

## Joint Findings of Fact

### **Coast Guard Eleventh District**

1. U.S. Coast Guard (USCG) District Eleven (D11) carries the responsibility of Rescue Coordination Center (RCC) Alameda. RCC Alameda is assigned a rescue region covering an area beginning at the Oregon-California border, going west approximately 1,000 miles, and South past the Mexico/Guatemala border.
2. The District Eleven Commander is the designated search and rescue (SAR) Coordinator and the SAR Mission Coordinator (SMC). The SMC duties for the area along the California coast out to two hundred miles are normally delegated to the responsible USCG Sector Commander.
3. SAR Coordinator (SC) is described as one or more persons or agencies within an Administration with overall responsibility for establishing and providing SAR services, and ensuring that planning for those services is properly coordinated.
4. SAR Mission Coordinator (SMC) is described as the official temporarily assigned to coordinate response to an actual or apparent distress situation.
5. Sector Los Angeles/Long Beach (LA/LB) was SMC for Marine Information for Safety and Law Enforcement (MISLE) Case # 480062, involving a skiff with one person onboard that had been missing since approximately 2000 on 27 October 2009.
6. Sector LA/LB was first notified that the skiff was missing on 28 October at approximately 2000 and maintained SMC until 29 October at 1415.
7. SMC of the case was passed to RCC Alameda at 1415 on 29 October due to the search area for the case drifting into both the Sector LA/LB and Sector San Diego areas of responsibility (AOR).
8. The Standard Watch for the District Eleven Command Center (D11CC) is:
  - a. Command Duty Officer (CDO)
  - b. SAR Controller (SARDO)
  - c. Law Enforcement Duty Officer (LEDO)
  - d. Situation Controller (SUDO)
9. On watch at the D11CC on 29 October were:
  - a. Lieutenant [REDACTED] (CDO)
  - b. Lieutenant Junior Grade [REDACTED] (SARDO day)
  - c. Lieutenant Junior Grade [REDACTED] (LEDO night)
  - d. Lieutenant [REDACTED] (LEDO day)

- e. Lieutenant Junior Grade [REDACTED] (SUDO night)
- f. Operations Specialist First Class Petty Officer (OS1) [REDACTED] (SUDO day)

### **Air Station Sacramento**

10. Air Station Sacramento is the West Coast C-130 unit for the United States Coast Guard. It is located at McClellan Airpark in McClellan, California. The unit is assigned four HC-130H aircraft and has a complement of 186 personnel. The Commanding Officer is Captain J. J. O'Connor.

### **CG 1705 Aircrew**

11. Seven USCG personnel were killed in the mishap. The aircrew of CG 1705 on 29 October 2009 and their respective positions in the aircraft were:

- a. Lieutenant Commander C. J. Barnes (Pilot in Command (PIC), left seat)
- b. Lieutenant A. W. Bryant (Co-pilot, right seat)
- c. Aviation Maintenance Technician Chief Petty Officer (AMTC) J. F. Seidman (Flight Engineer)
- d. Avionics Electrical Technician Second Class Petty Officer (AET2) C. P. Grigonis (Navigator)
- e. AET2 M. L. Beacham (Radio Operator)
- f. AMT2 J. S. Moletzky (Basic Aircrewman/Scanner)
- g. AMT3 D. R. Kreder (Dropmaster/Scanner)

12. All the USCG personnel involved in the mishap flight were on active duty in the Regular component of the United States Coast Guard.

13. The USCG aircrew involved in the mishap flight were current and qualified for the flight in accordance with all applicable USCG Air Operations Manual, COMDTINST M3710.1(series) requirements, medical, aeronautical and physiological qualifications and standards.

### **CG 1705 Aircraft**

14. CG 1705 maintenance records were reviewed and no significant discrepancies were noted.

15. CG 1705 was totally destroyed in the mishap at a cost of approximately \$48,400,000.

16. CG 1705 was an HC-130H ("C-130") model aircraft. The aircraft is assigned to Long-Range SAR missions due to its endurance and crew utilization capabilities. The aircraft is capable of day/night all weather operations.

17. Standard Operating Procedure (SOP) for the C-130 directs the illumination of landing lights for all landings, takeoffs, approaches and all other operations below 10,000

feet and 250 knots, day or night, unless operational or meteorological conditions prohibit their use.

18. Normal SOP for night SAR includes illumination of the following external lighting: a landing light on the undersurface of each wing; six navigation and two anti-collision lights, dispersed around the airplane; and a light on each side of the fuselage to illuminate the wing leading edges.

19. The cockpit lighting is not night vision device (NVD) compatible.

20. The USCG does have HC-130J model aircraft that are fully NVD compatible, but they are all based in Elizabeth City, North Carolina.

21. The HC-130H aircraft have been modified to provide a large search window in each side of the aircraft, which is occupied by left and right Scanners. The primary duty of the Scanner is to provide assistance with scanning and searching the surface for the search target and provide aircraft traffic calls.

### **CG 1705 Mission and Tasking**

22. On 29 October 2009 at 1423, D11CC directed the launch of the Air Station Sacramento Ready C-130 in support of MISLE Case #480062.

23. CG 1705 was assigned a 66 x 52.7 mile visual and radar search pattern encompassing San Clemente Island (SCI).

24. Aft scanners are authorized, but not mandated, to wear NVDs during night SAR missions.

25. There were no NVDs issued to CG 1705 for this SAR case.

26. USCG Air Operations Manual (COMDTINST M3710.1(series)) prescribes general operating procedures and flight instructions applicable to all aircraft. This manual is also intended to provide aviation doctrine and a description of the Coast Guard aviation program. It can be used as a guide to mission planning and execution, as well as for the exercise of professional judgment by those in aviation and those whose programs require aviation support.

27. COMDTINST M16130.2E is the U.S. Coast Guard Addendum to the United States National Search and Rescue Supplement (NSS) to the International Aeronautical and Maritime Search and Rescue Manual (IAMSAR). The most recent version of this Addendum became effective in September 2009.

28. COMDTINST M16130.2E outlines the "Green, Amber, Red (GAR)" model which is the Coast Guard's operational risk management analysis tool.

29. Air Station Sacramento Ops was tasked with completing the GAR model for CG 1705's SAR mission.
30. Air Station Sacramento Ops and D11 assigned CG 1705's mission a score of "20, green" which indicated a low risk factor.
31. Air Station Sacramento Ops and D11 considered the aircraft and aircrew status, terrain and weather conditions in the search area when they assigned the risk factor to CG 1705's mission.
32. Air Station Sacramento Ops completed a "subjective" risk assessment of CG 1705's mission but did not actually fill out the GAR worksheet depicted in COMDTINST M16130.2E.
33. CG 1705 was equipped with a Traffic Alert and Collision Avoidance System (TCAS), which provides Traffic Alerts and Resolution Advisories, i.e. TCAS II.
34. Traffic Alert and Collision Avoidance System (TCAS I & II): TCAS I provides proximity warning only, to assist the pilot in the visual acquisition of intruder aircraft. No recommended avoidance maneuvers are provided nor authorized as a direct result of a TCAS I warning. TCAS II provides traffic advisories (TAs) and resolution advisories (RAs). Resolution advisories provide recommended maneuvers in a vertical direction (climb or descend only) to avoid conflicting traffic. TCAS does not alter or diminish the pilot's basic authority and responsibility to ensure safe flight. Since TCAS does not respond to aircraft which are not transponder equipped or aircraft with a transponder failure, TCAS alone does not ensure safe separation in every case. At this time, no air traffic service nor handling is predicated on the availability of TCAS equipment in the aircraft.

