Findings of Fact

Training Prior to 12 October 2000

1. USS Cole completed the Basic Phase of its Inter-Deployment Training Cycle (IDTC) in December 1999, with Final Evaluation Period (FEP) being conducted in November 1999 during her Immediate Superior in Command (ISIC) (COMDESRON 22) Group Sail. (Enclosure (7) to the basic letter)

2. Damage Control (DC) training continued through IDTC Intermediate and Advanced phases with Afloat Training Group (ATG) Norfolk Limited Training Team visits, individual Fire Fighting Schools, Team Fire Fighting Schools, Helo Fire Fighting School, and an aggressive onboard training schedule. (Enclosure (7) to the basic letter)

3. COLE'S Damage Control Training Team (DCTT) was assessed to be effective and demonstrated steady improvement over the course of ATG Norfolk - supported visits conducted during the IDTC Basic Phase. (Enclosure (7) to the basic letter)

4. The ship's Damage Controlman Chief Petty Officer (DCC) billet had been gapped for more than a year, the command assigned GSMC (SW) [redacted] as R Division LCPO and Assistant DCTT Leader in order to improve the DC training effectiveness. (Enclosure (7) to the basic letter)

5. Personnel turnover between completion of IDTC Basic Phase and 12 October 2000 was 48% officers and 38.6% enlisted crew members. (Enclosure (7) to the basic letter)

6. Basic damage control training was an important element of Indoctrination Division in COLE, with a concerted effort to provide First Aid and Emergency Escape Breathing Device (EEBD) training, and to qualify personnel in basic DC through hands-on experience. (Enclosure (7) to the basic letter)

7. Areas self-assessed as requiring improvement upon COLE's 04 August 00 deployment were Chemical, Biological and Radiological Defense (CBRD) and Main Space fire fighting. (Enclosure (7) to the basic letter)

8. The chain of command placed a high priority on back-to-basics, realistic, hands-on DC training during its Atlantic and Mediterranean transits. (Enclosure (7) to the basic letter)

9. While deployed, the weekly training regimen featured a DC day that included repair locker training, emphasizing individual and team hands-on skills development in the morning and a DCTT or Integrated Training Team (ITT) scenario in the afternoon. (Enclosure (7) to the basic letter)

10. DC competitions became a regular training feature, and on one occasion during transit, USS SIMPSON's teams were even invited to COLE to participate in an inter-ship competition. (Enclosure (7) to the basic letter)

11. Following the Atlantic crossing, COLE's DC training further intensified during transits between Mediterranean port visits. Typically conducted over weekends, it included repair locker training, again stressing individual hands-on skills, on Fridays, training the entire DC organization with a DCTT-led effort on Saturdays, and culminating the training with a ship-wide ITT-led scenario on Sundays. (Enclosure (7) to the basic letter)

12. COLE routinely conducted damage control training that included loss of communications. It was ship's practice to impose communications losses during each DCTT/ITT scenario, one system at a time. (Enclosure (7) to the basic letter)

13. The crew reported they had conducted no training on casualty power. (Enclosure (7) to the basic letter)

14. COLE was reporting herself C-1 in the Training Resource area on 12 October 2000. (Enclosure (7) to the basic letter)

Installed and Portable Damage Control Equipment

15. The installed firemain in COLE is a horizontal loop system with seven athwartship piping runs. (Enclosure (6) to the basic letter)

16. The Main Drain System in COLE is a single line system running through the engineering spaces from frame 126 aft to frame 338. (Enclosure (6) to the basic letter)

17. There are stand alone sections in NR 3 SSGTG room and After Steering (4-442-0-E)that each have their own eductors. (Enclosure (6) to the basic letter)

18. Each space on the main drain line can be segregated from its adjacent spaces by the operation of bulkhead isolation valves. (Enclosure (6) to the basic letter)

19. Isolation valves are not located on both sides of each bulkhead. (Enclosure (6) to the basic letter)

20. The Aqueous File Forming Foam (AFFF) system in COLE is a continuous loop system served by two 1000 gpm AFFF proportioners. (Enclosure (6) to the basic letter)

21. Each main engineering space is equipped with primary and secondary HALON. (Enclosure (6) to the basic letter)

22. Each of the three repair lockers (Repair 2 is located at frame 97 on the starboard side, Repair 5 is located at frame 206 on the starboard side, and Repair 3 is located at frame 410 amidships) are outfitted with the following portable damage control equipment:

    1 PERI-jet eductor
    1 S-type eductor
    1 electrical submersible pumps
    1 Portable Exothermic Cutting Units (PECU)
    1 Box Fan
    2 Ram Fan 2000
    24 Self Contained Breathing Apparatus (SCBA)

(Enclosure (6) to the basic letter)

23. There were 3 P-100 dewatering pumps located throughout the ship. (Enclosure (6) to the basic letter)

24. The ship was equipped with one Portable Hydraulic Access and Rescue System (PHARS), a device similar to the "Jaws of Life". (Enclosure (6) to the basic letter)

25. Just prior to commencing the deployment, the Chief Engineer purchased each of her engineers a flashlight. (Enclosure (6) to the basic letter)

