

**BY ORDER OF THE COMMANDER  
33D FIGHTER WING**



**AIR FORCE INSTRUCTION 21-101**

**AIR EDUCATION AND TRAINING  
COMMAND**

**33D FIGHTER WING  
Supplement**

**3 OCTOBER 2012**

**Maintenance**

**AIRCRAFT AND EQUIPMENT  
MAINTENANCE MANAGEMENT**

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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**RELEASABILITY:** There are no releasability restrictions on this publication.

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OPR: 33 MXG/MXQ

Certified by: 33 MXG/CC  
(Col Mark E. Fluker)

Pages: 40

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This Instruction supplements AFI 21-101, Aircraft and Equipment Maintenance Management, dated 26 July 2010, Incorporating Change dated 16 August 2011, and AFI 21-101 AETCSUP, Aircraft and Equipment Maintenance Management, dated 21 October 2010, as follows. This supplement establishes policies and procedures for aircraft maintenance at Eglin AFB, FL. Procedures outlined in this supplement apply to all maintenance and operations personnel assigned to the 33d Operations Group and 33d Maintenance Group. Per agreement between HQ AETC/A4M and the Commander of Naval Air Forces Policy Branch, all Department of Navy (DoN) units assigned to the 33 FW will use COMNAVAIRFORINST 4790.2, The Naval Aviation Maintenance Program (NAMP) series, to govern daily aircraft maintenance activities. AFI 21-101 and AETC supplements are not applicable to DoN units except as specifically addressed in this supplement. Paragraphs applicable to DoN aircraft and personnel will be used as standalone instructions. Paragraphs peculiar to a single service will be annotated as such; otherwise this guidance applies to all 33 FW units. The goal is to standardize maintenance policy guidance throughout the wing to the maximum extent possible, while adhering to service specific standards where service policy is complimentary to each other. When conflicts exist, parent service directives will take precedence until resolved by the affected group commander. It is the intent of this supplement to provide clear maintenance policy direction for all units

assigned to the 33FW, and to document any significant departures from established USAF maintenance policy guidance and procedures. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the Air Force (AF) Form 847, *Recommendation for Change of Publication*; route AF Forms 847 from the field through the appropriate functional’s chain of command. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of in accordance with the Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS) located at [https://www.my.af.mil/afirms/afirms/afirms/rimscf m](https://www.my.af.mil/afirms/afirms/afirms/rimscf.m).

See Attachment 1 for a glossary of references and supporting information.

**SUMMARY OF CHANGES**

This document is newly published. A complete review is required.

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#### 1.4.1. Requests for Depot Assistance.

1.4.2. **(Added-USAF)** Units will use the Customer Relationship Management (CRM) tool within ALIS to initiate engineering requests. Each unit will establish at least one Optional Screening Point (OSP) reviewer. Required Screening Point (RSP) reviewers are established at the Group level.

1.4.3. **(Added-USAF)** The 33 MXG QA is the focal point for all CRM actions. The 33 FW/CC will publish an operating instruction outlining specific roles for the CRM process.

1.4.4. **(Added)** Respective unit/squadron QA will review engineering requests from their respective unit to ensure technical correctness and all local repair resources have been exhausted prior to submission to Autonomic Logistics Global Sustainment Operations Center.

#### 1.6. Use of Technical Orders (TO) and TO Supplements.

1.6.1.3. Ensure all technical data and technical data support equipment are shipped by military transportation unless deemed unfeasible by the unit. In the latter case, commercial means may be used to ship equipment. All actions should be coordinated with LRS prior to shipment.

1.6.2.2.1. **(Added)** All individuals ensure Joint Technical Data (JTD) installed on Portable Maintenance Aids (PMA) is current and validated. Ensure PMAs are synchronized when checking prior to use. Support personnel ensure the most current JTD is loaded for all personnel. Unit supervision ensure PMAs are synchronized at least once during each shift. The intention is to ensure the most up-to-date technical data and aircraft data is available at all times. Synchronization is accomplished at job completion to afford accurate aircraft status.

1.8. **Waiver Request.** Units submit waivers following procedures established in AFI 21-101 AETC Sup 1. Potential waivers are routed through unit supervision prior to submission to 33 MXG QA. 33 MXG QA will forward waiver requests to 33 MXG/CC/CD after review.

1.13.1. Superintendents and maintenance officers may utilize personal electronic devices on the flightline in the performance of official business.

#### 1.18. Air Force Munitions Policy.

1.18.3. Ensure safety pins/streamers for arming keys/safe-arm handles on Captive Air Training Munitions (CATM) are removed for daily training/flying operations.

2.8.1. **(Added) Aircraft Towing and Hangaring Procedures.** For increased visibility during aircraft towing operations (day or night), the tow vehicle hazard flashers or beacon light (if installed) will be illuminated.

2.8.1.1. **(Added-USAF)** Tow team supervisor will annotate completed items of the F-35 Hangar (Pre & Post) Entry Checklist (see Attachment 27) and secure it in the right forward portion of the fuselage (MIP Panel) prior to leaving the aircraft. The checklist will remain attached to the aircraft until the aircraft is removed from the hangar, at which time the checklist is removed and disposed of.

2.8.1.2. **(Added)** Wing and tail walkers are required when towing in/out of aircraft hangars and in congested areas.

### 2.21. **(Added) Incident Reporting.**

2.21.1. **(Added)** Report incidents to respective unit QA immediately; if contact is unable to be made, report incident to QA within 24 hours. 33 MXG units document all incidents on the Incident Report (see Attachment 26) and ensure it is routed to 33 MXG QA.

2.21.2. **(Added)** An incident can be defined as a "near accident;" an occurrence other than an accident, associated with the operation of an aircraft, vehicle or equipment, which affects or could affect the safety of operations. Some incidents also meet the definition of a Mishap (per AFI 91-204, *Safety Investigations and Reports*). USAF mishaps are required to be documented on an AETC Form 435 and routed to Wing Safety. DoN mishaps are reported through their respective Squadron Safety Officer and Quality Assurance Division.

2.21.2.1. **(Added)** DoN personnel assigned to the 33 MXG will report mishaps on an AETC Form 435 and route to Wing Safety. A copy will be provided to the Safety Officer at VMFAT-501 or VMA-101 as applicable. For instance, USMC personnel will provide a copy to VMFAT-501.

2.21.3. **(Added)** The following is a list of incidents that must be reported. It is not all-inclusive and may be supplemented by any person feeling an event should be reported:

2.21.3.1. **(Added)** Aircraft damage where the cause is not immediately associated as being routine, when determined by maintenance supervision.

2.21.3.2. **(Added)** Foreign Object Damage

2.21.3.3. **(Added)** Munitions: Dropped, Hung, Exploded, or Damaged

2.21.3.4. **(Added)** Ground Emergencies

2.21.3.5. **(Added)** Bird Strikes

2.21.3.6. **(Added)** Component Damage

2.21.3.7. **(Added)** Support Equipment Damage

2.21.3.8. **(Added)** Hazardous Material Spills

2.21.3.9. **(Added)** Personnel Injury

2.21.3.10. **(Added)** Vehicle Damage

2.21.3.11. **(Added)** Other (Incidents deemed appropriate to be reported)

2.21.3.12. **(Added)** Fuel spills

2.21.4. **(Added)** These reporting requirements do not preclude or substitute for reporting requirements prescribed by other applicable instructions.

### 3.4. **Maintenance Group Commander Responsibilities.**

3.4.1.16.1. **(Added)** The 33 FW Aviation Programs Team (APT) is the focal point for all functional, technical, and QAE matters pertaining to contractor

aircraft maintenance operations within 33 FW.

#### 5.6. Aerospace Ground Equipment (AGE)/General Support Equipment (GSE).

5.6.1.4. Performs maintenance on LOX/GOX/Liquid Nitrogen (LN2) servicing units/carts.

5.6.8. **(Added)** All AGE/GSE deploying from Eglin AFB is requested through and processed by the AGE Flight. During the CLS period of performance, this coordination takes place with the Ground Government Flight Representative (GGFR) and CLS Team prior to deployment of any AGE/GSE.

#### 6.2.2. Maintenance Operations Center (MOC).

6.2.2.1. **(DoN)** DoN will follow guidance as provided in COMNAVAIRFORINST 4790.2 series with regard to unit level management of maintenance activities. However, DoN Maintenance Controllers will coordinate maintenance actions outside of their unit resources through the MOC.

6.2.2.7. **(DoN)** DoN Maintenance Controllers will request support from the MOC for the following actions prior to execution:

6.2.2.7.1. **(DoN)** Standby fire fighting capability, aircraft water, snow removal, fueling and defueling service and civil engineer support.

6.2.2.9.1. **(DoN)** Control tower clearances for ground movement of aircraft and equipment across active taxiways or runways. All aircraft engine runs and aircraft ground movements conducted by maintenance personnel prior to execution.

6.2.2.9.2. **(Added-DoN)** DoN squadron program managers will maintain a log of engine ground run operations.

6.2.2.9.3. **(Added-DoN)** DoN unit controllers will immediately notify the MOC of any emergencies affecting DoN area of responsibility (e.g., major accident, bomb threat, and power or communication failure).

6.2.2.9.4. **(Added)** MOC will include DoN squadrons on all Quick Reaction Checklists (QRCs).

6.2.2.10.1. **(DoN)** DoN Maintenance Controllers will notify MOC of all live munitions loaded or unloaded from an aircraft, to include aircraft type, tail number, location, type of explosives and arming status.

6.2.6.16.6. **(USAF)** Data Integrity Team (DIT) Program. Ensure DIT team is established in accordance with guidelines developed after software integration with F-35 Autonomic Logistics Information System (ALIS).

7.10.7.2.1. **(USAF)** To maintain consistency and ensure standardization throughout the wing, maintenance units within the MXG and OG will submit additions or deletions to local forms, lists, preprints, and profile-type job flow packages through their section chiefs and supervision to review for accuracy, intent, and necessity. After this review, draft packages are submitted to 33 MXG QA for final approval.

7.10.7.2.1.1. (USAF) 33 MXG QA evaluates all local forms, lists, preprints, and profile-type job flow packages for accuracy, standardization, intent, and necessity.

7.10.7.2.1.2. (USAF) 33 MXG QA maintains a master copy and performs annual reviews/updates of all local forms, lists, preprints, and profile-type job flow packages.

7.10.7.2.1.3. (USAF) 33 MXG QA assigns individual control numbers to each approved form, list, and preprint. Ensure the current date and QA stamp (ink or approved digital) is placed on each odd numbered page.

8.12.2.1.9. (USAF) 33 MXG QA is the authority for interpretation and administration of deficiency reports and all related actions.

8.12.2.1.10. (USAF) All DRs are processed through QA. QA is the focal point for all deficiencies. QA ensures all actions are properly accomplished.

8.12.2.1.11. (USAF) Use a tracking program to log, track, and follow-up all reports.

8.12.2.1.12. (USAF) Release exhibits for repair, shipment, or turn-in through normal supply channels.

#### **8.16. (USAF) Functional Check Flights (FCFs) to include Operational Check Flights (OCFs).**

8.16.1.1. (USAF) All FCFs must be flown by a current and qualified FCF pilot. OCFs will only be flown by a FCF pilot or fully qualified F-35 Instructor Pilot.

8.16.2.4.1. (Added-USAF) All FCFs and OCFs will be flown using the F-35 Flight Series Data (FSD), FCF Module and Pilot Checklist (PCL). All FCF pilots will be issued their own FCF PCL and will be responsible for its currency.

8.16.2.7. (Added-USAF) FCF OIC Responsibilities:

8.16.2.7.1. (Added-USAF) Train and monitor all FCF pilots.

