



DEPARTMENT OF THE NAVY

CHIEF OF NAVAL AIR TRAINING
CNATRA
250 LEXINGTON BLVD SUITE 102
CORPUS CHRISTI TX 78419-5041

CNATRINST 13700.2M
N421

5 May 11

CNATRA INSTRUCTION 13700.2M

Subj: FOREIGN OBJECT DAMAGE (FOD) PROGRAM AND REPORTING OF
FOREIGN OBJECT DAMAGE TO GAS TURBINE ENGINES

Ref: (a) COMNAVAIRFORINST 4790.2A
(b) National Aerospace Standard 412

Encl: (1) Format for Engine FOD Hazard/Mishap Report, RCS
CNATRA 13700

1. Purpose. To provide instruction for the reduction of gas turbine engine removals or failures due to Foreign Object Damage (FOD) through an aggressive FOD prevention program. Due to the numerous changes in this instruction, it should be read in its entirety.

2. Cancellation. CNATRINST 13700.2L

3. Discussion

a. Foreign Object Damage to gas turbine engines is a problem which adversely impacts readiness. FOD related engine repairs continue to cause critical shortages of spare engines, repair parts, and funding. Premature engine removal adversely affects aircraft availability and Student Naval Aviator (SNA)/Student Naval Flight Officer (SNFO) training. FOD prevention is an area of prime concern and an "All Hands" responsibility.

b. One of the most important factors in FOD prevention is the immediate and thorough investigation of each FOD incident. Conducted properly, a comprehensive investigation can identify the object which caused the FOD and highlight maintenance or operating practices which may have contributed to the incident. While not all damage is preventable, it is necessary to investigate all damage to aircraft gas turbine engines in order to ensure timely action to prevent recurrence by eliminating the cause of damage whenever possible.

c. The following practices will help eliminate FOD:

(1) Perform operations and maintenance tasks according to technical data.

(2) Practice good housekeeping at all times in all areas.

(3) Ensure all tools, equipment, and hardware are accounted for at the end of each task.

(4) Use x-ray, borescope, and other state-of-the-art equipment to locate foreign objects in inaccessible areas.

(5) Use vacuum or magnetic sweepers or sweep by hand to remove foreign objects in hangars, on ramps, and access roads.

(6) Avoid wearing loose clothing or other articles that could be drawn into an engine intake or otherwise prevent the normal operation of equipment or system.

(7) Be aware of and seek new and better ways of preventing FOD.

d. Naval Air Training Command (NATRACOM) activities operating aircraft and those activities directly supporting flight operations shall take action to prevent aircraft engine damage due to FOD. Training Air Wing (TRAWING) and individual unit damage prevention programs shall incorporate the spirit and intent delineated in reference (a) and this instruction. Innovative FOD Prevention Program elements, tailored to local operating conditions, are strongly encouraged.

e. Government furnished contractor spaces will be maintained in accordance with the provisions of the governing contract. Any observed FOD deficiencies shall be reported to the FOD Prevention Officer (FPO) and appropriate site Chief of Naval Air Training (CNATRA) Detachment (DET).

f. All aircraft/simulator maintenance will follow their appropriate contract and will be monitored by CNATRA DETs for compliance. The maintenance contract will take precedence over this instruction.

g. Indoctrinate aircrews in FOD prevention measures, such as MAINTAINING PRUDENT TAXI/TAKEOFF INTERVALS AND AVOIDING TAXIING THROUGH THE EXHAUST BLAST OR PROPELLER WASH OF OTHER AIRCRAFT. Instruct aircrews to avoid, when possible, known icing and bird hazards and to report all observed FOD hazards. Ensure aircrews are briefed to pay particular attention to areas of aircraft that have had recent maintenance performed and to inspect areas adjacent to their aircraft for foreign objects before manning the aircraft.

