UNITED STATES AIR FORCE
AIRCRAFT ACCIDENT INVESTIGATION
BOARD REPORT

F-16C, T/N 86-0322

18TH FIGHTER INTERCEPTOR SQUADRON
354TH FIGHTER WING
EIELSON AIR FORCE BASE, ALASKA

LOCATION: EIELSON AIR FORCE BASE, ALASKA

DATE OF ACCIDENT: 28 MAY 2024

BOARD PRESIDENT: LIEUTENANT COLONEL RYAN H. OOT

Conducted IAW Air Force Instruction 51-307

EXECUTIVE SUMMARY
UNITED STATES AIR FORCE
AIRCRAFT ACCIDENT INVESTIGATION

F-16C, T/N 86-0322
EIELSON AIR FORCE BASE, ALASKA
28 MAY 2024

On 28 May 2024, at approximately 1:37 p.m. Alaska Daylight Time, an F-16C out of Eielson Air Force Base (AFB), Alaska, tail number (T/N) 86-0322, struck multiple birds causing damage to the engine. The Mishap Pilot (MP) jettisoned two external fuel tanks which impacted a forested area approximately 1.2 nautical miles to the west of Runway 32. Both the MP and Mishap Aircraft (MA) were assigned to the 18th Fighter Interceptor Squadron (18 FIS), 354th Fighter Wing (354 FW), Eielson AFB. The aircraft recovered safely at Eielson AFB. Total cost damage estimate to the engine was $1,265,213.00. The jettisoned fuel tanks, valued at $52,220, impacted the ground and were destroyed. No injuries resulted from this mishap.

The mishap occurred during a routine training mission during which four F-16Cs from 18 FIS flew as adversaries against four 90th Fighter Squadron (90 FS) F-22s from Joint Base Elmendorf-Richardson (JBER). The mission served as an annual evaluation for the MP, who led the four-ship formation. At 1:35 p.m. Eielson Tower cleared the MA for takeoff. Shortly after takeoff, the MA struck multiple waterfowl, with at least one entering the engine intake. MP reported "serious engine stalls" on his formation frequency and announced, "stores are coming off here, does it look clear below?" Mishap Wingman (MW) answered "You're clear!" The MP then emergency jettisoned the MA's two external wing tanks. The fuel tanks impacted approximately 1.2 miles to the west of Runway 32 into an undeveloped forested area. The MP recovered to Eielson AFB on Runway 32 via a precautionary flameout landing. As he taxied clear of the runway, MP reported three dead birds on the runway near Taxiway Bravo to Tower, taxied clear at Bravo, and shutdown the MA engine. The total time elapsed from the bird strike to taxing clear was just under three minutes.

The Accident Investigation Board President found, by a preponderance of the evidence, that the mishap was caused by unintentional collision of the MA with an unknown number of waterfowl shortly after takeoff. This wildlife was not observed by tower personnel, other aircrew, or the MP prior to the collision. There is no evidence that the MP or other base personnel could have taken reasonable actions to avert this collision. During this collision, at least one bird entered the MA engine intake, damaging multiple engine components and presenting an abnormal engine behavior to the MP. As a result, the MP initiated emergency procedures to recover the MA, to include jettisoning of the MA's external fuel tanks over an unpopulated, forested area.

SUMMARY OF FACTS AND STATEMENT OF OPINION
F-16C, T/N 86-0322
EIELSON AIR FORCE BASE, ALASKA
28 MAY 2024

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ACRONYMS AND ABBREVIATIONS

18 FIS	18th Fighter Interceptor Squadron
354 FW	354th Fighter Wing
AB	Afterburner
AFB	Air Force Base
AFE	Air Flight Equipment
AFI	Air Force Instruction
AFLCMC	Air Force Life Cycle Management Center
AGL	Above Ground Level
AIB	Accident Investigation Board
AK	Alaska
BASH	Bird Aircraft Strike Hazard
BWC	Bird Watch Condition
Capt	Captain
CUI	Controlled Unclassified Information
DAFI	Department of the Air Force Instruction
DEC	Digital Engine Control
DoD	Department of Defense
EM	Emergency Management
EOC	Emergency Operations Center
FDP	Flight Duty Period
FL	Flight Lead
FLUG	Flight Lead Upgrade
FOD	Foreign Object Damage
FS	Fighter Squadron
Ft	Feet
FTIT	Fan Turbine Inlet Temperature
FW	Fighter Wing
HUD	Heads-Up Display
IAW	In Accordance With
IFE	In Flight Emergency
JBER	Joint Base Elmendorf-Richardson
KCAS	Knots Calibrated Airspeed
kts	Knots
Lt Col	Lieutenant Colonel
MA	Mishap Aircraft
Maj	Major
MAJCOM	Major Command
MEF	Mission Execution Forecast
METAR	Meteorological Aerodrome Report
MF	Mishap Formation
MIL	Military
MP	Mishap Pilot
MS	Mishap Sortie
MSL	Mean Sea Level
MW	Mishap Wingman
ND	Nose Down
NM	Nautical Miles
NOTAMs	Notices to Airmen
OG	Operations Group
ORM	Operation Risk Management
PACAF	Pacific Air Forces
PHA	Physical Health Assessment
PWC	Pilot Weather Category
RAP	Ready Aircrew Program
ROC	Recovery Operations Chief
SAR	Search and Rescue
SCBA	Self-Contained Breathing Apparatus
SOF	Supervisor of Flying
TCTOs	Time Compliance Technical Orders
T/N	Tail Number
USDA	United States Department of Agriculture