26. The ship was equipped with SCOTT EEBD's. (Enclosure (6) to the basic letter)

Condition and Status of Damage Control Equipment and Ship's Systems Immediately Prior to Explosion

27. Material condition Modified was Zebra set on the main deck and below. Therefore, in addition to material condition Yoke being set, the main hatches were closed and dogged with the scuttles in those hatches open. (Enclosures (6) and (7) to the basic letter)

28. NRs 2 and 3 Ship's Service Gas Turbine Generators (SSGTGs) were running in parallel with Planned Maintenance System (PMS) under contemplation for the reduction gear on NR 1 SSGTG. (Enclosures (6) and (7) to the basic letter)

29. The electrical distribution system was in a ring bus configuration with all bus tie breakers closed. (Enclosures (6) and (7) to the basic letter)

30. The main engines were secured. (Enclosures (6) and (7) to the basic letter)

31. NRs 2 and 5 firepumps were running with material condition Yoke set on the firemain. (Enclosure (6) to the basic letter)

32. At the time of the explosion, the firemain had material condition Yoke set on it with the following "Y" crossover valves shut; FM-V-296, FM-V-299, FM-V-302, FM-V-306 and FM-V-310. Zebra Valves FM-V-293 and FM-V-316 were open. (Enclosure (6) to the basic letter)

33. The ship was in the process of taking on F-76 fuel with five of the six tank banks aligned (the sixth was already filled). (Enclosures (6) and (7) to the basic letter)

34. The ship had approximately 90% JP-5 (F-44) (18,000 gallons) onboard. (Enclosure (7) to the basic letter)

35. There was a Central Control Station (CCS) watch assigned as well as an Inport Equipment Monitor (IEM) and a Sounding and Security Watch. (Enclosure (7) to the basic letter)

Immediate Effects of Explosion on Damage Control Equipment and Ship's Systems

36. The explosion occurred at 1118 opening a 40 by 60-foot hole in the port side between frames 174 and 220 and drove the main deck up into its overhead (the 01 level) at that point. (Enclosures (6) and (7) to the basic letter)

37. Main Engine Room (MER) 1 (4-174-0-E), Auxiliary Machinery Room (AMR) 2 (4-220-0-E) and the Dry Provisions Storeroom (2-220-4-A) began flooding immediately, having free communication with the sea. (Enclosure (7) to the basic letter)

38. Flooding also occurred in the Supply Support Center (3-220-2-Q), Freezer Storeroom (2-220-3-A) and AMR 2 (4-220-0-E). (Enclosure (7) to the basic letter)

39. Minor flooding occurred in AMR 1 (4-126-0-E) through ruptured bleed air piping and damaged stuffing tubes. (Enclosures (6) and (7) to the basic letter)

40. Additionally, there was intermittent flooding in MER 2 (4-254-0-E) through the main shaft seal between that space and AMR 2. (Enclosure (7) to the basic letter)

41. The Crew and Chief Petty Officer's Galley (1-191-0-L), Combat Systems Office (1-1158-4-Q), Oil Test Laboratory (2-174-6-Q), General Workshop (2-200-2-Q), Repair Locker 5 (1-206-3-A), and Chief Petty Officer Mess Room and Lounge (1-174-0-L) were structurally destroyed. (Enclosure (7) to the basic letter)

42. NR 2 SSGTG shut down for unknown reasons. (Enclosures (6) and (7) to the basic letter)

43. NR 3 SSGTG and switchboard remained in operation, providing electrical power to the after portion of the ship. (Enclosures (6) and (7) to the basic letter)

44. The electrical fault current detection system activated, opening all bus tie breakers. (Enclosures (6) and (7) to the basic letter)

45. NRs 1 and 2 switchboards were deenergized. (Enclosures (6) and (7) to the basic letter)

46. The firemain was destroyed approximately between frames 174 and 220 MER 1. (Enclosures (6) and (7) to the basic letter)

47. The Data Multiplexing System (DMS) was unreliable, producing uncommanded cycling of motor-operated firemain valves and, coupled with explosion damage to firemain piping, contributed to a loss of firemain control and pressure. (Enclosures (6) and (7) to the basic letter)

48. This problem of uncommanded cycling of firemain valves had previously been noted in the DDG 51 class, but it had been reported corrected. (Enclosure (6) to the basic letter)

49. Many of the butterfly style firemain isolation valves were leaking, preventing isolation of some sections. (Enclosure (6) to the basic letter)

50. NR 5 firepump continued to run after the explosion. (Enclosure (6) to the basic letter)

51. NR 2 firepump shutdown from loss of power. (Enclosure (6) to the basic letter)

52. The Main Drain System was undamaged in MER 2 and AMR 1. The extent of damage to the system in AMR 2 and MER 1 could not be determined. (Enclosure (6) to the basic letter)

53. The main drain eductor in MER 2 was undamaged and was used extensively to dewater that space. (Enclosure (6) to the basic letter)

54. The AFFF system main deck piping was undamaged by the explosion. (Enclosure (6) to the basic letter)

55. The forward AFFF proportioner was inoperative due to lack of power, and was never restored. (Enclosures (6) and (7) to the basic letter)