4. Definitions

a. Foreign Object Damage (FOD): Damage that exceeds serviceable limits caused by ingestion of objects not organic to the engine.

b. Minor FOD damage: Damage which is repaired at the Organizational Maintenance Activity (OMA) or Intermediate Maintenance Activity (IMA) and the total man-hour and material cost that does not exceed the greater of \$3,000 or 10 percent of the reportable repair cost which is promulgated annually by Naval Aviation Safety Center (NAVSAFECEN) via naval message.

c. Major FOD damage: Damage on an installed engine which is removed for FOD and damage exceeds the dollar/man-hour/repair threshold.

5. Responsibilities

a. TRAWING Commanders

(1) Establish and maintain an aggressive FOD Prevention Program which meets the requirements of references (a) and (b).

(2) Designate a TRAWING FOD Prevention Officer (FPO). This individual will serve as the TRAWING point of contact in all matters pertaining to FOD.

(3) Establish and coordinate a base wide FOD prevention council. The purpose of this council is to provide a forum to communicate concerns and discuss ways of reducing FOD hazards aboard the Naval Air Station (NAS).

(a) This council will consist of, but not be limited to, representatives from the TRAWING, CNATRA DET, squadrons, contractors, Fuel Farm, Air Operations (AIROPS), Fire Department, and other concerned departments.

(b) Hold meetings on a monthly basis, chaired by the TRAWING Commander or designated representative. Items reviewed will include prior months' FOD incidents, Engine Damage Investigation (FOD Prevention Team reports/recommendations), observed conditions, and/or upcoming events that may create FOD hazards. Forward recommendations to the NAS Commanding Officer (CO) for action.

(4) Establish and maintain a TRAWING FOD Prevention Team. This team will function under the direction of the TRAWING FPO/CNATRA DET Officer-in-Charge (OIC).

(5) Review and endorse all FOD Investigation Reports and submit quarterly FOD summaries.

b. TRAWING FPO

(1) Maintain a definitive FOD prevention instruction. Via the CNATRA DET OIC, verify that subordinate squadrons and support stations/AIMDs are in compliance with references (a) and (b), when applicable, and this instruction.

(a) Administer the local FOD Prevention Program.

(b) Ensure all incidents of FOD are reported according to current instructions.

(c) Work with the local FOD Prevention Team to investigate each incident of FOD occurring at the TRAWING site. The FOD Prevention Team will submit a report to the FPO.

(d) Call CNATRA HQ (N4214) for the FOD control number to be used for the FOD message and control.

(2) Upon initial notification of a suspected FOD incident, call CNATRA (N4214), DSN 861-2410, not later than 1600 hours of the following workday. A control number will be assigned at this time to be utilized in conjunction with enclosure (1), Engine FOD Hazard/Mishap Report, to ensure positive engine tracking.

(3) Ensure the damage investigation is conducted utilizing FOD Prevention Team personnel. Collate inputs and provide a comprehensive FOD Investigation Report. This report is only for FOD incidents (including damage due to natural causes such as birds and ice). The team will be composed of, as a minimum, senior power plant's military/civilian personnel drawn from the following:

(a) CNATRA DET

(b) Navy "O" Level Maintenance or contractor as appropriate.

(c) Aircraft Intermediate Maintenance Department (AIMD) contractor to provide assistance to CNATRA DET in the investigation of FOD at the Intermediate Level facility.

(4) Designate and brief the Detachment FOD Officer for each Carrier Qualification (CQ) or Weapons/Training "Detachment" operating outside local area.

(5) In conjunction with CNATRA DET, ensure vigorous participation in the FOD Prevention Program.

c. FOD Prevention Team

(1) Upon notification of a FOD incident, the FOD Prevention Team will begin the investigation.

(2) If the cause of the FOD cannot be determined, the investigation will continue when the engine is inducted into AIMD or upon receipt of findings from the contractor repair facility. Provide a report of findings and completed rough enclosure (1) for transmittal to the FPO.

