



DEPARTMENT OF THE NAVY  
NAVAL SEA SYSTEMS COMMAND  
1333 ISAAC HULL AVE, SE  
WASHINGTON NAVY YARD, DC 20376-0001

REF ID: A66581

5810

Ser 00/ 4 4 5

JUN 19 2014

MEMORANDUM FOR THE RECORD

Subj: MEMORANDUM FOR THE RECORD

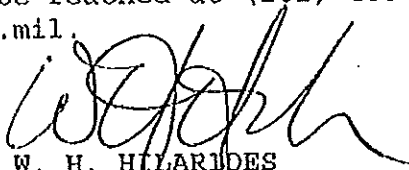
Ref: (a) SECNAV M-5510.36, DON INFOSEC Programs

Encl: (1) COMNAVSEA ltr 5830 Ser 00/C002 of 20 May 13

1. Team Subs along with NAVSEA 08 conducted a declassification review for Freedom of Information Act (FOIA) request of enclosure (1). As a result, information was redacted for those sections unable to be declassified and released in accordance with reference (a).

2. All other information is determined to be "UNCLASSIFIED".

3. The point of contact for this matter is Mr. Ameer S. Beresford, SEA 00P3. He can be reached at (202) 433-6071 or email to Ameer.Beresford@navy.mil.

  
W. H. HILLARIDES

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DEPARTMENT OF THE NAVY

NAVAL SEA SYSTEMS COMMAND  
1333 ISAAC HULL AVE SE  
WASHINGTON NAVY YARD DC 20376-0001

IN REPLY REFER TO

5830  
Ser 00/C002  
20 May 13

~~CONFIDENTIAL - RESTRICTED DATA~~ [Unclassified upon removal of enclosure (1)]

From: Commander, Naval Sea Systems Command  
To: Distribution

Subj: FINAL COMMAND INVESTIGATION INTO THE FIRE THAT OCCURRED  
ONBOARD USS MIAMI (SSN 755) AT THE PORTMOUTH NAVAL  
SHIPYARD ON 23 MAY 2012

Ref: (a) JAGMAN investigation Ser 5830 of 26 July 2012 w/  
endorsements

Encl: (1) Final JAGMAN investigation report of 15 May  
2013 approved by Commander Naval Sea Systems Command

1. (U) On 24 May 2012, I appointed RDML(sel) [b]6 [redacted] as the Investigating Officer into the 23 May 2012 fire onboard USS MIAMI (SSN 755). Reference (a) is classified Confidential - Restricted Data. All subsequent endorsements are For Official Use Only when the report is removed. This memorandum is also For Official Use Only upon removal of enclosure (1).

2. (U) This investigation was initially completed prior to Mr. Fury's confession to setting the fire and his subsequent arrest. Prior to that time, the focus of the cause of the fire was on the vacuum cleaner that was discovered in the debris of Wardroom Stateroom 1. The investigation was then re-drafted to incorporate Mr. Fury's admission that he intentionally set the fire, while highlighting the problem areas in the initial identification and response to the fire. Overall, this investigation, the Fleet Forces Command Fire Review Panel, the Naval Sea Systems Command lead integration group, and numerous

Derived from: ~~DoS-DoD-Classification-Guide-  
CG-BH-1 Rev 2 dtd February 1996  
RESTRICTED DATA  
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lessons learned teams allowed us to take a critical look at the Navy's ability to fight shipboard fires during extended maintenance availabilities. This remains an ongoing process and will continue to evolve and improve.

3. (U) The four endorsements to reference (a) contain recommended deletions, additions, and modifications to the investigative report. I have reviewed all the documents and have adjudicated the changes proposed by the endorsers. The Findings of Fact, Opinions and Recommendations, as modified within enclosure (1), are approved. Recommendations 1 through 6 will be implemented by the affected commands. Recommendations 7 and 8 addressing individual accountability are specifically retained in the report. However, all disciplinary and administrative actions against military and civilian personnel remain the responsibility of the individual commands.

  
K. M. MCCOY

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15 May 2013

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Subj: FINAL COMMAND INVESTIGATION INTO THE FIRE THAT OCCURRED  
ONBOARD USS MIAMI (SSN 755) ON 23-24 MAY 2012

- Ref:
- (a) JAGINST 5800.7E (MANUAL OF THE JUDGE ADVOCATE GENERAL)
  - (b) COMSUBFOR ltr 3540 Ser N00/C00017 of 24 Feb 11 (MIAMI ORSE REPORT)
  - (c) COMSUBLANT/COMSUBPACINST 3590.17D, Tactical Readiness Evaluation (TRE)
  - (d) COMSUBLANT NORFOLK VA MSG 290507Z JAN 11 MIAMI (SSN 755) TACTICAL READINESS EVALUATION (TRE) REPORT
  - (e) MIAMI MSG 241120Z JUN 11 MIAMI POM CERTIFICATION
  - (f) COMSUBFOR ltr 4790 Ser N01/00363 of 29 Jul 10 (PRE-AVAILABILITY PREPARATIONS)
  - (g) COMUSFLTFORCOMINST 4790.3B (Joint Fleet Maintenance Manual)
  - (h) CSGTWOSYREPPNSINST 5000.1 dtd 7 Jan 11 (Submarine Shipyard Availability Manual)
  - (i) COMSUBFORINST 3500.2 dtd 16 Feb 10 (Continuing Training Manual)
  - (j) NAVSEA 0902-018-2010, General Overhaul Specifications for Deep Diving SSBN/SSN Submarines (DDGOS)
  - (k) NAVSEA S9002-AK-CCM-010/6010 (Industrial Ship Safety Manual for Submarines)
  - (l) NAVSHIPYD PTSMH INSTRUCTION 4730.14K dtd 14 Jan 2010 (Portsmouth Naval Shipyard Work and Test Manual)
  - (m) NAVSHIPYD PTSMH INSTRUCTION 11350.1D dtd 26 JAN 2012 (CLEANLINESS ABOARD SHIPS AND ASSOCIATED DRY DOCKS)
  - (n) NAVSHIPYD PTSMH INSTRUCTION 11320.6G Shipyard Fire Safety Manual
  - (o) Portsmouth Naval Shipyard Process Instruction 1905-913-277K (Hot Work Precautions)
  - (p) NAVSHIPYD PTSMHINST 5100.85B dtd 3 May 2007 (Smoking Policy)
  - (q) Portsmouth Naval Shipyard Fire Department Standard Operating Procedures

Derived from: ~~DDM-DDD Classification Guide~~  
~~CG RN-1 Rev-3 dtd February 1996~~  
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Encl (1)



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Subj: FINAL COMMAND INVESTIGATION INTO THE FIRE THAT OCCURRED  
ONBOARD USS MIAMI (SSN 755) ON 23-24 MAY 2012.

- (18) MIAMI EOH Initial Services Install Timeline
- (19) JAGMAN memo (Interview with USS MIAMI Ship Safety Council) of 31 May 2012
- (20) (b)(6) USN, Commanding Officer MIAMI, Statement of 28 May 2012
- (21) MIAMI and PNSY Cleanliness and Equipment Protection Responsibilities
- (22) JAGMAN memo (Commander, PNSY teleconference) of 15 June 2012
- (23) (b)(6) USN, Summary of Interview dtd 28 May 2012
- (24) (b)(6) USN, Summary of Interview dtd 30 May 2012
- (25) Email Record of PNSY Safety and Cleanliness Tours of MIAMI
- (26) JAGMAN memo (Summary of Engine Room Tour of MIAMI) dtd 27 May 2012
- (27) NRRO Findings Related to MIAMI dtd 29 May 2012
- (28) NSRO Audit Reports dtd 15 May 2012
- (29) (b)(6) Inspection Report dtd 29 Feb 12
- (30) MIAMI Quality Performance System (QPS) record for EOH
- (31) Documentation concerning PNSY smoking incident of 10 May 2012
- (32) Hot Work Memorandum of Agreement Between PNSY and CO, MIAMI dtd 21 Feb 2012
- (33) (b)(6) USN, Statement of 24 May 2012
- (34) (b)(6) PNSY worker, Summary of Interview dtd 28 May 2012
- (35) (b)(6) PNSY worker, Summary of Interview dtd 28 May 2012
- (36) (b)(6) PNSY worker, Summary of Interview dtd 28 May 2012
- (37) (b)(6) PNSY worker, Summary of Interview dtd 28 May 12
- (38) Craftsman 2.5 Gallon Wet/Dry Vacuum Owner's Manual
- (39) (b)(6) Summary of Interview dtd 4 Jun 2012
- (40) PNSY Shipboard Weekly Fire Prevention Inspection checklists from 6 March 2012 to 15 May 2012
- (41) NAVSHIPYD PTSMH INSTRUCTION 11320.6G CH-3 dtd 28 Apr 11 (Shipyard Fire Safety Manual)
- (42) Company Submarine Inspection Reports
- (43) MIAMI Safety Watch Log of 23 May 2012
- (44) MIAMI BDW Log of 23 May 2012

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Encl (1)

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- (45) (b)(6) [REDACTED] USN, Summary of Interview dtd 28 May 2012
- (46) (b)(6) [REDACTED] USN, Summary of Interview dtd 28 May 2012
- (47) (b)(6) [REDACTED] Summary of Interview dtd 28 May 2012
- (48) MIAMIINST C3120.26 (MIAMI Commanding Officer's Standing Orders)
- (49) (b)(6) [REDACTED] Executive Officer MIAMI, Statement of 31 May 12
- (50) Summary of Shipboard Fires PNSY - (b)(6) [REDACTED] Ship Safety Manager
- (51) (b)(6) [REDACTED] Summary of Interview dtd 28 May 2012
- (52) (b)(6) [REDACTED] Assistant Fire Chief PNSY, Shift B, Summary of Interview dtd 29 May 2012
- (53) MIAMI Dry-Dock Fire Fighting Doctrine During EOH dtd 24 Mar 2012
- (54) MIAMI Training Records in support of "Dry Dock Fire Fighting Doctrine During EOH MIAMINST 3040.2" dtd 24 March 2012
- (55) Fire Drill Onboard MIAMI dtd 29 March 2012
- (56) (b)(6) [REDACTED] Ship Safety Manager, Portsmouth Naval Shipyard, Statement of 31 May 2012
- (57) Initial Work Accomplishment Timeline (NOFORN) dtd 26 May 12
- (58) CTSS Fire Drill records from MIAMI
- (59) (b)(6) [REDACTED] USN, Executive Officer MIAMI, Summary of Interview dtd 28 May 2012
- (60) (b)(6) [REDACTED] USN, Executive Officer MIAMI, Summary of Interview dtd 8 June 2012
- (61) Fleet Training Management and Planning System (FLTTPS) record for MIAMI as of 23 May 2012
- (62) District 8 Firefighter Training Records
- (63) (b)(6) [REDACTED] District 8 Fire Chief, Summary of Interview dtd 29 May 2012
- (64) Portsmouth Naval Shipyard Fire and Emergency Services Live Training in Quarters U
- (65) Work and Test Manual, Portsmouth Naval Shipyard, New Hampshire, Chapter 5 (Ship Safety)
- (66) District 8 Firefighter Certification Records
- (67) Summary of PNSY shipboard fire drills from 2008-2012
- (68) Ship Safety Department Standard Operating Procedure No.2 (Rev1) (Shipyard Fire/Flooding Drill Administration)

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Subj: FINAL COMMAND INVESTIGATION INTO THE FIRE THAT OCCURRED  
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- (69) JAGMAN memo (Interview with SUBASE New London Fire Fighters) dtd 1 June 2012
- (70) (b) (6) PNSY Fire Fighter, Summary of Interview dtd 29 May 2012
- (71) (b) (6) PNSY Fire Fighter, Summary of Interview dtd 29 May 2012
- (72) MIAMI Temporary Services Listing
- (73) TGI cover pages for hull cuts 1A & 37
- (74) Engineering Drawing of MIAMI hull cuts
- (75) TGI cover pages for battery removal
- (76) MIAMI hot work authorized for 23 May 2012
- (77) Record of email documenting sawzall work on board MIAMI dtd 6 Jun 12
- (78) (b) (6) PNSY worker, Summary of Interview dtd 28 May 12
- (79) (b) (6) PNSY worker, Summary of Interview dtd 28 May 12
- (80) (b) (6) PNSY employee, Summary of Interview dtd 27 May 2012
- (81) (b) (6) PNSY employee, Summary of Interview dtd 28 May 12
- (82) (b) (6) PNSY employee, Summary of Interview dtd 28 May 12
- (83) (b) (6) USN, Summary of Interview dtd 28 May 2012
- (84) (b) (6) PNSY employee, Summary of Interview dtd 30 May 12
- (85) Timeline of Events for 23 May 2012 submitted by MIAMI
- (86) (b) (6) USN, Statement of 24 May 2012
- (87) (b) (6) USN, Statement of 24 May 2012
- (88) (b) (6) USN, Statement of 24 May 2012
- (89) E-mail response from (b) (6) CSL N44 dtd 13 June 2012
- (90) (b) (6) USN, Statement of 24 May 2012
- (91) (b) (6) USN, Summary of Interview dtd 27 May 2012
- (92) (b) (6) PNSY employee, Statement of 23 May 2012
- (93) (b) (6) PNSY employee, Statement of 23 May 2012
- (94) (b) (6) PNSY employee, Summary of Interview dtd 28 May 2012
- (95) (b) (6) PNSY employee, Summary of Interview dtd 27 May 2012
- (96) (b) (6) USN, Statement of 24 May 2012

