

**UNITED STATES AIR FORCE**  
**ABBREVIATED AIRCRAFT ACCIDENT**  
**INVESTIGATION BOARD REPORT**



**MQ-1B, T/N 02-3100**

**432D AIR EXPEDITIONARY WING  
CREECH AFB, NV**



**LOCATION: UNITED STATES CENTRAL COMMAND AREA  
OF RESPONSIBILITY**

**DATE OF ACCIDENT: 21 AUGUST 2017**

**BOARD PRESIDENT: LT COL ALFRED J. ROSALES**

**Abbreviated Accident Investigation, conducted pursuant to  
Chapter 11 of Air Force Instruction 51-503**



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS AIR COMBAT COMMAND  
JOINT BASE LANGLEY-EUSTIS VA

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07 FEB 2019

**ACTION OF THE CONVENING AUTHORITY**

The report of the Abbreviated Accident Investigation Board, conducted under the provisions of AFI 51-503, that investigated the 21 August 2017 mishap in the United States Central Command Area of Responsibility, involving an MQ-1B, T/N 02-3100, assigned to the 432d Wing, Creech Air Force Base, Nevada, and operated by the 432d Air Expeditionary Wing, Creech Air Force Base, Nevada, complies with applicable regulatory and statutory guidance, and on that basis it is approved.

**CHRISTOPHER P. WEGGEMAN**  
Lieutenant General, USAF  
Deputy Commander

**EXECUTIVE SUMMARY  
UNITED STATES AIR FORCE  
ABBREVIATED AIRCRAFT ACCIDENT INVESTIGATION**

**MQ-1B, T/N 02-3100  
US CENTCOM AOR  
21 August 2017**

On 21 August 2017, at 0811 Zulu (Z), the mishap aircraft (MA), a remotely piloted MQ-1B, tail number (T/N) 02-3100, from the 432d Wing, Creech Air Force Base (AFB), Nevada (NV), was lost in the United States Central Command Area of Responsibility (US CENTCOM AOR) while participating in a combat support mission. At the time of the mishap, the MA was being operated by the 432d Air Expeditionary Wing, Creech AFB, NV. During normal flight operations, the mishap crew permanently lost the ability to monitor and control the aircraft (“lost link”) while flying medium altitude approximately 90 minutes into the mission. The destroyed MA was recovered from the impact site and the estimated cost of the aircraft and environmental clean-up was \$5,269,650. There were no reported fatalities or injuries.

The MA lost link approximately 36 minutes after a crew changeover brief. At the moment of the lost link event, the aircraft was operating normally at an altitude of 13,000 feet. According to aircrew statements, the mishap crew were troubleshooting the lost link when radar control facilities notified them of the MA crash. Weather was not a factor. The cockpit equipment and the maintenance of the cockpit was not a factor. The training and 72-Hour/7-Day History review of the mishap crew did not highlight any notable factors. The launch and recovery crews and their contract maintenance teams were not a factor. The contractor, General Atomics – Aeronautical Systems Incorporated (GA-ASI), completed analysis of the MA and determined the most likely cause of the accident was the failure of the Primary Control Module (PCM), which is a critical part of the flight control systems. No evidence contradicted GA-ASI’s conclusion.

Accordingly, the Abbreviated Accident Investigation Board (AIB) President determined, by a preponderance of the evidence, the cause of the mishap was a failure of the MA’s internal PCM, resulting in the aircraft’s inability to continue flight. There was insufficient evidence of additional substantially contributing factors.

*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.*

**SUMMARY OF FACTS AND STATEMENT OF OPINION**  
**MQ-1B, T/N 02-3100**  
**21 AUGUST 2017**

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## ACRONYMS AND ABBREVIATIONS

