes prepared by _____.

233. That no one in VF-11 kept a copy of the double-spaced rough dated 29 June 1967.

234. That the CO VF-11, CDR _____ did not see any copy of the 29 June double-spaced rough.

235. That AOC _____ recommendation on the VF-11 copy of the double-spaced rough draft of the minutes of the 29 June meeting was that non-propulsive units be installed on AIM-9 missiles loaded on aircraft on the hangar deck.

236. That the recommendation of AOC _____ regarding the use of the non-propulsive unit on AIM-9 missiles installed on aircraft on the hangar deck was incorporated in the 8 July 1967 draft memorandum.

237. That CDR _____ regarded the apparent reversal not as a change of the procedures agreed to at the 29 June meeting, but as a typist's error made on the 29 June double-spaced rough.

238. That a pencilled notation in paragraph 1 of the 8 July 1967 draft memorandum states: "All members took notes for review and a second meeting was held (blank) for final formulation of recommended procedures". The meeting designated by "(blank)" was not held.

All redactions are B-6

239. That LT _____ considered that the procedures in the rough draft of the minutes of the 29 June meeting were in effect, although he believed that a smooth document describing the procedures would be promulgated.

240. That LTJG _____ and AOC _____ believed that a final smooth copy, approved by the Commanding Officer, CVA-59, was necessary to formalize the procedures covered at the 29 June meeting.

241. That AOC _____ inquired of LTJG _____ and AOC _____ (Air Wing Ordnance CPO) several times before 29 July 1967 whether a finalized approved version of the decisions reached at the 29 June meeting had been received.

242. That LTJG _____ briefed the officers of VF-11, including CDR _____ as to the results of the 29 June meeting during a squadron conference, held for other reasons, just after the completion of the 29 June Weapons Coordination Board meeting.

243. That during July 1967 a number of pilots of VF-11 complained to AOC _____ VF-11 safety ordnance petty officer, that there were too many personnel around their aircraft during turn-up, and questioned the necessity for a safety ordnance petty officer when ordnance was being connected in the pack.

244. That LTJG _____ and AOC _____ agreed that the safety petty officer was not necessary in the pack as long as the plane captains were instructed not to give the pilots any signals to move any switches actuating flaps, hook, etc., actuation of which could possibly cause injuries to the ordnancemen under the aircraft.

245. That CDR _____ considered that the purpose of the "hands-off" signal to the pilot, while ordnancemen were working under the aircraft, was (a) to prevent injury to the ordnancemen and (b) to prevent blame of the pilot if any ordnance was accidentally fired or dropped.

All redactions are B-6

246. That CDR ~~B-6~~ verbally approved the policy of eliminating the use of the "hands-off" signal and the ordnance safety petty officer in the pack.

247. That the elimination of the "hands-off" signal in the pack was in contradiction to paragraph 1d(4) of the draft memorandum dated 8 July 1967.

248. That CDR ~~B-6~~ and LT ~~B-6~~ were not informed of the change in procedure by VF-11 with regard to elimination of the use of the ordnance safety petty officer in the pack.

249. That LT ~~B-6~~ did not detect the fact that VF-11 was no longer using the "hands-off" signal or an ordnance safety petty officer in the pack.

250. That although CDR ~~B-6~~ considered that it was policy in VF-11 to conduct stray voltage checks after both engines had been started, several VF-11 ordnancemen ~~B-6~~ ~~G~~ believed that the stray voltage test could be made anytime after power was applied to the aircraft.

251. That specific instructions as to precisely when, how and why the rocket circuitry of an F-4 aircraft should be tested for stray voltage was not contained in any publication available on board FORRESTAL.

252. That VF-11 ordnance crews were not instructed to manually check during pre-flight inspection that the LAU-10/A shorting device was fully forward in the "safe" position, since a visual check of its position was believed to be satisfactory.

253. That ~~B-6~~ on occasions, had checked TER safety pins by pulling the pin outward about one-half inch to test the catch. He had also checked pins by releasing the button to determine if the pin could be drawn all the way out.

254. That VF-11 commenced transition from Model F-8 aircraft to Model F-4 aircraft in July 1966.

255. That VF-11 changed its homeport from NAS, Cecil Field, Florida to NAS, Oceana, Virginia Beach, Virginia on 15 July 1966.

256. That the last effective organization manual for VF-11 was that contained in COMFAIRJAX Instruction P5440.8A of 29 October 1964, Subject: Standard Squadron Organization.

257. That VF-11 was in the process of writing a new organization manual and squadron instructions, which had not been issued on 29 July.

258. That there were an adequate number of personnel assigned to the Weapons Branch, Aircraft Maintenance Department, VF-11 (Assigned - 26; Allowance - 31) to properly perform the duties of the Branch.

259. That during operations on Yankee Station some TER electrical safety pins were found adrift on the flight deck after launches.

260. That some F-4 aircraft carrying rocket launchers (LAU-10/A or LAU-3A/A) on TER-7, arrived at the catapults without TER electrical safety pins installed.

261. That TER electrical safety pins occasionally failed mechanically and were pulled from the TER racks by the action of the wind over the deck and jet blast on the red warning flags attached to the end of the pins.

262. That it was VF-11 policy to leave the TER electrical safety pin in the TER until the aircraft arrived at the catapult.

263. That two squadrons of CW-17 (VA-65 and VA-106) were in the practice of removing TER electrical safety pins aft in the pack when they were carrying bombs on the TER's.

264. That the above mentioned squadrons did not interpret the restrictions in the 8 July memo on removing TER electrical safety pins in the pack as applying to TER's loaded with bombs.

265. That CDR B-6 reserved the right to fly with all of his squadrons, but directed that each of the pilots on his staff fly with a specified squadron.
266. That LCDR B-6 was directed to fly with VF-11.
267. That LCDR B-6 had extensive experience in the F-4 model aircraft; most recently as an instructor in VF-101 (Replacement Air Wing Fighter Squadron 101).
268. That LCDR B-6 last took an F-4 NATOPS check on 18 November 1966.
269. That LCDR B-6 attended some, but not all, of the training sessions conducted by VF-11 during the transit to WESTPAC on use of various types of ordnance.
270. That LCDR B-6 had never carried or fired ZUNI rockets until assigned to do so on 29 July 1967.
271. That during the five days that FORRESTAL conducted combat operations on Yankee Station, 486 aircraft were launched; 379 were loaded with ordnance; and only 3 VF-11 aircraft had carried rockets.