#### **HMH-465**

35. Marine Heavy-Lift Helicopter Squadron 465 (HMH-465) capabilities include low level, terrain flight, night vision goggle flight, forward area and aerial refueling from KC-130s, troop transport, and external cargo transport. HMH-465, call-sign "Warhorse," is commanded by Lieutenant Colonel [REDACTED] and is comprised of 14 CH-53Es and 248 personnel. HMH-465 is operationally controlled by Third Marine Aircraft Wing (3d MAW) based at Marine Corps Air Station (MCAS) Miramar, San Diego, California.

#### **HMLA-469**

36. Marine Light Attack Helicopter Squadron 469 (HMLA-469) capabilities include offensive air support, utility support, armed escort and airborne supporting arms coordination during expeditionary, joint, or combined operations. HMLA-469, call-sign "Vengeance," is commanded by Lieutenant Colonel [REDACTED] and is comprised of three AH-1W Super Cobras, three UH-1N helicopters and 140 personnel. HMLA-469 is operationally controlled by 3d MAW and is based at MCAS Camp Pendleton, California.

## U.S. Marine Corps (USMC) Aircrew

37. Two USMC personnel were killed in the mishap. The aircrew of Vengeance 38 (“V38”), the “Mishap Cobra”, on 29 October 2009 and their respective positions in the aircraft were:

- a. Major S. C. Leigh (PIC, rear seat)
- b. First Lieutenant E. J. Claiborne (Co-pilot, front seat)

38. The aircrew of Vengeance 39 (“V39”), the “Dash-2 Cobra,” on 29 October 2009 and their respective positions in the aircraft were:

- a. Captain [REDACTED] (PIC, rear seat)
- b. First Lieutenant [REDACTED] (Co-pilot, front seat)

39. The aircrew of Warhorse 50 (“WH50”), the “Dash-2 CH-53,” on 29 October 2009 were:

- a. Lieutenant Colonel [REDACTED] (PIC, left seat)
- b. First Lieutenant [REDACTED] (Co-pilot, right seat)
- c. Major [REDACTED] (Off-duty pilot, aft right troop compartment)
- d. Corporal [REDACTED] (Assistant crew chief)
- e. Corporal [REDACTED] (Crew chief)
- f. Lance Corporal [REDACTED] (Crew chief under instruction, left window)
- g. Lance Corporal [REDACTED] (Crew chief under instruction, right window)

40. The aircrew of Warhorse 53 (“WH53”), the “Lead CH-53,” on 29 October 2009 were:

- a. Major [REDACTED] (PIC, left seat)
- b. Captain [REDACTED] (Co-pilot, right seat)
- c. Staff Sergeant [REDACTED] (Senior crew chief)
- d. Sergeant [REDACTED] (Assistant crew chief, left window)
- e. Corporal [REDACTED] (Assistant crew chief, left window)
- f. Lance Corporal [REDACTED] (Assistant crew chief, right window)

41. All the USMC personnel involved in the mishap flight were on active duty in the Regular component of the United States Marine Corps.

42. The USMC aircrew involved in the mishap flight were current and qualified for the flight in accordance with all applicable Naval Air Training and Operating Procedures Standardization (NATOPS) Flight and Operating Instructions (OPNAVINST 3710.7(series)) requirements, medical, aeronautical and physiological qualifications and standards.

### **CH-53E Aircraft**

43. A review of both CH-53E aircraft maintenance records was conducted and no significant discrepancies were noted.
44. The crew chiefs/gunners occupy a large, open crew door/window, where aircraft armament is mounted. This window allows them to scan for traffic in addition to other duties.
45. Both CH-53Es in the mishap flight were fully NVD compatible.

### **AH-1W Aircraft**

46. A review of V38's (the Mishap Cobra) aircraft maintenance records was conducted and no significant discrepancies were noted.
47. A preflight review of V39's aircraft maintenance records was conducted by the pilots, who noted no significant discrepancies.
48. The AH-1W features a clear canopy covering the pilot and copilot/gunner stations.
49. Both AH-1Ws in the mishap flight were fully NVD compatible.
50. The Mishap AH-1W was totally destroyed in the mishap at a cost of \$11,580,478.

### **USMC Flight of Four Mission Tasking**

51. The mission of 29 October involved a flight of four USMC helicopters, two CH-53Es and two AH-1Ws.
52. The purpose of the flight was for V38 to be the Escort Flight Lead (EFL) for a live aerial gunnery shoot conducted with the Warhorse flight in the Shore Bombardment Area (SHOBA) on the south side of SCI.
53. The intended flight path as briefed was for the CH-53Es to depart Miramar and fly north toward Camp Pendleton, where they would rendezvous with the AH-1Ws. Once formed up, the flight would proceed into Warning Area 291 (W-291) then direct to SHOBA.
54. There are two types of tactical formations described in USMC Standard Operating Procedure:
  - a. Combat Cruise allows the wingman to fly anywhere on a rearward arc from 10 degrees forward of the abeam position on either side of the lead aircraft. In the absence of other mission considerations, the preferred wingman position is 45 degrees off the lead's tail with a minimum of 500 feet separation and level in altitude.

b. Combat Spread is flown by the wingman within  $\pm 10$  degrees of the lead aircraft's abeam, with a minimum of 500-foot lateral separation.

55. The flight was briefed as combat cruise or combat spread with WH50 planned to be approximately five rotor diameters or 500 feet behind and to the left of the Lead CH-53E. The briefed altitude was 500'.

56. The AH-1Ws planned to position themselves with V39 in the 5 o'clock and V38 in the 7 o'clock positions from WH53/50 and briefed to be approximately 3-5 rotor diameters from the CH-53Es. The briefed altitude was 300' of step up from the CH-53Es (800' altitude).

57. All the USMC aircrew involved in the mishap flight except Major [REDACTED] (who was in the aft troop compartment of WH50, waiting to assume co-pilot duties later in the flight) were wearing NVDs for the entire flight.

58. Naval Air Training and Operating Procedures Standardization (NATOPS) Flight and Operating Instructions (OPNAVINST 3710.7(series)) prescribe general flight and operating instructions and procedures applicable to the operation of all naval aircraft and related activities.

#### **USMC Formation and NVD SOP**

59. Field of View refers to breadth and height of what is seen through the NVDs.

60. NVDs provide a 40 degree field of view and require an active, aggressive scan on the part of aircrew to overcome the reduced field of view.