12 AF	12th Air Force	GCS	Ground Control Station or Cockpit
432 WG	432d Wing	GP	Ground Pilot
ACC	Air Combat Command	GSO	Ground Sensor Operator
AF	Air Force	HFACS	Human Factors Analysis and Classification System
AFB	Air Force Base	IAW	in accordance with
AFI	Air Force Instruction	MA	Mishap Aircraft
AFTO	Air Force Technical Order	MCE	Mission Combat Element
AFLCMC/WIIQL	Air Force Life Cycle Management Center/ MQ-1 System Program Office Logistics Section	MP	Mishap Pilot
AGL	Above Ground Level	MSO	Mishap Sensor Operator
AAIB	Abbreviated Accident Investigation Board	MSL	Mean Sea Level
AB	Air Base	MTS	Multi-Spectral Targeting System Notices to Airmen
AIB	Accident Investigation Board	ORM	Operational Risk Management
AOR	Area of Responsibility	PCM	Primary Control Module
ATO	Air Tasking Order	RPA	Remotely Piloted Aircraft
CC	Commander	SIB	Safety Investigation Board
CS	Chief of Safety	T/N	Tail Number
CTR	Contractor	TO	Technical Order
DoD	Department of Defense	USAF	United States Air Force
GA-ASI	General Atomics Aeronautical Systems Incorporated	US CENTCOM	United States Central Command
		V	Volume
		Z	Zulu Time or Greenwich Mean Time

The above list was compiled from the Summary of Facts, the Statement of Opinion, the Index of Tabs, and Witness Testimony (Tab V).

# SUMMARY OF FACTS

## 1. AUTHORITY AND PURPOSE

### a. Authority

On 24 July 2018, Major General Patrick M. Wade, Deputy Commander, Air Combat Command (ACC), appointed Lieutenant Colonel Alfred Rosales as the Abbreviated Accident Investigation Board (AAIB) President to investigate the 21 August 2017 accident involving a MQ-1B aircraft, tail number (T/N) 02-3100 (Tab Y-2 and Y-3). An AAIB was conducted at Nellis Air Force Base (AFB), Nevada (NV), from 7 August 2018 to 28 August 2018, in accordance with (IAW) the provisions of Air Force Instruction (AFI) 51-503, *Aerospace and Ground Accident Investigations*, Chapter 11 (Tab Y-2 and Y-3). A legal advisor (Captain) and a recorder (Staff Sergeant) were also appointed to the AAIB (Tab Y-2).

### b. Purpose

IAW AFI 51-503, 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 litigation, claims, disciplinary action, and adverse administrative action.

## 2. ACCIDENT SUMMARY

On 21 August 2017, at approximately 0811 Zulu (Z), the mishap aircraft (MA), a remotely piloted MQ-1B aircraft with T/N 02-3100, operated by the 432d Air Expeditionary Wing (432 AEW), was lost in the United States Central Command Area of Responsibility (US CENTCOM AOR) during a combat support mission (Tabs V-4.1, CC-10, DD-4 and DD-8). During normal flight operations, the mishap crew permanently lost the ability to monitor and control the aircraft (“lost link”) (Tabs R-3, R-14, V-1.1, and V-2.1). The destroyed MA was recovered from the impact site, and the estimated cost of the aircraft and environmental clean-up costs was \$5,269,650 (Tabs P-2 and DD-6). There were no reported fatalities or injuries (Tab Q-5).

## 3. BACKGROUND

The MA belonged to the 432d Wing (432 WG), Twelfth Air Force (12 AF), ACC, based at Creech AFB, NV, but was operated by the 432 AEW during the mishap (Tabs K-2 to K-3, Q-5, V-4.1, and CC-8 to CC-10).

### **a. Air Combat Command**

ACC is a major command of the United States Air Force (USAF) and the primary force provider of combat airpower to America's warfighting commands, established to support global implementation of national security strategy (Tab CC-2). ACC operates fighter, bomber, reconnaissance, battle-management and electronic-combat aircraft (Tab CC-2 to CC-3). It also provides command, control, communications and intelligence missions, and conducts global information operations (Tab CC-2). As a force provider and Combat Air Forces lead agent, ACC organizes, trains, equips and maintains combat-ready forces and aircraft for rapid deployment and employment while ensuring strategic air defense forces are ready to meet the challenges of air sovereignty and air defense (Tab CC-2 to CC-3 and CC-5). ACC numbered air forces provide the air component to United States Central, Southern and Northern Commands, with Headquarters ACC serving as the air component to Joint Forces Commands (Tab CC-2 to CC-4 and CC-10). ACC also augments forces to all combatant commands (Tab CC-2).