8.16.2.7.2. (Added-USAF) Provide QA FCF program manager a copy of the FCF certification letter (Attachment 35) and FCF Initial Checkout document (Attachment 34). FCF OIC will notify QA FCF program manager when FCF pilots are decertified or relocate.

8.16.2.8. (Added-USAF) FCF Pilot Qualification Training:

8.16.2.8.1. (Added-USAF) Upgrading FCF pilots will:

8.16.2.8.1.1. (Added-USAF) Receive a comprehensive briefing from the FCF OIC on local procedures and requirements listed in the following: AFI 21-101 plus AETC and 33 FW Supplements, AFI 11-202 Vol 3 plus AETC Supplement, AFI 11-2F-35A Volume 1, AFI 13-201 plus AETC Supplement, AFI 11-218 plus AETC Supplement, T.O. 1-1-300, F-35 FSD FCF Module, EAFBI 11-201, 33 FW In-Flight Guide.

8.16.2.8.1.2. (Added-USAF) Accomplish an open-book examination based

on the references listed in the previous paragraph. A passing score is 85% corrected to 100%.

8.16.2.8.1.3. **(Added-USAF)** Complete a full local FCF profile in a Full-Mission Simulator (FMS) with a current and qualified FCF pilot.

8.16.2.9. **(Added-USAF)** FCF Pilots will:

8.16.2.9.1. **(Added-USAF)** Meet FCF Pilot Currency Requirements IAW AFI 11-2F-35A Vol 1.

8.16.2.9.2. **(Added-USAF)** FCF pilots will receive FCF academics from the FCF OIC annually. This will be accomplished at an annual FCF meeting, run by the FCF OIC.

8.16.2.9.3. **(Added-USAF)** FCF pilots will log FCF sorties or simulator events with their squadron ARMS personnel to ensure ARMS tracking of FCF pilot currency.

8.16.2.9.4. **(Added-USAF)** Demonstrate proficiency by completing a full FCF profile in an F-35. An actual FCF will not be used for the qualification sortie. The requirement for an FCF training sortie can be waived by the 33 OG/CC.

8.16.2.9.5. **(Added-USAF)** FCF pilots who become non-current (greater than 90 days but less than 180 days since last FCF event/ FCF Sim) will accomplish an FCF profile in the FMS with a current and qualified FCF pilot to regain currency. After 180-days or more since last FCF Event or Sim, FCF pilots will be required to complete the entire 33 FW FCF upgrade to regain FCF currency.

8.16.3. **(USAF)** QA FCF Manager will:

8.16.3.6. **(Added-USAF)** Track and document all FCF/OCF and High Speed Taxis. Track all FCF pilot training with information provided by the 33OSS/OSOF on the first duty day of each month.

8.16.3.7. **(Added-USAF)** Conduct a full review of any applicable aircraft documentation in ALIS, and associated aircraft history (applicable to FCF and OCF aircraft).

8.16.3.8. **(Added-USAF)** Brief both OG/CC and MXG/CC or designated representatives and the FCF OIC on the specific reason for FCF and corrective action (notification/approval by e-mail or verbal authorized for OCF).

8.16.3.9. **(Added-USAF)** Brief pilot and Top-3 on the reason and corrective action for FCF/OCF.

8.16.4. **(USAF)** Aircraft configuration for all FCFs will be clean with no external pylons or internal stores. Internal suspension and release equipment is permitted. Aircraft will be configured with full internal fuel. Configurations other than the above require OG/CC approval.

8.16.5.1.2. **(Added-USAF)** FCF flights will be flown during official daylight hours, in Visual Meteorological Conditions (VMC) with a minimum of 3000 feet ceiling and visibility of 3-miles or better. Weather requirements may be waived

down to 1500 feet ceiling and 3-miles visibility if visual flight rules on top can be maintained, IAW T.O. 1-1-300 with 33 OG/CC approval.

8.16.5.1.3. **(Added-USAF)** FCF flights will be flown with a Supervisor of Flying (SOF) in the control tower and locally assigned aircraft airborne, available to assist if a chase aircraft is required.

8.16.7. **(USAF)** FCF Procedures Away from Home Station:

8.16.7.1. **(Added-USAF)** Coordinate with the FCF OIC to acquire a pilot for the FCF on aircraft type assigned to 33 FW. If an off-station pilot is used, the FCF OIC or representative will brief the pilot on local area procedures prior to the flight.

8.16.7.2. **(Added-USAF)** FCF OIC ensures transient/TDY pilots deployed to Eglin AFB for training are briefed on local FCF and OCF requirements.

8.16.7.3. **(Added-USAF)** 33 FW aircraft located off-station requiring an FCF/OCF will follow host-station FCF profiles and airspace restrictions in coordination with 33 FW OG/CC and MXG/CC.

8.16.7.4. **(Added-USAF)** Whenever possible, a 33 FW FCF pilot will be used for off-station FCFs/OCFs of 33 FW aircraft.

8.16.8. **(Added-USAF)** AMU Production Supervisor (Pro Super) will:

8.16.8.1. **(Added-USAF)** Notify/Coordinate all FCF/OCF requirements with the QA FCF Manager in a timely manner to allow sufficient time to accomplish FCF/OCF requirements and to prevent any last minute delays, ensure all maintenance actions and documentation are completed prior to QA FCF Manager review. All documentation is presented to QA at least 4 hours prior to the scheduled FCF and should consist of the following items/actions:

8.16.8.1.1. **(Added-USAF)** Units with ALIS ensure an FCF/OCF job flow package is inserted in the ALIS work file, and is reflected in the aircraft record. Due to the immaturity of ALIS at this time, a requirement may exist to retain certain legacy paper checklists, forms, or pre-prints until ALIS reaches its full functionality. In these instances, units may utilize job flow packages, pre-prints, or checklists to augment ALIS documentation for FCF/OCF activities.

8.16.8.1.2. **(Added-USAF)** Ensure (ALIS) automated forms are accurate and the open job document and maintenance history report for the aircraft and engine are presented to QA FCF Manager for review. ALIS/relevant aircraft documentation review must be accomplished by QA prior to OG/CC and MXG/CC authorization (FCF only).

8.16.8.1.3. **(Added-USAF)** Notify MOC of anticipated FCF/OCF mission.

8.16.8.1.4. **(Added-USAF)** Ensure check pilots and aircrew are briefed before post maintenance FCFs so the purpose and objectives of the flight are clearly understood. After completion of the FCF, debrief the check pilots, aircrew, maintenance control representative, and applicable work center representatives to determine compliance with objectives outlined on the FCF checklist and clarify discrepancies noted. Completed FCF checklists shall be retained in the aircraft

history files for a minimum of 6 months, or one phase cycle, whichever is greater.

8.16.9. **(Added-USAF)** 33 MXG/QA will:

8.16.9.1. **(Added-USAF)** Prepare and document the FCF worksheet (see Attachment 29) and obtain a current Weight and Balance Form F.

8.16.9.2. **(Added-USAF)** Review aircraft automated forms and history since the last flight for all FCFs. The forms review is conducted approximately 4 hours prior to crew step the day of the FCF. QA evaluator notes any deficiencies on the FCF worksheet and briefs the pilot approximately 1 hour prior to crew step on all open discrepancies and significant maintenance actions since the aircraft's last flight.

8.16.9.3. **(Added-USAF)** Perform a rated Pre-flight QVI IAW applicable aircraft technical data.

8.16.9.4. **(Added-USAF)** Accompany/assist the FCF pilot with the preflight inspection of the aircraft IAW applicable aircraft technical data.

8.16.9.5. **(Added-USAF)** Participate in all FCF debriefings. FCF debriefings are conducted in the appropriate squadron maintenance debrief section. The 33 MXG/QA evaluator ensures the pilot has properly annotated the aircraft automated forms.

8.16.10. **(Added-USAF)** FCF Profile.

8.16.10.1. **(Added-USAF)** All FCFs are flown by a current/certified FCF pilot. OCFs will only be flown by a fully qualified instructor pilot (IP). **NOTE:** OCFs are part of the check flight program and are coordinated through both the FCF OIC and the QA FCF Manager.

8.16.10.2. **(Added-USAF)** FCF/OCF is scheduled and flown during normal daylight hours. Weekend/holiday FCF/OCF requires approval by both the 33 OG/CC and 33 MXG/CC. Any squadron intending to fly an FCF/OCF outside the normal flying window will provide its own or coordinate for an FCF/OCF pilot, Top 3 and SOF. The 33 OG/CC and 33 MXG/CC or designated representative, must approve all FCF missions.

8.16.10.3. **(Added-USAF)** Aircraft FCF configuration is clean with no external pylons. Configurations other than the above require OG/CC approval.

8.16.10.4. **(Added-USAF)** The FCF pilot will record the lat/long data for the mach run (entry and exit points) and debrief the QA FCF Manager after the flight.

8.16.11. **(Added-USAF)** An OCF is flown when:

8.16.11.1. **(Added-USAF)** The FCF conditions outlined in applicable aircraft instructions do not apply and when operational maintenance checks cannot be performed adequately on the ground, when test equipment is not available or when directed by the 33 MXG/CC or 33 OG/CC.

8.16.11.2. **(Added-USAF)** An aircraft experiences repeat/recurring malfunctions involving flight controls, landing gear system, hydraulic system, engine, any

condition involving safety of flight, deemed appropriate by leadership personnel, or aircrew (reviewed by the MXG CC/CD, OG CC/CD for OCF requirements).

8.16.11.3. **(Added-USAF)** The 33 MXG/CC (in coordination with the 33 OG/CC) may authorize an OCF to be flown with training flights if the training would not be degraded should the system check bad.

8.16.11.4. **(Added-USAF)** 33 MXG/QA will:

8.16.11.4.1. **(Added-USAF)** Review aircraft automated forms and maintenance history since the last flight for all OCFs. The forms review will be conducted approximately 4 hours prior to crew step the day of the OCF. The QA evaluator notes any deficiencies on the OCF worksheet and briefs the pilot prior to crew step on all open discrepancies and significant maintenance actions since the aircraft's last flight.

8.16.11.4.2. **(Added-USAF)** Prepare and document the OCF worksheet.

8.16.11.4.3. **(Added-USAF)** Accompany/assist the pilot with the preflight inspection as required.

8.16.11.4.4. **(Added-USAF)** Participate in all OCF debriefings. OCF debriefings are conducted in the appropriate squadron maintenance debrief section. The 33 MXG/QA evaluator ensures the pilot has properly annotated the aircraft automated forms.

8.16.11.5. **(Added-USAF)** AMU will:

8.16.11.5.1. **(Added-USAF)** Ensure all maintenance actions are completed and the automated forms are properly documented and reviewed by squadron supervision (IAW TO 00-20 series requirements) before the aircraft and automated forms are turned over to 33 MXG/QA. All documentation is presented to 33 MXG/QA at least 4 hours prior to OCF.

8.16.11.5.2. **(Added-USAF)** Ensure the requirements of TO 00-20-1 are met when an aircraft has not flown for 30 days or more.

8.16.11.5.3. **(Added-USAF)** Coordinate all OCFs with 33 MXG/CC and MXG/QA NLT 1400L the duty day prior to the OCF to allow for coordination with the 33 OG/CC and 33 FW/FCF OIC.

8.16.11.5.4. **(Added-USAF)** Configure the aircraft for normal daily flying unless directed by the 33 FW FCF OIC for specific configuration.

#### 8.18. **(USAF) High-Speed Taxi Checks:**

8.18.1. **(USAF)** Aircraft are prepared for flight using the same criteria as FCF. However, a preflight Quality Verification Inspection is not required.

