



UNITED STATES MARINE CORPS
COMMANDER, HEADQUARTERS & SERVICE BATTALION
U.S. MARINE CORPS FORCES, PACIFIC
CAMP H. M. SMITH, HI 96861-4139

IN REPLY REFER TO:

5830

CO (b) (6)

8 Sep 16

From: Investigating Officer

To: Commanding General, III Marine Expeditionary Force

Subj: COMMAND INVESTIGATION INTO THE FACTS AND CIRCUMSTANCES SURROUNDING THE
AVIATION MISHAP INVOLVING TWO CH-53E SUPER STALLION HELICOPTERS FROM
HMH-463 ON 14 JANUARY 2016 OFF THE NORTHERN COAST OF OAHU

Ref: (a) JAGINST 5800.7F
(b) 10 U.S.C. § 2255

Encl: (1) Appointing Order dtd 27 Jan 16
(2) Extension Requests dtd 16 Mar 16, 20 Apr 16
(3) IO-created Timeline of HMH-463 Challenges During 2015
(4) HMH-463 Flight Schedules (3 Jul 15 to 15 Jan 16)
(5) CH-53E Simulator Utilization for September 2015
(6) Aircraft Discrepancy and Safe-for-Flight Checklist for BUNO 163081
(7) Aircraft Discrepancy and Safe-for-Flight Checklist for BUNO 161255
(8) Weight and Power Sheet for 14 Jan 16
(9) HMH-463 Risk Assessment Worksheets
(10) Kneeboard Card Material (Smartpack) for 14 Jan 16
(11) Transcripts of MCAS Kaneohe Bay Ground Control communications and
Approach Control Tower communications with Pegasus 31 on 14 Jan 16
(12) Wheeler Army Airfield Local Communications on 14-15 Jan 16
(13) HMH-463 FY 16 Campaign Plan dtd 1 Oct 15
(14) HMH-463 Monthly Training Plans for Oct 15 through Jan 16
(15) HMH-463 Weekly Training Plans for Jan 16
(16) HMH-463 Flight Hours Hotboard
(17) HMH-463 30/60/90 Hour Tracker
(18) Flight Simulator Hours for (b) (6), (b) (3) (A) (b) (6), (b) (3) (A) (b) (6), (b) (3) (A)
& (b) (6), (b) (3) (A) (Nov to Jan 2016)
(19) HMH-463 Qualifications and Designations Matrix
(20) Flight and Simulator Hours for (b) (6), (b) (3) (A) (2015) & (b) (6), (b) (3) (A)
(b) (6), (b) (3) (A) (b) (6), (b) (3) (A) (b) (6), (b) (3) (A) (b) (6), (b) (3) (A) (b) (6), (b) (3) (A) (b) (6), (b) (3) (A) (b) (6), (b) (3) (A)
(21) MAG-24 CO ltr 5000 dtd 12 Jan 16 re Delegation of Acting Authority
to (b) (6), (b) (3) 10 USC § 130b
(22) HMH-463 Command Chronologies for 1 Jul 14-30 Sept 15
(23) SqdO 1301.36, (b) (6), (b) (3) 10 USC § 130b Assumption of Command dtd 13 Jan 16
(24) HMH-463 Operations Duty Officer Logbook Entries dtd 14-15 Jan 16
(25) (b) (6), (b) (3) 10 USC § 130b Email Correspondence
(26) (b) (6), (b) (3) 10 USC § 130b Email Correspondence with MAG-24 Two-Year Campaign Plan
(27) Records of Emergency Data for deceased
(28) MSHARP Aircraft Crew Data for deceased
(29) Compact Disc of 178 photographs of recovered gear
(30) (b) (6), (b) (3) Designation as Naval Aviator
(31) (b) (6), (b) (3) (A) Naval Aviator Aviation Training Jacket Summary Card
(32) (b) (6), (b) (3) (A) NASTP Training Qualification Letter
(33) (b) (6), (b) (3) (A) CH-53 Training Syllabus NAVMC 2500.47 & Course Catalog
(34) (b) (6), (b) (3) (A) NATOPS Evaluation Report dated 28 Aug 15
(35) (b) (6), (b) (3) (A) NATOPS Instrument Rating Request dtd 29 Feb 16
(36) (b) (6), (b) (3) (A) NATOPS Audit Checklist
(37) (b) (6), (b) (3) (A) NATOPS Flight Personnel Training/Qualification Jacket
(38) PRK Extension for (b) (6), (b) (3) (A)

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(39)	(b) (6), (b) (3) (A)	Medical Recommendation for Flying or Special Ops Duty
(40)	(b) (6), (b) (3) (A)	NATOPS Flight Personnel Training/Qualification Jacket
(41)	(b) (6), (b) (3) (A)	Designation as Naval Aviator
(42)	(b) (6), (b) (3) (A)	CH-53 Training Syllabus NAVMC 2500.47 & Course Catalog
(43)	(b) (6), (b) (3) (A)	NATOPS Audit Checklist
(44)	(b) (6), (b) (3) (A)	NATOPS Evaluation Report
(45)	(b) (6), (b) (3) (A)	NATOPS Instrument Rating Request
(46)	(b) (6), (b) (3) (A)	NATOPS Flight Personnel Training & Quals Jacket
(47)	(b) (6), (b) (3) (A)	MEDICAL Recommendation for Flying or Special Ops Duty
(48)	(b) (6), (b) (3) (A)	Aircrew Performance Record
(49)	(b) (6), (b) (3) (A)	NASTP Training Qualification Letter
(50)	(b) (6), (b) (3) (A)	NATOPS Evaluation Report
(51)	(b) (6), (b) (3) (A)	Aeromedical Clearance Notice
(52)	(b) (6), (b) (3) (A)	Aircrew Performance Record Qualifications/Designations
(53)	(b) (6), (b) (3) (A)	NASTP Training Qualification Letter
(54)	(b) (6), (b) (3) (A)	NATOPS Evaluation Report
(55)	(b) (6), (b) (3) (A)	Medical Recommendation for Flying or Special Ops Duty
(56)	(b) (6), (b) (3) (A)	Designation as Helo Crew Chief, Qualified Plane Captain
(57)	(b) (6), (b) (3) (A)	NASTP Training Qualification Letter
(58)	(b) (6), (b) (3) (A)	NATOPS Evaluation Report
(59)	(b) (6), (b) (3) (A)	Medical Recommendation for Flying or Special Ops Duty
(60)	(b) (6), (b) (3) (A)	Designation as Helicopter Crew Chief
(61)	(b) (6), (b) (3) (A)	NATOPS Flight Personnel Training/Qualification Jacket
(62)	(b) (6), (b) (3) (A)	NATOPS Evaluation Report
(63)	(b) (6), (b) (3) (A)	NATOPS Flight Personnel Training/Qualification Jacket
(64)	(b) (6), (b) (3) (A)	Designation as Naval Aviator
(65)	(b) (6), (b) (3) (A)	NASTP Training Qualification Letter
(66)	(b) (6), (b) (3) (A)	NATOPS Audit Checklist
(67)	(b) (6), (b) (3) (A)	NATOPS Evaluation Report
(68)	(b) (6), (b) (3) (A)	NATOPS Instrument Rating Request
(69)	(b) (6), (b) (3) (A)	Extensions of Standard Instrument Rating (2)
(70)	(b) (6), (b) (3) (A)	NATOPS Flight Personnel Training/Qualification Jacket
(71)	(b) (6), (b) (3) (A)	Medical Recommendation for Flying or Special Ops Duty
(72)	(b) (6), (b) (3) (A)	Flight Personnel Training & Qualification Jacket
(73)	(b) (6), (b) (3) (A)	Designation as Naval Aviator
(74)	(b) (6), (b) (3) (A)	NASTP Training Qualification Letter
(75)	(b) (6), (b) (3) (A)	NATOPS Audit Checklist
(76)	(b) (6), (b) (3) (A)	NATOPS Evaluation Report
(77)	(b) (6), (b) (3) (A)	NATOPS Instrument Rating Request
(78)	(b) (6), (b) (3) (A)	Flight Personnel Training & Qualification Jacket
(79)	(b) (6), (b) (3) (A)	Medical Recommendation for Flying or Special Ops Duty
(80)	(b) (6), (b) (3) (A)	Designation as Helo Crew Chief, Qualified Plane Capt
(81)	(b) (6), (b) (3) (A)	NASTP Training Qualification Letter
(82)	(b) (6), (b) (3) (A)	NATOPS Evaluation Report
(83)	(b) (6), (b) (3) (A)	Medical Recommendation for Flying or Special Ops Duty
(84)	(b) (6), (b) (3) (A)	Designation as Helo Crew Chief/Qualified Plane Capt
(85)	(b) (6), (b) (3) (A)	NASTP Training Qualification Letter
(86)	(b) (6), (b) (3) (A)	NATOPS Evaluation Report
(87)	(b) (6), (b) (3) (A)	Medical Recommendation for Flying or Special Ops Duty
(88)	(b) (6), (b) (3) (A)	Qualifications and Achievements in Logbook
(89)	(b) (6), (b) (3) (A)	NASTP Training Qualification Letter
(90)	(b) (6), (b) (3) (A)	NATOPS Evaluation Report
(91)	(b) (6), (b) (3) (A)	Medical Recommendation for Flying or Special Operation Duty
(92)	(b) (6), (b) (3) (A)	Aircrew Performance Record Qualification/Designation
(93)	(b) (6), (b) (3) (A)	NASTP Training Qualification Letter
(94)	(b) (6), (b) (3) (A)	NATOPS Evaluation Report
(95)	(b) (6), (b) (3) (A)	Medical Recommendation for Flying or Special Ops Duty

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- (96) (b) (6), (b) (3) (A) Medical Recommendation for Flying or Special Ops Duty
- (97) Death Certificates of nine crew members
- (98) Hangar Photos of Recovered Debris
- (99) Email Correspondence, Cost of Aircraft
- (100) Still images (3) from 14 Jan 16 video of collision
- (101) 14 Jan 16 video of collision
- (102) (b)(6) (b) (3) 10 USC § 130b and (b)(6) (b) (3) 10 USC § 130b emails of 25-27 Mar 16 re PS 31 and PS 32 Mishap Crew Positions
- (103) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b of 10 Feb 16
- (104) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b of 11 Feb 16
- (105) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b dtd 11 Feb 16
- (106) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b dtd 11 Feb 16
- (107) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b dtd 11 Feb 16
- (108) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b dtd 12 Feb 16
- (109) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b dtd 12 Feb 16
- (110) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b dtd 12 Feb 16
- (111) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b dtd 16 Feb 16
- (112) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b dtd 16 Feb 16
- (113) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b dtd 17 Feb 16
- (114) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b dtd 17 Feb 16
- (115) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b dtd 18 Feb 16
- (116) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b dtd 18 Feb 16
- (117) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b dtd 22 Feb 16
- (118) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b dtd 22 Feb 16
- (119) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b dtd 23 Feb
- (120) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b dtd 24 Feb 16
- (121) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b dtd 24 Feb 16
- (122) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b dtd 24 Feb 16
- (123) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b dtd 26 Feb 16
- (124) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b dtd 26 Feb 16
- (125) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b, USN and (b) (6) (b) (3) 10 USC § 130b, USN dtd 1 Mar 16
- (126) (b)(6) (b) (3) 10 USC § 130b ltr of 12 Apr 16 re Ranges and Training Areas on Oahu
- (127) Autopsy Reports (9)
- (128) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b, USN dtd 2 Mar 16
- (129) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b dtd 2 Mar 16
- (130) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b dtd 3 Mar 16
- (131) Excerpts from A1-H53BE-NFM-000 (CH-53E NATOPS Manual w/ IC45)
- (132) Excerpts from OPNAVINST 3710.7U (NATOPS General Flight and Operating Instructions)
- (133) Email from HMH-463 Safety re 11 instrument extensions during November 2015 to January 2016.
- (134) Excerpts from NTPP 3-22.3-CH53, Aug 14 "Assault Support Tactical Standard Operating Procedure"
- (135) Excerpts from MAWTS-1 NVDMAN, 9th Edition
- (136) MAG-24 Hawaiian Islands Inflight Guide
- (137) Excerpts from Marine Aviation Plan 2015
- (138) Excerpts from NAVMC 3500.47B, CH-53 T & R
- (139) Night Imaging and Threat Evaluation Lab Course Critique
- (140) In-Field Report from Mishap Investigation Team
- (141) Summary of Phone interview with (b) (6)
- (142) Federal Aviation Administration Laser Beam Exposure Questionnaire for 16 Jan 16 Incident
- (143) Weather Reports for Kaneohe Bay dtd 14-15 Jan 16
- (144) 1st MAW CG and MAG-24 CO 14 Jan Mishap Update Brief
- (145) HMH-463 Air Operations Standing Operations Procedures Excerpt
- (146) Wing0 3700.1D, TERF Requirements Excerpt
- (147) 15 Nov 15 Hazard Report

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- (148) HMH-463 Command Climate Workshop Program dtd 30 Nov 15
- (149) HMH-463 Command Safety Assessment Survey
- (150) NAE CH-53E CR-CFT brief, (b) (6) (b) (3) 10 USC § 133 & (b) (6) (b) (3) 10 USC § 130b dtd 15 Dec 15
- (151) MARFORPAC ALD Readiness for December 2013-2015 Brief
- (152) Booz Allen Hamilton, CH-53E Super Stallion Independent Readiness Review dtd 5 Jun 15
- (153) ALD CH-53E Fleet Readiness
- (154) Helicopter Recovery Order dtd 230910Z Jan 16
- (155) AMHS Message Request Salvage Recovery Support dtd 210135Z Jan 16
- (156) MAG-24 and USCG 14th District Incident Brief of 18 Jan 15
- (157) Concept of Operations, NAVSEA Salvage Support Brief dtd 3 Feb 16
- (158) Salvage Timeline
- (159) Radar Tracks, 14 Jan 16
- (160) USMC Waimea Bay Aircraft Incident ICS 209 Incident Status Summary
- (161) Search, Recovery, and Salvage Update dated 4 Apr 16
- (162) MCBH Base Operations Officer Timetable
- (163) Marine Corps Times Article dtd 28 Jan 2016
- (164) Personnel Casualty Reports (12)
- (165) HMH-463 Flight Summary, Jun - Dec 2016.
- (166) Availability of Ranges and Training Areas on Oahu
- (167) Incident Status Summary & Daily SITREP for 15-19 Jan 16
- (168) Mishap Search Area and Debris Itemization
- (169) Mishap Search Area Data Brief
- (170) Unified Command Search Cumulative Brief dtd 19 Jan 16
- (171) Unified Command Search Cumulative Brief dtd 18 Jan 16
- (172) Unified Command Search Cumulative Brief dtd 16 Jan 16
- (173) National Oceanic and Atmospheric Administration Oil Fate Analysis
- (174) Depiction of Cumulative Search as of 19 Jan 16
- (175) Floating Debris Collection as of 18 Jan 16
- (176) HIKVISION IR Mini Bullet Network Camera Specifications
- (177) Waimea Bay Aircraft Incident 2016 Internet Relay Chat
- (178) NOAA Oil Fate Analysis Brief
- (179) (b) (6) (b) (3) 10 USC § 130b, (b) (2)
- (180) CH-53E Current Readiness Brief dtd Sept 15
- (181) 1st MAW RBA Goals, Oct 15 to Apr 16
- (182) CH-53E Super Stallion Independent Readiness Review dtd Jan 16
- (183) 1st MAW Aircraft Maintenance Inspection/Material Condition Inspection Results, 3 Sept 15
- (184) (b) (6) (b) (3) 10 USC § 133 email to BGen Sanborn re MRF-D 2016 dtd 29 Jan 16
- (185) Salvage/Recovery Messages
- (186) NAVSEA CH-53 Recovery Brief
- (187) Aircraft Mishap Board Search, Rescue, and Salvage Update
- (188) Summary of Interview with BGen Russel Sanborn dtd 18-19 Apr 16
- (189) (b) (6) (b) (3) 10 USC § 130b Email dtd 7 Feb 16 re Observations
- (190) USNS SALVOR (T-ARS-52)
- (191) Aviation Maintenance Inspection Results for HMH-463 dtd 6 Nov 14
- (192) Maintenance Program Assist/Material Conditions Inspection Results dtd 12 Sept 14
- (193) Excerpt from MCO 3710.8
- (194) Summary of Interview with (b) (6) (b) (3) 10 USC § 130b dtd 18 Mar 16
- (195) HMH-463 Extensions of Standard Instrument Ratings (9)
- (196) (b) (6) (b) (3) 10 USC § 133 Email re DCA readiness brief dtd 30 Dec 15
- (197) Graphical Hot Board Jun - Dec 15
- (198) COMPACFLT Salvage Matrix
- (199) MOA re Policy on Collection & Analysis of Human Factors Data
- (200) NAVMAC 4790.01
- (201) MARFORPAC ALD RBA Data Report for HMH-463, Jul 14 to Apr 16
- (202) MCO 3125.1B Excerpt

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- (203) 1st MAW ALMAT Re-Inspection Results for HMH-463 dtd 5 Nov 15
- (204) 1st MAW ALMAT Inspection Results for HMH-463 dtd 3 Sept 15
- (205) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b dtd 9 Mar 16
- (206) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b dtd 9 Mar 16
- (207) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b dtd 9 Mar 16
- (208) Compact Disk of MDSU-1 Salvage Updates
- (209) Summary of Interview with (b)(6) (b) (3) 10 USC § 130b, USCG
- (210) 1st MAW Naval Aviation Enterprise Current Readiness Chart
- (211) Marine Corps Aviation Readiness for CMC Brief dtd March 2016
- (212) Summary of Interview of (b)(6) (b) (3) 10 USC § 130b dtd 15 Mar 216
- (213) Overdue Aircraft Checklist
- (214) PACFLT Salvage Cost Estimate dtd 6 May 16
- (215) ROV Coverage and MDSU-1 Contacts
- (216) Termination of Salvage Operations Information Paper dtd 5 Apr 16
- (217) Mishap Flight Brief dtd 14 Jan 16
- (218) CH-53E Current Readiness Team Meeting dtd 17 Dec 15
- (219) MFP ALD CH-53E Executed Flight Hours
- (220) IO-Created Mishap Flight Storyboard
- (221) IO-Created Deep Drone 8000 Specifications
- (222) AMB Prioritized Salvage List dtd 21 Jan 16
- (223) Overdue Aircraft Procedures Wheeler AAF/FAA
- (224) Wheeler AAF "Daily Report of ATC Facility" dtd 14 Jan 16
- (225) METARs from Wheeler AAF dtd 14 Jan 16
- (226) Statements from Wheeler AAF Personnel on Duty 14 Jan 16
- (227) Star Advertiser Article on Mishap
- (228) JTF POTUS brief dtd 15 Dec 2016
- (229) First Salvage and Recovery OPT dtd 26 Jan 2016
- (230) Marine Corps Times "Fleet in Peril" article dtd 2-9 May 2016
- (231) Graphical Summary of CH-53E Readiness
- (232) 1st MAW Extension of High-Bird Requirement dtd 26 Mar 2014
- (233) Compact Disk of Floating Debris Images
- (234) Compact Disk of Recovered Debris Images dtd 16 Jan 2016
- (235) COMNAVAIRFOR NATOPS Program Administrator Email dtd 17 Aug 2016
- (236) Excerpt from OPNAVINST 3710.7U dtd 23 Nov 2009 (7.1.1.6 Operation of Battery Powered Devices)
- (237) Standard Operating Procedures for Aviation Operations for Marine Heavy Helicopter Squadron 463 (Short Title: HMH-463 AIR OPS SOP)
- (238) NTPP 3-22.5-ASTACSOP, JUNE 2014
- (239) NATOPS Instrument Flight Manual dtd 15 Nov 2006
- (240) OPNAVINST 3710.7U dtd 23 Nov 2009
- (241) NAVMC 3500.14D dtd 5 Feb 2016
- (242) CH-53E Training and Readiness Manual dtd 8 September 2015
- (243) MCO 4790.2
- (244) COMNAVAIRFOR INSTRUCTION 5442.1A dtd 15 March 2010 (Aircraft Material Condition Reporting)
- (245) COMNAVAIRFORINST 4790.2B CH-1 dtd 15 June 2013
- (246) CG, III MEF memo 5830/SJA of 24 Jun 16

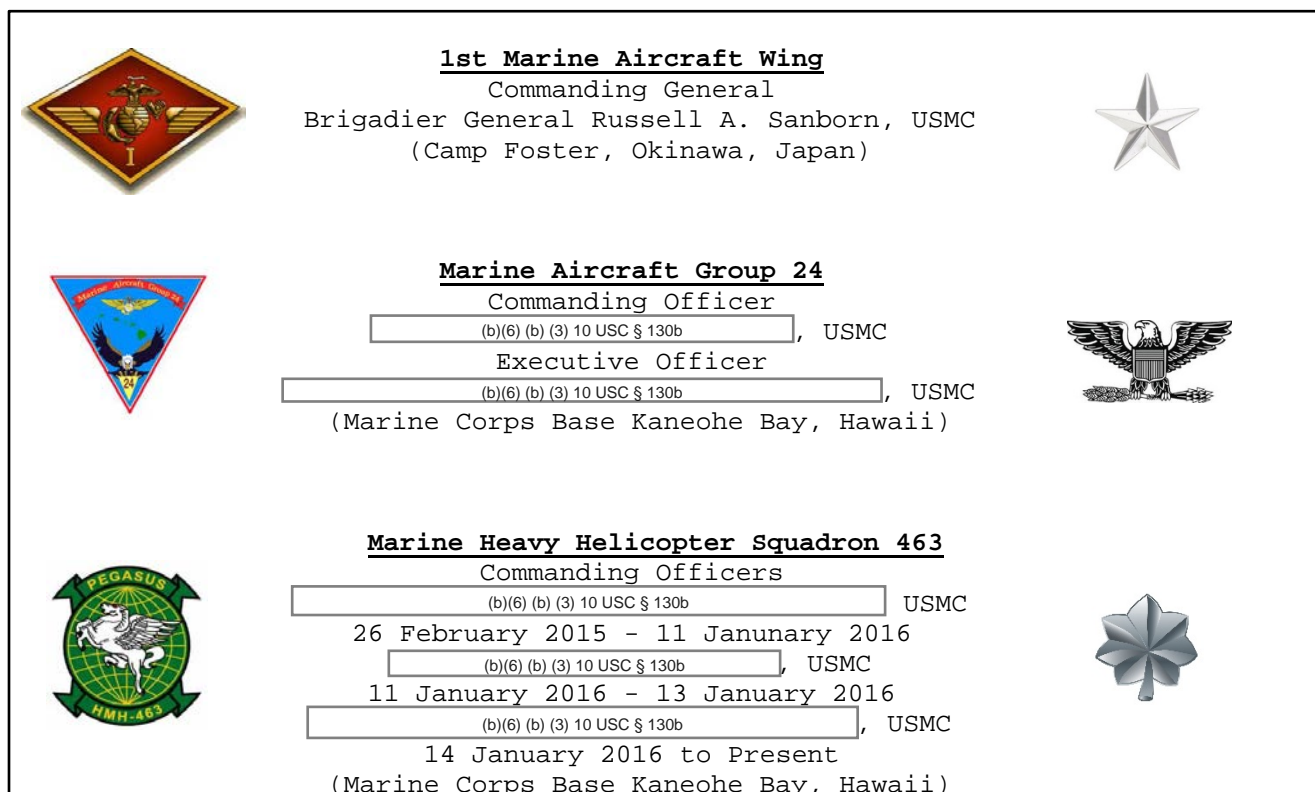
PRELIMINARY STATEMENTS

1. In accordance with reference (a) and pursuant to enclosure (1), this report completes an investigation into the facts and circumstances surrounding the 14 January 2016 CH-53E class "A" mishap that occurred near Haleiwa, Hawaii and resulted in the death of twelve Marines.

