UNITED STATES AIR FORCE
ABBREVIATED AIRCRAFT ACCIDENT
INVESTIGATION BOARD REPORT

MQ-9A, T/N 14 – 4267

319TH EXPEDITIONARY RECONNAISSANCE SQUADRON
432D WING
CREECH AIR FORCE BASE, NEVADA

LOCATION: KANOYA AIR BASE, JAPAN

DATE OF ACCIDENT: 22 August 2023

BOARD PRESIDENT: LIEUTENANT COLONEL CHRISTOPHER C. HENDERSON

Conducted in accordance with Chapter 12 of Air Force Instruction 51-307

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR COMBAT COMMAND

OFFICE OF THE DEPUTY COMMANDER
205 DODD BOULEVARD, SUITE 203
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01 AUG 2025

ACTION OF THE CONVENING AUTHORITY

The report of the abbreviated accident investigation board conducted under the provisions of Air Force Instruction 51-307, *Aerospace and Ground Accident Investigations*, that investigated the 22 August 2023 mishap in Japan, involving an MQ-9A, T/N 14-4267, and operated by the 319th Expeditionary Reconaissance Squadron, complies with applicable regulatory and statutory guidance, and is hereby approved.

MICHAEL G. KOSCHESKI
Lieutenant General, USAF
Deputy Commander

EXECUTIVE SUMMARY
UNITED STATES AIR FORCE
ABBREVIATED AIRCRAFT ACCIDENT INVESTIGATION

MQ-9A, T/N 14-4267
KANOYA AIR BASE, JAPAN
22 AUGUST 2023

On 22 August 2023 at 02:02:44 Zulu time (Z), an unmanned MQ-9A, the mishap aircraft (MA), impacted and subsequently departed Runway 08 at Kanoya AB, Japan (KAB). The accident sheared off a portion of the MA's left wingtip, bent the propeller blades, and collapsed the landing gear, resulting in a complete loss of the MA. The MA was operated remotely by the mishap crew (MC), who were a Launch and Recovery Element (LRE) that was comprised of the mishap pilot (MP) and mishap sensor operator (MSO). There was no reported damage to civilian property, no injuries, and no fatalities. The loss of government property was valued at $21,500,000.

Earlier at 02:02:11Z, the MA's landing gear touched down normally on the runway at KAB. Upon touch down, the MP moved the mishap ground control station (MGCS) throttle lever to the ground idle position per procedure, and the MA began to decelerate, as normal. Three seconds later, the MGCS lost uplink to the MA, indicated to the MC by a loud audible beep, red display warning showing "LOS uplink-LOST" (line of sight), and the camera switching from daylight TV to infrared. The MA entered high speed lost link logic (HSLLL), automatically setting engine power to full to initiate a go-around maneuver without the MP's input. The MP's throttle lever in the MGCS remained in the ground idle position from the manual landing attempt. The HSLLL accelerated the MA to takeoff airspeed and lifted off the runway. Six seconds after liftoff, MGCS uplink was restored. Because of this, control automatically transferred back to the MP, and the MA reverted to the MGCS's throttle lever position of ground idle. This caused the MA airspeed to drop, resulting in a stall. Four seconds after uplink was restored, the MA stalled and forced it to descend. At 02:02:40Z, 17 seconds after the MA lifted off, the MP commanded the MGCS throttle lever full forward and commanded a steep pitch up. The excessive increase in pitch exacerbated the stall. At 02:02:44Z, the MA impacted the runway and subsequently came to rest in the infield.

The Abbreviated Accident Investigation Board President (AAIBP) found, by a preponderance of the evidence, that the two causes of the mishap were: (1) the loss of uplink from the MGCS to the MA upon landing touchdown and (2) the MP's failure to execute the go around procedure and the MSO's failure to verify the throttle and pitch setting while the MA lost uplink and executed a HSLLL go around. The AAIBP also found, by a preponderance of the evidence, that the following three factors substantially contributed to the mishap: (1) a poor environment for datalink integrity, (2) the MC overlooked a caution/warning and (3) once the MP recognized the MA was in a stall the MP over-controlled the MA, exacerbating the stall.

