BY ORDER OF THE COMMANDER
AIR COMBAT COMMAND

AIR COMBAT COMMAND
INSTRUCTION 21-118

2 JULY 2018

MAINTENANCE

LOGISTICS MAINTENANCE
PERFORMANCE INDICATOR
REPORTING PROCEDURES

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

ACCESSIBILITY: Publications and forms are available on the e-Publishing website at **www.e-Publishing.af.mil** for downloading.

RELEASABILITY: There are no releasability restrictions on this publication.

This publication implements AFPD 21-1, *Maintenance of Military Material*. It establishes requirements and provides procedures for reporting aircraft logistics performance indicators (LPI) on assigned aircraft and systems. This publication applies to all military amd civilian personnel and contractor personnel assigned to Air Combat Air Force units and to those units that own aircraft for which ACC is the lead MAJCOM for to include Classically Associated Air Force Reserve Command and Air National Guard units. ACCI 21-118, *Logistics Maintenance Performance Indicator Reporting Procedures*, prescribes Reports Control Symbol (RCS): ACC-A4Q(M) 9302, Monthly Maintenance Performance Indicators' Report, and RCS: ACC-A4Q(AR)9303, Special Requests for Logistics Data. Ensure all records created as a result of processes prescribed in this publication are maintained in accordance with (IAW) AFMAN 33-363, *Management of Records*, and disposed of IAW Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS). The authorities to waive wing/unit level requirements in this publication are identified with a Tier ("T-0, T-1, T-2, T-3") number following the compliance statement. See AFI 33-360, *Publications and Forms Management*, for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the requestors commander for non-tiered compliance items. For questions on interpreting this instruction, first contact your MAJCOM maintenance functional activity. Units may publish a single supplement to consolidate local policies mandated by the AFI and this supplement. Supplements must be written IAW AFI 33-360. Contact supporting records managers as required. Send comments, questions, and suggested improvements to this publication on AF

Form 847, *Recommendation for Change of Publication*, through channels to HQ ACC/A4MO, 130 Douglas Street, Suite 210, Langley AFB, VA 23665-2791.

SUMMARY OF CHANGES

This document has been substantially revised and must be completely reviewed. Major changes include: reporting timeline requirements, replacing average Hangar Queen days with all Hangar Queens and definitions of previously undefined terms. Makes (RCS): ACC- A4Q(M) 9302 reporting mandatory for all wings reporting to ACC and covers all report templates, detailed requirements for data submission, and training.

Chapter 1

GENERAL INSTRUCTIONS

1.1. Introduction. This instruction, coupled with regular internal performance reviews by both units and headquarters, supports the ACC Goal to "Improve Our Combat Capability" by evaluating ACC logistics performance indicators in our Operations, Logistics, and Support programs. This instruction defines logistics performance terms and has reporting and review procedures to enable ACC to manage by fact. The focus is measurement of the many logistics processes that provide combat capability to the unit. The result of compliance with this instruction should be the quick and accurate identification of areas for improvement, as well as identification of support problems beyond the scope of the unit. The units' role emphasizes in-depth analysis of work processes, integrity in measurement methods, timeliness in reporting, and comprehensive remarks describing particular unit support issues requiring further analysis and action. The headquarters' role is to assist ACC units in process analysis, identification of opportunities for process improvement, identification of process standards and benchmarks, and maintenance of guidelines for consistent unit performance measurement and reporting. By no means should units limit their performance reviews to only the items reported to the headquarters. There are many other metrics available to unit managers that are helpful in determining unit health such as: cannot duplicate rates, data integrity, deferred discrepancy rates, maintenance scheduling effectiveness, system reliability/capability, attrition, meant time to repair, mean time between failure, mean time between maintenance actions, mean time to repair, mean time between failure, etc.

1.2. Applicability. Those ACC units dependent on Contractor Logistics Support (CLS) and Government/CLS will adhere to this instruction to the greatest extent possible within the current contract requirements. CLS limitations will be identified and waivers to the applicable portions of ACCI 21-118 will be requested from HQ ACC/A4MO. ACC policy is to reduce these waivers, where possible, when CLS contracts are reviewed/renegotiated. All contracts for logistics support must be written to provide for compliance with this instruction.