### **b. Twelfth Air Force**

12 AF, or Air Forces Southern, enables combat ready forces for rapid global employment; and receives and employs joint air component assets to meet US strategic objectives in the United States Southern Command Area of Responsibility (Tab CC-5). 12 AF is responsible for United States air and space operations in Central America, South American and the Caribbean and its subordinate commands operate more than 360 aircraft with more than 20,300 uniformed and civilian Airmen (Tab CC-5).



### **c. 432d Wing and 432d Air Expeditionary Wing**

The 432 WG consists of combat-ready Airmen who fly and maintain the MQ-1 Predator and MQ-9 Reaper remotely piloted aircraft (RPA) in direct support to the joint forces warfighter (Tab CC-8 to CC-10). The 432 WG also trains aircrew, intelligence, weather, and maintenance personnel for RPA operations (Tab CC-10). The RPA systems provide real-time intelligence, surveillance and reconnaissance (ISR), as well as precision attack against fixed and time-critical targets (Tab CC-10). The veteran combat unit returned to active service on 1 May 2007, at Creech AFB, NV, as the 432 WG, and formed the U.S. Air Force's first unmanned aircraft (later, RPA) systems wing (Tab CC-15). In doing so, the 432 WG took charge of existing and rapidly expanding unmanned precision attack and ISR combat missions there in support of overseas contingency operations (Tab CC-15). On 15 May 2008, the provisional 432 AEW activated at Creech AFB to offer the fullest possible spectrum of leadership to these fights, while complementing the operate, train and equip efforts of the 432 WG (Tab CC-15).





#### **d. MQ-1B Predator**

The MQ-1B Predator is an armed, multi-mission, medium-altitude, long endurance RPA that is employed primarily as an intelligence-collection asset and secondarily against dynamic execution targets (Tab CC-11). 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-11). Predators can also perform the following missions and tasks: intelligence, surveillance and reconnaissance, close air support, combat search and rescue, precision strike, buddy-lase, convoy/raid overwatch, route clearance, target development, and terminal air guidance (Tab CC-11). The MQ-1B's capabilities make it uniquely qualified to conduct irregular warfare operations in support of combatant commander objectives (Tab CC-11).



The Predator carries the Multi-spectral Targeting Systems (MTS), which integrates an infrared sensor, color/monochrome daylight TV camera, image-intensified TV camera, laser designator and laser illuminator (Tab CC-11). The full-motion video from each of the imaging sensors can be viewed as separate video streams or fused (Tab CC-11). The aircraft can employ two laser-guided Hellfire missiles that possess high accuracy, low-collateral damage anti-armor/anti-personnel engagement capabilities (Tab CC-11).

The aircraft is employed from a ground control station (GCS), commonly known as a cockpit, via a line-of-sight datalink or a satellite datalink for beyond line-of-sight operations (Tab CC-11 to C-12). The basic crew for the Predator is a rated pilot to control the aircraft and command the mission and an enlisted aircrew member to operate sensors and weapons inside the cockpit (Tab CC-11).

### **4. SEQUENCE OF EVENTS**

#### **a. Mission**

On 21 August 2017 at 0626Z, the Mission Combat Element (MCE) mishap crew accomplished a changeover brief to continue an assigned 432 AEW ATO authorized combat support mission in the US CENTCOM AOR (Tabs R-3, V-2.1, V-4.1, and AA-6). The mishap crew consisted of the Mishap Pilot (MP) and Mishap Sensor Operator (MSO) (Tabs K-3, V-5.1, and AA-6).

#### **b. Planning**

There is no evidence to suggest the mishap crew's mission planning was a factor (Tab V-4.1). Flight authorization and certification paperwork were completed (Tabs G-13 to G-14, G-23 to G-24, and AA-5). The risk management assessment was low, and there was no adverse weather (Tabs F-2 and AA-4 to AA-5).