2. The aircraft involved in the mishap and most of the crew were from Marine Heavy Helicopter Squadron 463 (HMH-463). HMH-463 is a CH-53E squadron located

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on Marine Corps Air Station (MCAS) Kaneohe Bay, Hawaii and falls under the command of Marine Air Group 24 (MAG-24) and the 1st Marine Air Wing (MAW). The Commanding Officer (CO) of HMH-463 from 26 February 2015 to 11 January 2016 was [REDACTED] (b)(6) (b) (3) 10 USC § 130b. The Executive Officer (XO) of HMH-463, [REDACTED] (b)(6) (b) (3) 10 USC § 130b was the acting CO from 0800 on 11 January 2015 until 0800 on 14 January 2015. [REDACTED] (b)(6) (b) (3) 10 USC § 130b assumed command of HMH-463 at 0800 14 January 2015 and as of the date of this report remains in command. The CO of MAG-24 was [REDACTED] (b)(6) (b) (3) 10 USC § 130b. The Commanding General (CG) of 1st MAW was Brigadier General Russell Sanborn. HMH-463 leadership and its higher headquarters at the time of the mishap is displayed in the chart below.



3. In accordance with reference (b), the investigating officer (IO), [REDACTED] (b) (6), (b) (3) (A), USMC is qualified to conduct this investigation due to his extensive aviation knowledge and experience.

4. Three extension requests were granted by the Convening Authority, requiring submission of this investigation by 8 September 2016. The extensions were necessary to ensure receipt and analysis of all potentially significant evidence.

5. This incident was simultaneously but separately investigated by an Aviation Mishap Board (AMB) led by [REDACTED] (b)(6) (b) (3) 10 USC § 130b, MAG-24.

6. The enclosures consist of copies of interview summaries, voice recordings, photographs, documentary evidence, and video files. The investigating officer certifies that all interview summaries are true and correct to the best of his

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knowledge. The AMB possesses all original documentary evidence and physical evidence, including recovered aircraft debris.

7. The Investigating Officer was not able to obtain the following evidence by the time of submission of this report: (1) the personal cellular phone records of (b) (6), (b) (3) (A) for the night of 14 January 2016, (2) forensic analysis of two cellphones and two tablets recovered from flight bags among the debris, and (3) a Snapchat image sent by (b) (6), (b) (3) (A) on 14 January 2016.

8. (b)(6) (b) (3) 10 USC § 130b, USMC and (b)(6) (b) (3) 10 USC § 130b, USMC provided CH-53 aviation subject matter expertise. (b)(6) (b) (3) 10 USC § 130b, (b) (3) 10 USC, USMC, (b)(6) (b) (3) 10 USC § 130b, Marine Forces Pacific, provided legal guidance.

9. All reasonably available and relevant evidence was collected. The majority of the interviews were conducted in person. Some of the interviews were conducted telephonically.

10. The IO is very familiar with HMH-463, having served two tours with the squadron, most recently as the IO from 2010 to 2011. He has also served as Operations Officer and XO of MAG-24, where (b) (6). He personally knew one of the deceased, (b) (6), (b) (3) (A). The closeness of the IO to the squadron and to the deceased did not affect the investigation. No conflicts of interest that may have precluded the IO or anyone assisting him were discovered during the investigation.

11. Unless otherwise noted, all times mentioned in this report are based upon the 24-hour clock and Hawaii Standard Time (HST).

12. The terms "aircrew" and "aircrewmembers" include both the pilots and enlisted aircrew, unless otherwise noted.

13. Technical and colloquial aviation terms are explained in the footnotes.

14. Findings of Fact are listed numerically and organized into the following sub-sections:

- Mishap Aircraft Manifests
- Background, Experience, and Qualifications [of the Deceased]
- Fleet-wide CH-53E Aircraft Readiness Challenges
- HMH-463 Aircraft Readiness Challenges
- HMH-463 Pilot Proficiency
- HMH-463 Staffing Challenges
- Aircrew Responsibilities and Physiology During Night Flights
- HMH-463 Human Factors
- Mishap Aircraft Maintenance
- Relief of the HMH-463 Commanding Officer
- Planning of the Mishap Flight
- The Mishap Flight
- Search and Rescue
- Recovery and Salvage
- Other Findings

15. NAVMC 3500.47B (CH-53E Training and Readiness Manual) defines proficiency and currency as follows:

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a. "Proficiency is a measure of achievement of a specific skill. Refly factors establish the maximum time between demonstration of those particular skills."

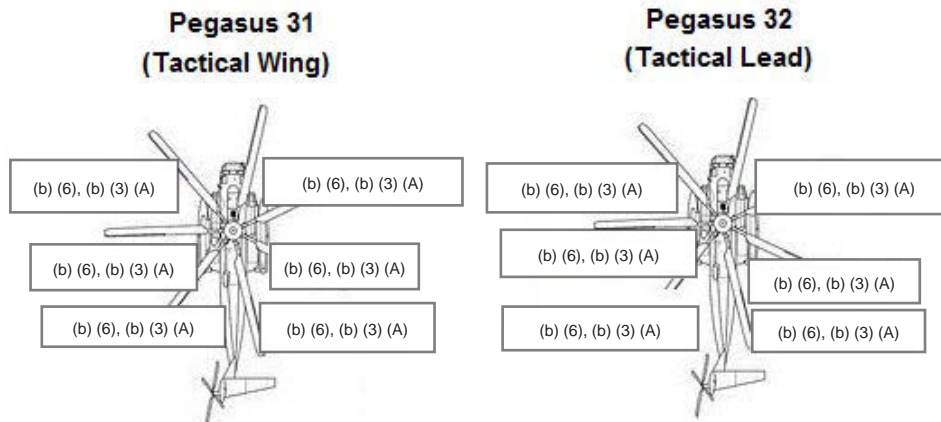
b. "Currency is a control measure used to provide an additional margin of safety based on exposure frequency to a particular skill."

FINDINGS OF FACT

1. On 14 January 2016 at 2234, two CH-53's, Pegasus 31 (call-sign PS 31) and Pegasus 32 (call-sign PS 32), from HMH-463 collided midair, approximately 1500 feet above the ocean and approximately 1.5 nautical miles northwest of the Haleiwa, Hawaii shoreline. [Encl (4), (11), (12), (24), (29), (97), (100), (101), (110), (111), (140), (141), (144), (154)-(156), (160), (163), (164), (167), (175), (178), (185)-(187), (212), (220), (226), (233)-(236)]

Mishap Aircraft Manifests

2. Crew positions for the Marines aboard PS 31 and PS 32 are depicted below.¹ [Encl (4), (7)-(10), (98), (102), (109)-(111)]



3. The following Marines were aboard PS 31, Bureau of Aeronautics number (BuNo) 161255, aircraft side number 06, at the time of the incident: [redacted] (b) (6), (b) (3) (A) and [redacted] (b) (6), (b) (3) (A), [redacted] (b) (6), (b) (3) (A), [redacted] (b) (6), (b) (3) (A) and [redacted] (b) (6), (b) (3) (A), [redacted] (b) (6), (b) (3) (A). [Encl (4), (7)-(10), (109)-(111)]

4. [redacted] (b) (6), (b) (3) (A) was the Helicopter Aircraft Commander² (HAC) of PS 31 and Section Leader of event 1431 on 14 January 2016. He sat in the left cockpit seat. [Encl (4), (8)-(10), (109)-(111)]

¹ The crew positions are based upon statements provided by the copilots who flew the same aircraft with the same enlisted crew immediately prior to the mishap flight as well as the flight schedule, air traffic control tower tapes, and flight brief materials. It would be unusual for enlisted crewmembers to change positions during the second phase of a hot seat flight.

² Helicopter Aircraft Commander is a designation given by a squadron commanding officer that allows an aviator to sign and be responsible for an

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5. (b) (6), (b) (3) (A) was the copilot³ of PS 31 and sat in the right cockpit seat. [Encl (4), (8)-(10), (109)-(111)]

6. (b) (6), (b) (3) (A) Corporals (b) (6), (b) (3) (A) and (b) (6), (b) (3) (A), and (b) (6), (b) (3) (A) were the qualified crew chiefs of PS 31. [Encl (4), (109)-(111)]

7. The following service members were aboard PS 32, BuNo 163061, aircraft side number 05, at the time of the incident: (b) (6), (b) (3) (A), (b) (6), (b) (3) (A), and (b) (6), (b) (3) (A); and (b) (6), (b) (3) (A). [Encl (4), (6), (8)-(10), (109)-(111)]

8. (b) (6), (b) (3) (A) was the HAC of PS 32 and sat in the left cockpit seat. [Encl (4), (6), (8)-(10), (109)-(111)]

9. (b) (6), (b) (3) (A) was the copilot of PS 32 and sat in the right cockpit seat. [Encl (4), (6), (8)-(10), (109)-(111)]

10. (b) (6), (b) (3) (A) and (b) (6), (b) (3) (A), and (b) (6), (b) (3) (A) were the qualified crew chiefs of PS 32. [Encl (4), (6), (8)-(10), (109)-(111)]

(b) (6), (b) (3) (A) Background, Experience, and Qualifications

11. (b) (6), (b) (3) (A) completed Advanced Flight Training at Helicopter Training Squadron 18 on 29 June 2010. [Encl (31)]

12. (b) (6), (b) (3) (A) was designated as a naval aviator on 16 July 2010. [Encl (30)]

13. (b) (6), (b) (3) (A) completed Advanced Flight Training at Helicopter Training Squadron 8 in July 2010. [Encl (31)]

14. On 26 February 2013, (b) (6), (b) (3) (A) completed aviation physiology and water survival refresher training, valid until 28 February 2017. [Encl (32)]

15. (b) (6), (b) (3) (A) earned his CH-53E HAC certification on 13 September 2013, Section Leader certification on 25 March 2014, and Night Systems Instructor (NSI) certification on 26 June 2014. [Encl (33)]

16. (b) (6), (b) (3) (A) last CH-53E Naval Air Training and Operating Procedures Standardization (NATOPS) evaluation was on 26 August 2015. At that time, he had logged 730.5 CH-53E hours and 947.8 total hours of flight time. [Encl (34)]

17. (b) (6), (b) (3) (A) last NATOPS instrument evaluation was on 20 February 2015. [Encl (35)]

18. There were no discrepancies with (b) (6), (b) (3) (A) NATOPS training requirements or currency. [Encl (36)]

aircraft. The HAC takes command of an aircraft and responsible for its safe operation in the accomplishment of the assigned mission.

³ The naval aviation term "copilot" can refer to either (1) another pilot in a specific aircraft or (2) an aviator's status or seniority as opposed to the more senior designation of "pilot" within an aviation squadron.

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19. By 14 January 2016, (b) (6), (b) (3) (A) logged 997.3 total flight hours and 780.1 CH-53E flight hours. [Encl (17)]
20. By 14 January 2016, (b) (6), (b) (3) (A) logged 85.6 total actual instrument⁴ flight hours. [Encl (17)]
21. On 14 January 2016, (b) (6), (b) (3) (A) logged 4.0, 7.0, and 16.0 flight hours in the last 30, 60, and 90 days, respectively. [Encl (17)]
22. (b) (6), (b) (3) (A) did not log any night hours during the 90 days preceding the mishap. [Encl (17)]
23. In accordance with the CH-53E Training and Readiness (T&R) Manual, (b) (6), (b) (3) (A) was current in all training codes required for the mishap flight. [Encl (9), (19), (242)]
24. There is no history of an aviation related mishap involving (b) (6), (b) (3) (A) prior to the 14 January 2016 mishap flight. [Encl (37)]
25. (b) (6), (b) (3) (A) was physically qualified and aeronautically adapted for unrestricted flight status with a photorefractive keratectomy (minor eye surgery for vision correction) waiver. [Encl (38)]
26. (b) (6), (b) (3) (A) last flight physical was dated 11 June 2015 and was set to expire on 31 July 2016. [Encl (39)]
27. (b) (6), (b) (3) (A) had no aeromedical issues, including appointments, consults or medications that were documented during the three months preceding the mishap. [Encl (128)]
28. No evidence indicates that (b) (6), (b) (3) (A) was under the influence of any alcohol or drugs, including prescription medication. [Encl (109)-(111)]
29. (b) (6), (b) (3) (A) did not display any behavior indicating that personal stressors could have interfered with the flight. [Encl (109)-(111), (123)]
30. (b) (6), (b) (3) (A) had a reputation for being very thorough and professional as a Weapons and Tactics Instructor⁵ (WTI) and mentor. [Encl (109)-(111), (117), (119)]

(b) (6), (b) (3) (A)

Background, Experience, and Qualifications

31. (b) (6), (b) (3) (A) was designated as a naval aviator on 25 September 2009. [Encl (41)]

⁴ Actual instrument flight hours are logged when there is no visible horizon, requiring the pilot to rely solely on aircraft instruments.

⁵ A WTI is an individual certified by Marine Aviation Weapons and Tactics Squadron One (MAWTS-1) during a biannual course at Marine Corps Air Station (MCAS) Yuma. Much like the Air Force Weapons School and the US Navy's Top Gun Fighter Weapons School, the USMC has developed a training program designed to produce subject matter experts in the area of cross-domain warfighting. During WTI, students receive in-depth, detailed training which is employed and practiced during exercises on the many nearby ranges in Arizona and California. The syllabus includes mission planning and briefing, techniques tactics and procedures, and the live employment of weapons in multiple scenarios. The WTI course is an advanced, graduate level course for select fixed wing, rotary wing, and tiltrotor pilots and enlisted aircrew.

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32. [REDACTED] completed Advanced Flight Training at Helicopter Training Squadron 8 on 25 September 2009. [Encl (40)]

33. [REDACTED] completed aviation physiology and water survival refresher training on 28 October 2015, which was valid until 30 October 2016. [Encl (43)]

34. [REDACTED] earned his CH-53E HAC certification on 6 July 2015. [Encl (42)]

35. [REDACTED] last CH-53E NATOPS evaluation was on 6 July 2015. At that time, he had logged 154.8 CH-53E hours and 1123.4 total hours of flight time. [Encl (44)]

36. [REDACTED] last NATOPS instrument evaluation was completed on 26 August 2015. [Encl (45)]

37. There were no discrepancies with [REDACTED] NATOPS training requirements or currency. [Encl (43)]

38. By 14 January 2016, [REDACTED] logged 1212.8 total flight hours. [Encl (17)]

39. By 14 January 2016, [REDACTED] logged 244.2 CH-53E flight hours. [Encl (17)]

40. By 14 January 2016, [REDACTED] logged 97.4 total actual instrument flight hours. [Encl (17)]

41. By 14 January 2016, [REDACTED] logged 5.0, 14.2, and 20.8 flight hours in the last 30, 60, and 90 days, respectively. [Encl (17)]

42. By 14 January 2016, [REDACTED] logged 5.0, 10.7, and 11.7 night hours of Night Vision Device (NVD) time in the last 30, 60, and 90 days, respectively. [Encl (17)]

43. In accordance with the CH-53E T&R Manual, [REDACTED] was current in all training codes required for the mishap flight. [Encl (9), (19), (242)]

44. There is no history of an aviation related mishap involving [REDACTED] prior to the 14 January 2016 mishap flight. [Encl (46)]

45. [REDACTED] was physically qualified and aeronautically adapted for unrestricted flight status. [Encl (47)]

46. [REDACTED] last flight physical was dated 20 October 2015 and was valid until 30 September 2016. [Encl (47)]

47. No aeromedical issues, including appointments, consults, or medications concerning [REDACTED] were documented during the three months preceding the mishap. [Encl (128)]

48. No evidence suggests that [REDACTED] was under the influence of any alcohol or drugs, including prescription medication, on the day of the mishap. [Encl (109)-(111)]

⁶ Night Vision Devices are also known as Night Vision Goggles (NVGs).

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49. [REDACTED] did not display any behavior indicating that personal stressors could have interfered with the flight. [Encl (109)-(111)]

50. Other members of HMH-463 considered [REDACTED] overall aviation performance to be above average. They believed he was a very conservative pilot. [Encl (109)-(111), (113), (119)]

[REDACTED] Background, Experience, and Qualifications

51. [REDACTED] received his crew chief designation on 7 November 2012. [Encl (48)]

52. [REDACTED] completed aviation physiology and water survival refresher training on 2 April 2012, valid until 31 March 2016. [Encl (49)]

53. [REDACTED] last CH-53E NATOPS evaluation was on 5 May 2015. At that time, he had logged 689.7 CH-53E hours and 689.7 total hours of flight time. [Encl (50)]

54. By 14 January 2016, [REDACTED] logged 932.6 CH-53E flight hours. [Encl (28)]

55. By 14 January 2016, [REDACTED] logged 301.6 total NVD hours. [Encl (28)]

56. In accordance with the CH-53E T&R Manual, [REDACTED] was current in all training codes required for the mishap flight. [Encl (9), (19), (242)]

57. [REDACTED] was physically qualified and aeronautically adapted for unrestricted flight status. [Encl (51)]

58. [REDACTED] last flight physical was dated 4 March 2015 and had an expiration date of 28 February 2016. [Encl (51)]

59. No aeromedical issues concerning [REDACTED] including appointments, consults or medications, were documented during the three months preceding the mishap. [Encl (128)]

60. No evidence suggests that [REDACTED] was under the influence of any alcohol or drugs, including prescription medication, on the day of the mishap. [Encl (109)-(111), (130)]

61. [REDACTED] did not display any behavior indicating that personal stressors could have interfered with the flight. [Encl (105), (109)-(111), (130)]

62. [REDACTED] was considered to be a highly competent crew chief by other members HMH-463. [Encl (105), (109)-(111), (130)]

63. [REDACTED] overall aviation performance was considered above average by members of HMH-463. [Encl (105), (109)-(111), (130)]

[REDACTED] Background, Experience, and Qualifications

64. [REDACTED] received his crew chief designation on 8 August 2013. [Encl (52)]

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65. [redacted] (b) (6), (b) (3) (A) completed aviation physiology and water survival refresher training on 19 November 2015, valid until 30 November 2019. [Encl (53)]

66. [redacted] (b) (6), (b) (3) (A) last CH-53E NATOPS evaluation was on 27 July 2015. At that time, he had logged 486.9 CH-53E hours and 486.9 total hours of flight time. [Encl (54)]

67. By 14 January 2014, [redacted] (b) (6), (b) (3) (A) had logged 581.4 CH-53E flight hours. [Encl (28)]

68. By 14 January 2014, [redacted] (b) (6), (b) (3) (A) had logged 155 total NVD hours. [Encl (28)]

69. In accordance with the CH-53E T&R Manual, [redacted] (b) (6), (b) (3) (A) was current in all training codes required for the mishap flight. [Encl (9), (19)]

70. [redacted] (b) (6), (b) (3) (A) was physically qualified and aeronautically adapted for unrestricted flight status. [Encl (55)]

71. [redacted] (b) (6), (b) (3) (A) last flight physical was dated 22 December 2015 and was valid until 31 December 2016. [Encl (55)]

72. No aeromedical issues, including appointments, consults or medications concerning [redacted] (b) (6), (b) (3) (A) were documented during the three months preceding the mishap. [Encl (128)]

73. [redacted] (b) (6), (b) (3) (A) was involved in an argument on 19 June 2015 while on liberty with his friends. Military police intervened and the situation was resolved. The event was recorded in the Duty Logbook that evening. [redacted] (b) (6), (b) (3) (A) was ordered to see the command Substance Abuse Counselor and was determined to be not dependent on alcohol on 30 June 2015. [Encl (117), (129)]

74. No evidence was uncovered that suggested [redacted] (b) (6), (b) (3) (A) was under the influence of alcohol or drugs, including prescription medications, on the day of the mishap. [Encl (109)-(111), (130)]

75. [redacted] (b) (6), (b) (3) (A) did not display any behavior indicating that personal stressors could have interfered with the flight. [Encl (109)-(111), (130)]

76. [redacted] (b) (6), (b) (3) (A) was considered to be a very conservative crew chief by other members of HMH-463. [Encl (109)-(111), (130)]

77. [redacted] (b) (6), (b) (3) (A) overall aviation performance was considered to be "varsity-level" by other members of HMH-463. [Encl (109), (110), (130)]

[redacted] (b) (6), (b) (3) (A) background, Experience, and Qualifications

78. [redacted] (b) (6), (b) (3) (A) received his crew chief designation on 12 July 2013. [Encl (56)]

79. [redacted] (b) (6), (b) (3) (A) completed aviation physiology and water survival refresher training on 15 October 2012, valid until 31 October 2016. [Encl (57)]

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80. [REDACTED] last CH-53E NATOPS evaluation was on 18 June 2015. At that time, he had logged 343.8 CH-53E hours and 343.8 total hours of flight time. [Encl (58)]

81. By 14 January 2016, [REDACTED] logged 469.6 CH-53E flight hours. [Encl (28)]

82. By 14 January 2016, [REDACTED] logged 113.5 total NVD hours. [Encl (28)]

83. In accordance with the CH-53E T&R Manual, [REDACTED] was current in all training codes required for the mishap flight. [Encl (9), (19)]

84. [REDACTED] was physically qualified and aeronautically adapted for unrestricted flight status. [Encl (59)]

85. [REDACTED] last flight physical was dated 1 June 2015, valid until 30 April 2016. [Encl (59)]

86. No aeromedical issues concerning [REDACTED] including appointments, consults or medications, were documented during the three months preceding the mishap. [Encl (128)]

87. No evidence suggests that [REDACTED] was under the influence of any alcohol or drugs, including prescription medication, on the day of the mishap. [Encl (109)-(111), (130)]