61. Formation flights shall be controlled/cleared as a single aircraft unless the formation leader requests otherwise.

62. The USMC Rotary Wing Tactical SOP directs aircraft lighting for NVD formation flights outside restricted areas as follows:

Type	Form	Position	Anti-collision	IR Position	IR Anti-Collision
CH-53E	Blade tip 3	DIM	OFF	3	3
AH-1W					
Lead	3	DIM	OFF	Ring 3	N/A
Last	3	DIM	ON	Ring 3	N/A

63. Per the USN/USMC Helicopter NVD Manual:

a. "Any time separation between aircraft within a flight gets extended or if a wingman perceives an unsafe situation developing, a traffic call or a call for anti-collision lights must be made on the radio." [The term "extended" is not further defined within the NVD Manual.]

b. “The port navigation light and white taillights on all aircraft create a large halo/blooming effect that washes out aircraft identifying features for formation even at their lowest intensity.”

c. “Anti-collision lights have a similar effect as the port navigation light due to the red color. The intensity of the anti-collision light is not adjustable. The strobe or rotating effect of the anti-collision light can also induce vertigo due to the flash-blinding effect on the goggles. Flying with the rotators off is not a solution to the problem if we are to remain visible to the unaided pilot.”

### **FACSFAC San Diego (General Description)**

64. Fleet Area Control and Surveillance Facility San Diego (FACSFAC SD) is a U.S. Navy, Air Traffic Control (ATC) facility, based at Naval Air Station, North Island, California.

65. FACSFAC SD, call-sign “Beaver” or “Beaver Control,” manages the Southern California (SOCAL) offshore military operating area (OPAREA). FACSFAC provides off-shore air traffic control and surveillance as well as active management of assigned airspace and operating areas.

66. FACSFAC SD is a subordinate unit to Commander, Naval Air Forces (CNAF) and operationally reports directly to CNAF.

67. FACSFAC SD operates two detachments responsible for aircraft within W-291: the Southern California Offshore Range (SCORE, call-sign “Starburst”) and FACSFAC San Clemente Island.

68. SCORE reports to FACSFAC SD and is the single operational authority over the San Clemente Island ranges. SCORE’s mission is to exercise control of the San Clemente Island land, air, and sea ranges including SHOBA, the SOCAL anti-submarine warfare (ASW) ranges, and the eight “Papa” areas within W-291. These ranges, called “hot areas,” provide military services, space, and facilities to conduct live fire, readiness training, and test and evaluation activities.

69. Hot areas are not depicted on any aeronautical charts.

70. Aircraft operating in W-291 are notified of all active hot areas by Beaver Control. Aircrew operating in SOCAL OPAREA shall receive a thorough brief on “hot areas” upon check-in with a controller.

71. The Shore Bombardment Area (SHOBA) is located at the southern end of San Clemente Island and is utilized for naval surface, artillery/mortar and air-to-ground gunnery exercises.



72. Standard ATC procedures and coordination apply within FACSFAC-controlled airspace.
73. Standard ATC procedures are outlined in and governed by Federal Aviation Administration Joint Order 7110.65S (FAA JO 7110.65S).
74. W-291 is one of the Special Use Airspace areas controlled by FACSFAC SD and is in the SOCAL OPAREA. W-291 is depicted on aeronautical charts.
75. Warning Areas are non-regulatory, Special Use Airspace in the FAA Air Traffic Control system.
76. A Warning Area is airspace of defined dimensions extending from three nautical miles outward from the coast of the United States, which contains activity that may be hazardous to nonparticipating aircraft. The purpose of such warning area is to warn nonparticipating pilots of the potential danger. A warning area may be located over domestic or international waters or both.
77. Special Use Airspace consists of airspace wherein activities must be confined because of their nature, or wherein limitations are imposed upon aircraft operations that are not a part of those activities, or both.
78. Except for controlled firing areas and “hot areas,” Special Use Airspace areas are depicted on aeronautical charts.

**FACSFAC SD (Doctrine, Mission, and Manning)**

79. FAA JO 7110.65S prescribes procedures and phraseology for use by personnel providing air traffic control services. FAA JO 7110.65S is the primary ATC manual for all DoD and FAA air traffic controllers.
80. FAA JO 7110.65S provides as follows:
- a. “The primary purpose of the ATC system is to prevent a collision between aircraft operating in the system.”
  - b. “Give first priority to separating aircraft and issuing safety alerts as required in this order. Good judgment shall be used in prioritizing all other provisions of this order based on the requirements of the situation at hand.”
  - c. “The issuance of a safety alert is a first priority once the controller observes and recognizes a situation of unsafe aircraft proximity to terrain, obstacles, or other aircraft.”
  - d. “Traffic Advisories” are defined as advisories issued to alert pilots to other known or observed air traffic which may be in such proximity to the position or intended

route of flight of their aircraft to warrant their attention. Such advisories may be based on: visual observation; observation of radar identified and nonidentified aircraft targets on an ATC radar display; or verbal reports from pilots or other facilities.

e. The word "traffic" followed by additional information, if known, is used to provide such advisories; e.g., "Traffic, 2 o'clock, one zero miles, southbound, eight thousand."

f. Traffic advisory service will be provided to the extent possible depending on higher priority duties of the controller or other limitations; e.g., radar limitations, volume of traffic, frequency congestion, or controller workload. Radar/ non-radar traffic advisories do not relieve the pilot of his/her responsibility to see and avoid other aircraft. Pilots are cautioned that there are many times when the controller is not able to give traffic advisories concerning all traffic in the aircraft's proximity; in other words, when a pilot requests or is receiving traffic advisories, he/she should not assume that all traffic will be issued.

81. FACSFAC San Diego Instruction 3120.1F (FACSFACSDINST 3120.1F) is the procedures guide and operations manual for FACSFAC SD.

82. FACSFACSDINST 3120.1F provides as follows:

a. "The controller's number one priority is separation of aircraft and issuance of safety alerts."

b. "FACSFAC does not provide separation of aircraft operating in airspace assigned jointly to different units. Concurrent Use Airspace (CO-USE) operations are separated by the principle of "see and avoid" under VMC [visual meteorological conditions]."

83. The NATOPS Air Traffic Control Manual (NAVAIR 00-80T-114) contains information on administrative and operational procedures for all Navy and Marine Corps units providing air traffic control services and applies on a worldwide basis. It provides that the mission of Navy and Marine Corps air traffic control facilities is to provide for the safe, orderly, and expeditious movement of air traffic.