SUMMARY OF FACTS AND STATEMENT OF OPINION
MQ-9A, T/N 14-4267
KANOYA AIR BASE, JAPAN
22 AUGUST 2023

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ACRONYMS AND ABBREVIATIONS

319 ERS	319 Expeditionary Reconnaissance Squadron
432 WG	432d Wing
AAIB	Abbreviated Accident Investigation Board
ACC	Air Combat Command
AFE	Aircrew Flight Equipment
AGL	Above Ground Level
AFI	Air Force Instruction
AFMAN	Air Force Manual
AOA	Angle of Attack
AOR	Area of Responsibility
ATLC	Automatic Takeoff and Landing Capability
BP	Board President
Capt	Captain
MC	Mishap Crew
MCE	Mission Control Element
MGCS	Mishap Ground Control Station
MP	Mishap Pilot
PGDT	Portable Ground Data Terminal
MSO	Mishap Sensor Operator
PACS	Portable Aircraft Control System
PSO	Pilot Sensor Operator
REC	Recorder
RCM	Redundant Control Module
SAR	Search and Rescue
SATCOM	Satellite Communications
SMSgt	Senior Master Sergeant
SOP	Standard Operating Procedure
T/N	Tail Number
TSgt	Technical Sergeant
TV	Television
USAF	United States Air Force
USINDO-PACOM	United States Indo-Pacific Command
Z	Zulu

SUMMARY OF FACTS

1. AUTHORITY AND PURPOSE

a. Authority

On 22 May 2024, the Deputy Commander, Air Combat Command (ACC), appointed Lieutenant Colonel Christopher C. Henderson as the Abbreviated Accident Investigation Board (AAIB) President to investigate a mishap that occurred on 22 August 2023 involving an MQ-9A aircraft at Kanoya Air Base (KAB), Japan (Tab Y-1 to Y-2). The AAIB was conducted virtually in accordance with Air Force Instruction (AFI) 51-307, *Aerospace and Ground Accident Investigations Air Combat Command Supplement,* Chapter 12, from 24 June 2024 to 28 May 2025 (Tab Y-4 to Y-9). Additional board members included a Captain (Capt) Legal Advisor, a Capt Pilot Member, a Senior Master Sergeant (SMSgt) Maintenance Member, a Technical Sergeant (TSgt) Recorder, and a TSgt Subject Matter Expert (Tab Y-1 and Y-3).

b. Purpose

In accordance with AFI 51-307, *Aerospace and Ground Accident Investigations*, this AAIB conducted a legal investigation to inquire into all the facts and circumstances surrounding this Air Force aerospace accident, prepare a publicly releasable report, and obtain and preserve all available evidence for use in potential litigation, claims, disciplinary action, and adverse administrative action.

2. ACCIDENT SUMMARY

On 22 August 2023 at 02:02:44 Zulu time (Z), an unmanned MQ-9A, the mishap aircraft (MA), impacted and subsequently departed Runway 08 at Kanoya AB (KAB) (Tabs J-2 and P-1). The accident sheared off a portion of the MA's left wingtip, bent the propeller blades, and collapsed the landing gear, resulting in a complete loss of the MA (Tabs J-4 and S-1 to S-8). The MA was operated remotely by the mishap crew (MC), who were a Launch and Recovery Element (LRE) that was comprised of the mishap pilot (MP) and mishap sensor operator (MSO) deployed performing duties for U.S. Indo-Pacific Command under the 319th Expeditionary Reconnaissance Squadron with their home unit being the 489th Attack Squadron at the 432d Wing, Creech Air Force Base, Nevada (Tabs CC-7 to CC-8, G-11, G-44, G-53, and G-55). There was no reported damage to civilian property, no injuries, and no fatalities. The loss of government property was valued at $21,500,000 (Tab P-1).

Earlier at 02:02:11Z, the MA's landing gear touched down normally on the runway at KAB (Tabs J-3, N-12). Upon touch down, the MP moved the mishap ground control station (MGCS) throttle lever to the ground idle position per procedure, and the MA began to decelerate, as normal (Tabs BB-3 and J-3). Three seconds later, the MGCS lost uplink to the MA, indicated to the MC by a loud audible beep, red display warning showing "LOS uplink-LOST" (line of sight), and the camera switching from daylight TV to infrared (Tabs J-3, BB-8). The MA entered high speed lost link logic (HSLLL), automatically setting engine power to full to initiate a go-around maneuver without the MP's input. (Tabs J-3, BB-11, and DD-2). The MP's throttle lever in the MGCS remained in the ground idle position from the manual landing attempt (Tabs J-5 to J-6, N-12). The

HSLLL accelerated the MA to takeoff airspeed and lifted off the runway (Tabs J-5 to J-6). Six seconds after liftoff, MGCS uplink was restored (Tab J-3). Because of this, control automatically transferred back to the MP, and the MA reverted to the MGCS's throttle lever position of ground idle (Tab J-5 to J-6). This caused the MA airspeed to drop, resulting in a stall (Tab J-5 to J-6). Four seconds after uplink was restored, the MA stalled and forced it to descend (Tabs J-3, N-13). At 02:02:40Z, 17 seconds after the MA lifted off, the MP commanded the MGCS throttle lever full forward and commanded a steep pitch up (Tab J-3). The excessive increase in pitch exacerbated the stall (Tabs J-6, BB-17). At 02:02:44Z, the MA impacted the runway and subsequently came to rest in the infield (Tab J-2).

