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(EXH DDDD, LLLL)..
personnel in USS J.F. KENNEDY (EXH SSS). Fireman
was on active duty and was Messenger of the
Watch in the After Engine room at the time of the
collision (R 213).

SS. DK1 , USN, *B6*
Suffered smoke inhalation. Permanent disability not
expected. Treated and released fit for duty prior to
1 December 1975 at Naval Regional Medical Center
Branch Dispensary, Sigonella. On active duty, USS
BELKNAP, at time of injury (EXH FFFF).

TT. CWO3 , USN, *B6*
B6 Permanent disability not ex-
pected. Treated and released fit for duty prior to
1 December 1975 at Naval Regional Medical Center
Branch Dispensary, Sigonella. On active duty, USS
BELKNAP, at time of injury (EXH FFFF).
B6 by medical personnel in USS J.F. KENNEDY
(EXH SSS).

UU. MMFN , USN, *B6*
B6
Treated at Brooke Army Medical Center, Ft. Sam Houston,
Texas, after transfer from U.S. Army General Hospital,
Landstuhl, Germany. Initially diagnosed at Naval
Regional Medical Center, Naples. On active duty,
USS BELKNAP, at time of injury (EXH DDDD, LLLL).
B6 by medical personnel of USS J.F.
KENNEDY (EXH SSS).

VV. SA , USN, *B6*
B6 Permanent disability not expected.
Treated and released fit for duty prior to 1 December
1975 at Naval Regional Medical Center, Branch Dis-
pensary, Sigonella. On active duty, USS BELKNAP,
at time of injury (EXH FFFF).

TRAINING

USS J.F. KENNEDY

141. That the training and qualification process
for bridge watches in J.F. KENNEDY requires an orderly
progression through the various enlisted or officer
watch stations while achieving qualification before
proceeding on to the next station (Various). There
are sufficient qualification milestones to recognize
progress or failure (R 685). The Commanding Officer
did impart guidelines to Junior Officers regarding the
conduct of carrier operating procedures when maneuvering
with ships in company (R 686).

142. That the training for helmsman consists of 20
hours at the helm under varying conditions for on-the-
job training, a written test and a practical qualification
test (R 462).

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143. That J.F. KENNEDY Damage Control (DC) drills are numerous and held during General Quarters (GQ) (R 516). There are 64 full time Damage Control Petty Officers (DCPOs) used to train and check divisional DC readiness and the proper setting of material conditions (R 517). At least two fire drills are held each month on the Flight Deck. No notice drills are conducted (R 566). Even with the foregoing, enlisted personnel from embarked squadrons received little damage control training while on board J.F. KENNEDY (R 549, 553).

144. That command support existed in J.F. KENNEDY for making available time to conduct engineering casualty control training (R 510, 511). The training associated with the Propulsion Examining Board (PEB) requirements was a definite asset for actions required after the collision (R 510, 511).

USS BELKNAP

145. The training and qualification process in BELKNAP for OODs was extensive (R 313, 629, EXH JJ). The current procedure uses the Personnel Qualification Standards (PQS) system (R 442). The Commanding Officer counseled his OODs always to turn away from the carrier (R 653).

146. The enlisted bridge watch standers were qualified through on-the-job training (OJT). The program was aggressive including under instruction periods but ^{the} helmsman, while considered qualified, had difficulty remembering the meaning of some commands (R 40, 41, 44, 45). Lookout training consisted of OJT only without formal training (R 298, 299). ^{the} bridge talker, possessed marginal qualification as a talker (R 354, 355).

147. That the Commanding Officer, BELKNAP, stated that he felt that his ship needed more time at sea to maintain the overall readiness (R 644).

148. The DC training in BELKNAP was constant (R 205, 206, 207, 208). The Executive Officer was a driving force (R 440, 441). Prior to deployment, over 100 personnel were sent to firefighting school. The DC training prior to the collision had as a goal a successful Operational Readiness Exercise (ORE) in December 1975 (R 641). Damage Control PQS is a requirement for advancement in BELKNAP and realistic training had been conducted 12-13 November (R 205, 206, 207, 251, 641).

149. That engineering casualty control training in BELKNAP was aggressive. GQ drills were used as were casualty control drills that were scheduled by the month. Engineering personnel were confident (R 238, 239). The above training was impacted adversely by Engineering crew PCS rotation (R 246, 257, 258).

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DAMAGE CONTROL PROBLEMS

EQUIPMENT

150. That the BELKNAP forward Emergency turbine generator starter proved unreliable. Although the turbine was tested satisfactorily the day before the collision, it did not start in automatic at the time of collision (R 196, 236). The Chief Engineer, BELKNAP, endorses a diesel vice a turbine forward for a more reliable source of emergency power and commonality of parts support. Diesels have the inherent advantage of reliability through ease of maintenance (R 196).

151. That BELKNAP's three P-250's above the main deck were destroyed by fire in the superstructure (R 209). SAR units transferred seven P-250's to BELKNAP, however these P-250's proved unreliable and difficult to start (R 129, 209, 412). The total operating time that BELKNAP was able to obtain from seven borrowed P-250 pumps was about one hour (R 202, 209).

152. That inadequate medical stores forward on BELKNAP precluded early availability of drugs for injured collected on BELKNAP's forecastle (R 111). In addition RICKETTS' HMC attending the injured on BELKNAP's forecastle found no oxygen available (R 146). Aft on BELKNAP, the Hospital Corpsman found that one oxygen flow-meter on a bottle of oxygen proved insufficient (R 272).

153. That BELKNAP experienced difficulties controlling Stokes stretchers equipped with only one line on either end when they were passed between ships (R 110).

154. That during the course of fighting fires on both BELKNAP and J.F. KENNEDY, OBA cannisters were found to be unreliable or were found not to provide life-support for the expected period (R 207, 531). The excess rate of cannister use on BELKNAP deprived SAR units of adequate OBA cannisters for their own emergency use (R 110). J.F. KENNEDY personnel found many OBA cannisters lasting only 5-10 minutes (R 531, 537).

155. That DC wet-cell floodlights with white lenses proved to be ineffective to penetrate dense smoke (R 498, 528).

156. That protective asbestos mittens provided damage control personnel were bulky and cumbersome to use and proved unsatisfactory for use when soaked with water (R 499).

157. That the present DC WWII hard helmet and portable DC head-light are unsatisfactory. The helmet was found usually to be bulky, heavy, and a poor fit; the head-light became detached from the helmet and the belt carried battery pack (R 498, 499, 528).

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158. That "red devil" blower capacity proved inadequate to desmoke internal spaces of J.F. KENNEDY in a reasonable length of time (R 498, 528).

159. That due to insufficient allowance of portable life-support, self-breathing devices on J.F. KENNEDY, these equipments were available only in living spaces and not in offices or working areas (R 499).

160. That on J.F. KENNEDY initial communication between DC Central and on-scene leaders was incomplete and slow. Principal method of communications was the dial telephone, subject to all other ship dial-phone vagaries (R 498).

COMBUSTIBLE MATERIAL

161. That combustible packing material in supply storerooms, located in the J.F. KENNEDY flight deck overhang spaces, was the principal contributing factor to fires and subsequent reflash fires (R 497, 527). Burning packing material presented additional hazards to firefighting personnel (R 527, 528).

162. That in BELKNAP, the additional personal living accoutrements on board did not adversely affect or hamper firefighting (R 445, 446).

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169. That the formation axis was not rotated prior to, or after, the CORPEN J signal (EXH 00).

170. That the challenging of tactical signals on the basis of correctness or safety had been done previously in TG 60.1 (R 420).

INTERNATIONAL RULES OF THE ROAD

171. That International Rules of the Road, Rule 19, Rule 22, Rule 29, Steering and Sailing Rules, and Annex to the Rules, Paragraphs 5 through 8, apply in the maneuvering situation existing prior to the collision of J.F. KENNEDY and BELKNAP.