56. The aft AFFF proportioner was initially caution tagged to prevent the Solenoid Operated Pilot Valve (SOPV) from cycling inadvertently. (Enclosures (6) and (7) to the basic letter)

57. The Propulsion Repair Locker (Repair 5) was explosion-damaged and rendered unusable. (Enclosures (6) and (7) to the basic letter)

58. Damage control equipment in the locker was largely intact, except for ventilation and portable desmoking equipment stowed in the vicinity of the explosion. (Enclosure (7) to the basic letter)

59. An estimated 20 Self-contained Breathing Apparatuses (SCBAs) stowed in the athwartships passageway near Repair 5 were destroyed. (Enclosure (7) to the basic letter)

60. Most interior communications systems were lost, including the Interior Voice Communications System (IVCS) and the ship's General Announcing System (1 MC). (Enclosures (6) and (7) to the basic letter)

61. The Wireless Internal Communications System (WICS) remained intact and became the ship's primary interior communication system, supplemented by 25 MC and various X5J casualty communications circuits. (Enclosures (6) and (7) to the basic letter)

62. Air conditioning, chilled and potable water systems were rendered out of commission. (Enclosures (6) and (7) to the basic letter)

63. Large quantities of fuel accumulated in MER 1, AMR 1 and AMR 2. (Enclosures (6) and (7) to the basic letter)

64. Lighting was lost forward of Central Control Station (CCS)(Frame 220). (Enclosures (6) and (7) to the basic letter)

65. There were no class "A" or class "B" fires. (Enclosure (7) to the basic letter)

66. A number of small class "C" fires were quickly extinguished when the electrical equipment was isolated. (Enclosure (7) to the basic letter)

67. The ship immediately settled to a 3.5 to 4 degree port list, trimmed to the head an undetermined amount. (Enclosures (6) and (7) to the basic letter)

Location of Leadership

68. CDR Lippold, Commanding Officer (CO), was in his cabin (02-146-1-L) when the explosion occurred. (Enclosure (7) to the basic letter)

69. [redacted] the Executive Officer (XO), was presiding over a meeting of the ship's Morale, Welfare and Recreation (MWR) Committee in the Ship's Crew Recreation and Training Room (Training Room) (2-350-2-L), located on the second deck, port side aft, when the explosion occurred. (Enclosure (7) to the basic letter)

70. LT [redacted], the Chief Engineer (CHENG), was in Officers' Country when the explosion occurred. (Enclosure (7) to the basic letter)

71. ENS [redacted] the Damage Control Assistant (DCA), (who had been aboard for about two months), was in the Filter Cleaning Shop (01-188-2-Q) on the 01 level port side at the time of the explosion. (Enclosure (7) to the basic letter)

Immediate Actions of the Crew

72. The CO armed himself with a nine-millimeter pistol kept in his cabin, donned a flack jacket and proceeded to the Pilot House (04-130-0-C). (Enclosure (7) to the basic letter)

73. Enroute to the Pilot House, the CO noted two personnel in the water, threw them a life ring and directed other crewmembers to recover them. (Enclosure (7) to the basic letter)

74. From the Pilot House, he attempted to determine the continued threat to the ship, and directed the weather decks secured to ship's company in order not to expose personnel to possible follow-on attack. (Enclosure (7) to the basic letter)

75. CDR Lippold noted several black inflatable boats in the water (subsequently identified as liferafts blown from the ship by the explosion, inflated, and overturned, exposing their black bottoms). (Enclosure (7) to the basic letter)

76. During the ensuing minutes, CDR Lippold received LCDR [redacted] damage report via Wire-free Internal Communication System (WICS), contacted the port authorities on a hand-held Very High Frequency (VHF) radio and in the absence of reliable external communications had two Emergency Positioning Indicating Radio Beacons (EPIRB) put in the water. (Enclosure (7) to the basic letter)

77. After the explosion, LCDR [redacted] recalled sensing the ship moving toward the starboard side, with an attendant violent vertical movement. He also sensed that the ship immediately began listing to port after the explosion occurred. (Enclosure (7) to the basic letter)

78. After the shaking ceased, LCDR [redacted] led the MWR Committee, including [redacted] (Command Master Chief) and LTJG [redacted] (Auxiliaries Officer and Repair 5 Locker Officer) from the Training Room toward the mess deck, proceeding forward along the port side of the ship until they were stopped by heavy smoke presumed to be from the explosion. (Enclosure (7) to the basic letter)

79. The group led by the XO, reversed direction and made their way past the aft Battle Dressing Station (BDS) (2-140-1-L) to the starboard side main deck passageway. (Enclosure (7) to the basic letter)

80. At the aft BDS, the group encountered personnel exiting the interior of the ship and some (six to 10 personnel) from the weather decks who were indicating, through pointing gestures, that they had suffered ear damage. (Enclosure (7) to the basic letter)

81. LCDR [redacted] stated during the interview that his instincts told him that the ship had been attacked and, as he was uncertain as to whether the ship remained under attack, his immediate concerns included ship security as well as damage control. (Enclosure (7) to the basic letter)

