

**9 SEPTEMBER 1998**



**Maintenance**

**MANAGEMENT OF GAS TURBINE ENGINES**

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

---

**NOTICE:** This publication is available digitally on the AFDPO WWW site at:  
<http://afpubs.hq.af.mil>.

---

OPR: 18 LSS/LGLM (MSgt Lee B. Van Tassle)

Certified by: 18 LSS/CC  
(Lt Col Reynaldo S. Sandico)

Pages: 8

Distribution: F

---

This instruction implements AFD 21-1, Managing Aerospace Equipment Maintenance, AFI 21-104, Selective Management of Selected Gas Turbine Engines, PACAFI 21-101, PACAF Aircraft Maintenance Organization and Procedures and is in addition to T.O. 00-20-254-1, Comprehensive Engine Management System Engine Configuration, Status, and TCTO Reporting Procedures. It provides local directives on unit responsibilities in the management, tracking, control, and status of the 18th Wing's assigned jet engines. This instruction applies to all units assigned to the 18th Wing.

**1. 18th Logistics Support Squadron Engine Management (EM) Procedures:**

- 1.1. EM will monitor/manage engine removals, replacements, parts tracking, engine Time Compliance Technical Orders (TCTO), Time Change Items (TCI), automated engine records, and perform engine manager duties prescribed by applicable Instructions and Technical Orders.
- 1.2. Input engine data transactions into the Core Automated Maintenance System (CAMS) and Comprehensive Engine Management System (CEMS) databases within 1 duty day of receipt.
- 1.3. Issue F100 spare engines for on-station and deploying flying squadrons with coordination through the 18th Maintenance Squadron's (18 MXS) Propulsion Flight Chief or designated representative. EM will release all F100 engines received into Jet Engine Intermediate Maintenance (JEIM) for any maintenance, (quick turn, courtesy run, etc.), back to the Fighter Squadron (FS) only after all post-maintenance history and database transactions are completed.
- 1.4. Ensure CAMS Job Standards for engine flying-hour inspections are loaded against the engine or module, not the aircraft.
- 1.5. Process and clear suspense listings from CAMS for all engine, engine related TCTOs, TCIs, and special inspection maintenance actions; F100 inspections will be cleared by the appropriate FS.

1.6. Establish F100 engine/module work package cover sheets for items inducted into JEIM for repair, to include a listing of applicable TCTOs and TCIs within replacement criteria.

1.7. Coordinate with the FS and Propulsion Flight to authorize TCI overflights. Overfly will be authorized due to parts non-availability, to level engine shop workload, and when aircraft can not be scheduled for downtime.

1.8. Monitor engine changes and ensure the 18 MXS Propulsion Flight and Non-Destructive Inspection Element is informed of engine changes for the oil analysis program.

1.9. EM is responsible for shipment of all engines assigned to the 18th Wing. Any engine shipped to depot must first be coordinated between EM and PACAF. EM will prepare required engine shipment paperwork for any shipment from Kadena. The unit(s) who wrapped each engine for shipment will provide EM the name of who is authorized to sign the required Hazardous Declaration Form. The owning squadron will provide EM with special TCN numbers for engines being shipped for exercises and deployments.

1.10. Track error rates for engines and serially-controlled engine components using existing AFTO Form 93, Modular Engine Time/Cycle Accumulation and CAMS data, and provide error rates to the 18th Operations and Logistics Group commanders on a monthly basis.

## **2. 18th Maintenance Squadron Propulsion Flight Procedures:**

2.1. Ensure all CAMS inputs are complete for TCTO actions and TCI removal/installation at the end of the duty day the maintenance was performed. This procedure is required to properly update CAMS/CEMS databases with accurate parts status/location.