FINDINGS OF FACT

SECTION VI

FACTS RELATING TO ORDNANCE AND ARMAMENT PERTINENT TO THE F-4B AIRCRAFT

272. That F-4B #110 assigned to VF-11 was configured for the scheduled 1100H launch on 29 July 1967 as listed below:

<u>External Stores Station</u>	<u>Armament Equipment</u>	<u>Items Carried</u>
No. 1 (Port Outboard)	Outboard Wing Pylon	Empty
No. 2 (Port Inboard)	LAU-17/A Pylon LAU-7/A Missile Launcher with adapters (Port side) LAU-17A Pylon Adapter A/A 37B-5 Triple Ejector Rack (P/N 5821520-527) 3 LAU-10/A Launchers	Items Below 1 AIM-9B 1 TER-7 3 LAU-10/A 4 ZUNI each with M414A1 VT nose fuze and M191 MOD 1 base fuze, 1 Frangible Fairing each
No. 3 (Port Aft Fuselage)	Aero 7A Launcher	1 AIM-7E
No. 4 (Port Forward Fuse- lage)	Aero 7A Launcher	Empty
No. 5 (Centerline)	Aero 27A Bomb Rack	1 600 gallon External Fuel Tank (full)
No. 6 (Starboard Forward Fuselage)	Aero 7A Launcher	1 AIM-7E
No. 7 (Starboard Aft Fuselage)	Aero 7A Launcher	Empty
No. 8 (Starboard Inboard)	LAU-17/A Pylon LAU-7/A Missile Launcher with Adepters (Stbd side) LAU-17/A Pylon Adapter A/A 37B-5 Triple Ejector Rack (P/N 5821520-527) LAU-10/A Launcher	Items Below 1 AIM-9B 1 TER-7 3 LAU-10/A 4 ZUNI each with M414A1 VT nose fuze and M191 MOD 1 base fuze, 1 Frangible Fairing each
<u>No. 9 (Starboard Outboard)</u>	<u>Outboard Wing Pylon</u>	<u>Empty</u>
Total Ordnance Items		2 AIM-9B Sidewinder 2 AIM-7E Sparrow III 24 ZUNI

273. That Section X of Conventional Weapons Loading Manual, F-4B, NAVWEPS 01-245FDB-75, dated 1 October 1965 (latest change 9 September 1966), prescribed detailed procedures for the loading and arming of rockets on the F-4B aircraft.

274. That the latest issue of NAVAIR 01-245FDB-75 dated 1 July 1967 was not received aboard FORRESTAL until 5 September 1967.

275. That Conventional Weapons Loading Checklist, F-4B, NAVWEPS 01-245FDB-75-7, dated 1 October 1965 (latest change 1 April 1966), provided a checklist for the loading and arming of rockets on F-4B aircraft.

276. That procedures prescribed for stray voltage checks on F-4 inboard stations are contained on pages 10-7 and 10-8 of NAVWEPS 01-245FDB-75 (enclosure (364)) and pages 10-12, NAVWEPS 01-245FDB-75-7 (enclosure 363)). These checks are performed on the LAU-17/A pylon, and test the Sparrow III rocket motor firing circuit and the wing pylon explosive bolt circuit only.

277. That neither a requirement nor a procedure which tests for stray voltage of rocket firing circuits in inboard stations is contained in enclosures (363) or (364).

278. That NAVWEPS OP 2210 Volume 1, Aircraft Rockets, requires that a stray voltage test, following instructions for such tests, be performed prior to connecting the rocket harness to the launcher (Sub-para 7-6.5.4, enclosure (365)). It also states, as a general precaution for aircraft rocket launcher packages, an injunction to never connect a launcher to the aircraft without first making a stray voltage check: page xviii, enclosure (366).

279. That VF-11 had devised a procedure and fabricated a test harness, prior to 29 July, for the purpose of conducting a stray voltage check of the rocket firing circuits of the F-4B/TER combination.

280. That the procedure actually followed by VF-11 ordnance personnel consisted of connecting a Missile Launcher Stray Voltage Test Set to each of the rocket harnesses of the TER, at any time when electrical power was available to the TER, as indicated by illumination of the HOMING INDICATOR LIGHT, and testing each station in turn for the presence of stray voltage prior to connecting the rocket harness into the LAU-10/A receptacle.

281. That since the procedure described above was conducted with the TER electrical safety pin "IN" and the weapons select switch on "BULLPUP", it tested for the presence of stray voltage only in the rocket harness of the TER-7 and in a short wire leading to the select rockets relay switch in the TER-7.

282. That the above described procedure for testing the rocket circuitry for stray voltage did not violate any written instructions. However, NAVAIRSYSCOMHQ messages 052222Z AUG 67 and 091903Z AUG 67 (enclosure (367), received after the 29 July accident) recommend that stray voltage checks be conducted after engines were started, when aircraft was operating on internal power, rather than at any time that electrical power was available to the TER.

283. That NAVAIR 11-75A-40, Technical Manual, TER-7, dated 15 August 1966, was inaccurate in that it did not show the actual wiring of the safety switch in the -527 TERs in use aboard FORRESTAL. Change to NAVAIR 11-75A-40 dated 15 April 1967, which shows the wiring correctly, was not received aboard FORRESTAL until after 29 July 1967.

284. That the change in wiring of the safety switch in the -527 TER (wiring the safety switch to ground rather than in series as in the -505 and -521 TERs) made it possible for a high magnitude current to damage or burn out the safety switch.

285. That the direction of throw of the HOME-STEP switch on the -527 TER is reversed from the direction of actuation on the -505 and -521 TERs. See photographs, enclosure (368).

286. That tests of the LAU-10/A shorting device, as described in FORRESTAL message 041015Z AUG 67 and ORISKANY message 060340Z AUG 67 (enclosure (369)) demonstrated that the shorting device, described in enclosure (371), pages 3-1 and 3-2 of NAVWEPS OP 2210 Volume 2, ZUNI AIRCRAFT ROCKET, is not reliable.

287. That the piece of metal taken from the right chest of ADJ3 KNIGHT was identified by the Naval Ordnance Laboratory (NOL), White Oak, Maryland, as being a part of a M414A1 VT nose fuze, as used in the MK24 warhead of a ZUNI rocket. Details are contained in NOL messages 221536Z AUG and 011603Z SEP 1967 (enclosure (373)) and enclosure (406).

288. That cook-off tests of ordnance involved in the FORRESTAL fire, requested by FORRESTAL 161048Z and 170350Z AUG 67 (enclosure (374)) confirmed that the cook-off time for the AN-M65A1 bomb is on the order of 85 to 120 seconds. This time is significantly less than for other bombs tested (see NAVAIRSYSCOMHQ 011710Z SEP 67, enclosure (375)) and enclosure (405).

289. That one CBU electrical cable, which is physically interchangeable with the LAU-10/A rocket harness, found on FORRESTAL after 29 July 1967, was not coded for color or feel identification. Use of a CBU cable instead of a rocket harness on a LAU-10/A launcher could lead to inadvertent firing of rockets (see NAVAIRSYSCOMHQ 052222Z AUG 67, enclosure (367), FORRESTAL 130945Z AUG 67, enclosure (376), and NAVAIRSYSCOMHQ 251436Z AUG 67, enclosure (377)).

290. That analysis of the kinescope of the PLAT recording of the sequence of events on 29 July demonstrated that the white puff or flash which seemed to be off the port bow at 10-51-21H was caused by an image which appeared to be between the camera lens and the forward flight deck.

291. That experiments were conducted on August 15, 1967 wherein the

PLAT camera was trained in the same direction that it had been at

10-51-21H on 29 July, and flash bulbs were fired from locations on the

port side of the flight deck aft. These experiments demonstrated that

the PLAT camera recorded a reflection from the port side of the flight

deck aft on the plexiglass enclosure of the PLAT booth. The demon-

stration proved conclusively to the Board that images seen in the film

were reflections of the last portion of the flight of the ZUNI rocket

as it traveled across the flight deck and struck A-4 #405 (see

enclosure (138)).