SUMMARY OF FACTS

1. AUTHORITY AND PURPOSE

a. Authority

On 17 August 2024, Lieutenant General Laura L. Lenderman, Pacific Air Forces (PACAF) Deputy Commander, appointed Lieutenant Colonel Ryan H. Oot as president of an Accident Investigation Board (AIB) to investigate the subject mishap under the provisions of AFI 51-307, *Aerospace and Ground Accident Investigations* (Tab Y-3). Other members appointed to the AIB on this same date include a Major Pilot Board Member, a Captain Legal Advisor, and a Senior Airman Recorder (Tab Y-3). On 1 October 2024, a Technical Sergeant Maintenance Expert was added to assist with reviewing maintenance records (Tab Y-5). The AIB conducted this investigation at Eielson Air Force Base (AFB), Alaska from 18 September 2024 through 2 October 2024.

b. Purpose

In accordance with AFI 51-307, *Aerospace and Ground Accident Investigations*, this Accident Investigation Board 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 (Tab BB-9).

2. ACCIDENT SUMMARY

On 28 May 2024, at approximately 1:37 p.m. Alaska Daylight Time, an F-16C out of Eielson Air Force Base (AFB), Alaska, tail number (T/N) 86-0322, struck multiple birds causing damage to the engine (Tabs L-3 and W-4). The Mishap Pilot (MP) jettisoned two external fuel tanks which impacted a forested area approximately 1.2 nautical miles to the west of Runway 32 (Tabs L-3 and W-4). Both the MP and Mishap Aircraft (MA) were assigned to the 18th Fighter Interceptor Squadron (18 FIS), 354th Fighter Wing (354 FW), Eielson AFB (Tab L-3). The aircraft recovered safely at Eielson AFB (Tab L-3). Total cost damage estimate to the engine was $1,265,213.00 (Tab P-3). The jettisoned fuel tanks, valued at $52,220, impacted the ground and were destroyed (Tabs L-3 and U-3). There were no injuries that resulted from this mishap (Tab L-3).

3. BACKGROUND

a. Pacific Air Forces (PACAF)

PACAF's primary mission is to deliver rapid and precise air, space, and cyberspace capabilities to protect and defend the United States, its territories and our allies and partners; provide integrated air and missile warning and defense; promote interoperability throughout the Pacific area of responsibility; maintain strategic access and freedom of movement across all

domains; and posture to respond across the full spectrum of military contingencies in order to restore regional security (Tab CC-3 to CC-4).

b. 11th Air Force (11 AF)

11 AF provides combat ready forces for Commander, PACAF. Defends Alaska, Hawaii, and Guam and key strategic nodes against all threats. Deploys service component forces worldwide in response to major regional contingencies (Tab CC-5). Supports vital Pacific air bridge operation for throughput of strategic movement by contingency forces during crisis response. Provides support to federal and state authorities during civil emergencies, search and rescue operations & counternarcotics interdictions (Tab CC-5).

c. 354th Fighter Wing (354 FW)

The 354 FW's mission is to deliver lethal airpower to Combatant Commanders in defense of National Military objectives. The 354 FW is the host unit at Eielson Air Force Base, Alaska and is assigned to 11 AF, headquartered at Joint Base Elmendorf-Richardson (JBER) near Anchorage, Alaska (Tab CC-7). 11 AF falls under Pacific Air Forces, which is headquartered at Hickam Air Force Base, Hawaii. The wing supports operations, maintenance, mission support, and medical group functions and is host to ten tenant units (Tab CC-7).

d. 18th Fighter Interceptor Squadron (18 FIS)

The 354th Fighter Wing redesignated the 18th Aggressor Squadron as the 18th Fighter Interceptor Squadron, on 2 February 2024, at Eielson Air Force Base, Alaska (Tab CC-9). The 18 FIS is organized under the 354th Operations Group and the 18th Fighter Generation Squadron (18 FGS) is organized under the 354th Maintenance Group (Tab CC-9). The redesignation allows the 18 FIS and 18 FGS to organize, train, and equip for their primary combat mission of providing aerospace control for homeland defense missions in the Alaska Theater of Operations (Tab CC-9).