88. Around the time of the mishap, [REDACTED] experienced significant stress related to his career progression. Since checking into HMH-463, his chain of command described him as being behind the pace of his peers in terms of maintenance qualifications. [Encl (110), (122), (130)]

89. [REDACTED] overall in-flight performance was considered above average. He was also considered to be a very conservative crew chief by other members of HMH-463. [Encl (109), (110), (111), (130)]

90. According to several Marines of HMH-463, [REDACTED] took pride in his work and had a wealth of systems knowledge. However, like many junior aircrew, he expressed a fear of night flying. [Encl (104), (112)]

[REDACTED] Background, Experience, and Qualifications

91. [REDACTED] received his crew chief designation on 12 June 2014. [Encl (60)]

92. [REDACTED] completed aviation physiology and water survival refresher training on 20 September 2013, valid until 30 September 2017. [Encl (61)]

93. [REDACTED] last CH-53E NATOPS evaluation was on 8 June 2015. At that time, he had logged 199.5 CH-53E hours and 199.5 total flight hours. [Encl (62)]

94. By 14 January 2016, [REDACTED] had logged 275.6 CH-53E flight hours and 59.3 total NVD hours. [Encl (28)]

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95. In accordance with the CH-53E T&R Manual, [REDACTED] was current in all training codes required for the mishap flight. [Encl (9), (19)]

96. [REDACTED] was physically qualified and aeronautically adapted for unrestricted flight status. [Encl (96)]

97. [REDACTED] last flight physical was dated 1 May 2015, valid until 30 April 2016. [Encl (96)]

98. No aeromedical issues concerning [REDACTED] including appointments, consults or medications, were documented during the three months preceding the mishap. [Encl (128)]

99. There is no indication [REDACTED] was under the influence of alcohol or drugs, including prescription medication, on the day of the mishap. [Encl (109)-(111), (130)]

100. [REDACTED] did not display any behavior indicating that personal stressors could have interfered with the flight. [Encl (109)-(111), (130)]

101. [REDACTED] had nearly completed the syllabus for plane captain qualification by the day of the mishap. He was known for his unrelenting initiative. [Encl (104), (109)-(111), (130)]

[REDACTED]

Background, Experience, and Qualifications

102. [REDACTED] completed Advanced Flight Training at Helicopter Training Squadron 18 on 18 December 2003. [Encl (63)]

103. [REDACTED] was designated as a Naval Aviator on 18 December 2003. [Encl (64)]

104. [REDACTED] completed aviation physiology and water survival refresher training on 20 May 2014. [Encl (65)]

105. [REDACTED] was a certified HAC on 21 August 2005. [Encl (66)]

106. [REDACTED] last CH-53E NATOPS evaluation was on 13 August 2015. At that time, he had logged 880 CH-53E hours and 1831 total flight hours. [Encl (67)]

107. On 31 October 2015, [REDACTED] granted [REDACTED] an extension to his standard instrument rating for a 90 day period. This extension would expire on 29 January 2016. [Encl (69)]

108. [REDACTED] records indicate he completed all NATOPS training and was current other than the instrument rating extensions. [Encl (66)-(68), (69)]

109. By 14 January 2016, [REDACTED] logged 1862.3 total flight hours. [Encl (17)]

110. By 14 January 2016, [REDACTED] logged 911.3 CH-53E flight hours. [Encl (17)]

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111. By 14 January 2016, [REDACTED] (b) (6), (b) (3) (A) logged 92.2 total actual instrument flight hours. [Encl (17)]

112. By 14 January 2016, [REDACTED] (b) (6), (b) (3) (A) logged 3.5, 5.8, and 36.7 flight hours in the last 30, 60, and 90 days, respectively. [Encl (17)]

113. By 14 January 2016, [REDACTED] (b) (6), (b) (3) (A) logged 2.0, 2.8, and 9.8 night hours of NVD time in the last 30, 60, and 90 days, respectively. [Encl (17)]

114. In accordance with the CH-53E T&R Manual, [REDACTED] (b)(6), (b)(3) was current in all training codes required for the mishap flight. [Encl (9), (19)]

115. There is no history of an aviation related mishap involving [REDACTED] (6), (b) (3) [REDACTED] prior to 14 January 2016. [Encl (70)]

116. [REDACTED] (b) (6), (b) (3) (A) was physically qualified and aeronautically adapted for unrestricted flight status. [Encl (71)]

117. [REDACTED] (b) (6), (b) (3) (A) last flight physical is dated 6 October 2015 and was set to expire on 30 September 2016. [Encl (71)]

118. No aeromedical issues concerning [REDACTED] (b) (6), (b) (3) (A) including appointments, consults or medications, were documented during the three months preceding the mishap. [Encl (128)]

119. There is no indication [REDACTED] (b) (6), (b) (3) (A) was under the influence of any alcohol or drugs, including prescription medications, on the day of the mishap. [Encl (109)-(111), (128)]

120. During the days preceding the mishap flight, [REDACTED] (b) (6), (b) (3) (A) exhibited behavior that indicated stress and fatigue:

a. On 12 January 2016, [REDACTED] (b) (6), (b) (3) (A) apologized to [REDACTED] (b)(6) (b) (3) 10 USC § 130b [REDACTED] (b) (3) 10 USC § 130b, for letting him down. As the Aircraft Maintenance Officer (AMO), [REDACTED] (b) (6), (b) (3) (A) expressed that he was responsible for the lack of improvement in aircraft readiness, and, therefore, the Commanding Officer's relief. [Encl (111), (119), (123), (124)]

b. After both the all-hands address provided by the 1st MAW Commanding General, Brigadier General Russell A. Sanborn, on 11 January as well as the 14 January incoming CO's all-hands address, [REDACTED] (b) (6), (b) (3) (A) believed that he would soon be relieved of his duties as the AMO. [Encl (111), (117), (194)]

c. On 14 January 2016 (the day of the mishap), the copilots described [REDACTED] (b) (6), (b) (3) (A) appeared "distracted," "preoccupied" and "not confident." [Encl (111), (117)]

d. [REDACTED] (b) (6), (b) (3) (A) who was working long hours since taking over as AMO⁷ in November 2015, was advised to go home by other Marines on several occasions

⁷ An Aviation Maintenance Officer is responsible for supervising the maintenance and repair of aircraft, aircraft components, and aviation support equipment. Other responsibilities include supervising the scheduling of aircraft for inspection, ensuring the collection and dissemination of maintenance management information, directing technical training, establishing maintenance personnel safety programs, and directing and monitoring the request, receipt, and allocation of materials and tools.

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when they saw him within the HMH-463 work spaces late at night. [Encl (110), (111), (117), (119), (123), (124), (128), (194)]

e. Members of the HMH-463 leadership described (b) (6), (b) (3) (A) as experiencing stress associated with balancing responsibilities as an individual pilot, a department head, and HMH-463's sole functional check pilot. [Encl (116), (117), (194)]

121. (b) (6), (b) (3) (A) was considered to be a conservative pilot by other members of HMH-463. [Encl (109)-(111)]

122. (b) (6), (b) (3) (A) 10 USC § 130b praised (b) (6), (b) (3) (A) efforts in causing "maintenance to turn the corner." [Encl (118)]

(b) (6), (b) (3) (A) Background, Experience, and Qualifications

123. (b) (6), (b) (3) (A) completed Advanced Flight Training at Helicopter Training Squadron 28 on 20 Jan 2011. [Encl (72)]

124. (b) (6), (b) (3) (A) was designated as a naval aviator on 11 February 2011. [Encl (73)]

125. (b) (6), (b) (3) (A) completed aviation physiology and water survival refresher training on 25 July 2014. [Encl (74)]

126. (b) (6), (b) (3) (A) earned his CH-53E HAC certification on 12 August 2013, Section Leader certification on 6 February 2014, and Night Systems Instructor (NSI) certification on 24 June 2014. [Encl (75)]

127. (b) (6), (b) (3) (A) last CH-53E NATOPS evaluation was on 27 July 2015. At that time, he had 476.6 CH-53E hours and 954.1 total flight hours. [Encl (76)]

128. (b) (6), (b) (3) (A) last NATOPS instrument evaluation was on 24 Aug 2015. [Encl (77)]

129. There were no discrepancies with (b) (6), (b) (3) (A) NATOPS training requirements or currency. [Encl (75)]

130. By 14 January 2016, (b) (6), (b) (3) (A) logged 1051.8 total flight hours. [Encl (17)]

131. By 14 January 2016, (b) (6), (b) (3) (A) logged 844.3 CH-53E flight hours. [Encl (17)]

132. By 14 January 2016, (b) (6), (b) (3) (A) logged 47.4 total instrument flight hours. [Encl (17)]

133. By 14 January 2016, (b) (6), (b) (3) (A) logged 13.0, 25.7, 52.8 flight hours in the last 30, 60, and 90 days, respectively. [Encl (17)]

134. (b) (6), (b) (3) (A) logged zero, 6, and 7 night hours of NVD time in the last 30, 60, and 90 days, respectively. [Encl (17)]

135. In accordance with the CH-53E T&R Manual, (b) (6), (b) (3) (A) was current in all training codes required for the mishap flight. [Encl (9), (19)]

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136. There is no evidence of any aviation related mishap involving [redacted] prior to the 14 January 2016 mishap flight. [Encl (78)]

137. [redacted] was physically qualified and aeronautically adapted for unrestricted flight status. [Encl (79)]

138. [redacted] last flight physical was dated 26 July 2015 and was valid until date of 31 July 2016. [Encl (79)]

139. No aeromedical issues concerning [redacted] including appointments, consults, or medications, were documented during the three months preceding the mishap. [Encl (128)]

140. No evidence suggests that [redacted] was under the influence of any alcohol or drugs, include prescription medications, on the day of the mishap. [Encl (109)-(111), (128)]

141. [redacted] did not display any behavior indicating that personal stressors interfered with the flight. [Encl (109)-(111)]

142. [redacted] was considered to be an excellent instructor pilot by other members of HMH-463. [Encl (109)-(111)]

143. [redacted] overall aviation performance was considered by HMH-463 to be above average. [Encl (109)-(111)]

[redacted] Background, Experience, and Qualifications

144. [redacted] received his crew chief designation on 9 May 2013. [Encl (80), (82)]

145. [redacted] completed aviation physiology and water survival refresher training on 19 June 2012. [Encl (81)]

146. [redacted] last CH-53E NATOPS evaluation was on 28 Apr 2015. At that time, he had logged 469.7 CH-53E hours and 469.7 total flight hours. [Encl (28)]

147. By 14 January 2016, [redacted] logged 560.5 CH-53E flight hours. [Encl (28)]

148. By 14 January 2016, [redacted] logged 144.6 total NVD hours. [Encl (28)]

149. In accordance with the CH-53E T&R Manual, [redacted] was current in all training codes required for the mishap flight. [Encl (9), (19)]

150. [redacted] was physically qualified and aeronautically adapted for flight status. He was required to wear vision correction devices in the performance of flight duties. [Encl (83)]

151. [redacted] last flight physical was dated 1 December 2015 and was valid until 30 November 2016. [Encl (83)]

152. No aeromedical issues concerning [redacted] including appointments, consults or medications, were documented during the three months preceding the mishap. [Encl (128)]

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153. No evidence suggests that (b) (6), (b) (3) (A) was under the influence of any alcohol or drugs, including prescription medications, on the day of the flight. [Encl (109)-(111), (128), (130)]

154. (b)(6), (b)(3) [Encl (109)-(111), (113), (114), (129) (130)]

155. (b) (6), (b) (3) (A) was considered to be a quiet professional and continuously drove other Marines to better themselves. [Encl (104), (109)-(111), (130)]

156. (b) (6), (b) (3) (A) was among the most respected crew chiefs of HMH-463. [Encl (104), (109)-(111), (130)]

(b) (6), (b) (3) (A) Background, Experience, and Qualifications

157. (b) (6), (b) (3) (A) received his crew chief designation on 30 September 2010. [Encl (84)]

158. (b) (6), (b) (3) (A) completed aviation physiology and water survival refresher training on 4 March 2014. [Encl (85)]

159. (b) (6), (b) (3) (A) last CH-53E NATOPS evaluation was on 18 December 2015. At that time, he had logged 1263.2 CH-53E hours and 1263.2 total flight hours. [Encl (86)]

160. By 14 January 2016, (b) (6), (b) (3) (A) logged 1275.2 CH-53E flight hours. [Encl (28)]

161. By 14 January 2016, (b) (6), (b) (3) (A) logged 339.3 total NVD hours. [Encl (28)]

162. In accordance with the CH-53E T&R Manual, (b) (6), (b) (3) (A) was current in all training codes required for the mishap flight. [Encl (9), (19)]

163. (b) (6), (b) (3) (A) was physically qualified and aeronautically adapted for unrestricted flight status. [Encl (87)]

164. (b) (6), (b) (3) (A) last flight physical was dated 20 January 2015 and was valid until 31 January 2016. [Encl (87)]

165. No aeromedical issues concerning (b) (6), (b) (3) (A) including appointments, consults or medications, were documented during the three months preceding the mishap. [Encl (128)]

166. No evidence suggests that (b) (6), (b) (3) (A) was under the influence of alcohol or drugs, including prescription medications, on the day of the mishap. [Encl (109)-(111), (128), (130)]

167. (b) (6), (b) (3) (A) did not display any behavior indicating that personal stressors may have interfered with the flight. [Encl (104), (109)-(111), (130)]

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168. [REDACTED] possessed a wealth of knowledge that allowed him to influence and lead other members of HMH-463. [Encl (104), (109)-(111), (130)]

169. [REDACTED] excellent aviation performance was demonstrated by his ease of balancing both ground (Collateral Duty Inspector (CDI)) and flying duties (Weapons and Tactics Instructor (WTI)). [Encl (104), (109)-(111), (130)]

[REDACTED] Background, Experience, and Qualifications

170. [REDACTED] received his crew chief designation on 13 May 2010. [Encl (88)]

171. [REDACTED] completed aviation physiology and water survival refresher training on 23 July 2013. [Encl (89)]

172. [REDACTED] last CH-53E NATOPS evaluation was on 30 March 2015. At that time, he had logged 1567.8 CH-53E hours and 1567.8 total flight hours. [Encl (90)]

173. By 14 January 2016, [REDACTED] logged 1690.6 CH-53E flight hours. [Encl (28)]

174. By 14 January 2016, [REDACTED] logged 557.9 total NVD hours. [Encl (28)]

175. In accordance with the CH-53E T&R Manual, [REDACTED] was current in all training codes required for the mishap flight. [Encl (9), (19)]

176. [REDACTED] was physically qualified and aeronautically adapted for unrestricted flight status. His last flight physical was dated 4 May 2015 and was valid until 30 April 2016. [Encl (91)]

177. No aeromedical issues concerning [REDACTED] including appointments, consults or medications, were documented during the three months preceding the mishap. [Encl (128)]

178. No evidence was discovered suggesting that [REDACTED] was under the influence of alcohol or drugs, including prescription medications, on the day of the mishap. [Encl (109)-(111), (130)]

179. [REDACTED] did not display any behavior indicating that personal stressors may have interfered with the flight. [Encl (104) (109)-(111), (130)]

180. [REDACTED] possessed the most flight hours among the enlisted flight crew, was a WTI, and had combat experience. [Encl (88)]

181. [REDACTED] was described as well-respected and approachable as a mentor by other Marines in HMH-463. [Encl (104), (109)-(111), (130)]

[REDACTED] Background, Experience, and Qualifications

182. [REDACTED] received his crew chief designation on 4 June 2014. [Encl (92)]

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183. [REDACTED] completed aviation physiology and water survival refresher training on 31 August 2013. It was valid until 31 August 2017. [Encl (93)]

184. [REDACTED] last CH-53E NATOPS evaluation was on 8 April 2015. At that time, he had logged 209.2 CH-53E hours and 209.2 total hours. [Encl (94)]

185. By 14 January 2016, [REDACTED] logged 376.1 CH-53E flight hours. [Encl (28)]

186. By 14 January 2016, [REDACTED] logged 63.2 total NVD hours. [Encl (28)]

187. In accordance with the CH-53E T&R Manual, [REDACTED] was current in all training codes required for the mishap flight. [Encl (9), (19)]

188. [REDACTED] was physically qualified and aeronautically adapted for unrestricted flight status. [Encl (95)]

189. [REDACTED] last flight physical was dated 7 April 2015 and was valid until 30 April 2016. [Encl (95)]

190. No aeromedical issues concerning [REDACTED] including appointments, consults or medications, were documented during the three months preceding the mishap. [Encl (128)]

191. No evidence suggests that [REDACTED] was under the influence of alcohol or drugs, including prescription medications, on the day of the mishap. [Encl (109)-(111), (128), (130)]

192. [REDACTED] did not display any behavior indicating that personal stressors may have interfered with the flight. [Encl (104), (109)-(111), (130)]

193. [REDACTED] was considered to be an outstanding talent in the aircraft and equally talented as an aircraft maintainer. [Encl (104), (109)-(111), (130)]

Fleet-wide CH-53E Aircraft Readiness Challenges

194. An independent readiness review of the CH-53E fleet was conducted in June 2015 and found that the Marine Corps has experienced serious difficulties with maintaining aircraft readiness. [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] [Encl (152)]

195. From 2008 to 2015, maintenance man-hours necessary to bring all CH-53E aircraft to mission capable status increased steadily by 89%. This figure mirrors the increase in Not Mission Capable Maintenance (NMCM) rates⁸ for the same period. [Encl (152)]

⁸ NMCM is a materiel condition indicating that weapon systems are not capable of performing an identified mission because of unit level maintenance

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196. A 2015 study noted that readiness within the Marine Corps' CH-53E fleet was "appalling" due to inadequate inventory; too many aircraft in maintenance; lack of designated resources; no fleet-wide "reset" following operations Iraqi Freedom and Enduring Freedom; insufficient maintenance training, oversight, equipment, formal and on-the-job training, and technical support. [Encl (152)]

197. In 2008, the Marine Corps implemented the Integrated Maintenance Concept program. For several years preceding 2008, the number of fully mission capable CH-53Es hovered around 50%. From 2008 to 2015, the number of fully mission capable CH-53Es steadily declined from approximately 50% to 20%. [Encl (152)]

198. Since 2009, the average time for completion of a CH-53E maintenance action has increased 33% fleet-wide. [Encl (152)]

199. The CH-53E fleet has the highest cannibalization rate⁹ in the USMC rotary fleet. [Encl (152), (243)]

200. A 2015 study found that existing Individual Material Readiness List¹⁰ gear had been poorly maintained throughout the CH-53E fleet. [Encl (152)]

201. From 2010 to 2015, the percentage of total flight hours devoted to Functional Check Flights¹¹ (FCFs) increased by 44% fleet-wide. [Encl (152)]

202. From 2012 to 2015, the number of Out of Reporting aircraft¹² increased by 78% fleet-wide. [Encl (152)]

203. In fiscal year 2015, 67% of the CH-53E squadrons were at a (b) (5) level of readiness.¹³ [Encl (196)]

requirements. Recording of NCMC time begins when a malfunction is discovered, a mission is complete, or a determination is made that a system cannot be returned to mission capable status within 2 hours. The time stops when maintenance has been completed or is interrupted by a supply shortage. The period of work stoppage due to a supply requirement is measured as Not Mission Capable Supply (NMCS). NCMC resumes when required supply items are delivered to the maintenance activity.

⁹ MCO 4790.2 defines cannibalization as: "The removal of serviceable parts or components, without replacement, from one unserviceable end item of equipment in order to install them on another unserviceable end item of equipment in order to restore equipment to an operational condition." Cannibalization unnecessarily increases maintenance hours, which can over-burden maintenance sections. Many observers think that high cannibalization rates are a reflection of poor health of an airframe.

¹⁰ The IMRL is an allowance list of all support equipment required to maintain an activity's aircraft and airborne systems.

¹¹ FCFs are flights performed to determine whether the airframe, power plant, accessories, and equipment are functioning in accordance with predetermined requirements while subjected to the intended operating environment. Such flights are conducted when it is not feasible to determine safe and required functioning by ground check or shop tests.

¹² Out of Reporting describes an aircraft that requires long-term repair or maintenance that preclude it from being reported as part of the squadron's aircraft inventory.

¹³ Training Rating or "t-rating" is a metric used by the Marine Corps to measure the ability of a unit to train to a comparable standard of mission

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204. Throughout fiscal year 2015, there were an average of 146 CH-53Es in inventory, 100 in reporting, and 44 Ready Basic Aircraft¹⁴ (RBA). Although readiness had increased from earlier in the year, the fleet still was only 31% to standard. The goal set by the Marine Corps Deputy Commandant for Aviation (DCA) for HMH squadrons that fiscal year was 56 RBA, while actual RBA was 37.2. [Encl (196)]

205. As of the date of this report, a fleet-wide "reset" is currently underway. The reset, planned and recommended by the Naval Aviation Enterprise,¹⁵ involves validation and verification of all CH-53E aircraft, training for maintenance Marines, modification of the supply system to make it more agile, and other changes intended to address the erosion of maintenance skills. [Encl (150)]

HMH-463 Aircraft Readiness Challenges

206. The 2015 U.S. Marine Corps Aviation Plan required at least a (b) (5) level of readiness for each CH-53E squadron. (b) (5) is achieved by an HMH squadron when the pilots, or at least the qualified crews, log at least 16.5 flight hours each month. [Encl (137), (181)]

207. During the interview for this investigation, (b)(6) (b) (3) 10 USC § 130b stated that he lowered his Defense Readiness Reporting System (DRRS) T-Rating from (b) (5) to highlight the extent of HMH-463 readiness challenges. [Encl (119)]

208. According to (b)(6) (b) (3) 10 USC § 130b, he "owed it" to his pilots to enable them to log at least 16.5 flight hours each month. This goal was briefed to every aviator that checked into HMH-463 by (b)(6) (b) (3) 10 USC § 130b. [Encl (110), (111), (114), (117), (119), (121)]

209. 1st MAW directs that if the number of RBA reported by a squadron is below 50% at the time of the daily release of the Aviation Maintenance Supply Readiness Report, the squadron is required to cease all flight activities and focus on maintenance until 50% RBA is achieved and a "get well" plan is briefed to the Marine Aircraft Group (MAG) 24 CO. Once the plan is briefed, the MAG CO can waive the restriction based upon operational necessity and allow the squadron to fly. [Encl (26), (115)]

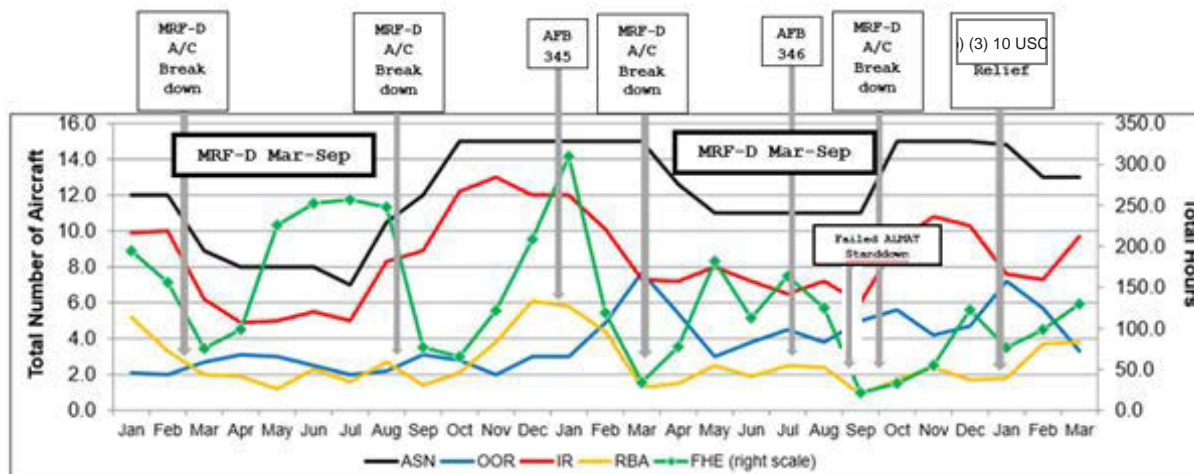
readiness. T-1, the highest rating, describes a unit whose training has made it capable of executing 85% or more of its Mission Essential Tasks (MET). T-2, T-3, and T-4 allow for 70-84%, 55-69%, and less than 55% of METs, respectively. Aviation T-Ratings have more specific criteria, described infra. See Chapter 5 of MCO 3000.13.

