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AUG 03 2010

MEMORANDUM

From: *Sally Bruce O'Hara*
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VCG

To: Distribution

Subj: FINAL ACTION ON THE ADMINISTRATIVE INVESTIGATION INTO THE
MIDAIR COLLISION OF CG 1705 THAT OCCURRED ON 29 OCTOBER 2009

1. Overview:

On the evening of Thursday, 29 October 2009, Coast Guard Air Station Sacramento C-130 airplane CG 1705 was conducting a search and rescue (SAR) mission in the vicinity of San Clemente Island off the California coast. The search pattern took CG 1705 in and out of airspace Warning Area 291 (W-291). Other military aircraft also were operating in W-291. At approximately 1909 Pacific Daylight Time (PDT – all times used herein are PDT, unless otherwise noted) CG 1705 and Vengeance 38 (V38), a Marine Corps AH-1W Cobra attack helicopter, collided within W-291. As a result of the collision, both aircraft were destroyed; all seven Coast Guard crewmembers and both Marine crewmembers were killed.

This document sets forth the facts that led to and evolved into this incident, states my conclusions and orders certain actions designed to prevent similar accidents in the future. The Coast Guard and the Marine Corps undertook independent administrative investigations. Both rely on a joint statement of facts which is an enclosure to this Final Action.

2. Findings of Fact and Opinions:

On the evening of 29 October 2009, Coast Guard Air Station Sacramento C-130 airplane CG 1705, with a crew of seven, was conducting a SAR mission in the vicinity of San Clemente Island, California, looking for a skiff with one person aboard that had been reported missing since 27 October 2009. The search pattern took CG 1705 in and out of W-291. CG 1705 departed Sacramento at approximately 1530, and initiated its search pattern at approximately 1640. Sunset was at 1800.

At approximately 1846, two AH-1W Cobras, V38 (the Mishap Cobra) and V39, both with a crew of two, launched from Marine Corps Base, Camp Pendleton (MCB CP) en route to W-291. The two Cobras traveled south toward Oceanside, California, where they rendezvoused with two heavy lift transport helicopters (CH-53Es), "Warhorse 53" (WH53) and Warhorse 50 (WH50) that had launched from Marine Corps Air Station Miramar (MCAS Miramar). All USMC pilots and aircrew, with the exception of one off-duty pilot in the cabin of WH50, wore night vision

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goggles (NVGs). These helicopters joined, forming a "flight of four," with WH53 as flight lead, at 500 feet altitude. WH50 was the trail, or "Dash-2" CH-53E, and was briefed to fly stepped up slightly at the 5 or 7 o'clock position from WH53. Following WH53 and WH50 were the two escort Cobras, V38 and V39, that were briefed to fly at 300 feet of step-up (i.e. 800 feet altitude) at the 5 and 7 o'clock positions of the two CH-53s. V38 was the lead Cobra, followed by V39, the trail or "Dash-2" Cobra, which also was the trail aircraft in the flight of four. After forming, the flight proceeded westbound toward W-291 to conduct an escort /assault training mission.

When multiple aircraft form a flight, they operate as a single aircraft, with respect to navigation and position reporting. The flight of four operated in this manner; i.e., only WH53, the lead aircraft, had its "Identification Friend or Foe" (IFF) transponder activated, and only V39, the rear aircraft, displayed its flashing "anti-collision light." The Mishap Cobra, V38, had its anti-collision light and IFF transponder switched off.

Other aircraft also were operating within W-291, including six U.S. Navy F/A 18 Hornet fighter jets and one Navy SH-60 (Lonewolf 55) maritime helicopter. Fleet Area Control and Surveillance Facility San Diego (FACSFAC SD), a Navy command located aboard Naval Air Station North Island, Coronado, California, provided off-shore air traffic control (ATC) within W-291.

The flight of four entered W-291 at approximately 1854 continuing west-southwest towards the Shore Bombardment Area (SHOBA) on the southern end of San Clemente Island. CG 1705, having completed a leg of its search pattern that took it out of W-291, re-entered W-291 at 1906 on a southwesterly course, where it continued searching for the missing skiff from an altitude of approximately 1000' above ground level (AGL).