172. That whistle signals were not sounded by either J.F. KENNEDY or BELKNAP (R 293, 618).

173. That no other shipping had a bearing on the collision (R 97).

PRINCIPAL RULES FOR MANEUVERING (ATP 1(B), VOL I)

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U. S. NAVY REGULATIONS, 1973

179. That the senior officer present is responsible for the safety of the units in company and at sea and shall direct the course to be steered and disposition to be employed [Art 0918(3)].

180. That the responsibility of the Commanding Officer for his command is absolute. The authority of the Commanding Officer is commensurate with his responsibility. While he may, at his discretion, and when not contrary to law or regulations, delegate authority to his subordinates for the execution of details, such delegation of authority shall in no way relieve the Commanding Officer of his continued responsibility for the safety, well-being and efficiency of his entire command [Art 0702(1)].

181. That all persons in the naval service responsible for the operation of naval ships, craft and aircraft shall diligently observe the International Rules for Preventing Collisions [Art 1120(1)].

STANDARD ORGANIZATION AND REGULATIONS OF THE U.S. NAVY
(OPNAVINST 3120.32)

182. That the duties, responsibilities and authority of the Officer of the Deck Underway, are as follows:

(1) Keep himself continually informed concerning the tactical situation and geographic factors which may affect the safe navigation of the ship, and take appropriate action to avoid the danger of grounding or collision in accordance with tactical doctrine, the Rules of the Road, and the orders of the Commanding Officer or other proper authority.

(2) Keep himself informed concerning current operation plans and orders, intentions of the OTC and the Commanding Officer, and such other matters as may pertain to ship or force operations.

(3) Issue necessary orders to the helm and main engine control to avoid danger, to take or keep an assigned station, or to change the course and speed of the ship in accordance with orders of proper authority.

(4) Make all required reports to the Commanding Officer (Art 433).

183. That the duties, responsibilities, and authority of JOOD are to assist the Officer of the Deck in the performance of his duties as the Officer of the Deck may direct (Art 435).

184. That CIC Watch Officer's duties include keeping the Officer of the Deck advised of recommended procedures for maintaining station, avoiding navigational hazards and collisions, and speed or course changes necessary to change or regain station in formation (Art 436).

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STANDING AND NIGHT ORDERS - USS J.F. KENNEDY

185. That Standing Orders for Underway Watches, J.F. KENNEDY, requires the Officer of the Deck to act as the Commanding Officer's representative when he is OTC. In addition, the Commanding Officer requires OODs to inform him when movements of units in the formation are not understood. Normally, the course and speed of KENNEDY cannot be changed without the Commanding Officer's knowledge and consent (EXH GGG).

186. That J.F. KENNEDY Standing Orders state that when in formation and no urgency exists, OODs should avoid crossing ahead of, turning toward, or otherwise embarrassing another ship by setting up a situation where a steering engine casualty or error in judgment in either ship might lead to a collision (EXH GGG).

187. That J.F. KENNEDY Standing Orders specifically state that continuous and accurate exchange of information between the bridge and CIC is essential to both the operation and safety of the ship (EXH GGG).

188. That J.F. KENNEDY Standing Orders state the OOD will alert ships in the force as necessary if danger of collision exists (EXH GGG).

189. That Commanding Officer, J.F. KENNEDY, emphasized that OODs maintain a close watch of other units and own ships during maneuvers to ensure respective units are kept out of trouble (R 686). Junior Officers have been told never to take their eyes off a contact, not to rely on radar, that they should utilize visual bearings for accurate bearing drift. The Commanding Officer, J. F. KENNEDY, had not briefed OODs on special rules when working with small surface units (R 686).

STANDING AND NIGHT ORDERS - USS BELKNAP

190. That BELKNAP's Standing Orders for Officer of the Deck and CIC Watch Officer provide: (a) The Commanding Officer must be notified of all major speed and course changes; (b) Avoid crossing ahead of privileged vessels; (c) Call the Commanding Officer when in doubt of the tactical situation and call the Commanding Officer any time in doubt and not wait until extremis (EXH VVV).

191. That Commanding Officer, BELKNAP, cannot recall being called by the OOD or JOOD prior to collision, notifying him of the CORPEN J PORT signal (R 634, 640).

192. That the OOD, ⁰⁰ had called the Commanding Officer of BELKNAP, on two previous CORPEN J STBD maneuvers during the watch and indicated he would "follow the carrier around" (R 640).

193. That the Commanding Officer, BELKNAP, stated that LTJG KNULL told him after the collision that he had notified the Captain of the CORPEN J PORT signal and told him that he would follow the carrier around (R 639)

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194. That Commanding Officer, BELKNAP, on a previous occasion had instructed LT *By* while OOD, that when the carrier made a CORPEN movement and BELKNAP was on the inside, he was to proceed toward the carrier's wake, regain the wake, then follow the carrier around to station. (R 317).

195. That prior to the collision, Commanding Officer, BELKNAP, had given instructions to his OODs never to turn into a carrier, and give a carrier plenty of room. (R 653).

196. That Commanding Officer, BELKNAP, expected CIC to function as an information center supporting the OOD with ranges, bearings, courses, speeds, CPAs, and maneuvering board solutions (R 645, EXH VVV).

USS J.F. KENNEDY'S LIGHTS

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199. Other surface units are.

- a. Red deck edge lights (17) (visible 360 degrees)
(5 additional red lights are shielded)
- b. Red vertical bar ramp drop-line light system (1) (visible aft only)
- c. Red, amber, green rotary beacon signal (1)
(visible port side, aft-forward)
- d. White overhead floodlights (27) (visible port side, aft-forward)
- e. Red overhead floodlights (40) (visible port-side, aft-forward)

(Visual Landing Aids General Service Bulletin No. 8, Revision E)

200. That red deck edge lights are shielded only on the port side aft of the LSO platform, to shade red lights from the LSO. (VLA General Service Bulletin, No. 8, Rev E)

201. That white and red floodlights, although hooded, are focused by the Air Officer to light the entire flight deck. The location of white and red floods at the 09, 010, 011 levels and 60 feet above the flight deck, respectively, extends their visibility range beyond the carrier. (VLA General Service Bulletin No. 8, Rev E)

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202. That when the hangar bay external doors are open, hangar bay lights are visible to surface units (obvious).

CTF 60 STAFF

203. That CTF 60/Commander Carrier Group Two Staff was embarked in J.F. KENNEDY when the collision occurred (R 587).

204. That CTF 60 does not normally act as OTC of Task Group formations and was not OTC at the time of collision (R 588). The CTF 60 Staff does not have the personnel numbers nor depth of training to assume the burden of tactical watches (R 588).

205. That CTF 60 exercises command and control of the Flagship and other TG 60.1 units by means of publications, directives, messages and personal staff contacts (R 587).

206. That as Flagship, J.F. KENNEDY generally develops and initiates her own training program with concurrence of the CTF 60 Staff (R 588).

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Opinions

CAUSE OF COLLISION

1. That the readiness conditions that existed on J.F. KENNEDY prior to collision were normal. There were no restrictions that would have impacted on a normal night of flight operations. No major command and control, navigation, or propulsion equipment was inoperative. Operational PIM was sufficiently close to NAF SIGONELLA, Sicily, to permit emergency divert of J.F. KENNEDY aircraft if circumstances were to require such action.
2. That Commanding Officer, J.F. KENNEDY, was sufficiently rested and alert to fully fulfill the responsibilities of command and safe operation of his ship at the time prior to the collision.
3. That sufficient officers and enlisted personnel were available on the J.F. KENNEDY bridge watch to ensure the safe operation of J.F. KENNEDY in task group evolutions. The Officer of the Deck and Junior Officer of the Deck were qualified. JOOW (COMM) and JOOW (Radar) Officers supporting the Officer of the Deck were qualified to execute their respective responsibilities. The watch officer in COTP was experienced for his assigned duties. The JOOD had been briefed erroneously as to the purpose of BELKNAP's assignment; however, this fact is not considered as influencing the events of the evening. The helmsman was qualified and the lee helmsman, although qualified, was relatively inexperienced due to his length of time on board.
4. That the quality of primary tactical radio communications between BELKNAP and J.F. KENNEDY was satisfactory.
5. That there were no restrictive conditions that precluded BELKNAP from conducting normal peacetime operations with TASK GROUP 60.1 and in support of CTU 60.1.9 (J.F. KENNEDY), the unit to which she was assigned.
6. That despite a shortage of qualified petty officer personnel, sufficient numbers of watch personnel were assigned to BELKNAP's 20-24 underway watch to conduct normal operations. The key operational officers -- the Officer of the Deck and CIC Watch Officer -- were qualified. The Junior Officer of the Deck, ENS HOWE, having been on board less than three months, had been exposed to few actual task group maneuvering situations and could offer little operational support to the Officer of the Deck. As a result, the bridge watch was essentially dependent upon the actions of the Officer of the Deck, LTJG *B6*. BELKNAP's starboard lookout and bridge JL talker at the time of collision were not qualified for the duties assigned, and the BMOW, helmsman, and QMOW were marginally effective.