292. That although the ZUNI rocket in the LAU-10/A launcher is

certified as HERO safe in enclosure (378), NAWEPBS 16-1-529 of

15 April 1966, there is a possibility that it may be susceptible to

RADHAZ if:

a. The shorting device is defective, and there is no contact

between the LAU-10/A contact screw and the rocket motor contact band.

b. A previously unconsidered source of RF energy such as a

transmitting ALQ-51 in a nearby aircraft is taken into account.

FORRESTAL message 201155Z AUG 67 to NAWAIRSYSCOMHQ requested that

these conditions be tested. (Enclosure (379)).

293. That three different ordnance safety pins in service in the Navy;

namely, the Aero 7 Sparrow launcher pin, the LAU-17/A pylon adapter pin,

and the TER electrical safety pin, will fit the TER rack; however, only

the latter will actuate the safety switch reliably (see enclosure (380)),

NAWEPGEN CHINA LAKE 112101Z AUG 67 and paragraph 3, enclosure (377)

which is NAWAIRSYSCOMHQ 251736Z AUG 67.

Safety Precautions, contains statements or requirements which are

vague, incomplete, or inapplicable to modern attack carrier aircraft.

For example, Section 3, Aircraft Launchers, of Chapter 2 states:

a. (Sub-paragraph 3 a(1)). "Loading crews shall make positive

check that the aircraft battery and armament switches are in the OFF

position prior to loading." Comment: Few attack carrier aircraft

have batteries.

b. (Sub-paragraph 3 a(2)). "All external power to the aircraft

shall be removed and stray voltage check made prior to loading."

Comment: The statement does not specify either the circuit(s) to be

tested or the purpose of the check. The omissions are significant

because rocket launchers such as the Lu-10/A have generated a need for

assuring that stray voltage does not exist in either the rocket firing

circuit or the bomb release circuit. Further, interpreted literally,

the stray voltage check is to be made after external power to the

aircraft is removed. In the case of A-4, F-4, and F-8 aircraft, since

engines are not running during loading, one would not expect to detect

stray voltage since those aircraft would then have no electrical power.

c. (Sub-paragraph 3d). "The pigtail shall not be plugged into

the launcher receptacles until just before take-off." Comment: The

phrase "just before take-off" is vague both as to time and place.

Further, the statement does not contain a requirement for completing

a stray voltage check of the rocket firing circuit prior to connecting

the rocket harness to the launcher receptacle.

- c. Three electrical submersible pumps inoperative. operable manually.
 - b. HCRF Station 5 out of commission in the automatic mode, but
 - a. Two electric fire pumps down for maintenance.
301. That the status of material readiness on 29 July 1967 as relates to damage control and fire fighting was:
300. That during the period from overhaul to Yankee Station, FORRESTAL was at sea 106 days and exercised at general quarters 57 times for an average of one exercise every 1.8 days.
299. That upon arriving on Yankee Station, 1610 officers and men, members of FORRESTAL ship's company, had attended a fire fighting school of at least two days duration within the past 36 months. This represents 57% of the ship's company.
298. That 37% of personnel in the damage control organization who went through refresher training were transferred, and replaced subsequent to REFTRA and prior to arrival Yankee Station.
297. That concentrated training after REFTRA and prior to the ORI resulted in a grade of Satisfactory for setting material condition Zebra for the ORI.
296. That during REFTRA FORRESTAL was graded Unsatisfactory in setting material condition Zebra, but because of good progress in all other damage control areas, received an overall mark of Satisfactory.
295. That the underway refresher training period for USS FORRESTAL was shortened from the normal 6 weeks for attack carriers to a period of 4 weeks.

FINDINGS OF FACT
SECTION VII
TRAINING PROCEDURES AND MATERIAL CONDITIONS AS RELATED TO
FIRE FIGHTING AND DAMAGE CONTROL

302. That upon arrival at HERTHA 17 February 1967, FORRESTAL HOFF systems were completely unreliable, however, they were at that time taken apart one-by-one, completely disassembled, restoring all but station 5 to good operating condition. HOFF station 5 is still inoperative in automatic mode due to a faulty HYDROL valve, but continues to be operative manually.

303. That FORRESTAL was up to allowance in essential damage control equipment but had minor deficiencies in repair lockers such as wedges, spanner wrenches, and pliers.

304. That the on-hand inventory of selected pertinent damage control equipment just before the fire was as follows:

ALLOWANCE		ON HAND BEFORE FIRE	
OBA'S	550		525
OBA CANNISTERS	3300		3100
1 1/2" NOZZLES	278		278
1 1/2" HOSE	646 (50' Length)		646
2 1/2" NOZZLES	52		52
2 1/2" HOSE	105 (50' Length)		105
FOG FCAM	1220 CANS		1170 CANS

305. A large number of OBA's, OBA cannisters, and cans of fog foam were received from ships in the vicinity during the fire. Exact quantities unknown.

306. That all damage control discrepancies from the INSURV inspection were corrected with the exception of a shortage of MK 5 gas masks, which shortage continues to exist.

307. That the status of HOFF hoses on the flight deck at the time of the first major explosion at 10-52-55H was:

Station	Frame #	Hose Length	Status
1 stbd	28	100'	Faked, uncharged, operable
1 port	24	100'	Faked, uncharged, operable
2	61	200'	Faked, uncharged, operable
3	---	---	No fitting on flight deck
4	100	150'	Faked, uncharged, operable
5	73	250'	Out of commission in "automatic"
6	118	200'	Faked, uncharged, operable
7	113	250'	Being led aft, uncharged, operable
8	146	150'	Being led aft, uncharged, operable
9	137	300'	Led aft 50' short of fire, charged
10	162	100'	Led to vicinity #316, charged
11	167	200'	Being led across deck, actuated but not charged
12	181	150'	Being led aft, uncharged
13	176	100'	Being led across deck, uncharged
14	204	150'	Engulfed in flames
15	226	100'	Being led across deck, uncharged
16	---	---	No fitting on flight deck
17	230	100'	Faked, uncharged, operable

308. That the status of salt water fire hoses on the flight deck at the time of the first major explosion was:

Station	Frame #	Hose Length	Status
1	5	100'	Faked, uncharged, operable
2	5	100'	Faked, uncharged, operable
3	32	100'	Faked, uncharged, operable
4	32	100'	Faked, uncharged, operable
5	62	200'	Faked, uncharged, operable
6	53	200'	Faked, uncharged, operable
7	81	100'	Faked, uncharged, operable
8	104	150'	Faked, uncharged, operable
9	119	300'	Faked, uncharged, operable
10	127	150'	Being led aft, uncharged, operable
11	145	250'	Being led aft, uncharged, operable
12	137	150'	Being led aft, uncharged, operable
13	174	250'	Being led aft, uncharged, operable
14	154	100'	Led out vicinity #316, charged
15	212	150'	Led out vicinity #416, charged, and playing on fire
16	186	150'	Led out vicinity of #416, uncharged
17	227	100'	Being led out across deck, uncharged, operable
18	214	100'	Engulfed in flames
19	---	---	No fitting on flight deck
20	226	100'	Engulfed in flames

309. That at the start of the fire, four of the installed sixteen HOFF stations were manned on the second deck. These were stations 2, 7, 9, and 14. These are the stations which are normally manned during flight quarters.

with the HOFF system in such close proximity that they can cause confusion. established pattern. Frequently there are similar fittings not associated

of the valve, actuating button, phone, and call button follows no in boxes; at others the switches are in boxes. The physical relationship

throughout FORHESSTAL. At some stations the sound powered handsets are

317. That the HOFF hose stations vary considerably in configuration

system, or, did not know how to do so.

to perform certain manual functions on the flight deck to actuate the

because personnel manning the hose either did not know it was necessary

316. That one or more fog foam stations were not initially charged

exploded.

the hose at HOFF station 11 was not charged by the time the first bomb

315. That, although the valve was open, and the actuation button pressed,

R4-5Cs; starboard side, abart the island.

became entangled in yellow equipment on deck in the vicinity of the

HOFF station 11 toward the fire on the flight deck because the hose

314. That personnel experienced difficulty in leading the hose from

HOFF stations 11, 12 and 13 in the early stages of the fire.