¹⁴ Ready Basic Aircraft are aircraft that are mission capable, i.e. FCF complete, capable of day or night instrument flight, and in possession of all necessary communication, navigation, flight, and safety systems required by applicable NATOPS and Federal Aviation Administration regulations. RBA is calculated on a monthly basis by averaging the actual daily RBA reported in the Aviation Maintenance Supply Readiness Report. [Encl (200)]

¹⁵ The Naval Aviation Enterprise is a partnership of fleet and provider stakeholders who use enterprise principles and tenets to advance and sustain Naval Aviation warfighting capabilities at an affordable cost today and in the future.

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210.



The above chart plots HMH-463's RBA (in yellow) and total flight hours (right side) together with key events in 2014 through March 2016 (top in black boxes). ASN (black line) denotes assigned aircraft, OR (blue line) denotes aircraft Out-of-Reporting, IR (red line) denotes aircraft In-Reporting, and FHE (green line) denotes Flight Hours Executed. [Encl (231)]

211. From 2013 to January 2016, the number of RBA in HMH-463 spiked during the first quarter of each fiscal year to six RBA and dropped during the summer and fall months, to two or less RBA. [Encl (151), (201)]

212. The chart below shows reported readiness numbers for HMH-463 from July 2014 through January 2016. The chart demonstrates that beginning in April 2015, reported numbers of RBA did not align for undetermined reasons. The October 2015 through January 2016 command chronology was not available at the time of this report. Asterisked numbers include RBA assigned to MRF-D.¹⁶ NR stands for "not reported" within the available enclosures.

MONTH	AIRCRAFT	RBA (CMD CHRON)	RBA (AMSRR ¹⁷)	RBA (1MAW CR)
Jul 14	10/NR	1.6 / NR*	1.6 / 4.1*	4.0
Aug 14	15	2.7 / NR*	2.7 / 5.8*	5.8
Sep 14	15	1.4 / NR*	1.4 / 1.4*	1.4
Oct 14	15	2.1	2.1	2.1
Nov 14	15	3.8	3.8	3.8
Dec 14	15	6.1	6.1	6.1
Jan 15	15	5.8	5.8	5.8
Feb 15	15	4.4	4.4	4.4
Mar 15	15	1.3	1.3	1.3
Apr 15	11/4	2.2 / 1.9*	1.5 / 1.5*	1.5
May 15	11/4	2.5 / 2.4*	2.5 / 4.9*	4.9
Jun 15	11/4	2.6 / 2.5*	1.9 / 4.4*	4.4
Jul 15	11/4	2.9 / 2.6*	2.5 / 4.7*	4.6
Aug 15	11/4	2.5 / 2.4*	2.4 / 4.0*	4.1
Sep 15	11/4	1.7 / 3.0*	0.9 / 2.3*	2.3 (.09) ¹⁸

¹⁶ Marine Rotational Force-Darwin (MRF-D) is a force made of various Marine Corps troops and assets, including aircraft that deploy to and conducts training and exercises in Darwin, Australia for approximately 6 months each year.

¹⁷ Aviation Management Supply and Readiness Reporting.

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Oct 15	15	NR	1.7	1.7
Nov 15	15	NR	2.4	2.3
Dec 15	15	NR	1.7	1.8
Jan 16	15	NR	1.8	1.8
Feb 16	13	NR	3.7	3.7
Mar 16	13	NR	3.8	3.8

[Encl (22), (153), (180)]

213. In January 2015, Airframes Bulletin¹⁹ 345 was released, which required the inspection and potential replacement of aircraft ramp bushings. The senior leadership of HMH-463 described this as a significant burden to HMH-463 maintenance which was preoccupied with preparing aircraft for MRF-D 2015.

[Encl (115), (118), (119), (124)]

214. In July 2015, Airframes Bulletin 346 was released, which required the inspection and potential replacement of fuel lines. This also added a significant burden to HMH-463 maintenance department at a time when the Marines were executing scheduled phase inspections.²⁰ Additionally, the bulletin was published at a time when several of the experienced maintenance Staff Non-Commissioned Officers (SNCOs) were executing Permanent Change of Station (PCS) orders. [Encl (115), (116), (118), (119), (124)]

215. From 3 April to 4 October 2015, HMH-463 detached four CH-53Es and 89 Marines in support of MRF-D to act as the Aviation Combat Element.²¹ [Encl (22), (119)]

216. In preparation for MRF-D, HMH-463 disassembled aircraft for strategic lift and prepared them for the required Australia Quarantine and Inspection Service (AQIS). This process required approximately 1000-1500 man-hours per aircraft, which began in mid-February 2015 and was completed in April 2015. The detachment required four aircraft, but HMH-463 elected to break down and prepare five aircraft for transportation and inspection. [Encl (119)]

217. During MRF-D 2015, HMH-463 cannibalized parts from Kaneohe Bay aircraft, shipped them, and ordered parts through the parts supply system from Australia as well. [Encl (212)]

218. In the summer through fall period of 2015, HMH-463 was effectively a three-site maintenance department: supporting MRF-D with a four aircraft detachment in Darwin, Australia; supporting the fall WTI class in Yuma, Arizona; and attempting to fly at home station in Hawaii. The HMH-463 Marines believed this reality made maintenance coordination a challenge. [Encl ((104), (124), 212)]

¹⁸ Enclosure (180), which was provided to the IO by the 1st MAW CG, reported only the home-based RBA rather than total RBA. This is a notable oversight because on enclosure (180) there is a big red arrow pointing to "0.9," which suggests a lower RBA than the squadron's actual RBA during the post-inspection no-fly period.

¹⁹ An airframes bulletin directs an inspection to determine if a given condition exists and specifies what actions to take if the condition is found.

²⁰ A "phase" refers to a periodic maintenance inspection where the entire inspection of a large or complex aircraft is divided into sections or "phases" that are inspected on a rotating basis every 150 hours.

²¹ The Air Combat Element provides aviation support to Marine units.

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219. On 15 June 2015, Marine Aviation Logistics Squadron (MALS) 24 conducted a courtesy maintenance pre-inspection on HMH-463 to prepare for the 1st MAW inspection. HMH-463 passed the inspection. [Encl (22), (103), (119)]

220. On 31 August 2015, 1st MAW conducted a maintenance inspection on HMH-463 and released its report on 4 September 2015. The inspectors gave HMH-463 a failing score of 53.6%, identifying 17 "On Track" programs, four that "Need[ed] More Attention," and 18 programs that were "Off-Track." [Encl (22), (103), (115), (183), (188), (204)]

221. The September 2015 inspection results were significantly worse than the November 2014 Chief of Naval Air Forces (CNAF) inspection when ten programs were deemed "Off-Track." [Encl (103), (183), (191)]

222. When the 1st MAW inspection results were released on 4 September 2015, flight operations ceased for over a month while HMH-463 focused on fixing the programs that were "Off-Track". The first frag²² executed by HMH-463 after the 4 September shutdown was on 14 October 2015. [Encl (4), (22), (26), (103), (115), (119), (183)]

223. From 2 to 5 November 2015, the HMH-463 maintenance program was re-inspected and passed. One program was off-track, four needed attention, and 34 were on-track. However, Brigadier General Sanborn was not satisfied that [REDACTED] had adequately identified and addressed the underlying reasons for the September 2015 failed inspection. [Encl (103), (188), (203)]

224. On 15 November 2015, the landing gear malfunctioned on an HMH-463 aircraft while returning single ship from the island of Hawaii to the island of Oahu. The aircraft was not involved in the 14 January 2016 mishap. The aircraft arrived at Marine Corps Base (MCB) Kaneohe Bay, Hawaii during closed field hours, when aircraft are prohibited from landing with passengers aboard due to the lack of crash-fire rescue and tower support. The HMH-463 pilots had previously coordinated with the airfield to land during closed field hours, but did not disclose that there were passengers on board their aircraft. The HMH-463 leadership reasoned that the passengers were maintenance Marines, and therefore, qualified as aircrew instead of passengers. The landing gear eventually deployed without incident, and the pilots briefed HMH-463 on lessons learned. [Encl (117), (147)]

225. In November 2015, [REDACTED] directed [REDACTED] to go to a "12 hours on, 12 hours off" work schedule after the Thanksgiving 96 if HMH-463 did not report at least 6 RBA (50%) at some point before the holiday period. [Encl (26), (115), (119), (130)]

226. [REDACTED] stated that when [REDACTED] took charge as the HMH-463 AMO on 9 November 2015, he noticed that [REDACTED] was "highly experienced, hard-working, genuine and capable. He [was] hungry to get things turned around." [Encl (26)]

227. HMH-463 did not achieve 50% RBA prior to the Thanksgiving holiday. [REDACTED] recommended and [REDACTED] directed that HMH-463 work during the weekend following Thanksgiving to improve readiness. [REDACTED] informed HMH-463 of the "12 hours on, 12 hours off"

²² A "frag" is an aviation term for a mission that provides external agency support.

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order as if it had originated from him rather than from higher authority, in order to ensure unity of command. [Encl (115), (119), (130)]

228. Most members of HMH-463 did not see any end in sight with regard to the long working hours. They claim this led to low morale and cumulative fatigue throughout HMH-463. [Encl (26), (113), (117), (118), (124), (130), (149)]

229. In a 23 November 2015 e-mail to Brigadier General Sanborn, [redacted] (b) (3) 10 USC § [redacted] stated that the readiness challenge in HMH-463 was his "number one focus since early September 2015, and it has taken on more and more of my attention." [Encl (26)]

230. [redacted] (b)(6) (b) (3) 10 USC § 130b 23 November 2015 email to Brigadier General Sanborn also stated: "despite a huge effort across the MAG to focus on readiness and implement new initiatives to increase readiness, nothing has taken hold at 463. While there are certainly huge CH-53E readiness problems across the Fleet, we are capable of much better readiness than what we have been producing..." [Encl (26)]

231. From 19 December 2015 until 4 January 2016, the U.S. Secret Service imposed a Temporary Flight Restriction (TFR)²³ upon all aircraft located at MCB Hawaii. The Secret Service denied MAG-24 requests to conduct FCFs, which are necessary to complete most maintenance actions. Without the ability to perform FCFs, HMH-463 was challenged to improve RBA numbers during the TFR. HMH-463 attempted to mitigate the impact of the TFR by conducting training on Kauai with two of their aircraft just prior to the TFR. The off-island training was used to improve the monthly flight hours and attempt to sustain and increase combat readiness. [Encl (123), (228)]

232. A recurring contract awarded to PKL Services, Inc. to support MAG-24 aircraft maintenance was terminated at the end of fiscal year 2014, leading to greater maintenance burdens for HMH-463. The contract had previously reduced 10-15% of HMH-463 directed maintenance man-hours. [Encl (115), (123)]

233. Although overall HMH-463 RBA was very slowly and steadily improving from the low point that followed the failed maintenance inspection in September 2015, there was a decline to days of zero RBA just prior to the December 2015 holidays. During this time, the 1st MAW Aviation Logistics Division (ALD) called the maintenance department about four times each day. [Encl (118), (119)]

234. Brigadier General Sanborn relieved [redacted] (b)(6) (b) (3) 10 USC § 130b on 11 January 2016 because of a loss of confidence stemming primarily from inadequate improvement in HMH-463 aircraft readiness rates from the time of the failed inspection in September 2015 through the first days of 2016. [Encl (115)-(120), (163), (179), (188)]

HMH-463 Pilot Proficiency

235. HMH-463 created monthly training plans in an attempt to allow pilots to maintain the 16.5 monthly flight hours required by the fiscal year 2015 Aviation Campaign Plan. [Encl (113), (119), (137)]

²³ The TFR was imposed as a security measure during the yearly December visit of the President of the United States.

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236. Monthly, weekly, and daily flight and training plans were created by HMMH-463 operations department, routed through the operations officer, maintenance officer, safety officer, executive officer, and then approved and signed by the CO. This process occurred during the month or week preceding the scheduled flights. [Encl (4), (14)-(16), (113)]

237. The operations officer, maintenance officer, safety officer, and executive officer were required to initial the daily flight schedule after any review, including follow-on reviews if further changes were made. The use of a digital "/s/" instead of a written signature was authorized by HMMH-463 standard operating procedures. However, at times, the digital /s/ allowed the schedules to be modified without proper re-routing and review, especially when flight schedules were signed late in the day, which happened routinely. [Encl (111), (113), (116), (123), (145)]

238. [REDACTED] (b)(6) (b) (3) 10 USC § 130b increased HMMH-463 total scheduled flight hours from 2700 in fiscal year 2015 to 3000 for fiscal year 2016. He did this to emphasize the growing gap between scheduled hours (derived from minimum requirements) and actual flight hours flown. [Encl (13), (114), (119), (120), (123)]

239. In January of 2016, HMMH-463 was already approximately 606 hours deficient in the scheduled flight hours for fiscal year 2016. [Encl (4), (13), (14)]

240. From July 2014 to March 2015, 1400.2 of 1488 scheduled hours were actually flown, an average of 156 per month. From April 2015 to September 2015, 1221.7 of 1294.7 scheduled hours were actually flown, or an average of 203 hours per month. [Encl (22)]

241. During the latter half of 2015, monthly and weekly flight training plans were created and approved with the knowledge that the plans were highly unlikely to be executed as planned due to an inadequate number of RBA. Because these "unrealistic" schedules often led to cancelled flights, HMMH-463 aviators considered the flight schedules to be "a running joke." [Encl (4), (13), (22), (110), (111), (113), (149)]

242. The average number of flight hours flown by personnel in September 2015 was 1.2, 4.4, 0.8, and 3.6 for copilots, company grade HACs, field grade HACs, and crew chiefs, respectively. [Encl (14)]

243. During October 2015, HMMH-463 executed 30.6 of 225²⁴ scheduled flight hours. [Encl (14)]

244. The average number of flight hours flown by personnel in October 2015 was 1.4, 9.3, 4.4, and 10.7 for copilots, company grade HACs, field grade HACs, and crew chiefs, respectively. [Encl (14)]

245. During November 2015, HMMH-463 executed 50.2 of 250 scheduled flight hours. [Encl (14)]

246. The average number of flight hours flown by personnel in November 2015 was 1.9, 4.3, 2.3, and 4.8 for copilots, company grade HACs, field grade HACs, and crew chiefs, respectively. [Encl (14)]

²⁴ Scheduled hours for October 2015 were 175 according to the monthly plan and 225 according to the fiscal year 2016 plan.

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247. During December 2015, HMH-463 executed 78.8 of 300 scheduled flight hours, prior to the TFR that began on 19 December 2015. [Encl (14)]

248. The average number of flight hours flown by personnel in December 2015 was 3.2, 5.7, 3.1, and 8.2 for copilots, company grade HACs, field grade HACs, and crew chiefs, respectively. [Encl (14)]

249. In December 2015, copilots complained that during that year, although they were supposed to log 16 hours each month, they were lucky to log 10 hours. Copilots felt "left behind" as they were prioritized far below the WTIs and Night System Instructors²⁵ (NSIs). Some pilots believed that low RBA was deteriorating pilot proficiency. [Encl (116), (148), (149)]

250. In the first quarter of fiscal year 2016, HMH-463 under-executed their flight hour goal by 21.4%. By January 2016, HMH-463 was 605 flight hours behind their flight hour plan. [Encl (14)]

251. At around the time of the mishap, HMH-463 had seven (one was aboard the mishap flight) NSIs who were averaging 2.3 total flight hours (day and night) each month. [Encl (118)]

252. 500 total flight hours are required to become a Helicopter Aircraft Commander (HAC). [Encl (138)]

253. By late 2015, HMH-463 pilots became increasingly concerned that they were not logging enough flight hours to maintain proficiency at piloting the CH-53Es. [Encl (109)-(111), (117)-(119)]

254. By January 2016, many pilots in HMH-463 believed they were not ready for combat as they felt they would not be able to safely execute certain tasks, like safely landing a helicopter at night, because they were not logging enough flight training hours. [Encl (109), (111), (113), (116), (117), (149)]

255. Some of the aviators in HMH-463 were looking forward to follow-on ground tours because of the lack of flight time. [Encl (111), (113)]

256. HMH-463 aviators used the CH-53E simulator to make up for limited opportunities to fly, more than any other HMH squadron in the Marine Corps. However, (b) (6), (b) (3) (A) like many other pilots in HMH-463, logged zero NVD simulator hours in the year preceding the mishap. [Encl (5), (117), (211)]

257. Marine Corps aviators are required to fly twelve instrument hours as a pilot under actual or simulated conditions²⁶ annually. [Encl (132)]

258. (b)(6) (b) (3) 10 USC § 130b granted extensions of standard instrument ratings²⁷ to ten HMH-463 pilots in the six months preceding the mishap. [Encl (69), (133), (195)]

²⁵ A Night System Instructor is an experienced aviator certified by Marine Aviation Weapons and Tactics Squadron One as an expert in night aided and unaided aviation operations.

²⁶ Instrument time is logged when there is no visible horizon and the control and navigation of an aircraft is by reference to its instruments only.

²⁷ The qualifications that an aviator must have in order to fly under instrument flight rules.

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259. [redacted] (b)(6) (b) (3) 10 USC § 130b rationale for the instrument extensions was that "Squadron aircraft have been unavailable due to maintenance issues, circumstances that were beyond your control." [Encl (69), (133) (195)]

260. NATOPS Instrument Evaluation extensions do not require notification outside the squadron and are locally maintained within an aviator's NATOPS record. However, these extensions are "generally only granted following a long deployment, long-term hospitalization, or assignment to a billet that limits opportunities to fly." [redacted] (b)(6) (b) (3) 10 USC § 130b and General Sanborn were unaware of the instrument extensions granted by [redacted] (b)(6) (b) (3) 10 USC § 130b [Encl(108), (115), (188), (193), (235), (239)]

261. The Commander Navy Air Forces (COMNAVAIRFOR) NATOPS Programs Administrator confirmed that in accordance with OPNAV 3710.7U, [redacted] (b) (6) (3) 10 USC § 130b was operating consistent with regulations in granting written instrument rating extensions. COMNAVAIRFOR's Administrator stated that although not specifically cited, aircraft availability is a reasonable circumstance beyond the control of the aviator that would prevent the completion of an instrument check. [Encl (235)]

262. The COMNAVAIRFOR NATOPS Programs Administrator confirmed that as the issuing authority, the CO may authorize and file the instrument extension without routing it outside his chain of command. The routing information in Chapter 8, OPNAV 3710.7U only applies to NASTP issues. [Encl (235)]

263. In late 2015, Brigadier General Sanborn told [redacted] (b)(6) (b) (3) 10 USC § 130b that he would arrange for HMH-463 pilots to travel to other CH-53E squadrons to get additional flight hours, but [redacted] (b)(6) (b) (3) 10 USC § 130b did not respond to the offer. [Encl(115), (188)]

264. In the latter half of 2015, the HMH-463 operations section felt forced to include the maximum number of training codes on a flight due to the limited number of flights. This caused HMH-463 to "chase Xs."²⁸ [Encl (105), (108)-(110), (113), (116), (117), (120), (123), (149)]

265. While operating in Hawaii, HMH-463 routinely used identical tactics scenarios, routes of flight, and landing zone (LZ) selections for its tactical training flights. [Encl (108), (110), (111), (113)]

266. Noise abatement requirements articulated in the MAG-24 SOP limit HMH-463's ability to vary the routes for tactical training flights on Oahu. [Encl (136)]

267. In the early 2000s, there were approximately 15 LZs on Oahu and four terrain flight (TERF) routes with various levels of difficulty available for CH-53 flight training. As of January 2016, there are only seven LZs and one TERF route available for CH-53 flight training. [Encl (126), (166)]

268. In Hawaii, the Marine Corps does not own any training areas or live fire ranges required for some advanced helicopter training. Accordingly, Marine aviators rely on the U.S. Army and Navy for access to ranges and training areas. This is further complicated by the recent installation of wind turbines within the primary Oahu training area leased by the U.S. Army.

²⁸ The "X" in the term "chasing X's" is a specific certification earned by a pilot during a flight after demonstrating proficiency for a certain task. When aviators "chase Xs," they focus efforts on earning certifications instead of focusing on actual proficiency.