8.18.2. **(Added-USAF)** QA FCF Manager will:

8.18.2.1. **(Added-USAF)** Brief the FCF OIC and squadron Top 3 on reason and corrective action for high-speed taxi, the aircraft configuration, internal fuel load, and desired taxi check speed.

- 8.18.3. **(Added-USAF)** 33 MXG/QA will:
- 8.18.3.1. **(Added-USAF)** Conduct forms review IAW FCF procedures.
  - 8.18.3.2. **(Added-USAF)** Ensure pilot is qualified and current.
  - 8.18.3.3. **(Added-USAF)** Brief the pilot on the items requiring the high-speed taxi check.
  - 8.18.3.4. **(Added-USAF)** Compute center of gravity (if aircraft components are removed) and ensure proper aircraft configuration. Aircraft will be configured for flight. Print a current Form F.
- 8.18.4. **(Added-USAF)** AMU will:
- 8.18.4.1. **(Added-USAF)** Obtain 33 MXG/CC and 33 OG/CC approval.
  - 8.18.4.2. **(Added-USAF)** Request specific clearance to conduct checks above 100 Kts.
  - 8.18.4.3. **(Added-USAF)** Ensure aircraft is fueled to the specifications in accordance with aircraft technical data.
  - 8.18.4.4. **(Added-USAF)** Process aircraft forms through 33 MXG/QA using FCF procedures.
  - 8.18.4.5. **(Added-USAF)** Ensure all pins and covers are pulled IAW normal launch procedures. Normal end of runway procedures are accomplished.
  - 8.18.4.6. **(Added-USAF)** Ensure aircraft is airworthy to include a valid preflight inspection (in case of unexpected flight during taxi check). Ensure all “Red X” and safety of flight maintenance discrepancies are cleared before high-speed taxi check.
  - 8.18.4.7. **(Added-USAF)** Exception: The Red Xs for aircraft impoundment and/or the original discrepancy may be downgraded, if applicable per guidance in TO 00-20-1.
- 8.18.5. **(Added-USAF)** AMU Production Super will:
- 8.18.5.1. **(Added-USAF)** Provide QA FCF Manager with a complete history of the problem to include the aircraft configuration, fuel on board, and speed at which the problem occurred.
  - 8.18.5.2. **(Added-USAF)** Coordinate all taxi checks through MOC. Prior to the operation, MOC will pass tail number, parking spot, time of taxi, and route to tower. Note: The tower will not authorize high-speed taxi checks without prior coordination with MOC.
- 8.18.6. **(Added-USAF)** The FCF pilot will:
- 8.18.6.1. **(Added-USAF)** Compute the aborted takeoff maximum brake application speed, in addition to normal takeoff/landing distance.
  - 8.18.6.2. **(Added-USAF)** Review the antiskid malfunction (ground hard over and landing); brake failure, hot brakes, NWS failure/hardcover, abort, and cable arrestment checklists.

8.18.6.3. **(Added-USAF)** Ensure the appropriate departure end cable is available and in place.

8.18.6.4. **(Added-USAF)** Follow the procedures outlined in the applicable -1, -1CL, and -1-1 TOs.

8.18.6.5. **(Added-USAF)** Taxi through dearm and ensure the aircraft is checked for hot brakes after a high-speed taxi check attempt.

9.4.12. **(Added-USAF)** Impoundment of Aircraft, Engine, and Equipment.

9.4.12.1. **(Added-USAF)** Attachment 23, Table 2, *Mandatory Impoundments* are locally modified extractions from AFI 21-101, Chapter 9 and add specific details applicable to impoundment of aircraft, engine and equipment within the 33 MXG and the 33 OG.

9.4.13. **(Added-USAF)** If a single incident or event occurs that involves multiple end items owned by different squadrons; then each squadron will initiate the impoundment process for their owned asset, i.e. MXS Production Supervision will ensure impoundment of AGE, and AMXS Production Supervision or DoN Maintenance Controller will separately impound an aircraft and/or engine (not in phase) for a related incident.

9.4.14. **(Added) (USAF) General QA Responsibilities:**

9.4.14.1. **(Added-USAF)** QA will assist the IO in initiating impoundment and review final actions prior to release.

9.4.14.2. **(Added-USAF)** Ensure the QA Impoundment Book/Event Log and the Impoundment Tracking Board are updated accordingly.

9.4.15. **(Added) (USAF) Impoundment Procedures for Engine Removal of Impounded Aircraft:**

9.4.15.1. **(Added-USAF)** The Aircraft IO will notify the 33d Aircraft Maintenance Squadron (AMXS) Engine Manager of the engine removal. During the CLS period of performance, this activity will require close communication with the CLS Team Chief, PSC Team Chief, the Ground Government Flight Representative, and the APT.

9.4.15.2. **(Added-USAF)** For Engine FOD related incidents, units may reference the Engine FOD Impoundment Logic Tree (see Attachment 24).

9.4.15.3. **(Added-USAF)** The original aircraft impoundment will be cleared IAW AFI 21-101 and TO 00-20-1.

9.4.16. **(Added) (USAF) Deployed and Off-Station Impoundment Procedures:**

9.4.16.1. **(Added-USAF)** Prior to scheduled deployments, the deploying maintenance officer will ensure there is a minimum of one qualified IA and one qualified IO scheduled for the deployment. If there is no qualified IA or IO scheduled, ensure a letter is generated designating an IA or IO, or both, for the deployment and authorized by the 33 MXG/CC or MXG/CD. Ensure a copy of the authorization is given to QA prior to departure.

9.4.16.2. **(Added-USAF)** For aircraft that break off-station with an impoundable condition; F-35 qualified maintenance personnel will request management of impoundment actions by the host base MXG/CC and QA. If no F-35 maintenance support is available contact home station for further direction.

9.4.16.2.1. **(Added-USAF)** If no deployed F-35 maintenance support is available, Eglin QA personnel will provide the designated deploying IO with all needed documentation.

9.5.1. The IO will ensure an Impoundment Worksheet is initiated and maintained for each aircraft/equipment impoundment (see Attachment 25).

#### 9.6. **(USAF) Impoundment Process and Procedures:**

9.6.1. **(USAF)** Ensure the automated forms within ALIS have a RED X (aircraft removed from service). If the equipment has no forms, attach an AFTO Form 350 with the appropriate text in the discrepancy block, border the tag in RED, and remove the equipment from service.

9.6.4.1.3. **(Added-USAF)** Provide and setup all signs and cones required for isolating aircraft. Cones are placed on the left, right and rear of the aircraft. The nose of the aircraft will have a cone with a placard stating the aircraft is impounded and the Impoundment Official contact information.

9.6.11.1. **(Added-USAF)** The owning squadron senior maintenance authority reviews the impoundment and signs the impoundment worksheet (see Attachment 25) recommending release.

9.6.11.2. **(Added-USAF)** A QA inspector reviews all documentation and signs the review on the appropriate impoundment worksheet, or documents the applicable automated ALIS screen, as applicable, after the owning squadron has reviewed all documentation. This review is considered a forms review inspection and is given a rating in the MSEP database against the owning unit or work center.

9.6.11.3. **(Added-USAF)** If impoundment involves a Safety Investigation, ensure release is authorized by the board before exercising impoundment release authority.

9.6.11.4. **(Added-USAF)** The Release Authority (RA) signs the impoundment worksheet and if applicable signs the "INSPECTED BY" block of the automated forms (or associated ALIS documentation) or AFTO Form 244 Red X entry (IO signs the "CORRECTED BY" block) with the following corrective action statement: "INVESTIGATION COMPLETE, ALL CORRECTIVE ACTIONS HAVE BEEN REVIEWED, (pick one; AIRCRAFT/ENGINE/EQUIPMENT) RELEASED IAW AFI 21-101, SEE PAGE X ITEM X" (refers to original discrepancy).

9.6.11.5. **(Added-USAF)** The RA may designate that the impound entries be cleared. In these instances, the IO annotates the impoundment entry as "Released by (RA Name and Grade) on (Date and Time)" then signs next to that entry (First Name Initial, Last Name, Grade). For automated forms and AFTO Form 244, supplement the information in previous paragraph with this information and sign the "INSPECTED BY" per TO 00-20-1, *Aerospace Equipment Maintenance Inspection, Documentation, Policy and Procedures*.

9.6.11.6. **(Added-USAF)** After releasing the impoundment, the IO is responsible to clear the RAs impoundment discrepancy in ALIS (if applicable). Show corrective action as “AIRCRAFT RELEASED BY (RA Name and Grade) ON (Date/Time)” and clear the entry using the “INSPECTED BY” block with corresponding RAs (MXG/CC or OG/CC or designated representatives) user ID.

9.6.11.7. **(Added-USAF)** If IO is changed, notify Impoundment Authority (IA) and request the change (IA must approve the change). For aircraft, an Info Note is placed in the automated forms of the change. Once approved, notify QA and document the changeover on the Impoundment Worksheet. Ensure the gaining IO is fully briefed on all actions taken or in-work.

9.6.11.8. **(Added-USAF)** When a critical piece of equipment is removed from an impounded aircraft for back shop repair/bench check, ensure item is identified. Contact MOC immediately upon the removal of equipment and MOC will contact QA so that the removed piece of equipment can be impounded with a separate impound number and all documents accompany the equipment.

9.6.11.9. **(Added-USAF)** Obtain all pertinent aircraft, engine, or equipment documentation files and automated forms history, Significant Historical Data, available database reports, copies of shop logs, work packages, unique documentation, and ALIS history etc. Review all applicable items thoroughly and place pertinent copies within the impoundment folder, listing attachments on the impoundment worksheet.

## 10.2. **(Guidelines for Program Management.**

10.2.1.1. All tools, Consolidated Tool Kits (CTK), and equipment are stored in a tool room or similar location to prevent pilfering. DoN units follow guidance as directed in COMNAVAIRFORINST 4790.2 series.

10.2.1.1.1. **(Added-USAF)** All tools, CTKs, and equipment are controlled through ALIS or an approved tool tracking system.

10.2.1.1.2. **(Added-USAF)** Special tools and equipment which cannot be returned at the end of the shift for physical inventory are controlled by the use of long term procedures. These tools, CTKs, and equipment are logged into ALIS or the approved tool tracking system.

10.2.1.1.3. **(Added-USAF)** Ensure every effort is made to ensure accountability of tools. Tools should not be signed out for an extended period of time. Extended period is defined as extended past a duty period for the person who signed out the tools.

10.2.1.1.4. **(Added-USAF)** Tools no longer part of the CTK (permanently removed from the MIL) or shadow board have the respective cutout filled or shadowing removed. This is accomplished by permanently filling in the tool cutout or by painting over the shadowed area in the appropriate background color of the shadow board.

10.2.1.1.5. **(Added-USAF)** All test equipment will have a list of detachable items included in the test set (i.e., power cords, hoses, etc.), posted inside the

cover. All detachable items larger than ¼ inch in diameter are etched, stenciled, or labeled with CTK number.

10.2.1.2.1. **(Added-USAF)** All CTKs have, as a minimum, a 90-day inspection performed and documented within ALIS or approved tool tracking system. When the CTK custodian is replaced, a 100% tool and equipment inventory is accomplished and documented in ALIS. As a minimum, inspect the following items: etchings, legibility of etchings and required markings (double etchings are not authorized), condition of tools, corrosion, foreign objects and condition/currency of the Master Inventory Listing (MIL) and ALIS database. Check MILs against the Master MIL to ensure accuracy. Also, ensure all MILs are legible and that permanent ink changes are added to the database and new MILs are printed. Check for overdue calibration and ensure all sets contain the proper number of items (as marked on the container). Inspect all tools for serviceability IAW TO 32-1-101.