3. BACKGROUND

a. Air Combat Command (ACC)

ACC, headquartered at Joint Base Langley-Eustis, Virginia, is one of nine major commands (MAJCOMs) in the United States Air Force (Tab CC-1). For more than seven decades, ACC has served as the primary provider of air combat forces to America's warfighting commanders (Tab CC-2). ACC organizes, trains, and equips Airmen who fight in and from multiple domains to control the air, space, and cyberspace (Tab CC-1). As the lead command for fighter, command and control, intelligence, surveillance and reconnaissance, personnel recovery, persistent attack and reconnaissance, electronic warfare, and cyber operations, ACC is responsible for providing combat air, space, and cyber power and combat support that assures mission success to America's warfighting commands (Tab CC-1).

b. 432d Wing (432 WG)

The 432 WG is located at Creech AFB, Nevada (Tab CC-2 to CC-3). The 432 WG was returned to active service in May 2007 as the U.S. Air Force's first unmanned (and later remotely piloted) aircraft systems wing (Tab CC-3). The wing's mission is to conduct unmanned precision attack and intelligence, surveillance, and reconnaissance combat missions in support of overseas contingency operations (Tab CC-2 to CC-4).

c. 319th Expeditionary Reconnaissance Squadron (319 ERS)

The 319 ERS was reactivated in 2022 to provide unmanned reconnaissance in the North Pacific at Kanoya Air Base (Tab CC-5 to CC-6) The Squadron then moved to Kadena Air Base in 2023 (Tab CC-7 to CC-8).

d. MQ-9A – Reaper

The MQ-9A Reaper is an armed, multi-mission, medium-altitude, long-endurance remotely piloted aircraft that is employed primarily against dynamic execution targets and secondarily as an intelligence collection asset (Tab CC-4). Given its significant loiter time, wide-range sensors, multi-mode communications suite, and precision weapons -- it provides a unique capability to perform strike, coordination, and reconnaissance against high-value, fleeting, and time-sensitive targets (Tab CC-4). Reapers can also perform the following missions and tasks: intelligence, surveillance, reconnaissance, close air support, combat search and rescue, precision strike, buddy-lase, convoy/raid overwatch, target development, and terminal air guidance (Tab CC-4). The MQ-

9's capabilities make it uniquely qualified to conduct irregular warfare operations in support of combatant commander objectives (Tab CC-4).

4. SEQUENCE OF EVENTS

a. Mission

On 22 August 2023, the MA conducted an operational mission, at an undisclosed location within the United States Indo-Pacific Command (USINDOPACOM) Area of Responsibility (AOR), originating from KAB (Tabs D-1 and N-1).

b. Planning

The flight authorizations and paperwork for the MA and MGCS were in order (Tab DD-2). The MC received all required weather and operations briefs from the Operations Supervisor prior to flight (Tab DD-2). H e r e , the MP acted as his own Operations Supervisor for his shift. Due to low manning, there was not a dedicated Operations Supervisor (Tab DD-2). There is no evidence that this was a factor in the mishap (Tab DD-2).

c. Preflight

The MC, consisting of the MP and the MSO, conducted a crew briefing per Air Force Manual (AFMAN) 11-2MQ-9, Volume 3 and the squadron standards prior to assuming control of the MA (Tabs BB-20 to BB-21 and DD-22). The MC was aware of MA previous datalink issues (Tabs K-79, N-3, N-5, N-8, and N-12). Specifically, a ground data terminal (GDT) antenna that facilitates linkage was replaced twice but passed operational checks both times. (Tabs N-16 and J- 5-5).

d. Summary of Accident

Handover from the Mission Control Element (MCE) to the MC took place at approximately 01:46:00Z (Tab J-3). The MC was in control for the remainder of the flight, including the mishap sequence (Tab J-3). The MP intended to conduct an Automatic Takeoff and Landing Capability (ATLC) landing, however the MA was too high above glideslope so the MP decided to take control to conduct a manual landing (Tabs J-3+, N-2, N-4 to N-5, and N-11).

