BY ORDER OF THE COMMANDER
366TH FIGHTER WING

MOUNTAIN HOME AFB INSTRUCTION 21-152

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Maintenance

ENGINE TRENDING & DIAGNOSTIC (ET&D) PROGRAM

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

NOTICE: This publication is available digitally.

OPR: 366 CMS/MXMP
(SMSgt Ricardo L. Chapa)

Certified by: 366 CMS/CC
(Major Kenneth D. Norgard)
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This instruction implements AFPD 21-1, *Managing Aerospace Equipment Maintenance.* It prescribes policies and procedures for monitoring jet engine internal performance. This program applies to all maintenance units, and applicable Air National Guard (ANG) units. Ensure that all records created as a result of processes prescribed in AFMAN 37-123 (to be replaced by AFMAN 33-363) are maintained in accordance with this manual, and are disposed of in accordance with the Air Force Records Disposition Schedule (RDS) located at **https://webrims.amc.af.mil**. Contact supporting records managers as required.

1. Purpose. The Engine Trending & Diagnostic (ET&D) program is intended to further the safe operation, performance reliability, and lower maintenance operating costs of installed gas turbine engines. The program analyzes trends in all available engine parameters to detect the onset of engine internal failures and shifts in instrumentation calibration or accuracy. When properly administered, this will be an effective management tool that allows maintenance personnel to take corrective actions before an engine failure or expensive secondary damage occurs.

2. Capabilities. The 366th Fighter Wing (366 FW) ET&D program enhances management of the Mountain Home AFB (MHAFB) propulsion systems by providing up-to-date program status and engine fleet health information to the Maintenance Group Commander.

3. References:

3.1. ACCI 21-152, *Engine Trending and Diagnostic (ET&D) Program*

3.2. TO 00-25-257, *Engine Trending and Diagnostics User's Manual*

3.3. TO 00-25-257-1/2, *Engine Trending and Diagnostics User's Manual: F100PW229/220*

4. Responsibilities:

4.1. **The 366th Maintenance Group (366 MXG) Commander will:**

4.1.1. Appoint a Senior NCO Propulsion system supervisor as ET&D Project NCO.

4.1.2. Appoint primary and alternate ET&D Monitors for each assigned MDS. The positions should be considered an additional duty for appointed individuals. 366 MXG/CC may assign personnel that do not meet the AFSC requirement, but possess the expertise and knowledge of the engine as ET&D monitors.

4.1.3. Ensure the primary and alternate ET&D Project NCOs receives the ET&D training course within 6 months of assignment of duty or at the earliest opportunity.

4.1.4. Ensure ET&D computers obtained from OC-ALC are not modified or used for non-ET&D applications to include and not limited to Integrated Maintenance Data System (IMDS), E-mail, Internet and Intranet.

4.2. **ET&D Project NCO will:**

4.2.1. Manage and coordinate the ET&D program for 366 MXG/CC.

4.2.2. Administer the ET&D program in accordance with ACCI 21-152, applicable technical orders (TO), and this instruction. Validate ET&D monitor recommendation for maintenance actions as a result of engine trending or analysis.

4.2.3. Review engine data and advise the 366th Maintenance Group (366 MXG) Commander on issues requiring attention.

4.2.4. Conduct quarterly review of engine performance using computer data. As a minimum, 366 MXG ET&D Project NCO (Chairperson), ET&D Monitors, and Air Force Engineering Technical Services (AFETS) will form a panel to review program status/results on a quarterly basis.

4.2.5. Act as the wing POC for all recommended changes to this instruction.

4.2.6. Maintain a register of where the ET&D equipment is located.

4.3. **The 366th Aircraft Maintenance Squadron (366 AMXS) will:**

4.3.1. Ensure Aircraft Maintenance Units (AMU) comply with wing ET&D program.

4.4. **AMU ET&D Monitor will:**

4.4.1. Be a qualified Propulsion technician AFSC (minimum 2A651A or civilian equivalent). These individuals must be knowledgeable of engine operation and troubleshooting and repair procedures.

4.4.2. Ensure engine flight data is downloaded following the daily flying period, entered into the Comprehensive Engine Trending and Diagnostic System (CETADS) database and forwarded to the Engine Management Element (EME) no later than 0700 the next duty day.

4.4.3. Ensure 366 AMXS deployed engine monitors make an appointment with MHAFB EME 1 week prior to deployment for a pre-departure brief. In addition, they will bring their CETADS laptop to this appointment to ensure CETADS is functioning properly and updated with the latest version of CETADS and all other requirements in EME pre-deployment letter.

4.4.4. When the engine Intelligence Trending and Diagnostic System (ITADS) fault indicates maintenance or engine removal is required, the ET&D monitor must coordinate with the project NCO and appropriate agencies.

4.4.5. Safeguard all Ground Station Unit (GSU) computers and related computer components associated with the ET&D program to prevent unauthorized usage or theft.

4.4.6. Ensure, after processing data into CETADS, ET&D monitor reviews each engine for CETADS and ITADS faults, adverse trends, cautions and alarms generated from the engine monitoring system or CETADS.

4.5. **The 366th Maintenance Operation Squadron (366 MOS) EME will:**

4.5.1. Reconcile daily downloads.

4.5.2. Serve as the primary advisor to the Project NCO on CETADS software issues.

4.5.3. Provide per MDS, CEMS/CETADS engine data to Wing's ET&D Project NCO weekly, or as required.

4.5.4. Be the primary contact with software engineers to report all program deficiencies and software configuration for Comprehensive Engine Trending and Diagnostic System (CETADS).

4.5.5. Maintain the custodian account and network control of all GSU computers and related computer components associated with the ET&D program.

4.6. **The 366th Component Maintenance Squadron (366 CMS) Propulsion Flight will:**

4.6.1. Administer ET&D Program for 366 MXG/CC.

4.6.2. In coordination with ET&D Project NCO, EME and the affected AMU, within mission requirements and consistent with the severity of the anticipated degradation, schedule maintenance at the earliest opportunity for problem engines.

4.6.3. Test Cell engine personnel will be required to provide engine run data to the EME no later than 0700 the next duty day.

THEODORE W. EATON, Colonel, USAF
Commander, 366th Maintenance Group