e. F-16C Fighting Falcon

The F-16 Fighting Falcon is a compact, multi-role fighter aircraft (Tab CC-11). It is highly maneuverable and has proven itself in air-to-air combat and air-to-surface attack (Tab CC-11). It provides a relatively low-cost, high-performance weapon system for the United States and allied nations (Tab CC-11). In an air combat role, the F-16's maneuverability and combat radius (distance it can fly to enter air combat, stay, fight, and return) exceed that of all potential threat fighter aircraft (Tab CC-11). It can locate targets in all weather conditions and detect low flying aircraft in radar ground clutter (Tab CC-11). In an air-to-surface role, the F-16 can fly more than 500

miles (860 kilometers), deliver its weapons with superior accuracy, defend itself against enemy aircraft, and return to its starting point (Tab CC-11). An all-weather capability allows it to accurately deliver ordnance during non-visual bombing conditions (Tab CC-11). The F-16 can be equipped with external fuel tanks, as required (Tab CC-12).

4. SEQUENCE OF EVENTS

a. Mission

The mishap sortie (MS) was planned and briefed without incident and had a valid authorization signed off by the designated personnel responsible for plans, operation, and scheduling (Tab K-5). The MS involved four F-16Cs from 18 FIS flying as adversaries against four 90th Fighter Squadron (90 FS) F-22s from JBER (Tab V-1.1). The MS served as an annual evaluation for the MP, who was the lead for the F-16C four-ship formation (Tab K-11).

b. Planning

Planning products (i.e. required paper documents for the MS) were provided to the MP on the day of the mishap to include a Mission Execution Forecast (MEF), notices to airmen (NOTAMs), and a Bird Watch Condition (BWC) review (Tabs F-3 to F-4, K-13, K-28 to K-30, and R-17 to R-23). Prior to the MS, all flight members attended a mass briefing conducted via video teleconference by the 90 FS at JBER, which adequately covered these items (Tabs K-21 and V-1.4). The MP also conducted a formation brief for the MS which addressed the briefing requirements IAW AFMAN 11-2F-16v3, *Flying Operations,* (Tabs BB-21, BB-23, V-1.4 to V-1.5 and V-4.3). The MP completed An Operational Risk Management (ORM) worksheet (used to identify environmental, mission driven, and personal risk factors) and the squadron operations supervisor reviewed and approved it prior to the MS (Tab K-19).

c. Preflight

After the flight briefings, the pilots involved in the MS, inspected and donned their flight gear, and assembled at the operations desk to accomplish a final review of weather, BWC, aircraft status, and NOTAMs prior to proceeding to their assigned aircraft (Tab K-25). The MP noted no discrepancies with his flight gear (Tab R-61 to R-68). The MA's exterior aircraft inspection and engine start were uneventful (Tabs R-61 to 68 and V-1.1).

d. Summary of Accident

The MS formation taxied uneventfully to the approach end of Eielson AFB Runway 32 (Tab L-3). At 1:35 p.m. Eielson Tower cleared the MA for takeoff with a 1,500 mean sea level (MSL) altitude restriction until past the departure end of the runway (Tab L-3). MP executed a radar assisted trail departure in afterburner which requires a 20 second interval between formation members (Tab R-61 to R-68). At approximately 300 knots calibrated airspeed (KCAS) he selected military power, the highest power setting without afterburner, and accelerated in a slight climb to 350 KCAS (Tab L-3). At this point, the MA struck multiple waterfowl, with at least one entering the engine intake (Tabs L-3 and W-4). The MP executed a climbing left-hand turn while simultaneously declaring an emergency on the Tower radio frequency, reaching 209 KCAS at 2,460ft AGL (Tab L-3). MP

reported “serious engine stalls” on his formation frequency and announced, “stores are coming off here, does it look clear below?” (Tabs L-3 and N-3). Mishap Wingman (MW) answered “You’re clear!” (Tabs N-3 and L-3). The MP then emergency jettisoned the MA’s two external wing tanks (Tabs L-3 and N-3). MP climbed towards the low-key position, a specific point relative to the runway that helps the pilot execute a safe landing in the event of total engine failure (Tab L-3). MP made a descending left-hand turn from low-key towards the runway and lowered the landing gear while querying Tower controllers about another aircraft that was a potential traffic conflict on its final approach (Tabs L-3 and N-3 to N-5). The other aircraft landed and Tower directed it to “keep your speed up” on its landing roll (Tabs L-3 and N-3 to N-5). Tower directed the MP to go around to which MP replied “unable” (Tab N-4). MA landed as the preceding aircraft taxied clear of the runway at Taxiway Charlie (Tab L-3). As he taxied clear of the runway, MP reported three dead birds on the runway near Taxiway Bravo to Tower, taxied clear at Bravo, and shutdown the MA engine (Tabs L-7, N-5, V-1.6 to V-1.7). The total time elapsed from the bird strike to taxing clear was just under three minutes (Tab L-3).