The aircraft was configured for a manually piloted landing attempt and descended toward the runway on a stable approach, touching down without issue at 02:02:11Z (Tabs J-3 and N-12). At this time, the MP moved the MGCS throttle lever to ground idle position per flight manual procedure, and the MA began to decelerate (Tabs J-3, N-12, and BB-4). At 02:02:14Z, the MGCS lost uplink to the MA, which was indicated to the MC by a loud audible beep, red display warning showing “LOS uplink-LOST”, and the camera switching from daylight TV to infrared (Tabs J-3, N-12, and BB-8). The MA entered high-speed lost-link logic, automatically setting engine power to full and initiating a go-around maneuver (Tabs J-3 and BB-11). The objective of the HSLLL is to provide safe, autonomous maneuvering to get away from the ground, personnel, and structures during takeoff or landing, regain link with the ground station, and return to a recovery location if necessary, all without pilot input (Tab BB-2 and BB-11).

When the uplink was lost and HSLLL initiated, the aircraft accelerated, and autopilot pitch

increased per normal HSLLL operation (Tab J-5). When the aircraft lifted back off the runway at 02:02:23Z after the HSLLL was initiated the MP throttle lever was still set to the ground idle position instead of full forward, the latter which is directed by flight procedure (Tabs J-5, BB-3, and BB-22). Additionally, the sensor operator must confirm the throttle position and pitch command by visually checking the pilot's control inputs are set for a positive rate of climb (Tab BB-22). Based off the MGCS recordings, the MC was unaware that the MA entered HSLLL but recognized it was going around (Tab N-12). It is a LRE MQ-9A community-wide standard procedure to match aircraft settings to those commanded automatically by the HSLLL when uplink is lost or to turn off the Ground Data Terminal (GDT) during loss of uplink (Tabs N-14, R-22, BB-18, and DD-1). This is also discussed during every departure or arrival crew brief in the emergency considerations section (Tabs K-78, BB-25, and DD-1). Matching throttle settings or disconnecting the MGCS are appropriate steps because if the uplink is restored, the MA reverts to real-time pilot control settings if the MA was in a manual landing at the time HSLLL initiated (Tabs J-5 and BB-15). Matching throttle settings to HSLLL and/or disconnecting the MGCS (which would keep an aircraft in autopilot setting rather than revert control back to a pilot) are considered executing a go-around procedure in the circumstances of this report.

At 02:02:29Z, uplink was restored (Tab J-3). The MA matched the MP's throttle lever position at ground idle causing the MA airspeed to drop, resulting in a stall. (Tabs J-5 and B-15). A stall is a loss of lift and an increase in drag that occurs when an aircraft is flown at an angle of attack/pitch attitude greater than the angle for maximum lift (Tabs BB-17 and DD-1). The aircraft climbed to a peak altitude at 02:02:33Z and airspeed continued to decrease while the MA descended (Tab J-3). At 02:02:40Z, while descending, the MP moved throttle lever to the full forward position and commanded a steep pitch up (Tab J-3 to J-6). The MA entered a stall and continued to descend towards the ground (Tab J-5 to J-6). The "Missed Approach/Go Around" procedure states: "The decision to go around should be made as early as possible. When the decision is made to go around, the pilot will simultaneously raise the nose of the aircraft above the horizon and advance full throttle (Tab BB-18)." The recommended pitch up attitude is significantly lower than the MP commanded (Tabs J-6 and DD-2). Extreme nose-high pitch attitude should be resolved with stable go-around pitch commands (Tabs J-5, BB-18, and DD-2). Failing to execute and maintain the recommended go-around pitch may cause the aircraft to exceed the safe pitch limits and risk ground contact, potentially damaging the aircraft. (Tabs J-5, BB-18, and DD-2).

e. Impact

The MA impacted the runway at 02:02:44Z (Tab J-3). Soon after both brakes were applied, the engine was shut down by the MP (Tab J-3). As a result, the MA experienced a hard landing causing damage to the landing gear (Tab J-4). Following the impact, the MA veered off the runway, causing further damage to the propeller blades and a collision with a light box that severed the left wingtip (Tabs J-4 and S-1 to S-8).

f. Egress and Aircrew Flight Equipment (AFE)

Not applicable.

g. Search and Rescue (SAR)

Not applicable.

h. Recovery of Remains

Not applicable.

