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# MEMORANDUM

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To: Distribution

Subj: FINAL ACTION ON THE ADMINISTRATIVE INVESTIGATION INTO THE CRASH OF CG 6523 THAT OCCURRED ON 20 APRIL 2010

1. **Overview:**

On the evening of Tuesday, 20 April 2010, Coast Guard Air Station Detroit helicopter, CG 6523, was conducting routine small boat hoist training with Coast Guard Station Port Huron's CG 41496. At approximately 2200 hours Eastern Standard Time (EST), immediately after completing night hoist training, and while transitioning to forward flight, CG 6523 crashed into Lake Huron. All three crewmembers successfully egressed the helicopter and suffered no significant injuries. CG 6523 sustained significant structural damage.

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.

2. **Findings of Fact and Opinion:**

On the evening of Tuesday, 20 April 2010, CG 6523 was conducting night hoist training with Station Port Huron's small boat CG 41496. The flight crew consisted of the pilot in command (PIC) occupying the aircraft's right seat and operating without the use of night vision goggles (NVGs); the co-pilot, acting as safety pilot (SP), occupying the left seat and operating with the use of NVGs; and the flight mechanic, who operated the hoist mechanism from the aircraft's right cabin door, aft of the PIC. At 2158:07, after completing five successful hoists, the PIC began to transition from a hover to forward flight.

The PIC directed the SP to radio CG 41496 and request that the small boat stay on station to provide support while CG 6523 performed additional approaches to the water. The PIC also directed the Flight Mechanic (FM) to complete Rescue Check List Part III and secure the hoisting gear.

As CG 6523 began transition to forward flight, the PIC directed the SP to disengage the aircraft's hover augmentation flight director mode (HOV AUG), which helps the aircraft maintain a constant altitude. The PIC gave this direction four times before the SP, occupied on the radio with CG 41496, disengaged the HOV AUG. While completing the radio call and disengaging the HOV AUG, the SP was using NVGs, but not focused on external visual cues or internal instrument readings indicating CG 6523's altitude and attitude relative to the water's surface.

After CG 6523 flew forward approximately 50 feet, the PIC lost sight of CG 41496 and had no other external references in view that might have helped him maintain situational awareness of the aircraft's attitude and altitude. PIC looked down to scan the instrument panel but did not regain his external orientation, and at 2158:47, began to lose positive control of the aircraft. At 2158:49, the PIC twice directed the SP to take control of the aircraft. The SP acknowledged these commands, but, due to CG 6523's low altitude at that moment (approximately 35 feet above the water), the SP was unable to gain control of the aircraft before impact with the water. CG 6523 entered the water at 2158:51, which was 44 seconds after transition to forward flight approximately 50 feet from the location where forward flight began, and in a 20 degrees nose down attitude at approximately 50 knots indicated airspeed.

All CG 6523 crew members quickly egressed the helicopter, surfaced within seconds of the crash, and were recovered by Station Port Huron's CG 41496. All CG 6523 crewmembers were evaluated by CG 41496's emergency medical technician (EMT) who determined that they had only minor injuries. All crewmembers were then transferred to CG 25466 and taken ashore. The PIC and SP were subsequently evaluated at a private hospital which confirmed the EMT's evaluation of no serious injuries and released to return home. The FM was not sent to a hospital for further evaluation.

CG 6523 sustained significant structural damage. The wreckage was recovered transported to the Aviation Logistics Center at Elizabeth City, North Carolina.

The PIC had more than seven years of Coast Guard helicopter flight experience. The PIC reported to Air Station Detroit on or about 1 July 2006 and was designated an HH-65C Aircraft Commander on 18 July 2007. Prior to that designation, on 18 March 2005, the PIC was designated an MH-68 Airborne Use of Force Mission Commander. On the date of the crash, it had been over three months since the PIC's last hoist training flight and more than 5 months since the PIC's last night hoist flight.

The SP was a pilot with less than a year of operational aviation experience, reported to Air Station Detroit on 13 April 2009, and qualified as a copilot/SP on 31 July 2009. On the night of the crash, it had been 5 months since the SP had participated in a night hoist flight over water.

The FM reported to Air Station Detroit on 5 November 2007 and qualified as a flight mechanic on 1 July 2009. On the night of the crash, it had been over one month since the FM's last H-65 flight and more than 4 months since the FM's last night hoist flight over water.

Night time training for approaches to the water is routinely conducted in conjunction with scheduled boat training in order to fulfill frequency requirements for these approaches. Air Station Detroit's local training boats were winterized between December of 2009 and March of 2010, which prevented Air Station Detroit from performing any local hoist training flights during that period.

3. **Findings and Directed Action:**

Although no single factor caused this mishap, it is likely that it could have been avoided had the crew been more deliberate in recognizing their limitations. The crew appeared to have rushed through over-water departure procedures, and the PIC removed flight crew back-up by directing the SP to conduct radio communications. The PIC also mismanaged the aircraft flight controls. As a result, a safe transition to forward flight became unachievable when the PIC lost all outside visual references and was unable to regain orientation via instrument scan due to CG 6523's low altitude and airspeed. The SP, distracted by radio communications, was not aware that the PIC

had lost situational awareness until directed to take control of the aircraft, by which time impact with the water was imminent.