At 1908, WH53, leading the USMC flight of four, which was initially on a west-southwest heading, initiated a right-hand turn to a westerly heading while climbing to approximately 1000' AGL to increase separation between the flight of four and Lonewolf 55, which was operating at approximately 2.5 miles in front of and below WH53. The three trailing helicopters in the flight of four, following WH53's lead, executed a right turn and climb, which brought the Mishap Cobra into contact with CG 1705. The collision occurred at 1909:37 at 1000' AGL in visual meteorological conditions of 7 miles. As a result of the collision, both aircraft were destroyed; all seven Coast Guard crewmembers and both Marine crewmembers were killed.

No single factor or individual act or omission caused this mishap. It was the product of a tragic confluence of events, missed opportunities, and procedure/policy issues in an airspace where most aircraft fly under a "see-and-avoid" regime (i.e. where individual aircraft de-conflict themselves).

Findings and Directed Action:

- A. I find that no misconduct was associated with the Class A flight mishap involving CG 1705 on 29 October 2009 and that the deaths of LCDR Barnes, LT Bryant, AMTC**

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Seidman, AET2 Grigonis, AET2 Beacham, AMT2 Moletzsky and AMT3 Kreder occurred in the line of duty.

I base this finding upon the following facts:

1. The CG 1705 crew members were all properly qualified in their crew positions and completed the requisite pre-flight responsibilities.
2. There is no indication that any member of the flight crew violated any procedures required by regulations, official policy or directives governing the operation of a Coast Guard C-130 from Air Station Sacramento.
3. CG 1705 was fully mission-capable with no aircraft discrepancies relevant to the mishap. There is no indication that any maintenance discrepancies occurred that affected the outcome of this flight.
4. The flight crew of CG 1705 was professional and focused on the search and rescue mission.
5. Before CG 1705 entered W-291, Rescue Coordination Center (RCC) Alameda personnel and the CG 1705 aircrew had a reasonable expectation that their SAR case would take priority over training missions within W-291, based on Federal Aviation Administration (FAA) SAR operational priority policy.

B. I find that a contributing factor to this mishap was that FACSFAC San Diego did not provide operational priority to CG 1705.

I base this finding upon the following facts:

1. FACSFAC SD is a U.S. Navy Air Traffic Control (ATC) facility based at Naval Air Station, North Island, California.
2. FACSFAC SD provides off-shore ATC control and surveillance as well as active management of the Southern California offshore military operating area, including W-291, which is "Special use Airspace," wherein military training activities are confined because of their nature, and limitations are imposed upon aircraft operations that are not part of those activities.
3. FACSFAC SD is an ATC facility with personnel trained to control airspace and provide aircraft separation. Personnel are trained to the same standards as any other FAA ATC facility.
4. Standard ATC procedures and coordination requirements apply within FACSFAC-controlled airspace.