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Subj: FINAL COMMAND INVESTIGATION INTO THE FIRE THAT OCCURRED  
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- (97) Portsmouth Naval Shipyard Dispatch Log dtd 23 May 2012
- (98) (b)(7)(C) USN, Summary of Interview dtd 27 May 2012
- (99) (b)(7)(C) USN, Summary of Interview dtd 27 May 2012
- (100) (b)(7)(C) USN, Statement of 24 May 2012
- (101) (b)(7)(C) USN, Statement of 24 May 2012
- (102) (b)(7)(C) USN, Summary of Interview dtd 27 May 2012
- (103) (b)(7)(C) USN, Chief of the Boat MIAMI, Statement of 29 May 2012
- (104) Naval Surface Warfare Center, Carderock Division, Fire Protection Group Shop Vacuum Fire Testing Summary of 6 June 2012
- (105) Flashover Assessment for USS Miami Stateroom No. 1
- (106) Statement of First Fire Fighting Agent Applied
- (107) Emergency Operations Center Log
- (108) (b)(7)(C) USN, Executive Officer MIAMI, Statement of 29 May 2012
- (109) JAGMAN MIAMI Incident Timeline
- (110) Emergency Operations Organization Log
- (111) COMSUBGRUTWO Representative Timeline
- (112) Emergency Control Center Data Data System 2 Log
- (113) CNI INSTRUCTION 3440.17 dtd 23 Jan 06 (NAVY INSTALLATION EMERGENCY MANAGEMENT (EM) PROGRAM)
- (114) OPNAV 5450.339 (MISSION, FUNCTIONS, AND TASKS OF COMMANDER, NAVY INSTALLATIONS COMMAND)
- (115) Navy Region Mid-Atlantic Fire and Emergency Services Organizational Chart
- (116) NRMA District 8 PNSY Fire Department Certification and Training Records
- (117) National Fire Protection Association 1005 (Standard for Professional Qualifications for Marine Firefighters For Land-Based Fire Fighters, 2007 ed.)
- (118) COMNAVREGMIDLANTINST 5233.1A dtd 17 Jan 12 (SHORE INSTALLATION MANAGEMENT (SIM) OPERATIONS MANUAL) - relevant portion enclosed
- (119) (b)(7)(C) Navy Region Mid-Atlantic Fire Chief, Summary of Interview dtd 5 June 2012
- (120) JAGMAN memo (Interview with Commander, Navy Region Mid-Atlantic Operations Department Personnel) dtd 31 May 2012
- (121) Navy Region Mid-Atlantic Fire and Emergency Services Fire District Weekly Report, District 8 dtd 22 Apr 12 to 2 Jun 12

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- (122) (b) [REDACTED] USN, PNSY Code 300, Summary of  
Interview dtd 30 May 12
- (123) NRMA Fire and Emergency Services Travel Summary to  
PNSY, 2009 to Present
- (124) (b) [REDACTED] email dtd 3 Apr 12 (Performance  
Appraisals (b) [REDACTED])
- (125) (b) [REDACTED] CNRMA Deputy N3, email dtd 5 Jun 12
- (126) PNSY Fire Department Standard Operating Procedures
- (127) (b) [REDACTED] Summary of  
Interview, dtd 29 May 12
- (128) (b) [REDACTED] USN, Commander, PNSY, Summary of  
Interview dtd 30 May 12
- (129) CNIC Fire and Emergency Services Program Compliance  
Assessments for Commander, Navy Region Mid-Atlantic,  
District 8 conducted October 2011
- (130) Commander, Naval Sea Systems Command (SEA 04) NAVSEA  
AVAILABILITY PROGRAM REVIEW, PORTSMOUTH NAVAL  
SHIPYARD, MAY 2012 DRAFT
- (131) NNSY Fire Drills, Summary of Interview dtd 30 May 12
- (132) (b) [REDACTED] email dtd 7 Jun 12 (Pearl Harbor NSY)
- (133) (b) [REDACTED] email dtd 6 Jun 12 (Norfolk NSY)
- (134) (b) [REDACTED] email dtd 5 June 12 (NAVSEA)
- (135) (b) [REDACTED] email dtd 5 Jun 12 (Interim guidance)
- (136) (b) [REDACTED] email dtd 8 Jun 12 (Puget Sound NSY)
- (137) (b) [REDACTED] email dtd 5 June 12 (NAVSEA Combustibles)
- (138) (b) [REDACTED] email dtd 5 June 12 (NAVSEA Stowage of  
Combustibles)
- (139) (b) [REDACTED] email dtd 7 June 12 (Vacuum Usage  
Memo)

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ONBOARD USS MIAMI (SSN 755) ON 23-24 MAY 2012.

Preliminary Statement

1. Pursuant to enclosure (1) and reference (a), a Command Investigation (JAGMAN) was conducted into the fire occurring onboard USS MIAMI (SSN 755) from 23 to 24 May 2012. [REDACTED] [REDACTED] USN; [REDACTED] USN; [REDACTED] USN, and [REDACTED] provided assistance in the interviews and collection of data enclosed with this report. [REDACTED] JAGC, USN, Staff Judge Advocate, Commander, Submarine Group TWO, provided legal counsel for the Investigating Officer (IO) and special assistants. Due to the complexity of the issues involved and Naval Criminal Investigative Service (NCIS) re-opening their investigation, the completion date for this report was extended by Commander, Naval Sea Systems Command.
2. During the course of this investigation, the IO and his investigative team obtained documents dealing with shipboard fire fighting issues raised previously at Puget Sound Naval Shipyard. These documents will be turned over for review by the Investigative Panel that is recommended to be convened by Commander, US Fleet Forces Command in accordance with Recommendation Number 1 of this report.
3. NCIS conducted an investigation of this incident from 24 to 26 May 2012. At the conclusion of their investigation, NCIS reported no reason to suspect criminal or malicious intent as the cause of the fire. Subsequent to the convening of this investigation, a number of incidents occurred in the MIAMI Drydock leading NCIS to re-open their investigation into the cause of the fire. The follow-on NCIS investigation prompted a confession from a Portsmouth Naval Shipyard (PNSY) civilian employee who revealed that he intentionally started the fire in a Wardroom Stateroom. The NCIS criminal investigation and prosecution efforts by the US Attorney's office remain ongoing as of the date of this report.
4. All available evidence was reviewed and collected by the IO and his investigative team. Members of the MIAMI crew, PNSY firefighters, PNSY employees and individuals from various other activities were interviewed in order to gain an understanding of the causes of the casualty and how day-to-day standards, training, and Command & Control elements affected the casualty response. Senior leadership, including the Commanding Officer of MIAMI and Commander, PNSY, were also interviewed to this end.

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5. The IO and his investigation team were able to view the fire scene intact, albeit after an NCIS team first reviewed the site. The prior presence of these parties did not impede the IO's ability to review and investigate this matter.

6. The time line in this report is based upon a compilation of witness statements, ship's records, shipyard records, and other evidence. As a result, times stated in this document are best estimates given the available information. All times cited in this report are local (-4Q) unless otherwise specified. In the Casualty Timeline portion of this report, where times are not specified, events are placed within the timeline in the most likely sequence based on the compilation of evidence.

7. A typical 688-Class Submarine Engineered Overhaul (EOH) at any Naval Shipyard consists of approximately 12 months in drydock for major production work. Weapons are removed prior to arrival. Early in the availability, habitability and stowage items are offloaded from the ship to off-hull temporary storage locations. Damage control gear is relocated to a CONEX box on the pier near the brow of the ship. Crew berthing spaces are cleared of all mattresses and bunk curtains. Bulkheads and equipment throughout the ship are covered with protective materials to prevent damage. Most onboard systems are drained, depressurized, and deenergized with control turned over to the maintenance activity to allow for efficient and safe production work. The majority of the maintenance is conducted with the ship in dry dock. Hull cuts are typically used to facilitate major production work. Temporary systems are employed where necessary to mitigate the ongoing work on ship's systems required for safety (e.g., fire fighting, communications, emergency breathing, dewatering). These conditions were similar to those existing on MIAMI at the time of the fire.

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Subj: FINAL COMMAND INVESTIGATION INTO THE FIRE THAT OCCURRED  
ONBOARD USS MIAMI (SSN 755) ON 23-24 MAY 2012.

Executive Summary

On 23 May 2012, a major fire occurred on USS MIAMI in Drydock #2 at Portsmouth Naval Shipyard (PNSY). The fire burned for approximately 10 hours and required unprecedented assistance from numerous federal and civilian Fire & Emergency Service providers. The fire resulted in extensive damage to the Forward Compartment (FC) of MIAMI with an initial repair estimate of \$440M. Some responders suffered minor injuries.

A PNSY civilian employee confessed to intentionally starting the fire in a bag of rags, remaining at the scene in a Wardroom Stateroom until the flames on the rags were approximately two inches high. There were other combustible items stowed in close proximity to the bag of rags. This PNSY worker then returned to his assigned workspace in the Torpedo Room (TR).

Even though the fire was intentionally set, there was a window of opportunity to control, contain and extinguish the fire in the early stages of the casualty. Human error and a poorly coordinated response between Ship's Force and PNSY firefighters allowed the fire to fully develop causing extensive damage to the FC.

During the period of time between when the fire was started and the fire alarm was sounded, there were no members of Ship's Force below decks in the FC. When the fire first presented smoke in FC Middle Level (FCML), valuable time was lost locating the source due to human error. Two PNSY workers unsuccessfully attempted to trace the smell of smoke in the FC to the source rather than immediately actuate the fire alarm in parallel with their search. During this critical time period, the contents of Wardroom Stateroom #1 (WRSR1), to include plastic non-fire retardant vacuum cleaners (commercial wet/dry vacs) and other combustibles began to burn and emit dark, black smoke.

By the time the casualty alarm was first pulled in the TR (the space below the seat of the fire), the volume of smoke and rate of smoke production in the FC allowed for only a short investigation by personnel not wearing breathing protection. The focus of this investigation on the TR allowed more time for the fire in WRSR1 to grow and spread to the other vacuum cleaners and combustibles stowed in WRSR1. The personnel who evacuated the ship and knew the fire was not in the TR were not consulted immediately nor did they forcefully volunteer this information. Ship's Force investigation was hampered when the

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on-watch Below Decks Watch (BDW) remained topside instead of proceeding to the scene with a portable extinguisher as required by the ship's Fire Bill.

The Ship's Force immediate response personnel in breathing protection also focused on the TR although, by this time, it had been announced that the Wardroom was the location of the fire. This response was disadvantaged because all Ship's Force watchstanding supervisors were off the ship on the living barge, resulting in a delay getting to the ship, determining the status of the casualty, and establishing effective command and control topside. The immediate response effort was unsuccessful in determining the fire location.

While the arrival of the PNSY firefighters was timely, their initial actions, based on training and practice, were dependent on knowledge of the location of the fire. This scenario was well beyond that which had been practiced or anticipated by either Ship's Force or the PNSY firefighters, resulting in an uncoordinated attempt below decks to find the fire. This condition, combined with a lack of effective on-scene Incident Command, precluded a successful attack on the seat of the fire during this initial window of opportunity.

Within 30 minutes of the fire alarm, the contents of WRSR1 flashed over and the fire spread to adjacent spaces in the FC. A flashover is the near-simultaneous ignition of most of the directly exposed combustible material in an enclosed area. The extent of the fire was now beyond the capacity and capability of Ship's Force and the on-scene PNSY Fire Department personnel. Establishment of the PNSY Emergency Operations Center and arrival of numerous mutual aid fire fighters eventually resulted in sufficient resources to extinguish the fire.