84. NAVAIR 00-80T-114 describes the FACSFAC SD watch positions:

a. Facility Watch Supervisor (FWS): The FWS is responsible for operational performance of the watch crew on duty.

b. Radar Supervisor (RS): The RS will monitor and assist controllers with required coordination and ensure all controllers are performing at an acceptable level. Duties include coordination of airspace, notifying cognizant SAR agencies of aircraft in distress, and overseeing any special handling aircraft or emergency aircraft requirements including SAR and MEDEVAC operations.

c. Approach Control (AP): AP is responsible for coordination and control of all instrument traffic within the Air Traffic Control Facility area of jurisdiction.

d. Sector Control (SC): The function of SC is to provide Special Use Airspace (SUA) control services to all aircraft within the Air Traffic Control Facility's assigned SUA.

e. Assistant Sector Control (ASC): The function of ASC is to effect coordination with other sectors and adjacent ATC Facilities, receive and relay aircraft movement messages and prepare and post flight progress data. ASC is responsible for assisting the SC.

f. Flight Data (FD): FD monitors and operates equipment to provide controllers with information to maximize safe and efficient ATC services.

85. FAA JO 7110.65S para. 2-1-4(c) states, "Provide maximum assistance to SAR aircraft performing a SAR mission." The operational priority for SAR missions is third, immediately following aircraft emergencies and air evacuations/medical evacuations.

86. FACSACSDINST 3120.1F para. 2.10 and Appendix E provide thorough guidance on how SAR operations are to be conducted when FACSAC San Diego is integrally involved in an actual SAR mission as the SMC but is silent on procedures for FACSAC controllers to provide coordination for outside agencies conducting SAR operations within FACSAC's operating area, including W-291.

87. FACSACSDINST 3120.1F para. 2.38 states, "Operational missions, SARs, MEDEVAC and active Law Enforcement/Drug Interdiction will preempt Fleet OPAREA activities. Scheduling Authority/Activity shall closely monitor operational missions to mitigate interference to scheduled events."

88. FACSAC Virginia Capes (FACSAC VACAPES) is the East Coast counterpart to FACSAC SD and is located in Virginia Beach, Virginia.

89. FACSAC VACAPES Instruction 3120.1J requires FACSAC VACAPES to be kept informed of all SAR activities within its areas of responsibility in order to clear the area required by SAR missions. SAR has equal priority to Undersea Warfare surveillance and investigations, and higher priority than active drug interdiction missions.

90. FAA JO 7110.65S provides the following guidance regarding "Special Use Airspace Control Service":

a. Providing direction and flight following of mission aircraft.

b. Providing advisory control to aircraft conducting VFR [visual flight rules] operations within radar surveillance areas, including navigational assistance to ensure

integrity of adjacent controlled airspace.

c. Interfacing with the National Airspace System, including positive control of IFR [instrument flight rules] aircraft arriving and departing SUA.

91. FAA JO 7110.65S provides the following guidance regarding traffic separation for formation flights [There is no amplifying information or specificity within FAA JO 7110.65S whether this guidance applies to IFR traffic or VFR traffic and whether it applies in or out of Special Use Airspace.]:

a. Because of the distance allowed between formation aircraft and lead aircraft, additional separation is necessary to ensure the periphery of the formation is adequately separated from other aircraft, adjacent airspace, or obstructions. Provide supplemental separation for formation flights as follows:

(1) Separate a standard formation flight by adding 1 mile to the appropriate radar separation minima.

(2) Separate two standard formation flights from each other by adding 2 miles to the appropriate separation minima.

(3) Separate a nonstandard formation flight by applying the appropriate separation minima to the perimeter of the airspace encompassing the nonstandard formation or from the outermost aircraft of the nonstandard formation whichever applies.

(4) If necessary for separation between a nonstandard formation and other aircraft, assign an appropriate beacon code to each aircraft in the formation or to the first and last aircraft in trail.

92. FACSFAC provides W-291 users with the following services: IFR handling, advisory control to VFR aircraft, controlled airspace/hot area advisories, weather information, SAR/MEDICO/MEDEVAC/HUMEVAC assistance.

93. FACSFACSDINST 3120.1F para. 2.12.2 states, in relevant part, "In order to maximize safety and effectively provide radar service to W-291 users, the following priorities will be utilized:

- a. Prevention of spill-ins/spill-outs
- b. Traffic advisories
- c. Recommended headings for VFR aircraft upon request
- d. Check-in/check-out of civil VFR aircraft
- e. Weather
- f. Bird Activity

94. Other pertinent provisions of FACSFACSDINST 3120.1F:

a. “While the majority of Fleet OPAREAs exist within Special Use Airspace (Warning Areas, Restricted Areas, etc.), it is important to recognize that non-military surface and air platforms cannot be restricted nor prohibited from operating in or transiting most Fleet OPAREAs.”

b. “Aircraft operating in W-291 shall check-in with BEAVER on assigned frequency with the following: (1) Call-sign (2) Altitude (3) Number in Flight (4) Operating Area (5) Mission (6) Estimated Delay.”

c. “No unit shall transit FLETA HOT [Fleet Training Area HOT], SOAR [SOCAL ASW Range], nor any part of San Clemente Island, including SHOBA at any time without clearance from Beaver Control due to frequent short notice hazardous events.”

d. “Aircrew shall maintain a vigilant lookout at all times while operating under VFR/VMC. Numerous non-transponder equipped civil aircraft operating at low altitudes (e.g., fish spotters) use the offshore areas and may not be displayed on FACSACSD radar equipment.”

95. FACSAC separates W-291 airspace into the “North” sector and the “East/West” sector for purposes of manning and radar control.

96. The SOCAL Controller North Sector includes the airspace around SCI and specially identified areas to include NAOPA [Northern Air Operating Area], FLETA HOT, SHOBA and SOAR. SOCAL Controller North Sector has been officially combined with the Approach Controller position; however, this combining of positions has not yet been captured in FACSAC San Diego 3710.1A.

97. The SOCAL Controller East/West Sector includes the airspace around the designated “Papa” areas, exclusive-use areas south of the North Sector.

98. FACSAC San Diego Facility Manual (ATCINST 3710.1A) para 305 states, “Between the hours of 0800 to 2000 all operating positions shall be de-combined to the greatest extent practical. Only the FWS has the authority to combine positions. Prior to combining operating positions the FWS shall take into consideration current volume and the projected/anticipated traffic volume. Once the positions are combined, it is the responsibility of the Radar Supervisor to ensure positions do not remain combined simply to enhance the volume of traffic a single controller is working or to challenge the ability of a trainee. In fact the opposite is true; Radar Supervisors shall de-combine operating positions at an early enough stage to ensure the workload is evenly distributed and no one single controller is saturated.

a. FWS may be combined with RS at any time.

b. SOCAL Controller E/W may be combined with Approach Controller. To provide for controller relief, SOCAL Controller E/W may be combined with Approach Controller during light periods of traffic.

c. The FWS shall ensure sufficient manning is readily available during all periods if traffic requires the positions to be de-combined.