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5. The FAA operational priority for SAR missions is third, immediately following aircraft emergencies and air medical evacuations (MEDEVAC). Maximum assistance is to be provided to SAR aircraft performing a SAR mission. There were no higher priority missions in W-291 at the time of the mishap.
6. FACSFAC SD policy states that operational missions, SAR, MEDEVAC and active Law Enforcement / Drug Interdiction will preempt Fleet Operations Area (OPAREA) activities.
7. FACSFAC SD policy provides specific guidance on conducting SAR operations when FACSFAC SD is the SAR Mission Coordinator (SMC), but is silent on procedures for coordinating with other agencies, such as the Coast Guard, conducting SAR operations within FACSFAC-SD controlled airspace, including W-291.
8. FACSFAC Virginia Capes (VACAPES), the East Coast counterpart to FACSFAC SD, policy requires that FACSFAC VACAPES be kept informed of all SAR activities within its area of responsibility in order to clear the area required by SAR missions. FACSFAC VACAPES policy does not distinguish between SAR conducted by Navy personnel and SAR conducted by other agencies, such as the Coast Guard.
9. Coast Guard District Eleven (D11) is responsible for RCC Alameda. RCC Alameda was SAR Mission Coordinator (SMC) of CG 1705's SAR case on the evening of 29 October 2009. CG 1705 was searching for a skiff with one person aboard that had been missing since approximately 2000 on 27 October 2009.
10. At the time the SAR mission began, Coast Guard RCC Alameda personnel had a reasonable expectation that the SAR case would take priority over training missions within W-291, based on FAA SAR operational priority policy. Despite several phone calls initiated by RCC Alameda and Air Station Sacramento to FACSFAC SD to coordinate CG 1705's use of W-291 for a SAR mission, including a conversation in which the FACSFAC SD Watch Supervisor agreed that the SAR mission was more important than the practice approaches being flown, FACSFAC SD never gave clear, unambiguous confirmation that CG 1705 would be given operational priority in W-291.
11. Before CG 1705 entered W-291, the CG 1705 aircrew had a reasonable expectation that their SAR case would take priority over training missions within W-291 based on FAA SAR operational priority policy.
12. CG 1705 advised FACSFAC SD of its SAR mission in a 1636 radio call prior to entering W-291. CG 1705's transponder was squawking 1277, an FAA-approved SAR code, while operating in W-291.

13. Unlike other military aircraft that might enter W-291 to conduct a mission and exit after the mission is complete, CG 1705 needed to exit and reenter W-291 numerous times to execute a mission-appropriate search pattern.
14. FACSFAC SD did not provide operational priority to the SAR mission, but instead vectored CG 1705 around live fire areas. For approximately 2.5 hours, CG 1705 communicated with FACSFAC SD repeatedly as it left and re-entered W-291 in the course of executing its search pattern; coordinated clearing or avoiding "hot areas" of Navy aviation or gunnery exercises; and received FACSFAC SD's directions to alter course. It is reasonable to conclude that these vectors would have reinforced CG 1705 crew's expectation that the headings provided by FACSFAC SD would protect CG 1705, not only from live fire areas, but also from other aircraft operating in W-291.
15. FACSFAC SD communicated frequently with CG 1705 to provide flight advisories to facilitate execution of the SAR mission. However, the FACSFAC SD Watch Supervisor and Controller did not notify CG 1705 of the flight of four, nor take steps to fully de-conflict the aircraft within W-291 by, e.g., imposing altitude and or airspace restrictions on all aircraft, or preempting training for the duration of the SAR mission.
16. FACSFAC SD did not notify the flight of four that CG 1705 was in W-291 conducting a search pattern. Shortly before the collision, and before its right turn and climb, WH50 made an internal traffic call describing a "light civil" fixed wing aircraft at around 2-3 o'clock of the Warhorse flight. The off-duty pilot in WH50, who was not wearing NVGs, stated in a later interview that he knew the traffic was not a light civil aircraft due to the size of its lights, but did not communicate that to the crew at the time, due to aircraft Internal Communication System (ICS) limitations. The WH50 copilot acknowledged the traffic call, by saying "in sight." WH50 assessed that CG 1705 would pass aft of the two CH-53Es. Additionally, shortly after 1900, and before its right turn and climb, the Dash-2 Cobra, V39, also called the traffic at 2-3 o'clock to the pilot of the Mishap Cobra, V38, who responded "Tally one, visual three. Will keep him padlocked" (i.e., will keep the traffic in sight until the pilot believes it is no longer a factor in the flight). Since V38 evidently did not have CG 1705 in sight at the time of the mishap, it is reasonable to conclude that V38's pilot thought that CG 1705 had left his vicinity and was no longer a factor in his flight. The USMC pilots would have known that CG 1705 could again become a factor in their flight and kept watch for it or stayed clear of 1000' AGL, had FACSFAC SD informed them of CG 1705's presence and SAR mission.

Action: As a result of this finding, I direct:

1. The Deputy Commandant for Operations to recommend to Commander Naval Aviation Forces (CNAF) reconciliation of its SAR prioritization policies so that all FACSFAC controllers enforce SAR operational priority and de-confliction for all SAR cases, including those in which FACSFAC is not the SMC.