313. That difficulty was experienced in promptly leading out and charging

tasks, such as fire fighting.

movement, or, because they became effectively engaged in other required

to because of injury; because the effects of the casualty prevented their

Some personnel made no attempt to proceed thereto while others were unable

312. That many personnel did not reach their general quarters stations.

fighting efforts.

fighting procedures and therefore unable to contribute to the fire

at the outset of the fire on the flight deck were unfamiliar with fire

311. That numerous personnel who were near the fire fighting stations

over the 1MC "man all fog foam stations."

310. That at the commencement of the fire, word was immediately passed

condition.
 450 were new, the remainder were of late design and in good material
 323. That of the 525 OBAs on hand in FORESTAL just before the fire,

salt water only. One station required 4 minutes to generate foam.
 Level varied from 30 to 45 seconds. One station failed to generate, producing
 The times required to generate good foam at 8 stations at the flight deck
 out warning, ten HOFF stations on the flight deck for automatic operation.
 322. That on 22 August 1967, the Board of Investigation tested, with-

after a total elapsed time of 17 seconds from activation of the system.
 was produced at the nozzle in 8 seconds. Foam appeared at the nozzle
 switch at the flight deck level. The riser was initially empty. Water
 2 performed in an acceptable manner when energized from the remote control
 to produce fog foam. HOFF Station 2 was randomly selected. HOFF Station
 of a HOFF station and to determine an order of magnitude of time required
 igation in order to familiarize members of the Board with the operation
 was conducted by ship's personnel at the request of the Board of Invest-
 321. That on 7 August 1967, a test of HOFF station 2 in USS FORESTAL

HOFF stations which are served by his equipment. He has no call button.
 communications with the crew on either the hangar or the flight deck
 a man on the second deck manning a HOFF station is unable to initiate
 320. That as the second deck HOFF stations are presently configured,

major explosion.
 major explosion. These hoses were engulfed in flames by the second
 hose station 17 were not led out or charged at the time of the first
 319. That flight deck HOFF hose stations 15 and 17 and salt water

they were immediately engulfed in flames.
 stations 18 and 20 could not be manned at the outset of the fire because
 318. That flight deck HOFF hose station 14 and salt water fire hose

324. That difficulty was experienced by some personnel in pulling the tabs to open OBA canisters.
325. That some OBA canisters did not last the rated 30 minutes.
326. That significant numbers of air wing personnel were not properly checked-out on the use of OBAs.
327. That complaints were received from users of OBAs that some were in poor material condition, i. e., broken straps, holes in the mask and timers not working.
328. That the damage control message chits, which would have provided an invaluable record of events related to the casualty, were inadvertently destroyed, greatly hampering the Board's ability to reconstruct a true picture of the damage control and fire fighting efforts.
329. That only two men were killed during the fire fighting operations after major explosions had subsided. They were probably killed by chlorine gas. ² died in compartment 03-231-0-L after having removed his OBA because the compartment was relatively free of smoke, and ³ died in compartment 03-226-0-L at 0300, 30 July 1967 while removing bodies.
330. That during the afternoon of 29 July, inexperienced air wing personnel actuated the divisional doors between hangar bays 2 and 3 (opening and then closing same) without authority of Damage Control Central.
331. That it required one man approximately one hour to jettison 750 gallons of liquid oxygen through a single one inch, 16 foot length hose, at its storage location, compartment 1-192-2-E, near hangar bay 3.
332. That there is no emergency dump capability installed in FORHESTAL's liquid oxygen systems.
333. That the 1MC ship's announcing system was ineffective in the hangar deck areas; thus denying personnel in those areas important information and directives during the emergency.

334. That prior to the fire, FORRESTAL's planning and drill for flight deck fire fighting had concentrated chiefly on the landing areas of the flight deck, with lesser emphasis elsewhere.

335. That only one minor electrical casualty occurred during the entire period of the emergency; the temporary loss of air conditioning in Main Comm and supra O7 radio spaces. In spite of the large number of electrical cables burned by fires, FORRESTAL experienced no secondary electrical fires therefrom.

336. That the escalator between 2nd and O2 decks (2-187-2-L), acted as a reverse stack feeding smoke downward to the second deck.

337. That the identity of damage control and repair party personnel was not evident to large numbers of unengaged personnel in the ship, particularly throughout the hangar bays. Many sought to assist in fire fighting but were unable to identify the on-scene leader.

338. That no significant instability resulted to the ship from excess water in the hull incident to fire fighting.

339. That a minor list of 2.5 degrees to port was caused by shrapnel holes in the transom and on the port side aft near and at the waterline which flooded voids 8-244-2-V, 8-244-4-V, and 8-244-6-V. This list was corrected by transfer of NSFO from port to starboard tanks.

340. A preliminary decision was made to flood magazines 7-222-1-M, 7-222-2-M, 7-227-3-M and 7-231-0-M in the after portion of the hull. Damage Control Central subsequently determined from Air Ordnance Control Station (AOCS) that the ordnance in these magazines was in fact inert. They were not flooded.

341. That the location of MK 24 paraflares on 29 July 1967 at 1051H and their subsequent disposition is as follows:

<u>Location</u>	<u>Number of Flares</u>	<u>Disposition</u>
4-172-0-M Deep storage magazine	459	Retained
02-146-3-M Taping and Banding Room	24	*Jettisoned
Jettisonable Lockers	96	*Jettisoned
	<u>Total 579</u>	

* 120 MK24 paraflares jettisoned at commencement of the fire; no flares actually involved in the fire.

342. That during the fire, normal services were maintained in the undamaged areas of FORRESTAL including light, ventilation, air conditioning, hot and cold water.

343. That there is no known survival training curriculum directed toward training aircrewmembers in abandoning static aircraft engulfed in flames.

FINDINGS OF FACT

SECTION VIII

FATALITIES AND INJURIES

344. That 134 persons, 116 whose remains have been positively identified, are dead or missing as the result of the fire and explosions in FORRESTAL on 29 July 1967. The names, location, cause of death and remarks concerning the cause of death of all fatalities are contained herein at the end of this section.