99. ATCINST 3710.1A para 304 states, "Normal Work Hours Staffing Standard – Monday through Friday from 0630 to 2230 local:

- (1) Facility Watch Supervisor (FWS)
- (2) Radar Supervisor (RS)
- (3) Approach Controller (AP)
- (4) SOCAL Controller East/West Sector (SC E/W)
- (5) SOCAL Controller North Sector (SC N)
- (6) Approach Assistant Controller (AAP)
- (7) SOCAL Assistant East/West (SCA E/W)
- (8) FD-1
- (9) FD-2"

100. ATCINST 3710.1A para 304 states, "Monday through Friday after 2000 local (provided CCAs, Carrier Fly-Offs, or any special exercises are not scheduled) the FWS may reduce staffing to:

- (1) Facility Watch Supervisor (FWS)
- (2) Radar Supervisor (RS)
- (3) SOCAL Controller East/West Sector (SC E/W)
- (4) SOCAL Controller North Sector (SC N)
- (5) Approach Assistant Controller (AAP)
- (6) SOCAL Assistant East/West Controller (SCAE/W)
- (7) FD-1
- (8) FD-2"

101. At the time of the mishap:

a. The Facility Watch Supervisor (FWS) and Radar Supervisor (RS) were combined and manned by Air Controlman First Class (AC1) [REDACTED]

b. The Approach Controller (AP), SOCAL Controller E/W Sector, and SOCAL Controller North Sector were combined and manned by AC2 [REDACTED]

c. The Approach Assistant Controller (AAP) and SOCAL Assistant Controller were combined and manned by AC2 [REDACTED]

d. The Approach Assistant Controller in training and SOCAL Assistant Controller in training were combined and manned by AC2 [REDACTED]

e. The Flight Data (FD) was Airman [REDACTED]

f. There was no scheduled military training in the East/West Sector, so East/West Sector positions were combined with the North Sector or Approach positions.

102. The SOCAL Range Complex Environment Impact Statement states:

a. Military aircraft routinely operate in international airspace in W-291. These aircraft take off from military airfields in California and Arizona, including the airfield at SCI (San Clemente Island), or from aircraft carriers operating offshore. Military aircraft take off from mainland airfields normally with an IFR clearance from FAA Air Traffic Control. After entering W-291, flights proceed via VFR, using a “see-and-avoid” rule to remain clear of other air traffic.

b. When W-291 is active, aircraft on IFR clearances are precluded from entering W-291 by the FAA. However, since W-291 is located entirely over international waters, nonparticipating aircraft operating under VFR are not prohibited from entering the area. Examples of aircraft flights of this nature include light aircraft, fish spotters, and whale watchers which occur under VFR throughout W-291 on a variable basis.

103. FACSAC controllers were working with several aircraft or flights of aircraft in W-291 prior to and at the time of the incident. Of note:

a. Six USMC F/A-18 Hornets, call sign “Snake,” going in and out of SCI on IFR clearances. The F/A-18s were conducting simulated carrier landings known as Carrier Controlled Approaches (CCAs, also called FCLPs);

b. One Navy SH-60 helicopter, call sign “Lonewolf 55” (“LW55”) conducting operations with USS CURTS at 200’ and below altitude approx 13 miles east of SCI;

c. Two CH-53Es and two AH-1Ws, call sign “Warhorse 53 flight of four,” a flight of four helicopters en route SHOBA.

d. One Coast Guard HC-130 aircraft, call sign “Coast Guard Rescue 1705” conducting SAR operations.

#### **Airspace/Aviation Description**

104. Formation Flight: More than one aircraft which, by prior arrangement between the pilots, operate as a single aircraft with regard to navigation and position reporting. A standard formation is one in which a proximity of no more than one mile laterally or longitudinally and within 100 feet vertically from the flight leader is maintained by each wingman. Nonstandard formations are those operating under any of the following conditions:

a. When the flight leader has requested and ATC has approved other than standard formation dimensions.

b. When the operations are conducted in airspace specifically designed for a special activity.

105. Federal Aviation Regulation (FAR) Part 91.209(a)(1) states in relevant part that “No person may, [d]uring the period from sunset to sunrise, operate an aircraft unless it has lighted position lights.”

106. The Department of the Navy was given an FAA exemption (Exemption 8028C) from compliance with FAR 91.209 (aircraft lights) to conduct NVD flight training operations without lighted position lights. The exemption includes specific requirements to mitigate the risk associated with reduced aircraft lighting. A few key conditions include:

a. Dedicated observers or dedicated observer aircraft to collectively survey entire flight for non-participating aircraft and provide timely traffic notifications to the flight,

b. Altitude restrictions of 500 feet or below,

c. A requirement that, when nonparticipating traffic is relevant, each pilot must light its position lights until the traffic is no longer a factor, and

d. Pilot familiarity with the exemption.

107. Per FAR standards, aircraft are required to display Forward and Rear Position Lights. Forward position lights are red (left) and green (right) and are displayed from 0 to 110 degrees on either side referenced from the front (nose) of the aircraft. The Rear Position Light is white and extends from the 110 degree position relative to the nose to the 180 degree (tail) position on each side of the aircraft.

108. According to the FAA, Federal Aviation Regulation (FAR) Part 91.209(a)(1) and Exemption 8028C do not apply in those portions of Warning Areas, specifically W-291, that are in international airspace, and the provisions of ICAO do not apply to military aircraft.

109. Transponder Operations

a. Pilots should be aware that proper application of transponder operating procedures will provide both VFR and IFR aircraft with a higher degree of safety in the environment where high-speed closure rates are possible. Transponders substantially increase the capability of radar to see an aircraft and the Mode C feature enables the controller to quickly determine where potential traffic conflicts may exist. Even VFR pilots who are not in contact with ATC will be afforded greater protection from IFR aircraft and VFR aircraft which are receiving traffic advisories.



b. Nevertheless, pilots should never relax their visual scanning vigilance for other aircraft.

c. In all cases, while in controlled airspace each pilot operating an aircraft equipped with an operable ATC transponder maintained in accordance with 14 CFR section 91.413 shall operate the transponder, including Mode C if installed, on the appropriate code or as assigned by ATC. In Class G airspace, the transponder should be operating while airborne unless otherwise requested by ATC.

110. FACS FACSDINST 3120.1F para 2-12 states, "Aircraft will not operate in W-291 without an operable transponder except: Multiple aircraft flights that remain joined throughout the flight (considered a single unit for ATC purposes), provided one aircraft has an operating transponder."

### **Other Relevant Assets**

111. The USS CURTS (FFG 38) was conducting training operations with an SH-60 (LW55) approximately 13 miles east of SCI prior to the incident. The USS CURTS was the first surface asset to arrive on scene after the mishap. Lonewolf 55 witnessed the explosion following the collision and was the first aviation asset on scene searching for survivors/debris besides the remaining three USMC helos.

112. The USS PELELIU (LHA 5) was conducting training approximately 20 miles southeast of the incident location. PELELIU captured video of all aircraft and subsequent explosion on LLTV. The PELELIU also was utilized for both SAR and salvage operations.

### **Weather**

113. The forecast weather for the mishap location was winds from the east (090 degrees) at 4 knots, greater than 6 miles visibility, and scattered clouds at 25,000ft.