e. Impact

The MA recovered to Eielson AFB on Runway 32 via a precautionary flameout landing (Tab L-3). The two external wing tanks were jettisoned from approximately 2,170ft AGL at 239 KCAS from mid-field downwind (Tab L-3). The external wing tanks impacted approximately 1.2 miles to the west of Runway 32 into an undeveloped forested area of State of Alaska-owned land (Tab S-9 to S-10).

f. Egress and Aircrew Flight Equipment (AFE)

Egress was not applicable (Tab H-3). There were no deficiencies of the Aircrew Flight Equipment in or post mishap inspection (Tab H-3).

g. Search and Rescue (SAR)

This mishap did not include an aircraft crash site (Tab L-3). However, Eielson AFB personnel were dispatched shortly after safe landing of the MA to locate the jettisoned external fuel tanks (Tab V-5.3). Based on accounts from the MP, the fuel tanks were assessed to have landed off military installation property (Tab V-5.3). Base emergency response personnel coordinated with local area responders and the Civil Air Patrol to conduct a search of the likely wreckage area (Tab V-5.4). Both fuel tanks were located on the date of the mishap, and both were found to have been destroyed upon impact (Tab V-5.4). The fuel tanks impacted in an undeveloped forested area with no resulting injuries or damage to built infrastructure (Tabs DD-3, V-5.3 and Z-5 to Z-6).

h. Recovery of Remains

The 354 FW assigned a Recovery Operations Chief (ROC) to lead recovery efforts at the wreckage sites (Tab V-3.2). Wreckage materials were surveyed and removed (Tab V-3.3 to V-3.4). The location and survey results of the wreckage are depicted below in Figures 1 and 2, respectively (Tab Z-5 to Z-6). While the exact volume of JP-8 stored in the tanks at the time of impact is unknown, the capacity of each tank was 370 gal (Tab DD-3). The ROC coordinated with State agencies to develop a plan to remediate any soil contaminated by fuel released by the tanks on impact (Tabs DD-3 and V-3.3 to V-3.4). Remediation efforts, which were still underway at the

time of this report, used a combination of federal government and contracted services to sample, test, remove, and dispose of contaminated soil at the site (Tabs DD-3 and V-3.3 to V-3.4). At the time of this report, 354 FW personnel were in coordination with the property owner regarding the final disposition of the affected land (Tabs V-3.4 and P-3).

Figure 1: Impacted Fuel Tanks Site Location (Tab Z-5)

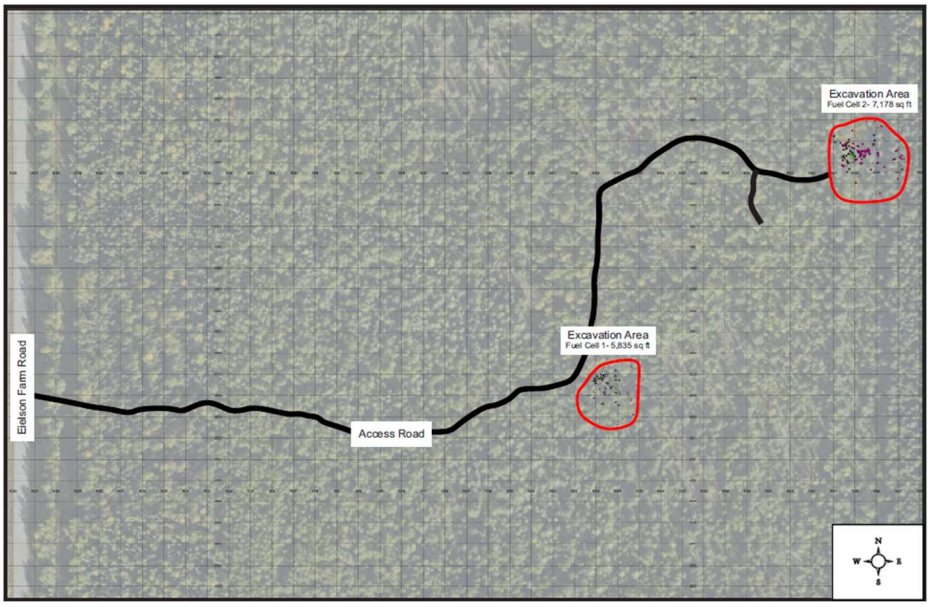


Figure 2: Impacted Fuel Tank Excavation Areas (Tab Z-6)