5. MAINTENANCE

a. Forms Documentation

A review of the maintenance records for the MA and MGCS leading up to the day of the mishap show that the following issues were documented, signed off, and cleared with the applicable technical data and operational checks (Tabs D-1 to D-109 and DD-1).:

- 06 July 2023, the Tactical Fiber Optic Cable Assembly (TFOCA, often shortened to "fiber-optic") between the MGCS and the MGDT was "snapped" and inoperable. The cable was subsequently removed and replaced, and the GDT passed an operational check (Tab J-58).
- 27 July 2023, the TFOCA was removed and reinstalled to facilitate other maintenance (unspecified in available records). Following this maintenance, the GDT passed an operational check (Tab J-58).
- 03 August 2023, a 28-day Phase Maintenance Inspection (PMI) was completed on the MA. Following this inspection, the aircraft passed an operational check (Tab J-58).
- 10 August 2023, the TFOCA was removed and reinstalled (reason was not specified in available records). Following this maintenance, the GDT passed an operational check (Tab J-58).
- 12 August 2023, the upper directional antenna on the MA was replaced following a discrepancy of degraded Line-of-Sight (LOS) signal. The aircraft passed a C-band operational check (Tab J-58).
- 21 August 2023, it was reported that the upper directional antenna on the MA was slow to slew toward the GDT during turns, resulting in lost-link events. The aircraft passed C-band and Redundant Control Module (RCM) operational checks (Tab J-58).

All preflight, through-flight, postflight inspections, and release procedures were conducted, and there were no overdue Time Compliance Technical Orders (TCTO) (Tabs D-1 to D-109 and DD-1). There is no evidence that forms documentation was a factor in the mishap (Tab DD-1).

b. Inspections

All Inspections were current and documented by all relevant authorities (Tabs D-1 to D-109 and DD-1). There is no evidence that this was a factor in the mishap (Tab DD-1).

c. Maintenance Procedures

All maintenance procedures conducted by maintenance personnel were in accordance with applicable Technical Orders (TOs) and guidance (Tabs D-1 to D-109 and DD-1). There is no evidence that this was a factor in the mishap (Tab DD-1).

d. Maintenance Personnel and Supervision

There is no evidence that this was a factor in the mishap (Tab DD-1).

e. Fuel, Hydraulic, Oil, and Oxygen Inspection Analyses

There is no evidence that this was a factor in the mishap (Tabs D-182 to D-183 and DD-1).

f. Unscheduled Maintenance

Maintenance records were reviewed for the MA and MGCS leading up to the day of the mishap (Tab D-1 to D-109). There is no evidence that this was a factor in the mishap (Tab DD-1).

6. AIRFRAME, MISSILE, OR SPACE VEHICLE SYSTEMS

a. Structures and Systems

Datalink: The MQ-9A datalink consists of two parts: a radio frequency uplink/command link and a downlink/return link (Tab BB-1). Both components establish a two-way communication link between the aircraft and the GCS (Tab BB-1). When functioning correctly, a continuous stream of control commands is transmitted to the aircraft, and the aircraft transmits a continuous stream of status and imagery data to the GCS (Tab BB-1). An uplink is transmitted from a GCS to an aircraft while a downlink is transmitted from an aircraft to the GCS (Tab BB-1).

HSLLL: When the uplink is interrupted and the arming time has passed without regaining the uplink, the flight computer begins lost-link logic (Tab BB-9). If the aircraft is below the Initial Lost Link Altitude (ILLA), the aircraft will enter a climb state and begin a flyover waypoint out in the direction of the Initial Lost Link Heading (ILLH, usually aligned with runway heading) (Tabs J-5 and BB-12). Once the aircraft climbs to ILLA at the flyover waypoint, it will begin executing the emergency mission (Tabs J-5 and BB-12). If the uplink is regained at any time, all lost-link logic will be reset, and real-time control (if not previously in autonomous flight) will be reestablished (Tabs J-5 and BB-15). Here, the MA was not in autonomous flight when the uplink was lost, so a regained MGCS uplink caused the MA to resume the MC's commanded settings (Tab J-5).

b. Evaluations and Analysis

Eight components, critical to the uplink system, were removed from the MA and sent to the General Atomics-Aeronautical Systems Incorporated (GA-ASI) for inspection and testing (Tab J-4 to J-5 and J-58). No obvious damage was present on any hardware (Tab J-58). Of the eight

components tested only the Upper Directional Antenna Cable (W027) had degraded performance and provided minimal output showing it was close to complete failure prior to testing. (Tab J-59). This testing showed the cable's P1 connector was damaged (Tab J-64). This cable had been replaced on 12 August 2023, ten days before the mishap. Because this cable was damaged and not properly transmitting data, the MC was forced to use a different antenna configuration that was suboptimal for landing (Tab J-62 and J-64).