2. The Deputy Commandant for Operations to direct all Coast Guard SAR units and Coast Guard Command Centers to obtain confirmation of SAR operational priority. Normally, the SAR unit (SRU)/parent command should take the necessary steps to gain SAR prioritization, but SMC assistance may be required. If the Coast Guard does not get official confirmation prior to entering an active warning area that SAR has operational priority in the airspace, then mission risk should be reevaluated by the SRU and the SMC, if practicable.
3. The Deputy Commandant for Operations to direct all Coast Guard aviation SAR units and Coast Guard Command Centers to liaise regularly with ATC facilities (FAA and military) in respective areas of responsibility (AOR) and stress the prioritization of SAR missions and airspace de-confliction. Coast Guard personnel should visit ATC facilities in their AOR, discuss Coast Guard operations with each supervisor and practice a SAR operational priority scenario with the ATC supervisor. During the visit, Coast Guard personnel shall verify the single/primary phone number/POC for each controlling area (FAA ATC Sector or Military Warning Area). Coast Guard personnel shall also obtain FAX number and/or watch floor email address to expedite the transmission of SAR mission details/charts of search areas and other search information.
4. The Deputy Commandant for Operations to direct Coast Guard SMCs and SRUs to provide verbal and visual Search Action Plans (SAP) to applicable air or surface controlling agencies for greater situational awareness.
5. The Deputy Commandant for Operations to direct all Coast Guard Air Stations to incorporate operations within Warning Areas and other Special Use Airspace into annual Op-Hazard Awareness Training.
6. The Deputy Commandant for Operations align the Operational Risk Management (ORM) instruction (COMDTINST 3500.3) with recently released Coast Guard Addendum to the National Search and Rescue Supplement to the International Aeronautical and Maritime Search and Rescue Manual to ensure risk models and methods are formalized and standardized throughout the Coast Guard. When conducting Operational Risk Management, Coast Guard personnel should consider whether and to what degree conducting SAR in special use airspace/warning areas is a factor that elevates the risk to operations.

C. I find that the flight of four's formation size and aircraft lighting, although not in violation of regulation, afforded CG 1705's flight crew little opportunity to "see and avoid" the mishap aircraft and were contributing factors to the mishap.

I base this finding upon the following facts:

1. Aircraft in W-291 are responsible for their own separation through “see and avoid” particularly in the absence of positive ATC coordination.
2. When weather conditions permit, pilots are required to observe and maneuver to avoid other aircraft. Weather conditions were not a factor in this mishap, but environmental conditions (night-time) reduced visual cues and “see and avoid” opportunities.
3. The flight of four was operating as a formation flight which, by definition, means that, by prior arrangement among the pilots, the multiple aircraft operate as a single aircraft with respect to navigation and position reporting.
4. At the time of the collision, the distance between WH53, the lead CH-53E (the only aircraft with an IFF transponder turned on (squawking), and the trail aircraft, V39 the rear or “Dash-2 Cobra,” (the only helicopter in the flight with its anti-collision light turned on), was determined to have been 7,500 feet (1.42 statute miles). This exceeded the separation distances that were briefed pre-flight for this training mission – five rotor diameters (approximately 500’) separation between the two CH-53Es, and three to five rotor diameters (approximately 150-500’) between WH50 and V38.
5. The actual separation among the aircraft within the flight of four was much greater than the participating USMC aircrews visually perceived. In post-flight interviews, the V39 pilots estimated that they trailed WH53, the lead CH-53E, by 10-12 rotor lengths (approximately 500-1000’), when in reality it was nearly 150 rotor lengths (approximately 7,500’). Although the two AH-1Ws had their steady position lights on, and the two CH-53s had their red and green steady position lights on (white rear position lights were secured), the lighting configuration of the flight of four provided little to no opportunity for other aircraft (non-participating aircraft) to detect them, especially due to the lateral (over one mile) and vertical (up to 300 feet) separation of the individual aircraft in the formation flight.
6. Any time prior to six minutes before the mishap, CG 1705’s distance from the formation flight, or its perspective to the formation (heading toward the southern CA shoreline, before it turned to the southwest), may also have contributed to obscuring the flight of four.
7. The primary means of spotting an aircraft at night visually, per FAA and International Civil Aviation Organization (ICAO) regulations, is the anti-collision light (which flashes red or white) and not the dimmer, less conspicuous, position lights that indicate aircraft aspect.
8. The sole anti-collision light representing the flight of four was on V39, which was flying approximately a mile from V38, the Mishap Cobra, at the time of the collision and approximately 1.42 statute miles from WH53, the lead CH-53E, with the only IFF