### Findings of Fact (FOF)

#### Overview

1. On 23 May 2012, sometime before 1737, a Class-A fire started in Wardroom Stateroom #1 (WRSR1) on board MIAMI. [Encl (2), (3)]
2. The location of WRSR1 is shown in enclosure (4). [Encl (4)]

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3. The ship's crew and shipyard fire fighting support teams, to include local civilian mutual assistance companies, fought the fire for approximately 10 hours. [Encl (5)]
4. Eight individuals, including [REDACTED] the ship's Navigator, were treated for medical injuries in the course of fighting the fire. No one required hospital care lasting longer than 24 hours, but the Navigator suffered four broken ribs. [Encls (6), (7)]
5. The extensive damage to MIAMI's Forward Compartment (FC) is catalogued in the enclosures. A detailed damage assessment is being conducted by a separate Naval Sea Systems Command Technical Assessment Team. [Encl (8)]
6. During the initial post-fire inspections by the Fire Investigator, the seat of the fire was determined to have been in WRSR1 based on discovery of the lowest point of burn and the telltale "V"-shaped burn patterns that emanated from WRSR1. [Encls (3), (8)]
7. Comprehensive forensic analysis of WRSR1 revealed the point of origin, that point which exhibits the lowest and generally the most intense burn: melted plastic remains of a vacuum cleaner. Additionally, remains of at least five other plastic vacuum cleaners and debris of combustible material were discovered in WRSR1. [Encls (3), (8), (9)]
8. Deleted.
9. The Criminal Complaint against Mr. Casey Fury revealed that Mr. Fury has confessed to intentionally and willfully starting a fire in a Wardroom Stateroom by setting a bag of rags on fire with a lighter. The bag of rags was in close proximity to other combustibles in the Wardroom Stateroom. [Encl (10)]

Readiness of MIAMI to commence Engineered Overhaul

10. As of 23 May 2012, Commanding Officer (CO), USS MIAMI, [REDACTED] [REDACTED] had been on board for 21 months and the Executive Officer, [REDACTED] had been on board for 18 months. [Ref (b)]

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11. The MIAMI completed her most recent Tactical Readiness Evaluation (TRE) on 28 Jan 2011 and received an overall score of "At Standards" and a Damage Control grade of "At Standards." Fire casualty response received a grade of "Below Standards." No specific report of corrective action is required in accordance with reference (c). [Refs (c), (d)]

(b)(1)

13. The MIAMI completed a Pre-Overseas Movement Certification (POMCERT) on 24 Jun 2011 and was recommended for deployment certification pending resolution of material and training issues (none of which were related to fire fighting). The ship received a DC grade of "At Standards" and a Fire casualty response grade of "At Standards". [Ref (e)]

14. Personnel from Task Force 69 and Submarine Squadron 4 conducted a Mid-Deployment Check Ride (MDCR) on MIAMI from 13 through 17 October 2011. The MDCR Team concluded the ship's briefing and certification process for all evolutions was exceptional and her cleanliness was above average. The MDCR Team identified no specific areas of concern. Records provided show that MIAMI exceeded the continuing training program requirements from higher authority for shipboard fire fighting. [Encl (11)]

15. Prior to beginning an EOH, the Joint Fleet Maintenance Manual Volume II, Part I, Section 3.5 requires the ship to coordinate with the industrial activity to conduct pre-availability training and indoctrination, and provides suggested topical areas. Volume I, Section 1200 of the Submarine Shipyard Availability Manual (SSAM) tailors this list for the types of availabilities conducted at PNSY. Appendix B of the Commander, Submarine Forces, Continuing Training Manual also directs pre-availability training with a focus on the topics from the SSAM. Mandatory training events include all-hands training on fire safety and prevention, watchstanding procedures, and shipyard casualty response. Reference (f) further reinforced the importance of preparations for EOH to the MIAMI Command Team. [Refs (f), (g), (h), (i)]

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16. MIAMI returned from deployment in December 2011 and conducted her EOH initial pre-availability training as required by references (f), (g), (h), and (i) during the transit home from her last port of call. The remainder of the training was conducted prior to or during the initial portion of the EOH. MIAMI met the training requirements through approximately 1700 man-hours of pre-arrival training. [Encls (12), (13)]

17. There is no requirement from higher authority for the Immediate Superior in Command (ISIC) to certify a ship's readiness prior to entering an extended maintenance availability. [Refs (g), (h)]

Condition of MIAMI in Engineered Overhaul

18. MIAMI arrived in Portsmouth, NH on 1 Mar 2012 and commenced alongside preparations for EOH. [Encl (14), (15)]

19. MIAMI entered Drydock #2 on 15 Mar 2012. [Encl (16)]

20. Duty section quarters and working spaces were relocated to a crew living barge moored adjacent to Drydock #2, approximately 200 yards from the ship's access brow. A temporary wardroom was established as a work control center in a trailer parked on the starboard wing wall near the topside access shack. These are both normal practices for ships in EOH. [Encl (17)]

21. In anticipation of securing the ship's installed fire fighting system, temporary fire fighting hose reels were established topside in accordance with reference (j) on 20 Mar 2012. [Encl (18)]

22. The Casualty Control (CASCON) Alarm and Announcing System was established on 26 March 2012 in accordance with reference (j). [Encl (18)]

Matters pertaining to cleanliness and stowage onboard MIAMI

23. The Ship Safety Council (SSC) was established for the MIAMI EOH in accordance with reference (k), and defined in reference (1). The SSC is assigned to take local approval actions for production work that could affect ship safety. Members include the Ship Safety Officer (PNSY Code 300 member), NAVSEA Representative's Office (NSRO) Representative, and a Ship's Force representative. [Refs (k), (1)]

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24. Combustible materials were removed from the ship in accordance with reference (m). For the FC, this included all technical manuals and publications; and all habitability equipment such as mattresses, rack curtains, and seat coverings. This did not, however, include the vacuum cleaners and cleaning gear maintained in WRSR1 as they were not thought to be combustible. Additionally, as was common practice at PNSY, all DC gear was removed from the ship and staged topside near the access brow in a CONEX box. [Ref (m), Encl (17)]

25. The SSC was not involved in verification of the off-loading of combustible material from MIAMI. SSC involvement in this verification is not specifically required by higher authority. [Encl (19)]

26. Reference (m) states "Overall responsibility for cleanliness of the ship during an availability rests jointly with the CO and the Project Superintendent." [Ref (m)]

27. Deleted.

28. Deleted.

29. Deleted.

30. Deleted.

31. Deleted.

32. A review of SSC daily cleanliness inspection reports and an inspection of the Engine Room by the IO and his investigative team concluded the shipboard cleanliness and stowage standards onboard MIAMI were outstanding. [Encl (25), (26)]

33. The Naval Reactors Representative's Office (NRRO) provided monitor watches on board MIAMI in the weeks following her arrival at PNSY. During each of those nine weeks, no significant deficiencies relating to damage control or stowage were noted. [Encl (27)]

34. The NAVSEA Shipyard Representative's Office (NSRO) conducted three surveillances after the MIAMI was dry docked; no significant deficiencies relating to damage control or stowage were noted. [Encls (28), (29)]

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35. A review of the Quality Performance System (QPS), the shipyard's deficiency reporting and tracking system, revealed no safety or Ship Plan of the Day (SPOD) deficiencies for MIAMI during her EOH. [Encl (30)]

36. The presence of combustibles, including vacuums and cleaning products in WRSR1, was not viewed by anyone in the ship, PNSY, or oversight chains of command as unusual or outside of established practices. [Encls (20), (22), (27), (28), (30)]

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Matters pertaining to fire prevention onboard MIAMI

37. Smoking is prohibited onboard ships in PNSY. [Ref (p)]

38. In violation of the policy in reference (p), there was one confirmed incident of smoking onboard MIAMI when a PNSY worker was caught smoking in the Battery Well. The worker was removed from the MIAMI Project. Additionally, there were two other instances when cigarette butts were discovered onboard. [Encls (19), (31)]

39. During an EOH a significant amount of hot work takes place in, on, and around a submarine. Hot work is defined as "all flame heating, welding, torch cutting, brazing, carbon arc gouging, or any work which produces heat, by any means, of 400 degrees F or more." Because of the volume of hot work conducted on a daily basis during an EOH, most Shipyards control hot work via a Memorandum of Agreement (MOA) between the ship undergoing repair and the Project Team conducting the work. This MOA streamlines the approval process for hot work by granting permission for the Shipyard to perform hot work without specific (job-by-job) permission. To keep the duty section informed of the status of hot work, the shops conducting hot work onboard the ship are required to update a hot work status board (one maintained forward and one aft) prior to commencing hot work. This practice was followed onboard MIAMI during her EOH. [Ref (o)]

40. In accordance with reference (o), hot work onboard MIAMI was controlled via an MOA signed by the CO and the PNSY Project Superintendent for the EOH. [Encl (32)]

41. Hot work safety and fire prevention were stressed by both the ship and the project. Roving watchstanders routinely inspected work in progress at work sites. [Encls (14), (20), (33)]

42. Deleted.

43. Deleted.

44. Deleted.

45. Deleted.

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46. The PNSY Fire Department performed a "Shipboard Weekly Fire Prevention Inspection" every week since the arrival of the MIAMI at PNSY in accordance with Chapter 24 of reference (n) and SOP 83 of reference (q). No deficiencies were noted in any of these inspection reports. [Encls (40), (41), (42)]

47. Deleted.

Matters pertaining to watchstanding onboard MIAMI

48. In accordance with reference (l), the Below Decks Watch (BDW) maintained the Ship Safety Watch Log that included checks of hot work sites, conditions of hoses and leads, fire fighting equipment status and checks of the CASCON system. [Ref (1), Encl (43)]

49. As specified in Section 1115 of reference (h), the ship's Master Logs were updated to reflect changes in specifications and parameters during the course of the EOH. Specifically, normally monitored items no longer applicable due to removal or layup of parent equipment were 'grayed out' on the log sheets. As a result, the BDW no longer had any log entries associated with the WR State Rooms or WR Passageway (e.g., WRSR Safes, Small Arms Locker and Key Locker). [Encl (44)]

50. Three individuals who were qualified to stand BDW, but who were not on duty on 23 May 2012, were interviewed to determine the typical watch standing routine, formality, and effectiveness. From these interviews it was concluded that, MIAMI BDWs were aware that cleaning gear and vacuums were stored in WRSR1; Contrary to Article 2305 of reference (r) which states "during the course of the continuous patrol, the watch will enter all lower deck spaces to ascertain conditions," these individuals stated that some hourly tours did not include entry or viewing of each WRSR; Article 2305 of reference (r) states "when a Topside Sentry is not stationed in addition to the Petty Officer of the Deck, the BDW shall make a safety check of the Petty Officer of the Deck at half-hour intervals, minimizing the amount of time spent Topside." Although the Topside Sentry was stationed, these individuals stated the BDW went topside every 30 minutes to sight the Petty Officer of the Deck. This practice was consistent with MIAMI Command Team expectations. [Encls (45), (46), (47)]

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51. The BDW practice of going topside twice per hour was not required by higher authority and resulted in periods of time where no Ship's Force watchstanders were in the FC, as the BDW is the only watchstander assigned to this space. [Encls (45), (46), (47)]

52. The ship had adjusted the timing of supervisory tours such that there was a tour every hour and a half by a supervisor, but the ship did not require the forward supervisors to tour aft or the aft supervisors to tour forward. Neither of these actions was required by higher authority. The MIAMI Commanding Officer's Standing Orders provides guidance on the content of supervisory tours with specific direction on Fire Hazard Mitigation, cleanliness of work sites, hot work sites, and proper precautions to maintain cleanliness. [Encls (13), (48)]

53. For the first month of the EOH, the ship implemented a backshift watchbill for forward and aft supervisors to provide additional oversight on backshift watchstanding formality and effectiveness to properly transition to the EOH environment. This action was not required by higher authority. [Encl (49)]

54. The Type Commander provided guidance to ships in overhaul to maintain an Engineering Department supervisory presence onboard the ship when habitability conditions caused messing, berthing and sanitation to be off the ship. Further, the CO amplified this guidance to mandate one of his Watch Officers remain onboard in EOH at all times. At the time of the fire casualty alarm, all four supervisory watchstanders were on the living barge. [Ref (s), Encl (48)]

55. Deleted.

Matters pertaining to fire fighting onboard MIAMI at PNSY

56. Between 2007 and May 22<sup>nd</sup> 2012, PNSY has seen a steady decline in the number of fires due to hot work onboard submarines. There were 7 total fires in 2007, 3 in 2008, 3 in 2009, none in 2010, 2 in 2011 and one in 2012 at the PNSY San Diego detachment. In all cases, no action was required by Fire Department personnel to extinguish the fire. The fires either self-extinguished or were extinguished through immediate response by Ship's Force or shipyard workers. [Encl (50)]

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57. The PNSY Fire Safety Manual designates the CO as responsible for fire fighting and training on his ship in accordance with directives from higher authority. It further states that when two or more activities are involved in a fire on PNSY, overall responsibility for fire fighting evolves on Commander, PNSY. [Ref (n)]
58. The Commander, Submarine Forces, Continuing Training Manual requires training on shipyard casualty response procedures. This requirement is not specific to the techniques or tactics that would be appropriate for fire fighting on a ship undergoing repair in a drydock. Additionally, no specific guidance on the content of such training exists in submarine fire fighting references (t) or (u). [Refs (i), (t), (u)]
59. Naval Ships' Technical Manual Chapter 555 and the Ship Systems Manual procedures depend exclusively on personnel action for both fire detection and casualty response, both in-port and at-sea. Neither reference provides specific fire casualty response action or principles for submarines in overhaul. [Refs (t), (u)]
60. The Ship Systems Manual Fire Procedure states that submarines in overhaul are most vulnerable to a disastrous fire. It further states the Ship's Duty Officer must know the pre-planned response procedures with the local fire department in the event of a fire on the ship. [Ref (u)]
61. The Engineering Department Master Chief (EDMC), (b)(6) engaged the SSO, PNSY Fire Department, and Commander, Submarine Group 2 Representative on both the design of the MIAMI EOH Drydock Firefighting Doctrine and the requirements for fire drill content necessary to secure the ship's installed fire fighting system. [Encl (51)]
62. PNSY did not provide a written pre-planned response procedure to meet the requirements of Section 1.2.2.h(1) of the Ship System Manual Fire Procedure. Instead, PNSY Fire Department provided verbal guidance that, in the event of a fire, the PNSY Fire Department would take charge of the casualty and the ship would provide escorts to the PNSY fire fighters. [Ref (u), Encls (51), (52)]

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63. As no standing plan was available from higher authority, the ship's Damage Control Assistant developed the MIAMI EOH Drydock Fire Fighting Doctrine by modifying the MIAMI's existing in-port fire fighting plan for Groton, CT. The modifications took into account the differences uncovered by the EDMC in his discussions and research. [Encl (51)]

64. The MIAMI promulgated her EOH Drydock Fire Fighting Doctrine in a ship's instruction dated 24 March 2012. This doctrine specified manning assignments for supervisors, initial responders, rapid response and full hose teams. The doctrine further specified that Ship's Force shall combat the fire until properly relieved by base emergency personnel. Additionally, the doctrine states the Ship's Duty Officer will ensure that appropriate extinguishing agent is continuously applied to the fire until the shipyard fire department man-in-charge relieves him at the scene. [Encls (20), (53)]