2.2. Prior to test cell operation, verifies all installed TCI are properly reflected in CAMS.

2.3. Prepare complete comprehensive post-maintenance summary for EM input into CEMS database.

2.4. Provide EM adequate secured storage area for TCTO kits, supply point assets, and on-hand TCI components.

2.5. 2A6X1A/B Personnel Manning: The Propulsion Flight Chief is responsible to the 18 WG/CC as the functional manager for 2A6X1 engine personnel manning. The propulsion flight chief will review all inbound personnel and assign personnel to appropriate positions. Manning prioritization is as follows: Flight line positions will be manned at 100% unless Propulsion Flight manning falls below 90%. EM will be equitably manned with authorized engine personnel. Any deviations will be coordinated with the 18 OG/CEM.

## **3. F100 Engine Rotating Spare and Quick Turn Procedures and Responsibilities:**

3.1. The Rotating Spare Program is designed to attain the highest aircraft availability. The success of the program is totally dependent on sound management, coordination, and communication by all personnel. The effectiveness of the program will be reviewed annually by the 18 OG/CC and 18 LG/CC.

3.1.1. Rotator Spare Defined. Engines removed for organizational or intermediate maintenance that can be repaired within 72 hours or less and are not intended to be reinstalled in the aircraft previously removed from. When returned to service, these engines are spare engine assets, inspected per JEIM serviceability criteria.

**NOTE:** Each engine will be reviewed on a case-by-case basis for applicability for the 72-hour criteria. If a spare engine is not required within 72 hours, time will be coordinated through the FS and 18 MXS/LGMP.

3.1.2. EM will issue a spare engine to the FS after determination is made that an engine is not repairable within the 72-hour timeframe allowed for JEIM.

3.2. Quick Turn Engines Defined. Engines removed for intermediate or organizational maintenance that can be repaired within 48 hours and are intended for reinstallation in the aircraft previously removed from. These engines will be inspected per 18 OG/CC and 18 LG/CC coordinated quick turn checklist. These engines are still assigned to an aircraft and will be inspected using flight line technical order inspection criteria.

**NOTE:** Each engine will be reviewed on a case-by-case basis for applicability for the 48-hour criteria. If a spare engine is not required within 48 hours, time will be coordinated through 18 OG/CEM and 18 MXS/LGMP.

3.2.1. The 18 MXS Propulsion Flight will:

3.2.1.1. Provide each FS one rotator spare engine for their use when spare level permits.

3.2.1.2. Ensure that rotator engine intermediate maintenance actions and inspections are accomplished according to technical orders and other directives required for spare engine assets.

3.2.1.3. Provide assistance to each FS when called upon for troubleshooting guidance and training.

3.2.1.4. Provide each FS two test cell courtesy runs per month. One additional run per month will be available and coordinated through 18 MXS/LGMP or their designated representatives. If an engine fails during a courtesy run for an intermediate-level malfunction, and a spare is issued, that engine run will not be counted as a courtesy run.

**NOTE:** If a FS desires more than two courtesy runs per month, they may use a run from another fighter squadron with approval of the production superintendent of the giving FS. Additional courtesy runs must be coordinated and approved through 18 MXS/LGMP.

3.2.1.5. Determine if a rotator spare engine is not repairable within the 72-hour timeframe or quick turn engine within 48 hours allowed for applicable level maintenance. Inform EM when a spare engine requires issue, unless other time arrangements are agreed upon and coordinated through 18 MXS/LGMP and the FS.

3.2.1.6. Ensure that minor maintenance receiving and final inspection technical order requirements are met on rotator engines.

3.2.1.7. Ensure that 18 OG/CC and 18 LG/CC coordinated checklist requirements are met on quick turn engines.

3.2.1.8. Ensure that quality assurance inspections are accomplished prior to rotator spare engine release to the FS.

3.3. Quality Assurance F100 Rotator Spares and Quick Turn Procedures and Responsibilities:

3.3.1. Inspect all rotator spare engines. If quick turn engines are inspected, the 18 OG/CC, 18 LG/CC checklist and flight line technical data inspection limit criteria will be used.