transponder activated.

9. The Mishap Cobra, V38, with its anti-collision light turned off and IFF transponder not squawking would be very difficult to detect at night. For example, the Dash-2 Cobra, V39, copilot reported that earlier in the flight he was unable to see the CH-53Es without using his NVGs. The position lights on the two CH-53Es were on dim; at the same time, the crew of V39 stated, during interviews after the accident, that V38's position lights were on bright but its anti-collision light was off.
10. CG 1705 was adequately lit to be "seen and avoided" by all aircrews, with or without NVGs. CG 1705 had the following lighting configuration: landing lights 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. USMC aircrew visually identified an aircraft, which was CG 1705, several times before the collision.
11. During post-accident interviews, USMC crew members stated that when the flight of four executed its climbing right turn, WH50 turned on its overt search light for approximately two seconds, and V39, turned on its overt search light, aimed down and left, for ten seconds in order to let Lonewolf 55 see them. Lonewolf 55 said he saw a single point of white light that appeared to be a landing light at his 11 o'clock high position, west bound, approximately 500 feet above him. Given the positions of the aircraft, it is questionable whether CG 1705 could have seen WH50 or V39 at that time.
12. Per the US Navy/USMC Helicopter Night Vision Device (NVD) Manual, any time separation between aircraft within a flight becomes overextended or if a wingman perceives an unsafe situation developing, a traffic call or a call to turn on anti-collision lights within the formation must be made on the radio.
13. The crew of CG 1705 appears never to have visually or electronically detected the Mishap Cobra, V38. However, the evidence indicates that the crew of CG 1705 visually detected several aircraft during the final few minutes of flight. The first aircraft seen by the pilots was at 1907:37 and was based on a Traffic Collision Avoidance System (TCAS) proximity target on CG 1705's TCAS display. That target visually identified by the pilots was most likely Lonewolf 55, maneuvering low over the water with position lights, an anti-collision light, and a search light illuminated. CG 1705 determined the target was low and flying away, therefore not a factor. The next visual traffic call occurred at 1909:16 by CG 1705's left scanner, approximately 20 seconds before the collision. The traffic call was, "got traffic on the left, appears to be crossing." The aircraft identified as "traffic," based on the field of view of the left scanner and radar data was most likely the Dash-2 Cobra, V39, which was displaying its flashing anti-collision light and was approximately one mile abeam of CG 1705. At the time of the traffic call, the Mishap Cobra (V38) likely would not have been in the left scanner's primary field of

view. Additionally, with CG 1705's landing lights and wing leading edge lights energized, ambient light around the left scanner's window may have obscured any steady light source dimmer than a flashing collision light. Based on the field of view, ambient lighting, and the lack of NVGs, the left scanner most likely could not detect V38's single green position light as it approached and ascended underneath CG1705.