65. The MIAMI conducted an EOH Drydock Fire Fighting Doctrine supervisory table-top exercise led by the Engineer Officer and a supervisor training session led by the CO. Training on the MIAMI EOH Drydock Fire Fighting Doctrine was provided to the crew. 122 of 148 enlisted members were trained on this instruction. 9 of 18 officers were trained on this instruction. No additional training was provided to absentees. Notable exceptions include key responders on the day of the casualty: the Ship's Duty Officer (SDO) [REDACTED] the Duty Chief Petty Officer (DCPO) [REDACTED] and the Chief of the Boat (COB). [Refs (t), (u), Encls (53), (54)]

66. In accordance with reference (1), the SSC conducted a fire drill on 29 March 2012 to evaluate the MIAMI, the Project Team, and PNSY Fire Department prior to securing the ship's installed fire fighting system. The drill simulated a fire in Engine Room Upper Level from an electrical component that spread to adjacent material. Pressurized hoses were not authorized during this drill. Section 5.5.3.9 of reference (1) specified that the drill may be secured when the Fire Department arrived on the scene with a hose, and a turn-over with the man-in-charge was complete. The SSC evaluated this drill as "SATISFACTORY." [Encl (19), (55), (56)]

67. The requirements of references (j) and (k) were satisfied by the conduct of the drill run on 29 March 2012 and the ship's installed fire fighting system was secured on 2 April 2012. [Encl (57)]

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68. The ship conducted two additional drills on 11 and 12 April, 2012. These fire drills were not conducted in conjunction with shipyard firefighters. Continuous Training Support Software (CTSS) scores for the two drills dated 11 April and 12 April were 90% and 89%, respectively, indicating satisfactory completion. The two additional drills were not required by higher authority. [Encls (19), (58), (59)]

69. All three duty sections had fire fighting practice as a result of these drills. Notable absentees from all three fire drills were the SDO, [REDACTED] and the DCPO, [REDACTED] who were on duty on 23 May 2012. The ship did not have a duty section training program for EOH to mitigate these absences. [Encls (56), (58), (60)]

70. At the time of the casualty, the MIAMI had 138 graduates of Submarine Basic Firefighting (Course Identification Number A-495-2071), over the 135 required. Notable exceptions include [REDACTED] (on-watch SRW who responded to the casualty) and [REDACTED] (off-watch BDW who responded in Fire Fighting Ensemble (FFE)/Self-Contained Breathing Apparatus (SCBA)). [Encl (61)]

71. At the time of the casualty, the MIAMI had 17 out of 27 required graduates of Submarine Advanced Firefighting (Course Identification Number A-495-2072). Notable graduates include the Executive Officer (XO), COB, and the SDO, [REDACTED]. The notable exception was the DCPO, [REDACTED]. [Encl (61)]

72. In a typical 24 hour shift, a PNSY Firefighter spends two hours training. The majority of this training is conducted as lectures or computer-based training and is centered on the required training topics promulgated by higher authority. These topics do not include shipboard fire fighting. [Encls (52), (62)]

73. While hands-on training is conducted on a variety of topics, the only hands-on shipboard fire fighting training at PNSY is through the fire drills run to satisfy the requirements of references (j) and (k). [Refs (j), (k), Encls (52), (63)]

74. A smoke trailer is provided once per year for PNSY Fire Department training. This training device is used to acquaint fire fighters with Self-Contained Breathing Apparatus (SCBA) use in a smoke-filled environment. [Encl (52)]

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75. The Mobile Structure Fire Trainer is the only fire training device available for use by the PNSY Fire Department. This device has not yet been used at PNSY as no personnel are trained on its operation. The last live fire training conducted by the PNSY Fire Department was on the weekend of 4 November 2006.  
[Encls (52), (64)]

76. At PNSY, fire drills are the principle mechanism used to evaluate the response of shipyard personnel and the actions of Ship's Force and PNSY firefighters in combating the fire/associated casualties. [Encls (62), (65), (66)]

77. There is no record of a drill run at PNSY to exercise all necessary components of response to a major, fully developed fire onboard a ship in drydock. [Encls (19), (56), (67)]

78. Since 2009, PNSY has conducted 54 fire drills onboard submarines that required fire department response. While each of these drills required the fire department's participation, only one simulated the vertical spread of fire, most did not require the fire truck's hose to be pressurized, and none required the fire department to wear vision obscurement devices.  
[Encls (19), (67)]

79. PNSY Work and Test Manual and PNSY Safety Department Standard Operating Procedure No. 2 (Rev 1) set the requirements for the conduct and evaluation of shipboard fire drills. Incident Command effectiveness and PNSY firefighter familiarity with conditions below decks are not included in the evaluation criteria. [Encls (65), (68)]

80. Interviews conducted with several District 6 (SUBASE New London) and 8 (PNSY) fire fighters revealed only a limited familiarity with the interior of a submarine. In most cases, fire fighters stated they would desire to have more time onboard submarines for familiarization. In addition, it was clear that the fire fighters were not familiar with the nomenclature from the Submarine Interior Communications Manual used to describe the spaces and hatches on submarines. [Encls (52), (69), (70), (71)]

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81. A PNSY Fire Department company submarine inspection is required monthly by SOP 33B of reference (q). This inspection includes a tour of the ship, testing of fire alarms, and determination of access points into the ship. The intent of these inspections is to expose every PNSY fire fighter to the onboard conditions of submarines at PNSY. The required report and record of fire fighter attendance was not completed for these inspections. [Encls (41), (42), (52)]

82. Deleted.

83. Deleted.

Condition of MIAMI Prior to Start of the Casualty

84. At the time of the incident, the MIAMI was in the 3<sup>rd</sup> month of a 20 month Engineered Overhaul (EOH) in Drydock #2 at the Portsmouth Naval Shipyard (PNSY). [Encl (16)]

85. All of the systems in MIAMI's FC were drained, depressurized, deenergized, and turned over to PNSY. No temporary ladders were installed in the FC. The corresponding temporary services, as applicable, were installed onboard the ship [Encl (72)]:

- a. 400 Hz, 440 VAC Power
- b. 8" Vent, Fresh Water and Bleeder
- c. CASCON & Temp Communication Leads
- d. Pre-Heat Battery Well & Capstan Space
- e. Temp EAB & Production air lines
- f. Temporary & Emergency Lighting
- g. 8" Vent & Dehumidification Lines
- h. Carbon Arc Leads
- i. General Vent
- j. Purge & Vent & Breathing Air Lines
- k. Phone Lines

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86. There were two hull cuts in the FC of the ship to  
facilitate EOH production [Encls (73), (74)]:

- a. Hull Cut 1A (19in X 59in), which was located between  
frame 35 and 36 high on the port side of the Combat  
System Electronics Space (CSES).
- b. Hull Cut 37 (18in X 44in), which was located forward of  
frame 45 low on the starboard side of the Torpedo Room  
(TR).

87. The ship's battery was removed and work was ongoing in the  
battery well to make preparations for the VRLA battery  
installation. [Encl (75)]

88. There were eight hot work evolutions authorized for the FC  
on 23 May 2012. Subsequent Findings of Fact detail the specific  
jobs either in progress or recently completed at the time of the  
fire. [Encl (76)]:

- a. Welding and grinding associated with the foundation  
for the VRLA battery scanner and components in FC  
Lower Level (FCLL), just aft of the Torpedo Room
- b. Removal of deck access and miscellaneous structure in  
the Battery Well
- c. Grinding to remove distilled water battery fill piping  
in the port side of the Machinery Room
- d. Grinding in support of removal of valves CG-4, CG-5  
and CG-6 in the Crew's Head, port side, FCLL
- e. Cutting, grinding and brazing to support Low Pressure  
Air modifications for VRLA installation in FCLL, just  
aft of the Torpedo Room
- f. Grinding and welding to install platform modification  
structure in the Battery Well
- g. Welding to support installing 2nd platform portable  
deck access in FCLL, centerline, just aft of the  
Weapons Launch Console
- h. Grinding to support removal of the existing battery in  
the Battery Well

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89. There was also an authorized non-hot work job in the Capstan Space to cut a steel hanger using a sawzall. This created hot metallic byproducts which were later cleaned up using a vacuum cleaner at approximately 1430 on 23 May 2012. [Encls (77), (78)]

90. [REDACTED] an Assistant Project Supervisor for MIAMI, toured the ship at approximately 1330. He recalled tank cleaning in the TR in support of the VRLA battery installation and ship fitters working in the Auxiliary Machinery Room (AMR). [Encl (37)]

91. Two PNSY workers, [REDACTED] and [REDACTED] were tasked with welding and grinding associated with the foundation for the VRLA battery scanner and components in FCLL, just aft of the TR. They conducted this work between 1300 and 1500 on 23 May 2012. A vacuum was used to cleanup the jobsite following completion of hotwork. [Encls (35), (79)]

92. Two PNSY workers, [REDACTED] and [REDACTED] were tasked with welding and grinding associated with the foundation for the VRLA battery scanner and components in FCLL, just aft of the TR. They conducted this work between 1530 and 1730 on 23 May 2012. A vacuum was used to cleanup the jobsite following completion of hotwork. [Encls (80), (81)]

93. Two PNSY workers, [REDACTED] and [REDACTED] were tasked with welding to support installing 2nd platform portable deck access in FCLL, centerline, just aft of the Weapons Launch Console. They conducted this work between 1540 and 1600 on 23 May 2012. A vacuum was used to cleanup the jobsite following completion of hotwork. [Encl (82)]

94. [REDACTED] and [REDACTED] were also tasked with grinding in the Battery Well. They conducted this work between 1630 and 1730 on 23 May 2012. [Encl (82)]

95. At approximately 1530, [REDACTED] relieved as BDW, toured the FC, and noted multiple vacuums, blue plastic bags, Formula 409 cleaner, and other unidentified items in WRSR1. Contrary to Article 2305 of reference (x), subsequent tours until the time of his relief did not include a check of the WRSRs nor the WRSR Passageway. [Encl (83)]

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96. [REDACTED] an Assistant Project Supervisor for MIAMI, toured the ship from 1530 to 1600. His tour concentrated on cleanliness and stowage of the FC. During his tour he entered WRSR1, noted vacuum cleaners and other supplies, but noted no abnormalities. [Encl (84)]

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97. At approximately 1630, the SDO, [REDACTED] toured the FC and noted [REDACTED] and [REDACTED] grinding in FCLL, near the entrance to the TR. He ordered these individuals to stop working because their hotwork containment was allowing sparks to escape the work area. The CO was not informed of this incident. The workers were allowed to continue their work upon fixing the containment. The SDO toured the WRSR passageway and WRSR1-3 during this tour. No abnormalities were noted. This was the last time a watchstander inspected WRSR1 prior to the fire alarm. [Encls (33), (44), (48), (80), (82), (85)]

98. At 1700, [REDACTED] completed hot work (grinding) on the battery well access, removed his respirator, and thought he smelled smoke. He mentioned this to his fire watch, [REDACTED] the fire watch did not detect anything abnormal. No further action was taken. [Encl (80)]

99. At 1710, [REDACTED] relieved [REDACTED] as BDW for a chow break. Contrary to Article 2106 of reference (r), [REDACTED] did not tour the FC prior to relieving the watch. Upon watch relief, he proceeded from FCLL to the Torpedo Room to begin a tour of the FC. [Encls (83), (86)]

100. Between approximately 1715 and 1720, the BDW, [REDACTED] passed through FC Middle Level (FCML), to include the area in the immediate vicinity of the Wardroom, and stated that he noted nothing abnormal. Contrary to Article 2305 of reference (r), he did not tour the WRSR Passageway or WRSR 1-3 during this tour. He then proceeded to FCUL to complete his tour of the FC. He arrived at the Fan Room at approximately 1722. At approximately 1730, after conversing with two PNSY workers in the Fan Room, the BDW went topside for his half-hour check-in with the Petty Officer of the Deck (POOD). [Encls (85), (86)]

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101. At the start of the casualty there were three watch standers below decks: the Shutdown Reactor Operator (SRO), the Shutdown Electrical Operator (SEO) and the Shutdown Roving Watch (SRW). There were no watch standers below decks in the FC as the BDW was topside verifying the alertness of the topside watch and manning the access brow. The BDW typically spent 5 to 10 minutes topside every half-hour. [Encls (86), (87), (88)]

102. Contrary to reference (s), both the Engineering Duty Officer (EDO) and Engineering Duty Petty Officer (EDPO) were on the living barge at the same time and contrary to paragraph S.2.1.2 of the MIAMI Commanding Officer's Standing Orders, both the SDO and EDO were on the living barge at the same time. [Ref (s), Encls (48), (89), (90), (91)]

103. Mr. Fury, a PNSY painter, confessed that at approximately 1730 he stopped using a needle gun to strip paint in the TR and went to the Wardroom Stateroom area. Mr. Fury further confessed that while in one of the Staterooms, he noticed a bag of rags and due to his anxiety and the desire to get out of work, he set the bag of rags on fire with a BIC lighter. He remained in the Wardroom Stateroom until the flames on the rags were approximately two inches high and then he returned to the TR and his previous work. [Encl (10)]