1.3. Responsibility. Wing, maintenance and operations group, and subordinate unit commanders are responsible for compliance. Commanders or their designated representative will ensure all reports cited in this instruction are prepared and transmitted as prescribed. The preparing agency and office of primary responsibility (OPR) is the Maintenance Management Analysis (MMA) section (or designated contractor where applicable) regardless of organizational structure. Commanders will review the accuracy of data required by this instruction and take action to improve deficiencies. At a minimum, the MOF Superintendent will have overall responsibility for ensuring quality, in-depth analysis of drivers in the COMMENTS tab as prescribed in paragraph **3.2.5.4**. References within the document to "you" or "your" apply to the preparing agency unless otherwise noted (**T-2**).

1.4. Reporting During Minimize Conditions. Minimize conditions are controlled by a designated communication agency. A minimize condition occurs to limit message traffic during contingencies as needed. All reporting will continue during minimize conditions with "Minimize Considered" entered at the bottom of each page of the report. (**T-2**) Reports cited under this instruction are essential and require expeditious preparation and transmission during emergency conditions.

1.5. Algorithms. Formulas used in computing rates and performance indicators are listed in **Attachment 2**.

1.6. References. Personnel responsible for the reports described in this instruction should be familiar with the applicable portions of AFI 10-601, *Operational Capability Requirements Development*, AFI 21-101, *Aerospace Equipment Maintenance Management*, AFI 21-103, *Equipment Inventory, Status, and Utilization Reporting*, AFI 63-101, *Acquisition and Sustainability Life Cycle Management*, AFCSM 21-558 through 579, Vol.2, AFMAN 23-110, Vol. 2, *USAF Supply Manual*, AFPD 10-9, *Lead Command Designation and Responsibilities for Weapon Systems*, and applicable command supplements.

Chapter 2

9302 REPORT TRANSMISSION INSTRUCTIONS

2.1. Report Transmission Methods. The Monthly Maintenance Performance Indicators Report, RCS: ACC-A4Q(M) 9302 must be submitted via the HQ ACC/A4MO Maintenance Analysis Section SharePoint Site (**https://acc.eim.acc.hedc.af.mil/org/a4/A4Q/A4QJ/MPI/Forms/MPI.aspx**). The 9302 data information can be found under the document library named MPI. Contact the ACC/A4MO Analysis Team office for assistance at DSN 574-4810 or by email to the ACC/A4MO Analysis Team email box. (**T-2**)

2.2. Report Templates. Each wing/unit has a 9302 report template specifically designed for its MDS(s) and reporting requirements. For example, the 1st Fighter Wing (FW) will receive a template named "0001FW-9302-TEMPLATE.XLSM". Use of the templates are mandatory. The 9302 templates will be obtained from the HQ ACC/A4MO Maintenance Operations Branch SharePoint Site under the 9302 TEMPLATES (BLANK) folder. When you save your file locally, do not change the file extension of the template file, it must be .XLSM at all times throughout the process (NOTE: Changing the file extension at any time throughout the process removes hidden coding used by ACC to upload data to our databases. Any file sent to ACC with the coding stripped will be returned to the unit for resubmission in the correct format). Each month, replace the word "TEMPLATE(X.X)" in the file name with the current month (3 characters) and year (4 digits). Example: For August 2011, the 1 FW file name would be "0001FW-9302-AUG-2011.XLSM". Wings/Units should check this site every month before reporting to ensure they have the current 9302 template for their unit. The version of the file will be indicated at the end of the file name (e.g., 0001FW-9302-AUG-2011(3.4).XLSM). (**T-2**)

2.2.1. Template Modifications. HQ ACC/A4MO maintains sole responsibility for template modifications. Do not modify your template. If changes are required, contact the ACC/A4MO Analysis Team office for assistance at DSN 574-4810 or by email to the ACC/A4MO Analysis Team email box.

2.3. Restriction on Types of Information. Only UNCLASSIFIED/Non-PII (Personally Identifiable Information) information is acceptable. Do not include CLASSIFIED/PII information in the report. If classified information or PII is required on any report, an appropriate transmission method will be specified (usually SIPRNET e-mail). Call ACC/A4MO for the current SIPRNET account.

Chapter 3

AIRCRAFT REPORTING REQUIREMENTS

3.1. Types of Reports. This chapter describes the overall report concept. It provides information for each report: The 9302 consists of two reports, the Monthly Logistics Performance Indicators Report, ACC- A4Q(M)9302 Excel portion and the Maintenance Group Monthly Executive Summary to ACC/A4.