14. At 1909:33, four seconds before impact with the Mishap Cobra, V38, CG 1705's Flight Engineer unemotionally called: "Traffic, flight of two going in front." One second later, CG 1705's TCAS issued an aural "traffic, traffic" alert, which meant it had acquired a transponding aircraft, which could only have been WH-53 (the only squawking member of the flight of four), which, at that time, was three-quarters of a mile in front of CG1705 and below 1000' AGL, with WH-50 in trail.
15. CG 1705, an HC-130H, has cockpit lighting that is not NVG compatible. CG 1705 and all 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 duties of the scanner are to search the water for the search target, to scan for air traffic and provide air traffic calls. During execution of a search pattern, a scanner's attention would be focused primarily on the surface search. Scanners are authorized but not mandated to use NVGs during night SAR missions and no NVGs were issued to CG 1705 for this SAR case.
16. Transmissions from FACSFAC may have distracted the CG 1705 crew from observing V38 as it ascended into its line of flight. At 1906:48, FACSFAC SD made a radio call to CG 1705 asking if CG 1705 was "familiar with SHOBA." Recordings of the ICS on board CG-1705 indicate that the aircrew thought the FACSFAC SD controller asked if they were familiar with "Sheldon" (the aircrew asked each other if they had heard of "Sheldon") and the CG 1705 pilot responded to FACSFAC SD "Negative for 1705." At 1907:05, the FACSFAC SD controller informed CG 1705 that "SHOBA is going active for a live gun exercise surface to 5000." At this point, the CG 1705 aircrew on the ICS said "Oh, SHOBA, SHOBA" as they realized that the controller's earlier reference had been SHOBA, vice Sheldon. CG 1705 previously had flown in W-291, as Air Station Sacramento aircraft conducted operations in W-291 approximately once a week. In addition, CG 1705 had charts of the search area aboard, and was familiar with SHOBA. From 1909:08 to 1909:36, FACSFAC SD volunteered coordinates to CG 1705, presumably to delineate the boundaries of the SHOBA, where a naval gunnery exercise was scheduled. It is not unusual for ATC to radio information such as coordinates to aircraft in flight, and pilots are accustomed to safely operating aircraft while making and responding to radio calls. Moreover, CG 1705 ICS traffic calls were occurring at the same time. Although the FACSFAC transmission of SHOBA coordinates may have been a distraction to the flight crew, it was not a causal factor in CG 1705's failure to "see and avoid" V38. I cannot, however, rule out that it was a contributing factor.

Action: As a result of these findings, I direct:

1. The Deputy Commandant for Operations to direct an aviation and flight safety program management review of flight manuals to ensure they prescribe a maximum distance allowed (vertical and lateral) for formation flights operating as a single aircraft. If a tighter formation is not feasible due to specific mission requirements, prescribe that all formation aircraft "squawk" a distinct code while non-participating aircraft are a factor in the flight. This should be clearly described in applicable flight manuals for each aircraft type and any other official service publications describing formation flights. The Deputy Commandant for Operations should recommend that Department of Defense and Department of Homeland Security conduct a similar review.
2. The Deputy Commandant for Operations to recommend that the FAA consider a review of Federal Aviation Regulations to determine if aviators would benefit from a more precise definition of formation flight, under various circumstances that would:
 - a. Prescribe maximum distance between each aircraft in formation (lateral and vertical separation) to ensure safety of flight of those aircraft not participating and to ensure controlling agencies can adequately anticipate footprint of entire flight.
 - b. Further define and delineate maximum distance between each aircraft participating in a formation flight according to multiple criteria: IFR in controlled airspace, VFR in controlled or uncontrolled airspace, and possibly day and night specifics. This would provide greater clarity for controllers, and all participating and non-participating aircraft.
 - c. Better define formation flight guidance for operating as a single aircraft with regard to navigation and position reporting. This should include minimum lighting configuration, e.g., requiring that all aircraft comply with Federal Aviation Regulations (FAR) lighting requirements unless operating under FAA waiver 8028C, and IFF transponder use, such as requiring that all formation aircraft squawk a discrete code unless otherwise directed.
3. The Deputy Commandant for Operations to work with Assistant Commandant for Acquisition to accelerate the C-130H avionics modernization program for NVG compliant/compatible cockpit. The Deputy Commandant for Operations to direct all Coast Guard Air Station Commanding Officers to reiterate to all aircrews to never underestimate criticality of "see and avoid" principles, ensure they know the importance of accurate, bold and concise traffic calls; and finally, all aircrew ensure pilots acknowledge all traffic calls to assist in determining whether traffic is a "factor" or "no factor."