5. MAINTENANCE

a. Forms Documentation

The investigation into the bird strike event revealed that the incident was unrelated to scheduled or unscheduled maintenance activities (Tab U-3). Reviewing the Air Force Technical Order (AFTO) Forms 781, ARMS Aircrew/Mission Flight Data Document, and missile maintenance logs showed no significant findings pertinent to the bird strike (Tab U-3). The only discrepancies noted were the egress final being signed in the wrong block and an error in a calculative step of the Category 09 engine time on the oil servicing page, both of which were deemed insignificant to the bird strike (Tab U-3). The engine was also in a 10% overfly status, which was also unrelated to the incident (Tab U-3). All forms and documentation were found to be correct and accurate to the standard, with no recurring maintenance problems identified in historical records (Tab U-3). No Time Compliance Technical Orders (TCTOs) relevant to the accident were noted. Overall, the bird strike event was determined to be unrelated to maintenance issues, and the aircraft's documentation was in order (Tab U-3).

b. Inspections

All scheduled inspections were satisfactorily completed, and no discrepancies were noted (Tab U-3). The investigation into the bird strike event confirmed that the incident was unrelated to maintenance activities (Tab U-3). A thorough review of the Air Force Technical Order (AFTO) Forms 781, ARMS Aircrew/Mission Flight Data Document, and missile maintenance logs revealed no significant findings or recurring maintenance issues (Tab U-3). The documentation is accurate and compliant with standards, and no relevant Time Compliance Technical Orders (TCTOs) were identified (Tab U-3).

c. Maintenance Procedures

There were no significant maintenance procedures, practices, or performances related to the accident, including work completed by civilian contractors (Tab U-3).

d. Maintenance Personnel and Supervision

A comprehensive review was conducted to identify all personnel, units, and commercial entities that serviced or maintained any systems that may have been a factor in the accident (Tab U-3). This included an examination of preflight servicing of the mishap aircraft, the supervision provided over aircraft maintenance personnel, and their performance (Tab U-3). The review also assessed whether maintenance personnel were trained, experienced, and certified to complete assigned tasks by examining AF Forms 623 (Individual Training Record Folder or automated training records), AF Forms 797 (Job Qualification Standard Continuation/Command Job Quality Standards or automated training records), staff progress records, and staff certifications (Tab U-3). The findings indicate that personnel, units, and commercial entities were in no way a factor in the result of the bird-strike (Tab U-3).

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

Fuel, Hydraulic, Oil, and Oxygen were not applicable.

f. Unscheduled Maintenance

The investigation on unscheduled maintenance since the last scheduled inspection was compiled, detailing the work performed and its relationship to the mishap, if any (Tab U-3). The report identified expendables and other items replaced, repaired, tested, or overhauled, along with the organizations, dates, and locations involved (Tab U-3). The findings indicate that personnel, units, and commercial entities were in no way a factor in the result of the bird-strike (Tab U-3).

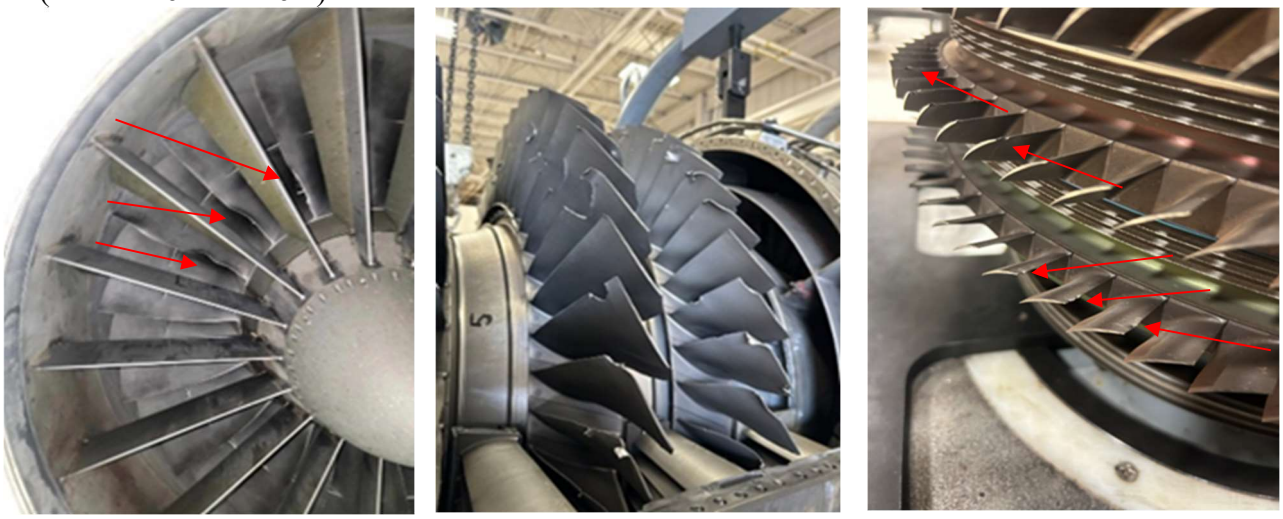
6. AIRFRAME, MISSILE, OR SPACE VEHICLE SYSTEMS

a. Structures and Systems

The MA recovered to Eielson AFB on via a precautionary flameout landing (Tab L-3).