82. The XO directed GM2 [redacted] to man the after deck gun topside and directed other personnel in the passageway to man Repair 3 (2-410-2-A), check/set material condition Zebra, and investigate for damage in MER 2. (Enclosure (7) to the basic letter)

83. Upon the XO's direction, personnel began to react as trained and headed for their general quarters stations. (Enclosure (7) to the basic letter)

84. LCDR [redacted] continued forward along the starboard side passageway. (Enclosure (7) to the basic letter)

85. Noting several injured personnel (including GSMC(SW) [redacted] Leading Chief Petty Officer for R and Main Propulsion Division's and Assistant Damage Control Training Team (DCTT)

leader) along his path and observing SN [redacted] (corpsman striker) and others administering first aid to the injured in that area, LCDR [redacted] directed that the starboard side passageway area between CCS and the Medical Treatment Room (MTR) (1-220-3-L) become a staging/first aid/triage area. (Enclosure (7) to the basic letter)

86. The MTR was inaccessible because of heavy smoke. (Enclosure (7) to the basic letter)

87. LCDR [redacted] was unable to determine if there were any fires at this point. (Enclosure (7) to the basic letter)

88. LCDR [redacted] proceeded aft to CCS where he established communication with the Commanding Officer in the Pilot House via WICS (IVCS and the 1MC were inoperative) and assumed overall control of initial damage control efforts. (Enclosure (7) to the basic letter)

89. LCDR [redacted] estimated the total time elapsed between the explosion and his arrival in CCS to be approximately 10 minutes. (Enclosure (7) to the basic letter)

90. LT [redacted] exited Officers' Country on the 02 level through the port side access en route to her CCS general quarters station. (Enclosure (7) to the basic letter)

91. She made her way as far as the port side breezeway. (Enclosure (7) to the basic letter)

92. Determining that CCS was inaccessible from that side, LT [redacted] went to the Pilot House to assess exterior damage and to speak to the Commanding Officer. (Enclosure (7) to the basic letter)

93. Returning to her stateroom, she donned an EEBD and made her way through smoke to CCS via the starboard side passageway. (Enclosure (7) to the basic letter)

94. At CCS, she conferred with the XO and directed restorative actions for the engineering plant while the XO concentrated on damage control efforts. (Enclosure (7) to the basic letter)

95. Concerned about the potential for fire in MER 2 due to leaking fuel and lube oil in that space, LT [redacted] directed isolation of that space and securing of flammable and

combustible liquid systems pending completion of damage investigation. (Enclosure (7) to the basic letter)

96. ENS [redacted] made his way as far as the 01 level weather deck on the port side, crossed over to starboard, proceeded aft to the flight deck and entered the starboard interior passageway via the starboard side airlock. (Enclosure (7) to the basic letter)

97. From the starboard side airlock, he went forward to CCS (also Damage Control Central), his general quarters station. (Enclosure (7) to the basic letter)

98. ENS [redacted] estimated arriving in CCS within 15 minutes of the explosion. (Enclosure (7) to the basic letter)

99. By that time, the damage control organization was manning or had manned stations, and ENS [redacted] immediately began receiving verbal, face-to-face damage reports from investigators. (Enclosure (7) to the basic letter)

100. ENS [redacted] established communications with Repair 3 via Damage Control Wire-free Communications (DC WIFCOM). (Enclosure (7) to the basic letter)

101. Approximately 15-20 minutes following the explosion, triage was well underway in the starboard passageway and at the aft BDS, initial casualty evacuation was in progress, and personnel had manned their general quarters stations to the extent that COLE's damage control organization was functioning effectively. (Enclosure (7) to the basic letter)

102. Key command personnel were aggressively coordinating the effort to evacuate casualties and save the ship. (Enclosure (7) to the basic letter)

103. Immediate damage effects described above were reported to CCS within approximately 20 minutes of the explosion. (Enclosure (7) to the basic letter)

104. The smoke that had filled the ship's interior along the main deck level, was dissipating rapidly (most likely through the damaged hull) and there was still no evidence of fires burning inside the ship. (Enclosure (7) to the basic letter)

105. Further investigation determined that the Refrigeration Machinery Room (2-240-1-E), Pulper/Shredder room (2-240-6-Q),

and Dry Provisions Storeroom were flooding into AMR 2 (source(s) of flooding could not be determined). (Enclosure (7) to the basic letter)

106. AMR 1 was taking on manageable amounts of water through bleed air piping and leaking electrical bulkhead stuffing tubes. Fuel from NR 1 SSGTG's Fuel Gravity Feed Tanks (FGFT) (2-174-2-F) in fuel oil storage tanks banks NRs 1 and 2 (specific tank damaged has not been determined) and storage tanks was leaking from the ship through the hole in MER 1, constituting a significant fire hazard. (Enclosure (7) to the basic letter)

107. Firemain and 60 Hz electrical power were not yet restored forward, resulting in AFFF Proportioning Stations NR 1 and 2 being out of commission. (Enclosure (7) to the basic letter)