104. At approximately 1730, [REDACTED] and [REDACTED] who were assigned to clean ventilation ducting in the Fan Room in FCUL, completed a conversation with the BDW, [REDACTED] and departed the Fan Room to retrieve an item from FCUL. They noted smoke at the forward end of the FCML Passageway near the non-vertical ladder leading to FCUL. Contrary to Chapters 2 and 8 of reference (n), instead of announcing the casualty, they traced the ventilation piping through Forward Crew's Berthing and Aft Crew's Berthing. They saw no indication of fire. As they exited Aft Crew's Berthing, they noted heavy smoke coming from the WRSR Passageway, attempted to identify the source, but could not due to its volume. [Encls (92), (93)]

105. At approximately 1736, a Shop 56 Supervisor, [REDACTED], encountered [REDACTED] and [REDACTED] in FCML as they exited Aft Crew's Berthing. [REDACTED] also noted smoke in the WRSR Passageway and called "Fire, Fire, Fire" down from FCML to [REDACTED] in FCLL and directed him to sound the CASCON alarm in the Torpedo Room in accordance with Chapters 2 and 8 of reference (n). The CASCON alarm in the WR was not accessible due to smoke. [Encls (80), (81), (94)]

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106. Per reference (n), an individual who discovers a fire should immediately operate the nearest fire alarm box. If possible, he should call the Fire Station at extension 2333, and should standby to direct the firefighters to the location of the fire. [Ref (n)]

107. At 1737, [REDACTED] and [REDACTED] went to the TR and told [REDACTED] a PNSY painter, to activate the CASCON alarm. When he did so, the PNSY Fire Department received automatic notification. At this time, there was very little smoke in the TR. [REDACTED] notified his co-worker, Mr. Fury, of the fire and then both evacuated the ship. [Encls (2), (80), (81), (95)]

108. Contrary to the MIAMI EOH Drydock Firefighting Doctrine, the BDW, [REDACTED] who had relieved [REDACTED] while topside just prior to the time of the CASCON alarm, did not respond to the fire with a CO2 fire extinguisher. Instead, he remained topside throughout the casualty. [Encls (53), (83)]

109. At 1738, the on-watch SRO, [REDACTED] and SRW, [REDACTED] moved into the FC via the Side Passageway Tunnel after confirming that there was no fire in the Engine Room (ER). These watch standers were immediate responders and therefore had no breathing protection; their actions were in accordance with the MIAMI EOH Drydock Firefighting Doctrine. Neither of the watch standers could verify the location of the fire because the smoke in FCML forward of Crew's Mess was thick enough at this time to retard their investigation. [Encls (53), (87), (88)]

110. The Shop 56 Supervisor, [REDACTED] and [REDACTED] both stated that heavy smoke was coming from the WRSR Passageway but they were not able to see flames. They exited MIAMI via the Aft Escape Trunk (AET) and proceeded topside. [REDACTED] briefed an unidentified member of Ship's Force at the CASCON shack on what he observed below decks, however, his report did not specifically identify the WRSR Passageway as the likely location of the fire. Contrary to reference (n), neither [REDACTED] nor [REDACTED] stood by to direct firefighters to the location of the fire. [Encls (92), (93), (94)]

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111. Upon hearing the CASCON alarm in the living barge, the DCFO, (b)(6) proceeded to the damage control CONEX box topside and then established Damage Control (DC) Central at the CASCON shack near the access brow in accordance with the MIAMI EOH Drydock Firefighting Doctrine. The transit from the living barge to the CASCON shack took approximately one minute. (b)(6) noted smoke coming out of all forward hatches. [Encls (5), (24), (53)]

112. The SDO, (b)(6) the Engineering Duty Officer (EDO), (b)(6) and Engineering Duty Petty Officer (EDPO), (b)(6) also were on the living barge when the CASCON alarm sounded. They proceeded to the DC CONEX box and took action in accordance with the MIAMI EOH Drydock Firefighting Doctrine. [Encls (33), (53), (85)]

113. At approximately 1740, (b)(6) attempted to exit the ship via the Weapons Shipping Hatch (WSH). Because of heavy black smoke and burning rubber/plastic smell in FCML, he could not transit forward to reach the ladder from FCML to FCUL, so he instead turned aft and exited via the AET. [Encl (80)]

114. At 1740, the on-coming POOD, (b)(6) completed most of the immediate actions for a CASCON fire alarm in accordance with the MIAMI EOH Drydock Firefighting Doctrine, to include calling the fire department and making a CASCON All-Call announcement: "Unknown fire in the Torpedo Room." The fire was announced as being in the TR because that was the location where the CASCON alarm was activated, and no better information was available at the time. [Encls (53), (96)]

115. The SEO, (b)(6) and the SRW, (b)(6) accessed the TR via the Auxiliary Machinery Room (AMR) scuttle. They noted much less smoke in both the FCUL and the TR. This allowed them to descend into the AMR and then proceed forward into the TR without breathing protection. Despite making a full circuit of the TR, these individuals found no evidence of the source of the fire. Shortly thereafter, these individuals were forced to leave the FC due to increasing smoke. The AMR scuttle's temporary cover was not replaced following their access contrary to good submarining practice. [Encls (87), (88)]

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116. At 1741, (b)(6) announced via CASCON All-Call that the fire was in the Wardroom (WR). This announcement was based on information obtained from an unidentified shipyard worker as that worker evacuated across the access brow. [Encls (96), (97)]

117. At 1743, the first PNSY fire truck, Engine #83, arrived at the scene. Shortly thereafter, the remainder of the on-shift PNSY Fire Department personnel and equipment arrived (13 men total). The Assistant Fire Chief for PNSY, (b)(6) took command of the scene as Incident Commander in accordance with reference (n) and SOP 88 of reference (q) and began directing a pressurized hose be deployed from Engine #83 to the WR via the WSH, since he had been briefed by Ship's Force personnel that the fire was in the Wardroom. [Encls (5), (52)]

118. (b)(6) stated that as Incident Commander he expected a coordinated effort with PNSY Fire Department in the lead. This expectation is consistent with reference (n). [Ref (n), Encl (52)]

119. Upon arrival, (b)(6) saw smoke coming out of the WSH and could smell plastic burning. [Encl (52)]

120. Shortly thereafter, upon learning that the CASCON alarm had been pulled in the TR, (b)(6) redirected his initial hose team to the TR. [Encl (52)]

121. At approximately 1744, two Ship's Force rapid responders, (b)(6) and (b)(6), each wearing a SCBA and carrying a CO<sub>2</sub> extinguisher, entered the ship via the WSH in accordance with the MIAMI EOH Drydock Firefighting Doctrine. They proceeded through heavy black smoke in the FCML passageway with the objective of locating and fighting the fire in the Wardroom; however, they found no flames upon reaching the Wardroom. They did not search the WRSR Passageway and immediately proceeded to the TR since that was the only other space where the fire had been announced. They were eventually forced to evacuate from the TR due to their SCBAs alarming on low air. [Encls (53), (85), (96), (98)]

122. The DCFO, (b)(6) reported no communications in-hull with the FC. (b)(6) was directed to establish communications when he entered the ship with the first Ship's Force Firefighting Team. [Encls (24), (99)]

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123. At approximately 1746, the first Ship's Force Firefighting Team (b)(6) arrived at the Wardroom in Firefighting Equipment (FFE) with the Naval Firefighter's Thermal Imager (NFTI) & Temporary Firefighting Hose #1 in accordance with the MIAMI EOH Drydock Firefighting Doctrine. The team saw no flames or hot spots in the Wardroom, and proceeded directly to the TR with the hose. This hose was not pressurized. They did not check the WRSR Passageway or WRSR 1-3. This team verified that there were no flames in the Torpedo Room, Vertical Launch Space, 21-Man Berthing, or Battery Well. [Encls (53), (85), (99), (100), (101)]

124. The SDO (b)(6) entered the ship via the WSH in accordance with the MIAMI EOH Drydock Firefighting Doctrine. His entry to the ship was delayed as he required additional time to don a second SCBA when he incorrectly believed the SCBA purge valve malfunctioned. (b)(6) stated that the FC was filled with heavy black smoke with visibility reduced to about one foot. (b)(6) attempted to proceed to the TR but was unable to get there due to personnel blocking access in FCML. (b)(6) exited the ship via the Forward Escape Trunk (FET) when he received a low air supply alarm on his SCBA. [Encls (33), (53)]

125. At 1746, the first PNSY firefighting team of three firefighters, escorted by (b)(6) entered the WSH with a pressurized fire hose en route to the TR. When this team reached FCLL, and discovered no fire, they moved the pressurized fire hose to FCML, outside of the WR. [Encls (97), (102)]

126. After having clarifying discussions regarding the location of the fire with Ship's Force personnel topside, (b)(6) redirected his subsequent fire teams to the WR. [Encl (52)]

127. The second Ship's Force Firefighting Team dressed in FFEs and SCBAs was directed below decks via the WSH to deliver battle lanterns to the first Ship's Force Firefighting Team. [Encls (85), (86)]

128. At approximately 1750, the Chief of the Boat (COB) entered the ship via the WSH in an SCBA and FFE by himself, verified no flames in FCUL and then proceeded to FCML to attempt to locate the fire. [Encls (85), (103)]

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129. Shortly after 1755, the fire search effort in FCML was hampered due to the entanglement of Ship's Force and PNSY fire hoses, both of which were routed through the WSH. At no time did any fire fighting team report conducting a search for fire in the WRSR area, Officer's Head, or CPO Quarters. Members of the first Ship's Force Firefighting Team began exiting the ship due to low SCBA pressure alarms. [Encls (85), (103)]

130. At approximately 1756, the CO arrived and assumed responsibility to coordinate Ship's Force efforts with the PNSY Incident Commander, [REDACTED] [Encl (20)]

131. At 1757, all PNSY non-emergency response personnel evacuated from the ship mustered satisfactorily. [Encl (97)]

132. The CO received a face-to-face report from the SDO, [REDACTED] of heavy smoke in the Wardroom and Wardroom passageway. The SDO reported the light strings in the Wardroom and two other locations were out. [Encl (20)]

133. Although no flames were seen in the WR at this time, high temperatures could be observed via NFTI, and crackling sounds were audible and high heat was evident from the WRSR passageway. [Encl (103)]

134. Section 35.3.2.4 of reference (t) states that in a casualty involving a flashed-over fire, ignition of combustibles located in the compartment directly above the fire may occur within as little as 3 minutes and within 5 minutes for other combustibles in the space. In adjacent compartments on the same deck, ignition of combustibles in direct contact with bulkheads may occur in as little as 7 minutes and within 20 minutes for other combustibles in the space. Fire spread through frame bay openings can be even faster. [Ref (t)]

135. Naval Surface Warfare Center, Carderock Division, Fire Protection Group conducted a shop vacuum fire test on 6 June 2012. In this test, an empty Craftsman 2.5 Gallon Wet/Dry Vacuum, once ignited, burned for 13 minutes, 44 seconds, with a peak net heat release of 182 kilowatts and total net heat release of 64 megajoules. This amount of heat release multiplied by the number of vacuums in WRSR1 was sufficient for flashover to occur. [Encls (3), (104)]

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136. (b)(6) stated flashover likely occurred in WRSR1 at this point in the casualty given the assumed contents prior to the fire, actual dimensions of WRSR1, and extrapolated data available for plastic vacuum-like components. [Encls (39), (105)]
137. At approximately 1800, the first extinguishing agent was discharged onboard the ship in an attempt to reduce the heat in the WRSR Passageway. The COB obtained a NFTI from a member of an exiting fire fighting team and located extreme heat in the WRSR Passageway. He then directed a combined Ship's Force/PNSY firefighting team to discharge the PNSY fire hose into the overhead near WRSR3 in accordance with Section 35.6.6 of reference (t). No further progress down the WRSR Passageway was possible due to hose entanglement. [Encls (85), (100), (103), (106)]
138. At approximately 1800, in response to the shipyard site emergency, PNSY Code 105 ordered a limited recall of the Radiological Emergency Response Organization (RERO) in accordance with reference (v). [Ref (v), Encl (15)]
139. The combined Ship's Force/PNSY firefighting team near WRSR3 shut the hose nozzle and abandoned the hose after several minutes when their SCBAs began to alarm on low air. There was no relieving hose team on-scene contrary to section 35.6.10 of reference (t). [Encl (103)]
140. As the COB was departing the ship, he noticed that incoming PNSY firefighters were reporting to the scene by crawling on their hands and knees in order to follow the pressurized hose. The COB attempted to turn over the abandoned PNSY hose near WRSR3 to arriving PNSY firefighters, but their SCBA bottles quickly alarmed on low air and they were forced to depart the FC. [Encl (103)]
141. All fire teams had abandoned the PNSY hose used to attack the WRSR area. A relieving PNSY fire fighting team was unable to access the scene when one of their members broke his ankle topside enroute to the WSH. Other PNSY fire fighters could not reach the nozzle before their SCBAs alarmed on low air. The visibility through the WSH was reported as too poor to support continued entry from that hatch. [Encls (52), (103)]

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142. The Navigator entered the ship via the FET in an FFE and SCBA. The wooden boards covering the AMR scuttle at the bottom of this hatch had been removed by the SEO and SRW earlier in the casualty, and the Navigator partially fell through this uncovered hole, breaking several ribs. He returned topside immediately thereafter and reported the open decking under the FET. [Encls (6), (7), (85)]

143. At approximately 1805, the Project Superintendent, (b)(6) arrived topside and joined the CO and the Incident Commander, (b)(6) to coordinate shipyard Project Team support for the casualty efforts. He noted that smoke was primarily coming out of the Bridge Hatch, with some coming out of the WSH. [Encl (14)]