3.2. Monthly Logistics Performance Indicators Report, ACC-A4Q(M)9302 Excel Document.

3.2.1. Report Use. Intermediate command and MAJCOM managers use this report. It is the official source document for briefings to the COMACC and the ACC/A4. The workbook has four tabs: Section 1 (wing overall, including deployed), Deployed (wing deployment), Section 2 (drivers), and Comments (explanatory remarks).

3.2.2. Report Auto-Calculations and Manual Entries. The data for the 9302 report is manually input. The total FSE Deviation and FSE rate, are automatically calculated and identified with gray colored cells. The remaining cells require manual inputs to include the name, rank, and telephone number of the unit POC responsible for report preparation at the bottom of Section 1. Providing this information gives a POC that ACC/A4MO may contact if there are questions about the submitted report.

3.2.3. Applicability. Submit this report on all aircraft or systems by MDS, with the exception of the USAF Air Demonstration Squadron (Executive Summary only), full-scale Aerial Target and sub-scale Aerial Target drones. Units possessing more than one MDS will break each out separately. Separate messages are not required for each MDS. F-16 units with multiple blocks will break out the blocks in separate columns. Units having multiple missions, (e.g., operational (OPS), training (TNG), or test (TST)), will further break out each mission type. The following MDS are exceptions to this rule: EQ-4, MQ-1/9, RQ-4, U-2S, and TU-2S. These missions will be combined and their blocks will not be separated. (**T-2**)

3.2.3.1. Units possessing a mix of F-16 aircraft, F-16C/D series are considered one Mission Design Series (MDS), within the applicable block, for 9302 reporting purposes. For example, the Block 30 F-16C and Block 30 F-16D aircraft must be combined as Block 30 F-16C/D for reporting purposes. (**T-2**)

3.2.3.2. F-15 MDS will include all variations (i.e., F-15C/D) and F-15 C/Ds will be reported together. F-15E aircraft will be reported separately. (**T-2**)

3.2.3.3. Home base units will report deployed aircraft information under the deployed section of the standard template. The deployment column will be labeled with the operational name (e.g., OIF, OEF, OND, etc) and MDS. When a unit is supporting more than one major deployment, each deployment will be reported under a separate column. Deployed drivers and their impact on overall wing performance must be highlighted, i.e., specifically referred to, and clearly identified in the comments section. For deployments, unless otherwise stated, add total sorties scheduled into the overall Wing total programmed hours/sorties. Do not report zero for total sorties scheduled if your unit had actual sorties flown at a deployed location. Do not report data for exercises, (e.g., Red

Flag, Air Warrior, etc), in the deployed section of the 9302. This section is used for wartime operations, contingencies, and real-world crises. If exercise data is required, units will be given specific guidance on reporting requirements (**T-2**).

3.2.4. Frequency of Reporting. The 9302 report is submitted to HQ ACC/A4MO monthly. Upload the 9302 via the ACC/A4MO SharePoint site NLT 1400 EST on the fifth calendar day following the month being reported. Units will inform ACC/A4MO as soon as they are aware of any situation that may cause a late submittal. Exercises, down-days, and inspections are not valid reasons for late submittals. (**T-2**)

3.2.5. Report Preparation. The standard report template is specifically designed for each wing. Use of the standard report template is mandatory. (**T-2**) Do not deviate from the numbering system outlined in this instruction or in the template. The standard templates for each wing are available on the ACC/A4MO SharePoint site.

3.2.5.1. SECTION 1 tab. Section One contains the overall wing/MDS/Block data totals, including contingency information. Section One of each unit's template may contain multiple MDS/Blocks/Missions.

3.2.5.1.1. Specific Guidance for Section 1 tab. You must enter the current reporting month-year (cell C2). (**T-2**) It will automatically feed the date to the other worksheets. The non-shaded cells in this worksheet are open for manual entry. The shaded cells are calculated cells and are locked and unavailable for editing. If the data is not entered correctly a red cell will appear where the data is in error.

3.2.5.1.2. Deviation Items.   All entries on the template are standard Analysis metrics, changes to the template will be posted in ACC/A4MO SharePoint as required. Refer to AFI 21-101, ACC Supplement, Chapter 15 for guidance on how to report specific deviations used in FSE rate calculation.