#### 4. Deployment Procedures:

- 4.1. At least 3 weeks prior to any scheduled deployment or immediately for short-notice deployments, the deploying flying squadron will provide EM a listing of aircraft that are scheduled to deploy. The squadron will also designate a deployed engine monitor (DEM), if EM personnel are not part of the deployment. EM will provide a listing of engine times, hours, cycles, etc., remaining on all TCI components along with an automatic history for each deploying engine. Status of engine TCTOs will also be identified. If TCI and TCTO parts/kits are available, EM and Plans & Scheduling (P&S) will take necessary actions to accomplish maintenance prior to deployment. This is necessary to avoid scheduled maintenance during TDYs. The designated DEM will report to EM for a pre-deployment briefing provided by the engine manager no later than 1 week prior to deployment.
- 4.2. The DEM will ensure all data collection is completed and transferred to EM via modem, e-mail, fax, or message no later than 0900 the day following the last flight of each day. This procedure is necessary to ensure most current flight data is expeditiously entered into CAMS and CEMS.
- 4.3. The DEM will ensure a duplicate copy of the engine CEMS IV data is transferred with repairable engines when one is removed at the deployed location.
- 4.4. The DEM is responsible for completing all engine shipping paperwork for redeployment. Engine shipment TCN numbers will be provided to EM at Kadena via phone, fax, or e-mail prior to redeployment.

#### 5. F-15 Fighter Squadron Procedures:

- 5.1. The 12th, 44th, and 67th Fighter Squadrons will:
  - 5.1.1. For engines with installed Event History Recorders:
  - 5.1.2. After each engine run, complete an AFTO Form 93 for each engine with the front side of card legibly filled out.
  - 5.1.3. Complete CAMS and an AFTO Form 93 for each engine and time tracked engine component removed/installed with both front and reverse side of the card filled out. All engine removal/installations must have the appropriate How Mal Code entered from T.O. 1F-15A-06.
  - 5.1.4. Deliver the AFTO Forms 93 to EM at the end of each flying day or no later than 0900 the next duty day.
- 5.2. For engines with installed Engine Diagnostics Unit (EDU):
  - 5.2.1. Download the EDU for each engine after the last flight of each day and transfer the data into the FS CEMS IV computer workstation.
  - 5.2.2. Perform daily engine reconciliation with EM by 2100 hours via LAN connection or disk. When night flying, send engine downloads to EM no later than 1200 the following duty day.
  - 5.2.3. Download and reconcile with EM the last flight's data when an engine or TCI is removed/replaced.
- 5.3. Each FS will track, forecast, and schedule all engine-related special inspections listed in T.O. 1F-F15A-6. All jobs will be scheduled against the engine, not the aircraft. FS schedulers will process all CAMS suspense's for completed engine inspections.

- 5.4. Wrap and deliver to 5-Right each rotator spare engine being deployed, coordination through 633 AMC Special Handling is required for inspection prior to wrapping.
- 5.5. Will not cannibalize from their rotator spare engine.
- 5.6. Perform organizational-level engine maintenance actions as outlined in job guides and maintenance publications.
- 5.7. Must troubleshoot all installed engines to determine the cause of engine malfunctions prior to using their rotator engine.
- 5.8. Will coordinate courtesy and quick turn engine removals with 18 MXS/LGMP.
- 5.9. Perform inspections on rotator and quick turn engines.
- 5.10. Track and document all organizational-level maintenance actions performed on engines on the AFTO Form 93 and in CAMS.
- 5.11. Provide a supply document number or replacement part to propulsion flight for organizational maintenance components needed to repair rotator engines. Supply document number must be provided prior to engine release.

#### **6. 33d Rescue Squadron Procedures:**

- 6.1. Notify EM of any engine status changes and provide a weekly status report NLT close of business each Friday.
- 6.2. Maintain T700/701C engine record files to include performance of semi-annual inspections.
- 6.3. Will load and update all locally tracked components in CAMS. EM will load engines in CAMS and update CEMS.
- 6.4. Monitor, schedule, and order TCI components.
- 6.5. All engine shipments will be coordinated through and shipping documentation completed by EM.