GA-ASI also conducted testing on the mishap GDT (Tab J-59). During testing, it was found that the fiber optic links between the mishap GDT and MGCS were degraded but had significant improvement when switched to copper connection (Tab J-59). However, the copper connection still suffered degraded performance (Tab J-59). The GDT was further found to have alignment discrepancies (Tab J-64). GA-ASI assessed that these GDT issues, coupled with the suboptimal antenna configuration resulted in a poor environment for datalink integrity (Tab J-64). GA-ASI could not determine how uplink was restored during the mishap sequence (Tab J-65).

7. WEATHER

a. Forecast Weather

The forecast weather provided to the MC was winds at 090 at 7 knots, clear visibility, and no significant weather (Tabs F-1 to F-5 and N-11). There is no evidence that weather was a factor in the mishap.

b. Observed Weather

There is no evidence observed weather was a factor in the mishap. (Tabs F-1 to F-5 and N-11 to N-12).

c. Space Environment

Not applicable.

d. Operations

There is no evidence indicating the MA operated outside of prescribed operational weather limits (Tabs F-1 to F-5 and N-11 to N-12).

8. CREW QUALIFICATIONS

a. Mishap Pilot

The MP was current and qualified to instruct and conduct launch and recovery duties in the MQ-9A at the time of the mishap (Tab G-1). MP had 1536.8 hours of MQ-9A flight time and 150.7 hours of MQ-9A simulator time around the time of the mishap (Tab G-47). The total flight time and sorties for the previous 30, 60, and 90 days are set forth below (Tab G-46 to G-50).

	Flight Hours	Flight Sorties
Last 30 Days	4.8	19
Last 60 Days	14.4	42
Last 90 Days	26	48

b. Mishap Sensor Operator

The MSO was current and qualified to conduct launch and recovery duties in the MQ-9A at the time of the mishap (Tab G-1). MSO had 199.4 hours of MQ-9A flight time and 540.2 hours of MQ-9A simulator time around the time of the mishap (Tab G-94). The total flight time and sorties for the previous 30, 60, and 90 days are set forth below (Tab G-92 to G-97):

	Flight Hours	Flight Sorties
Last 30 Days	4.8	18
Last 60 Days	13.6	40
Last 90 Days	21.1	45

9. MEDICAL

a. Qualifications

All crew members were medically qualified for their specific duties at the time of the mishap (Tab G-98 to G-99). There is no evidence that this was a factor in the mishap (Tab G-98 to G-99).

b. Health

Not applicable.

c. Pathology

Toxicology test samples were collected from members after the mishap (Tab G-98 to G-99). The toxicology reports show no evidence that this was a factor in the mishap (Tab G-98 to G-99).

d. Lifestyle

There is no evidence that this was a factor in the mishap (Tab G-98 to G-99).

e. Crew Rest and Crew Duty Time

There is no evidence that this was a factor in the mishap (Tab DD-1).

10. OPERATIONS AND SUPERVISION

a. Operations

When the MA impacted the runway, the MC was less than twenty minutes into their planned 30-minute sortie and the MC was less than two hours into their six-hour shift (Tabs J-3, R-3, and DD-1). There is no evidence that this was a factor in the mishap (Tab DD-2).

b. Supervision

There is no evidence that this was a factor in the mishap (Tab DD-2).

11. HUMAN FACTORS ANALYSIS

a. Introduction

The Department of Defense Human Factors Analysis and Classification System 8.0 (DoD HFACS 8.0) lists potential human factors that can play a role in aircraft mishaps and identifies potential areas of assessment during an accident investigation (Tab DD-3 to DD-5). Two human factors were identified as relevant to this mishap (Tab DD-2).

b. Relevant Factors Identified by AAIB

(1) Overlooked Caution/Warning (AE 205) is when the mishap individual disregarded an accurately perceived and understood caution or warning in favor of addressing what they perceive to be a greater immediate threat, which resulted in the near-miss or mishap. (Examples include audible alarm, flashing light, verbal communication, etc.) The error may be a result of competing inputs/priorities, preconditions of the individual, or the operating environment. (Tab DD-5)

