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11 Apr 2022

From: CDR (b) (6), USN
To: Commander, Naval Air Forces Pacific

Subj: SUPPLEMENTAL COMMAND INVESTIGATION INTO THE FACTS AND CIRCUMSTANCES SURROUNDING THE 31 AUGUST 2021 AVIATION MISHAP THAT OCCURRED ONBOARD USS ABRAHAM LINCOLN (CVN-72)

Ref: (a) JAGINST 5800.7G, Chapter II
(b) CAPT (b) (6), USN ltr 5830 of 4 Feb 22 w/ endors.

Encl: (1) CNAP ltr 5830 SerN00 of 29 Mar 22
(2) MIST Infield Report dtd 12 Oct 21
(3) LPU 37 A/P Initial EI Report dtd 27 Jan 22
(4) LPU 37 A/P Amendment 1 to Initial EI Report dtd 31 Jan 22
(5) LPU 37 A/P Final EI Report dtd 17 Mar 22

Preliminary Statement

1. Purpose and Scope. In accordance with Reference (a), this report contains the results of the supplemental command investigation convened pursuant to Enclosure (1) to inquire into the material condition and performance of the Aviation Life Support Systems (ALSS) associated with the subject mishap and to ascertain whether any of the new information now available should change any of the conclusions or recommendations of Reference (b).

2. Executive Summary.

a. Following a 2.5 hour plane guard/search and rescue (SAR) support event on 31 August 2021, a tragic mishap occurred when Loosefoot 616 (LF616) experienced uncommanded lateral and vertical vibrations upon landing on the USS ABRAHAM LINCOLN (ABE) flight deck. As the vibrations intensified, the aircraft began a left yaw for approximately 50 degrees followed by a right yaw for approximately 200 degrees on the flight deck. The aircraft's rotor blades impacted ABE's flight deck and LF616 fell over the starboard side into the ocean.

b. On 12 October 2021 the Naval Air Systems Command (NAVAIR) Mishap Investigation Support Team (MIST) generated an In-field Investigation Report (IIR). [Enclosure 2]. The NAVAIR MIST provided a copy of the IIR to the Aviation Mishap Board (AMB) for their investigation. A copy of the IIR was not provided to the person conducting the Command Investigation (CI) since it is a separate investigation with different responsibilities.

c. The AMB requested an Engineering Investigation (EI) be completed to investigate why the LPU-37A/P (Life Preserver Unit) worn by Pilot1 was found with both beaded handles detached, right handle pulled, right side CO2 cylinder discharged, and right side inflation bladder partially deployed. [Enclosure 3]

d. The AMB also requested a second EI to review the status of the remaining Low Profile Flotation Collars (LPFC) that were worn by the mishap crew. An additional EI was requested to evaluate and document the LPU-37A/P life preserver assembly worn by Pilot1 for potential anomalies that may have prevented the LPU from functioning properly. [Enclosures 4, 5]

Findings of Fact

1. Of the six Survival Egress Air (SEA) bottles utilized by the crew only two of six the bottles were turned on. The SEA bottles not being turned on indicate that the preflight inspections were not done in accordance with NAVAIR 00-80T-123, the Aircrew Systems NATOPS. [Enclosure 2]
2. All of the mishap LPUs were analyzed. It should be noted that the ambient pressure at the recovery depth can compromise the integrity of the foil of the CO2 cartridges located in the LPU, causing the LPU to inflate without intentional action. Because of this, examination of the beaded handles and actuation levers were of critical importance. An inflated LPU with unsecured beaded handles and an unseated actuation lever can be said to have been intentionally actuated. The LPUs belonging to CC1 and Pilot1 were intentionally actuated. [Enclosure 2]
3. The LPU worn by Pilot1 had a serviceable left side inflation assembly and air bladder. The LPU worn by Pilot1 also had a serviceable right side inflation assembly. The right bladder was found to have a leak from the right side oral inflation valve. The oral inflation valve was in a "depressed/open state" which facilitated air escaping. When and why the valve became stuck open in relation to the mishap event cannot be determined. [Enclosure 3]
4. Improper CO2 cartridge installation cannot be ruled out as a contributing factor to the incomplete bladder inflation for Pilot1's LPU. [Enclosure 5]
5. Pilot2's LPU was found to have inconsistencies relative to specifications, maintenance requirements, and expected conditions. During lab functional testing, the left inflation assembly did not hold pressure due to an unseated CO2 cylinder piercing pin rod pressure seal. The timeline or cause of the failed pressure seal cannot be definitively determined due to extended exposure to the salt water environment and post-mishap handling and storage conditions. The lab functional testing also revealed a one-inch split/puncture through the inflation shell on the right bladder preventing the right inflation assembly from holding pressure following full inflation, the LPU was recovered fully packed with no damage to the outer casing. [Enclosure 5]

Opinions

1. This mishap casts doubt on the functionality and reliability of LPU-37A/P and LPU-34B/P ALSS equipment. [Findings of Fact 2-5]
2. The ALSS gear was recovered after being exposed to salt water at a depth of 5000'. Exposure to the salt water and pressure make it difficult, if not impossible to determine the timeline of LPU actuations. It is plausible that the LPU was actuated at a depth where the subsequently provided inflation was insufficient to overcome the ambient water pressure. [Findings of Fact 1]

Recommendations

1. This supplemental Command Investigation concurs with the original recommendations of Reference (b).
2. In addition to the recommendations made by the original Command Investigation it is recommended that:
   a. An EI be conducted to determine at what depth a properly functioning LPU fails to provide effective flotation with a fully burdened life vest.
   b. The results of the original CI and supplemental CI be briefed to all pertinent commands addressing the importance of properly preflighting SEA bottles, proper attachment procedures for Emergency Release Assemblies, and the importance of correctly installing and utilizing crashworthy seats.
   c. A random functional check be conducted on 22 Ready For Issue (RFI) in-service LPUs from different squadrons to determine if LPU functionality is an issue endemic to the fleet.
   d. Amend the requirements Naval Aviation Survival Training Program to require both auto inflation and manual inflation of at least one of lobe for aircrew that utilize the LPU-37A/P and LPU-34B/P.

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