114. The observed weather at the mishap location (San Clemente airfield (KNUC, 20NM west/northwest of mishap)) approximately 13 minutes prior to the mishap was winds from the northwest (300 degrees) at 9 knots, visibility 7 miles, scattered clouds 25,000ft.

115. Sunset occurred at 1800. The End of Evening Nautical Twilight (EENT) occurred at 1855. Moonrise occurred at 1533. At 1900, the moon elevation was 40 degrees at an azimuth of 123.4 degrees. The lux at 1900 was .044 and the moon was 87 percent illuminated.

### **Mishap Chronology**

116. At approximately 1430 D11 requested the launch of a C-130 search unit (SRU) from Air Station Sacramento.

117. At 1505 CG Sector San Diego (SD) contacted D11 to discuss options to secure training flights within W-291 for an active SAR mission. A MISLE entry reads, "Contacted D11 via Jabber to see if they will request SCI to cease ex and open island for helo to search whole north side."

118. At 1513 D11 called Sector SD and discussed SHOBA and a Navy exercise in the vicinity of SCI.

119. At 1513 the D11 SARDO initiated a call to SCI Operations (Starburst) regarding a Navy exercise off SCI. Starburst advised that Coast Guard aircraft should contact Starburst on frequency 352.1 approaching SCI.

120. At approximately 1521 D11 requested de-confliction of SHOBA airspace with SCI Operations. A MISLE entry reads, "Requested de-confliction of SOCAL Range airspace with San Clemente Ops. Called San Clemente Ops, who relayed UHF freq for CG a/c to make contact and de-conflict once in the air. Passed to SSD."

121. At 1523 the Air Station Sacramento Operations Duty Officer (ODO) placed a call to FACSFAC attempting to coordinate CG 1705's use of W-291.

122. At 1526 the D11 SARDO called Air Station Sacramento to pass that SHOBA had an on-going Navy exercise. The SARDO passed check-in instructions and the exercise information, along with the Starburst frequency, to CG 1705.

123. At approximately 1527 CG 1705 took off from Coast Guard Air Station Sacramento.

124. Prior to entering W-291, CG 1705 had requested a change in its search parameters to three nautical mile track spacing from the original one nautical mile track spacing.

125. At 1636, prior to entering W-291, CG 1705 made an initial radio check-in call with Beaver Control, informed Beaver that CG 1705 was on a SAR mission, and requested any hot areas. Beaver discussed the activity in "SALT 1 and 2" and said they would try to coordinate with SCORE to have the range go cold.

126. At 1640 CG 1705 was handed off from FAA SOCAL TRACON ("SOCAL Approach") to FACSFAC. CG 1705 arrived in W-291 and commenced searching for the skiff. Beaver said that CG 1705 was "radar contact".

127. The FACSFAC SOCAL OPAREA should not be confused with the FAA SOCAL Approach. They are different entities with different (although bordering) National Airspace responsibilities. All references to the FAA SOCAL Approach Controller will be referred to as FAA SOCAL.

128. CG 1705 was squawking 1277, an FAA-approved SAR squawk code, for its entire duration in W-291.

129. At 1651 Beaver directed CG 1705 to turn to a heading of 220 to avoid SOAR, which was an active “hot” area.

130. At 1652 CG 1705 made another request to Beaver that hot areas be cleared so that CG 1705 could complete its SAR pattern. Beaver replied that it cannot call to stop an event. CG 1705 stated that its SAR mission is an “active search and rescue case” and stated “someone needs to set priority” for the airspace. Beaver replied, “stand by for coordination.”

131. At 1701 Beaver informed CG 1705 that the “hot areas” were “cold” and CG 1705 could proceed with desired intentions and SAR mission execution.

132. At 1816:30 CG 1705 departed W-291 as it continued its search and adjusted its flight path to accommodate the new search parameters it had requested earlier. Beaver terminated radar services for CG 1705 and handed CG 1705 off to SOCAL Approach.

133. At 1828 SOCAL Approach called FACSAC via landline regarding CG 1705. SOCAL Approach stated to Beaver to “make sure you are keeping an eye on the Coast Guard squawking 1277” as CG 1705 was transiting between SOCAL and FACSAC airspace. The FACSAC controller confirmed, “Yeah, we’re watching him.”

134. At 1830, CG 1705 was heading toward the northern end of SCI where six F/A-18s were practicing carrier landing approaches (CCAs/ FCLPs) at 1200’.

135. Beaver called CG 1705 on emergency “guard” frequency to notify CG 1705 about the F/A-18 landing pattern.

136. At 1830:20 SOCAL Approach handed off CG 1705 back to FACSAC.

137. At 1830:24, 20 seconds after the “guard” radio call, CG 1705 radioed Beaver, “back with you.” Beaver replied, “I currently have scheduled FCLPs on [SCI]. I need you to proceed due south or west on 270 heading, keep you clear.”

138. CG 1705 turned to a heading of 270, then 280, at 1000’ and below, and informed Beaver it was assigned an active search area. Beaver told CG 1705 to stand by for coordination.

139. At 1832 CG 1705 relayed to D11 via Communications Area Master Station Pacific (CAMSPAC) a concern about being unable to conduct the planned search pattern due to other aircraft training activity in the area.

140. At approximately 1833, the FACSAC assistant approach controller (AAP) and the SCI Arrival Controller conferred on their land line about CG 1705’s intended flight path. The Arrival Controller informed AAP to have CG 1705 remain clear of the F/A-18 traffic and to utilize caution.

141. At approximately 1833, shortly after the conversation with AAP, the SCI Arrival Controller and FACSAC Radar Supervisor (RS) conferred via land line about CG 1705. RS said CG 1705 was going to fly right through the FCLP pattern at 1000' and below, to which Arrival responded "that's not going to happen." Arrival told RS to have CG 1705 contact SCI Tower to coordinate their intended flight path near the airfield and F/A-18 traffic.

142. At 1834 CG 1705 requested a turn to 230 for 30 miles so it could resume its assigned search area after which it would reverse course to fly back toward SCI and south of the airfield.

143. At approximately 1837, WH 53/50 departed MCAS Miramar.

144. At approximately 1845, CG 1705 turned left to 050, directly toward SCI airfield and the F/A-18 FCLP pattern.

145. At approximately 1846 V 38/39 departed MCAS Camp Pendleton.

146. At 1846 Beaver coordinated with SCI Tower to work CG 1705's SAR track around the CCAs. CG 1705 contacted SCI Tower.

147. At about this time, D11 was informed that CG 1705 had just been "kicked out" of W-291.

148. The USMC flight of four helicopters formed up as briefed with WH53/50 at approximately 400-500 feet and V38/39 at approximately 800 feet, heading westbound towards SHOBA. WH53 maintained the external communications and squawk for the flight. The other aircraft went to stand-by on their squawks.