#### **c. Preflight**

No relevant discrepancies were noted in the maintenance records for the MA, and neither the mishap crew nor maintenance personnel made a statement of any outstanding issues with the MA

or cockpit prior to takeoff (Tabs R-14, R-48, V-1.1, and V-3.1). At the time of the mishap, the MA had accumulated 19,547 total flight hours and was not overdue for any inspections (Tab D-2 and D-43).

#### **d. Summary of Accident**

On 21 August 2017, at approximately 0811Z, the MA was lost in the US CENTCOM AOR while participating in a combat support mission and flying at a medium altitude of approximately 13,000 feet Mean Sea Level (MSL) (Tabs R-25 and S-2). Approximately 90 minutes into the MCE's flight, and approximately 36 minutes after a crew changeover in the same cockpit, the MA lost link (Tabs R-3, R-14, R-25, V-1.1, V-2.1, V-4.1, AA-6, and DD-8). During the troubleshooting effort with maintenance personnel, radar facilities notified the mishap crew that they had lost contact with the MA and it had crashed (Tabs R-25 and DD-2). The deployed installation's leadership coordinated the recovery of the aircraft in the US CENTCOM AOR (Tabs V-4.1 and DD-5 to DD-7).

There is no evidence the MA attempted to fly the emergency mission prior to the mishap (Tab J-3). A lost link event occurs when the cockpit loses satellite link with the aircraft (Tab V-4.1). The aircraft has an emergency mission logic that it executes when a lost link event occurs (Tab V-4.1). The emergency mission logic is input by the mission pilot (Tab V-4.1). In this case, when the MA lost link, it should have flown or attempted such a preset emergency mission (Tab V-4.1).

#### **e. Impact**

The MA impact location was in the US CENTCOM AOR, and the wreckage was recovered by the deployed installation (Tabs V-4.1, S-2 and DD-7).

#### **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 leading up to the mishap day revealed no relevant discrepancies or issues, and showed no overdue Time Compliance Technical Orders, time change items, or special inspections (Tab D-2 to D-62). However, the PCM had malfunctioned during

routine checks and was replaced on 15 August 2017 (Tabs D-62 and R-41). There were no issues with the installation or post-installation checks of the PCM (Tab R-41 to R-42). Prior to launch, there was no evidence of procedural violations on the MA's flight and post- and pre-flight inspections (Tab D-3 to D-12).

#### **b. Inspections**

There was no evidence of maintenance inspection discrepancies (Tab D-2 to D-3). An Air Force Technical Order (AFTO) Form 781H indicated the MA was inspected prior to its last flight (Tab D-3).

#### **c. Maintenance Procedures**

There was no evidence to suggest that maintenance procedures were not conducted IAW applicable AFTOs and guidance (Tab D-2 to D-62).

#### **d. Maintenance Personnel and Supervision**

There was no evidence to suggest preflight servicing and maintenance was inadequately documented by military and civilian maintenance personnel (Tab D-2 to D62). No evidence existed that the training, qualifications, and/or supervision of the maintenance personnel were factors in this mishap (Tab D-2 to D-62).

#### **e. Fuel, Hydraulic, and Oil Inspection Analyses**

According to the MA's AFTO 781H forms, fluid levels checks/inspections were conducted before and after the mishap mission, with insignificant findings (Tab D-4 to D-7).

#### **f. Unscheduled Maintenance**

Maintenance documentation revealed no unscheduled maintenance prior to the mishap (Tab D-2 to D-62).

## **6. AIRFRAME, MISSILE, OR SPACE VEHICLE SYSTEMS**

#### **a. Structures and Systems**

Maintenance personnel inspected the mishap cockpit following the incident and did not note any issues (Tab DD-8).

#### **b. Evaluation and Analysis**

Following the lost link event, maintenance personnel downloaded the MCE data logs from the cockpit and sent them to the Air Force Life Cycle Management Center – MQ-1 Predator System Program Office Logistics Section (AFLCMC/WIIQL) for review (Tab DD-8). AFLCMC/WIIQL conducted an analysis of the cockpit data logs and variables that pointed to the cause of the lost link event originating within the Primary Control Module (PCM) (Tab DD-10). During the contractor's post-mishap technical review of the aircraft's PCM, the inconsistent behavior of the

PCM during post-mishap testing, the review of the data logs, and the video analysis led the General Atomics Aeronautical Systems Incorporated (GA-ASI) analysts to conclude the lost link event was likely caused by an intermittent issue within the PCM's processor or possibly a failure of the internal circuit board itself (Tab DD-10 to DD-11). The PCM is a critical component for flight operations in the MQ-1B (Tab BB-8).