345. That the 18 persons who are missing or whose remains are unidentifiable and are presumed dead (see enclosure (362)) are:

PR2, USN

USN

AEAN, USN

DJ3, USN

, USN

USN

USN

T, USN

ORAN, USN

AE3, USN

IC, USN

AMM2, USN

ATN3, USN

USN

AMS2, USN

SN, USNR

, LCDR, USN

AN, USN

*All redactions
are B-6*

346. That 12 to 14 remains were recovered aboard FORRESTAL, but were not identifiable.

347. That 4 persons have been determined missing in the water without recovery of remains.

348. That 3 of these persons, were seen jumping into the water from the port quarter at about 1145H.

349. That the fourth man believed lost over the side was sighted jumping from FORRESTAL by the (OD, USS RUPERTUS before the initial major explosion.

350. That at least 16 other FORRESTAL personnel were blasted, knocked, jumped or fell into the water on 29 July 1967 and were subsequently recovered. Thirteen of these have been identified as follows:

<u>NAME</u>	<u>TIME IN WATER</u>	<u>TIME OUT OF WATER</u>	<u>METHOD OF RECOVERY</u>	<u>DISPOSITION</u>
	1130	1200	Motor Whale Boat	MACKENZIE ORISKANY CUBI POINT FORRESTAL
	1200	1230	Helo	ORISKANY CUBI POINT FORRESTAL
1.	1135	1155	Helo	ORISKANY FORRESTAL
	1115	1145	Helo (#2)	FORRESTAL
	1150	1205	Helo	ORISKANY CUBI POINT FORRESTAL
	1140	1155	Motor Whale Boat	MACKENZIE ORISKANY CUBI POINT FORRESTAL
	1145	1205	Motor Whale Boat	MACKENZIE ORISKANY CUBI POINT FORRESTAL
	1145	1205	Motor Whale Boat	MACKENZIE ORISKANY CUBI POINT FORRESTAL
	1100	1115	Motor Whale Boat	MACKENZIE ORISKANY CUBI POINT FORRESTAL

All redactions are B-6.

<u>NAME</u>	<u>TIME IN WATER</u>	<u>TIME OUT OF WATER</u>	<u>METHOD OF RECOVERY</u>	<u>DISPOSITION</u>
	1130	1145	Motor Whale Boat	MACKENZIE ORISKANY CUBI POINT FORRESTAL
	1100	Unknown	Helo	ORISKANY REPOSE EXPIRED
	1100	Unknown	Unknown	OKALAND ARMY BASE MORTUARY EXPIRED
	Approx. 1100	Approx. 1115	Helo	ORISKANY REPOSE MED-EVAC

351. That [redacted] jumped into the water with three other men, identities unknown, and all were picked up and taken to USS ORISKANY by helicopter.

352. That a total of 27 personnel were killed or injured by the first bomb explosion while engaged in fire fighting efforts on the flight deck. Nine of these personnel were killed, 4 of whom were V-1 crash crew members (see enclosure (316)). Sixteen personnel were injured, 5 of whom were V-1 crash crew members.

353. That V-1 crash crew personnel, [redacted] and [redacted] were killed by the first bomb explosion while fire fighting.

354. That V-1 crash crew personnel [redacted] and [redacted] were injured by the first bomb explosion while fire fighting, and [redacted] later died.

355. That non-crash crew personnel, [redacted] V-1; [redacted] V-2; [redacted] VA-65; [redacted] VA-65; and [redacted] V-1, were killed by the first bomb explosion while fire fighting.

All redactions are B-6.

356. That V-1 Division non-crash crew personnel,

_____ and _____ were injured by the first bomb explosion while fire fighting.

357. That other non-crash crew personnel, _____, VF-11; _____, VF-11;

_____, VA-106; _____, _____; and _____ RVAH-11 were injured by the first bomb explosion while fire fighting.

358. That a total of 161 personnel were injured as a result of the fire and explosions (see enclosures (328) and (329)).

359. That 87 of the personnel injured were hospitalized for a period of 24 hours or longer for injuries received as a result of the fire and explosions (see enclosure (329)).

360. That 74 of the personnel injured were treated for injuries received as a result of the fire and explosions and returned to duty without hospitalization (see enclosure (328)).

All redactions are B-6.

ALPHABETICAL LISTING OF FATALITIES

<u>NAME</u>	<u>LOCATION/CAUSE OF DEATH</u>	<u>REMARKS/DOCUMENTED BY ENCL NR</u>
	AME Shop (Hangar Bay 3) Presumed drowned.	First seen in AME shop, then made way to port quarter where he went overboard with raft. (220) to (225), (362).
Division	2-244-2-L Multiple extreme injuries.	Presumed trapped in compartment. (226), (362).
VF-11	03-226-0-L Multiple extreme injuries.	Presumed trapped in compartment. (216), (362).
7-74	1 03-241-1-L Multiple extreme injuries	Presumed trapped in compartment. (227), (362).
VA-46	Flight deck. Cause of death unknown	Escaped from aircraft and was running forward when first bomb exploded. (228), (362).
MH2 F-11	03-231-0-L Multiple extreme injuries	Presumed trapped in compartment. Encl (216), (362).
VF-11	03-226-0-L Third degree burns over 80% of body.	Presumed trapped in compartment. (216), (362).
SN, Div.	3-237-2-E Multiple extreme injuries.	Standing watch in port after steering, was wounded by shrapnel during initial explosions. Continued to man his station and sound powered phone till 1130 when contact with him was lost. (229), (362).
AA,	03-236-0-L Burns, 3rd degree over 80% of body.	Presumed trapped in compartment. (217), (362).
VF-11	03-226-0-L Third degree burns entire body.	Presumed trapped in compartment. (230), (362).
AMS1 F-11	03-241-2-L Explosion and fire.	Presumed trapped in compartment. (216), (362).
AE3 F-11	03-236-0-L Multiple extreme injuries.	Was awakened and last seen compartment. (231), (362).

All redactions are B-6

<u>NAME</u>	<u>LOCATION/CAUSE OF DEATH</u>	<u>REMARKS/DOCUMENTED BY ENCL NR</u>
L., AQP3, F-74	03-236-0-L Third degree burns 60% - 70% body.	Presumed trapped in compart- ment. (232), (362).
., PRAN, F-74	03-236-0-L Multiple extreme injuries.	Presumed trapped in compart- ment. (217), (362).
. A., SN A Div.	03-207-2 Lung damage due to smoke inhalation.	Had been fire fighting since fire began, helping recover bodies when overcome at approximately 0330, 30 July 1967. (233), (234), (362).
2 VF-11	Flight Deck. Multiple extreme injuries.	Aft in vicinity of A/C 110. (235) to (239), (362).
, SN, F-74	03-236-0-L Third degree burns 70%-80% body.	Presumed trapped in compart- ment. (217), (362).
AN, F-11	AMD Para-loft. Multiple extreme injuries.	Presumed trapped in para- loft. (240), (362).
ABH2, VF-74	03-236-0-L Third degree burns 70%-80% body.	Presumed trapped in compart- ment. (241), (362).
AME2, VF-74	03-236-0-L Multiple extreme injuries.	Presumed trapped in compart- ment. (217), (362).
AEAN, F-74	03-236-0-L Cause of death unknown.	Presumed trapped in compart- ment. (217), (362).
A02, A-65	Ordnance Shop (03-236-2) Traumatic amputation both legs, third degree burns 60% body.	When fire broke out he was in Ordnance Shop (03-236-2). Last seen running forward about midships. (242), (362).
AE3, F-11	03-226-0-L Third degree burns entire body.	Presumed trapped in compart- ment. (216), (362).
ADJ3, F-11	03-231-0-L Cause of death unknown.	Presumed trapped in compart- ment. (219), (362).
ADJ3, F-11	03-226-0-L Third degree burns entire body.	Presumed trapped in compart- ment. (216), (362).