144. At approximately 1810, the PNSY Fire Chief, (b)(6) arrived topside. (b)(6) relieved as Incident Commander at approximately 1819 and reported his relief to the Fire Station dispatch by radio in accordance with SOP 88 of reference (q). [Encl (63)]

145. (b)(6) stated that he recognized he was dealing with a mature fire due to the amount and color of smoke and great amount of heat. [Encl (63)]

146. The DCFO, (b)(6) stated that many of the civilian fire fighters did not use the same terminology for the spaces onboard the submarine. (b)(6) stated a whiteboard and drawings were used to assist the Incident Commander in directing his efforts and understanding submarine terminology. [Encl (24)]

147. The SDO, (b)(6) attempted a second entry into the ship via the WSH, but was unable to proceed past the Executive Officer's State Room (XOSR) due to high heat conditions. (b)(6) spent the rest of the evening at DCC, assisting in the coordination of fire fighting efforts. [Encl (33)]

148. After being relieved as Incident Commander, (b)(6) was directed to deploy with a PNSY fire team to the WSH. (b)(6) also noted high heat and zero visibility at the bottom of the WSH in FCUL. He was unable to advance to the fire scene due to loose service leads and deployed fire hoses preventing progress. [Encl (52)]

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149. At 1821, [REDACTED] briefed the CO and Incident Commander that there was extreme heat below decks. The location of the fire was still undetermined and further attempts to access FCML would not be possible via the WSH. [Encls (20), (33), (85)]

150. Most reports to DC Central at this time were face-to-face due to the inability to establish communications in the FC below decks and lack of shared portable radios between Ship's Force and the PNSY Fire Department. [Encls (20), (24), (59), (103)]

151. At approximately 1825, the CO gave the order for all Ship's Force personnel to exit the FC, and mustered the crew due to reports of injured fire fighters. [Encls (20), (85)]

152. At approximately 1826, Ship's Force covered the Side Passageway Door opening with herculite with the intent to prevent smoke from entering the ER. [Encls (20), (85), (103)]

153. At approximately 1830, PNSY Code 105 ordered a full recall of the RERO in accordance with reference (v). [Ref (v), Encl (15)]

154. At approximately 1835, the CO had 100% accountability of Ship's Force personnel. [Encls (20), (85)]

155. Due to the heat at the WSH and open decking below the FET, the CO and Incident Commander, [REDACTED] directed a fire fighting team to attempt to access FCML via the AET and Side Passageway. [Encl (85)]

156. At approximately 1840, [REDACTED] and the COB led a firefighting team in routing a 1 3/4" hose through the Side Passageway Door opening via the AET. [Encls (52), (85), (103)]

157. At 1844, the PNSY Emergency Operations Center was activated. [Encl (107)]

158. At approximately 1850, the COB reported that there was an active fire in the WR and that the hose from the AET would not reach the WR due to hose kinks that needed to be unraveled. [Encls (85), (103)]

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159. Between 1850 and 1933, the fire in the WR increased in intensity. Firefighters were unable to continuously apply water to the fire with the hose routed from the AET because firefighter SCBAs would alarm on low air before the next relief crew arrived at the hose nozzle. Thick black smoke continued to build in Crow's Mess until heat and smoke began bypassing the Herculite staged at the Side Passageway Door. [Encls (20), (85), (103)]

160. At 1900, the PNSY Emergency Operations Center was fully manned. [Encl (107)]

161. The CO stated he was very frustrated by the lack of continued water application which was a result of the practice of sending one fire fighting team down, that team exits, debriefs and then the next team goes down. He stated this practice resulted in the continued spread of the fire. [Encl (20)]

162. At 1902, (b)(6) relieved (b)(6) as the Incident Commander. (b)(6) proceeded to the PNSY Emergency Operations Center. [Encls (52), (97)]

163. The DCPO, (b)(6), stated that (b)(6) was "overwhelmed and flustered with the situation." [Encl (24)]

164. At approximately 1915, the CO, Project Superintendent, and Incident Commander decide to seal all hull cuts and openings and then direct temporary ventilation into the FET and exhausting through the WSH to push the smoke and heat forward and regain access to the FC via the FET. The CO ordered the hose routed from the AET backed out in order to affix a more resilient barrier to the Side Passageway Door opening. [Encls (14), (20), (85)]

165. At approximately 1930, the Project Superintendent, (b)(6) stated that charged SCBA bottles were running out. Arrangements were made to transport bottles to the PNSY Fire Station for refill. DC gear from USS PASADENA, located in Drydock #3, was being brought to the scene. (b)(6) also stated it was evident there were not enough firefighters to attack the fire. Many personnel were exhausted from the heat; some were injured. [Encl (14)]

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166. The CO stated the immediate action portion of the fire response was ineffective at getting the personnel and equipment in place to combat the fire. [Encl (20)]

167. At 1933, the FC of the MIAMI was verified empty by the COB, as he was the last man out of the space. Prior to exiting, the COB replaced the wooden boards covering the AMR scuttle to ensure that the FET could be used as a safe access point. The COB and two Ship's Force personnel then secured a rigid barrier over the Side Passageway Door in order to protect the ER. [Encls (20), (97), (103)]

168. The Project Superintendent stated that it was not until approximately an hour and a half to two hours into the fire when a cogent strategy to gather more resources and more effectively employ them to continuously apply extinguishing agent was formed. [Encl (14)]

169. At this point in the casualty, the FC was inaccessible due to heat and smoke. At approximately 2000, at the direction of both the Incident Commander and the CO, one 2 1/2" sprinkler hose was routed with an open nozzle through each of the Bridge hatch, the WSH, and the FET in order to cool the ship and allow re-entry. [Encls (20), (52), (85), (103), (108)]

170. The CO stated that the Project Superintendent, [REDACTED] directed the Incident Commander to call all fire departments within 100 miles to respond. [Encl (20)]

171. At 1959, PNSY Fire Department requested York Fire Department Support. [Encls (97), (109)]

172. At 2001, PNSY Fire Department requested Portsmouth City Fire Department support. [Encls (97), (109)]

173. At 2013, Portsmouth City Fire Department arrived on scene. Additional mutual aid fire companies arrived with equipment and personnel throughout the duration of the casualty. These included Kittery, Pease, Eliot, Newcastle, Rye, Newington, Logan, South Berwick, Rollingsford, York Beach, Greenland, Somersworth, South Portland, York Village, Dover, York County, Hanscom AFB, Hampton, and Massport. [Encls (97), (109)]

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174. At approximately 2015, hose runoff from the hose routed through the Bridge hatch flashed to steam along the Starboard side of the hull, external to the ship. The CO ordered three hoses to be directed to the exterior of the Starboard side of the ship to mitigate the extreme temperatures. [Encls (20), (109), (110)]

175. At approximately 2020, the sprinkler hose at the FET was pulled away and the COB led a PNSY firefighting team with a 2 1/2" hose through that hatch. This team progressed to the WR where they were able to start suppressing the active fire there. The COB eventually exited the ship when his SCBA alarmed on low air, leaving firefighters on the hose. [Encls (20), (85), (103), (108)]

176. At this point in the casualty, as additional personnel and equipment were available, the strategy to deploy relieving hose teams under escort by Ship's Force in time to allow an on-scene relief was achieved. [Encls (14), (20), (24)]

177. At approximately 2026, RERO is fully manned. [Encl (15)]

178. At approximately 2030, PNSY Fire Department requested SUBASE New London Fire Department support. [Encl (69)]

179. At approximately 2128, the XO led an 8-man team to the FET to relieve the hose team below. Four to five of these men were able to descend into FCML before a deliberate temporary ventilation system lineup change caused heavy black smoke to blow out of the FET. The remaining portion of the team, including the XO, was forced to back out due to having no visibility. [Encls (14), (20), (85), (103), (108)]

180. At 2158, the COB and PNSY Firefighters used the 2 1/2" hose and an additional 1 1/2" hose that had been routed through the FET to fight the fires in FCML passageway and in the WR. [Encls (85), (103), (107)]

181. At 2215, the COB reported that the fires in the WR and FCML passageway were out. The WRSR passageway and all adjoining staterooms were too hot to advance into at this time, though the COB was able to proceed to FCUL and verify that active flames existed in CSER and in Control. [Encls (85), (97), (103)]

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182. Between 2230 and 0200, firefighting teams made efforts to contain the fires in CSES and Control. Although the fires in these spaces were dampened by hoses and at one point verified to be out, these fires reflashed twice during this time. Firefighting efforts were hindered by the inability to access FCUL via the ladder from FCML to FCUL just forward of the Radio Room. This access was blocked by temporary services. [Encls (69), (85), (107), (110)]

183. At approximately 2233, Hull cut 1A on the port side of CSES was uncovered in order to vent smoke and to enable a firefighting team to spray water into FCUL from outside the ship. [Encls (14), (107), (110)]

184. At approximately 2353, SUBASE New London Fire Department arrived on scene. [Encl (97)]

185. A PNSY Firefighter, [REDACTED] stated that during two trips below decks with SUBASE New London firefighters, he was able to clear the temporary services that were preventing access from FCML to FCUL just forward of the Radio Room. This allowed additional firefighting access to FCUL. [Encls (69), (70), (111)]

186. By approximately 0314, there was evidence that firefighting efforts were successful. There were no visible flames anywhere on the ship. Reports confirmed reduced heat, clearing smoke, and that firefighters were knocking down potential hot spots. The fire was under control. [Encls (85), (107), (111)]

187. At approximately 0400, two-man fire teams had verified that there were no further hot spots in FCLL and FCML. Hot spot checks in FCUL were in progress, with one hot spot identified in the Radio Room. [Encls (85), (107)]

188. At 0407, the CO authorized ER watch standers to remove EABs and resume normal ER access. [Encls (85), (112)]

189. At 0550, the fire was out, there were no hot spots, and reflash watches were stationed. [Encls (85), (97), (109)]

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Organizational Structure and Responsibilities for PNSY Fire and  
Emergency Services

190. PNSY Fire and Emergency Services (F&ES) are provided by  
Commander, Navy Installations Command through Commander, Navy  
Region Mid-Atlantic (CNRMA). [Encls (113), (114), (115)]

Matters pertaining to Organizational Structure

191. DoDI 6055.06 (DoD Fire and Emergency Services (F&ES)  
Program) directs the Navy to establish an F&ES program. [Refs  
(w), Paragraph 5.5.1; (x), Table C2.T1]

192. DoDI 6055.06 further designates fire emergency response for  
"facilities, structures, aircraft, transportation equipment,  
HAZMAT..." however it does not specifically designate response  
to shipboard or marine fires. [Ref (w), 6.10, E3.1.1]

193. OPNAVINST 11320.23F CH-2 establishes Navy-wide policies,  
standards, guidance, and responsibilities for the Shore  
Activities F&ES. [Ref (y)]

194. OPNAVINST 11320.23F CH-2 adopts National Fire Protection  
Association (NFPA) Fire Codes, however it does not specifically  
address shipboard firefighting nor invoke the NFPA 1005  
Certification Standard for Professional Qualifications for  
Marine Fire Fighting for Land-Based Fire Fighters. Accordingly,  
no fire fighters at PNSY are certified Marine Firefighter I or  
II nor is periodic training on shipboard firefighting required  
by higher authority. [Encl (116), Ref (y)]

195. NFPA 1005 specifies numerous specific skill sets relevant  
to shipboard firefighting for one to be qualified as a Marine  
Firefighter I or II: [Encl (117)]

a. Reading ship plans to access a specific location on  
vessel (5.2.1 - 5.2.3)

b. Deploying hoses and nozzles for exposure protection  
within a marine vessel (5.3.4)

c. Advancing hose lines on board a vessel for defensive  
fire operations (6.3.3)

d. Ventilating smoke from a vessel as part of a team,  
including an understanding of vessel construction principles  
that affects ventilation operations and the effects of shifting  
ventilation (6.3.4)

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e. Confirming the location and identity of hazards from vessel documents or personnel (6.3.7)

f. Attacking a fire within a vessel as part of a team (6.3.10)

g. Determining the need to deploy special extinguishing agents for a particular vessel and fire (6.3.13)

196. OPNAV 11320.23F CH-2 states that Commander, Navy Installations Command (CNIC) is responsible for developing detailed policy and implementing F&ES functions Navy-wide, while Regional Commanders are responsible for establishing an effective program for their region. [Ref (y)]

197. CNIC has promulgated CNI Instruction 3440.17, which directs the Regions and Installations to develop an effective F&ES system. [Refs (w), (y), Encls (113), (114)]

198. COMNAVREGMIDLANTINST 5233.1A, the CNRMA Shore Installation Management Operations Manual, provides structural processes to manage Fire and Emergency Services in the Mid-Atlantic region. [Encl (118)]

a. Commander, PNSY is responsible and accountable to CNRMA for operations of PNSY. [Encl (118)]

b. Navy Region Mid-Atlantic (NRMA) has a Regional Fire Chief and is divided into Districts under the Public Safety Division, which reports to the Operations Department Head. [Encls (118), (119), (120)]

c. F&ES District 8, whose Chief and personnel are located at Fire Station #26 on board PNSY, serve PNSY and Naval Computer and Telecommunications Station, Cutler, ME. [Encls (63), (118), (119), (120)]

d. NRMA has based the Fire and Emergency Services for its subordinate Districts, including District 8, on the requirements of Department of Defense Instruction (DoDI) 6055.06 and OPNAVINST 11320.23F. Shipboard firefighting certification and training are not core NRMA F&ES requirements. [Refs (w), (y), Encl (121)]