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7. That BELKNAP Bridge and CIC enlisted watch personnel, with the exception of those noted in paragraph 6 above, were qualified to meet their respective responsibilities.

8. That while not on the bridge until immediately prior to the collision, the Commanding Officer of USS BELKNAP was in good health and sufficiently rested to fully fulfill the responsibilities of command and the safe operation of his ship.

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11. That BELKNAP's CIC to bridge JL sound-powered phones were marginally effective for communications, owing to the failure of the bridge JL talker, SA LIPPERT, to pass information. This resulted in at least one vital CIC recommendation, to "Come right full rudder" at 2151A, not being received by the OOD or JOOD.

12. That failure of BELKNAP's CIC to communicate ranges and bearings to the CO, OOD, and JOOD while the range closed from 4000 yards to eventually 0 deprived those officers of a source of vital information.

13. That weather was not a factor that contributed to the collision.

14. That the lack of useful DRT traces of BELKNAP and J.F. KENNEDY tracks and the incompleteness of data in general from the units of CTU 60.1.5 can be attributed to their completion about 2130A of a screen maneuvering drill, followed by an inter-ship critique, prior to return to normal steaming conditions.

15. That OODs in both BELKNAP and J.F. KENNEDY understood the relationship of the units prior to the OTC's execution of the delayed executive signal CORPEN J PORT 025-12.

16. That Figure 1 represents the Investigating Officer's calculation of respective J.F. KENNEDY and BELKNAP tracks from 2130 to the time of collision, which occurred at approximately 2201A. The brief narrative which follows

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furnishes a verbal interpretation of Figure 1. The facts and opinions relating to the exact time and events are to be found previous to and subsequent to this narrative and figure.

a. BELKNAP was on station generally maintaining a course of 200 degrees prior to the delayed executive signal CORPEN J PORT 025-12. The signal was given in NUCO and was "broken" properly by BELKNAP bridge and CIC personnel. At the execution of the signal, J.F. KENNEDY came left toward the ordered new course 025 degrees and increased shaft turns for speed 12 KTS. BELKNAP slowed to turns for 5 KTS and placed her rudder left 5 degrees in an initial repositioning effort. This rudder angle was slowly effective and the ship's head came left to 183 degrees where BELKNAP OOD felt that "this was taking too long." BELKNAP steadied on 185 degrees and the OOD evidenced his first doubt as to the target angle of J.F. KENNEDY. BELKNAP CIC recommended Right Full Rudder over the JL sound-powered phone circuit at this time, after realizing that the CPA would be close. The bridge JL talker was not effective in conveying these recommendations.

b. The OOD of BELKNAP was becoming less and less sure of J.F. KENNEDY's target angle. The Commanding Officer was summoned to the Bridge at 2156A after the OOD had increased speed from one-third to standard and then full at 2154 and 2155A. Upon his arrival on the Bridge at about 2157A, the first transmission that Commanding Officer, BELKNAP, heard was J.F. KENNEDY's "Interrogative your intentions." During the two minutes prior to his arrival on the bridge, Right Full Rudder had been ordered and, as the ship's speed increased, the ship's head swung right to steady on 220 degrees. At a point between 2156A and 2157A, immediately prior to the Commanding Officer's arrival, LTJG *Be* ordered Left Full Rudder and BELKNAP's head rapidly swung left, showing a starboard aspect to J.F. KENNEDY and prompting the "Interrogative your intentions."

c. Commanding Officer, J.F. KENNEDY, having seen BELKNAP's head swing starboard and then port, and upon receipt of a reply to the Interrogative indicating that BELKNAP was coming left, ordered BELKNAP to come right full rudder at 2158A.

d. Immediately following his direction to BELKNAP, Commanding Officer, J.F. KENNEDY, ordered his own rudder Right Full and engines Emergency Back Full at 2159A.

e. At about 2158A BELKNAP's rudder came momentarily from left full to right full before being put back to left full. This right rudder checked the swing to port, but did not bring BELKNAP's heading sufficiently to the right to be noted as a turn to starboard by J.F. KENNEDY bridge personnel. The rapid left, right, left rudder shift, however, did result in decreasing range/steady bearing at a time when a constant left full rudder would have opened the range.

f. The Commanding Officer, BELKNAP, recognizing at 2159A the target angle of J.F. KENNEDY and that his ship was in extremis, but not being fully aware of all the facts, countermanded *by* final Left Full Rudder, All Ahead Flank, orders with Right Full Rudder, All Back Full. The changing helm orders and the speed of BELKNAP yielded constant bearings until it was too late to miss a collision.

g. There is a possibility that had the rudders of BELKNAP and J.F. KENNEDY been Hard Right as opposed to Full, the ships would have missed.

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17. That the signal CORPEN J PORT 025 TACK 12 was in accordance with Article 348 of ATP 1(B) and appropriate for the situation. At the time the signal was originated, the formation consisted of two units in the main body, J.F. KENNEDY and BELKNAP, and five surface combatants in respective screening sectors. Since formation axis was not rotated, no restrictions were placed on the degree of turn other than J.F. KENNEDY was required to turn the shortest way to the new course. The new course of 025 was 175 degrees left from the previous course of 200.

18. That sufficient time was available for BELKNAP to determine a safe maneuver to regain station without interfering with J.F. KENNEDY's movements under the delayed executive method utilized by the OTC. This allowed approximately three minutes between standby to execute and execution of the signal; which was sufficient considering the signaled speed, the separation of the ships, and their respective turn radii.

19. That BELKNAP Officer of the Deck's solution using left five degrees rudder and slowing to five knots was not satisfactory. Unless BELKNAP's course was altered to the right first, this maneuver would have caused BELKNAP slowly to close J.F. KENNEDY and would not permit J.F. KENNEDY to pass safely ahead as the Officer of the Deck planned. Tactical data does not exist for BELKNAP to determine a track using 5 degrees rudder at 5 knots. No maneuvering board solution was developed by either CIC or the bridge watch.

20. That BELKNAP's courses and speeds to accomplish the turn depended solely upon LTJG *Be*'s appraisal of KENNEDY's movements and what he alone determined BELKNAP's courses and speeds should be.

21. That the solution to accomplish the turn offered by the JOOD, while not representing an efficient, smart maneuver, did represent a safe maneuver, provided the turn was executed with sufficient rudder.

22. That BELKNAP's OOD, LTJG *Be*, assumed from his success with incremental changes of course in the direction of the carrier's turn while altering speeds from five to twenty knots in accomplishing the two CORPEN J STBD turns, that he could follow a similar regimen in accomplishing the CORPEN J PORT turn. In so assuming, he ignored BELKNAP's formation displacement of approximately 1380 yards left of J.F. KENNEDY.

23. That subsequent to execution of the CORPEN J PORT signal, BELKNAP's Officer of the Deck attempted to develop a mental picture of the carrier's movements only through visual observations of her navigation and running lights. Flight deck lighting interfered with his attempt to determine the carrier's target angle by lights alone. No radar ranges or accurate visual bearings were taken or recorded by the OOD or other bridge personnel.