(2) Over-Controlled/Under-Controlled Aircraft/Vehicle/Vessel or System (AE104) is when the mishap individual(s) inappropriately reacted to conditions by either over- or under-controlling the aircraft/vehicle/vessel/system, which resulted in the near-miss or mishap. (Examples include applying too much or too little pressure, oversteering/understeering, improper braking, etc.) (Tab DD-4)

12. GOVERNING DIRECTIVES AND PUBLICATIONS

a. Publicly Available Directives and Publications Relevant to the Mishap

AFI 51-307, *Aerospace and Ground Accident Investigations*
AFI 51-307, *Aerospace and Ground Accident Investigations*, ACC Supplement
AFMAN 11-2MQ-9 V1, MQ-9, *Aircrew Training*
AFMAN 11-2MQ-9 V3, MQ-9, *Operations Procedures*
AFMAN 11-202 V3, *Flight Operations*

NOTICE: All directives and publications listed above are available digitally on the Air Force Departmental Publishing Office website at: https://www.epublishing.af.mil.

b. Other Directives and Publications Relevant to the Mishap

Human Factors Analysis and Classification System, Version 8.0

TO lQ-9(M)A-1, Flight Manual, 31 March 2023

TO 1Q-9(M)A-1-1, Flight Manual, 11 July 2022

c. Known or Suspected Deviations from Directives or Publications

TO 1Q-9(M)A-1, Flight Manual, 31 March 2023, paragraph 2.45

TO 1Q-9(M)A-1, Flight Manual, 31 March 2023, paragraph 3.37

AFMAN 11-2MQ-9 V3, MQ-9, *Operations Procedures*, 10 January 2022, paragraph 3.10.2.2.

HENDERSON.CHRISTOPHER.C. Digitally signed by HENDERSON.CHRISTOPHER.C. Date: 2025.07.25 20:03:00 -06'00'

25 July 2025

CHRISTOPHER C. HENDERSON, Lt Col, USAF
President, Abbreviated Accident Investigation Board

STATEMENT OF OPINION

MQ-9A, T/N 14-4267
KANOYA AIR BASE, JAPAN
22 AUGUST 2023

Under 10 U.S.C. § 2254(d) the opinion of the accident investigator as to the cause of, or the factors contributing to, the accident set forth in the accident investigation report, if any, may not be considered as evidence in any civil or criminal proceeding arising from the accident, nor may such information be considered an admission of liability of the United States or by any person referred to in those conclusions or statements.

OPINION SUMMARY

On 22 August 2023 at 02:02:44 Zulu time (Z), an unmanned MQ-9A, the mishap aircraft (MA), impacted and subsequently departed Runway 08 at Kanoya AB, Japan (KAB). The accident sheared off a portion of the MA's left wingtip, bent the propeller blades, and collapsed the landing gear, resulting in a complete loss of the MA. The MA was operated remotely by the mishap crew (MC), who were a Launch and Recovery Element (LRE) that was comprised of the mishap pilot (MP) and mishap sensor operator (MSO) from the 489th Attack Squadron, 432d Wing, Creech Air Force Base, Nevada deployed performing duties for U.S. Indo-Pacific Command under the 319th Expeditionary Reconnaissance Squadron. There was no reported damage to civilian property, no injuries, and no fatalities. The loss of government property was valued at $21,500,000.

Earlier at 02:02:11Z, the MA's landing gear touched down normally on the runway at KAB. Upon touch down, the MP moved the mishap ground control station (MGCS) throttle lever to the ground idle position per procedure, and the MA began to decelerate, as normal. Three seconds later, the MGCS lost uplink to the MA, indicated to the MC by a loud audible beep, red display warning showing "LOS uplink-LOST" (line of sight), and the camera switching from daylight TV to infrared. The MA entered high speed lost link logic (HSLLL), automatically setting engine power to full to initiate a go-around maneuver without the MP's input. The MP's throttle lever in the MGCS remained in the ground idle position from the manual landing attempt. The HSLLL accelerated the MA to takeoff airspeed and lifted off the runway. Six seconds after liftoff, MGCS uplink was restored. Because of this, control automatically transferred back to the MP, and the MA reverted to the MGCS's throttle lever position of ground idle. This caused the MA airspeed to drop, resulting in a stall. Four seconds after uplink was restored, the MA stalled and forced it to descend. At 02:02:40Z, 17 seconds after the MA lifted off, the MP commanded the MGCS throttle lever full forward and commanded a steep pitch up. The excessive increase in pitch exacerbated the stall. At 02:02:44Z, the MA impacted the runway and subsequently came to rest in the infield.