(1) General Electric F110-GE100 Engine

The MA engine sustained damage to the inlet guide vanes, all three Fan Stages and all nine stages of the rear compressor in the core engine module due to foreign object damage (FOD) after ingesting at least one white-winged scoter, a type of migratory waterfowl (Tabs S-3 to S-6, W-4). The AIB additionally discovered evidence of bird remains scattered throughout the engine (Tab S-3 to S-6). The engine continued to operate in low to mid-range throttle position, however, the MP reported engine stalls to his wingmen in flight, distinct visible shaking can be observed in the HUD video, and the number two wingman as well as an eyewitness reported flames shooting from the engine nozzle consistent with engine stalls (Tabs L-3, R-74, R-81 and V-8.1). First Responder (FR1), the commander of the emergency response team, reported the smell of burnt feathers and debris on the engine nozzle when he responded to the MA after it landed and taxied (Tab V-6.3). There were no indications of an engine fire reported by the aircraft detection systems, engine instruments during flight, nor observations by emergency responders during the ground response (Tab V-1.6 and V-6.2).



First Stage Fan Blades | Second and Third Stage Fan Blades | Eighth and Ninth Stage Compressor Blades

Figure 3: F-16C Engine Damage (Tabs S-5 to S-6, and Z-3)

(2) External Wing Fuel Tanks

The MA was equipped with two external fuel tanks (Tab S-7). The 370-gal capacity external wing fuel tanks and wing fuel pylons were jettisoned during the mishap and impacted the ground approximately 1.2 nautical miles to the southwest of Runway 32 approximately 375 ft apart (Tab S-7). They were destroyed on impact (Tab S-7).

Figure 4: Destroyed Fuel Tank (Tab S-7)

b. Evaluation and Analysis

The engine data downloaded from the digital engine control (DEC) by the 354th Maintenance Squadron (354 MXS) revealed eight separate engine stall events over the course of 30 seconds (Tab L-3). The first through third fan stages were sent to the Air Force Life Cycle Management Center (AFLCMC) for analysis (Tab I-4).

7. WEATHER

a. Forecast Weather

The Mission Execution Forecast during the projected flight time of 1:00-3:00 p.m. called for winds out of the northwest at 10 kts gusting to 15 kts with visibility at 15 statute miles and a ceiling forecast at 20,000 ft MSL over Eielson AFB (Tab F-3). The forecast temperature was 63°F and altimeter 29.79 inches mercury (Tab F-3). Icing and turbulence were not a factor (Tab F-3 to F-4).

b. Observed Weather

The Eielson Meteorological Aerodrome Report (METAR) reported winds out of the northeast at 10 kts, 10 statute miles visibility with overcast clouds at 8,000 ft above ground level, temperature 63° F, altimeter 29.74 inches mercury (Tab F-5 to F-6). Post-mishap weather was not applicable.

c. Space Environment

Not Applicable.

d. Operations

The MP was operating within the prescribed weather requirements for Category 2 Pilot Weather Category (PWC) minimums (Tab F-3 to F-4).

8. CREW QUALIFICATIONS

a. Mishap Pilot (MP)

The MP attended Undergraduate Pilot Training at Columbus AFB and received the aeronautical rating of pilot on 28 February 2020 (Tabs G-68 and V-1.3). MP accomplished the F-16C Basic course in the 195th Fighter Squadron at Morris Air National Guard Base receiving his initial instrument qualification in the F-16C (Tab G-55). The MP completed his F-16C mission qualification training and 4 ship flight lead upgrade (FLUG) at Kunsan Air Base, Korea in the 35th Fighter Squadron (Tab G-11). MP completed the Aggressor Mission Qualification Training on 26 September 2022 and then his Aggressor 4-ship FLUG on 24 March 2023 with the 18 FIS (Tab G-26 and G-32). There were no deficiencies in the MP's flight records applicable to this mishap (Tab G-44 to G-56). MP met his 3-month Ready Aircrew Program (RAP) lookback in and was a current and qualified combat mission ready flight lead on the date of the mishap (Tab G-39 and G-41).