108. In response to leaking fuel and lube oil, repair locker personnel emptied five gallons cans of AFFF concentrate into MER 1 through a natural ventilation shaft and into AMR 2 (4-220-0-E) through a hatch. (Enclosure (7) to the basic letter)

109. Although electrical arcing and sparking had been observed in various spaces, no fires had been discovered. (Enclosure (7) to the basic letter)

110. The damage control organization was intact and the crew functioning in an organized effort to restore the ship's basic systems and capabilities. (Enclosure (7) to the basic letter)

111. With DC efforts well underway, CDR Lippold and LCDR [redacted] were comfortable they could focus Command level attention more closely on triage and casualty evacuation. (Enclosure (7) to the basic letter)

Lifesaving/Medical Actions of the Crew

112. Lifesaving and emergency medical response began immediately following the explosion. (Enclosure (7) to the basic letter)

113. The use of flashlights purchased by the CHENG were used by injured personnel to signal crewmembers. (Enclosure (7) to the basic letter)

114. GSM1 (SW) [redacted] used her flashlight to swim back into the oil laboratory to search for the Main Propulsion Assistant

after the initial explosion. (Enclosure (7) to the basic letter)

115. CDR Lippold was contacted by the U.S. Defense Attaché (DATT), who had been inside the port area and hurried to where COLE was moored via small boat. (Enclosure (7) to the basic letter)

116. Leaving CDR Lippold with a cellular phone (by which CDR Lippold made his initial OPREP-3 report to higher authority), the DATT commenced coordinating casualty evacuation through embassy channels. (Enclosure (7) to the basic letter)

117. These arrangements were completed approximately one hour after the explosion had occurred. (Enclosure (7) to the basic letter)

118. COLE had previously developed a preplanned mass casualty response that included triage sites on the mess deck and at the Aft BDS. (Enclosure (7) to the basic letter)

119. Circumstances were such that triage in the classic sense was not possible, but the preplanned triage sites were nonetheless used to stabilize the injured and prepare them for evacuation off the ship. (Enclosure (7) to the basic letter)

120. Because of extensive damage to the mess deck and ongoing restoration efforts, the forward triage area was initially established in the starboard side passageway near the Engineering Department Office (1-258-3-Q). (Enclosure (7) to the basic letter)

121. When the Commanding Officer permitted personnel to access the weather decks, the triage areas were moved to the flight deck, with HMCM(SW/AW/FMF) [redacted] in charge, and to the starboard quarterdeck area , under the direction of HMC(SW) [redacted]. (Enclosure (7) to the basic letter)

122. From those locations, non-ambulatory patients were placed in Stokes and Search and Rescue (SAR) litters, lowered to the fueling dolphin by sliding them down the ship's brow, and placed in boats for transport to medical facilities ashore. (Enclosure (7) to the basic letter)

123. DC1 [redacted], HT1(SW) [redacted] HT2 [redacted] 1, DCFN [redacted] DCFN [redacted] and DCFN [redacted] were all involved in evacuating injured personnel

from the Chief Petty Officers Mess, the area of the greatest concentration of injured personnel. (Enclosure (7) to the basic letter)

124. In order to gain access to the space, Petty Officer [redacted] knocked down a false bulkhead, then took charge of the initial effort to evacuate the wounded. (Enclosure (7) to the basic letter)

125. Once all were rescued, this group assisted in the dewatering and shoring effort in AMR1 and MER 2. (Enclosure (7) to the basic letter)

126. OS2 [redacted] was also searching for survivors in the vicinity of the CPO Mess. (Enclosure (7) to the basic letter)

127. Leading a group of four other rescuers through a small opening in the damaged port side, Petty Officer [redacted] noticed a critically injured crewman and immediately helped place him on a litter. (Enclosure (7) to the basic letter)

128. Because of the extensive damage in the area and oil and debris on deck, he and his team were unable to maneuver the litter through the passageway. (Enclosure (7) to the basic letter)

129. Recognizing the severity of the injury to his shipmate, Petty Officer [redacted] took the critically injured crewman in a fireman's carry and made his way through the damage to get the man to a place from which he could be evacuated to topside. (Enclosure (7) to the basic letter)

130. BMC(SW/AW/DV) [redacted] was in the CPO Mess at the time of the explosion. (Enclosure (7) to the basic letter)

131. Despite sustaining injuries to his leg and lungs, he made his way through the smoke and debris to obtain an SCBA, then searched for survivors in the vicinity of the damaged mess line, guiding one Sailor to a BDS. (Enclosure (7) to the basic letter)

132. He then obtained emergency lighting from Repair 5 and returned to the CPO Mess to rescue several remaining personnel. (Enclosure (7) to the basic letter)

133. Once the CPO Mess was evacuated, he reported to Repair 2 and assumed Damage Investigator duties and in the process

safely evacuated several more personnel from spaces in the forward part of the ship. (Enclosure (7) to the basic letter)

134. In the first 90 minutes following the attack, HMCM(SW/AW/FMF) [redacted] rendered life saving medical treatment to more than twenty wounded shipmates, whose injuries ranged from lacerations to multiple fractures. (Enclosure (7) to the basic letter)