#### **7. 909th Air Refueling Squadron Procedures:**

- 7.1. Enter downloaded aircraft engine and oil servicing data into CEMS IV computer after each flight. When deployed and access to a CEMS IV computer is unavailable, download aircraft and update CEMS IV immediately after return to home station.
- 7.2. Transfer downloaded engine data to EM by end of the flying day or no later than 0900 hours the following duty day. When deployed and access to a CEMS IV computer or communication link is unavailable, transfer engine data to EM no later than 0900 hours the following duty day after return to home station.
- 7.3. Diagnose and analyze engine trends from performance evaluation graph and maintenance summary for each engine.
- 7.4. Track and schedule all 60 hour inspections. EM will schedule all other engine special inspections and clear all engine suspense's in CAMS.

**8. 961st Airborne Air Control Squadron Procedures:**

- 8.1. Complete in-flight engine data sheet along with oil servicing data and deliver to EM at the end of the flying day or no later than 0900 hours the following day.
- 8.2. EM will process data into CAMS/CEMS and perform engine trending and diagnostics functions.
- 8.3. EM will monitor and schedule engine inspections.

**9. Form Prescribed.** AFTO Form 93, Modular Engine Time/Cycle Accumulation.

JAMES B. SMITH, Brigadier General, USAF  
Commander, 18th Wing

Attachment 1

QUICK-TURN ENGINE MAINTENANCE REQUIREMENTS

Engine ID \_\_\_\_\_ Date \_\_\_\_\_ Acft \_\_\_\_\_ JCN \_\_\_\_\_

Discrepancy \_\_\_\_\_

Record EHR Readings: Ser# \_\_\_\_\_ EOT \_\_\_\_\_ HSI \_\_\_\_\_  
HSII \_\_\_\_\_ LCF \_\_\_\_\_ Flags: SF Y/N, HS Y/N, OTB Y/N, OTC Y/N

1. Perform pre/post-maintenance serially controlled parts sheet and forward to EM.

Employee # \_\_\_\_\_ Date \_\_\_\_\_

2. Check for free rotation of front compressor rotor.

Employee # \_\_\_\_\_ Date \_\_\_\_\_

3. Inspect 1st stage compressor rotor blades for damage.

Employee # \_\_\_\_\_ Date \_\_\_\_\_

4. Inspect CIVV flaps for trailing edge play.

Employee # \_\_\_\_\_ Date \_\_\_\_\_

5. Inspect IGV case anti-ice manifold bosses for cracks.

Employee # \_\_\_\_\_ Date \_\_\_\_\_

6. Inspect 1st stage fan case rub strip.

Employee # \_\_\_\_\_ Date \_\_\_\_\_

7. Inspect 1st stage fan case for bumper pad wear.

Employee # \_\_\_\_\_ Date \_\_\_\_\_

8. Inspect oil tank straps for cracks, worn bolts.

Employee # \_\_\_\_\_ Date \_\_\_\_\_

9. Perform borescope inspection in AP2, AP3, and AP6.

Employee # \_\_\_\_\_ Date \_\_\_\_\_

10. Ensure borescope plugs are installed.

IPI C/W (signature) \_\_\_\_\_ Employee # \_\_\_\_\_ Date \_\_\_\_\_

11. Check malfunction indicators: a. Oil Filter b. TT2.5 Sensor c. Main Fuel Filter  
d. P&D Filter e. APR

Employee # \_\_\_\_\_ Date \_\_\_\_\_

12. Inspect all chip detectors

Employee # \_\_\_\_\_ Date \_\_\_\_\_

13. Inspect augmentor, spray rings, and flameholder for serviceability.

Employee # \_\_\_\_\_ Date \_\_\_\_\_

14. Perform detailed inspection of immediate area where maintenance was performed.

Employee # \_\_\_\_\_ Date \_\_\_\_\_

15. Perform detailed visual inspection of entire engine for FOD, dents, cracks, oil and fuel leakage, evidence of hot spots, proper component installation, proper lock wiring, and general serviceability.

\*\*\* 7 LEVEL REQUIREMENT \*\*\*

Employee # \_\_\_\_\_ Date \_\_\_\_\_