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According to the MAG-24 Operations Officer, the training area encroachment coupled with degraded pilot proficiency is the largest threat to Marine aviation in Hawaii. He believes the challenge will jeopardize the MAG's ability to complete its mission and encourage HMH-463 to "chase Xs." [Encl (123), (126), (166)]

HMH-463 Staffing Challenges

269. During the summer of 2015, several Staff Non-Commissioned Officers (SNCOs) in key leadership positions executed Permanent Change of Station (PCS) orders. [Encl (103), (107), (115), (116), (118), (119), (124)]

270. The summer 2015 turnover challenge at HMH-463 was not unusual, as significant personnel turnover occurs each summer. [Encl (113), (115), (116), (118), (119), (130)]

271. Newly arrived SNCOs, returning from B-billetts, spent a majority of their first several months in HMH-463 recertifying their maintenance qualifications, as their three-year absence from aircraft maintenance duties required significant refresher training. This caused significant technical leadership voids at the SNCO-level. [Encl (104), (113), (115), (116), (118), (119), (129), (130)]

272. There is only one CH-53E squadron located in Hawaii. By comparison, there are four active duty CH-53E squadrons in Miramar, California. In New River, North Carolina there are three active duty squadrons and one Fleet Replacement Squadron (FRS). Unlike HMH-463, CONUS-based squadrons can conveniently exchange personnel among other nearby aviation squadrons, which can greatly reduce short-term staffing challenges (deficiencies, gapped billets, etc.). [Encl (116), (119), (189)]

273. The pool of maintenance Marines eligible to execute PCS orders to HMH-463 is limited because only Marines with at least 3 years remaining on their enlistment contracts are eligible for orders to Hawaii. CONUS squadrons do not have the same limitation. [Encl (119)]

274. A SNCO in the Flightline Department (a key maintenance position) at HMH-463 was deployed to MRF-D in 2015, disciplined for an unrelated incident, returned early from Australia, and, finally, reassigned to MAG-24. As of the completion of this report, HMH-463 has yet to secure a replacement for this staff non-commissioned officer. [Encl (119)]

275. Relieving SNCOs was complicated by manpower realities. For example, after the 1st MAW maintenance inspection failure, (b)(6) (b) (3) 10 USC § 130b requested that certain Quality Assurance SNCOs be relieved of their duties. However, (b)(6) (b) (3) 10 USC § 130b did not relieve the SNCOs because he believed that he would not receive any replacements. [Encl (115), (119)]

276. As articulated in email correspondence with Brigadier General Sanborn, (b)(6) (b) (3) 10 USC § 130b believed that HMH-463's inability to improve readiness was due primarily to SNCO technical and leadership deficiencies, which were keeping morale low. This opinion was shared by (b) (6), (b) (3) (A) [Encl (26), (113), (117), (124), (129), (130), (149)]

277. Some Marines in HMH-463 described the squadron's maintenance leadership in 2015 as "toxic." [Encl (104), (107)]

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Aircrew Responsibilities and Physiology During Night Flights

278. The MAWTS-1 NVD Manual states: "The high demands of the night NVD-aided mission require good crew coordination, not only among aircrew on a particular aircraft, but also among the aircrews of different aircraft and with controlling agencies. Degraded crew coordination during a critical phase of the mission can lead to poor performance and the increased chance of a mishap. For this reason, night systems briefs must be very thorough and cover many topics that may not be discussed during most briefs (e.g. moon angle, luminescence level, absolute humidity, etc.)" [Encl (135)]

279. The MAWTS-1 NVD Manual requires that in low light ambient conditions, a wingman should stay close enough to the lead aircraft to recognize any significant attitude, altitude, or airspeed changes. Greater distances reduce the visual cues needed to effectively maintain position within the flight. Additionally, NVD limitations necessitate conservative closure rates between aircraft. [Encl (135)]

280. The MAWTS-1 NVD Manual also states that key elements of night operations training include:

- a. Progressive training through decreasing light levels,
- b. Understanding the physiological impact of night operations, and
- c. Repetitive practice of night flying skills. [Encl (134)]

281. The MAWTS-1 NVD Manual also states that during formation flights, aircrewmembers²⁹ must:

- a. maintain a lookout for other aircraft in the vicinity of the formation, especially during night and simulated instrument flight,
- b. advise the HAC of any change of the formation and periodically provide status on flight integrity, and
- c. advise the HAC of any situation that makes a crew member feel unsafe or uncomfortable. [Encl (131)]

282. The cockpit technology of the CH-53E is nearly three decades old. Integration of aftermarket technology and handheld applications certified by Naval Aviation (NAVAIR) are provided to improve situational awareness in the cockpit. However, OPNAVINST 3710.7U prohibits the use of personal cellular telephones in naval aircraft while airborne. [Encl (110)-(120), (123), (240)]

Assault Support Tactical Standard Operating Procedure

283. Fatigue offers one of the greatest potentials for crew error at night. [Encl (134)]

284. The basic tactical formation for night flights is "combat cruise" where the preferred wingman position is 30 to 45 degrees from the lead's tail with a minimum of 3 to 5 rotor lengths of separation, level in altitude. Prolonged flight in the area within plus or minus 15 degrees of the tail should be

²⁹ Aircrew includes both pilots and enlisted personnel on the aircraft.

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avoided. Combat cruise is designed to maximize flexibility and maneuverability for the section. [Encl (134)]

285. During formation maneuvering, aircraft may be in a level horizontal plane, converging laterally. When this occurs, the tactical wingman³⁰ always has the ultimate responsibility for maintaining adequate aircraft separation by varying the airspeed, altitude, or angle of bank. [Encl (134)]

286. During a night flight, visibility is reduced, necessitating the pilot at the controls to maintain an aggressive outside scan while also scanning key flight performance gauges. All other cockpit duties should be assigned to the other pilot not at the controls. When flying in formation at night, aircraft movements should be slower and more predictable than during day-time flights. Aggressive maneuvering should be minimized. [Encl (134)]

287. During night flying, reduced visibility also requires the aircrew to exercise a more aggressive outside scan. They must not hesitate to call out potential obstacles and must never assume that other members of the crew see the same obstacle. [Encl (134)]

288. While flying over open water, NVDs may be able to display a horizon, but due to the lack of surface texture, the height above the ocean may be impossible to perceive. Due to the lack of terrain density, the aircrew must rely heavily on flight instruments while flying over open water. [Encl (135)]

289. There are many perceptual limitations associated with NVD use. There is also the potential for fatigue, spatial disorientation, breakdown in crew coordination, and complacency. [Encl (135)]

290. Distance estimation is significantly altered with NVDs, and objects will appear further away than they actually are. Reduction in visual acuity negatively affects the ability to estimate distances primarily because one expects objects that are less distinct in detail to be farther than ones that possess sharp detail. Care must be taken to maintain adequate separation from other aircraft. [Encl (135)]

291. The same principles of using the radius of a turn to maintain or regain position apply to NVD-aided operations. However, pilots must remember that NVD limitations dictate a more conservative approach regarding closure rates. [Encl (135)]

292. The low light level (LLL) flight regime is a demanding environment. It requires detailed briefing, excellent crew coordination, and a vigilant scan. Lack of visual cues, decreased depth perception, and poor external lighting require reduced separation between aircraft (tighter formations) to adequately maintain sight of the lead. Under low ambient light conditions, and when atmospheric conditions deteriorate, wingmen should decrease lateral separation to stay close enough to the lead aircraft to recognize any attitude, altitude, or airspeed changes. Tactical turns are not recommended under these conditions. Step-down is particularly useful in areas where lead or other

³⁰ The "tactical wingman" refers to the aircraft in the wing (rear) position. This can, at times, refer to the aircraft containing the lead pilot, if the aircraft is not in the tactical lead position. The term is used to limit confusion which may occur when the wingman moves into the tactical lead position or when the lead pilot moves into the tactical wingman position during a flight.

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flight members may become lost in the background, such as in an urban environment. [Encl (135)]

293. Due to a potential for disorientation while using NVDs, rapid execution of large angles of bank is not recommended. NVD-aided maneuvers should be smooth, measured, and coordinated to reduce the chance of inducing spatial disorientation or vertigo. The lead must fly the most stable platform as possible and avoid abrupt maneuvering. [Encl (135)]

294. Due to the limited peripheral vision, degraded depth perception, and the 40° field of view associated with NVDs, aircrew lookout doctrine must be briefed for all phases of the flight and strictly followed by all crew members. [Encl (135)]

295. The crew chief is responsible for ensuring that the pilots know the location of other aircraft in the flight, in accordance with established lookout doctrine.³¹ [Encl (135)]

HMH-463 Human Factors

296. In late November [redacted (b)(6) (b) (3) 10 USC § 130b] mandated 12 hour work shifts for all members of HMH-463. [Encl (105)-(107), (109), (110), (122), (124), (129)]

297. Overall, HMH-463's morale was low during the summer and latter half of 2015. Many of the Marines who deployed to Australia in 2015 dreaded coming back to Hawaii because of the long working hours and low morale. [Encl (26), (108), (112), (117), (118), (121), (123), (124), (149)]

298. Between the failed maintenance inspection in September 2015 and the mishap flight on 14 January 2016, HMH-463 Marines worked long hours, often including weekends, and experienced the effects of long-term, cumulative fatigue. [Encl (105), (107), (108), (112), (119), (120), (123), (129), (130)]

299. Although HMH-463's morale was low, aircrews were in relatively high spirits during flights. During the first flight of the 14 January 2016 mission, the crew chiefs were excited to fly and were engaged and actively contributing to aircrew coordination. [Encl (110), (111), (130)]

300. [redacted (b) (6), (b) (3) (A)] worked 10-14 hours each day as the AMO starting in November 2015. [Encl (113), (115), (117), (119), (123)]

301. [redacted (b) (6), (b) (3) (A)] was described as noticeably stressed, pre-occupied, and appeared exhausted on the day of the mishap flight. [Encl (111), (117)]

302. Many members of HMH-463 felt personally responsible for [redacted (b) (6) (b) (3) 10 USC § 130b] relief. [Encl (109)-(111), (113), (117), (119), (123)]

303. On 12 January 2016, the day following [redacted (b)(6) (b) (3) 10 USC § 130b] relief, [redacted (b) (6), (b) (3) (A)] expressed concern that his performance as AMO ultimately led to his Commanding Officer's relief. With tears in his eyes, [redacted (b) (6), (b) (3) (A)] apologized to [redacted (b)(6) (b) (3) 10 USC § 130b] for letting him down. [Encl (119), (123)]

³¹ Lookout Doctrine demands that aircrew maintain a 360 degree overlapping scan around the aircraft to ensure obstacle avoidance.

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304. On 13 January 2016, appearing visibly tired, [REDACTED] executed a night flight without incident or issue. [Encl (114), (117), (123)]

305. Within HMH-463 some of the junior officers responsible for scheduling flights and some of the SNCOs responsible for maintaining aircraft had professional disagreements regarding the intensity of scheduling aircraft and the difficulty of the maintenance department to support the schedule. [Encl (117), (121), (129), (130), (148), (149)]

Mishap Aircraft Maintenance

306. Both aircraft, 05 and 06, had T64-GE-419 engines that, according to everyone involved with the maintenance and preflight preparation of the mishap aircraft, were in good working order. No abnormalities were noted during the startup or final checks. [Encl (6), (7), (104), (110), (111), (113)]

307. Aircraft 05 and 06 flew on 13 January 2016, the night prior to the mishap, without any incidents or reasons for concern. [Encl (6), (7)]

308. As of 14 January 2016, aircraft 05 logged 5,817 hours and was 144.7 hours away from its next scheduled phase. [Encl (6)]

309. As of 14 January 2016, aircraft 06 logged 6,924.6 hours and was 93.5 hours away from its next scheduled phase. [Encl (7)]

310. On 13 January 2016 at 2030, Aircraft 05 and 06 were determined to be, and signed, safe for flight by the maintenance controller³², [REDACTED] and the plane captain³³, [REDACTED] [Encl (6), (7)]

311. On 14 January 2016, a weight and power check was conducted on the GE-T64-419 engines. The aircraft were within weight and power standards, and both aircraft commanders and the Operations Duty Officer³⁴ (ODO) signed the relevant paperwork. [Encl (8)]

Relief of [REDACTED]

312. [REDACTED] took command of HMH-463 on 26 February 2015 from the previous Commanding Officer, [REDACTED] [Encl (22)]

313. Brigadier General Sanborn stated during his April 2016 interview, "In November 2015, I thought-how long am I willing to sleep on whether to relieve [REDACTED]? By relieving this CO I think I'm going to prevent a mishap." [Encl (188)]

³² The maintenance controller is a billet held by a Marine who is qualified to and tasked with ensuring aircraft are prepared for flight.

³³ Plane captain is a maintenance billet held by a qualified Marine who ensures the appropriate inspections and paperwork are completed prior to flight. This individual signs the paperwork that certifies the aircraft is "safe for flight."

³⁴ The Operations Duty Officer manages the immediate flight schedule to ensure its safe execution.

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314. After the failed maintenance inspection in September 2015, (b) (6) (b) (3) 10 USC § 130b did not immediately relieve anyone. Instead, the Marines of HMH-463 witnessed (b) (6) (b) (3) 10 USC § 130b take complete ownership of the failure. [Encl (116)]

315. Brigadier General Sanborn did not relieve (b) (6) (b) (3) 10 USC § 130b in 2015 after the failed maintenance inspection because some leadership changes were eventually made at HMH-463, including the assignment of a new AMO and new SNCOs in key maintenance billets. The change in AMO was made through the normal changeover in support of the MRF-D detachment. Additionally, (b) (3) 10 USC § 130b, who provided detailed daily updates on HMH-463 actions and readiness, asked Brigadier General Sanborn for a 30-day delay to give (b) (6) (b) (3) 10 USC § 130b an opportunity to make significant changes. [Encl (26), (115), (188)]

316. In early January 2016, (b) (6) (b) (3) 10 USC § 130b and other members of HMH-463 believed that aircraft readiness was beginning to improve. [Encl (119), (151), (201), (210)]

317. On 11 January 2016 at 0800, (b) (6) (b) (3) 10 USC § 130b was relieved of command in person by Brigadier General Sanborn due to a loss of confidence, stemming primarily from (b) (6) (b) (3) 10 USC § 130b inability to improve aircraft readiness. [Encl (115), (119), (120), (179), (188)]

318. Immediately after being told of his relief, Brigadier General Sanborn asked (b) (6) (b) (3) 10 USC § 130b if he had any thoughts. According to (b) (6) (b) (3) 10 USC § 130b, he told Brigadier General Sanborn that his relief for readiness was a dangerous precedent to set. He said, "If the General wants up aircraft, the Marines will get him up aircraft," implying that readiness reporting would become inflated and corrupted. According to (b) (6) (b) (3) 10 USC § 130b, he told Brigadier General Sanborn that the relief was a huge mistake that would put Marines at risk. [Encl (119)]

319. According to Brigadier General Sanborn, (b) (6) (b) (3) 10 USC § 130b did tell him that the relief was a mistake. However, Brigadier General Sanborn explained that (b) (6) (b) (3) 10 USC § 130b never said anything about the relief jeopardizing safety. [Encl (188)]

320. Following his relief, (b) (6) (b) (3) 10 USC § 130b asked Brigadier General Sanborn to allow him to address his Marines. Brigadier General Sanborn denied his request. [Encl (119), (188)]

321. On Monday, 11 January 2016, while (b) (6) (b) (3) 10 USC § 130b was being relieved, the MAG-24 executive officer, (b) (6) (b) (3) 10 USC § 130b told (b) (6) (b) (3) 10 USC § 130b that he was now the acting CO of HMH-463 and that the squadron was not to be "shut down." It was to be "business as usual." [Encl (117), (120), (123)]

322. At approximately 1000 on 11 January 2016, (b) (6) (b) (3) 10 USC § 130b placed (b) (3) 10 USC § 130b in acting command of HMH-463 via a verbal order. (b) (6) (b) (3) 10 USC § 130b signed the acting letter on 12 January 2016. [Encl (21), (117), (188)]

323. At approximately 1100 on 11 January 2016, Brigadier General Sanborn addressed the Marines of HMH-463 regarding the relief. Brigadier General Sanborn brought HMH-463 together and said, "I just relieved your CO." He then told each HMH-463 member to look into the mirror and ask "yourself if you were a positive, negative, or neutral force in the squadron" and whether their action or inaction helped lead to the CO's relief. However, (b) (3) 10 USC § 130b

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(b)(6) (b) (3) 10 USC § 130b only remember Brigadier General Sanborn providing words of encouragement. [Encl (25), (110), (111), (119), (188)]

324. On 11 January 2016, Brigadier General Sanborn told the HMH-463 Marines in the squadron hangar to "break glass, not backs," or, in other words, that changes need to be made but not at the expense of the Marines. [Encl (113), (188)]

325. During the week of 11 January 2015, Brigadier General Sanborn did not provide guidance on whether to continue business as usual or to cease flight operations through an operational pause. [Encl (188)]

326. On 11 January 2016, the MAG-24 Operations Officer, (b)(6) (b) (3) 10 USC § 130b (b) (3) 10 USC § 130b discussed with the HMH-463 Operations officer, (b)(6) (b) (3) 10 USC § 130b, the possibility of HMH-463 supporting a high visibility frag mission on the next day, 12 January 2016. (b)(6) (b) (3) 10 USC § 130b told (b)(6) (b) (3) 10 USC § 130b that if they could not support, that was understandable given the recent relief, and that the frag would be re-assigned to the U.S. Army's 25th Aviation Brigade. (b)(6) (b) (3) 10 USC § 130b said that HMH-463 was able and ready to support the frag. [Encl (113), (123)]

327. (b)(6) (b) (3) 10 USC § 130b was acting CO of HMH-463 from the time of the relief at 0800 on 11 January until 0800 on the day of the mishap, 14 January. In less than 72 hours, he administered non-judicial punishment, approved enlisted proficiency and conduct marks, signed three flight schedules, and executed a NATOPs evaluation. [Encl (4), (25), (117), (118), (129)]

328. On Tuesday, 12 January 2016, HMH-463 executed a frag mission with (b)(6) (b) (3) 10 USC § 130b acting as the flight leader for this mission. [Encl (4), (14)]

329. After executing the frag mission on 12 January 2016, (b)(6) (b) (3) 10 USC § 130b (b)(6) (b) (3) 10 USC § 130b attempted to clarify guidance provided during the previous day by (b)(6) (b) (3) 10 USC § 130b. He directed (b)(6) (b) (3) 10 USC § 130b to "keep flying the squadron," "keep doing what you're doing," and "keep business as usual." However, he also cautioned (b)(6) (b) (3) 10 USC § 130b not to fly aircraft just because they are available and to fly only one or two aircraft at a time. [Encl (120)]

330. On Tuesday, 12 January 2016, (b)(6) (b) (3) 10 USC § 130b and (b)(6) (b) (3) 10 USC § 130b did not discuss the types of flights they would fly (like higher level training codes). [Encl (117), (120), (123)]

331. In early January 2016, (b)(6) (b) (3) 10 USC § 130b was informed that he would be taking command of HMH-463 very soon. On Tuesday, 12 January 2016, he arrived on Oahu and met with Brigadier General Sanborn from 1730 to 1900. (b)(6) (b) (3) 10 USC § 130b was directed not to make any significant changes to HMH-463 during the first two weeks or first 30 days of his command. [Encl (118), (188)]

332. At noon on 12 January 2016, (b)(6) (b) (3) 10 USC § 130b told (b)(6) (b) (3) 10 USC § 130b that (b)(6) (b) (3) 10 USC § 130b would take command on 14 January or sometime during the following week. [Encl (117)]

333. On Wednesday, 13 January 2016, (b)(6) (b) (3) 10 USC § 130b met with (b)(6) (b) (3) 10 USC § 130b and was told that he was now in command of HMH-463. (b)(6) (b) (3) 10 USC § 130b then attended an All Officer Meeting (AOM) in the HMH-463 ready room that afternoon. [Encl (113), (115), (117), (118)]

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334. On 13 January 2016, (b)(6) (b) (3) 10 USC § 130b did not believe that (b)(6) (b) (3) 10 USC § 130b was in command of HMH-463 because (b)(6) (b) (3) 10 USC § 130b had not yet signed the assumption of command letter, and he did not expect him to take command until 14 January or later. [Encl (117)]

335. On 13 January 2016, HMH-463 executed a Low Light Level TACEX (tactical training), Gun Shoot mission in the training area located north of Oahu. During this mission, one of the pilots experienced vertigo. This pilot did not participate in the mishap flight. [Encl (4), (117)]

336. On 13 January 2016, (b)(6) (b) (3) 10 USC § 130b was surprised when he learned that (b)(6) (b) (3) 10 USC § 130b was scheduled to execute an initial NATOPS HAC evaluation that afternoon, which is typically done by the Commanding Officer of a squadron. [Encl (118)]

337. (b)(6) (b) (3) 10 USC § 130b discovered on 13 January that the 14 January flight schedule had already been approved by (b)(6) (b) (3) 10 USC § 130b with his signature as well as digital signatures from (b)(6) (b) (3) 10 USC § 130b (HMH-463 Operations Officer), (b) (6), (b) (3) (A) (HMH-463 AMO), (b) (6), (b) (3) (A) (HMH-463 Pilot Training Officer), and (b)(6) (b) (3) 10 USC § 130b (HMH-463 Aviation Safety Officer). According to (b)(6) (b) (3) 10 USC § 130b, there was confusion concerning whether (b)(6) (b) (3) 10 USC § 130b or (b)(6) (b) (3) 10 USC § 130b should have finally approved the 14 January flight schedule. [Encl (4), (117), (118)]

338. On 14 January 2016, (b)(6) (b) (3) 10 USC § 130b signed his Assumption of Command letter dated 13 January 2016. [Encl (23), (118)]

339. On 14 January 2016 at 1700, (b)(6) (b) (3) 10 USC § 130b addressed the HMH-463 Marines in the MCAS Kaneohe Bay theater. All crewmembers scheduled to fly aboard PS 31 and PS 32 attended with the exception of (b) (6), (b) (3) (A) who was assigned to MAG-24 at that time. During the address, (b)(6) (b) (3) 10 USC § 130b (b) (3) 10 USC § 130b stated there were "going to be some changes." At the time, some Marines believed that (b)(6) (b) (3) 10 USC § 130b meant that he planned to fire some of HMH-463 leaders. [Encl (4), (109)-(111), (118)]

Planning of the Mishap Flight

340. The January 2016 monthly flight training plan listed three flights of two aircraft each for 18 total flight hours for 14 January. [Encl (4), (14), (121)]

341. The 14 January 2016 training included LLL and High Light Level (HLL) flying, Confined Area Landings (CALs), Terrain Flight External (TERF External), a TACEX, and a Section Leader Check. [Encl (4), (145), (146)]

342. (b) (6), (b) (3) (A) was assigned as the WTI for the 14 January 2016 flight. Although HMH-463 schedulers recognized that he had not flown with NVDs in over 30 days, they believed that his status as a WTI mitigated the associated risks. Accordingly, (b) (6), (b) (3) (A) the Pilot Training Officer (PTO), originally assessed the 14 January 2016 flight as low risk. [Encl (113), (117), (121)]

343. On 13 January 2016, (b)(6) (b) (3) 10 USC § 130b discussed with (b)(6) (b) (3) 10 USC § 130b his plan to approve a two aircraft night flight with multiple T&R codes for 14 January 2016. However, the signed 14 January flight schedule was not reviewed by anyone on the MAG-24 staff until after its execution. [Encl (115), (117), (120)]

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344. During the routing of the 14 January flight schedule on 13 January 2016, (b)(6) (b) (3) 10 USC § 130b, the Aviation Safety Officer (ASO), engaged in a heated discussion with (b) (6), (b) (3) (A) over the risks associated with the 14 January flight. (b)(6) (b) (3) 10 USC § 130b was concerned that assigning a WTI to each flight did not sufficiently mitigate the risks associated with the lack of night flight training hours the pilots recently received. [Encl (113), (121)]

345. A Risk Assessment Worksheet (RAW) is a matrix used by the Marine Corps to assess levels of risk. In a squadron, this matrix highlights areas that are specific to Marine Corps aviation. This matrix has numerous columns used to articulate risk factors. Beside the column entitled "DISCUSS NVD ENVIROMENT [sic], OPERATIONS, EMERGENCIES" on both RAWs for the 14 January 2016 flights, there is a handwritten notation: "WTI." [Encl (9)]

346. The Risk Assessment Worksheets for the 14 January 2016 flights contained several oversights or discrepancies:

a. The RAWs filled out by HMH-463 personnel note that the squadron is not in a "Transition Condition" despite the recent relief of the CO. The term is not defined on the RAW, but could include a recent leadership change. [Encl (9)]

b. (b) (6), (b) (3) (A) was marked as low risk for T&R proficiency despite not flying on NVDS in over 90 days. [Encl (9), (17)]

c. Instrument currency for all pilots and co-pilots were identified as low risk despite the existence of extensions. [Encl (9), (69)]

d. Aircrew fatigue was identified as low risk despite (b) (6), (b) (3) (A) long work hours. [Encl (9)]

e. No human factors were identified despite the recent relief of (b)(6) (b) (3) 10 USC § 130b and (b)(6), (b)(3) [Encl (9)]

f. (b) (6), (b) (3) (A) is identified as current on his instrument rating, and therefore low risk, despite flying on an instrument extension. [Encl (9), (69)]

g. The forms allow identification of risk for one co-pilot and one crew-chief when there were two pilots and four crew chiefs aboard each aircraft. [Encl (9)]

h. Instead of four separate RAWs for the four separate crews that flew on 14 January 2016, only two RAWs were filled out, one for each aircraft. Accordingly, neither of the 14 January RAWs distinguish between risk factors effecting the different aviators before and after the hot seat³⁵. [Encl (9)]

i. Command Status and Relationships were identified as low risk despite the fact that (b)(6) (b) (3) 10 USC § 130b was relieved on 11 January 2016. [Encl (9)]

347. The RAW does not include a definition for "currency" or "proficiency." [Encl (9)]

³⁵ A "hot seat" flight is an operational evolution where one or both of the pilots or crew of an aircraft is changed while the engine(s) is (are) operating and the aircraft is to be immediately relaunched.