135. He directed junior corpsmen and ship's company in life saving techniques, and personally prepared many injured crew for evacuation to medical treatment facilities ashore. (Enclosure (7) to the basic letter)

136. LTJG [redacted] went to Repair 2 immediately after the attack and directed DC efforts there until relieved by the locker leader. (Enclosure (7) to the basic letter)

137. He then made his way to the mess deck to aid in rescue efforts there. (Enclosure (7) to the basic letter)

138. With the assistance of others, he freed MS3 [redacted], who had sustained multiple fractures to both legs and ankles, from the severely damaged Galley. (Enclosure (7) to the basic letter)

139. Once MS3 [redacted] was evacuated safely, LTJG [redacted] returned to area of greatest damage and assisted in evacuating injured personnel from the CPO Mess and MER 1 access area. (Enclosure (7) to the basic letter)

140. Evacuation of the wounded and blood donors to accompany them to the hospital was accomplished within two hours (Reportedly one hour and thirty-nine minutes). (Enclosure (7) to the basic letter)

141. Provision of sufficient water to cleanse wounds and to prevent dehydration in the 100-plus degree heat became a major concern. (Enclosure (7) to the basic letter)

142. Emergency water supplies at the BDSs were depleted almost immediately. (Enclosure (7) to the basic letter)

143. The ship had procured bottled water during a port visit in France for use in the repair lockers in anticipation of training in the hot conditions of the Arabian Gulf. (Enclosure (7) to the basic letter)

144. This supply was rapidly consumed and the crew made do by melting ice from the Wardroom Pantry ice maker, supplemented by a large stock of Gatorade from Ship's Store (1-94-2-Q). (Enclosure (7) to the basic letter)

145. Water from off-ship was not received until the next day. (Enclosure (7) to the basic letter)

Restoration Actions of the Crew

146. Having taken immediate steps to treat and evacuate casualties while minimizing the potential for fire, the main damage control effort shifted focus to stopping flooding and removing water from the ship. (Enclosure (7) to the basic letter)

147. Repair parties were rigging P-100 portable pumps to dewater AMR 1 and AMR 2. (Enclosure (7) to the basic letter)

148. By mid-afternoon 12 October, the crew had begun gaining ground on equipment restoration and flooding control. (Enclosure (7) to the basic letter)

149. Firemain was restored to the aft starboard loop approximately one to one and a half hours after the explosion. (Enclosure (7) to the basic letter)

150. Electricians were isolating components of the electrical distribution system, conducting detailed electrical damage investigation, and clearing grounds. (Enclosure (7) to the basic letter)

151. Rigging casualty power from NR 3 switchboard to Communications Center (2-126-1-C) to power off-ship communications was reported by the crew to be a challenge. (Enclosures (6) and (7) to the basic letter)

152. They had not recently practiced rigging casualty power and the electrical information on damage control diagrams was incorrect, slowing the process. (Enclosures (6) and (7) to the basic letter)

153. A crew muster was completed by 1500, and the flight deck was established as a temporary messing and berthing facility. (Enclosure (7) to the basic letter)

154. Water remained a critical need and, in addition, galley food supplies had been contaminated. (Enclosure (7) to the basic letter)

155. The evening meal consisted mainly of snacks from ship's store stock. (Enclosure (7) to the basic letter)

156. Security lighting was rigged topside and personnel were rested in brief shifts. (Enclosure (7) to the basic letter)

157. At 1825, MER 2's starboard side shaft bulkhead seal was reported to be leaking. (Enclosures (6) and (7) to the basic letter)

158. The leak was brought under control by plugging the seal using oakum and damage control wedges and dewatering begun using a P-100 pump. (Enclosures (6) and (7) to the basic letter)

159. An attempt to use the space eductor for dewatering failed due to system misalignment; firemain valve (V-769) was closed in Crew Living Space NR 4 (3-300-1-L). (Enclosures (6) and (7) to the basic letter)

160. At 2213, NR 3 SSGTG blow-in doors opened and could not be closed because of lack of LP air. (Enclosures (6) and (7) to the basic letter)

161. As an interim measure to prevent foreign object damage to the engine, ship's force installed Scott foam at the blow-in doors and continued to run the generator. (Enclosures (6) and (7) to the basic letter)

162. SSGTG lube oil filters clogged, and after shifting filters, became clogged again. (Enclosures (6) and (7) to the basic letter)

163. Replacement filter elements were not available, therefore the installed filters eventually had to be removed entirely to keep the engine supplied with lube oil, even though the lube oil was contaminated. (Enclosures (6) and (7) to the basic letter)

164. By noon on 13 October, casualty power had been rigged to the forward portion of the ship, powering the 1MC General Announcing system and, installed lighting forward of frame 174. (Enclosures (6) and (7) to the basic letter)

165. Temporary lighting was rigged between frames 174 and 220 using friendship lights and extension cords. (Enclosures (6) and (7) to the basic letter)

166. By early afternoon, air conditioning, potable water and CHT were restored to the after portion of the ship and air conditioning boundaries were established using damage control smoke curtains. (Enclosures (6) and (7) to the basic letter)