149. The lighting configuration for the USMC helicopters per SOP was NVD-3 for CH-53s and NVD-2 for AH-1Ws.

150. Lighting per SOP for each respective aircraft (NVD-3 and NVD-2):

a. WH53: Form: Blade Tip 3; Pos: Dim; Anti-collision: OFF; IR pos: 3;  
IR collision: 3

b. WH50: Form: Blade Tip 3; Pos: Dim; Anti-collision: OFF; IR pos: 3;  
IR collision: 3

c. V38: Form: 3; Pos: Dim; Anti-collision: OFF; IR pos: 3; IR collision: ring  
3

d. V39: Form: 3; Pos: Dim; Anti-collision: ON; IR pos: 3; IR collision: ring 3

151. After the USMC helicopters rendezvoused and were proceeding to W-291, the CH-53Es demonstrated various light settings ("light show") as a training evolution for the AH-1Ws.

152. WH53 overt lighting configuration after the light show and at the time of the mishap was position lights on dim, with the exception of the white tail/position light which was off, and anti-collision light off.

153. WH50 overt lighting configuration after the light show and at the time of the mishap was position lights on dim, with the exception of the white tail/position light which was off, and anti-collision light off.

154. V38 lighting configuration after the light show and at the time of the mishap was position lights on bright, anti-collision light off, form lights unknown, overt searchlight unknown.

155. V39 lighting configuration after the light show and at the time of the mishap was position lights on bright and anti-collision light on.

156. After the light show, V39 copilot looked under his NVDs and later stated that he was unable to see the CH-53Es.

157. At approximately 1850, CG 1705 was four miles west of SCI at 1500', heading 055 at approximately 190 knots. The flight of four was at approximately 400' and was turning to a heading of 240 at approximately 120 knots. Each aircraft was at the other's 1 o'clock position and were 58 miles apart.

158. At 1850:04 WH53 contacted Beaver for clearance into W-291. WH53 informed Beaver that they were a flight of four at 500' inbound to work SHOBA. Beaver told WH53 to contact Beaver again when WH53 was entering W-291.

159. At 1852 D11 MISLE case file stated, "D11 contacted SCI Ops, at (619) 545- 9464 to de-conflict airspace issue, they have not been in contact with 1705, perhaps it was FACSFAC."

160. At 1853:59 WH53 contacted Beaver for clearance into W-291 and was cleared into the area. WH53 was not assigned a discrete Mode 3 squawk at this time and continued to squawk 1200.

161. At 1854:32 CG 1705 reported to Beaver, "Beaver, CG 1705 back with you."

162. At 1856 the flight of four helicopters entered W-291 at approximately 500', heading 225 at 115 knots. CG 1705 was seven miles east of SCI at 1000', heading 055 at 185 knots. CG 1705 and WH53 were roughly 30 nautical miles apart, at each other's 1:30 o'clock position.

163. At 1857 the D11 MISLE summary stated, "D11 contacted FACSFAC, they have also not been in contact with 1705, however they know that may be talking to SCI Tower at 619-524-9379 or SCI Radar at 619-524-9240/9249."

164. At 1859:54 CG 1705 switched frequencies to SOCAL Approach and exited W-291 to the north-northeast.

165. At 1900 the D11 SARDO called Starburst (SCORE) to further discuss SAR coordination for CG 1705. The call ended approximately 1903.

166. WH50 made an internal traffic call for a "light civil" fixed-wing traffic at about the 2-3 o'clock of the Warhorse flight.

167. The off-duty pilot in the aft compartment of WH50 later stated that he knew the traffic was not a light civil aircraft due to the size of its lights.

168. The off-duty pilot in the aft compartment of WH50 could hear radio and ICS communications, but not communicate with the pilots from his aft seating position.

169. The traffic call was identified as a "possible factor" within WH50 to the co-pilot who acknowledged the call and the traffic by saying "in sight."

170. V39 later called traffic at 2-3 o'clock to V38. V38 responded, "Tally one, visual three. We'll keep him padlocked." Stating "padlocked" means that the person saying "padlocked" will keep sight of the traffic until it is no longer a factor to the flight.

171. The "tally/visual" call was not heard by any crewmember in the CH-53Es.

172. At 1905:06 FACSFAC provided IFF squawk 0653 to WH53. There is no reply or acknowledgment from WH53.

173. At 1905:30 SOCAL Approach terminated radar service for CG 1705 and advised it to contact Beaver.

174. At 1905:48 the D11 SARDO initiated a call to FACSFAC FWS to discuss SAR priority and airspace coordination in W-291 for CG 1705. The SARDO and FWS concluded that the SAR mission was more important than practice approaches. Then FWS passed along other numbers for D11CC to continue coordination efforts.

175. At 1905:55, CG 1705 was at 1000', heading 216 degrees at 187 knots, bearing 004 degrees and approximately 5.5 nm from V38.

176. At 1905:55, V38 was at 800', heading 241 degrees at 107 knots.

177. At 1905:55 V38 was 32 degrees left of CG1705's nose. CG 1705 was approximately 123 degrees right of V38's nose.

178. At 1906:01 CG 1705 checked back into W-291 with Beaver and advised Beaver of its search/flight intentions.

179. At 1906:25, CG 1705 was at 1000', heading 226 degrees at 179 knots, bearing 012 degrees and approximately 5.2 nm from V38.

180. At 1906:25, V38 was at 800', heading 239 degrees at 116 knots.

181. At 1906:25 V38 was 34 degrees left of CG 1705's nose. CG 1705 was approximately 133 degrees right of V38's nose.

182. At 1906:48 Beaver requested, "Are you familiar with SHOBA?" Via ICS the crew stated "Familiar with Sheldon?" CG 1705 replied, "Negative for 1705."

183. At 1907:05, the Beaver controller stated he would pass SHOBA coordinates to CG 1705 and that, "SHOBA is going active for a live gun exercise surface to 5000." At this point the crew said on the ICS, "Oh, SHOBA...SHOBA."

184. For the next one and a half minutes, the Beaver controller gave IFR clearances to "Snake" aircraft returning to Miramar from SCI.

185. At 1907:31, CG 1705 was at 1000', heading 226 degrees at 187 knots, bearing 010 degrees and approximately 3.7 nm from V38.

186. At 1907:31, V38 was at 800', heading 247 degrees at 119 knots.

187. At 1907:31 V38 was 36 degrees left of CG 1705's nose. CG 1705 was approximately 123 degrees right of V38's nose.

188. At 1907:37 CG 1705 Flight Engineer reported a TCAS target. CG 1705's pilots remarked that the TCAS target was 400-600' below their altitude and visually identified a red strobe light.

189. At 1908, radar data indicated that WH53 was between 400'-500'.

190. LW55's anti-collision light was a strobe light. V39's was a rotating beacon.

191. CG 1705's pilot identified a red/white strobe at their 11:30 o'clock position appearing to go right to left and "away from us."

192. At 1908:08, WH53 called traffic and initiated a check turn to de-conflict the flight with LW55, which was approximately 2.5 nautical miles in front, to the left, and slightly below WH53.