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24. That BELKNAP's OOD, *BW* ordered increased speed to 15 knots at 2154A and 20 knots at 2155A with a concurrent change of course to 220 to effect a port to port CPA and to regain station at the earliest possible time.

25. That after steadying up on 220 at 20 knots, at 2156A, BELKNAP's OOD, *BW*, attempting to regain J.F. KENNEDY's visual aspect, erroneously concluded that she had come all the way around past 025, that she had crossed BELKNAP's bow, and that he was seeing her starboard bow aspect. Based upon these erroneous conclusions, *BW* ordered left full rudder to effect a starboard to starboard passage, at the same time calling for the Captain to the bridge.

26. That at 2157A BELKNAP OOD, *BW*, failed to respond to the recommendation of the CIC Watch Officer on the 21MC for right full rudder.

27. That BELKNAP's OOD, *BW*, by increasing speed to 15 knots at 2154A and 20 knots at 2155A, turning port at approximately 2156A, and subsequently shifting rudder about 2158A, created a crossing situation, placing BELKNAP in extremis with J.F. KENNEDY. Although it is possible that his maneuver of left full rudder at 2156A with a speed of 20 knots might have been successful in avoiding collision, the maneuver was based upon erroneous conclusions and incomplete information and was fundamentally contrary to prudent seamanship and the International Rules of the Road.

28. That up until the moment BELKNAP turned left to show a starboard running light, at approximately 2156-2157A, distance 2000 yards, there was no extraordinary need for concern by J.F. KENNEDY's Commanding Officer or OOD to feel that BELKNAP did not intend to pass down the port side and astern of KENNEDY while proceeding to her station.

29. That at approximately 2157A, after BELKNAP had turned left and created a crossing situation, as evidenced by the reappearance of her starboard side light, Commanding Officer, J.F. KENNEDY, properly queried BELKNAP's intentions. BELKNAP's 20-knot speed was unknown to him. The time available for urgent action to reverse what developed into a situation of closing range and constant bearing was also unknown.

30. That the order of Commanding Officer, J.F. KENNEDY, at 2159A, "Right full rudder, all back full," was proper. He had judged his vessel to be in extremis with rapidly closing range, steady bearing, and heard BELKNAP's transmission relating a left turn.

31. That because Commanding Officer, BELKNAP, considered *BW* to be his most qualified and reliable OOD and because he had been informed of the prior CORPEN J maneuvers during *BW* watch together with proposed solutions which he had approved, he could reasonably have expected to be kept fully informed of subsequent course changes and that proposed actions to effect them would have been submitted to him for approval.

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32. That ^{BW} did not notify the Commanding Officer of the CORPEN J PORT maneuver or his plan to regain station. The most persuasive evidence in support of this opinion is the specific and unequivocal recollection by the Commanding Officer and the JOOD, ENS HOWE, of the calls on the previous CORPEN J STBD maneuvers without recollection of any call for the maneuver preceding the collision; the Commanding Officer's honest lack of knowledge, upon arriving on the bridge, of J.F. KENNEDY's course, remembering 200 as the last formation course; and, perhaps most importantly, the complete lack of any affirmative evidence that there had been a call. Except for the Commanding Officer's testimony relating a conversation with ^{BW} after the collision in which ^{BW} stated that he had called, the Commanding Officer's testimony, as a whole, displays his belief that he was not called.

33. That when Commanding Officer, BELKNAP, arrived on the bridge at 2157A, he was given insufficient information by the OOD with which to determine the tactical relationship and was not able to determine for himself an accurate assessment of course and speed upon which to base a course of action until at about 2159A when he judged BELKNAP to be crossing J.F. KENNEDY's bow and in extremis. He then ordered Right Full Rudder, All Engines Back Emergency Full. His actions to take way off his vessel, and come full right rudder were correct for the situation he judged to exist and were in accordance with Rules of the Road, ATP 1(B), Vol I and accepted practices.

34. That prior to making the emergency orders, Commanding Officer BELKNAP did not query CIC for range or other information, did not determine BELKNAP's course and speed, nor query J.F. KENNEDY for her course and speed. Due to his immediate deep concern for the safety of his vessel and his movements about the bridge, he ignored or did not hear BELKNAP CIC's 2157A transmission over 21MC recommending right full rudder or J.F. KENNEDY's 2158A PRITAC transmission ordering BELKNAP to come right full rudder.

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36. That actions of the Commanding Officer following the collision and his leadership exercised in support of his crew's valiant efforts to save BELKNAP were commendatory, as were ^{BW} individual efforts.

THE COLLISION

37. That at the moment BELKNAP collided with J.F. KENNEDY, J.F. KENNEDY's heading was approximately 041 degrees. BELKNAP's heading was 222 or more, and estimated to be about 250 degrees.

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38. That the approximate relative speed was between 9 and 13 knots. J.F. KENNEDY's speed was between 3 and 4 knots, and BELKNAP's speed was between 6 and 9 knots.

39. That Figures II, III, IV, and V represent the Investigating Officer's view as to how the units appeared relative to each during the collision.

Figures II, III, IV, and V follow.

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ALL TIMES ALFA (ZULU +1)
 ALL TIMES CORRECTED TO
 J. F. KENNEDY/BELKNAP DECK LOGS