167. On 14 October, U.S. and Allied assistance began to arrive on scene and COLE's material condition continued to improve through the crew's efforts. (Enclosure (7) to the basic letter)

168. The U.S. Marine Corps FAST team arrived in the early morning hours on the 14th and assumed security duties. (Enclosure (7) to the basic letter)

169. Mobile Diving and Salvage Unit TWO's master diver commenced diving operations on the 14th. (Enclosure (7) to the basic letter)

170. HMS MARLBOROUGH arrived and provided water and AFFF on the morning of the 14th, and USS HAWES (FFG 53) and USS DONALD COOK (DDG 75) were on scene in the afternoon, providing food, clothing, medical supplies, additional damage control gear and relief crews. (Enclosure (7) to the basic letter)

171. COLE's power restoration effort continued and by 1931 the crew had rigged and energized casualty power from #3 switchboard to Load Center 11 (2-53-1-C), enabling them to operate additional auxiliary equipment in the forward part of the ship, including vital auxiliaries in AMR 1. (Enclosures (6) and (7) to the basic letter)

172. At 2100, a rise in the water level in AMR 2 was noted, and two additional PERI-jet eductors (for a total of five) were put in use to control flooding. (Enclosures (6) and (7) to the basic letter)

173. At 0115, the watch stationed in MER 2 reported the leak at the forward starboard side shaft bulkhead seal adjacent to AMR 2 to be approximately five gallons per minute. (Enclosures (6) and (7) to the basic letter)

174. By 0130, the leak was reported to have increased to approximately 15 gallons per minute. (Enclosures (6) and (7) to the basic letter)

175. The MER 2 space eductor was placed in operation. (Enclosures (6) and (7) to the basic letter)

176. At 0137, the Commanding Officer ordered Repairs 2 and 3 to be remanned in response to the increased flooding in AMR 2 and MER 2. (Enclosure (7) to the basic letter)

177. By 0237, the flooding in AMR 2 reached the six-foot level in the escape trunk. The source of the flooding remained undetermined. (Enclosures (6) and (7) to the basic letter)

178. At 0305, the ship lost electrical power. (Enclosures (6) and (7) to the basic letter)

179. NR 3 SSGTG, which had been on line continuously since the explosion, shut down due to fuel starvation. (Enclosures (6) and (7) to the basic letter)

180. With the generator's primary fuel supply unavailable after the explosion, ship's force had provided fuel directly to the engine's gravity feed tank from the JP-5 transfer system. (Enclosures (6) and (7) to the basic letter)

181. Refilling was done based on estimated fuel consumption (the Fuel Control Console in the Oil Test Laboratory was damaged in the explosion and there was no other normal means to positively monitor gravity feed tank level such as sounding tube or sight level indicator). (Enclosures (6) and (7) to the basic letter)

182. The Command did consider maintaining the fuel level in the NR 3A and NR3B fuel gravity feed tanks by removing the top covers or pressing the tanks up until fuel came out of the vents, but did not initially take that action. (Enclosure (6) to the basic letter)

183. With no HP air compressor available, leaks in the air system, and start air flasks depleted from earlier failed attempts to start NRs 2 and NR 3 SSGTG, ship's force had early in the day improvised an alternative method of refilling the flasks. (Enclosures (6) and (7) to the basic letter)

184. Using the diesel-powered SCBA air compressors, ship's force was able to recharge the flasks through their gage lines, using fittings supplied by the Navy divers on board. (Enclosures (6) and (7) to the basic letter)

185. Repeated attempts to restart NR 3 SSGTG failed and as a result, COLE would be without electrical power for nearly an entire day. (Enclosures (6) and (7) to the basic letter)

186. Without electrical power, COLE was also without firemain, auxiliaries and hotel services. (Enclosures (6) and (7) to the basic letter)

187. The water level in AMR 2 continued to rise, and portable dewatering equipment was removed in order to secure the space and prevent progressive flooding. (Enclosures (6) and (7) to the basic letter)

188. The increased pressure on AMR 2's bulkhead began to dislodge shoring that had been constructed around MER 2's plugged bulkhead seal and the engine room water level also began to rise. (Enclosures (6) and (7) to the basic letter)

189. Ship's force attempted to supply the ship's firemain from a riser on the fueling dolphin, but there was insufficient pressure to operate a PERI-jet to dewater MER 2. (Enclosures (6) and (7) to the basic letter)

190. Ship's force also attempted to rig two P-100 pumps in tandem in order to control MER 2 flooding, but lacked a three inch to two-and-a half inch reducing coupler needed to mate suction and discharge lines between the two pumps. (Enclosures (6) and (7) to the basic letter)

191. The coupler was not part of the ship's damage control equipment. (Enclosures (6) and (7) to the basic letter)

192. An attempt was then made to rig a PERI-jet in tandem with a P-100 in MER 2, but the arrangement was unable to overcome the static discharge head between the engine room and the damage control deck overboard discharge fittings. (Enclosures (6) and (7) to the basic letter)

193. The single P-100/PERI-jet arrangement was finally successful when ship's force cut a lower overboard discharge hole through the ship's hull in MER 2's upper level using a PECU. (Enclosures (6) and (7) to the basic letter)