**A. I find that no misconduct was associated with the Class A flight mishap involving the CG 6523 on 20 April 2010, and that minor injuries sustained by the flight crew occurred in the line of duty.**

I base these findings upon the following facts:

1. The flight crew was properly qualified in their crew positions, medically cleared for flight, and post-flight testing revealed no evidence of substance abuse.

2. There is no indication that any member of the flight crew intentionally violated any procedures required by regulations, official policy, or directives governing the operation of a Coast Guard H-65 from Air Station Detroit.

3. There is no indication that any maintenance actions or procedures factored in the mishap.

4. The flight crew was professional, focused on the training mission, and wearing all required personal protective gear.

**B. I find that this mishap was caused by pilot error attributable primarily to the PIC.**

I base this finding upon the following facts and opinions:

1. There is no evidence to indicate mechanical failure.

2. Flight profile, environmental conditions, and aircrew testimony indicate that while transitioning away from CG 41496, the PIC did not have sight of external references, lost situational awareness, and lost positive control of CG 6523. The PIC's disorientation and inability to control the aircraft were the primary causal factors in this mishap.

3. The PIC tasked the SP to radio CG 41496 and to disengage the HOV AUG, essentially at the same moment that PIC initiated forward flight, thereby reducing the likelihood that the SP would detect or be able to react quickly to a sudden loss of control by the PIC.

4. The SP, engaged in a radio call, did not acknowledge or react to the PIC's directive to disengage the HOV AUG until repeated a fourth time. This should have prompted the PIC to delay initiating forward flight until PIC was certain that the SP was able to concentrate full attention on the aircraft's maneuvers.

5. The PIC directed the SP to assume control of CG 6523 a mere two seconds before the aircraft impacted the water, which provided insufficient time, at 35 feet above the water, in which to gain control and prevent the crash.

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

1. FORCECOM, through Aviation Training Center Mobile, Alabama, provide fleet training to emphasize the need for pilots to establish an instrument scan and conduct an instrument take off when departing over water hover operations and avoid over-reliance on night vision goggle use.

2. FORCECOM through Aviation Training Center Mobile, AL provide fleet training to emphasize the need for the SP and FM (where appropriate) to provide instrument back up to the PICs when performing critical maneuvers.

3. Operational Commanders (term to include District Commanders and Air Station Commanding Officers throughout) ensure Air Stations emphasize the practice of flight in simulated instrument conditions in accordance with COMDTINST M3710.1F, Coast Guard Air Operations Manual section 8.4.F.1.d.

**C. I find that pilot error by the SP contributed to this mishap.**

1. There is no evidence to indicate mechanical failure.

2. Aircrew testimony indicates that while the PIC was transitioning from a hover at low altitude to forward flight, the SP was talking on the radio to CG-41496, and/or disengaging the HOV AUG as directed, and was not focused on the aircraft flight parameters.

**D. I find that lack of proficiency in conducting over water hover operations contributed to this mishap.**

I base this finding upon the following facts:

1. Prior to the date of the crash, more than three months had passed since the PIC's last hoist training flight and more than five months since the PIC's last night hoist over water.

2. Prior to the date of the crash, more than five months had passed since the SP's last night hoist flight over water.

3. Prior to the date of the crash, more than one month had passed since the FM's last H-65 flight and more than four months had passed since his last night hoist flight over water.

4. Air Station Detroit's local training boats were winterized between December of 2009 and March of 2010, which prevented Air Station Detroit from performing any local hoist training flights during that period.

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

1. Operational Commanders should emphasize the importance of factoring Days Since Last Hoist (DSLH) for each flight crew member in the Air Station training plan, and recommend Commanding Officers take action as necessary to minimize the impact of DSLH for each flight crew member.

2. Operational Commanders of rotary wing air stations with limited hoist opportunities identify external hoist training opportunities to reduce DSLH.

3. Operational Commanders provide support for proficiency deployments to air stations that are unable to conduct hoisting for extended periods.

**E. I find that inadequate command oversight contributed to this mishap.**

I base this finding upon the following facts:

1. All crewmembers were qualified and current to perform their duties:

a. The PIC qualified as an H-65 Aircraft Commander on 18 July 2007.
b. The SP qualified on the H-65 on 31 July 2009.
c. The FM qualified as a flight mechanic on 1 July, 2009.

2. On the date of the crash the SP had less than 9 months overall experience flying the H-65 and relatively little experience in over water hover operations.

3. None of the crew members had recently conducted a night hoist operation.

a. On the date of the crash, it had been over 5 months since the PIC's last night hoist over.
b. On the date of the crash, it had been 5 months since the SP participated in a night hoist over water. .
c. On the date of the crash, it had been over 4 months since the FM's last night hoist over water.

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

Operational Commanders ensure that Air Station leadership focus on overall experience level and regency of mission set experience when determining flight crew assignments to manage operational risk during all training and operational missions.

4. **Summary**:

The quick egress by all air crew members from the CG 6523 following this crash is a powerful testament to the effectiveness of the Coast Guard aviation's underwater egress (dunker) and shallow water egress (SWET) training programs.

I commend the response efforts by all Coast Guard units involved in the recovery of the crew of CG 6523 and the salvage of the airframe.

Coast Guard crews operate in a hazardous environment that requires consistent training to keep them in top operational condition. The winter environment of the Great Lakes region poses challenges to our crews to maintain proficiency. Mitigation strategies to keep our crews at the peak of operational proficiency must continue so that we can provide professional search and rescue services and prevent future mishaps.

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