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e. Commander, PNSY is fully supported in the performance of F&ES by the NRMA Operations Department and Regional Fire Chief, who provide all resourcing for the District 8 PNSY Fire Department, along with the necessary technical management and oversight. [Ref (y), Encls (118), (121)]

199. The organizational structure for F&ES at PNSY is aligned to DoD, OPNAV and CNRMA instructions and does not include shipboard firefighting as a certified skill set. [Refs (w), (y), Encls (118), (120)]

Matters pertaining to F&ES Responsibility

200. The training and certification of District 8 PNSY F&ES personnel are the responsibility of the PNSY Fire Chief. All training required by higher authority was completed. [Refs (w), (y), Encls (41), (119), (120)]

201. Oversight of the training, effectiveness, and proficiency of District 8 PNSY shipboard firefighting is the responsibility of the NRMA Regional Fire Chief. The NRMA Regional Fire Chief last visited PNSY to conduct site assistance in September 2010. [Encls (41), (63), (121), (122), (123)]

202. The NRMA Regional Fire Chief reviews the performance evaluation for the District 8 Fire Chief. Commander, PNSY provides input towards this performance evaluation. [Encls (119), (122), (124)]

203. There were no staffing, equipment, or resourcing shortfalls at the District 8 PNSY Fire Station that degraded their ability to respond to a shipboard fire on 23 May. [Encls (63), (119), (120), (125)]

204. The PNSY Fire Safety Manual was issued to address the OPNAVINST 11320.23F requirement for Installation Commanding Officers to prepare local fire protection regulations and instructions. [Ref (y), Encls (41), (126)]

205. The PNSY Operations Officer (Code 300) is responsible to the Commander, PNSY for the safety of ships and craft, a responsibility which is shared with the ship's CO. [Ref (1)]

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206. The PNSY Executive Officer, [REDACTED] and PNSY Code 800, [REDACTED] both have oversight responsibility for the PNSY Fire Department yet neither could describe the specific lines of authority and accountability for oversight of the District 8 PNSY Fire Department operational proficiency. [Encl (127)]

207. There is no documented record of communication between Commander, PNSY and NRMA that establishes expected mission requirements for F&ES for PNSY. Onboard PNSY, shipboard firefighting is an assumed function with no specific certification, training, or proficiency requirements. [Encls (63), (119), (120), (122)]

208. Commander, PNSY, his Executive Officer, Code 300, Code 800, or Ship Safety Manager have not engaged NRMA regarding any issues associated with shipboard firefighting. [Encl (56), (128)]

209. PNSY Ship Safety Manager (SSM) is responsible to PNSY Code 300 for administration and execution of the PNSY submarine fire and flooding drill program. [Ref (1) section 5.1.3.14]

210. Deleted.

211. The CNIC Fire and Emergency Services Program Compliance Assessments for Commander, Navy Region Mid-Atlantic, District 8 conducted October 2011 concluded that pre-fire plans were concise, detailed, systematically organized, and up to date. Additionally, this report stated that mission critical and high risk facilities were included in the pre-fire plans. [Encls (52), (129)]

212. The 2012 Availability Program Review (APR) conducted by NAVSEA 04 "identified continued weaknesses in the Shipyard's identification and elimination of workplace hazards." Further, in a fire drill run onboard USS HAMPTON (SSN 767) on 28 Mar 2012 (conducted by the PNSY Detachment San Diego), the APR Team noted "improvement is needed in drill evaluation and timely execution of immediate and long term corrective actions." In addition "firefighting effectiveness was not adequately evaluated." [Encl (130)]

213. Responsibility for PNSY Fire Department shipboard firefighting operational proficiency rests with the PNSY Fire Chief with oversight from both NRMA and PNSY chains of command. [Refs (w), (y), Encls (41), (63), (118), (119), (120), (121), (122), (123), (127)]

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Practices at Other Public Shipyards

214. [REDACTED] Commander Submarine Group 2 Representative, Norfolk Naval Shipyard (NNSY), [REDACTED] Commanding Officer, USS WEST VIRGINIA, and [REDACTED] Commanding Officer, USS TENNESSEE (BLUE) were interviewed to determine fire fighting practices at other shipyards within NRMA. [REDACTED]

[REDACTED] stated fire drills coordinated with the Fire Department happened within 7 days of accepting temporary systems and every 90 days thereafter in accordance with references (j) and (k). [Encl (131)]

215. [REDACTED] stated that fire department hoses were typically not pressurized below decks at NNSY. This practice is similar to that at PNSY. [Encl (131)]

216. [REDACTED] stated that fire drills typically only check the initial response of ship's force and the turnover of fire fighting efforts to the fire department. This practice is similar to that at PNSY. [Encl (131)]

217. A survey of all public shipyards revealed practices and guidance similar to that which exists at PNSY regarding use of commercial vacuums for cleaning. [Encls (132), (133), (134), (135), (136), (137), (138), (139)]

218. A survey of all public shipyards revealed no guidance beyond that which exists at PNSY for stowage of combustibles onboard submarines in maintenance availability. [Encls (132), (133), (134), (135), (136), (137), (138), (139)]

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Opinions

1. A PNSY civilian employee confessed to NCIS that the fire began due to his own willful, criminal act. The NCIS investigation remains ongoing and charges are pending against the PNSY civilian employee in US District Court, District of Maine. [FOF 9, 103]
2. Shipboard conditions during the fire were well beyond that which many of the responders had ever experienced and their actions in fighting the fire below decks were heroic. [FOF 3]
3. The root cause of the severity of the fire is the deliberate act of arson and how the associated loss of response time impacted the crew and firefighters. Because of dedicated fire safety and prevention efforts and the corresponding reduction of the number and severity of shipboard fires in overhaul, the Navy developed, over time, a cultural blind-spot to a shipboard fire scenario as seen on MIAMI. Accordingly, organizations at all levels fell into the trap of going through the motions to satisfy existing requirements and did not develop adequate doctrine to train and prepare for a casualty of this complexity, and subordinate organizations did not recognize doctrine gaps and institute local solutions and requirements. The Navy underestimated the probability and severity of a shipboard fire of the magnitude experienced by MIAMI, and overestimated the capability of on-ship and off-ship resources to respond rapidly and effectively. [FOF 15, 16, 25, 36, 37, 41, 56, 58, 59, 62, 66, 73, 78, 79, 101, 102, 176, 194, 207, 208, 210, 213, 218]
4. The following policies and procedures, if not established or revised, could result in a similar occurrence:
  - a. Shipboard firefighting, to include; drydock, maintenance availabilities, integration with installation fire departments, use of remote monitoring and detection systems, use of automatic suppression systems
  - b. Deleted
5. The injuries sustained by [REDACTED] the Navigator, were sustained in the line of duty and were not due to his own misconduct. [FOF 142]

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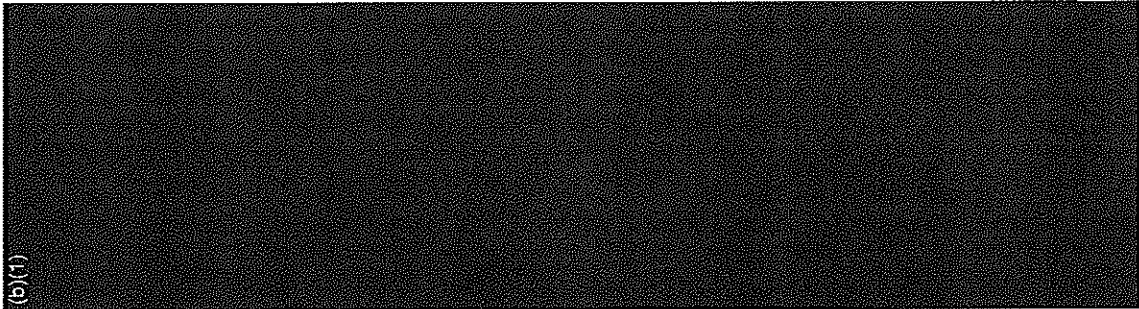
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Preparations for and execution of EOH:

6. Based on the requirements that existed at the time of the fire, the ship's state of readiness to commence the EOH was satisfactory. [FOF 13, 14, 15, 16, 18, 24, 40, 49, 52, 53]

- a. The existing guidance for EOH preparation from higher authority and level of oversight provided to MIAMI was adequate. No formal ISIC certification was required nor is it deemed necessary. [FOF 15, 16, 17]
- b. The ship completed all required training prior to or during the initial portion of EOH. [FOF 16]



- d. The ship's continuing training program for at-sea shipboard fire-fighting was sufficient and exposed all crew members to the use of fire-fighting equipment, fire-fighting tactics, and casualty response command and control principles. The skills learned and practiced in an at-sea environment, however, do not directly translate to an industrial overhaul. [FOF 11, 12, 13, 14]
- e. The ship thoughtfully approached the EOH and enacted additional mitigations in an attempt to successfully manage the transition. Additionally, the ship promulgated the MIAMI EOH Drydock Firefighting Doctrine to account for known differences between an at-sea and industrial environment fire fighting response. [FOF 20, 49, 52, 53, 54, 61, 63, 64, 65, 66, 68, 69]

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1) The failure of 9 officers and 26 enlisted members to attend the ship's EOH Drydock Firefighting Doctrine training did not significantly degrade the ship's ability to fight the fire. Additionally, all key duty section personnel on 23 May 2012 displayed an adequate understanding of the EOH Drydock Firefighting Doctrine during post-event interviews. [FOF 65, 66, 68, 69, 70, 71, 109, 111, 112, 121, 123, 124, 137]

2) While the ship had only 17 of 27 graduates of the Advanced Firefighting course, there is enough of a difference between the scenarios presented in the trainer and the conditions encountered onboard MIAMI to question whether this contributed to the ship's performance in fighting the fire. In addition, the absence of the DCPO, (S), from this course was not a significant contributing factor to the ship's response to the casualty. [FOF 66, 68, 70, 71, 111]

f. The ship's overall stowage and cleanliness were outstanding as a result of both MIAMI Commanding Officer and PNSY Project Superintendent focus. These high standards were validated by outside activity monitor reports. [FOF 14, 27, 30, 32, 33, 34, 35]

7. Deleted.

a. Deleted.

b. Deleted.

c. Deleted.

Contributing to the start and magnitude of the fire:

8. The training, standards, and practices onboard MIAMI to execute hot work in a manner to prevent a fire were effective and in accordance with established requirements. [FOF 24, 28, 31, 39, 40, 41, 42, 43, 45, 46, 47]

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9. The fire onboard MIAMI began when rags were intentionally set on fire in WRSR1 in close proximity to plastic, non-fire retardant vacuums and other combustibles stored in the Stateroom. [FOF 6, 7, 8, 9, 103]

10. No specific guidance existed for the onboard use and stowage of plastic, non-fire retardant vacuum cleaners. Vacuums of this type were numerous and used frequently onboard MIAMI as well as onboard other submarines at all naval shipyards. [FOF 36, 50, 91, 92, 93, 218]

11. The presence of a number of plastic vacuum cleaners stowed together, combined with a moderate load of combustible materials in the WRSR1 racks, provided sufficient fuel to achieve a flashover condition in WRSR1. [FOF 24, 36, 46, 218]

a. Deleted.

b. The MIAMI fire was caused by arson, not by cleaning materials or vacuum cleaners. Realistic policies can never eliminate all sources of potential fuel for an arsonist bent on criminal activity, and storing vacuums and clean rags in a stateroom away from any accidental ignition source is not prohibited by paragraph 6.n(2) or reference (m). MIAMI was not outside of fleet norms in allowing cleaning materials below decks for the benefit of promoting fire prevention through clean work spaces. [FOF1, 9, 24, 26, 32, 33, 34, 35, 36]

12. Existing fire casualty response is exclusively dependent on people to detect, locate, and extinguish a fire onboard a submarine in EOH. This vulnerability has not been adequately addressed in existing requirements. [FOF 20, 51, 54, 58, 59, 60, 61, 62, 63, 83]

a. The use of zone fire detection systems or remote monitoring could have immediately alerted personnel to the fire and provided first responders with the location of the fire. [FOF 39, 50, 54, 55, 98, 100, 104, 105]

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- b. The deletion of BDW checks on the key locker in the wardroom passage, small arms locker, safe 2-41-3 in the wardroom passage, and individual safes in each Stateroom removed the impetus for the watch stander to traverse the WRSR passageway. These log modifications were consistent with guidance from higher authority. [FOF 49, 50, 55, 99, 100]
- c. The BDW practice of going topside twice an hour was not required by higher authority and resulted in periods of time when no Ship's Force personnel were in the FC. Additionally, the ship interpreted reference (r) as requiring topside checks by the Below Decks Watch at 30-minute intervals during periods when the Topside Sentry was not physically positioned topside at the aft end of the ship. Subsequent revisions to reference (r) provide better clarity to assist Commanding Officers in balancing topside security concerns with desired levels of below-decks presence. [FOF 49, 50, 99, 100, 108]
- d. The failure to maintain at least one supervisory watchstander onboard may have impacted the effectiveness of the initial casualty response. [FOF 52, 54, 101, 102]
- e. The failure of shipyard personnel to immediately report a fire upon noting the presence of smoke contributed to a delay in the execution of casualty response immediate actions and was contrary to existing requirements. [FOF 98, 104, 106]
- f. The criminal complaint against Mr. Fury describes an individual who was familiar with shipboard routines and layout, and adept at finding an unsupervised location to carry out this crime. It is reasonable to believe he would have found an alternate location or simply waited for a roving watchstander to clear a given area before continuing with his intended act. The failure of Below Decks watches to execute quality turnovers and conduct thorough compartment tours at required intervals must be corrected. However, executing those responsibilities with perfect compliance is unlikely to have reduced the eight minute detection time or affected the outcome of the MIAMI fire. [FOF 9, 50, 51, 52]