(3) Collect all pertinent data to complete message, enclosure (1), and turn over to FPO for transmittal.

d. AIMD. For contractor operated activities, the contractor (per contract requirements) will notify the FPO and the CNATRA DET when engines that have damage from foreign objects are inducted without a FOD Prevention team report number attached.

e. CNATRA Detachment

(1) CNATRA DET personnel will ensure contractor personnel comply with reference (b) and government approved FOD control procedures/programs as prescribed in the governing contract. Assist TRAWING FPO in gathering data from contractor personnel for FOD Prevention Team reports and serve as coordinator between TRAWING and contractor personnel.

NOTE: If the "FOD/Internal Failure" determination cannot be ascertained at the organizational level, ensure that NAVAIR 13700 SERIES, DECKPLATE/Engine Propulsion Module Management removal codes best describing the damage are utilized to preclude erroneous FOD reporting. Avoid the use of Malfunction Code 301 when FOD cannot be ascertained.

(2) Conduct a special audit (when applicable) of each unit's maintenance areas. Recommendations for correction of deficiencies noted will be documented and copies provided to the unit/FPO.

(3) Contractors shall submit FOD reports per this instruction to the CNATRA DET for reporting as indicated above.

f. Organizational/Intermediate. In the event an engine has damage from foreign objects, the Navy/Contractor (via CNATRA DET as appropriate) shall notify the TRAWING FPO not later than 1200 hours the workday following discovery.

g. Detachments. Conduct FOD Prevention Team investigation to the fullest extent possible and provide an accurate rough FOD Report, enclosure (1), to the CNATRA DET or designated FPO.

NOTE: DETACHMENTS/BOAT DETACHMENTS/EL CENTRO, CA WEAPONS DET FOD occurrences while on detachment will be assigned to the operator of the aircraft (Pilot in command/parent TRAWING).

6. Forms. The Visual Information Display System/Maintenance Action Form (VIDS/MAF), OPNAV 4790/60, is obtained through normal supply channels.


THOMAS E. BRODERICK
Chief of Staff

Distribution:
CNATRA WEBSITE

Copy to:
CNET
NAVSAFECEN, Norfolk, VA
COMTRAWING TWO (COOP File)

CNATRAINST 13700.2M
5 May 11

FORMAT FOR ENGINE FOD HAZARD/MISHAP REPORT

FROM: ORIGINATOR

TO: CNATRA CORPUS CHRISTI TX//N4//

INFO: CNO WASHINGTON DC//N881C6//

COMNAVAIRSYS COM WASHINGTON DC//AIR-4106//

COMNAVAIRFOR SAN DIEGO CA//N422C//

NAVSAFECEN NORFOLK VA//12//

APPROPRIATE TRAWING//JJJ//

UNCLAS //N04790//

MSGID/GENADMIN/-//

SUBJ/(COMMAND SUBMITTING INITIAL OR SUPPLEMENTAL REPORT) ENGINE FOD INCIDENT REPORT SERIAL NUMBER (SEQUENTIAL NUMBER WITHIN EACH CALENDAR YEAR FOLLOWED BY LAST TWO DIGITS OF CALENDAR YEAR) (USE SEQUENTIAL NUMBERING REGARDLESS OF WHETHER THIS IS AN INITIAL OR SUPPLEMENTAL REPORT) EXAMPLE OF SUBJECT LINE: VA-100 ENGINE FOD INCIDENT REPORT SERIAL NUMBER 03-95//

REF/A/DOC/CNAF/10NOV09//

REF/B/DOC/CNATRA/-//

NARR/REF A IS COMNAVAIRFORINST 4790.2A. REF B IS CNATRAINST 13700.2M//

POC/(SENIOR MEMBER OF FOD INVESTIGATION TEAM)
NAME/RANK/CODE/PHONE

RMKS/1. SUMMARY (SUMMARIZE CONTENTS OF REPORT IN 2 LINES OR LESS.)