Recent flight time is as follows:

	Hours	Sorties
30 days	9.9	7
60 days	22.5	14
90 days	24	15

Figure 5: MP's Supplemental 30/60/90 Day History (Tab G-75 to G-77)

9. MEDICAL

a. Qualifications

The MP was medically qualified on the date of the mishap (Tab K-9).

b. Health

The MP received no injuries due to the mishap (Tab G-3).

c. Pathology

Not Applicable.

d. Lifestyle

Upon the review of the MP's 72-hours prior, 7-days prior histories and interview, there is no evidence to suggest lifestyle factors contributed to the mishap in any way (Tab R-3 to R-14 and R-61).

e. Crew Rest and Crew Duty Time

For single piloted aircraft, the flight duty period (FDP) begins when an aircrew member first reports for official duty and ends at final engine shutdown after the final flight of the completed mission and is not to exceed 12 hours (Tab BB-3). Crew rest and duty time requirements are detailed in AFMAN 11-202v3, *Flight Operations* (Tab BB-3). Air Force pilots are required to have proper crew rest prior to performing in flight duties (Tab BB-3). Crew rest consists of a minimum 12-hour non-duty period before the designated flight duty period starts (Tab BB-3). During this time, the aircrew may participate in meals, transportation, or rest, which allows for the opportunity for at least eight hours of continuous sleep (Tab BB-3). The MP met all crew rest and FDP requirements mandated on the day of the mishap (Tab R3 to R-14 and R-61 to R-68).

10. OPERATIONS AND SUPERVISION

a. Operations

At the time of the mishap, MP reported he did not feel rushed or pressured with respect to executing the mission (Tab V-1.3). MP stated, while the 18 FIS maintains a high tempo with its alert mission and normal flying missions, he was always able to operate with sufficient time to mission plan and comply with crew rest and FDP requirements (Tab V-1.3).

The 354 FW implements a Bird and Wildlife Strike Hazard (BASH) program outlined by EIELSONAFI 91-212, *Eielson Air Force base Bird and Wildlife Strike Hazard (BASH) Program,* dated 24 May 2021 (Tab BB-13). The program is a coordinated effort between air traffic control, base operations, the US Department of Agriculture (USDA), the local civil engineering squadron, and flying units to manage the risk of wildlife activity around the airfield (Tab BB-13). Daily and seasonal wildlife movements of resident and migratory species present an enduring risk to operations at the base (Tab BB-14). BASH program has two phases; Phase I concentrates on wildlife control and habitat modification and is in effect year round; Phase II concentrates on bird avoidance using operating restrictions and increased dispersal efforts (Tab BB-13). Active control of wildlife is conducted April-September, with 24-hour operations, seven days a week (Tab BB-15). At the time of the mishap, the base operated in BASH Phase II, a period of heightened wildlife hazard management driven by avian migratory periods (Tab V-2.4). The mishap wing extended BASH Phase II outside of the prescribed normal time window due to increased activity identified by members of the BASH program (Tabs R-29 and V-2.4). The Supervisor of Flying (SOF) is the single point of contact that sets the bird watch condition (BWC) in the flying status for the field (Tab BB-18). On the day of the mishap, three USDA personnel were on shift managing wildlife activity on the base, and they coordinated with the SOF to inform the BWC (Tabs W-3 to W-6 and R-31).

b. Supervision

Flying operations were conducted in accordance with local flying directives (Tabs BB-17, BB-19, K-19, K-25 to K-32, R-3 to R-10 and R-83 to R-90). Flying operations are overseen by the 354th Operations Group Commander and directly supervised by the on-duty supervisor of flying (SOF) (Tab BB-19). During the mission step brief, the squadron operations supervisor reviewed and approved the mishap formation's ORM and provided all relevant updates to the pilots (Tab K-19 and K-25 to K-32). Prior to the sortie takeoff time, the current SOF set the BWC to Low based on observations throughout the morning and concurrence with USDA personnel on station (Tab R-86). The birds involved in the mishap were not observed prior to the mishap (Tab R-83 to R-90) At the time of the mishap, the SOF was in the process of a shift changeover, but stayed in place through the time the emergency was terminated and continued to oversee flying operations with the assistance of the changeover SOF (Tab R-83 to R-90). After the mishap, FR1 responded to the MA recovery and commanded the ground emergency through the termination of the event (Tab V-6.2 to V-6.3).

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 mishaps and identifies potential areas of assessment during an accident investigation (Tab BB-5). The AIB considered all questions presented in HFACS 8.0 and concluded that only one factor is relevant to the mishap, as described below (Tab BB-7).

b. PE113 Animal or Non-DoD affiliated Human

HFACS Code PE113, Animal or Non-DoD affiliated Human, applies when the actions of a non-DoD affiliated civilian, or an animal resulted in a reportable DoD mishap, including cases in which an animal crosses into the path of travel (Tab BB-6).