10.2.1.2.2. **(Added-USAF)** On quarterly inspections, weapons section chiefs will expand their inspection to ensure Voltage Detectors (VD) in each test set are opened and checked for battery terminal corrosion or battery leakage. Visually inspect internal surfaces of VD for signs of humidity, leakage and/or corrosion. If corrosion exists, turn the item into PMEL for maintenance. If no defects exist, reinstall the batteries.

10.2.1.2.3. **(Added-USAF)** Support Section Chief documents CTK custodian change inventory by letter. Flight commander/chief signs the letter and files it in the MIL book or section continuity book.

10.2.1.2.4. **(Added)** Spill Recovery Units, EPA Trailers, and Hazardous Waste Accumulation points that contain safety equipment and Personal Protective Equipment (PPE) are marked with the squadron and accumulation site or trailer number. An equipment content listing is kept with spill kits.

10.2.1.3. **(USAF)** Flight commanders/chiefs/senior maintenance representatives ensure strict control of warranty tools and designate program managers (primary and alternate) in writing or electronic format.

10.2.1.3.1. **(Added-USAF)** The program manager will maintain a list of all warranty tools and ensure broken or damaged warranty tools are isolated and under strict control until properly replaced. Warranty replacement tools must be isolated from other replacement tools. An asterisk on all CTK MILs and spare bin rosters will identify non-warranty tools. Broken warranty tools are replaced according to the manufacturer's warranty agreement.

10.2.1.4. **(USAF)** Consumables placed in CTKs are marked for the CTK they are in and replaced as needed. Only support section personnel/CTK custodian are allowed to replace consumables and only when the empty container or roll is returned. Consumables not feasible to mark (petrolatum, grease, etc.) are placed in a suitable container that is marked. Keep consumables placed in CTKs at the absolute minimum levels needed to perform the job.

10.2.1.5.1. **(Added-USAF)** The production supervisor authorizes all flight line

CTK turnovers and keeps transfers to a minimum. When transfers do occur, the person being relieved of the CTK and the person assuming control of it inventory the CTK. A section chief, line chief or a representative from the support section also inventories the CTK. Use an AF Form 1297, *Temporary Issue Receipt*, to issue the CTK to the next person. The person being relieved of control of the CTK ensures the hand receipt is delivered to the support section or responsible agent for accounting for this equipment. This relieves him or her from responsibility for the CTK. These turnovers are treated as if the CTKs were being turned in or signed out at the support section.

10.2.1.6.1. **(Added)** Procedures for AETC Form 138, *Lost Tool or Item Investigation Record* (USAF) / COMNAVAIRFORINST 4790.2 *Missing Tool Report* (DoN) as follows: QA keeps the original Eglin Lost Tool/Object Report and forwards it to 33 FW FOD Manager. A copy is filed with the CTK custodian. When lost tools are found, notify AMU Production Super, applicable DoN controller, or owning support section and 33 FW FOD Manager. Lost tool reports are accomplished on all reported lost tools and objects, whether found or not.

10.2.1.6.2. **(Added)** If a tool/object is lost during maintenance on an in-shop engine or component, the following procedures will apply:

10.2.1.6.2.1. **(Added)** All maintenance on the affected engine or unit will be stopped and the work center supervisor will immediately initiate a search for the missing item. All available personnel stop all maintenance and assist in a search until the work center supervisor releases personnel or calls off the search. The work center supervisor notifies the flight chief, maintenance superintendent and QA immediately and initiates lost tool paperwork. If the tool/object is not found after an extensive search, the maintenance superintendent or designated representative determines if the equipment requires impoundment.

10.2.1.6.2.2. **(Added)** QA will review the impoundment procedures prior to release of the engine from impoundment after the work center has completed a thorough search of all involved engines and work areas.

10.2.1.6.2.3. **(Added)** The shift supervisor and the individual who signed for the CTK will ensure support personnel annotate the missing tool on all copies of the CTKs MILs.

10.2.1.6.2.4. **(Added)** If aircraft or associated equipment is not involved, the individual discovering the tool or object missing will notify the work center supervisor immediately. The work center supervisor stops all maintenance and a search is conducted to find the item. All equipment the tool or object was used on must be returned to the shop. A search of the equipment will be conducted and annotated on AETC Form 138, *Lost Tool or Item Investigation Record* (USAF) / COMNAVAIRFORINST 4790.2 *Missing Tool Report* (DoN).

10.2.1.6.2.5. **(Added)** If a tool/object is lost while performing maintenance on/around an aircraft, the affected backshop, flying unit, or AMU immediately

stops aircraft movement on ground until all involved flight line areas can be searched, unless cleared to fly sooner by appropriate supervision. All available personnel in affected areas stop all maintenance and assist in a search until the senior maintenance officer or maintenance superintendent releases personnel or calls off the search. If the tool/object is not found within a reasonable period of time, the maintenance officer, maintenance superintendent or designated representative determines if the aircraft/equipment requires impoundment.

10.2.1.6.2.6. **(Added-USAF)** To minimize aircraft downtime when a tool/object is suspected lost in a cockpit, the ejection seat is raised to the full up position. If the search proves unproductive, the ejection seat pan, kick panels, console instruments, and other components are removed to facilitate the search, as required.

10.2.1.6.2.6.1. **(Added-USAF)** After a thorough search, egress personnel thoroughly search the ejection seat (at the request of the impoundment official) prior to the aircraft being released from impoundment. Before requesting release of the impoundment, the impoundment official will confer with the available Releasing Authority (RA) to determine if an ejection seat removal is required for further searching.

10.2.1.6.2.7. **(Added)** The shift supervisor and the individual who signed for the CTK ensure support personnel annotate the missing tool on all copies of the CTKs MILs.

10.2.1.7. Only tools/equipment supplied or approved for use by the F-35 program are used to facilitate maintenance on aircraft and assigned equipment. These tools are marked according to ALIS guidelines.

10.2.1.7.1. **(Added)** Tools/equipment required to facilitate aircraft/equipment maintenance not supplied by Lockheed Martin may be used after obtaining approval from the 33 MXG/CC or DoN Squadron Aircraft Maintenance Officer. These tools are marked according to ALIS guidelines or service specific instructions.

10.2.1.8.1. **(Added-USAF)** Issued personal equipment (hearing protection, reflective belts, etc.) are permanently marked with individual's first initial, last name, and last four of Social Security Number (SSN) (example: J. Doe, 1234). Personnel must maintain strict control and accountability of personal issued equipment. Lost tool procedures are followed if an item is lost. All personnel assigned to the 33 FW comply with local requirements for the use of Personal Protective Equipment (PPE) and safety equipment such as reflective belts and hearing protection.

10.2.1.9.1.1. **(Added-USAF)** Containers of five rags may be kept for issue and the number of rags is marked on the container. Rags are counted each time the container is issued or turned in. Any time rags are changed, it is on a one-for-one swap. Single rags may be issued using an AF Form 1297. Individually issued rags are replaced on a one-for-one swap. An unaccounted

rag is treated as a lost tool.

10.2.1.10.1. **(Added-USAf)** Only government purchase cardholders and/or resource advisors are authorized to procure tools.

10.2.1.11.1. **(Added)** All requests for F-35 specific tool modifications are forwarded to the Lightning Support Team using the Action Request (AR) process. For items that are not F-35 specific, the requester will initiate a letter requesting authorization to locally manufacture and use a particular tool or piece of equipment. The letter should include justification for the tool and all applicable diagrams, TO references, inspection requirements etc. (Attachment 32). **Note:** F-35 specific tools are to be provided by the Joint Strike Fighter Program Office (JSFPO).

10.2.1.11.2. **(Added)** The requester will submit the requirement to the Quality Assurance office for control number assignment. It is the requester's responsibility to obtain all necessary materials for the item/tool requested. **Note:** If the requested item is F-35 specific, an AR must be drafted and submitted via ALIS to obtain approval for local manufacturing of the item.

10.2.1.11.3. **(Added)** QA will:

10.2.1.11.3.1. **(Added)** Assign a control number to the item using the next available number open on local manufacture tool control log (stored electronically on the 33 MXG QA SharePoint site). **Note:** After item is manufactured, electronically file one copy of request and drawing(s) in QA local manufacture electronic file.

10.2.1.11.3.2. **(Added)** Line through applicable "do or do not need to inspect the item after manufacture" statement.

10.2.1.11.4. **(Added)** Manufacturing organization will:

10.2.1.11.4.1. **(Added)** Manufacture the tool/equipment.

10.2.1.11.5. **(Added)** Once the tool/equipment is completed, the requesting unit support section will:

10.2.1.11.5.1. **(Added)** If applicable, notify QA when the item is complete if inspection of the item is required by the QA Local Manufacture Monitor as annotated on letter upon submittal. **NOTE:** The tool/equipment will not be utilized until inspected by the QA Local Manufacture Monitor.

10.2.1.11.5.2. **(Added)** Maintain a file of all approved local manufacture authorization letters and place the item on the Support Master Equipment Listing or equivalent.

10.2.1.11.5.3. **(Added)** The owning support section maintains a list, signed by the squadron MOO/Superintendent, of all local manufacture tools used within their work center by nomenclature, QA control number, and location. This list is reviewed and documented annually to ensure accuracy and a copy is forwarded to QA.

10.2.1.11.5.4. **(Added)** Owing organization will assign unique identifier in

tool tracking system.

10.2.1.11.6. **(Added)** Other required actions for local manufactured tool request:

10.2.1.11.6.1. **(Added)** When an identical item has been made for another squadron, the former assigned control number is annotated on the request letter upon submittal.

10.2.1.12.1. **(Added-USAF)** After the CLS period of performance, when depot, CLS, factory representative, or contract field team works on aircraft or equipment, they will comply with applicable Air Force procedures for tool control and accountability. If neither the Air Force contractor nor the applicable teams have any provisions concerning tool control or accountability, the team leader/supervisor will coordinate with the 33 FW QA to develop a program. The program is drafted on a letter and signed by 33 MXG/CC along with the team leader/supervisor. QA and the team maintain a copy of this letter for the duration of the stay. Local lost tool procedures are followed if an item is lost.

10.2.1.13.1. **(Added)** CTKs and decentralized support equipment shall be locked when not in use. Support personnel will issue these items on an as needed basis. Items are inspected by support personnel upon turn-in.

10.2.1.15.1. **(Added-USAF)** Squadron production supervisors or unit senior maintenance personnel may act as a second party to conduct an inspection of the tool kit. Organizations without a production supervisor on duty (such as QA) may request a second party from another squadron.

10.2.1.16.1. **(Added-USAF)** Units/sections will designate by memorandum individuals authorized uncontrolled access into tool rooms. QA inspectors do not require permission for uncontrolled access into tool rooms.

10.2.1.17.1. **(Added-USAF)** Procedures to control aircrew tools and life support section tool kits that are dispatched to the flight line are found in the AFI 11-301 Vol 1.

#### 10.4. Tool Accountability.

10.4.1. **(USAF)** ALIS, TAS, or an approved tool tracking system is used to track all tools. Units will use numbers in Attachment 31 to mark tools not provided through the F-35 program (i.e. vehicle keys, radios, etc.).

#### 10.4.4. **(Added) Management of Dash-21/Red Gear Equipment.**

10.4.4.1. **(Added)** Each set of Dash-21/Red Gear equipment is tracked in ALIS.

10.4.4.2. **(Added-USAF)** Each Dash-21/Red Gear equipment set is assigned to an aircraft and is inspected semi-annually.

10.4.4.3. **(Added-USAF)** Spare operational sets of Dash-21/Red Gear equipment, such as TDY sets, are assigned an identification number and tracked in ALIS. Spare operational sets are inspected semiannually by the Dash-21/Red Gear Program Manager. Operating stock needed for Dash-21 equipment may be maintained.