KEY

\bar{X} - EXECUTE

\bar{X} TF - EXECUTE TO FOLLOW

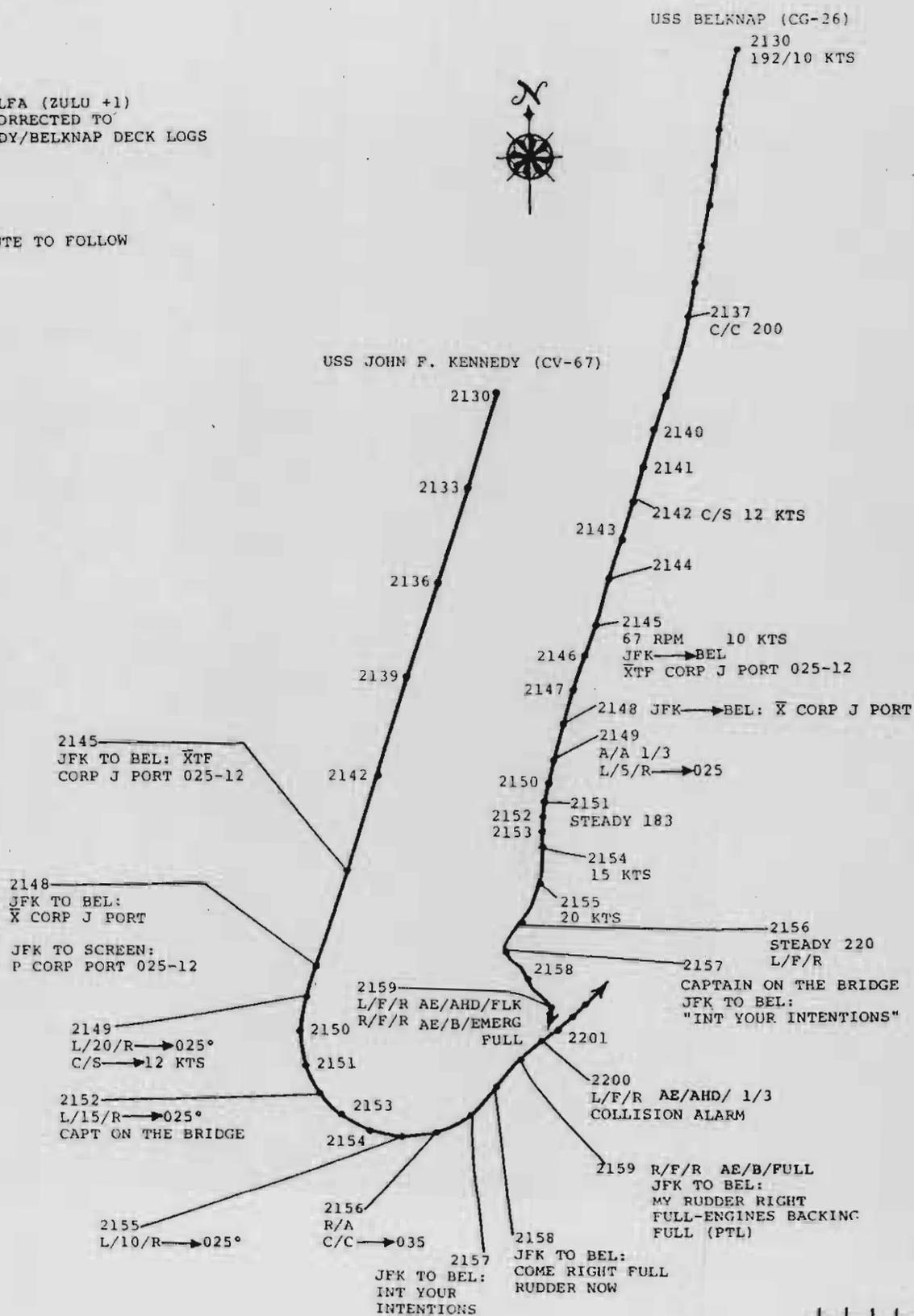
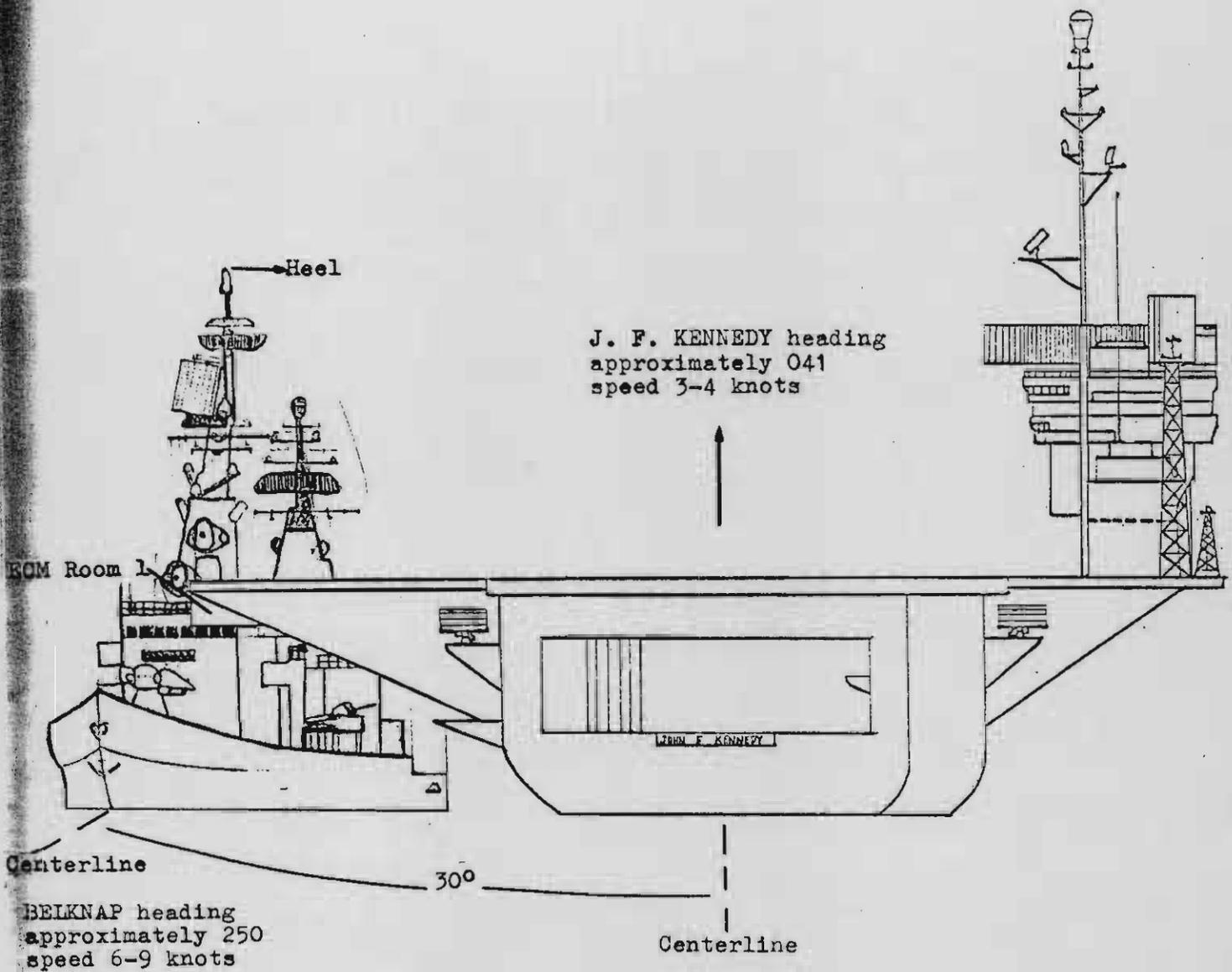


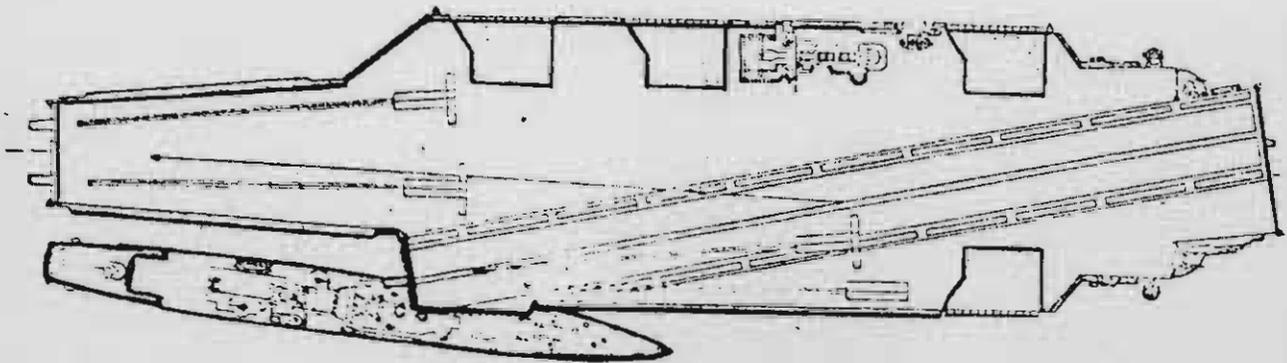
Figure I



J. F. KENNEDY turning right, stern swinging left
 BELKNAP turning right, stern swinging left
 Relative speed 10-12 knots.

Figure II

First flash of fire came from switchbox in BELKNAP CIC as the pilot house and CIC were laid open.



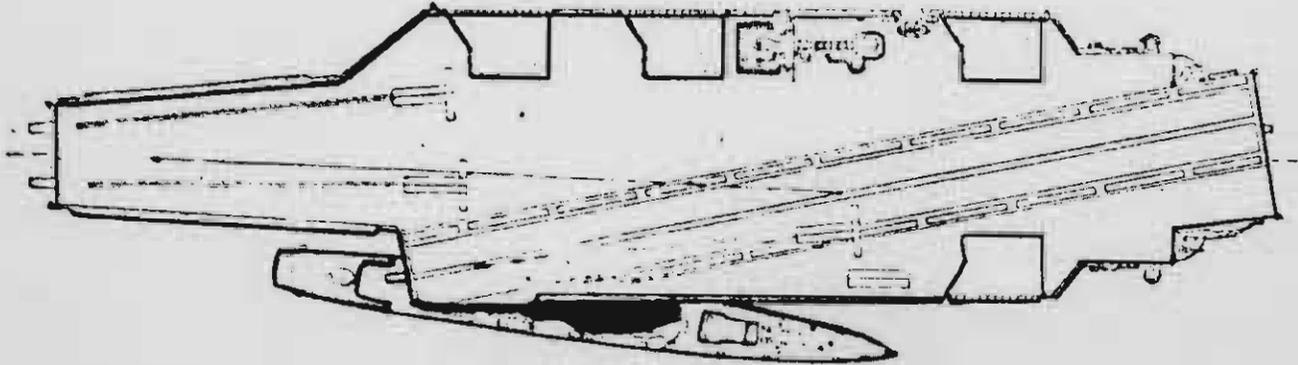
Initial contact occurred at Frame 78 J. F. KENNEDY, Frame 73 BELKNAP, BELKNAP turning hard with angle of incidence of approximately 30° .