2. DATA

A. AIRCRAFT

(1) TYPE/MODEL/SERIES

(2) BUREAU NUMBER

Enclosure (1)

B. ENGINE(S)

- (1) TYPE/MODEL/SERIES
- (2) SERIAL NUMBER(S) PSSN(S) (IF APPLICABLE)
- (3) INSTALLED POSITION(S) AT THE TIME OF FOD, IF UNINSTALLED N/A

C. JULIAN DATE(S)/TYPE OF LAST MAINTENANCE

- (1) ON AIRCRAFT
- (2) ON ENGINE(S)/MODULE(S)

D. LOCATION OF ENGINE(S) AT TIME OF FOD (FOR EXAMPLE: MIRAMAR, OCEANA, CV-62 DEPLOYED, NAVAVNDEPOT JACKSONVILLE TEST CELL)

E. EMPLOYMENT OF UNIT AT TIME OF FOD (FOR EXAMPLE: REFTRA, FLEETEX, WEAPONS DET, OR ORANGE AIR).

F. JULIAN DATE FOD DISCOVERED

- (1) WHERE DISCOVERED (FOR EXAMPLE, LINE, FLIGHT DECK, IMA, TEST CELL).
- (2) HOW DISCOVERED (FOR EXAMPLE, DAILY, TURNAROUND, PRE-INDUCTION INSPECTION, DUCT DIVER, FLIGHT CREW INSPECTION)

G. DISPOSITION OF ENGINE(S)/MODULE(S) (FOR EXAMPLE, BLENDING, I LEVEL TURN-IN, RETURN TO DEPOT) (INDICATE NEXT RECEIVING ACTIVITY).

H. PREVIOUS ACTIVITY OPERATING ENGINE(S)/MODULE(S), IF A FACTOR (THAT IS, FOD DISCOVERED UPON RECEIPT) INDICATE IF FOD AESR ENTRY WAS MADE (N/A IF NOT A FACTOR).

I. OTHER REFERENCE(S) TO SAME FOD INCIDENT

- (1) ETR SERIAL NUMBER(S) (ENGINE FOD INCIDENT REPORT SERIAL NUMBER(S) IS/ARE INCLUDED IN THE REMARKS SECTION OF THE ORIGINAL ETR THAT LISTED REASON FOR REMOVAL CODE 5C OR 5D). NOTE: REASON FOR REMOVAL CODE 3Q SHALL NOT BE USED FOR ENGINES DAMAGED BY INGESTION OF FOREIGN OBJECTS.

Enclosure (1)

(2) JCN(S) (ENSURE ENGINE FOD INCIDENT REPORT SERIAL NUMBER IS INCLUDED IN DISCREPANCY FIELD OF TURN-IN VIDS/MAF).

(3) OTHER APPLICABLE MSG DTGS (LIST SEPARATELY).

3. COST DATA

- A. ENGINE(S) REPAIR COST (BASED ON CURRENT NAVSAFCEN MSG OF REPORTABLE ENGINE(S) REPAIR COST)
- B. AIRCRAFT DAMAGE COST (BASED ON P&E REPORT, OTHERWISE NA)
- C. TOTAL INJURY COST (REFER TO APPENDIX 4B OF OPNAVINST 3750.6R)
- D. OTHER PROPERTY DAMAGE COST
- E. TOTAL COST (TOTAL OF A, B, C, AND D ABOVE)

4. INVESTIGATION

- A. DESCRIBE EVIDENCE
- B. ANALYSIS OF EVIDENCE
- C. ACTUAL FOREIGN OBJECT INGESTED (IF KNOWN)
- D. SUSPECTED FOREIGN OBJECT INGESTED IF ACTUAL IS UNKNOWN (DO NOT REPORT UNKNOWN)

5. DATE/SERIAL NUMBER OF LAST FOD INCIDENT MESSAGE

6. CORRECTIVE ACTION

- A. LOCAL CORRECTIVE ACTION TAKEN TO PREVENT RECURRENCE
- B. RECOMMEND CORRECTIVE ACTION IF BEYOND THE CAPABILITY OF THE ORIGINATOR TO IMPLEMENT CORRECTIVE ACTION.

7. COMMANDING OFFICER'S COMMENTS//

Enclosure (1)