12.1.15.1.1. **(Added) Launch/Recovery of Explosive Loaded**

**Aircraft: NOTE:** For flightline explosives operations, see EGLINAFBI 91-101, *Flightline Explosives Operations*.

12.1.15.1.2. **(Added)** The only areas approved and designated as operational arm/de-arm aircraft parking areas are outlined on the base map maintained by the Wing Safety Office.

12.1.15.1.3. **(Added)** Hung inert/live bombs: EOR or arm/de-arm personnel will safe the aircraft IAW applicable technical data. If the aircraft cannot be safed, EOR personnel will inform aircrew and contact MOC for available parking location. The aircraft will then be directed to shut down by EOR personnel. MOC will dispatch Aircraft Maintenance Unit (AMU)/Squadron recovery/weapons personnel to download bombs and safe the aircraft as required. If aircraft/bombs cannot be safed, recovery/weapons personnel will notify MOC to continue hung ordnance procedures as required.

12.1.15.1.4. **(Added)** DoN Aircraft are handled as outlined above, but require DoN personnel to respond to the approved arm/de-arm area (off the main parking ramp) to comply with the direction above.

**12.1.15.3. (Added) Aircraft Gun System Malfunction:**

12.1.15.3.1. **(Added)** Aircraft returning with a gun malfunction (hung/runaway/un-commanded firing/rotation) will taxi to the designated hung gun/de-arm area and wait for weapons personnel to arrive. At no time will aircraft with known gun system malfunctions be allowed back onto the main parking ramp prior to confirming system safety in an approved de-arm area. If an unsafe condition is discovered after aircraft has taxied back to the main parking ramp, the pilot will be directed to return to the de-arm/hung gun location area for further evaluation. Prior to aircraft shutdown, weapons maintenance personnel will establish communications with the pilot and examine the rounds counter to determine whether gun rotation occurred. If the gun system did not rotate, weapons maintenance personnel perform normal de-arm procedures and allow the aircraft to taxi back to the parking ramp. **If the gun system rotated, the aircraft must be shut down in order to safely assess damage and determine if rounds are chambered.** Personnel will not leave the aircraft unattended until the gun is safe. If the gun is found jammed during ground operations at de-arm/hung gun location area, weapons maintenance personnel inform the aircrew and MOC.

12.1.15.3.2. **(Added)** Weapons/Ordnance maintenance personnel, with the assistance of 33d Maintenance Squadron (MXS) armament personnel, if needed, will make every effort to clear the gun of all chambered rounds IAW applicable JTD.

12.1.15.3.3. **(Added)** If the gun or gun pod cannot be cleared, qualified Weapons maintenance/Ordnance personnel will remove the gun barrels and if possible remove the round/spent casing from the barrel. Use only hands (no tools) to remove rounds/spent casing from barrel. **DO NOT** pry/strike/force any rounds to free them from barrels. Removed gun barrels that still contain live rounds/spent casings are oriented toward the least hazardous area and MOC is contacted to

have EOD dispatched to dispose of the gun barrel. Do not deliver gun barrels that contain live rounds or spent casings to the Armament Flight maintenance facility.

12.1.15.3.4. **(Added)** When a hung or unsafe gun is discovered on the aircraft parking ramp, personnel will continue with proper gun safing operations as stated in paragraph 12.1.15.3.1.

12.1.15.3.5. **(Added)** If the gun cannot be **immediately** cleared, maintenance personnel will contact MOC and inform them of the gun condition.

12.1.15.3.6. **(Added)** In the event there are damaged rounds with exposed powder, maintenance crews will immediately stop operations and call MOC to dispatch EOD personnel.

#### 14.11. Dropped Object Prevention (DOP) Program, and (DoN) Things Falling Off Aircraft (TFOA) Program

14.11.1.1. The 33 FW FOD/DOP/TFOA Manager is the OPR for this program. The DOP/TFOA Program manager will:

14.11.1.1.1. **(Added)** Monitor the overall effectiveness of the Wing DOP/TFOA Program.

14.11.1.1.2. **(Added)** Analyze results of all dropped object incidents and ensure maintenance managers are aware of unfavorable trends.

14.11.1.1.3. **(Added)** Brief the Vice Wing Commander on all matters concerning dropped objects.

14.11.1.1.4. **(Added)** Maintain a listing of all unit DOP/TFOA monitors.

14.11.1.1.5. **(Added)** Assist Quality Assurance investigating dropped object incidents.

14.11.1.2. **(USAF)** Maintenance Training Flight will ensure all maintenance personnel receive dropped object prevention training at initial/annual refresher Maintenance Orientation Training. All students attending the dedicated crew chief course will receive DOP training.

14.11.1.6. **(Added)** MXG and OG Squadron Commanders will:

14.11.1.6.1. **(Added)** Ensure personnel comply with the spirit and intent of the DOP/TFOA Program IAW applicable USAF and DoN instructions.

14.11.1.6.2. **(Added)** Appoint Dropped Object Prevention monitors from each unit by letter to 33 FW/CV. Include name, rank, office symbol and phone number, update appointment letters annually or as necessary.

14.11.1.6.3. **(Added)** When a dropped object incident occurs, the unit will notify MOC. The unit will complete the Dropped Object Incident Checklist (Attachment 28) and route it to the 33 FW DOP/TFOA monitor within 24 hours of the incident. The 33 FW DOP/TFOA monitor will investigate the incident and determine the most likely cause and ensure corrective actions are taken to preclude reoccurrence. If a material or design deficiency or JTD procedure deficiency is determined to be the cause, submit an AR through the ALIS

Customer Relationship Management tool.

**14.13. (USAF) End-Of-Runway (EOR) Inspection.**

14.13.8.1. **(Added-USAF)** EOR supervision will ensure all discrepancies discovered during EOR operations are immediately reported to the owning AMU Production Supervisor. The AMU will document valid discrepancies in ALIS and ensure corrective actions are cleared from the automated forms before flight.

**14.15. Engine Run Training and Certification Program.**

14.15.5.4.7. **(Added)** Engine run personnel will ensure there are no aircraft engine runs during announced quiet hours. Only the MXG/CC or a designated representative is authorized to waive these requirements.

**14.19. Foreign Object Damage (FOD) Prevention Program.**

14.19.2.1. While maintenance is being performed on aircraft, uninstalled engines and AGE, maintenance personnel ensure all openings, ports, lines, hoses, electrical connections and ducts are properly plugged or capped to prevent FO from entering the systems, both installed or when removed for storage. At no time will items, (e.g., binders, tools, PMA), be placed in or on engine intakes. NOTE: Does not apply to technicians performing maintenance, inlet inspections and blade blending requiring lights, files or other tools inside aircraft inlets. Personnel will inventory all items prior to entering the inlet and immediately upon exiting the inlet.

14.19.2.2.1. **(Added)** Personnel performing maintenance will ensure ALIS is documented when a FOD intake barrier (barrier paper, tape, etc) is installed. Prior to and after maintenance, all tools and hardware are inventoried with all consumable items accounted for prior to removing the FOD barrier. A foreign object inspection is accomplished after removal of the FOD barrier.

14.19.2.3.1. **(Added)** While an aircraft is positioned in any hangar, the owning organization will ensure that unattended aircraft is protected with suitable covers. Additionally, aircraft canopies are closed over the weekends and during extended down time (when cockpit entry is not required). If the aircraft canopy is removed, aircraft cockpits are covered when not in use.

14.19.2.5. All personnel will remove and secure restricted area badges when performing intake/inlet/exhaust inspections if personnel physically enter these areas. Restricted area badges are secured with a subdued nylon/cotton cord or plastic armband.

14.19.2.6.2. Wigs, hairpieces, metal hair fasteners, earrings, or any other jewelry that may fall off without notice, are not authorized on the flightline. Escorts of visiting personnel will ensure FOD prevention measures are taken.

14.19.2.6.4. **(Added)** Flightline clothing policy.

14.19.2.6.4.1. **(Added)** Headgear, with the exception of cold weather apparel and DoN cranial, is not authorized within 50 feet of operating engines. Headgear is not required in designated "No Hat/Cover/No Salute Area" (Attachment 30).

14.19.2.6.4.2. **(Added)** Individuals performing duties enroute to and from the flightline, parking ramps, and maintenance hangars are not required to wear hats. (This does not include when an individual arrives/departs his/her place of duty.)

14.19.2.6.4.3. **(Added)** Ensure articles of clothing (coats, shirts, goggles, headsets, etc) are properly fitted at all times. At no time will hats or loose clothing be worn within 50 ft of an operating engine (with the exception while wearing proper hearing protection over cold weather watch-cap).

14.19.2.6.4.4. **(Added)** All personnel ensure flightline badges and passes are properly secured to prevent loss at all times while on the flightline and are removed within 25 ft of an operating engine. Personal items (pens, pencils, etc) not restrained are removed or secured to prevent being dropped or drawn into an engine.

14.19.2.6.5. **(Added)** Personal backpacks and camel backs may be used by personnel on the flightline or restricted areas to secure personal items to include rain gear and cold weather gear and may be used to secure loose items such as re-sealable beverage containers, issued PPE, personal items, etc. Backpacks and camel backs will not be used as a tool bag to carry tools, equipment or parts for maintenance. Personal backpacks/camel backs will not be taken inside the normal aircraft Fuel Servicing Safety Zone (FSSZ) (ex; wingtip to wingtip, nose to tail circle).

14.19.2.6.6. **(Added)** Glass bottles, cartons, or aluminum cans are not authorized on the flightline. A single size plastic drink bottle may be taken to the flightline. Plastic bottles will not be taken inside the normal aircraft FSSZ area and will be positioned to prevent being blown away. Flight personnel will ensure all personal gear and required equipment are accounted for after executing flight operations.

14.19.2.8.1. **(Added)** Ensure all maintenance production areas have readily accessible FOD containers. All vehicle FOD containers are identified with a sticker, stenciling or permanent marking. Ensure the container is emptied every shift or when full, whichever comes first. Ensure all vehicles normally driven on the flightline are equipped with secured and lidded FO containers.

14.19.2.9.1. **(Added)** Maintenance personnel ensure when panels/components are opened/removed to facilitate other maintenance, all removed screws/fasteners are stored in screw bags. Screw bags are annotated with the aircraft tail number, panel number/component name, and accounted for hardware inside and attached to the panel/component. Panels are stored on a panel rack or in the appropriate tail number bin (TNB). Exception: panels/components that are too heavy or too large to place on panel racks or TNBs may be placed on the floor, as long as they have padded protection.

14.19.2.14.1. **(Added)** All personnel entering aircraft cockpits ensure personal belongings are removed from pockets to prevent FOD. Pilots will account for equipment/personal items before/after each flight and ensure that items lost during flight are entered into ALIS.

14.19.2.17.1. **(Added)** Flight line vehicle operators will monitor the flightline/taxiways for the presence of FO or broken concrete and ensure all items are removed immediately. Vehicle operators will request a sweeper through the MOC/Base Operations for items deemed excessive for manual pickup.

14.19.2.17.2. **(Added)** First-responder vehicles (fire department, SFS, medical) responding to an emergency are exempt from stopping to perform a vehicle tire rollover check.

14.19.2.19.1. **(Added)** Vehicle operators will ensure the vehicle is clean and an FO container is aboard and properly used at all times. Ensure magnetic bars (if installed) are cleaned at the beginning of each shift and checked in conjunction with vehicle tire rollover checks. Ensure all pintle hooks attached to vehicles are secured and serviceable. Ensure proper sized pintle hook pins are installed and secured at all times.