CAUSE

As the Abbreviated Accident Investigation Board President, I find, by a preponderance of the evidence, that the two causes of the mishap are: (1) the loss of uplink from the MGCS to the MA upon landing touchdown and (2) the MP's failure to execute the go around procedure and the MSO's failure to verify the throttle and pitch setting while the MA lost uplink and executed a HSLLL go around.

First, the MA experienced a loss of uplink shortly after MA touchdown onto the runway. If not for the loss of uplink the MC would have been able to normally land the MA safely. Second, the go around procedure is executed by the pilot simultaneously raising the nose of the aircraft above the horizon and advancing to full throttle, or to turn off the GDT during loss of uplink. Additionally, once go-around is initiated, the sensor operator must confirm the throttle position and pitch command by visually checking the pilot's control inputs are set for a positive rate of climb. Failure of the MC to execute and verify these actions led to the MA stalling once uplink was restored, because the MA reverted to the MP's throttle command for ground idle due to the MA's previous manual landing setting. As a result, the MA experienced a hard landing, resulting in damage to the landing gear. Following the impact, the aircraft veered off the runway, causing further damage to the propeller blades and a collision with a light box that severed the left wingtip resulting in a complete loss of the MA.

3. SUBSTANTIALLY CONTRIBUTING FACTORS

Further, I find, by a preponderance of the evidence, that the following three factors substantially contributed to the mishap: (1) a poor environment for datalink integrity (2) the MC overlooked a caution/warning (AE 205) and (3) once the MP recognized the MA was in a stall the MP over-controlled the MA (AE 104), exacerbating the stall.

(1) Several factors combined to produce a poor environment for datalink integrity, which contributed to the loss of uplink experienced during the mishap sequence. The Upper Directional Antenna Cable (W027) on the MA had degraded performance and provided minimal output due to a damaged P1 connector. Because this cable was damaged and not properly transmitting data through the MA's antenna, the MC was forced to use a different antenna configuration that was suboptimal for landing. Also, the mishap GDT suffered from alignment discrepancies coupled with degraded fiber optic connections between the mishap GDT and MGCS.

(2) The MC overlooked the caution/warning indications of a loud audible beep, red display warning showing "LOS uplink-LOST," and the camera switching from daylight TV to infrared. All these cues signified that the MA lost uplink and had entered HSLLL. The MC failed to match full throttle setting that is commanded by the HSLLL or to sever the mishap GDT which are the two common practices executed when an aircraft loses uplink in accordance with the squadron's and the larger launch and recovery MQ-9 community standard operating procedures (SOP). The MC was aware of previous link issues that were experienced daily during their deployment. Additionally, lost link and landing emergency procedures are part of the standard crew preflight brief. The mishap cockpit transcript shows the MP was aware that an emergency option was to disconnect the mishap GDT from the MA. Given this and the MC's combined extensive MQ-9A flight experience, the MC should have been prepared for this situation.

(3) Once the MP recognized the MA was in a stall, the MP over-controlled the MA by commanding a steep pitch up attitude which was substantially higher than what is recommended for a go-around. This action exacerbated the stall.

4. CONCLUSION

Aircraft data logs, witness testimony, technical reports, and operational and maintenance practices

prove, by a preponderance of the evidence, that the two causes of the mishap were: (1) the loss of uplink from the MGCS to the MA upon landing touchdown and (2) the MP's failure to execute the go around procedure and the MSO's failure to verify the throttle setting while the MA lost uplink and executed a HSLLL go around. The proper procedure would have been for the MP to simultaneously raise the nose of the MA above the horizon and advance full throttle, or to turn off the mishap GDT from the MA. Failure of the MC to execute and verify these actions led to the MA stalling once uplink was restored. As a result, the MA experienced a hard landing that damaged the landing gear. Following the impact, the aircraft veered off the runway, causing further damage to the propeller blades and a collision with a light box that severed the left wingtip. Further, I find, by a preponderance of the evidence, that the following three factors substantially contributed to the mishap: (1) a poor environment for datalink integrity (2) the MC overlooked a caution/warning and (3) once the MP recognized the MA was in a stall the MP over-controlled the MA, exacerbating the stall.

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25 July 2025

CHRISTOPHER C. HENDERSON, Lt Col, USAF
President, Abbreviated Accident Investigation Board

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