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All redactions are T56

<u>NAME</u>	<u>LOCATION/CAUSE OF DEATH</u>	<u>REMARKS/DOCUMENTED BY ENCL NR</u>
ADJ3 VF-74	03-236-0-L Multiple extreme injuries.	Presumed trapped in compart- ment. (217), (362).
, SN, VF-11	03-226-0-L Third degree burns 70% body.	Presumed trapped in compart- ment. (216), (362).
, AEL, VF-74	03-241-0-L Cause of death unknown.	Presumed trapped in compart- ment. (217), (362).
, AO2, VA-106	03-236-1-L Multiple extreme injuries.	Presumed trapped in VA-106 ordnance berthing compart- ment. (218), (362).
ATN2 VF-11	AMD Para-loft Multiple extreme injuries.	Presumed trapped in Para- loft. (244), (362).
, ABHC, V-1 Div.	Flight Deck. Multiple extreme injuries.	Attempting to extinguish fire on flight deck with PKP bottle when 1st explosion occurred. (245), (299), (362).
, FN, : Div.	2-237-2-E Multiple extreme injuries.	Standing watch in port steering. Early explosion cut both arms. First aid was given on the spot by the Quartermaster. (246), (247), (362).
AME1, VF-74	AME Shop (1-217-4) Death by drowning is presumed.	Trapped in AME Shop(1-217-4) till approximately 1215 when worked way to port quarter. Jumped from Port Quarter. (248), (362).
IN, VF-74	03-236-0-L Cause of death unknown.	Presumed trapped in compart- ment. (217), (362).
, DJ1, VA-106	Flight Deck. Multiple extreme injuries.	Last seen early stages of fire proceeding forward along starboard catwalk. (249), (362).
AN, S-2	03-231-0-L Cause of death unknown.	Presumed trapped in compart- ment. (219), (362).
V-1	Flight Deck. Multiple extreme injuries.	Hot suit man. Ran directly to fire and was fighting the fire when 1st explosion occurred. (299), (362).

All redactions are B-6

<u>NAME</u>	<u>LOCATION/CAUSE OF DEATH</u>	<u>REMARKS/DOCUMENTED BY ENCL NR</u>
, AMS1, F-74	03-236-0-L Multiple extreme injuries.	Presumed trapped in compart- ment. (217), (362).
(NMM), AN F-74	03-236-0-L Multiple extreme injuries.	Last seen beside his rack dressing after General Quarters sounded. (250), (362).
* 6 LT, 4-65	Flight Deck. Explosion and fire.	Last seen running toward the fire after the first explosion. (251), (362).
, ADJ3, F-11	03-226-0-L Multiple extreme injuries.	Presumed trapped in compart- ment. (216), (362).
AMEAN, VF-74	03-(231 or 226)-0-L Third degree burns burns 70%-80% body.	Presumed trapped in compart- ment. (252), (362).
, AMS3, VF-11	03-231-0-L Third degree burns entire body.	Presumed trapped in compart- ment. (216), (362).
AMS3 F-74	03-236-0-L Cause of death unknown	Presumed trapped in compart- ment. (217), (362).
AE3	03-236-0-L Third degree burns entire body.	Presumed trapped in compart- ment. (253), (362).
?, ATR3 VF-74	03-236-0-L Third degree burns entire body.	Presumed trapped in compart- ment. (254), (362).
SN, Div.	4-244-0-A Multiple extreme injuries.	Remains recovered approximate 1300 30 July 1967. Compart- ment 4-244-0-A had been flooded, apparent cause of death suffocation or drowning. (255), (256), (362).
7 -1 Div.	Flight Deck. Multiple extreme injuries.	Flight deck port side aft by cats 3 and 4, just before 1st explosion. (257), (362).
- 8 VA-46	Flight Deck. Shrapnel wound abdomen, traumatic amputation left arm third degree burns 50% body.	Arm severed before first explosion, possibly by ZUNI Rocket on its path across flight deck. He was taken to island and later to ORISKANY where he died. (258), (259), (362).

(49)
All redactions are B-6.

<u>NAME</u>	<u>LOCATION/CAUSE OF DEATH</u>	<u>REMARKS/DOCUMENTED BY ENCL NR</u>
<p> <i>1.</i>, AN VF-11 </p>	<p> AMD Para-loft Multiple extreme injuries. </p>	<p> Presumed trapped in AMD Para-loft. (260), (362). </p>
<p> DS2 DE </p>	<p> 03-226-0-L Lung damage due to smoke inhalation. </p>	<p> had been aiding in the effort to remove remains from the 03 level in the early morning the day following the fire when apparently overcome by smoke and/or Chlorine Gas. (261), (362). </p>
<p> <i>2.</i>, AMH3 VF-11 </p>	<p> 03-226-0-L Multiple extreme injuries. </p>	<p> Presumed trapped in compartment. (216), (362). </p>
<p> <i>3.</i>, AE2 VF-11 </p>	<p> AMD Para-loft. Multiple extreme injuries. </p>	<p> Seen standing in his cube, Compartment 03-226-0-L, after the first bomb explosion. Next seen in AMD Para-loft, where he was apparently trapped. (262), (263), (362). </p>
<p> <i>4.</i> 9 AN, V-1 </p>	<p> Flight Deck. Second and third degree burns 80% of body. </p>	<p> Fighting fire by Salt Water Station #15 when fires forced him down the external ladder near the B & A crane. While going down the ladder he caught fire and threw him overboard to extinguish the flames. Was recovered from water by ORISKANY, transferred to REPOSE where he died. (264), (265), (362). </p>
<p> <i>5.</i> A03 VF-11 </p>	<p> Flight Deck. Multiple extreme injuries. </p>	<p> Last seen near aft fuel station just after fire started. (266), (267), (362) </p>
<p> <i>6.</i> W01, -1 Div. </p>	<p> Flight Deck. Multiple extreme injuries. </p>	<p> went down the external ladder near the B & A crane with When caught fire he threw him overboard to put out the flames, then followed him into the water. saw in the water but did not see him recovered by helo. remains were recovered but it is not known how he was picked up out of the water. (264), (268), (362). </p>
<p> <i>7.</i>, ADJAN, F-74 </p>	<p> 03-236-0-L Multiple extreme injuries caused by fire and explosion. </p>	<p> Presumed trapped in compartment. (217), (362). </p>

All redactions are B-6.