14.19.2.23. All personnel will practice good housekeeping in all areas. The “Clean As You Go” concept is required. On the flightline, in hangars and shops, it is imperative that proactive housekeeping procedures are included in every task performed.

14.19.2.24. **(Added)** Each unit assigned FOD area of responsibility (see attachment 33) will use the ‘FOD BOSS’ sweeper on their assigned area of the aircraft parking ramp prior to the FOD walk. These units will conduct a FOD walk daily prior to flying or maintenance operations. Squadron performing maintenance in or around aircraft maintenance docks and back shops ensure these areas are kept clean and FOD free. Maintenance personnel are responsible for ensuring housekeeping and potential FOD problems are reported to the respective squadron supervision.

14.19.2.25. **(Added)** When vehicles are operated on unpaved surfaces, public roads, and along the black asphalt at the edge of the concrete airfield/taxiway, tires frequently pick up rocks and debris between the treads. Prior to entering the flight line, taxiways, EOR, hot-pits, de-arm, trim pad, and Christmas tree areas; operators will stop prior to airfield/taxiway concrete and remove any debris from the tire treads.

14.19.3.2.2.1. **(Added)** All personnel ensure all FOD mishaps are reported and investigated IAW applicable USAF and DoN guidance.

14.19.3.2.2.2. **(Added)** Any aircraft maintenance activity discovering FOD damage to any engine or aircraft will immediately report findings to maintenance supervision.

14.19.3.2.2.3. **(Added)** Maintenance supervision will notify the MOC of FOD damage immediately. MOC will initiate the applicable checklist.

14.19.3.2.2.4. **(Added)** DoN FOD incidents are investigated and reported IAW DoN guidance. DoN units will send a courtesy copy of completed FOD Incident Reports to the 33 FW FOD Prevention Monitor.

#### 14.19.4. FOD Monitor.

14.19.4.2.1. **(Added)** The 33 FW FOD/DOP Prevention Monitor will document spot inspections on a general purpose form and store the results in SharePoint.

14.19.4.2.2. **(Added)** Spot inspections and assessments will cover, but are not limited to the following areas: awareness boards (content and condition), prevention (sweeper utilization and condition), housekeeping, CTK (FOD in tool boxes, support equipment connectors, lost tool log), vehicles (FOD bars, cleanliness), and aircraft (use of intake plugs, caps/plugs).

14.19.4.4.1. **(Added)** Ensure all newly assigned personnel are trained on FOD awareness and responsibilities.

14.19.6. FOD Prevention Committee Meeting. The 33 FW/CV is the committee chairperson. The MXG/CC will chair the meeting in the absence of the 33 FW/CV. Minimum attendee representation is all group commanders, director(s), commanders of units with maintenance personnel, wing safety, CE, Airfield Manager, and security forces. The chairperson designates additional attendees (e.g., agencies, detachments) as required. Meetings will be conducted monthly when the unit exceeds the lead command-established standard, and quarterly if the unit FOD rate is less than the established standard. The meeting will identify negative trends and develop action plans to resolve them. The meeting is also used to recognize personnel making significant contributions to FOD prevention.

#### 14.19.8. **(Added) FOD Program Management.**

14.19.8.1. **(Added)** 33 FW units with aircraft maintenance personnel will:

14.19.8.1.1. **(Added)** Ensure personnel comply with spirit and intent of FOD Prevention Program IAW applicable USAF and DoN instructions.

14.19.8.1.2. **(Added)** Appoint FOD prevention monitors from each unit by memorandum. Unit FOD monitors will forward the memorandum to the 33 FW FOD Prevention Monitor. Include name, rank, office symbol and phone number. Update appointment letters annually or as changes occur.

14.19.8.1.3. **(Added)** FOD/DOP prevention monitors will develop, manage and maintain overall responsibility for their organization's FOD prevention program. Monitors may be appointed for individual workcenters. A copy the workcenter FOD monitor appointment letter is sent to the Wing FOD Prevention Monitor. The designated unit FOD Monitor will also maintain a copy.

14.19.8.1.4. **(Added)** All 33 FW maintenance organizations will maintain a FOD/DOP program awareness board located in a high visibility area. DoN squadrons ensure items are included in program binder or on required reading board. The purpose of the board is to inform personnel on FOD prevention and provide contact information. As a minimum, the board will include:

14.19.8.1.4.1. **(Added)** 33 FW FOD/DOP Prevention Monitor picture sheet.

14.19.8.1.4.2. **(Added)** 33 FW FOD and DOP Prevention Monitor appointment and notification procedures letter.

14.19.8.1.4.3. **(Added)** Most current FOD/DOP flash/gram.

14.19.8.1.5. **(Added)** Optional board items are:

14.19.8.1.5.1. **(Added)** Wing/Squadron/Flight incentive program award

recipients.

14.19.8.1.5.2. **(Added)** FOD/DOP related news and magazine articles.

**14.19.9. Incentive Program:**

14.19.9.1. The 33 FW FOD Prevention Monitor conducts the wing FOD Prevention Incentive Program. Submissions for the monthly 33 FW FOD Fighter Award may be sent via e-mail providing the person's name, rank, organization, date of event, and a brief narrative. FOD Fighter nominations must be received by the last duty day of the quarter.

14.19.9.2. **(Added)** FOD prevention posters will be submitted on 8 1/2 x 11 inch bond paper or via email. The 33 FW FOD Prevention Monitor must receive poster nominations NLT the last duty day of the quarter (to be considered for that quarter). The FOD poster is a quarterly award.

**14.28.2. (Added) (USAF) Radar Threat Warning System (RTWS) Reliability Program.**

14.28.2.1. **(Added)** USAF units will appoint an AMU RTWS Reliability Program Manager and alternate in writing.

14.28.2.2. **(Added-USAF)** All units will establish and maintain the AMU RTWS Reliability Program continuity book.

14.28.2.3. **(Added-USAF)** All units will notify the 33 MXG Avionics Manager when equipment is unserviceable and will be down for an extended time, or if equipment is NRTS.

**14.37. (USAF) Identification Friend or Foe (IFF) Mode IV Reliability Program.**

14.37.2. **(Added-USAF)** AMU supervision will ensure aircraft IFF Mode IV systems are ground checked in chocks prior to flight at least once every 2 months to comply with AFI 21-101.

14.37.3. **(Added-USAF)** AMU supervision will appoint an IFF Mode IV manager and alternate in writing.

14.37.4. **(Added-USAF)** AMU IFF Mode IV manager will establish and maintain the AMU IFF Mode IV program.

14.37.5. **(Added-USAF)** All units will notify the 33 MXG Avionics Manager when equipment is unserviceable and will be down for an extended time.

14.37.6. **(Added-USAF)** All units maintain an IFF Mode IV tracking log. Forward a copy of the bimonthly record to the 33 MXG Avionics Manager no later than the 5th duty day of February (Dec-Jan report), April (Feb-Mar report), June (Apr-May report), August (Jun-Jul report), October (Aug-Sep report), and December (Oct-Nov report).

14.37.7. **(Added-USAF)** All units will notify AMU debrief section on IFF Mode IV failures. Ensure discrepancy is entered into ALIS.

14.37.8. **(Added-USAF)** All units will report IFF Mode IV results to the AMU IFF Mode IV manager.

**14.41. (Added) Oil Analysis Program Responsibilities and Requirements (OAP)**

**NOTE:** Aircraft that do not have a technical order oil analysis requirement are exempt from this program.

**14.41.1. (Added) MXG/CC Responsibilities:**

14.41.1.1. **(Added)** Appoints a Wing OAP Manager primary and alternate.

**14.41.2. (Added) Wing OAP Manager will:**

14.41.2.1. **(Added)** Manage the OAP IAW T.O. 33-1-37-1/2/3 and AFI 21-124, *Oil Analysis Program*.

14.41.2.2. **(Added)** Develop procedure and establish policy and requirements for the wing OAP. Include a standardized method to ensure the total oil serviced since last OAP sample can be tracked and accurately entered on the AF IMT 2026, *Oil Analysis Request*.

14.41.2.3. **(Added)** Ensure all organizations requiring OAP support appoint an OAP Manager primary and alternate in writing.

**14.41.3. (Added) Operations Officer/Maintenance Superintendents will:**

14.41.3.1. **(Added)** Ensure all assigned aircraft are sampled IAW the applicable aircraft TO.

14.41.3.2. **(Added)** Ensure OAP samples are delivered to the OAP lab with an AF IMT 2026 or locally overprinted DD IMT 2026, Oil Analysis Request, filled out IAW T.O. 33-1-37-1.

14.41.3.3. **(Added)** For engines with engine monitoring systems (EMS) on the AF IMT 2026 in the "hours/miles since overhaul" block, use engine operating time unless the specific TO directs otherwise (i.e. F110 engine use EMS in-flight time). Reconcile NDI/OAP lab and aircraft records using downloaded EMS data accordingly. For engines without EMS, use engine flying hours.

14.41.3.4. **(Added)** Ensure flightline personnel verify with the OAP lab that the information entered in the OAP records (AF IMT 2027, Oil Analysis Record or automated OAP records) matches during scheduled aircraft records checks. Verify, as a minimum, engine operating hours, time since oil change, oil serviced since last records check OAP sample, engine serial number(s) and aircraft serial number. **NOTE:** GP or equivalent may waive verification of OAP records against aircraft records when aircraft are deployed and the scheduled aircraft records check is due.

14.41.3.5. **(Added)** Identify AMU OAP Manager primary and alternate in writing, and forward a copy to the Wing OAP Manager and OAP laboratory. The appointment letter will include grade, name, duty phone, AFSC, organization and office symbol. OAP manager will be an NCO and will serve as the primary liaison between their AMU and the OAP lab for all OAP issues.

14.41.3.6. **(Added)** Ensure assigned OAP Manager attends all OAP meetings involving their AMU.

14.41.3.7. **(Added)** Ensure all aircraft engines under special OAP codes IAW T.O. 33-1-37 are not flown until results of the OAP sample(s) are known. Ensure no aircraft engines are operated until the following AF IMT 2026 discrepancies are corrected and verified with the OAP lab: equipment and/or end item serial number error, hours since overhaul (EOT or EFH), oil change error, and oil added since last sample error. These items are essential to oil analysis trending and remove the engine from service until the discrepancy is corrected.

14.41.3.8. **(Added)** Ensure AF IMTs 2026 with equipment and/or end item serial number error, hours since overhaul error and oil added since last sample error are corrected immediately.

14.41.3.9. **(Added)** Ensure all maintenance actions affecting oil-wetted engine components are provided to the OAP lab using the remarks section of the DD IMT 2026 or a suitable local form.

14.41.4. **(Added)** Flightline Expeditors will:

14.41.4.1. **(Added)** Ensure an oil sample is taken from all on-station oil servicing carts weekly. Samples are submitted NLT 1500 Friday (or last duty day of the week). If results indicate an oil cart is contaminated, discontinue use and notify 33 MXG MOC immediately.

14.41.4.2. **(Added)** Ensure contaminated oil carts are drained, flushed, serviced, and a new sample is submitted to the OAP Laboratory.

14.41.5. **(Added)** Propulsion Flight Chief will: **NOTE:** When no Propulsion Flight exists, or the propulsion flight performs no maintenance on the affected oil wetted system, the MXG/CC or designated representative or equivalent assumes these responsibilities.

14.41.5.1. **(Added)** Make recommendations regarding all OAP engine maintenance actions to MXG/CC.

14.41.5.2. **(Added)** Ensure all maintenance actions that affect oil-wetted engine components, are provided to the OAP Lab. This should be done by using the remarks section of the DD IMT 2026, which is submitted with OAP sample for maintenance on an oil-wetted engine component.