In the Wreckage Inspections and Testing section of the report, the GA-ASI analyst also stated the PCM damage was likely the result of improper handling during shipping or when the unit was in storage (Tab DD-15). However, the maintenance procedures clearing the aircraft for flight operations, the successful flight operations for approximately 90 minutes, and the interview statement from the deployed Battle Space Flight Services Senior Technician who installed the PCM contradict this portion of the GA-ASI report (Tabs D-3, R-3, R-13, R-45 to R-52, V-1.1, V-2.1 and V-3.1).

## **7. WEATHER**

### **a. Forecast Weather**

No data was available regarding the weather slides briefed to the mishap crew (Tab F-2). However, no turbulence, icing, or lightning was reported (Tab F-3).

### **b. Observed Weather**

No significant weather was reported or observed at the time of the mishap (Tab F-2 to F-5). No turbulence, icing, or lightning was observed (Tab F-3). Low clouds were observed in the southern region, but none elsewhere in the AOR (Tab F-3).

### **c. Space Environment**

Not Applicable.

### **d. Operations**

No evidence suggests that the MA was operated outside of prescribed operational weather limits (Tab F-2 to F-5).

## **8. CREW QUALIFICATIONS**

### **a. Mishap Pilot**

The MP was current and qualified to conduct mission combat element operations in the MQ-1B at the time of the mishap (Tab G-13). The MP had 1681 hours of MQ-1B flight time around the time of the mishap (Tab G-17). Recent MQ-1B flight hours were as follows (Tab G-17):

	Flight Hours	Flight Sorties
Last 30 Days	29.6	9
Last 60 Days	36.1	11

Last 90 Days	36.1	11
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**b. Mishap Sensor Operator**

The MSO was current and qualified to conduct mission combat element operations in the MQ-1B at the time of the mishap (Tab G-23). The MSO had 2409 hours of MQ-1B flight time (Tab G-25). Recent MQ-1B flight hours were as follows (Tab G-26):

	Flight Hours	Flight Sorties
Last 30 Days	53.8	14
Last 60 Days	67.9	19
Last 90 Days	67.9	19

**9. MEDICAL**

**a. Qualifications**

No evidence exists to suggest crews were not qualified for flight duty (Tab K-2).

**b. Health**

No evidence exists to suggest the health of the mishap crews contributed to the mishap (Tab R-15 to R-22 and R-26 to R-33).

**c. Pathology/Toxicology**

Toxicology was not a factor in this mishap (Tab EE-3 to EE-4).

**d. Lifestyle**

No evidence suggests the mishap crew members' lifestyles were a factor in the mishap (Tab R-22 to R-23 and R-34 to R-35).

**e. Crew Rest and Crew Duty Time**

Prior to performing in-flight duties, aircrew members must have proper rest, as defined in the ACC Supplement to AFI 11-202, Volume (V) 3, *General Flight Rules*, ACC Supplement (Tab BB-5 to BB-6). AFI 11-202 V3 defines normal crew rest as a minimum of a 12-hour non-duty period before the designated flight duty period begins (Tab BB-6). Crew rest is defined as free time and includes time for meals, transportation and the opportunity to sleep (Tab BB-6). The mishap crew verified they had received the proper crew rest by signing the pre-flight authorization (Tab AA-5).

**10. OPERATIONS AND SUPERVISION**

### **a. Operations**

There is no evidence to suggest operations tempo contributed to the mishap (Tab V-4.1).

### **b. Supervision**

There is no evidence that supervision contributed to the mishap (Tab V-1.1 to V-5.1).

## **11. HUMAN FACTORS ANALYSIS**

The AAIB considered all human factors as prescribed in the Department of Defense (DoD) Human Factors Analysis and Classification System (HFACS), Version 7.0, to determine those human factors that directly related to the mishap (Tab BB-2). Based on the evidence, human factors did not play a factor in this mishap.