<u>NAME</u>	<u>LOCATION/CAUSE OF DEATH</u>	<u>REMARKS/DOCUMENTED BY ENCL NR</u>
ATR3, VF-11	03-226-0-L Multiple extreme injuries.	Presumed trapped in compart- ment. (216), (362).
12 AN, 1	Flight Deck. Multiple extreme injuries.	Ran aft when fire broke out to aid firefighting effort. Survived 1st explosion, but was last seen in vicinity of elevator 3 and 4 prior to second explosion. (269), (362).
VF-74	03-236-0-L Multiple extreme injuries.	Presumed trapped in compart- ment. (270), (362).
AN VF-74	03-236-0-L Third degree burns entire body.	Presumed trapped in compart- ment. (217), (362).
AN, (NMN) III	03-226-0-L -11 Third degree burns 70% body.	Presumed trapped in compart- ment. (271), (362).
AME3 VF-11	03-226-0-L Multiple extreme injuries caused by fire and explosion.	Presumed trapped in compart- ment. (216), (362).
SN, VF-11	03-226-0-L Third degree, burns entire body.	Presumed trapped in compart- ment. (216), (362).
13	Flight Deck. Multiple extreme injuries.	Firefighting on the Flight deck near fog foam station #12. Killed by first explosion and thrown aft of number 3 J.B.D. on Port side. (272), (362).
EM2 E,	2-244-2 Multiple extreme injuries.	Appeared to be heading to port steering space when caught by bomb explosion. (273), (362).
AN, VF-11	03-226-0-L Multiple extreme injuries.	Presumed trapped in compart- ment. (274), (362).
AQF3 VF-11	03-226-0-L Multiple extreme injuries.	Presumed trapped in compart- ment. (216), (362).
VFAN, VF-11	03-231-1 Third degree burns entire body, traumatic amputation of extremities.	Presumed trapped in compart- ment. (216), (362).
AZ2, VF-11	03-226-0-L Traumatic amputation lower legs, third degree burns 40% body.	Presumed trapped in compart- ment. (275), (362).

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All redactions are B-6.

<u>NAME</u>	<u>LOCATION/CAUSE OF DEATH</u>	<u>REMARK/DOCUMENTED BY ENCL NR</u>
AMH3 VF-11	03-226-0-L Multiple extreme injuries.	Presumed trapped in compartment. (216), (362).
AQF3, VF-74	03-236-0-L Multiple extreme injuries.	Presumed trapped in compartment. (217), (362).
14 V-1	Flight Deck. Cause of death unknown.	Had finished starting an A-4 aircraft and was sitting on tractor prior to first explosion. The first explosion blew tractor across flight deck and was no longer seen. (276), (277), (362).
AMH2 VF-74	03-236-0-L Multiple extreme injuries.	Presumed trapped in compartment. (217), (362).
ADJAN, VF-74.	03-236-0-L Multiple extreme injuries.	Presumed trapped in compartment. (217), (362).
ADJ1, VF-74	03-241-0-L Third degree burns 70% body.	Presumed trapped in compartment. (217), (362).
F-11	03-226-0-L Multiple extreme injuries.	Presumed trapped in compartment. (216), (362).
AMH3, VF-11	03-226-0-L Multiple extreme injuries.	Presumed trapped in compartment. (216), (362).
AN, VA-106	03-236-1-L Shrapnel wounds, third degree burns entire body.	Presumed trapped in VA-106 Ordnance Berthing Compartment (218), (362).
15 F-74	AQFAN, Flight Deck. Multiple extreme injuries.	Last seen on elevator #4 at 1048 29 July 1967. (278), (362).
JEAN, VF-74	03-236-0-L Multiple extreme injuries.	Presumed trapped in compartment. (217), (362).
5 VF-11	FR3, Multiple extreme injuries.	Presumed trapped in AMD Para-loft. (279), (362).
16 VF-11	AE3 Flight Deck. Cause of death unknown.	Vicinity of A/C 112 and A/C 110 just prior to fire. (280) to (285), (362).

All redactions are B-6
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<u>NAME</u>	<u>LOCATION/CAUSE OF DEATH</u>	<u>REMARKS/DOCUMENTED BY ENCL NR</u>
1 AE3,	03-226-0-L Third degree burns entire body.	Presumed trapped in compart- ment. (216), (362).
1 AN, F-74	03-236-0-L Third degree burns lower body, traumatic amputation upper 1/3 body.	Presumed trapped in compart- ment. (217), (362).
AA, F-11	AMD Para-loft. Multiple extreme injuries.	Presumed trapped in AMD Para-loft. (286), (287), (362).
FN, Div.	3-237-2-E Multiple extreme injuries.	Standing watch in port steering. (288), (362).
17 VA-46	Flight-Deck Multiple extreme injuries.	Last seen near A/C 405 approximately 5 minutes before the fire. (289), (290), (362).
AN, VF-74	03-236-0-L Multiple extreme injuries.	Presumed trapped in compart- ment. (217), (362).
18 AMHC, VA-46	Flight Deck. Cause of death unknown	Last seen in vicinity of A/C 410 approximately 5 minutes before the fire. (290), (291), (362).
AMH3, VF-11	03-226-0-L Third degree burns 80% of body.	Presumed trapped in compart- ment. (216), (362).
102, A-106	03-236-1-L Multiple extreme injuries.	Presumed trapped in VA-106 Ordnance berthing compartment. (218), (362).
PRAN, VA-46	03-177-0-L Multiple extreme injuries.	Seen leaving compartment 03-177-0-L about 5 minutes before fire. (289), (362).
AMH2 F-11	03-241-0-L Cause of death unknown.	Presumed trapped in compart- ment. (292), (362).
AN VF-74	03-236-0-L Third degree burns 70%-80% of body.	Presumed trapped in compart- ment. (293), (362).
AE3 VF-74	03-226-0-L Third degree burns 70%-80% of body.	Presumed trapped in compart- ment. (216), (362).

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All reductions are B-6

<u>NAME</u>	<u>LOCATION/CAUSE OF DEATH</u>	<u>REMARKS/DOCUMENTED BY ENCL NR</u>
, ATN3, VF-11	03-226-0-L Cause of death unknown.	Presumed trapped in compart- ment. (216), (362).
, ABH3, VF-74	03-236-0-L Third degree burns entire body.	Last seen running through compartments waking men. (294), (362).
, AOAN, VA-106	03-236-0-L Multiple extreme injuries.	Presumed trapped in VA-106 Ordnance berthing compartment (218), (362).
, AMS3, VF-11	03-226-0-L Multiple extreme injuries.	Presumed trapped in compart- ment. (216), (362).
AME2, VF-11	AME Shop, 1-217-4 Death by drowning is presumed.	First seen in AME Shop, then made way to port quarter where he went overboard with a one-man raft. (220) to (225), (362).
AN, VF-11	03-226-0-L Multiple extreme injuries.	Presumed trapped in compart- ment. (216), (362).
VF-11	03-226-0-L Third degree burns 70%-80% body.	Presumed trapped in compart- ment. (216), (362).
, AO2, VA-65	ORN Shop 03-236-2. Third degree burns entire body.	When fire broke out he was in ORN Shop (03-236-2). Last seen running forward about midships. (242), (362).
06, AMH3, VF-11	03-226-0-L Cause of death unknown.	Presumed trapped in compart- ment. (216), (362).
19 ABH3, -1 Div.	Flight Deck. Multiple extreme injuries.	Last seen going into area of 1st fire, just prior to 1st explosion. (299), (362).
AOAN, F-11	03-226-0-L Multiple extreme injuries, third degree burns 90% body.	Presumed trapped in compart- ment. (216), (362).
SN,	03-236-0-L Multiple extreme injuries.	Presumed trapped in compart- ment. (217), (362).
AMS2, VF-74	03-236-0-L Cause of death unknown.	Presumed trapped in compart- ment. (217), (362).