View adjusted to reflect approximate position as determined from line of destruction and coincides with normal swing of BELKNAP.

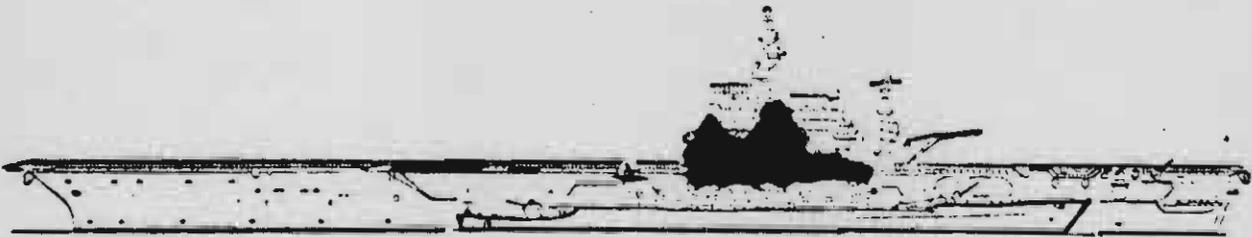
Figure III

As BELKNAP proceeded down J. F. KENNEDY's port side, JP-5 Stations 8 and 12 poured about 1500 gallons of JP-5 onto BELKNAP, which ignited.



Flight deck crewmen of J. F. KENNEDY were pouring light water from an MB-5 onto BELKNAP.

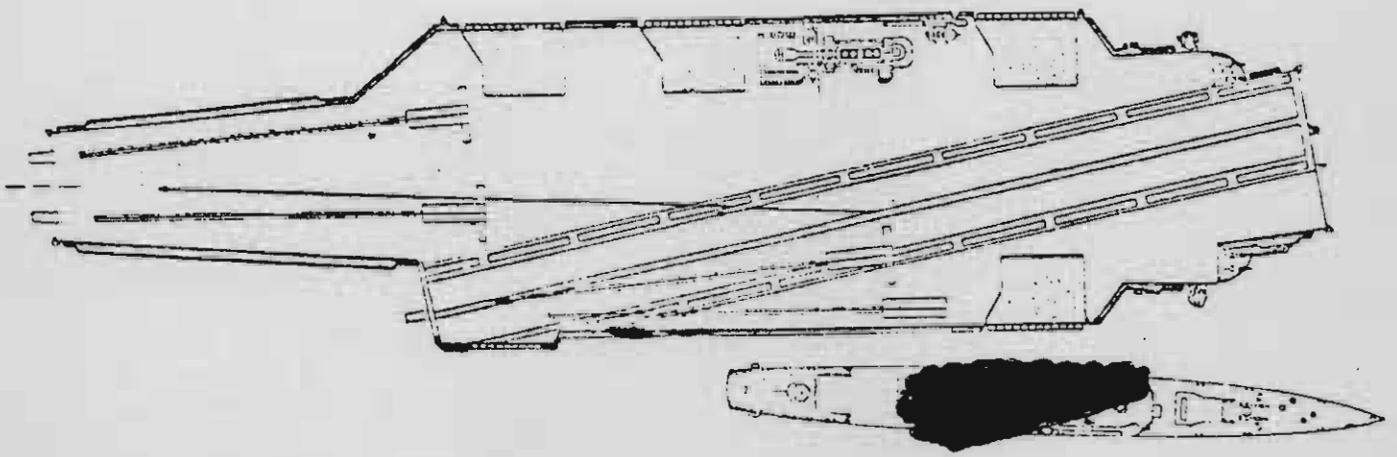
The superstructure of BELKNAP was laid open and JP-5 poured into the uptakes of the forward and after fire rooms.



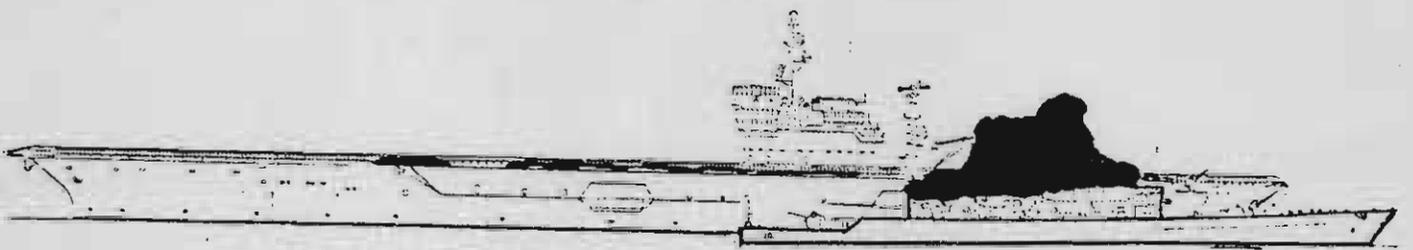
BELKNAP crewmen could look up and see J. F. KENNEDY looming above them.

View reflects the "stopped" position of BELKNAP. The drag of the collision would tend to pull the bow to the left as seen above.

Figure IV



As the ships broke clear
BELKNAP was already fighting fires
J. F. KENNEDY engineering spaces were
inundated with heavy black smoke



BELKNAP had come to all stop.
all engineering spaces were evacuated

Figure V

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APPLICABLE DIRECTIVES

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MANEUVERING

46. That under Rule 19, International Rules of the Road, BELKNAP was obligated not to hamper the Guide who remained in Station ZERO; BELKNAP's safe maneuver was to keep clear of J.F. KENNEDY by turning to starboard and passing J.F. KENNEDY astern.

47. That under Rule 22, International Rules of the Road, general operational tenets for fleet formations rely upon the premise that smaller combatants will stand clear of aircraft carriers. This is implicit in CTF 60 Operation Order 4000. While BELKNAP did not become a burdened vessel until J.F. KENNEDY began her turn,

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Rule 22 does emphasize that any vessel which is burdened is required to take timely action to keep out of the way of the other and avoid crossing ahead of the privileged vessel. Timely action to keep out of way of J.F. KENNEDY was not apparent in any of BELKNAP's maneuvers prior to the collision, with the exceptions of the turn to starboard at 2155A and the final attempt by the Commanding Officer to avoid BELKNAP's crossing ahead of J.F. KENNEDY.

48. That Rule 29, International Rules of the Road, emphasizes the rule of good seamanship and the consequences of neglect. It is the ordinary practice of prudent seamen to determine ranges and bearing to units where risk of collision is deemed to exist. The failure of the Officer of the Deck to use radar to determine range and bearing; his failure to use the information provided by, or to solicit information from, his CIC Watch Officer; his failure to consider maneuvers on the basis of accurate visual bearings; and his failure to solve for a prudent course and speed to regain station by standard maneuvering board procedures were in violation of the tenets of Rule 29.

49. That the information and recommendations provided in the Annex to the Rules of the Road were generally not observed by BELKNAP's OOD; the most critical items that directly contributed as a cause of BELKNAP's collision with J. F. KENNEDY were (1) the failure to alter course substantially to starboard in order to avoid a close CPA; (2) failure to reduce the speed of BELKNAP in order to increase the time available to BELKNAP Watch Officers to determine the correct movements of the Guide and correctly calculate a safe maneuver for his own ship to regain station; and (3) ordering small and numerous course and speed changes which could only serve to confuse as to his intentions.

50. That the fact that whistle signals were not sounded by either vessel during the maneuvers prior to the collision was not a contributing factor.