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348. The acting Commanding Officer, (b)(6) (b) (3) 10 USC § 130b, wrote on PS 32's RAW, "NO PRESSURE TO EXECUTE THIS FLIGHT." He also wrote, "TAKE YOUR TIME," and "thoroughly brief." On PS 31's RAW, he wrote, "TAKE YOUR TIME, AND ENSURE THAT EVERYTHING IS thoroughly BRIEFED. NO PRESSURE to do this flight!" [Encl (9)]

349. On 13 January 2016, (b) (6), (b) (3) (A) attended the NVD lab with (b) (3) 10 USC § (b)(6) (b) (3) 10 USC § 130b. (b) (6), (b) (3) (A) mentored his copilot using the simulator and rehearsing the scheduled 14 January 2016 flight, even though the simulator was not scheduled or required. [Encl (111), (139)]

350. The RAWs for the mishap flight designated the risk as medium. (b)(6) (b) (3) 10 USC § 130b (b) (6), (b) (3) (A) and (b) (6), (b) (3) (A) signed the Mishap Flight RAWs on 13 January and 14 January 2016. [Encl (9), (110), (111), (121)]

351. (b) (6), (b) (3) (A) Section Leader requalification was the priority for mishap flight of 14 January 2016. [Encl (109)-(111)]

352. (b) (6), (b) (3) (A) briefed the flight at approximately 1445 on 14 January 2016. [Encl (109)-(111)]

353. The copilots of the first half of the 14 January 2016 hot seat mission noticed that (b) (6), (b) (3) (A) was not prepared to brief the flight. They believed that he was distracted by and preoccupied with the CO's relief. (b) (6), (b) (3) (A) appeared tired and struggled through the brief. (b) (6), (b) (3) (A) omitted multiple briefing items. The omitted portions of the brief were later provided by (b) (6), (b) (3) (A) [Encl (109)-(111), (194)]

354. On 13 January, HMH-463 operations department changed the weekly flight schedule to reflect the number of executable events for the aircraft available. Only the night missions were planned for 14 January 2016. [Encl (4), (15), (113), (117), (118)]

355. The 14 January aircrew's Smartpack³⁶ for the mishap flight, which included material from the flight brief provided by (b) (6), (b) (3) (A) contained multiple errors including:

a. Landing zones LZ Black and LZ Puukapu are switched/mislabeled. [Encl (10)]

b. A landing hour was indicated for the first, but not the second flight. [Encl (10)]

c. After the hot seat, the timeline does not indicate any scheme of maneuver or any tasks for the mishap flight. [Encl (10)]

d. Alternate LZs are not clearly identified. [Encl (10)]

e. Call signs are erroneously indicated throughout the brief as PS 41 and PS 42 instead of PS 31 and PS 32. [Encl (10)]

f. Initial Points Chevy and Del Mar are switched/mislabeled. [Encl (10)]

³⁶ A Smartpack contains documents used for the execution of a flight that contain pertinent information that aircrew can review in the aircraft.

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356. (b)(6) (b) (3) 10 USC § 130b was assigned as the evening Operations Duty Officer (ODO) for the 14 January flight, but was also scheduled to fly FCFs at 0730 on 15 January 2016. [Encl (4)]

357. (b)(6) (b) (3) 10 USC § 130b ODO duty, even without any incident, would have ended at midnight. Accordingly, the 14-15 January 2016 flight schedules, if executed, would have violated the eight-hour crew rest requirement. [Encl (4)]

358. The flight event for which (b)(6) (b) (3) 10 USC § 130b and (b) (3) 10 USC § were training requires 2.0 hours of flight time as well as planning and briefing the tactical mission, in accordance with applicable regulations.³⁷ [Encl (4), (138)]

359. Although required, (b)(6) (b) (3) 10 USC § 130b and (b)(6) (b) (3) 10 USC § 130b did not plan or brief any portion of the mission on the mishap night, 14 January 2016. The HMH-463 operations department reasoned that they had already provided a brief in December 2015 for an earlier flight to Kauai that was cancelled. [Encl (109)-(111), (138)]

360. (b) (6), (b) (3) (A) was scheduled to conduct an AMO in-brief with (b) (6) (b) (3) 10 USC § 130b on Friday morning, 15 January 2016 at 0830. [Encl (4), (124)]

The Mishap Flight

361. The weather at MCAS Kaneohe Bay (PHNG) for 0557Z during the mishap flight was 320003 7SM BKN055 23/18 2996³⁸, and was briefed by the ODO. The weather at Wheeler Army Air Field (PHHI) 0558Z, the closest airfield to the scheduled operating area, was 08002 10SM CLR 22/18³⁹ and was briefed by the ODO. [Encl (10), (24), (143)]

362. (b)(6) (b) (3) 10 USC § 130b and (b) (3) 10 USC § encountered haze during the first flight of the hot seat on 14 January 2016. [Encl (110), (111)]

363. At the time of the mishap, the maximum temperature was 27 degrees Celsius, maximum pressure altitude was 20 feet, and maximum density altitude was 1650 feet. [Encl (24)]

364. The High Light Level period for 14 January 2016 was from 1809 to 2206. [Encl (4)]

365. The Low Light Level period was from 2206 to 0609. [Encl (4)]

366. Sunset occurred at 1809 on 14 January 2016. [Encl (4)]

367. Maximum illumination was 19%. [Encl (4)]

368. Moon rise occurred at 1047, and moonset occurred at 2310. [Encl (4)]

³⁷ Assault Support Tactical SOP (ASTACSOP) and the CH-53E Aviation Series Naval Tactics, Technics, and Procedures Tactical Pocket Guide (ANTTP 3-223-CH53).

³⁸ Winds out of the North West at 3kts, 7 statute miles visibility, broken layer of clouds at 5500 ft, temperature 23 degrees Celsius, dew point 18 degrees Celsius, altimeter setting 29.96 inches of mercury.

³⁹ Winds out of the East 2 kts, 10 statute miles visibility. Skies clear.

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369. Aircraft 05, PS 32, required single point plots for the engines⁴⁰. [Encl (6), (24)]

370. [REDACTED], the HMH-463 ODO, provided the ODO portion of the mission brief to the mishap aircrew at 1445 on 14 January 2016.⁴¹ [Encl (10), (24)]

371. [REDACTED] assumed the ODO duties at 1530 on 14 January 2016. [Encl (24), (109)]

372. On 14 January 2016 at approximately 1645, following the flight brief but prior to mission execution, the aircrew and pilots, with the exception of [REDACTED] proceeded from the HMH-463 hangar area to the MCAS Kaneohe Bay theater to join the rest of HMH-463 and receive [REDACTED] introduction brief. [Encl (4), (109)-(111), (117), (119), (121)]

373. [REDACTED] and [REDACTED] both stated that [REDACTED] brief was inadequate. Just prior to the flight, [REDACTED] provided a "clean up" brief to the copilots to address the inadequacies in [REDACTED] brief. [Encl (110), (111)]

374. It is customary for pilots to begin the execution phase of the flight at the completion of the flight brief. This is to ensure that the aircrew remains focused on the mission. It is uncommon to interrupt a flight brief, also known as the "flight bubble," especially to attend an unrelated brief. [Encl (4), (108), (113), (116), (117), (119)-(121), (123), (188)]

375. [REDACTED] assigned aircraft (PS 31, aircraft 08) required a ten-minute maintenance ground turn⁴² to evaluate a damper prior to the flight. [Encl (24), (109)]

376. At 1935, PS 31 (aircraft 08), with copilot [REDACTED], was shut down due to the failed ground turn. This forced the crew to use the back-up aircraft (aircraft 06) at 2005, which delayed their departure. [Encl (4), (109), (111)]

377. At 1955, PS 32 (aircraft 05), with copilot [REDACTED] departed without the lead aircraft (single ship) so as not to further delay their scheduled training. [Encl (24), (109)-(111)]

378. At 2040, PS 31 (aircraft 06) took off and established radio and visual contact with PS 32. At that time, PS 32 was returning from the North Shore. [Encl (11), (24), (109), (110)]

379. At approximately 2050, PS 31 and 32 conducted a non-briefed, nonstandard, over-the-water join up at or below 500 feet, then proceeded to LZ Puuakpu to salvage any remaining training time to conduct section CALs and TERF runs. [Encl (110), (111)]

380. At 2145, the flight notified the ODO that they would be on the flight line in ten minutes to change copilots. [Encl (11), (24), (109)]

⁴⁰ Single point plots are engine performance checks that ensure that engines are operating normally and at the prescribed power.

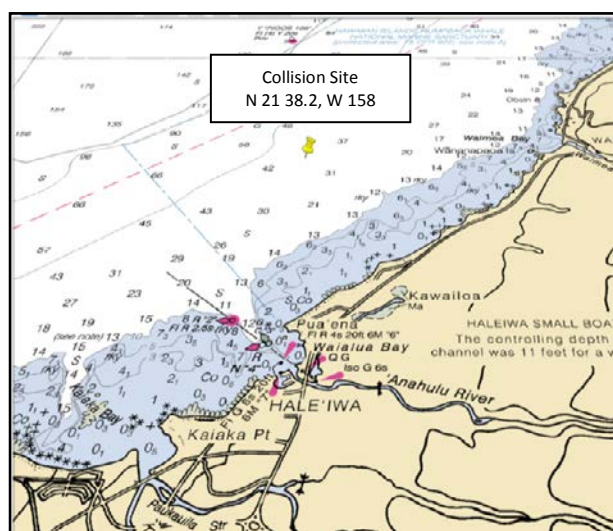
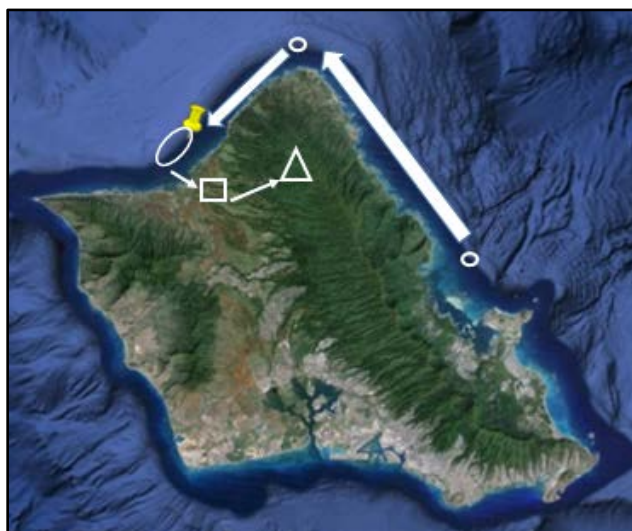
⁴¹ The ODO brief generally concerns weather, outside agency coordination, and Notices to Airmen (NOTAM) alerting them to potential hazards.

⁴² A ground turn is used to evaluate a previous maintenance action not requiring a functional check flight.

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381. The hot seat was conducted at 2200, placing (b) (6), (b) (3) (A) in the right seat of PS 32 and (b) (6), (b) (3) (A) in the right seat of PS 31. [Encl (9), (11), (24), (109)-(111)]

382. The images below depict the flight's planned scheme of maneuver and location of the collision. The first small white circle (right) is Checkpoint⁴³ Buoy. The second circle (top) is Checkpoint Barstow. The oblong circle is Holding Area⁴⁴ (HA) Wendy. The yellow thumbtack is the collision location. The square is the Initial Point⁴⁵ (IP) for the landing training, and the triangle is the landing zone.⁴⁶ The image on the right depicts the collision site. [Encl (10), (110), (111), (144)]



383. During the hot seat, some of the navigation equipment in (b) (6), (b) (3) aircraft did not properly load the route coordinates. This required him to manually enter coordinates into the GPS throughout the flight. [Encl (111)]

384. During the hot seat, the crew chiefs were in high spirits and excited to fly. A Snapchat photo was sent from (b) (6), (b) (3) (A) personal cellphone on 14 January at 2145 stating "I have the best job ever" with a picture of him in the back of a CH-53E wearing NVDs. [Encl (110), (111), (130)]

385. Following the copilot hot seat at 2210, the two aircraft radioed the ODO that they were taxiing for the second half of the scheduled mission. [Encl (4), (11), (24)]

⁴³ A checkpoint is a predetermined point on the surface of the earth used as a means of controlling movement or as a reference for location.

⁴⁴ An Initial Point is an air control point in the vicinity of a landing zone from which individual flights of assault support aircraft are directed to their prescribed landing sites.

⁴⁵ A Holding Area is a preplanned or hastily designated area for delay to facilitate coordination and/or de-confliction of aviation assets. Holding areas are usually designated along the route of flight in areas that provide cover and concealment from enemy observation and fires.

⁴⁶ A Landing Zone (LZ) is any specified zone used for landing of aircraft.

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386. The route of the mishap flight began at MCAS Kaneohe Bay, continued around the northernmost point on Oahu, proceeded to Haleiwa, and then was supposed to proceed into the Tactical Flight Training Area (TFTA). [Encl (10), (11), (12), (109), (110), (111), (126), (127)]
387. The first CP on the route was CP Alameda (Kahuku Point). [Encl (10), (159)]
388. The second CP on the route of flight was CP Barstow (Turtle Bay). [Encl (10), (159)]
389. The third CP was CP Carlsbad in the vicinity of Haleiwa, Hawaii. [Encl (10), (159)]
390. HA Wendy (EJ9241489478), co-located with CP Carlsbad approximately two miles northwest of Haleiwa, was a standard holding area. [Encl (10), (110), (111)]
391. The inbound heading for HA Wendy was oriented on the route of flight at 212 degrees. [Encl (10)]
392. After CP Carlsbad/HA Wendy, the flight was supposed to proceed to IP Chevy, and then to the objective area, LZ Puukapu. [Encl (10)]
393. The Primary LZ was LZ Puukapu and the alternate LZ was LZ Black. [Encl (10)]
394. The section planned to return single ship to MCAS Kaneohe Bay. [Encl (10), (110), (111)]
395. Following flight training in the TFTA, the section was scheduled to complete their final training event (terf external operations) at LZ West Field, MCAS Kaneohe Bay. [Encl (10), (110), (111)]
396. At 2211, PS 31 checked in, on behalf of the section, with MCAS Kaneohe Bay Ground Control and erroneously reported his wingman's call sign as PS 32. PS 31 reported six Marines per aircraft. [Encl (11)]
397. PS 31 reported two hours, thirty minutes of fuel remaining per aircraft to the air traffic control tower. [Encl (11)]
398. PS 31 requested to taxi from their spot on the line to runway 04 and requested a northwest visual flight rules⁴⁷ (buoy) departure. [Encl (11), (109)]
399. PS 31 reported to Ground Control the total time en route (roundtrip) for the flight was two hours. [Encl (11)]
400. At 2212, PS 31 advised Ground Control that the flight would be returning by 2345. [Encl (11), (12), (109)]
401. At 2216, PS 31 reported holding short⁴⁸ at Alpha on Bravo. The MCAS Kaneohe Bay air traffic control tower reported calm winds and cleared PS 31 and PS 32 for takeoff from runway 04. [Encl (11)]

⁴⁷ Visual flight rules are a set of regulations under which a pilot operates an aircraft in weather conditions generally clear enough to allow the pilot to see where the aircraft is going.

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402. At 2216, PS 31 requested that the MCAS Kaneohe Bay Tower reduce the runway lighting because the section was using Night Vision Devices. [Encl (11)]

403. At 2221, PS 31 reported that they were approaching CP Buoy and requested a change in frequency. The flight was now clear of the MCAS Kaneohe Bay controlled airspace. This was the last communication between the air station and the mishap flight. [Encl (11)]

404. At 2229, approaching CP Barstow, (b) (6), (b) (3) (A) (PS 31) contacted Lightning Radio⁴⁹ and requested to "work the Black Sector⁵⁰" for approximately thirty minutes and enter the TFTA via Police Beach. [Encl (16), (110), (111)]

405. At 2229, PS 31 again reported six Marines per aircraft. [Encl (16), (110), (111)]

406. Prior to reaching CP Barstow, the section checked in with Lightning Radio that they were in the vicinity of Turtle Bay. After checking in, the section immediately turned toward CP Carlsbad. [Encl (126), (127), (159)]

407. Lightning Radio received no further communications from PS 31 following the initial check-in. [Encl (12)]

408. The section transited from Turtle Bay to CP Carlsbad northwest of Haleiwa, feet dry,⁵¹ thus violating the MAG-24 noise abatement SOP. [Encl (126), (127), (159)]

409. At 2233:25, local radar displayed two returns (or "blips") for PS 31 and PS 32 in a loose, cruise formation moving southwest along the coast of Oahu. The radar returns proceeded toward CP Carlsbad/HA Wendy. The section executed a right hand turn to the northwest, away from the shoreline, in the area where it was briefed they would enter a holding pattern. [Encl (126), (127), (159)]

410. After approximately 100 degrees into the turn, the flight rolled wings level and proceeded northbound, where the returns began to converge until only a single return appeared. The final return was received at 2234:25 and subsequently faded until it disappeared from the radar display at 2234:40. The image below, created from enclosure 159, displays all radar returns received from 2233:25 until 2234:25. [Encl (126), (127), (159)]

⁴⁸ Holding short describes a position on the taxiway, short of the runway, where an aircrew awaits clearance to takeoff.

⁴⁹ "Lightning Radio" is the call sign of the controlling agency for the Tactical Flight Training Area (TFTA). Lightning Radio and Wheeler Army Airfield Control Tower are located within the same building. Lightning Radio and Wheeler Tower have direct communication via telephone.

⁵⁰ A Black Sector is a portion of the TFTA that includes several landing zones and the only TERF route on Oahu. In requesting to "work the Black Sector,"

(b) (6), (b) (3) (A) was attempting to claim a portion of the TFTA for his section and prevent other aircraft from using the same airspace.

⁵¹ "Feet dry" describes flight over land rather than over water.