14.41.5.3. **(Added)** Appoint OAP Managers and provides the names in writing to the Wing OAP Manager and OAP lab. Include grade, name, duty phone, organization, AFSC and office symbol.

14.41.5.4. **(Added)** Ensure assigned OAP Managers or alternates attend all OAP meetings.

14.41.6. **(Added)** MOC Responsibilities:

14.41.6.1. **(Added)** Relay to the OAP lab, information regarding engine changes on and off station as they occur NLT 0800 the next duty day.

14.41.6.2. **(Added)** Notify the OAP lab when the cross country/deployed aircraft return.

14.41.6.3. **(Added)** Initiate follow-up action when the oil analysis record from country/deployed aircraft is not returned to the OAP lab.

14.41.7. **(Added)** NDI/OAP Lab NCOIC will:

14.41.7.1. **(Added)** Ensure the scheduled aircraft records check is documented on the affected engine's OAP record (DD IMT 2027 or automated OAP records) with the date the check was accomplished and OAP lab person's initials.

14.41.7.2. **(Added)** Provide a copy of the AF IMT 2027 (or a suitable automated form) to the propulsion flight for each engine undergoing scheduled maintenance or overhaul at depot, JEIM or CIRF.

14.41.7.3. **(Added)** Immediately notify MOC and the propulsion flight chief when an installed engine is restricted from operation or placed on special sampling.

14.41.7.4. **(Added)** Ensure analysis results on all installed engines are provided to MOC after analysis of the OAP sample is complete.

14.41.7.5. **(Added)** Immediately notify test cell and the propulsion flight chief when abnormal OAP results are discovered on test cell engines.

14.41.7.6. **(Added)** Ensure AF IMT 2026s with equipment and/or end item serial number error, hours since overhaul error and oil added since last sample error, are corrected immediately.

14.41.7.7. **(Added)** Track aircraft OAP sample response times for all assigned aircraft to ensure the response time compliance.

14.41.7.8. **(Added)** Maintain a current appointment letter of all customer OAP managers.

14.41.8. **(Added)** OAP Requirements for Cross-Country Flights/Deployments:

14.41.8.1. **(Added)** The flightline expediter or pro super will notify the OAP lab in advance for cross-country documents. OAP lab personnel will ensure the oil analysis record contains at a minimum the last 10 analyses. Flightline personnel will sign for the oil analysis record at the OAP lab.

14.41.8.2. **(Added)** An oil analysis record (automated record or a copy of AF IMT 2027) must accompany the aircraft on cross-country flights/deployments.

14.41.8.3. **(Added)** Flightline personnel must return the oil analysis record to the OAP lab the day the aircraft returns to home station.

14.41.8.4. **(Added)** The OAP lab will notify MOC if the oil analysis record is not returned.

14.41.8.5. **(Added)** The OAP lab will review the returned oil analysis record for adverse trends and take necessary action.

14.41.8.6. **(Added)** AMUs will follow the maintenance procedures in this supplement at the deployment sites.

14. 41.8.7. **(Added)** Deployed OAP personnel shall have telephone or radio communication with MOC and the AMU to expedite reporting of abnormal OAP trends.

ANDREW J. TOTH, Colonel, USAF  
Commander

**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

AFI 21-101, *Aircraft and Equipment Maintenance Management*, 26 Jul 10

AFI 21-101 AETCSUP, *Aircraft and Equipment Maintenance Management*, 21 Oct 10

AFMAN 33-363, *Management of Records*, 1 Mar 08

AFI 91-204, *Safety Investigations and Reports*, 24 Sep 08

COMNAVAIRFORINST 4790.2 Series, *The Naval Aviation Maintenance Program (NAMP)*, 15 May 12

TO 00-20-1, *Aerospace Equipment Maintenance Inspection, Documentation, Policy and Procedures*, 15 Jun 11

***Abbreviations and Acronyms***

**CRM**—Customer Relationship Management

**DoN**—Department of Navy

**EFH**—Engine Flight Hours

**GGFR**—Ground Government Flight Representative

**IA**—Impoundment Authority

**IO**—Impoundment Official

**MIP**—Maintenance Interface Panel

**RA**—Release Authority

**RTWS**—Radar Threat Warning System

**TFOA**—Things Falling Off Aircraft

## Attachment 23 (Added)

**AIRCRAFT, ENGINE AND EQUIPMENT IMPOUNDMENT TABLE (USAF)**

Any aircraft, engine, or equipment reportable incident or unusual occurrence may require impoundment; each event is evaluated on a case-by-case basis. Any aircraft, engine or equipment with the potential for impoundment is treated as such by being placed on impoundment freeze until it is determined by an approved Impound Authority that impoundment is not justified. **No** maintenance actions are performed until a determination for impoundment is made by an approved Impoundment Authority.

When using the impoundment table “**Conditions**” column, pay particular attention to keywords; i.e., the use of “in-flight” means that condition only applies to those that occurred in-flight. The absence of keywords mean all conditions apply; i.e. in-flight, on-ground, installed, removed, by aircrew or by maintenance personnel. Similarly, when using the “**Notes**” column, carefully read specific conditions typically noted as Includes or Excludes.

**Table A23.1. Mandatory Impoundments**

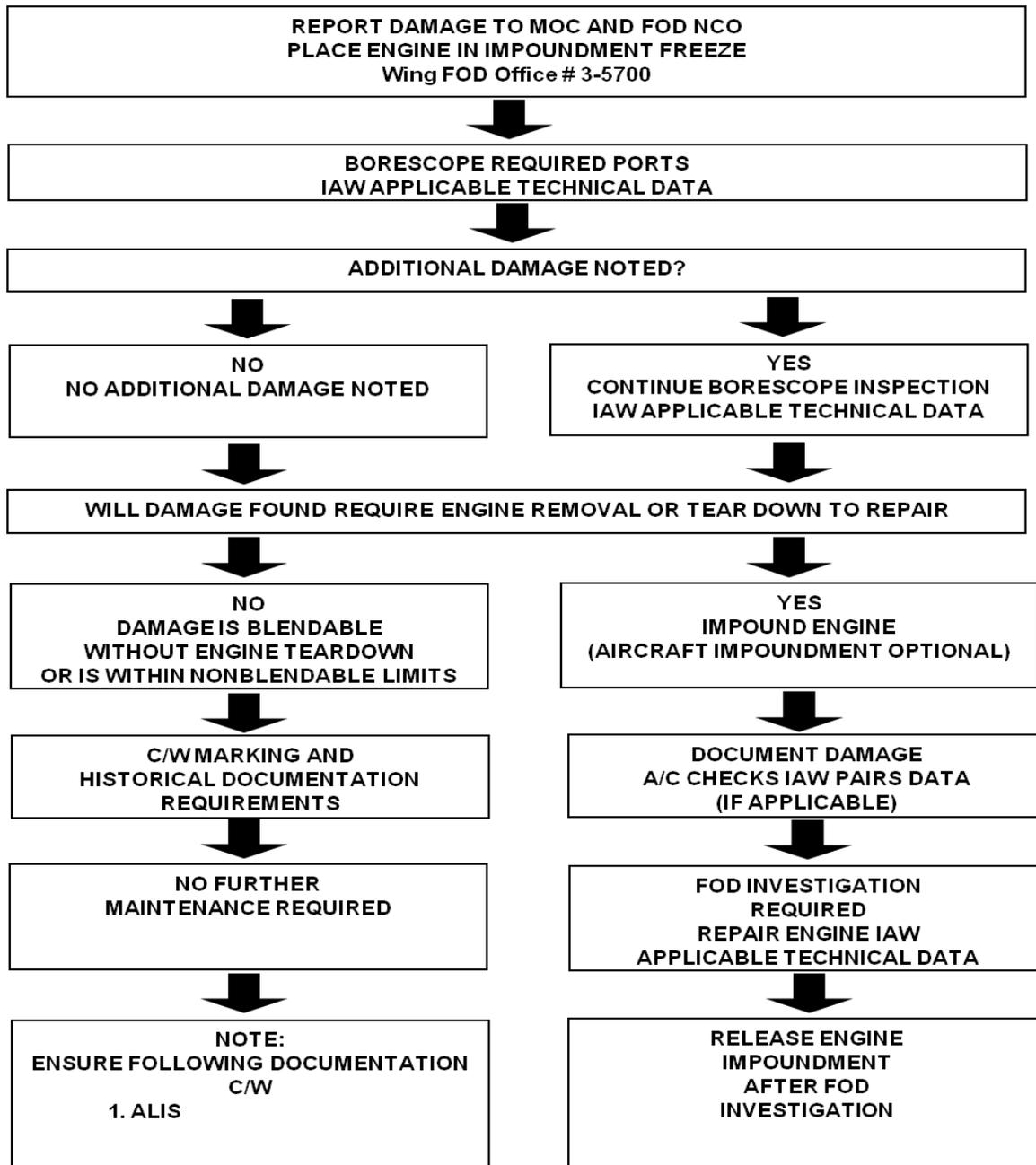
	Conditions	Notes
<b>1.</b>	<b>General Mishaps and Incidents (On and Off-Equip)</b>	
1.1.	When aircraft or equipment is involved in an incident, or considered to be a reportable mishap (Class A, B, or C Mishap)	- <b>Notify 33 FW Safety Office of incident details</b> - In general, all Class Reportable Mishaps require direct coordination with Interim Safety Board (ISB), Safety Investigation Board (SIB), or Safety Investigation Office (SIO) prior to release by the impoundment release authority
1.2.	Any physiological incident to a rated aircrew member such as, but not limited to; hypoxia, hyperventilation, G-induced loss of consciousness, motion sickness, vertigo, etc.	- Attributable or believed to be aircraft related - See also this table item 1.1.
1.3.	When there is evidence or suspicion of intentional damage, vandalism, tampering, or sabotage	
1.4.	Aircrew unintended departure from paved surface, runway, taxiway	
1.5.	Suspected Nuclear, Biological, or Chemical Contamination	
1.6.	When an Impoundment Authority directs	
1.7.	When an in-flight fire occurs	- See also this table item 1.1.
<b>2.</b>	<b>Flight Controls and Instruments (On-Equip Only)</b>	
2.1.	Flight control malfunction that results in an uncommanded change in altitude, attitude, heading, or difficulty in maintaining positive control	- Excludes known interference by occupant in rear cockpit, however incident is still a Class-E reportable per this table item 1.1. - May Require completion of JSF specific checklist for JSFPO evaluation - Includes during landing roll, takeoff or taxi
2.2.	Out-of-control/departure events, to include spins, rolls, and stalls	- Excludes intentionally induced departure - See also this table item 1.1.
2.3.	Any aircraft not responding to auto fly-up command or warning	- See also this table item 1.1.
2.4.	Aircraft descends below 75% of set altitude clearance without an auto fly-up command, with fly-up system armed	- See also this table item 1.1.
2.5.	Non-resettable Flight control malfunction	- Excludes failures during self-test