12. GOVERNING DIRECTIVES AND PUBLICATIONS

a. Publicly Available Directives and Publications Relevant to the Mishap

(1) AFMAN 11-202v3, *Flight Operations*, dated 10 January 2022
(2) AFMAN 11-202v3_PACAFSUP, *Flight Operations,* dated 30 August 2023
(3) AFI 51-307, *Aerospace and Ground Accident Investigations,* dated 18 March 2019
(4) DAFI 91-204, *Safety Investigations and Reports,* dated 10 March 2021
(5) AFMAN 11-2F-16V3*, F-16 Operations Procedures*, dated 4 February 2020, incorporating change 3, dated 13 September 2022, certified current, 13 September 2022
(6) EIELSONAFI 91-212, *Eielson Air Force base Bird and Wildlife Strike Hazard (BASH) Program,* dated 24 May 2021
(7) DAFI 91-204, *Safety Investigations and Reports*, dated 09 May 2021

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

c. Other Directives and Publications Relevant to the Mishap

(1) Department of Defense Human Factors Analysis and Classification System 8.0 (HFACS 8.0), dated 25 May 2022, available at: https://www.safety.af.mil/Divisions/Human-Performance-Division/HFACS/

d. Known or Suspected Deviations from Directives or Publications

No known or suspected deviations from directives or publications were discovered by the AIB.

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24 January 2025

RYAN H. OOT, Lieutenant Colonel, USAF
President, Accident Investigation Board

STATEMENT OF OPINION

F-16C, T/N 86-0322
EIELSON AFB, ALASKA
28 MAY 2024

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 28 May 2024, at approximately 1:37 p.m. Alaska Daylight Time, an F-16C out of Eielson Air Force Base (AFB), Alaska, tail number (T/N) 86-0322, struck multiple birds causing damage to the engine. The Mishap Pilot (MP) jettisoned two external fuel tanks which impacted a forested area approximately 1.2 nautical miles to the west of Runway 32. Both the MP and Mishap Aircraft (MA) were assigned to the 18th Fighter Interceptor Squadron (18 FIS), 354th Fighter Wing (354 FW), Eielson AFB. The MP safely recovered the MA to Eielson AFB. The total cost estimate for the damage to the engine was $1,265,213.00. The jettisoned fuel tanks, valued at $52,220, impacted the ground and were destroyed. No injuries resulted from this mishap.

I find, by a preponderance of evidence, that the mishap was caused by unintentional collision of the MA with an unknown number of waterfowl shortly after takeoff. This wildlife was not observed by tower personnel, other aircrew, or the MP prior to the collision. There is no evidence that the MP or other base personnel could have taken reasonable actions to avert this collision. During this collision, at least one bird entered the MA engine intake, damaging multiple engine components and presenting an abnormal engine behavior to the MP. As a result, the MP initiated emergency procedures to recover the MA, to include jettisoning of the MA's external fuel tanks over an unpopulated, forested area.

I used the preponderance of evidence standard of proof to determine the cause of this mishap and to analyze contributing factors. I established my opinion based on a thorough review of the mishap evidence, sworn pilot, witness, and responder testimony, engineering analysis, and other information provided by technical and subject matter experts.

2. CAUSE: UNINTENTIONAL COLLISION WITH WILDLIFE

Recording from MA's Heads-Up Display, aircraft data, and interviews with multiple witnesses were used to formulate a detailed account of the mission timeline and events. Each of these pieces of evidence support the conclusion that the MA struck multiple waterfowl, specifically white-winged scoters, shortly after takeoff with no advanced warning. The birds were not observed by tower personnel, other aircrew, or the MP prior to the collision and there is no evidence that the

MP or other personnel involved in the mishap could have taken reasonable actions to avert this collision. Following the collision, multiple witnesses observed the MA engine emitting flames in an unusual manner and the MP reported multiple engine stalls. These stalls were validated with engine data available after the mishap. The MP then initiated emergency procedures to prepare for an immediate landing, to include jettisoning the MA's two external fuel tanks. The MA validated that the likely impact area was clear of hazards before performing this procedure. Upon landing, the MA was met by emergency responders who observed signs of engine damage and evidence of bird remains in the engine nozzle. No other damage to MA components was observed on-site or in subsequent analysis.

The cause of this mishap was the unintentional collision of the MA with multiple waterfowl.

3. SUBSTANTIALLY CONTRIBUTING FACTOR

I did not find any act, omission, condition, or circumstance that played an important role, directly or indirectly, in the mishap, where its correction, elimination, or avoidance would not, by itself, have prevented the mishap. I thoroughly considered the installation's Bird and Wildlife Strike Hazard (BASH) program and implementation and determined that reasonable measures to reduce bird-related hazards were in place at the time of the mishap.

4. CONCLUSION

I conclude, by the preponderance of evidence, that this mishap was caused by unintentional collision of the MA with an unknown number of waterfowl shortly after takeoff. This wildlife was not observed by tower personnel, other aircrew, or the MP prior to the collision. There is no evidence that the MP or other base personnel could have taken reasonable actions to avert this collision. During this collision, at least one bird entered the MA engine intake, damaging multiple engine components and causing the MP to perform emergency actions to recover the MA. I find the MP's response to the mishap to be in accordance with proper protocols and procedures. I do not find the MP or other personnel involved in the mishap to be causal, nor do I find any other factors that substantially contributed to the mishap.

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24 January 2025

RYAN H. OOT, Lieutenant Colonel, USAF
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