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- g. The identified gap in aft supervisory presence during meal hours is an issue that warrants correction, and the continuous presence of forward supervisors in a complementary role should be clarified in higher directives. However, the shipboard presence or absence of supervisory personnel is not likely to have a substantive effect on preventing a determined arsonist. [FOF 9, 52, 53, 54]

13. The failure to systematically investigate the FC to locate the seat of the fire in accordance with the established principles for fire fighting allowed time for the fire to fully develop. [FOF 75, 76, 78, 82, 83, 104, 108, 110, 115, 117, 121, 123, 124, 129]

- a. Command and control by both Ship's Force and the PNSY Fire Department at the start of the casualty was ineffective. Contributing to this, the pre-planned response required by higher authority was not established nor practiced. [FOF 60, 61, 62, 63, 64, 66, 68, 69, 73, 76, 77, 78, 80, 83, 125, 126, 129, 139, 140, 141, 146, 161, 163, 166, 168, 210, 211, 212]
- b. With the fire location unknown, all available reports from personnel evacuated from the ship were not gathered to aid in the search for the seat of the fire. [FOF 110, 113, 115]
- c. PNSY Fire Department weekly and monthly shipboard inspections were cursory, did not identify the access restrictions that would impact fire fighting, and did not adequately familiarize PNSY fire fighters with conditions below decks on MIAMI. [FOF 80, 81]

14. After flashover, the fire grew quickly in intensity by consuming secondary combustibles and spread to adjoining locations via wireways and outboard framebays. [FOF 134, 136, 158, 161]

15. The failure to continuously apply extinguishing agent to the seat of the fire in accordance with established fire fighting principles resulted in fire spread. While there were several instances where fire fighting personnel left charged hoses on the deck, this action was warranted due to personnel safety. [FOF 137, 139, 140, 141, 159, 161]

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Contributing to the duration and extent of the fire:

16. The lack of a consolidated reference for fire fighting during ship overhaul that incorporates principles from NSTM 555, the Ship Systems Manual, and the PNSY Fire Safety Manual precluded the execution of a cogent fire fighting strategy from the onset of the casualty. [FOF 59, 62, 63]

a. The presence of temporary ventilation services, hull cuts, open torpedo tubes and fouled hatches caused air flow patterns foreign to those known by most submarine crews. There is no training available on how to deal with these irregular conditions. [FOF 58, 85, 86, 164, 179, 182, 183]

b. The deliberate shifting of temporary ventilation services in the FC contributed to the growth and dynamic behavior of the fire. [FOF 164, 179]

c. The presence of Hull Cut 37 in the Torpedo Room, just below the seat of the fire, provided an additional source of oxygen to the fire as soon as the fire breached the aluminum fascia lining the WRSR 1 outboard. [FOF 7, 8, 86, 137, 149]

17. The failure to establish effective and integrated on-scene Incident Command in the first phases of the casualty response contributed significantly to missing the window of opportunity to contain and control the fire. Additionally, Incident Commander training and certification is not specific to shipboard fire fighting. [FOF 111, 112, 120, 124, 126, 127, 198, 199]

18. The failure to implement an immediate, effective, integrated response for shipboard fire fighting allowed uncontrolled fire growth. [FOF 60, 62, 63, 73, 77, 78, 80, 120, 124, 129, 137, 139, 140, 141, 166, 168]

a. The requirements for shipboard fire drills conducted at PNSY do not reflect the necessary level of complexity, command and control, duration and shipboard conditions to adequately measure casualty response proficiency of Ship's Force and District 8 PNSY firefighters. [FOF 66, 77, 78, 80, 166, 168, 211, 212]

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b. The requirements established to evaluate shipboard fire drills do not include the necessary items to validate an integrated, sustained response. [FOF 77, 78, 79, 80, 83, 211, 212]

c. Lack of meaningful oversight by the CNRMA and PNSY chains of command, as well as by on-site Naval Reactors and Naval Sea Systems Command representatives, to determine proficiency of District 8 PNSY Fire Department personnel in response to shipboard fire. [FOF 33, 34, 77, 78, 79, 81, 200, 201, 208, 209, 211, 213]

d. The lack of an effective, common communication device between firefighters and DC Central for both Ship's Force and land-based firefighters significantly hindered efforts throughout the casualty. Specifically, Ship's Force uses sound-powered phones and the PNSY Fire Department uses hand-held radios. [FOF 122, 132, 149, 150]

e. PNSY firefighters were unfamiliar with the interior of the submarine and did not know the nomenclature used by the crew to describe spaces and hatches. [FOF 80, 81, 140, 141, 146]

f. Generally, Navy-wide training is effective, and is focused precisely on the most likely scenario: a small fire that is rapidly located and effectively attacked before it grows to the point where compartment conditions force responders to evacuate. Many initial response and sustainment actions could, if improved, minimize the duration of the fire and severity of damage incurred in the event of a large multi-level fire that requires an outside-in attack. These improvements are the goal of multiple working groups that will identify a standard methodology for incorporating lessons learned on MIAMI. By existing measures of damage control readiness, MIAMI was trained and ready to fight a shipboard fire, and would have succeeded if the arsonist had not denied the opportunity to rapidly locate the fire. [FOF 9, 10-17, 58-83]

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19. The use of zone fire suppression systems could have contained the fire from growing uncontrollably and spreading beyond the point of origin. No requirement exists to employ these systems during EOH. [FOF 134, 159, 169]

**Fire and Emergency Services Organization:**

20. The Regionalization of F&ES personnel has resulted in an enterprise structure that is effective for manning and equipping, but not for shipboard casualty response at PNSY. [FOF 72, 73, 74, 75, 77, 78, 79, 80, 81, 83, 161, 166, 168, 203, 208]

a. The District 8 Fire Chief failed to properly train for shipboard fire. Contributing to this, DOD and OPNAV directives do not establish shipboard fire fighting as a core mission for F&ES personnel. [FOF 72, 73, 75, 77, 78, 79, 80, 81, 161, 166, 168, 192, 194, 198, 199, 200, 213]

b. The Regional Fire Chief is not adequately positioned to provide effective oversight to the PNSY Fire Department. [FOF 73, 77, 78, 79, 80, 81, 201]

c. Commander, PNSY has several independent and dedicated subject-matter safety experts on his staff, however, none were able to recognize F&ES weaknesses. [FOF 198, 202, 205, 206, 207, 208, 209, 213]

d. The NRMA staff and PNSY staff do not share a common understanding of accountability for PNSY fire fighting operational proficiency. [FOF 206]

e. The triennial CNIC F&ES Program Compliance Assessment is administrative in nature and does not evaluate operational proficiency. [FOF 211]

f. The failure to formally recognize the importance of training F&ES personnel in shipboard fire fighting is systemic across the Navy Mid-Atlantic Region. [FOF 72, 192, 194, 198, 199, 207, 211, 215, 216]

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Recommendations

1. Commander, US Fleet Forces Command should establish an independent investigative team to evaluate the organizational construct and effectiveness of shipboard fire fighting on US bases and shipyards.
2. Commander, Naval Sea Systems Command should:
  - a. Reconstruct the fire scene through mockup, modeling and/or testing to evaluate the effectiveness of existing fire detection, immediate response actions, fire fighting techniques, and fire fighting doctrine.
  - b. Conduct an assessment of temporary services equipment, installation methods, and operating procedures. This assessment should identify alternatives to reduce volume and maintain accessibility through passageways, access trunks, and compartments, as well as fully account for the impact of temporary services on shipboard casualty response. Additionally, some service lines and cables were suspended with materials that melted or burned, further complicating access. Proposed improvements should consider the impact of high temperatures on the materials used to support temporary services and access.
  - c. Implement fire detection and monitoring schemes to protect ships in maintenance availabilities.
  - d. Issue an update to NSTM Chapter 555 and associated publications specifically addressing fire fighting during ship construction, overhaul, modernization, maintenance or repair.
  - e. Deleted.
  - f. Deleted.
  - g. Establish guidelines for complex, multi-activity fire drills for ships in extended availabilities to exercise response from the deckplate through command and control at the Emergency Operations Center and the Emergency Control Center (ECC) utilized for other casualty events.

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- h. Evaluate procurement of improved shipboard fire fighting and communication equipment based on this report, as well as lessons learned and Safety Investigative Board reports promulgated separately.
  - i. Conduct further study on the impact of hull cuts on containment strategy and oxygen starvation. On MIAMI, hull cuts provided an unlimited oxygen source that contributed to the duration and intensity of the fire during the period when firefighting agents could not be brought to bear on the seat of the fire.
  - j. Conduct further studies to develop a consistent strategy for release of stored energy in shipboard systems in the event of a large-scale fire. MIAMI's forward systems were largely de-energized and depressurized. The presence of compressed air, oxygen, hydraulic fluid, or a charged battery could be catastrophic in a future fire scenario, and must be considered when developing firefighting strategies.
  - k. Evaluate security-related practices for civilian hires at Navy shipyards. The fire occurred as the result of a deliberate act by an individual with unfettered access to the Controlled Industrial Area at Portsmouth Naval Shipyard. Given the inherent trust placed by the crew of the ship in the civilian workers of shipyards, the appropriate entity should investigate and address the adequacy and enforcement of screening procedures for shipyard workers. Consideration should be given for additional supervisory mitigation strategies or access controls for individuals who undergo limited screening procedures. Additionally, consideration should be given to installing shipboard camera systems as a preventative measure to deter acts of arson or sabotage.
3. Commander, Navy Installations Command should:
- a. Establish shipboard fire fighting as a core mission for the functional area of fire and emergency services.

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- b. Design and develop an integrated solution to provide effective shipboard fire fighting for ships and submarines at shipyards and bases. This solution should include a very clear construct for on-scene command and control.
  - c. Evaluate the inclusion of NFPA 1005, Standard for Professional Qualifications for Marine Fire Fighting for Land-Based Fire Fighters or equivalent for federal fire fighters.
  - d. Evaluate procurement of improved shipboard fire fighting equipment for land-based fire fighters based on this report, as well as lessons learned and Safety Investigative Board reports promulgated separately.
4. Submarine Type Commanders should:
- a. Review watchstander and supervisor requirements to ensure adequate casualty detection and response for ships in extended availabilities.
  - b. Evaluate the adequacy of training and readiness requirements for ships in extended availabilities.
  - c. Deleted.
5. Commander, Navy Region Mid-Atlantic should:
- a. Provide oversight for complex, multi-activity fire drills for ships in extended availabilities to exercise response from the deckplate through command and control at the Emergency Operations Center. F&ES leadership remain actively engaged in multiple working groups established to improve shipyard fire prevention and response to ships during availabilities. New requirements must be adequately resourced to support effective implementation and long-term sustainment.
  - b. Comply with additional operational proficiency requirements including familiarity with shipboard condition upon completion of established working groups and provide oversight to ensure compliance is maintained.
6. Commander, Portsmouth Naval Shipyard should:

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- a. Conduct an assessment of the accountability associated with the shipyard's numerous safety-related organizations.
  - b. Provide formal mission requirements to CNRMA for development of Fire and Emergency Services.
7. Pending the results of the investigation described in Recommendation Number 1, the ISIC or higher should evaluate whether appropriate action should be taken against:

- a. (b)(6) and (b)(6) for their failure to properly execute their duties as BDW.
- b. (b)(6) (SDO) and (b)(6) (DCPO) for their failure to provide supervisory oversight of the BDW.
- c. (b)(6) (XO) for failure to identify deficiencies in watchstanding practices and supervisory oversight, as well as fully prepare his crew to prevent and contain a major fire in EOH.
- d. (b)(6) (CO) for failure to identify deficiencies in watchstanding practices and supervisory oversight, as well as fully prepare his crew to prevent and contain a major fire in EOH.
- e. (b)(6) (PNSY Code 300) for inadequate oversight of PNSY shipboard fire casualty preparation and response.
- f. (b)(6) (Commander, PNSY) for inadequate oversight of PNSY shipboard fire casualty preparation and response.

8. Pending the results of the investigation described in Recommendation Number 1, commands should evaluate whether appropriate administrative action should be considered against:

- a. (b)(6) (Asst Fire Chief, PNSY) for inadequate performance as Incident Commander during the initial phases of the casualty.
- b. (b)(6) (Fire Chief, PNSY) for inadequate preparation of District 8 PNSY personnel to combat shipboard fire.

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Subj: FINAL COMMAND INVESTIGATION INTO THE FIRE THAT OCCURRED  
ONBOARD USS MIAMI (SSN 755) ON 23-24 MAY 2012.

- c. (b) [REDACTED] (Ship Safety Manager, PNSY) for poor execution of shipboard fire fighting drill program.
- d. (b) [REDACTED] (Regional Fire Chief, NRMA) for inadequate oversight of District 8 PNSY fire fighting proficiency.
- e. (b) [REDACTED] (Deputy Regional Fire Chief, NRMA) for inadequate oversight of District 8 PNSY fire fighting proficiency.

~~CONFIDENTIAL~~

Encl (1)