All redactions are B6.

All rotations are to 6-6

REMARKS/DOCUMENTED BY ENCL NR	LOCATION/CAUSE OF DEATH	NAME
Presumed trapped in compartment. (217), (362).	03-241-0-L Third degree burns 70% of body.	01 -74 SN, Div. Cause of death unknown.
Assigned to clean landing Force Locker (4-244-0-A) the morning of the fire. (256), (362).	4-244-0-A Cause of death unknown.	Div. SN, 4-244-0-A
Presumed trapped in compartment. (295), (362).	03-236-0-L Multiple extreme injuries shrapnel wounds.	A03, TF-74. CDR, VA-46
Last seen in aircraft. Apparently he was unable to free himself before flames covered his aircraft. (296), (297), (298), (362).	Flight Deck. Cause of death unknown.	AN, 1 Div. Multiple extreme injuries.
Hot suit man. Last seen going into the area of 1st fire. Was fighting fire just prior to 1st explosion. (299), (362).	Flight Deck. Second and third degree burns 80% of body.	VA-106 ADJ2
Severely burned by initial fuel explosion. Transferred to ORISKANY, then to RHROSE where he died. (300), (362).	03-236-0-L Multiple extreme injuries, third degree burns 70%-80% body.	AA, -74
Ran aft when fire broke out apparently to direct aircraft out of area of fire. Believed killed by the 1st explosion. (301), (302), (362).	Flight Deck. Multiple extreme injuries.	ABHAN, 1-1 Div. Multiple extreme injuries.
Was seen near elevator #3 helping an injured man toward the island just prior to 2nd explosion. (303), (362).	Flight Deck. Multiple extreme injuries.	ABH2 V-1 Div. Multiple extreme injuries.
Presumed trapped in compartment. (304), (362).	03-226-0-L Multiple extreme injuries.	'AN, TF-11
Presumed trapped in compartment. (305), (362).	03-236-0-L Multiple extreme injuries.	YN3, TF-74

REMARKS/DOCUMENTED BY ENCL. NR

LOCATION/CAUSE OF DEATH

NAME

AMH1	VF-74	03-241-0-L Multiple extreme injuries, third degree burns 70%-80% body.	Presumed trapped in compart- ment. (217), (362).
	AR3,	03-231-0-L Multiple extreme injuries.	Presumed trapped in compart- ment. (216), (362).
	AN	Starboard passageway about frame 200. Multiple extreme injuries.	Last seen departing compartment 03-207-1-L. (306), (362).
	AN	03-236-1-L Multiple extreme injuries.	Presumed trapped in VA-106 Ordnance berthing compartmen (218), (362).
	ATMAN,	In the area of 03-231-3-L Multiple extreme injuries.	Last seen departing the compartment after the initial explosion. (307), (362).
	AN,	Flight Deck. Cause of death unknown.	Last seen in immediate vicinity of initial fire. (308), (362).
25	VA-46	03-236-0-L Multiple extreme injuries.	Presumed trapped in compart- ment. (217), (362).
	AME3,	Flight Deck. Multiple extreme injuries.	Last seen holding fire hose aft of island prior to 1st explosion.
	AOP3,	03-226-0-L Multiple extreme injuries.	Presumed trapped in compart- ment. (216), (362).
	F-11	Multiple extreme injuries.	Presumed trapped in AMD Para-loft (310), (362).
	ADJ3,	AMD Para-loft. Multiple extreme injuries.	Presumed trapped in AMD Para-loft (310), (362).
	VA,	03-236-0-L Third degree burns entire body, multiple extreme injuries.	Presumed trapped in compart ment. (311), (362).
27	LCDR,	Flight Deck. Multiple extreme injuries.	Believed to have exited his aircraft but caught in 1st explosion. (312), (313), (314), (362).
	AMHAN,	03-236-0-L Multiple extreme injuries.	Presumed trapped in compart ment. (217), (362).
	AN,	Flight Deck. Second and third degree burns 80% body.	Was near aircraft 416 when fire broke out. Received severe burn and was trans- ferred to USS REFUSE where he died.

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All locations are B-6.

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FINDINGS OF FACT

SECTION IX

DAMAGE AND LOSS RESULTING FROM THE FIRE

361. That the damage to FORRESTAL from fire, explosions, smoke and water as a result of the fire on 29 July 1967 is related in detail in enclosures

(187) through (215a)

362. In general, the damage to the ship included:

- a. Major damage to 01, 02, 03 levels and flight deck, aft of frame 212, including major structural members, bulkheads, decks, armored flight deck, and damage to hull of ship abaft hangar bay 3.

- b. All gun mounts and fire control equipment damaged beyond repair.

- c. Bomb elevators 19, 20, and 21 rendered inoperative.

- d. All electrical cables burned on the B and A cranes.

- e. All piping systems severely damaged above main deck from frame

212 aft.

- f. Damage and destruction of ventilation heating and air conditioning

system main deck, 2nd and 3rd decks from frame 212 aft.

- g. All electrical equipment and wiring burned completely or damaged

by water, main deck, 2nd deck and 3rd deck from frame 212 aft.

- h. Arresting gear machinery; N2 plant; Number 3 oxygen plant; and

port emergency steering unit damaged.

- i. AN/SPN 42 rendered inoperative; ISO console destroyed; 22 cables

in main mast affecting Tacan, SPN 43, 1 FR, SPN 9, two ARC 27s and ECM

severed by shrapnel; and SPN 43 and SPS 30 antenna reflectors damaged

by shrapnel.

- j. Nine berthing compartments aft completely destroyed.

- k. Jet engine repair and stowage facility destroyed.

- l. Aft moving stairway rendered inoperative due to salt water

damage to electrical equipment.

363. That the cost of voyage repairs accomplished in FORRESTAL at Subic Bay, R. P. after the fire on 29 July 1967 was \$4,500,000

364. That the preliminary estimate by Naval Ship Systems Command for repairing the structural damage to FORRESTAL resulting from the fire and explosions is \$16,000,000.

365. That the following aircraft were destroyed as a result of the fire on 29 July 1967:

TYPE	NUMBER	COST EACH	TOTAL COST
F-4B	7	2,749,000	19,243,000
A-4E	11	781,000	8,591,000
RA-5C	3	5,563,000	16,689,000
TOTAL	21		\$44,523,000

366. That a total of 40 other aircraft were damaged during the fire on 29 July 1967. Some repairs have already been accomplished by WESTPAC activities (see enclosure (194)), but the total cost of repairs to aircraft is unknown as of 15 September 1967.

367. That the estimated value of ordnance destroyed or jettisoned during the fire on 29 July 1967 is \$1,950,000.

368. That the estimated value of supplies and equipment jettisoned, or damaged beyond repair during the fire on 29 July 1967 is \$3,150,000.

369. That the estimated cost of repair of equipment damaged during the fire on 29 July 1967 is \$225,000.

370. That the replacement cost for the Dual Purpose Battery and associated fire control equipment is \$6,210,000.