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411. [REDACTED] (b) (6), [REDACTED] (b) (6), received a cellphone text message from [REDACTED] (b) (6), (b) (3) (A) personal cell phone number at approximately 2233. The conversation was about food. [Encl (113), (114), (118), (141)]

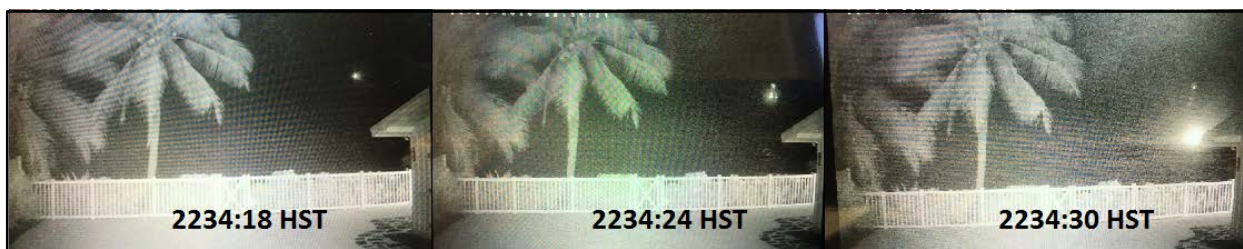
412. This was not the first time [REDACTED] (b) (6), (b) (3) (A) texted [REDACTED] (b) (6) during a flight. On 15 November 2015, [REDACTED] (b) (6), (b) (3) (A) texted [REDACTED] (b) (6) during a ferry flight from the "Big Island" of Hawaii to Oahu, when the aircraft's landing gear malfunctioned. [Encl (4), (108), (123), (141)]

413. It is not uncommon for aircrew, including pilots, to text updates to family members via personal cellphones during training missions. [Encl (118)]

414. An infrared video security camera from a residential home in Haleiwa, Hawaii recorded a burst of light over the ocean at 2234 and 18 seconds on 14 January 2016. It also recorded several lighted objects falling from the sky at 2234 and 24 seconds and then a second burst of light just above sea level at 2234 and 30 seconds. Three still images from the video, with enlarged timestamps, are shown below. [Encl (101)]

415. The impact occurred at 2234, the time recorded by both a Haleiwa residential surveillance camera and a military radar tracking system. Both the video camera and the radar system utilized internet time in creating time stamps. [Encl (101), (123), (159)]

416. The energy associated with the collision far exceeded human tolerances. There were multiple impacts, with at least one involving 100 to 300 times the force of gravity. [Encl (97), (98), (127), (140)]



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417. The Naval Safety Center found that the mishap was "nonsurvivable."
[Encl (140)]

418. Aviation Life Support Systems (ALSS), four gunner's belts (two complete), and three out of four pilot and copilot seats were recovered and examined in-field as part of a Naval Aviation and Safety Center inspection. The left cockpit seat of PS 32 was never recovered. [Encl (140)]

419. The energy levels associated with the mishap far exceeded the design conditions of the crashworthy systems or ALSS onboard the aircraft. Both aircraft sustained extremely high impact forces throughout the aircraft and subsequently broke up into many small pieces. [Encl (98), (140)]

420. In accordance with NATOPS as well as OPNAVINST 3710.7U, all the aircrew in both mishap aircraft were wearing the CMU-33/P survival vest. [Encl (140)]

421. Ten of twelve HGU-84 helmets were recovered. All of the recovered helmets showed structural fractures of the outer shell and severe damage to the helmet liners. Some helmets were missing the helmet liners completely. The outer shells of all ten helmets exhibited damage that would have compromised impact protection. Seven of the helmets were missing NVD mounts because the mounts had broken away as a result of the impact. [Encl (98), (140)]

422. Two of the recovered gunner's belts were missing the anchor point hardware. Both had torn webbing on both the adjustable tether as well as the belt portion of the restraint. [Encl (140)]

423. All of the CMU-33/P survival vests were recovered. All of the vests to some extent were missing equipment such as radios, Life Preserver Units (LPU), flash lights, knives, and other survival gear. Pockets containing survival gear were ripped and torn. One of the survival vests was missing the leg straps and hardware for both the left and right legs of the vest. Another vest exhibited severe tearing of both leg straps. Multiple vest quick release buckles on the leg straps on the vest failed. [Encl (140)]

424. [REDACTED] survival vest was recovered. That vest was missing most of the survival gear and most of the pockets were ripped and torn. His LPU was found with the inflation lobes partially exposed. There was also significant tearing to the left side on both the shoulder area and lower back of the vest. [Encl (140)]

425. [REDACTED] flight suit was missing the left arm. Another flight suit from a crew chief from an unknown aircraft experienced significant shredding of the suit. The flight suit was severely damaged from the shoulders down through the lower legs. The right breast section of the flight suit was completely missing from the right shoulder down through the right hip. [Encl (140)]

426. Several components from troop and crew chief seats were recovered. Intrusion damage resulted in numerous failures of load paths for both the troop seats and crew chief seat. [Encl (140)]

427. The CH-53E cockpit seats come equipped with Variable Load Energy Absorbers (VLEA) to absorb energy in the vertical direction as well as Fixed Load Energy Absorbers (FLEA) which are intended to absorb energy in the horizontal direction. There are two VLEAs and two FLEAs on each seat for a total of four Energy Absorbers (EAs). [Encl (140)]

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428. Of the 12 potential EAs on the three seats, only one was still attached to the seat structure at both points. The right side VLEA on the pilots seat from PS 32 was still intact. All other EAs were separated from their respective structure. Once the structural failures occurred, the EAs could no longer absorb energy. None of the EAs were able to absorb the vertical impact shock or "stroke" during this mishap. [Encl (140)]

429. The ALSS Engineering Investigation found that there was no evidence suggesting the performance of any of the ALSS or crashworthy systems onboard the two mishap aircraft were causal to the injuries sustained in this mishap. [Encl (140)]

430. The damage to the pilot seat bucket assembly in PS 32 was concentrated on the left side of the seats. The impact pushed the PS 32 pilot and co-pilot towards the right side of their seat buckets. [Encl (140)]

431. Although both destroyed, the cockpit of PS 31 was significantly more damaged than the cockpit of PS 32. [Encl (98), (140), (233), (234)]

432. The Naval Safety Center investigation complained of a lack of data upon which it could form conclusions. It noted that recording technology, such as a flight data recorder, could have aided in a much more definitive analysis. Several prototype and fielded systems already exist in the rotary wing community to record flight data, cockpit voice, cockpit video, and crash accelerations. [Encl (140)]

433. Lightning Radio expected PS 31 and PS 32 to check-in every 15 minutes following their 2229 initial contact. Because no check-in occurred, Lightning Radio attempted to contact PS 31 at 2245, 2254, and 2255. [Encl (12)]

434. At 2254, Honolulu Control Facility (HCF) telephoned Wheeler Tower and informed them of a report they received from a civilian who reported hearing two helicopters, a subsequent "loud boom," and then a cessation of the helicopter noises. The HCF Supervisor also stated that he received a report of a possible flare and an aircraft accident. [Encl (12)]

435. At 2255, (b)(6) (b) (3) 10 USC § 130b U.S. Coast Guard (USCG), Honolulu telephoned Wheeler Tower and stated the Coast Guard had received multiple reports of a flare on the North Shore and requested information regarding any military operations in that area. [Encl (12)]

436. At 2256, Wheeler Tower called Lightning Radio and asked if they were communicating with any aircraft. The Lightning Radio representative stated, "PS 31 was supposed to come into the TFTA, and I haven't gotten any [communication] with them yet." [Encl (12)]

437. The Wheeler Tower representative responded to the Lightning Radio representative, "OK, because I just got a call from Honolulu and Coast Guard stating civilians reporting a potential aircraft collision up at the North Shore. You might want to call to see where Pegasus is at, maybe call their Operations." [Encl (12)]

438. At 2258, Schofield Provost Marshall Office (PMO) reported that a witness stated that an aircraft collision occurred in front of his house. [Encl (12)]

439. At 2257 and 2259, Lightning Radio unsuccessfully attempted contact with PS 31 on multiple radio frequencies. [Encl (12)]

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440. At 2300, Lightning Radio contacted MCAS Kaneohe Bay Tower and requested whether they had any information regarding the status of PS 31. The Lightning Radio representative informed the MCB Hawaii Tower that the flight was "a little overdue." [Encl (12)]

441. The only aircraft using the Lightning Radio frequency to coordinate flight operations during the time of the mishap was PS 31. [Encl (12)]

442. At 2301, the Wheeler Tower Supervisor informed Wheeler AAF Base Operations that he had received a telephone call from the USCG relaying that 12 Marines were aboard the two missing aircraft. Wheeler Tower also informed Base Operations that two reports of flare sightings were made in the vicinity of Waimea Bay, Oahu. [Encl (12), (160)]

443. At 2303, Wheeler Tower informed Wheeler Base Operations that two CH-53E last communicated with Lightning Radio at approximately 2229. [Encl (12), (160)]

444. An estimated 900 gallons of JP-8 were on board each aircraft at the time of the mishap. [Encl (160)]

Search and Rescue Operations

445. Lightning Radio, the USCG, Air Traffic Control (ATC), HCF, and the Regional 911 dispatcher were the first agencies to coordinate search and rescue assets. [Encl (12)]

446. At approximately 2304, the USCG informed Wheeler Base Operations that they were initiating search and rescue (SAR) operations⁵². A Critical Incident Communication (CIC) call was made by the USCG Joint Rescue Coordination Center, who dispatched a USCG MH-65 Dolphin search and rescue helicopter as well as a HC-130 Hercules search and rescue to the North Shore. [Encl (12), (160)]

447. Search and rescue operations commenced on 14 January at approximately 2300, less than 30 minutes following impact. [Encl (115), (121), (123), (157), (158), (160)]

448. At 2305, Wheeler Tower and Lightning Radio discussed initiating the Overdue Aircraft Checklist before attempting contact again with PS 31. [Encl (12), (213)]

449. At 2305, Lightning Radio called the HMH-463 ODO and informed him that people on the North Shore are reporting an aircraft collision. [Encl (12), (24), (109)]

450. (b)(6) (b) (3) 10 USC § 130b unsuccessfully attempted to contact the flight aircrew via text message and via PRC-119. [Encl (109)]

451. At 2306, the Wheeler Tower representative contacted the HCF supervisor and informed him that the potential mishap aircraft are two CH-53Es. [Encl (12)]

⁵² Search and Rescue Operations: The search for and provision of aid to people who are in distress or imminent danger.

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452. At 2319, Lightning Radio contacted the military 911 operator and asked for information regarding a potential aircraft mishap. The military 911 operator informed Lightning Radio that the Honolulu Fire Department (HFD) and USCG were currently responding to a potential aircraft mishap. [Encl (12), (160)]

453. At 2320, [REDACTED (b)(6) (b) (3) 10 USC § 130b], USCG reported to the HMH-463 ODO that two witnesses reported hearing helicopters, observing a fireball over the ocean, and subsequently not seeing the helicopters following a loud bang. [Encl (109)]

454. At 2320, Wheeler Tower contacted Wheeler Medevac and informed them that civilian witnesses reported that a midair collision had occurred at 67-293 Kahaone Loop, Wailua, Hawaii. [Encl (12)]

455. At 2342, Wheeler Tower informed Lightning Radio that the USCG responded to the potential mishap. The search area was narrowed to the Haleiwa, Hawaii area. [Encl (12)]

456. At 2345 and 2346, a Sikorsky SH-60 Seahawk from Helicopter Anti-Submarine Squadron Light 37 (HSL-37), call sign Easy Rider 41, informed Wheeler Tower that debris, including a life raft, was floating in the water approximately 3 miles from the shore of Haleiwa, Hawaii. [Encl (12)]

457. At 2347, Easy Rider 41 provided Wheeler Tower the latitude and longitude of the search area and stated that they planned to remain until the USCG helicopter arrived to assume the duties of an on-scene Commander (OSC). Shortly afterward, HFD aircraft Air-1 arrived while Easy Rider 41 was executing their search, and Wheeler Tower established a common frequency for all aerial search aircraft. [Encl (12)]

458. At 2359, USCG Rescue 6578, a USCG H-65 dolphin helicopter, contacted Wheeler Tower and informed them that they were en route to Waimea, Hawaii. Wheeler Tower passed to USCG Rescue 6578 that Air 1 and Easy Rider 41 were currently on station. [Encl (12)]

Search and Rescue Day One of Five (15 January)

459. At 0001, USCG 6578 contacted all aircraft responding to the mishap to change to a common frequency of [REDACTED (b)(5)] for coordination and deconfliction. [Encl (12)]

460. At 0006, Wheeler Tower notified HCF that Easy Rider 41 reported debris in the water. [Encl (12)]

461. At 0026, HFD telephoned Wheeler Tower to confirm the total number of people aboard each aircraft. Wheeler Tower called Lightning Radio to confirm 12 total Marines, six per aircraft. [Encl (12)]

462. At 0030, the MCB Hawaii Command Duty Officer (CDO) was notified that there was a potential mishap. [Encl (12), (123)]

463. At 0031, the MCB Hawaii Operations Officer was notified by the CDO that there had been a potential aircraft mishap. [Encl (12), (123)]

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464. At 0031, the MCB Hawaii Operations Officer notified the MAG-24 Operations Officer who was aware of the possible mishap and was en route to MCB Hawaii. [Encl (12), (123)]

465. At about 0100, the MCB Hawaii Emergency Operations Command (EOC) was activated. [Encl (112), (123), (162)]

466. At 0200, the Honolulu Police Department (HPD) on scene commander contacted the MCB Hawaii EOC and reported that debris and human remains were washing up on the beach. [Encl (162)]

467. At 0350, [redacted (b) (6)] from the HFD arrived in Haleiwa with the initial HFD assets. [redacted (b) (6)] telephoned the MCB Hawaii CDO and requested Marine Corps support on site. [Encl (162)]

468. At 0350, the MCB Hawaii Operations Officer contacted the MAG-24 Executive Officer to coordinate USMC communication with HFD and HPD assets on scene at Haleiwa. [Encl (162)]

469. At 0350, [redacted (b) (6)] from the Federal Fire Department contacted the MCB Hawaii EOC to coordinate Federal Fire support to the mishap. [redacted (b) (6)] had previously made contact with HFD. [Encl (162)]

470. At 0400, [redacted (b) (6)] stated that "debris from the mishap was washing up on the beach." [Encl (162)]

471. At 0530 on 15 January 2016, 44 Marines from HMH-463 departed for Haleiwa in a Combat Logistics Battalion-3 bus in order to begin a shore-side search. [Encl (120), (162)]

472. At 0900 on 15 January 2016, the USCG 14th Sector Liaison, [redacted (b) (b) (3) 10 USC § 130b], arrived at the MCB Hawaii Emergency Operations Center to coordinate Marine Corps and Coast Guard efforts. Additionally, MAG-24 provided a liaison to the 14th Sector. [Encl (162)]

473. At 0900, the USMC Mobile Command Post departed MCB Hawaii for Haleiwa. [Encl (160)]

474. At 1900 on 15 January, the first joint Marine Corps and Coast Guard briefing to the families was conducted at the MCB Hawaii chapel. [Encl (160)]

475. By 2000 on 15 January 2016, 14 aerial sorties had been conducted over 649 square miles. [Encl (160)]

476. U.S. Coast Guard liaisons remained in place at the Incident Command Post (ICP) in Haleiwa, Hawaii and at the MCB Hawaii EOC throughout the duration of the search. [Encl (160), (162)]

477. Surface assets (ships) conducting the initial search included the USS Paul Hamilton and the USCG Kiska. The USS Paul Hamilton was responsible for airspace. [Encl (160)]

478. By 2000 on 15 January 2016, four surface patrol ships searched over 64 square miles. [Encl (160)]

479. The air assets that executed searches included a USCG C-130, a USCG MH-65 from 0000-0800, and a U.S. Army UH-60 until 0000 17 Jan 2016. [Encl (160)]

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480. On 16 January, MAG-24 requested the USNS SALVOR, a salvage ship, assist in searching for aircraft and personnel in vicinity of the crash site. [Encl (160), (198)]

481. Armed with a Warning Order from Pacific Fleet, the USNS SALVOR with Mobile Diving and Salvage Unit 1 (MDSU-1) embarked, prepared to deploy a Remotely Operated Vehicle (ROV) with side scan sonar capability in support of the Search and Rescue effort. [Encl (160), (198)]

482. By the end of the first search day, approximately 55 Marines from HMH-463 were combing the beaches from Kaena Point to Turtle Bay Golf course from first light to the afternoon. [Encl (160)]

483. HPD provided four to five officers to escort the searching Marines. [Encl (160)]

484. Both mishap aircraft were located in approximately 300 feet of water off the coast of Oahu, approximately 1.5 miles from the town of Haleiwa. The wreckage of the two aircraft was approximately 100 yards apart. [Encl (160), (161)]

485. Initial on-scene reports described a large debris field centered around a life raft with no personnel on board and metal fragments. There was fire on the water surface from which a strong fuel scent emanated. [Encl (12), (160)]

486. The National Oceanic and Atmospheric Administration (NOAA) estimated that 90% of the fuel evaporated within 6-12 hours of its release. [Encl (160), (178)]

487. By 1534 on 15 January, an Incident Management Team was in place with a liaison from MAG-24. [Encl (160)]

488. In the afternoon of 15 January, the USS Gridley arrived on scene and assumed air space management duties from the USS Paul Hamilton. The surface assets dedicated to the search effort included USCG Kiska, USCG Ahi, USS Gridley, USS John Paul Jones, and three jet skis from the Hawaii Ocean Safety and Lifeguard Services Division (Ocean Safety). [Encl (160)]

489. MAG-24 placed a formal request via Pacific Fleet for the support of two on-scene USN ships for a period of one week. [Encl (160)]

490. On 15 January, one standard issue combat boot with human remains was recovered. [Encl (160)]

491. By 2000 on 15 January, two life rafts were recovered. [Encl (160)]

492. On 15 January, the Commander, U.S. Coast Guard District 14, was designated Unified Commander for the search and rescue effort. The Unified Commander issued the following objectives:

- a. Search for and rescue persons in distress;
- b. Provide life-saving assistance to all persons in distress;
- c. Conduct joint SAR efforts and complete survivor accountability;
- d. Evacuate survivors to a place of safety for further medical treatment and triage and transport to hospital;

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- e. Provide for safety and security of responders and maximize the protection of public health and welfare;
- f. Implement FAA airspace closure and monitor for compliance;
- g. Establish a Family Assistance program and provide joint family briefings;
- h. Implement scene integrity and evidence collection, storage, and disposal;
- i. Develop and implement the salvage plan;
- j. Manage a coordinated integrity response effort that reflects the composition of a Unified Command;
- k. Inform the public, stakeholders, and media of response activities; and
- l. Establish internal resource request and external resource ordering procedures. [Encl (160)]

493. On 15 January, waves were reported with four foot swells and a North West swell of 16 feet, which made search and rescue efforts extremely challenging. [Encl (160), (169)]

494. At 1900 on 15 January, the joint USCG and USMC representatives provided a family and HMH-463 briefing at the MCAS Kaneohe Bay chapel to update the search status. [Encl (160), (169), (170)-(172)]

495. On 15 January, a safety zone was established around the debris field by the USCG to prevent non-participating ships from impacting the search and rescue effort. [Encl (160)]

496. On 15 January, a Temporary Flight Restriction (TFR) was established by the FAA to prevent non-participating aircraft from impacting the search and rescue effort. [Encl (160)]

497. At the conclusion of the first search day, 15 January, 14 aerial sorties covering 649 square miles and 4 surface sorties covering 64 square miles were completed. [Encl (160)]

Search and Rescue Day Two of Five (16 January)

498. On 16 January, ocean waves near the impact site were 11 to 13 feet high, which, according to the USCG, hampered search and rescue efforts. [Encl (160)]

499. On 16 January at about midnight (0540Z), pilots of a C-130 participating in the search and rescue mission reported suspected laser beams in their cockpit at 1000-2000 feet while flying off the coast of Haleiwa, Hawaii. No subsequent reports of lasing were received. [Encl (142)]

500. On 16 January, reports of oil on the shoreline were investigated. The NOAA investigators arrived in Haleiwa with a reporting party and could not locate any impacted shorelines. An initial report of oil impact to the coast was deemed inaccurate. [Encl (160)]

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501. At 1900 on 16 January, the second family update was conducted at the MCB Hawaii chapel by the USCG 14th District CO and MAG-24 CO joint command. [Encl (160), (169)]

502. At the conclusion of 16 January, 20 additional aerial sorties were completed covering an additional 4,471 square miles, and 12 additional surface patrols were completed covering 572 square miles. [Encl (160)]

Search and Rescue Day Three of Five (17 January)

503. On 17 January, the search assets included three ships: USCG Kiska, USS Paul Hamilton, and the USNS SALVOR; and five aircraft: CG MH-65 helicopter, CG C-130, Army H-60, USN SH-60F, and USN P-3 Orion. [Encl (160)]

504. On 17 January, USNS SALVOR departed Pearl Harbor at 1330, arrived at the mishap location at 2330, and served as a platform for MDSU-1. [Encl (160), (198)]

505. The mission of the USNS SALVOR was to identify aircraft wreckage on the sea floor, evaluate the condition of the airframes, and support the ongoing search for the missing crew members. At this time, it was not a salvage mission, but a search and rescue mission. [Encl (160)]

506. MAG-24 requested and PACOM approved a request for USN sub-surface search capability to locate the aircraft crash site and determine if crew members remained aboard. [Encl (160)]

507. On 17 January, 3d Marines and MAG-24 Marines provided shore-side search efforts in concert with HPD and HFD supporting. [Encl (160)]

508. At 0817 on 17 January, Brigadier General Sanborn arrived at MCB Hawaii and (b)(6) (b) (3) 10 USC § 130b traveled to Haleiwa to review the SAR efforts. [Encl (162)]

509. The MDSU-1 was on station at Haleiwa at 1330 on 17 January 2016. [Encl (160)]

510. On 17 January 2016, MDSU-1 launched one seven meter RHIB and one 27 foot Boston Whaler from the Haleiwa harbor in order to operate the Side Scan Sonar and Remote Operated Vehicle in support of the Search and Rescue efforts. [Encl (160), (162)]

511. At 1810 17 January, the USS Gridley departed the search site. [Encl (110)]

512. On 17 January 2016, The USS John Paul Jones turned over search responsibility to the USS Paul Hamilton. [Encl (160)]

513. MDSU-1 vessels conducted search efforts with their ROV and side scan sonar. However, the side scan sonar was ineffective as the water depth at the crash site exceeded 250 feet, beyond the ROV's capabilities. The side scan sonar yielded negative results. [Encl (160), (162)]

514. On 17 January, the water depth at the suspected crash site was reportedly about 330 feet. [Encl (160)]

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515. By 17 January 2016, three of the four life rafts had been recovered. One life raft was recovered by HFD on 15 January, USCGC Ahi recovered one life raft on 16 January, and USCGC Kiska recovered one on 17 January. [Encl (160), (162)]

516. A small craft advisory⁵³ was in effect during the evening of 17 January, which complicated search efforts. [Encl (160)]

517. At the conclusion of 17 January, twelve additional aerial sorties were completed covering 2,624 square nautical miles, and four surface patrols were completed covering 806 square nautical miles. [Encl (160)]

518. By the end of the third day of search and rescue, the cumulative search area covered reached 16,072 square nautical miles. [Encl (160)]

Search and Rescue Day Four of Five (18 January)

519. The search assets for 18 January were the USCGC Kiska, USS Paul Hamilton, a USCG MH-65, a USCG C-130, a USN P-3 Orion, and the USNS Salvor. [Encl (160)]

520. Between 0900 and 1300 on 18 January 2016, the Governor of Hawaii and Mayor of Honolulu visited the Incident Command Post in Haleiwa and conducted a press briefing. [Encl (160)]

521. At 1000, the shore side search team located an 8-10 foot suspected tail section of a helicopter in the surf zone in the vicinity of Kaena Point. Ocean Safety jet skis and shore side teams worked to recover this item. [Encl (160)]

522. At 1117, MDSU-1 located two small pieces of aircraft debris on the ocean floor approximately 100 yards from the location provided by the Incident Command Post. [Encl (160)]

523. At 1132, MDSU-1 received a "ping" from a locator on their hand held sonar. [Encl (160)]

524. At 1143, a partially inflated life raft was located approximately three miles north of Kahuku Point. USCGC Kiska diverted, located, and recovered the life raft at 1300. At 1420, the serial number was confirmed and matched the fourth and final life raft embarked aboard the mishap aircraft. [Encl (160)]

525. On 18 January, the USCGC Kiska was released from the SAR operation. [Encl (160)]

526. As of 18 January, the cumulative search effort included 102 total sorties over a search area of 26,457 nautical square miles. [Encl (160)]

527. Search assets included the USCGC Kiska, the USCGC Ahi, a USCG HH-65, a USCG C-130, a US Army UH-60, a USN P-3 Orion, a USN SH-60F, the USNS SALVOR, eight seven-man shore line search teams provided by the Marine Corps, a HFD fire boat, a HFD Air 1 helicopter, a HPD helicopter, numerous Ocean Safety jet

⁵³ A Small Craft Advisory is a type of warning issued by the National Weather Service when winds have reached or are expected to reach within 12 hours, a speed marginally less than gale force.