51. That, in view of BELKNAP's courses and speeds during the period 5 to 10 minutes prior to the collision which were unknown to J.F. KENNEDY, the maneuvers and subsequent actions of J.F. KENNEDY taken in extremis to avoid a collision were in compliance with the Special Maneuvering rules of ATP 1(B), Vol I, Art 351 and 352c.

U. S. NAVY REGULATIONS, 1973

52. That the delegation of OTC responsibility by CTG 60.1 to CO, J.F. KENNEDY, under the circumstances was proper and in compliance with Navy Regulations; CTG 60.1 SOPA actions following the collision were appropriate.

53. That under U.S. Navy Regulations, Article 0702(1), CO, BELKNAP, violated his command responsibility to ensure the safety and well-being of his ship

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58. That Commanding Officer, J.F. KENNEDY, acted in accordance with existing regulations, ATP 1(B), and Rules of the Road.

59. That CIC Watch Officer, BELKNAP, acted in substantial accordance with regulations and prudent rules of maneuvering.

60. That the CIC Watch Officer, J.F. KENNEDY, while not required by the J.F. KENNEDY OOD to provide tactical maneuvering support, did not demonstrate the initiative to provide the tactical support that could be requested by the OTC or SOPA in similar situations. A smooth functioning team of OOD-CIC was not apparent in J.F. KENNEDY's watch organization.

STANDING AND NIGHT ORDERS

61. That contrary to BELKNAP Standing Orders:

a. The Officer of the Deck, BELKNAP, ^{B6} did not inform the Commanding Officer of the CORPEN J PORT signal.

b. The Officer of the Deck, BELKNAP, ^{B6} executed a series of maneuvers which would have caused BELKNAP to cross ahead of J.F. KENNEDY to station.

c. The Officer of the Deck, BELKNAP, ^{B6} did not call the Commanding Officer in sufficient time to permit his determination of the tactical situation prior to the time the Commanding Officer was required to take action to avoid immediate danger.

d. The Officer of the Deck, BELKNAP, ^{B6} failed to act on a vital recommendation of the CIC Watch Officer or to request additional assistance when he became unsure of the tactical situation.

62. That the Officer of the Deck, J.F. KENNEDY, complied with the Standing Orders requiring the Commanding Officer to be informed when movements of other units are not understood.

63. That, during flight operations, J.F. KENNEDY's flight deck lighting and light from open hangar bay doors obscured normal navigation lights.

64. That red deck edge lights on J.F. KENNEDY visible 360 degrees, tended to obscure port and starboard side lights.

65. That floodlights, located on the island superstructure of J.F. KENNEDY, obscured masthead and range lights.

66. That when J.F. KENNEDY's lights made it difficult to determine her course and aspect by observation of navigation lights, other means should have been employed by BELKNAP's OOD, such as:

a. Radar tracking.

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- b. Visual tracking.
- c. Combination of radar and visual tracking.

Such methods would have been consistent with EMCON restrictions in effect at the time.

STAFF ACTIONS

67. That Staff actions or guidance prior to this collision were not significant and could not have had an impact on the collision.

DAMAGE

USS J.F. KENNEDY

68. That the initial fires in J.F. KENNEDY were a result of an approximate 1500 gallon JP-5 aviation fuel surge onto BELKNAP. This fuel was the primary cause of fires. Other damage resulted from the collision itself.

69. That fires were contained within established fire boundaries in J.F. KENNEDY. Other areas within the ship offered safe haven for personnel, and equipment with which to fight the fires was easily brought from these other areas.

70. That the engineering spaces in J.F. KENNEDY were evacuated in a timely and proper manner.

71. That although a fire main to the port side flight deck sprinkler system ruptured when a silver soldered copper pipe union separated from intense heat, this was not limiting to the firefighting and was isolated.

72. That the bulk of effort at eliminating flammable fixtures has been in habitable areas; this fire in J.F. KENNEDY has shown that there may be a far greater danger of flammability in supply/packing items than in habitability items.

73. That the fact that there was no list of flammable materials stored by compartment hindered the fire-fighting effort.

74. That had the aviation tires and magnesium wheels located in compartments on the 02 level been ignited, the smoke and fire damage would have been far greater.

75. That damage in Supply compartments would not have been as great had there been compartment sprinkler systems or other manual or automatic fire protection systems installed. The damage caused by fire/smoke was chiefly attributable to flammable packing material.

76. That J.F. KENNEDY can continue her deployment while repairing damaged systems.

USS BELKNAP

77. That during the collision the first indication of fire occurred in BELKNAP CIC (Aft of the Pilot House)

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in an electrical switch box which exploded. The Forward Mack of BELKNAP severed two charged JP-5 aviation fuel risers which poured forth fuel at a total rate of 1,045 gallons per minute for about 90 seconds before they were secured and drained back. The fuel poured down on BELKNAP as the Forward Mack passed the risers at J.F. KENNEDY Stations 8 and 12. The fuel poured directly into the uptakes of the After Mack where those hot gasses further ignited the approximate 1,500 gallons of JP-5 that had poured on and into BELKNAP. This accounts for the reported fuel based, blue flame explosion throughout the superstructure, including the explosion in the After Fire-room, and the continuing heavy fire about the upper decks.

78. That evidence shows that no boilers exploded but that there was an explosion in the after uptakes. At the time of this explosion, the After Mack, perhaps weakened by collision, fell to lie at a relative angle of 120 degrees with the fore and aft axis of BELKNAP. The heavy concentration of fuel created the reported fireball and maintained the ensuing heavy fire in BELKNAP.

79. That collision damage in BELKNAP appeared to be limited to the 03 level and above. The relatively soft aluminum superstructure gave way to the steel sheeting on J.F. KENNEDY's side. The remainder of the damage was the result of fire and explosions. The fire was exceedingly hot and caused CHAFFROC, pyrotechnics, and 3"/50 ammunition to explode in many directions, creating further damage. The heat of the fire melted the aluminum superstructure. Molten aluminum in turn poured through overheads creating further fires on the next deck below. It eventually pooled to cool and harden throughout the 01 level.

80. That further damage occurred in the After Engine and Fire Rooms from explosion and subsequent fires. Some damage was incurred from flooding due to firefighting water. There may be further damage to the Engineering Plant in view of the rapidity and manner that the spaces had to be secured.

81. That BELKNAP damage has rendered her incapable of continuing operations until extensive repairs can be made.

82. That the firefighting assistance provided by C.V. RICKETTS and BORDELON contributed significantly to the ability of BELKNAP to restrict the fires to the superstructure area, thus aiding materially in saving the ship.

USS C.V. RICKETTS

83. That the hull damage to USS C.V. RICKETTS is relatively moderate and is not mission limiting. The requirement to make-up alongside in order to fight the fires and transfer injured personnel overrode other considerations. The Commanding Officer of C.V. RICKETTS executed his shiphandling in an excellent manner and minimized damage to his ship.

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USS BORDELON

84. That BORDELON did not sustain damage. She was able to avoid damage through the expert shiphandling of her Commanding Officer during firefighting and towing evolutions.

DEATHS AND INJURIES

85. That all injuries reported in Finding of Fact 140 were incurred in the line of duty and were not due to any misconduct on the part of the injured person.

DAMAGE CONTROL

86. That despite the loss of, and general inaccessibility to Damage Control equipment amidships, BELKNAP was able to sustain satisfactory damage control through good leadership, aggressive actions by individuals, and use of equipment from other nearby units.

87. That in BELKNAP reliable sources of emergency power were vital. The unreliability of the Forward Emergency Turbine starter hampered BELKNAP's DC effort. The simplest, most reliable mode of emergency power should be installed in ships.

88. That initially there were poor to no communications between Damage Control Central and Damage Control parties. It is a tribute to the state of training in both ships that the teams functioned well and initially without centralized control.

89. That light water is an effective firefighting agent for small confined spaces containing highly combustible materials.