3.2.5.2. DEPLOYED tab. The Deployed section contains the overall wing/MDS/Block data totals. This section of each unit's template may contain multiple MDS/Blocks/Operations.

3.2.5.2.1. Specific Guidance for the Deployed tab. The deployment section is reserved for deployments in support of real world operations, not unit TDY's. This section has been modified to allow drop downs for the Unit, MDS, Block and Operation and must be completely filled in for each deployed location. The non-shaded cells in this worksheet are open for manual entry and the shaded cells are calculated cells and are locked and unavailable for editing.

3.2.5.2.2. Deviation Items. Refer to paragraph **3.2.5.1.2** above.

3.2.5.3. SECTION 2 – Data Elements/Drivers tab. Section Two contains the top ten drivers (three digit WUC) for: Abort, Break, Fix* (to include the 4 hour), Cannibalization, and Hangar Queens, Category I,II, and III.

3.2.5.3.1. For high cannibalization items provide the full National Stock Number (NSN), part number (if obtained through CLS contractor, full work unit code (WUC) or logistics control number (LCN), and nomenclature. This enables A4MO analysts and ACC A4R personnel to address the correct parts problems. The comment "NSN

not available" is not acceptable. Be sure components are listed under the correct subsystem/WUC/LCN. (**T-2**)

3.2.5.3.2. For Hangar Queens, ensure all information is entered as required to include any explanation for non-possessed days. (**T-2**)

3.2.5.4. COMMENTS tab. Provide explanations for all indicators not meeting HQ/ACC standards or goals, per MDS for the previous month. Your unit's comments provide background information for the ACC/A4 staff therefore, quality, in-depth remarks are required. (**T-2**) Provide explanations for your cumulative unit data. Combine all the comments into one narrative for each labeled metric. For example, do not provide a separate Not Mission Capable Maintenance (NMCM) narrative for a particular squadron and for the unit overall. If there are key issues for a squadron, make sure those are put in with the general comments block. Deployed comments must be rolled up into the overall unit comments. Comments must be entered in the appropriate block (COMMENTS) of the report template. (**T-2**)

3.2.5.4.1. Specific Guidance for Comments tab. Provide explanations for all missed indicators each month. Comments are not complete unless it covers the Who, What, When, Where, Why, and How of the indicator. Do not regurgitate numbers for the comment explanations. Comments must provide important details explaining why an item drove unit performance. (**T-2**) Utilize raw data to emphasize a point rather than reiterating information already available in the Section 1 tab. Submit thorough comments.

3.2.5.4.1.1. Analyze the data. Indicate and note short-term (six months) and long-term (beyond 12 months) trends. Do not go beyond 36 months. Do not just focus on the current month's data to determine if a trend exists. Look at the entire picture to make those determinations. Reference the Air Force Logistics Management Agency Maintenance Metrics U.S. Air Force handbook for suggested data investigations.

3.2.5.4.1.2. When possible, quantify an issue or event's impact on mission capability, (e.g., one-time inspection reduced aircraft availability by 10%). Although the statement "No Trends Noted" is completely valid, do not use it lightly. Avoid using individual aircraft unless used to quantify specific problems.

3.2.5.4.1.3. Your unit's report should include comments from maintenance management/sortie production personnel, (i.e., Maintenance Group/Deputy Group Commander, Maintenance Operations, Aircraft Maintenance Unit (AMU) OICs, Aircraft Maintenance Squadron (AMXS) Commanders, and Maintenance Operations Officers) (**T-2**). This is distinct and separate from the comments in the Executive Summary.

3.2.5.4.1.4. List pacing aircraft, limited manning, and unit events such as training, exercises, stand-downs, or deployments that may have affected unit performance. Provide projected unit plans to fix pacing items.

3.2.5.4.1.5. For all explanations, use the full WUC/LCN when discussing a part and the three-digit WUC/LCN when discussing the sub-system. For example, the E-3 Anti-Skid Device should be reported as 13DHM, not by the system WUC of

13000. Spell out all acronyms.

3.2.5.4.1.6. Explain the way ahead. One way to accomplish this is to provide "predictive analysis" which means determining where indicators are headed over the next several months. Predictive analysis includes, among other things, identifying anticipated changes in aircraft availability, (e.g., expected depot inductions, depot field teams, extended scheduled maintenance, or any other issues that may impact the unit's ability to meet mission requirements). Finally, specific actionable items that ACC/A4 and WSTs can help your unit with should be addressed here and in your executive summary (paragraph **3.3**).