## **12. GOVERNING DIRECTIVES AND PUBLICATIONS**

### **a. Publicly Available Directives and Publications Relevant to the Mishap**

- (1) AFI 51-503, *Aerospace and Ground Accident Investigations*, 14 April 2015, Incorporating AFGM2018-01, 12 March 2018
- (2) AFI 51-503, *Aerospace Accident Investigations*, ACC Supplement, 28 January 2016
- (3) AFI 11-2MQ-1&9, Volume 1, *MQ-1&9 - Aircrew Training*, 23 April 2015
- (4) AFI 11-2MQ-1&9, Volume 3, *MQ-1 and MQ-9 - Operations Procedures*, 28 August 2015
- (5) AFI 11-202, Volume 3, *General Flight Rules*, ACC Supplement, 28 November 2012
- (6) AFI 91-204, *Safety Investigations and Reports*, 27 April 2018

**NOTICE:** All directives and publications listed above are available digitally on the Air Force Departmental Publishing Office website at: <http://www.e-publishing.af.mil>.

### **b. Other Directives and Publications Relevant to the Mishap**

- (1) DOD HFACS, Version 7.0

### **c. Known or Suspected Deviations from Directives or Publications**

There is no evidence to suggest that any directive or publication deviations occurred during this mishap.

22 January 2019

  
ALFRED J. ROSALES, Lt Col, USAF  
President, Abbreviated Accident Investigation Board

# STATEMENT OF OPINION

## MQ-1B, T/N 02-3100 US CENTCOM AOR 21 AUGUST 2017

*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.*

### 1. OPINION SUMMARY

On 21 August 2017, at 0811 Zulu (Z), the mishap aircraft (MA), a remotely piloted MQ-1B, tail number (T/N) 02-3100, from the 432d Wing, Creech Air Force Base (AFB), Nevada (NV), was lost in the United States Central Command Area of Responsibility (US CENTCOM AOR) while participating in a combat support mission. At the time of the mishap, the MA was operated by a mission combat event (MCE) from the 432d Air Expeditionary Wing, Creech AFB, NV. During normal flight operations, the mishap crew permanently lost the ability to monitor and control the aircraft (“lost link”) while flying medium altitude approximately 90 minutes into the mission. The destroyed MA was recovered from the impact site, and the total Government loss was valued at \$5,269,650. There were no reported fatalities or injuries.

The MA lost link approximately 36 minutes after a crew changeover brief, resulting in an inability to monitor and control the aircraft. At the moment of the lost link event, the MA was operating normally at an altitude of 13,000 feet. Based on statements, the mishap crew started troubleshooting the lost link when radar control facilities notified them of the MA crash.

### 2. CAUSE

The preponderance of the evidence indicates the cause of the mishap was failure of the Primary Control Module (PCM). During the contractor’s post-mishap technical review of the MA’s PCM, the inconsistent behavior of the PCM during post-mishap testing, the review of the data logs, and the video analysis led the General Atomics Aeronautical Systems Incorporation (GA-ASI) analysts to conclude the lost link event was likely caused by an intermittent issue within the PCM’s processor or possibly a failure of the internal circuit board itself. The PCM is a critical component for flight operations in the MQ-1B.

In the Wreckage Inspections and Testing section of the report, the GA-ASI analyst further stated the PCM damage was likely the result of improper handling during shipping or when the unit was in storage. The maintenance procedures clearing the aircraft for flight operations, the successful flight operations for approximately 90 minutes, and the interview statement from the deployed Battle Space Flight Services Senior Technician who installed the PCM contradict this portion of the GA-ASI report.

### **3. SUBSTANTIALLY CONTRIBUTING FACTORS**

I find no preponderance of evidence indicating any substantially contributing factors.

### **4. CONCLUSION**

I find, by a preponderance of the evidence, the cause of the mishap was a failure of the MA's internal PCM resulting in the MA's inability to continue flight. There was insufficient evidence of additional substantially contributing factors.

22 January 2019

  
ALFRED J. ROSALES, Lt Col, USAF  
President, Abbreviated Accident Investigation Board



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