4. Since FAA exemptions only apply to domestic U.S. airspace and ICAO rules only apply to civil aircraft (i.e., are not applicable to state/military aircraft),
 - a. Deputy Commandant for Operations to direct an aviation and flight safety program management review of those flight activities that take place in international airspace and not in accordance with ICAO standards, and, if applicable, accept and fully understand due regard for the safety of navigation of other aircraft, i.e., full responsibility for separation between participating aircraft and all other aircraft, both public and civil, falls on the service/agency conducting the mission.
 - b. Deputy Commandant for Operations to recommend to DoD services and other DHS agencies a similar review of those flight activities that take place in international airspace and not in accordance with ICAO standards, and, if applicable, accept and fully understand due regard for the safety of navigation of other aircraft, i.e., full responsibility for separation between participating aircraft and all other aircraft, both public and civil, falls on the service/agency conducting the mission.
5. The Deputy Commandant for Operations to recommend to FAA that it provide more restrictive language to FAR 91.209(b) regarding when pilots are allowed to secure anti-collision lights (“in the interest of safety” is too broad), and provide some specific examples, e.g., when operating in clouds where spatial disorientation could occur or when operating in formation flights at night under certain ambient light conditions. Recommend to FAA that at a minimum they provide a warning in this regulation that securing anti-collision lights will place that aircraft at a greater risk of mid-air collision and that the pilot takes on an even greater responsibility to “see and avoid” other aircraft.
6. The Deputy Commandant for Operations to recommend to FAA that all FAA exemptions to Federal Aviation Regulations clearly state that they are not applicable in international airspace or, at a minimum, state additional guidelines for pursuing an ICAO exemption.

D. I find that a contributing factor to the mishap was FACSFAC San Diego’s failure to adhere to standard air traffic control procedures, including failing to inform CG 1705 and the USMC flight of four of each other’s presence.

I base this finding upon the following facts:

1. Upon initially entering W-291 at approximately 1630, the crew of CG 1705 formally checked in with FACSFAC SD, as “Rescue 1705,” emphasized their active SAR mission, and FACSFAC SD acknowledged positive radar contact. The term “radar contact” is used by ATC to inform an aircraft that it is identified on the radar display and radar flight

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following will be provided. Upon re-entry into W-291 at 1906 (as directed by FACSFAC SD), CG 1705 stated, "back with you," the same transmission it made at 1830 and 1854 when it earlier reentered W-291. CG 1705 had reason to assume and expect (based on the previous 2.5 hours of interaction with FACSFAC SD that had included traffic advisories) that they were being given aircraft traffic advisories from FACSFAC SD to avoid hot areas and/or other aircraft.

2. Although WH53, the lead CH-53E, did not specifically request flight following / traffic advisories upon the flight's initial check-in with FACSFAC SD, the flight of four assumed and expected they were being provided flight advisories from FACSFAC SD to avoid hot areas and/or other aircraft.
3. FACSFAC SD might have been prompted to provide current traffic advisories had CG 1705 and the flight of four specifically requested "flight following" when they reentered W-291.
4. Upon entering W-291, the flight of four and CG 1705 were not given an adequate or thorough briefing from FACSFAC SD describing activities and other aircraft in W-291, thus they were unaware of each other's presence.
5. FACSFAC SD controller did not recognize that this was a situation where a Traffic Advisory or Traffic Alert was warranted for the flight of four and CG 1705. FACSFAC SD had received flight intentions (desired direction of flight, altitude), had primary and secondary radar returns on the aircraft, and had two-way communications with the lead aircraft of the flight of four and CG 1705.
6. The two CH-53Es (only aircraft monitoring FACSFAC SD Control frequency) were never advised that CG 1705 was in the immediate area conducting a search pattern.
7. CG 1705 was never advised by FACSFAC SD of the flight of four.
8. The controller failed to closely monitor the flight paths of CG 1705 and the flight of four, did not recognize the flight of four's climbing right turn, did not recognize the converging flight paths, and in the end, was extremely slow to recognize the subsequent collision of two aircraft.
9. The FACSFAC SD transmissions to CG 1705 from 1906:48 to 1909:36 that may have distracted the CG 1705 crew from seeing V38 may also have distracted the FACSFAC SD controller from observing the converging courses of CG 1705 and V38.
10. For over an hour after the mishap, the lead CH-53E, even though in constant communications with FACSFAC SD, was never informed by FACSFAC SD that there had been a C-130 in the area at the time of the mishap. FACSFAC SD did not realize the

CG 1705 was no longer on the radar display, did not realize or relay that communications were lost with the CG 1705, and subsequently did not advise the immediate SAR On-scene Coordinator, WH53, of this critical piece of information.