194. The tide turned when two air-driven pumps provided by HAWES and supplied with LP air from the pier were added to the effort. MER 2 dewatering was completed approximately 1600. (Enclosures (6) and (7) to the basic letter)

195. At 0005, COLE engineers were successful in starting NR 3 SSGTG. (Enclosures (6) and (7) to the basic letter)

196. Within an hour, electrical power, firemain, CHT, sea water service and air systems were restored. (Enclosures (6) and (7) to the basic letter)

197. Air conditioning was restored to its previous level of service by 0200. (Enclosures (6) and (7) to the basic letter)

198. With services restored to levels attained prior to the loss of NR 3 SSGTG, and having benefit of outside-the-lifelines help from MDSU TWO, U.S. Marine Corps FAST team, USS HAWES (FFG 53), USS DONALD COOK (DDG 75), theater U.S. Central Command, and technical and law enforcement communities, COLE's subsequent efforts turned toward recovery of remains, continued restoration of equipment and preparing the ship for onward movement. (Enclosures (6) and (7) to the basic letter)

Effectiveness of Damage Control Equipment

199. The crew stated the PHARS was an invaluable piece of damage control equipment, and performed extremely well in all applications. (Enclosure (6) to the basic letter)

200. The crew stated WICS proved to be 100% reliable. (Enclosure (6) to the basic letter)

201. The crew experienced 100% reliability in the use of both PERI-jet and S-type eductors. (Enclosure (6) to the basic letter)

202. The crew stated that the training wooden and metal shoring equipment during damage control training at the beginning of deployment proved invaluable and they reported no difficulties in using the equipment. (Enclosure (6) to the basic letter)

203. SCBAs operated flawlessly. (Enclosure (6) to the basic letter)

204. SCOTT EEBD's operated flawlessly. (Enclosure (6) to the basic letter)

Opinions

1. LCDR [redacted] and GSMC(SW) [redacted] revitalized COLE's ship-wide damage control training. (Findings of Fact 4-14)

2. As a result of the basic hands-on approach to DC training, individual and team enthusiasm for the training developed into a healthy and synergistic competitiveness between repair parties and teams. (Findings of Fact 9-11)

3. Training conducted during COLE's Atlantic and Mediterranean transits was key in preparing the damage control organization to combat the damage sustained on 12 October. (Findings of Fact 6-14 and 72-197)

4. There is no specific scenario used that would have prepared the ship and her crew for the damage sustained; however, all of the combined elements of integrated training came together to meld the crew into a cohesive team and resulted in the successful efforts of saving the ship from further degradation. (Findings of Fact 27-67 and 72-197)

5. Based on crew performance following the 12 October explosion, DC training in COLE must be assessed as effective. (Findings of Fact 72-197)

6. The ship was correctly designed and equipped to cope with the primary effects of the explosion. (Finding of Fact 18-67, 72-110, and 145-203)

7. Medical equipment and supplies were distributed correctly about the ship, available, and ship's force was trained to use them. (Findings of Fact 84-85, 100-101, and 110-144)

8. In the immediate aftermath of the explosion, there were numerous instances wherein ship's force personnel reacted quickly, correctly, and even heroically to remove injured shipmates from the debris, administer first aid, and prepare them for evacuation from the ship, all while damage control efforts continued. (Findings of Fact 72-138)

9. COLE's designed resistance to damage and the crew's actions had stabilized the ship and stemmed further progressive damage

within 20-30 minutes of the explosion. (Finding of Fact 72-110)

10. Uncommanded cycling of firemain valves was a known issue in the DDG 51 class, but had been reported as corrected. In COLE, it is difficult to ascertain whether or not firemain valves where cycling as a result of this previously known issue or damage encountered from the explosion. Regardless of the reason, the crew encountered great difficulty in gaining control of the firemain. (Findings of Fact 47-48)

11. The main drain system was not utilized as effectively as it could have been in that AMR 2 could not be either dewatered using its own main drain eductor (due to a lack of external remote operators) or using the main drain eductor in MER 2 because the electrically operated main drain bulkhead isolation valves did not work. (Findings of Fact 40, 52, 146, 156, 158, 171-176, and 186-192)

12. Given the circumstances, overly conservative management of the fuel system for NR 3 SSGTG (the only online SSGTG) contributed to the loss of electrical power at 0305 on 15 October. (Findings of Fact 177-181)

13. Concern was expressed that the OCENCO EEBD lacked any sort of hood, and that it would have been difficult to move through smoke filled areas without burning the eyes. (Enclosure (6))

14. The use of flashlights, purchased by the Chief Engineer, not only provided lighting during periods of darkness, they were used by injured personnel to signal crewmembers, and, in fact, saved lives. (Findings of Fact 25 and 112-113)

15. With the exception of the P-100 portable dewatering pump, damage control equipment performed effectively. The P-100 lacked sufficient power and capacity to be used as either a dewatering pump or a firefighting pump. (Findings of Fact 36-67, 99, 107, 112-113, 130-131, and 145-203)