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skis and lifeguards, and Marines from MAG-24 and 3d Marine Division. [Encl (160)]

528. During the evening of 18 January 2016, the Unified Command recognized that a transition from SAR to recovery and salvage would be necessary "in the near future" with a simultaneous active search suspension briefing provided to the families. [Encl (160)]

529. After transition, the USMC would have full tactical control of the USNS SALVOR and MDSU-1 for recovery and salvage operations. The USCG was ready to modify and manage Safety Zones, facilitate the FAA removal of the TFR, and demobilize the USCG assets and command post. [Encl (160)]

530. MAG-24 planned to station a small element of personnel at the Haleiwa firehouse for the remainder of the week. [Encl (160)]

531. Over 100 various items of debris had been documented at the conclusion of 18 January. [Encl (160), (162)]

532. By 18 January 2016, eleven additional aerial sorties covering 5,884 square nautical miles and four additional surface patrols covering 168 square nautical miles were completed. [Encl (160)]

533. At the conclusion of 18 January, 102 total sorties were completed covering 26,457 square nautical miles. [Encl (160)]

Search and Rescue Day Five of Five (19 January)

534. 19 January 2016 was the final active search and rescue day. [Encl (160)]

535. On 19 January, twelve additional aerial sorties were completed covering 7,427 square nautical miles. [Encl (160)]

536. On 19 January, two additional surface patrols were completed covering 260 square nautical miles. [Encl (160)]

537. During the search mission, a total of 130 sorties were completed covering 40,530 square nautical miles. [Encl (160)]

538. On 19 January 2016, a suspension brief was provided to the families and HMH-463 Marines. The suspension decision was coordinated between the Coast Guard and Marine Corps Commandants. [Encl (160), (170)]

539. The U.S. Coast Guard provided a press briefing at MCB Hawaii after all next-of-kin were notified. [Encl (170)]

540. MDSU-1 commenced recovery operations with two ROVs. [Encl (160), (170), (215)]

541. A "bulk wreckage site" was located at 21-38.010N, 158-07.538W. The ROV operators reported seeing multiple pieces of debris, including a rotor blade, seat, fuselage, and helicopter tail section. [Encl (160), (162)]

542. On 20 January 2016, Search and Rescue was suspended and the units transitioned to recovery operations. The priority was the recovery of human remains. [Encl (160)]

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Recovery and Salvage

543. The timeline on the following page identifies the mission, weather, and details of efforts for recovery and salvage operations. [Encl (215)]

Survey and Dive Prep Timeline (21 January - 31 January)

Date/Day	Mission	Details	Weather
21 January	Shallow Salvage/Dive Prep	Salvage concept of operations developed // AMB provided verbal prioritized list of recovery items	
22 January	Shallow Salvage/Dive Prep	ROV scans report depth as shallow	
23 January	Shallow Salvage/Dive Prep	MDSU-1 divers arrive on island	Within Limits
24 January	Shallow Salvage/Dive Prep		Near Limits
25 January	Shallow Salvage/Dive Prep	MDSU-1 equipment onload SALVOR	Out-of-Limits
26 January	Shallow Salvage/Dive Prep	UUV searches	Out-of-Limits
27 January	Shallow Salvage/Dive Prep	Analysis of 26 Jan dive shows debris in excess of 300 feet	Out-of-Limits
28 January	Shallow Salvage/Dive Prep	SALVOR return to port	Near Limits
29 January	Shallow Salvage/Dive Prep	AMB provides prioritized salvage list	Near Limits
30 January	Shallow Salvage/Dive Prep	UUV ops suspended due to weather	Out-of-Limits
31 January	Shallow Salvage/Dive Prep	UUV confirms deeper depth (excess of 300 ft)	Near Limits

Deep Salvage Timeline (1 February - 22 February)

Date/Day	Mission	Details	Weather
1 February	Deep Salvage	Deep Salvage Request sent to OPNAV	Within Limits
2 February	Deep Salvage		Within Limits
3 February	Deep Salvage	CNO approved Deep Salvage request	Near Limits
4 February	Deep Salvage	Deep Drone 8000 shipped	Out-of-Limits
5 February	Deep Salvage		Out-of-Limits
6 February	Deep Salvage	Deep Drone 8000 arrived in HI	Near Limits

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	Salvage		
7 February	Deep Salvage		Within Limits
8 February	Deep Salvage	SALVOR onload of Deep Drone	Within Limits
9 February	Deep Salvage		Within Limits
10 February	Deep Salvage		Out-of-Limits
11 February	Deep Salvage	SALVOR underway	Near Limits
12 February	Deep Salvage	Salvage operations commence	Within Limits
13 February	Deep Salvage	First human remains and aircraft debris recovered	Within Limits
14 February	Deep Salvage	Human remains and aircraft debris recovered	Within Limits
15 February	Deep Salvage	Dignified transfer in port / SALVOR return to port	Out-of-Limits
16 February	Deep Salvage		Out-of-Limits
17 February	Deep Salvage	SALVOR underway	Out-of-Limits
18 February	Deep Salvage		Out-of-Limits
19 February	Deep Salvage	Mishap material recovered	Near Limits
20 February	Deep Salvage	Mishap material recovered	Within Limits
21 February	Deep Salvage	SALVOR slipped moor on site	Within Limits
22 February	Deep Salvage	SALVOR returned to port	Out-of-Limits

Maintenance hold and weather hold (23 February - 14 March)

Date/Day	Mission	Details	Weather
23 February	Weather Hold	In port	Out-of-Limits
24 February	Weather Hold	In port	Out-of-Limits
25 February	Weather Hold	In port	Out-of-Limits
26 February	Weather Hold	In port	Out-of-Limits
27 February	Weather Hold	In port	Out-of-Limits
28 February	Weather Hold	In port	Out-of-Limits
29 February	Weather Hold	In port	Out-of-Limits
1 March	Weather Hold	In port	Out-of-Limits
2 March	Weather Hold	In port	Out-of-Limits
3 March	Weather Hold	In port	Out-of-Limits
4 March	Maint Hold	Underway cancelled due to generator failure	Near Limits
5 March	Maint Hold	In port	Within Limits
6 March	Maint Hold	In port	Within Limits
7 March	Maint Hold	In port	Within Limits
8 March	Maint Hold	In port	Within Limits
9 March	Maint Hold	New parts for generator installed	Out-of-Limits
10 March	Maint Hold	In port	Out-of-Limits
11 March	Maint Hold	In port	Out-of-Limits

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12 March	Maint Hold	In port	Out-of-Limits
13 March	Maint Hold	In port	Out-of-Limits
14 March	Maint Hold	Generator passed test	Out-of-Limits

Final Deep Salvage Timeline (15 March - 31 March)

Date/Day	Mission	Details	Weather
15 March	Deep Salvage	SALVOR underway	Out-of-Limits
16 March	Deep Salvage	Return to port for weather	Near Limits
17 March	Deep Salvage	In port	Out-of-Limits
18 March	Deep Salvage	In port	Out-of-Limits
19 March	Deep Salvage	In port	Out-of-Limits
20 March	Deep Salvage	In port	Out-of-Limits
21 March	Deep Salvage	Underway at 1600	Near Limits
22 March	Deep Salvage	Human remains recovered / aircraft debris recovered	Within Limits
23 March	Deep Salvage	Recovered aircraft debris	Within Limits
24 March	Deep Salvage	Recovered aircraft debris	Within Limits
25 March	Deep Salvage	Recovered aircraft debris	Within Limits
26 March	Deep Salvage	Recovered aircraft debris	Within Limits
27 March	Deep Salvage	Recovered aircraft debris	Within Limits
28 March	Deep Salvage	Returned to port 1700	Within Limits
29 March	Deep Salvage	In port	Near Limits
30 March	Deep Salvage	In port	Out-of-Limits
31 March	Deep Salvage	In port	Out-of-Limits

Search and Recovery / Ops Hold Period (1 April - 12 April)

Date/Day	Mission	Details	Weather
1 April	Search and Recovery	SALVOR underway	Near Limits
2 April	Search and Recovery	No human remains found / aircraft debris recovered	Within Limits
3 April	Search and Recovery	No human remains found / SALVOR returned to port	Within Limits
4 April	Ops Hold	In port	Within Limits
5 April	Ops Hold	In port	Within Limits
6 April	Ops Hold	In port	Within Limits
7 April	Ops Hold	CINCPACFLT releases SALVOR	Within Limits
8 April	Ops Hold	Deep Drone off load	Near Limits
9 April	Ops Hold	In port	Within Limits
10 April	Ops Hold	In port	Near Limits
11 April	Ops Hold	In port	Out-of-Limits
12 April	Ops Hold	Official termination notification to families	Out-of-Limits

544. From 17 January to 4 April 2016, the USNS SALVOR conducted seven sorties for 30 days at sea, including operations at the limits of their safety capabilities. [Encl (161), (190)]

545. On 21 January 2016, the Commanding General of U.S. Marine Corps Forces, Pacific requested rapid salvage/recovery assistance from the U.S. Navy in order to recover evidence associated with the CH-53 mishap. This assistance would aid in the mishap investigation; prevent possible environmental damage from leaking hazardous materials. [Encl (155)]

546. From 21 January to 31 January, shallow salvage, surveys, and dive preparations were conducted by MDSU-1. [Encl (161)]

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547. On 21 January, Commander, Third Fleet directed the coordination of the movement of Explosive Ordnance Disposal Group (EODGRU) 2 Fly-Away Mixed Gas System (FMGS) from Key West, Florida to Oahu in order to conduct operations. [Encl (158)]

548. On 22 January, the depth reported by initial ROV scans was reported as within the limits of mixed gas diving capabilities,⁵⁴ and Commander, Third Fleet tasked EDOGRU 1 to execute salvage operations. [Encl (161)]

549. On 22 January, the FMGS divers arrived on Oahu. [Encl (161)]

550. On 23 January 2016, the Commander of Pacific Fleet, Pearl Harbor, Hawaii sent a tasking order to the Commander of Third Fleet directing him to conduct salvage operations for two USMC CH-53E aircraft. [Encl (154)]

551. MDSU-1 and the USNS SALVOR were tasked with salvage recovery operations until MDSU-1 was relieved during the first week of February by Naval Sea Systems Command's deep water capability. [Encl (123), (157)]

552. On 23 January, MDSU-1 equipment preparations and calibrations began. Also, additional divers arrived from San Diego. [Encl (161)]

553. On 24 January, MDSU-1 began loading equipment onto the USNS SALVOR while commencing pier side workup dives. On 24 January 2016, Unmanned Undersea Vehicle (UUV) searches were executed. [Encl (161)]

554. On 27 January, workup dives were conducted aboard the USNS SALVOR. Four wreckage locations were identified as deeper than 300 feet, which is beyond the limit for mixed gas diving. UUV operations were cancelled due to poor weather conditions. [Encl (161), (208)]

555. HeO₂ mixed gas diving operations are limited to 30 minutes of maximum bottom time and in-water and chamber decompression requirements of a minimum of three hours. Given these limits, MDSU-1 described mixed gas diving as not efficient for search and recovery under these circumstances. [Encl (208)]

556. On 29 January, the AMB provided a prioritized list of salvage items. However, most of these items were located at depths greater than 300 feet. [Encl (161)]

557. On 2 February, Naval Sea Systems Command approved a request for deep water capability (Deep Drone 8000), which was originally coordinated on 18 January via a phone conversation and by official message request on 21 January. [Encl (123)]

558. On 4 February, the Chief of Naval Operations approved the deep salvage request which was forwarded on 1 February. This message was required in order to move the necessary salvage assets to Oahu. [Encl (161)]

559. During the search, salvage, and recovery, numerous debris items and human remains were collected from the ocean surface, ocean floor, and beaches of Oahu and Kauai. [Encl (156), (158), (161), (175)]

560. On 4 February, the Deep Drone was shipped and subsequently arrived on Oahu on 6 February 2016. [Encl (161)]

⁵⁴ HeO₂ mixed gas diving operations is limited at deeper depths due to short bottom times and excessive in-water and chamber decompression requirements.

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561. Deep Drone 8000 was utilized for recovery operations. The Deep Drone 8000 is a 4,100 pound ROV that is designed to meet the Navy's mid-water salvage requirements down to a maximum of 8,000 feet of seawater. [Encl (157)]

562. Of seven total sorties, the USNS SALVOR was unable to conduct active salvage on three of the sorties due to weather, damage to the ship, and injuries sustained to her crew. The USNS SALVOR was down for maintenance for a total of 14 days. Only four of these 14 days were potential search days. [Encl (158)]

563. On 8 February, the Deep Drone was loaded onto the USNS SALVOR. On 11 February, the USNS SALVOR was underway with the embarked Deep Drone. The equipment was necessary to facilitate the deep salvage of the wreckage. [Encl (161)]

564. From 12 February to 22 February, the USNS SALVOR conducted numerous operations over the mishap site. [Encl (161)]

565. On 22 February, recovery operations were suspended due to weather conditions. [Encl (161)]

566. Three major debris fields were located within 150 meters of the center grid of 21 38.2N, 158 06.5W. [Encl (187)]

567. On 13 February, the first wreckage was recovered from the sub-surface search. [Encl (157)]

568. On 27 March 2016, the recovery operation concluded and the units transitioned to salvage operations. [Encl (157)]

569. The Deep Drone 8000 and USNS SALVOR recovered a majority of the human remains and also the large sections of interest from both mishap aircraft. Nine aircrewmembers were positively identified from the recovered human remains. [Encl (127), (187)]

570. Human remains from nine of the twelve deceased were recovered. Those nine crewmembers were positively identified from DNA extracted from the human remains. [Encl (23), (127), (161)]

571. No human remains were recovered for [redacted] (b) (6), (b) (3) (A) and [redacted] (b) (6), (b) (3) (A) [redacted] (b) (6), (b) (3) (A) and [redacted] (b) (6), (b) (3) (A) were positively identified by their serialized flight equipment that was recovered. No human remains, DNA or serialized flight equipment was recovered that belonged to [redacted] (b) (6), (b) (3) (A) [redacted] [Encl (23), (127), (161)]

572. On 1-2 April, the Deep Drone completed a search of the location of the PS 32 debris. Several items of debris suspected of containing human remains were recovered, but none contained DNA. [Encl (161)]

573. All items at site 028 were either retrieved or stacked underwater following a full search by the team. This included sifting through sand within the vicinity of the items. [Encl (161)]

574. An expanded search was conducted 2 April 2016 with a sonar scan and visual search from the centralized debris field of site 028 moving toward the

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primary debris field at site 019. All items observed during this search were spread out and no bigger than about 6 inches. [Encl (161)]

575. On 2 April, nothing was recovered during the search. The winds that day were beyond safe operational limits of the drone and exceeded the ship's ability to effectively conduct a search. [Encl (161)]

576. On 3 April, the expanded search continued using the same methods as site 028. No human remains were recovered, but one flight suit and one T-Shirt were recovered along with debris in the vicinity of the recovered personal items. [Encl (161)]

577. The search was discontinued following the recovery of items when the winds and currents exceeded operational limits. [Encl (161)]

578. On 3 April 2016, the AMB recommended cessation of recovery operations, believing that all reasonable efforts to find and recover the Marines had been exhausted. [Encl (161)]

579. The debris field of the USMC CH-53 helicopters was found approximately three nautical miles offshore at a depth of greater than 300 feet below sea. [Encl (157), (161)]

580. As of 4 April, three debris fields were identified within 150 meters of the center grid. [Encl (161)]

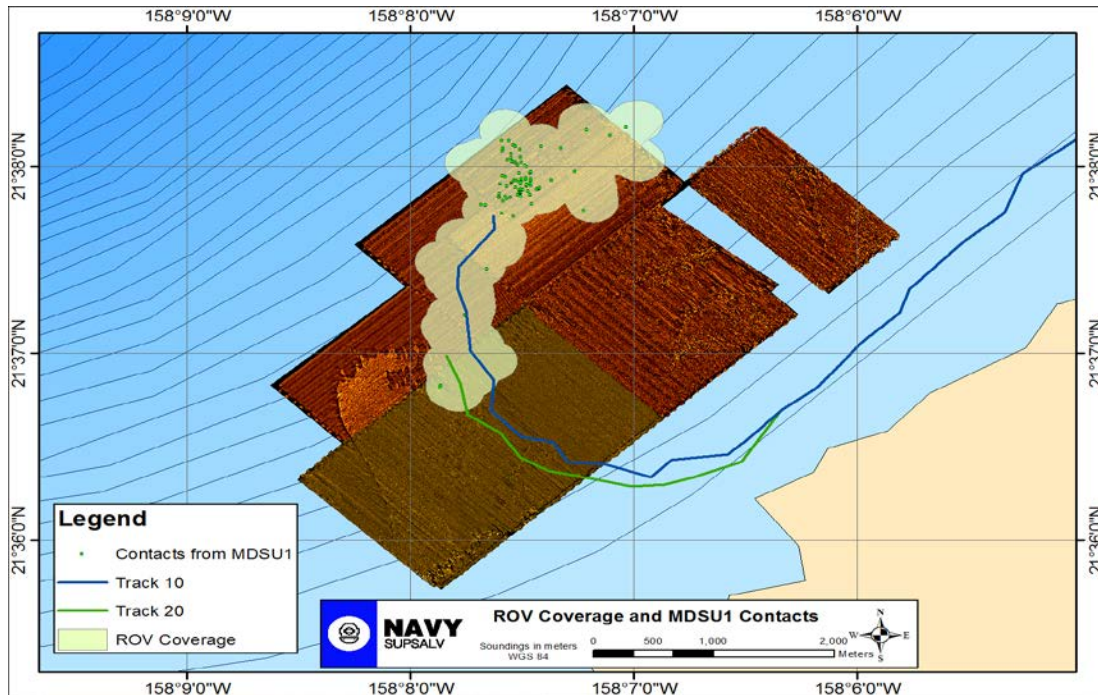
581. All debris items, except one partial blade, were located deeper than 300 feet. [Encl (161), (187)]

582. Every priority item previously identified via underwater photos was recovered. [Encl (161), (187)]

583. On 4 April 2016, salvage operations ceased. No other items were recovered after 4 April. [Encl (161)]

584. The image below depicts the total search area and debris fields associated with the 14 January mishap. The center of the three debris fields was located approximately 1.9 nautical miles from Haleiwa Harbor. The blue and green lines identify the remotely operated vehicle paths. [Encl (168)]

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585. By 5 April 2016, 90% of the wreckage items were recovered. A sonar scan of the remaining items yielded only items measuring six inches or smaller. On that day, salvage operations ceased. [Encl (210), (215), (216), (232), (233)]

586. No aircraft anomalies were identified from collected debris that would suggest that the mechanics of or something on the aircraft caused or contributed to the mishap. [Encl (4), (6), (7), (11), (109), (110), (110), (212)]

Other Findings

587. No classified material or information was aboard either PS 31 or PS 32 at the time of the collision. [Encl (123)]

588. The original cost of each CH-53E was \$21,585,000 or approximately \$54,800,000 each in 2014 dollars. [Encl (99), (214)]

589. The cost of USNS SALVOR support was approximately \$10,000 per day and \$125,000 overall as of 4 April 2016. [Encl (214)]

590. The overall cost of the recovery operation was \$3.2 million. [Encl (214)]

591. The MAG-24 CO and [redacted (b)(6) (b) (3) 10 USC § 130b] found the USCG's family update extremely helpful. They lauded the briefing template and the way in which the USCG informed the families. [Encl (115), (118), (170)-(172), (188)]

592. All of those aboard PS 31 and PS 32 at the time of the collision were active duty Marines assigned to HMH-463, except for [redacted (b) (6), (b) (3) (A)] who was transferred from HMH-463 during October 2015 to work in the tactics division of MAG-24's operations department. [Encl (4), (109), (110), (111)]

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OPINIONS

(b)(6)

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(b)(5)

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RECOMMENDATIONS

(b)(5)

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(b)(5)

(b)(6) (b) (3) 10 USC § 130b



UNITED STATES MARINE CORPS
III MARINE EXPEDITIONARY FORCE
UNIT 35601
FPO AP 96382-5601

IN REPLY REFER TO:
5830
CG
OCT 03 2016

FIRST ENDORSEMENT on Col (b) (6) ltr 5830/CO of 8 Sep 16

From: Commanding General, III Marine Expeditionary Force
To: Commander, U. S. Marine Corps Forces, Pacific

Subj: COMMAND INVESTIGATION INTO THE FACTS AND CIRCUMSTANCES
SURROUNDING THE AVIATION MISHAP INVOLVING TWO CH-53E SUPER
STALLION HELICOPTERS FROM HMH-463 ON 14 JANUARY 2016 OFF THE
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(b)(5)

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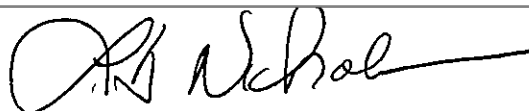
(b)(5)

Subj: COMMAND INVESTIGATION INTO THE FACTS AND CIRCUMSTANCES
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(b)(5)



L. D. NICHOLSON

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CG, 1st MAW
File



UNITED STATES MARINE CORPS
COMMANDER, U.S. MARINE CORPS FORCES, PACIFIC
CAMP H. M. SMITH, HI 96861-4139

IN REPLY REFER TO:

5830

SJA

07 OCT 2016

SECOND ENDORSEMENT on (b)(6), (b)(3) ltr 5830 CO dtd 08 Sep 16

From: Commander, U.S. Marine Corps Forces, Pacific
To: Commandant of the Marine Corps (JAD)

Subj: COMMAND INVESTIGATION INTO THE FACTS AND CIRCUMSTANCES
SURROUNDING THE AVIATION MISHAP INVOLVING TWO CH-53E
SUPER STALLION HELICOPTERS FROM HMH-463 ON 14 JANUARY
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(b)(5)

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SUPER STALLION HELICOPTERS FROM HMH-463 ON 14 JANUARY
2016 OFF THE NORTHERN COAST OF OAHU

(b)(5)



D. H. BERGER

Copy to:
G-8, MARFORPAC
G-3, MARFORPAC
Safety, MARFORPAC
Deputy Commandant for Aviation
Deputy Commandant, Manpower and Reserve Affairs
Director, Commandant of the Marine Corps Safety Division
Commander, Naval Air Systems Command
Commander, Naval Sea Systems Command
Commanding General, Training and Education Command
CG, III MEF
File