11. Following the mishap, the FACSFAC SD controllers were relieved of their duties and sent to provide blood and urine samples in accordance with FACSFAC SD policy. However, the process was compromised when the decision was made to have the samples provided the following morning (and, in fact, samples were not actually provided until the following afternoon). The criticality of timely blood and urine sampling of FACSFAC SD Controllers should have resulted in the recall of the duty Flight Surgeon at NAS North Island. The delay until the following day to collect samples may have significantly compromised their value.

Action: As a result of this finding, I direct:

1. The Deputy Commandant for Operations to recommend to CNAF that FACSFAC SD review all publications/training/doctrine/norms to ensure primary mission of air traffic control is safety of flight and aircraft separation. More specifically:
 - a. FACSFAC SD should establish procedures requiring positive radar contact with aircraft upon check in, prior to addressing other issues beyond immediate safety of flight issues.
 - b. FACSFAC SD should establish procedures requiring watch-standers to enforce airspace prioritization, including that SAR missions take priority over training missions.
 - c. FACSFAC SD should establish procedures requiring a more thorough in-brief, to include active/hot areas and other aircraft in area, to all aircraft upon check in.
 - d. FACSFAC SD should establish procedures requiring that controllers be aware of the size and configuration of formation flights, and consider airspace footprint and associated flight safety margins.
 - e. FACSFAC SD should establish procedures requiring one clearinghouse/gatekeeper for all air activity occurring in their OPAREA to avoid outside agencies being handed off to multiple entities within FACSFAC SD.
 - f. FACSFAC SD should reiterate to controllers that traffic advisories are always appropriate, regardless of whether radar contact is established, since aircraft separation and deconfliction responsibilities are paramount.

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INVESTIGATION INTO THE MIDAIR COLLISION
OF CG 1705 THAT OCCURRED ON 29 OCTOBER
2009

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- g. FACSFAC SD should incorporate SAR operational priority and more detailed descriptions of Facility Watch Supervisor responsibilities into their SOPs.
 - h. FACSFAC SD should review its process for immediate bodily fluid sampling for members involved in a mishap to ensure timely collection of specimens immediately following a mishap.
2. The Deputy Commandant for Operations to discuss with CNAF appropriate modified check-in/check-out procedures for SAR aircraft entering and exiting Warning Areas due to SAR search patterns. The modified procedures should ensure that the SAR aircraft receive "flight following" and traffic advisories while concurrently giving the air traffic controllers visibility on the search pattern.

3. Summary:

This accident is a reminder that we often operate in hazardous environments. Coast Guard men and women go into harm's way to train and conduct operations each day and we must diligently direct our energies to performing missions safely and effectively. The aircrew of CG 1705 epitomized the Guardian Ethos and the Nation is grateful for their service.

I am also grateful for the service of the two Marine Corps pilots who lost their lives in this accident. Each day, the extraordinary personnel of the Marine Corps selflessly put themselves in harm's way to train and execute their missions.

I commend the extraordinary performance by the Coast Guard and Department of Defense personnel who responded immediately to, and in the aftermath of, this tragic mishap. Special recognition is due to those who met the needs of grieving families, friends and shipmates impacted by this tragic loss.

Enclosures: Joint Findings of Fact
Glossary of Terms

Dist: CG-09, CG-01
CG-092, CG-094
CG-1, CG-2, CG-3, CG-4, CG-5, CG-6, CG-7, CG-DCO
All Area and District Commanders
CG FORCECOM