90. That the following equipments proved unsatisfactory or unreliable in the conflagrations in both J.F. KENNEDY and BELKNAP:

- a. P-250 submersible pump (difficult to start, hard to keep in operation, fuel highly combustible)
- b. Stokes litters (single handling lines for inter-ship transfers are hazardous)
- c. OBA cannisters (usable time varied 5 to 40 minutes)
- d. DC wet-cell white floodlights (in dense smoke created undesirable reflected light)
- e. Protective asbestos mittens (became wet, heavy and unmanageable)
- f. DC hard helmets and associated portable lights (too heavy, fell off)
- g. "Red devil" blowers were ineffective for de-smoking large spaces.

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91. That the distribution of life-support, self-breathing devices for carriers is not sufficient. Ninety-five percent of those in J.F. KENNEDY were in berthing compartments; five percent were in other critical (work) areas.

92. That medical storage forward in ships such as BELKNAP is inadequate. Additional oxygen equipment and drugs should be available forward, aft and amidships on cruisers.

93. That loss of liferafts deprived BELKNAP of the capability to abandon ship safely should this action have proven necessary.

94. That certain packing materials in use aboard ships for protecting and storing equipment proved hazardous for personnel required to combat fires.

TRAINING

USS J.F. KENNEDY

95. That the bridge team training in J.F. KENNEDY was of high quality. The progression of training to achieve Officer of the Deck qualification was such that formal schools and practical background were required to conform to high standards. Training for duties of helm and lee helm was satisfactory and more complete than that for lookout. The lookout performance for the 2000-2400, 22 November, watch in J.F. KENNEDY indicates that the training program was not as effective as it should be.

96. That damage control training in J.F. KENNEDY was good but like any large organization there appears to have been a diminution of intent and quality at the lower levels of responsibility. The Damage Control Petty Officers (DCPOs) were dedicated and were mainstays in the training program. Typical of aircraft carriers, squadron personnel were not well versed in damage control.

97. That the effectiveness of the firefighting effort is testimony to the training program. Qualified personnel were at hand when needed and were lined up as volunteers. There were more volunteers than could be used.

USS BELKNAP

98. That the bridge team training in BELKNAP was in need of greater command attention. There was evidence of individual and uncoordinated action. The Commanding Officer had counseled his Officers of the Deck with regard to shiphandling. The training that ^{he} had was excellent and his Commanding Officer placed the highest trust in him as OOD.

99. That there was an aggressive damage control training program in effect in BELKNAP. The success of that program can be measured by the fact that the ship was saved.

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100. That the engineering casualty control training was effective and all personnel responded in the proper manner. There is evidence that proper space abandoning procedures were not used in the After Fireroom shortly after the collision. This bears on the adequacy of training in that area.

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Recommendations

1. That Captain Walter Richard SHAFER, USN, be addressed a punitive letter of reprimand for his failure to ensure the safety, well-being, and efficiency of his command, as evidenced by his failure to be present on the bridge of USS BELKNAP during the initial maneuvers in a new station in close proximity to USS J. F. KENNEDY and his failure to assure the proper training of USS BELKNAP bridge team members. A draft of such a letter is forwarded herewith as Enclosure (5).
2. That ⁸⁴ USN, be brought to trial by general court-martial on charges of violation of Articles 92, 108, 110, and 119, Uniform Code of Military Justice. The appropriate charge sheet, signed by the Investigating Officer as accuser, is forwarded herewith as Enclosure (6).
3. That Type Commanders utilize the various means at their disposal to emphasize to all Commanding Officers the importance of review and update of their standing and daily night orders to ensure that they are, in fact, being used properly and that there is strict compliance.
4. That Type Commanders utilize the various means at their disposal to emphasize to all commands the necessity to continually monitor phone talker procedures and lookout procedures and ensure that individual training programs meet standard requirements.
5. That the use of NUCO Tables be examined to determine if they do, in fact, serve to make intended courses and speeds sufficiently secure to warrant the continued use of these tables.
6. That the procedure for attaining standard times between ships in a Task Group be emphasized and implemented.
7. That Commanding Officer, J.F. KENNEDY, examine the capability and output of information of COTP and CIC with a view toward more complete integration of information by command through total use of the facilities available.
8. That Fleet Commanders in their operations orders require all surface units maneuvering in the vicinity of aircraft carriers at night to observe the 3-2-1 rule; i.e., not pass within 3000 yards of the bow, 2000 yards of the beam, and 1000 yards astern of an aircraft carrier underway.
9. That Naval Air Engineering Center provide a permanent solution to preclude white and red floodlights of an aircraft carrier from obscuring the masthead and range lights.

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identify dangerous items for storage in storerooms equipped with sprinkler systems.

21. That each ship in the naval service have specified storage spaces equipped with ammunition magazine type sprinklers to permit storage of supply items packed in inflammable/toxic packing.

CLOSING STATEMENT

In retrospect this unfortunate and unnecessary collision leaves the question whether or not Commanding Officers and watch team leaders in our fleets are tending to place decreasing emphasis on the basics of seamanship and good sound operating procedures as well as on the utilization of the total watch team. There is a strong suggestion of a growing general acceptance of trainees' filling subordinate positions of responsibility with less than adequate command emphasis on qualification through demonstrated performance. If one collision of proportions much less than here can be attributed in the slightest degree to an easing of our standards of excellence of established command elements at sea, then we should acknowledge a training problem and solve it.

The need for mutual trust while maneuvering a Task Group at sea is axiomatic. Mutual trust among ships is built upon the capacity for unquestioned reliance upon common tactical criteria and proven capability to perform. That capability to perform, like basic seamanship, requires solid, considered judgement, based on information gathered from all available sources. Maneuvers must be planned, communicated, and executed safely in the minimum distance and time. The ship command team must be used in its entirety, each member as frequently and extensively as required. Commanding Officers should expect and gain excellence from each performer. We should relentlessly seek to qualify only the best.

Rear Admiral, U. S. Navy
Investigating Officer

Final Entry, 31 December 1975.

Rear Admiral, U. S. Navy
Investigating Officer

Captain, U. S. Navy
Counsel for the investigation

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10. That Type Commanders require compliance with VLA General Service Bulletin #38, of 28 November 1975, requiring 220° of shielding for red deck edge lights on aircraft carriers.
11. That condensed extracts of this record and report describing the collision between two of our most modern ships, the cause of that collision, and damage control exercised be made available to naval officers as lessons learned.
12. That increased reliability be designed into turbine machinery used as emergency power sources. If this cannot be accomplished, that one standard diesel-type engine be used for all emergency power sources on small combatants.
13. That a new, more reliable, portable emergency pump replace the P-250. P-250 performance in this situation proved to be totally unsatisfactory, which historically was not completely unexpected.
14. That Navy Safety Center investigate improvement of the design for Stokes stretchers. Two lines on each end to permit increased control while transferring patients between units may not be the only improvement possible.
15. That Navy Safety Center conduct an investigation into the reliability of OBA cannisters currently in the fleet inventory by drawing a sufficient sample from several ships, including PACFLT units, and realistically conduct a diagnostic test of each OBA cannister. This is potentially a very serious problem if it is determined that shelf life limits the usefulness of OBA cannisters.
16. That Navy Safety Center conduct an evaluation of all protective clothing for DC personnel. In view of new materials available and potentially serious fires which occur aboard ship, strong emphasis on modern clothing, including lighter-weight helmets that contain a permanent head light, and usable protective mittens should be among established objectives.
17. That DC wet-cell white floodlights be equipped with inexpensive, plastic amber lenses.
18. That an allowance for large capacity commercial smoke eductors be provided large ships such as aircraft carriers and the allowance be increased for additional damage control equipment on cruisers.
19. That the current cannister emergency liferaft program be accelerated to ensure life-saving equipment is provided some "hardness" against fire and explosions.
20. That the use of inflammable packing materials and those materials that burn with toxic fumes or are dangerous to firefighting personnel be reduced; where this is not possible, that containers which have within them inflammable/toxic packing material be distinctively marked or labelled to permit shipboard personnel to

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