2.6.	Non-resettable Dual Flight control Fail	- Excludes failures during self-test
2.7.	Loss of all pitot static or all gyro-stabilized instruments or any multiple failure that would result in total loss of any directional or attitude indications (i.e. total failure of all pitch indications, total failure of all altitude indications, total loss of all heading indications etc.)	- See also this table item 1.1.
<b>3.</b>	<b>Weapons (On-Equip)</b>	
3.1.	Uncommanded release of munitions or stores	- No attempt was made to release munitions or stores from the selected station (uncommanded release) - See also this table item 1.1.
3.2.	Late release of munitions or stores	- Munitions or stores were selected but released greater than 10 seconds after expected release or impacted off range -See also this table item 1.1
	<b>(On and Off-Equip)</b>	
3.3.	Unintentional release, firing, or activation of munitions, munitions system, pyrotechnic device or stores collectively referred to as (explosive devices)	- Includes munitions or stores selected for release/firing but human factors, failure of safety devices, or other problems occurred resulting in an unexpected release/firing when none was intended (i.e. gun simulations when gun fires or rotates, ground maintenance operations that results in actual stores jettison etc.) - Includes any release of munitions that impact off-range - Includes any unintentional activation of an explosive device (i.e. impulse cart, 25mm ammunition, egress component etc.) - Excludes chaff and flare when release is due to human factors and release occurs on-range with no known damage - See also this table item 1.1.
3.4.	Runaway gun	- Gun fails to stop firing when trigger is released -See also this table item 1.1
<b>4.</b>	<b>Environmental (On-Equip Only)</b>	
4.1.	In-flight loss of primary oxygen system (OBOGS)	- Includes empty gaseous oxygen container (BOS) not expended during operational use (STOVL) -See also this table, item 1.2
4.2.	Suspected oxygen system contamination or unusual odor from oxygen system	
4.3.	Sudden or explosive loss of cabin pressure	- Excludes failure of the cockpit to pressurize during climb-out or slow loss of cabin pressure for environmental bleed air failure -See also this table item 1.2 - See also this table item 1.1.
<b>5.</b>	<b>Electrical (On-Equip Only)</b>	
5.1.	Electrical fire or catastrophic failure of wiring harness or fiber optic cables	- Includes all damage to harnesses from current flow - Excludes abraded or cut harnesses that show little or no evidence of current flow damage - See also this table item 1.1. - Mandatory deficiency report required per applicable JTD -May require completion of JSF specific checklist for JSFPO evaluation
5.2.	Explosive or catastrophic (case rupture) battery failure	
<b>6.</b>	<b>Airframe General (On-Equip Only)</b>	
6.1.	Unusual noise or vibration	- Includes installed engines
6.2.	Simultaneous failure of A and B hydraulic systems	- Excludes indication malfunctions - Includes over-pressurization or under-pressurization - See also this table item 1.1.
6.3.	Structural chemical contamination	- Includes exposures to chemicals such as mercury, hydrazine (see 6.4 and 6.5), and caustic cleaners (i.e. accidental use of Simple Green or Grease Lightning)
6.4.	Fire or evidence of fire or heat damage to aircraft, aircraft components or aircraft structure	- Excludes fires contained in components such as engines or generators that do not effect external components or structures

		- See also this table item 1.1.
<b>7.</b>	<b>Landing Gear, Brakes, Steering (On-Equip Only)</b>	
7.1.	In-flight failure of any landing gear to fully extend and lock following alternate extension	- Excludes indication malfunctions - See also this table item 1.1.
7.2.	Landing gear collapse or uncommanded retraction/extension	- See also this table item 1.1.
7.3.	Unrecoverable brake failure	- Excludes failure for prolonged usage after B-System hydraulic failure - See also this table item 1.1.
<b>8.1</b>	<b>Engine (Installed Engines Only)</b>	
8.1.1.	Loss of thrust or no throttle response	- Exclude expected performance losses for augmentor malfunction, exhaust nozzle position errors, and secondary fuel control (SEC) operation - FCF requirements may apply - See also this table item 1.1.
8.1.2.	Stall	- Exclude stalls that occur with throttle in augmentor range - FCF requirements may apply
8.1.3.	Stagnation or in-flight engine shutdown	- Engine stagnations are NOT recoverable and must be shutdown and restarted - Exclude under this category any engine that recovers without being shutdown - Include any commanded or uncommanded in-flight engine shutdown - FCF requirements may apply - See also this table item 1.1.
8.1.4.	Flameout or die-out.	- FCF requirements may apply - See also this table item 1.1.
<b>8.2.</b>	<b>(Installed or Removed Engines)</b>	
8.2.1.	Case rupture, penetration or burn through	- Exclude damage that does not penetrate the outer engine casing (fan duct case, bypass area case and augmentor case) - See also this table item 1.1.
8.2.2.	Engine foreign object damage that will necessitate engine removal and teardown for repair	- For installed engines, aircraft is placed on impoundment freeze until determination of repair action. (- If engine must be disassembled for repair, impound the engine <b>ONLY</b> and release impound freeze on aircraft for maintenance
8.2.3.	Engine damaged while in transport	- For uninstalled engines damaged in transport, engine is placed on impoundment. Investigation of engine damage will be performed to determine extent of damage and cause
<b>9.</b>	<b>Aircraft and Equipment General (On and Off-Equip)</b>	
9.1.	Unusual or unknown fluid system contamination	- Include suspected serious cross-contamination of oil, hydraulic fluid, fuel, with unknown fluids, water, or cleaners etc. - Include contamination of servicing units such as hydraulic carts, nitrogen carts etc. - Include on-aircraft contamination not covered in technical data - Exclude on-aircraft contamination for known malfunctions. Typical contaminants such as hydraulic fluid in fuel, fuel in oil systems, metals in filters etc. are known contaminations that occur as the result of normal system failures - Exclude contamination of hydraulic mules for known aircraft system contamination

Attachment 24 (Added)

FIGURE A24.1 ENGINE FOD IMPOUNDMENT LOGIC TREE (USAF)



Attachment 25 (Added-USAF)

FIGURE A25.1. 33 MXG AIRCRAFT/EQUIPMENT IMPOUNDMENT CHECKLIST



**33<sup>rd</sup> Maintenance Group Aircraft/Equipment  
Impoundment Checklist**



ACFT/EQUIP TYPE:	ACFT/EQUIP S/N:	DATE:	TIME OCCURRED/LANDED:

SQUADRON/MAINTENANCE UNIT:	ALIS IMPOUNDMENT NO:	IMPOUND OFFICIAL/PHONE NO:

DISCREPANCY [EXACTLY AS IT APPEARS IN ALIS]

IMPOUND DISCREPANCY AND INVESTIGATION OFFICIALS NAME ANNOTATED IN ALIS AND EQIP FORMS \_\_\_\_  
 CAN DISCREPANCY BE CAUSED BY RELATED SYSTEMS \_\_\_\_  
 LIST SYSTEMS INVOLVED:

--

CURRENT/HISTORICAL CMMS DATA REVIEWED FOR RELATED, REPEAT, OR RECURRING DISCREPANCIES \_\_\_\_  
 FINDINGS:

--

LIST ALL SHOPS AIRCRAFT/EQUIP RELEASED FOR INVESTIGATION:

LIST ANY MAINTENANCE PERFORMED OR ACCOMPLISHED BEFORE ARRIVAL OF INVESTIGATION TEAM:

HAVE PARTS/EQUIPMENT BEEN REMOVED THAT REQUIRE IMPOUNDMENT? \_\_\_\_\_

LIST ITEMS AND IMPOUND CONTROL NUMBERS

**PRIOR TO RELEASING ACFT/EQUIP FOR MAINTENANCE, THE IMPOUNDMENT OFFICIAL WILL:**

- A. ISOLATE ACFT/EQUIP AND IDENTIFY IT AS IMPOUNDED I.E. CONES/PLACARD.
- B. SELECT TEAM CHIEF (7 LEVEL) AND CREW TO ASSIST IN FAULT ISOLATION AND REPAIR
- C. ESTABLISH APPROPRIATE FAULT ISOLATION CRITERIA. **\*\*NOTE\*\* ENSURE IMPOUNDMENT TEAM HAS DEBRIEFED AIRCREW**
- D. PLAN THE WORK SCHEDULE. **\*\*CANNIBALIZATION FROM IMPOUNDMENT EQUIPMENT IS NOT AUTHORIZED\*\***

**PRIOR TO CLEARING THE IMPOUNDMENT, THE IMPOUNDMENT OFFICIAL WILL:**

- A. REVIEW THIS FORM AND CMMS FOR ACCURACY. CORRECTIVE ACTION WILL REFLECT FAULT ISOLATION REFERENCE/FINDINGS.
- B. COMPLETE APPLICABLE CMMS LABOR LINE ONCE REVIEW IS C/W.
- C. INITIATE AND COMPLETE AETC IMT 138, LOST TOOL OR ITEM INVESTIGATION RECORD (AS APPLICABLE).
- D. BRING ALL DOCUMENTATION TO QA FOR CMMS REVIEW.

**QA WILL KEEP THIS FORM AND CMMS REPORT FOLLOWING RELEASE FROM IMPOUNDMENT**



Attachment 26 (Added)
33 FW INCIDENT REPORT (USAF)

Report Sequence Number: \_\_\_\_\_

Squadron: \_\_\_\_\_ Date & Time: \_\_\_\_\_ QA Official \_\_\_\_\_

AIRCRAFT/EQUIPMENT # \_\_\_\_\_ TYPE OF A/C \_\_\_\_\_ LOCATION \_\_\_\_\_

TYPE INCIDENT (Circle All That Apply):

- FOREIGN OBJECT DAMAGE BIRD STRIKE GROUND EMERGENCY
CHEMICAL SPILL NATURAL DISASTER COMPONENT DAMAGE
MUNITIONS PERSONNEL INJURY SUPPORT EQUIP
OTHER
VEHICLE AND VEHICLE REGISTRATION # \_\_\_\_\_

INDIVIDUAL DATA:

#1: NAME/ RANK: \_\_\_\_\_ UNIT: \_\_\_\_\_ SHIFT: \_\_\_\_\_

#2: NAME/ RANK: \_\_\_\_\_ UNIT: \_\_\_\_\_ SHIFT: \_\_\_\_\_

#3: NAME/ RANK: \_\_\_\_\_ UNIT: \_\_\_\_\_ SHIFT: \_\_\_\_\_

#4: NAME/ RANK: \_\_\_\_\_ UNIT: \_\_\_\_\_ SHIFT: \_\_\_\_\_

DESCRIPTION OF INCIDENT: Photos attached

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

DESCRIPTION OF DAMAGE / INJURY:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

FOR IN-FLIGHT INCIDENT:

AIR SPEED \_\_\_\_\_ AOA \_\_\_\_\_ ALTITUDE \_\_\_\_\_ ACFT G CONDITION \_\_\_\_\_

DOES ACFT/ EQUIP REQUIRE IMPOUNDMENT: YES / NO (DATE / TIME) \_\_\_\_\_

INSPECTOR COMMENTS : \_\_\_\_\_

**Attachment 27 (Added)****F-35 HANGAR ENTRY CHECKLIST (USAF)**

F-35 Aircraft Hangar Entry Checklist

Eglin AFB 33 FW

Acft Tail Number: \_\_\_\_\_ Hangar #: \_\_\_\_\_

The tow team supervisor will insure the following items are complied with:

- \_\_\_ 1. Check aircraft status in ALIS, visually confirm absence of weapons on/in aircraft, and verify arming switch position in safe position to ensure aircraft has been dearmed. (Physically check aircraft)
- \_\_\_ 2. Ensure gun is configured cold/safe as required. Ammo removed, if required.
- \_\_\_ 3. Landing gear pins installed.
- \_\_\_ 4. External stores ground safety pins installed.
- \_\_\_ 5. Ejection seat pin and Transparency Removal System (TRS) pin.
- \_\_\_ 6. Arresting hook pin installed.
- \_\_\_ 7. Ground wire properly connected.
- \_\_\_ 8. Engine intake and Exhaust covers installed.
- \_\_\_ 9. Air data and Total Temp probe covers installed.
- \_\_\_ 10. Place drip pans under aircraft.
- \_\_\_ 11. Ensure chocks are laced.
- \_\_\_ 12. Ensure Fire Extinguisher is available.

TOW TEAM SUPERVISOR: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

ENTRY DATE: \_\_\_\_\_ DATE/TIME: \_\_\_\_\_