193. In the right turn, WH50 turned on its overt search light for approximately two seconds to ensure LW55 saw them.

194. In the right turn, V39 turned on its overt search light for approximately ten seconds, aimed down and left, to ensure LW55 saw them.

195. LW55 was in the landing pattern for USS CURTS at approximately 200 feet and in a right turn.

196. Most of the USMC aircrew saw LW55 at their 10-11 o'clock position when the flight turned to the right.

197. LW55 saw a single point source of white light that appeared to be a landing light at its 11 o'clock high position, west-bound, approximately 500 feet higher than LW55.

198. LW55 was not wearing NVDs during its flight.

199. Shortly after the call from WH53 to turn right, V38 recommended that the flight climb.

200. At 1908:08, CG1705 was at 1000', heading 225 degrees at 184 knots, bearing 010 degrees and approximately 3.2 nm from V38.

201. At 1908:08, V38 was at 800', heading 244 degrees at 113 knots.

202. At 1908:08 V38 was 33 degrees left of CG 1705's nose. CG 1705 was approximately 126 degrees right of V38's nose.

203. At 1908:25, after WH53 made the right turn, CG 1705 was at 1000' heading 225 degrees at 184 knots, bearing 009 degrees and approximately 2.7 nm from V38.

204. At 1908:25, V38 was at 800', heading 259 degrees at 103 knots.

205. At 1908:25 V38 was 36 degrees left of CG 1705's nose. CG 1705 was approximately 110 degrees right of V38's nose.

206. After the right turn and climb, aircrew in WH50 could see CG 1705 and assessed CG 1705 was going aft of the flight of CH-53Es.

207. Aircrew in WH53 called traffic at 3 o'clock far, then a later call at the 4-5 o'clock position with lights that bloomed out the NVDs.

208. Aircrew in WH50 saw traffic at 2-4 o'clock at a distance and continued to monitor that traffic for several minutes. The traffic appeared to parallel the CH-53E's flight path on a westerly heading and was approximately 300 feet above flight of four.

209. The off-duty pilot in the aft compartment of WH50 described the following: "I saw, plain as day, that we had turned the flight perpendicular to the route of flight of [CG 1705] ... this was not comfortable ... the traffic call appeared to be for or from Vengeance and that they had the large, illuminated aircraft in plain [sight].... I realized at this point how quickly [CG 1705] was bearing down on our flight... it looked as if he



might be headed towards our tail.... I saw overt white lights, closing fast.... [CG 1705] made no evasive maneuvers prior to the impact.

210. None of the helicopters changed flight path in response to the traffic calls referencing CG 1705, and none of the helicopters notified any other aircraft in formation of the proximity of CG 1705.

211. At 19:08:56 Beaver advised CG 1705, "I have coordinates, advise when ready to copy," to which CG 1705 replied, "Ready to copy."

212. At 19:09:06 CG 1705 was at 1000', heading 225 degrees at 180 knots, bearing 010 degrees and approximately 1.2 nm from V38.

213. At 19:09:06, V38 was climbing from 800', heading 276 degrees at 109 knots.

214. At 19:09:06, V38 was 35 degrees left of CG 1705's nose. CG 1705 was approximately 94 degrees right of V38's nose.

215. At 19:09:06 WH53 was approximately 2.25 miles away from CG 1705 and approximately 35 degrees left of CG 1705's nose. CG 1705 was approximately 114 degrees right of WH53's nose.

216. At 19:09:08 Beaver began passing coordinates to CG 1705.

217. 19:09:16 CG 1705's Left Scanner made a traffic call at 10-11 o'clock and stated, "Got traffic on the left, appears to be crossing."

218. At 19:09:18 Beaver continued passing coordinates.

219. At 19:09:24 CG 1705's pilot acknowledged the first two corner points by stating "Roger."

220. At 19:09:27 Beaver began to pass a third corner point.

221. At 19:09:33 CG 1705's Flight Engineer called a "flight of two going in [front]."

222. At 19:09:34 CG 1705's TCAS issued an aural "Traffic, Traffic" alert.

223. At 19:09:35 CG 1705's pilot called for a climb.

224. At 19:09:36 Beaver began passing a fourth corner point.

225. At 19:09:37 CG 1705 and V38 collided.

226. At the time of impact the flight of four was heading 276 at 109 knots with WH53 at 900' and V38 at 1000'. CG 1705 was heading 226 at 184 knots and 1000'. WH53 was

0.766 nautical miles directly in front of CG 1705. V39 was 1.005 nautical miles at approximately the 9 o'clock position from CG 1705.

227. At 1910 LW55 radioed FACSFAC to report an aircraft in the water.

228. At 1910 a D11 MISLE entry stated: "Rcvd notification via USN asset of downed aircraft near SCI. Requested CAMSPAC confirm CG 1705 status for separate case."

229. At 1911 FACSFAC FWS terminated conversation with D11 SARDO upon hearing that there was an aircraft in the water.

230. At 1911 WH53 and LW55 commenced search efforts.

231. The approximate position of impact was 33N 118W, 15 miles east of SCI.

232. At 1942 the SCORE controller overheard CG 6023 (a USCG helicopter that had been diverted to assist with the search) report a wheel and strut assembly in the water, which were not from a Cobra.

233. At 2001 a D11 MISLE entry stated, "CAMSPAC air to ground confirm comms w/ CG 1705 is negative results."

234. Within one hour of the incident, both FACSFAC FWS and RC were relieved of their duties in accordance with NAVAIR 00-80T-114.

235. NAVAIR 00-80T-114 states "ATCF personnel who appear to have contributed to an accident or incident which jeopardizes safety of aircraft shall be temporarily relieved of operational duty and referred to a military flight surgeon for physical/psychological evaluation."

236. The FWS and RC were sent to the Branch Medical Clinic at North Island immediately after being relieved in order to give blood and urine samples but were told to return to the clinic the following morning. They returned and provided the requested samples the following afternoon.

237. At approximately 2030 Air Station Sacramento confirmed the serial numbers on the landing gear in the water belonged to CG 1705. At this time all parties involved (Search Assets, FACSFAC, D11) realized that CG 1705 was additional mishap aircraft.

### **Post-Mishap Search Efforts**

238. The post mishap SAR efforts were immediately initiated by LW55, the remaining USMC aircraft, and CG 6023. The active search was suspended on 01 November 09 after completing 30 sorties utilizing 435 asset hours with 5606 square miles searched.

239. The majority of the structure and engines of both mishap aircraft was never recovered from the Pacific Ocean.

240. Commander, USCG Personnel Service Center, issued preliminary determinations of death for the crew of CG 1705 on 15 November 2009, with reported date of death of 29 October 2009. All deaths were preliminarily determined to be in the line of duty and not due to misconduct.

**Miscellaneous**

241. The conversations with CG 1705 and CAMSPAC Point Reyes were not recorded.

242. D11 Command Center utilized a Digital Voice Logger (DVL); however,

a. The time synchronization was approximately one hour and five minutes different than official GMT.

b. Several DVL recordings were indecipherable or cut off.