3.2.5.4.2. For manning and training issues, we require the complete AFSC as well as an explanation of the problem. For inspections, time change items, Time Compliance Technical Orders (TCTO) or Time Compliance Technical Directives (TCTD), the type of inspection and TCTO/TCTD number are required. (**T-2**)

3.2.5.5. AMU Data. There is no requirement to report aircraft maintenance indicators by AMU. Although units are not required to provide HQ ACC by AMU data, WSTs and other staff agencies may request this information to answer questions from senior leadership. When tasked, provide the requesting agency with the appropriate AMU data using an ACC/A4MO approved AMU template.

3.3. Monthly Executive Summary.

3.3.1. Report Use. Intermediate command, WSTs, MAJCOM managers, and HQ ACC/A4 use this report. This summary is designed to be a senior leader analysis of major issues/factors that are affecting the unit health. It is designed to be a direct communication between the MXG/CC and the A4 Director, however the information in not privileged. Other methods are available to provide this type of information such as telephone or email.

3.3.2. Applicability. The MXG/CC or equivalent will submit the summary on all aircraft assigned to that unit. A designated appointee may sign/submit the summary in absence of the MXG/CC. Separate summaries are not required for each MDS. (**T-2**)

3.3.3. Frequency of Reporting. The executive summary is submitted to HQ ACC/A4MO monthly. Upload the signed summary via the ACC/A4MO SharePoint NLT 1400 EST on the eighth calendar day following the month being reported. Units will inform ACC/A4MO as soon as they are aware of any situation that may cause a late submittal. Additionally, overseas units will inform their respective MAJCOMs. Exercises, down-days and inspections are not valid reasons for late submittals. (**T-2**)

3.3.4. Report Preparation. The executive summary is a memorandum from the Maintenance Group Commander to the ACC/A4. This memorandum provides a top level view of topics for the unit to include: overall fleet health, unit concerns, future plans, Flying Hour Program factors/issues, and MAJCOM required assistance. It should not be an aircraft by aircraft laundry list of issues and should not repeat comments from the Excel document. Each MDS in the summary will be a separate topic and addressed within the same summary. Exec Summary will contain inputs from maintenance management/sortie production personnel, (i.e., Maintenance Group/Deputy Group Commander, Maintenance Operations, Aircraft Maintenance Unit (AMU) OICs, Aircraft Maintenance Squadron (AMXS) Commanders, and Maintenance Operations Officers (**T-2**).

3.3.5. Report Length. Summaries should be concise (optimally one page) and reviewed for clarity. The ACC/A4 has to review at least 28 summaries each month, accuracy, brevity, and clarity are paramount. Spell out all acronyms.

3.4. Coordination and Correction Procedures. Unit commanders will establish coordination procedures to ensure the on-time release of accurate data to HQ ACC/A4MO. Route the reports through all appropriate maintenance management/sortie production personnel for their review and comments prior to submission to HQ ACC/A4MO. After the 9302 Data and Executive Summary have been uploaded to the Maintenance AnalysisSectionSharePoint site, any corrections to reports must be submitted via SharePoint with a "heads-up" by e-mail with reference to the original reported data as well as the corrected data. The unit OPR will maintain a master file of monthly reports for the current and previous fiscal year. If there are any reporting errors identified after the reports arrive at HQ ACC/A4MO, ACC/A4MO will contact the unit OPR. The OPR, in turn, will notify the appropriate base agency to correct erroneous data. Wing Analysis sections will ensure the timely submission of corrected reports (**T-2**). **Note:**:*Section 2, Fix Rate is prefilled on the template. Typically, attack and fighter aircraft use the 8- Hour Fix Rate, all others use the 12-Hour Fix Rate. HQ ACC/A4MO may change which Fix Rate to track when tasked by WSTs and other staff agencies.

Chapter 4

DEPLOYMENT REQUIREMENTS

4.1. Applicability. This chapter outlines guidance for units with a deployment commitment for contingencies, exercises, crises, or wartime operations.. Units may use any format they choose for local reporting as long as it satisfies RCS: ACC-A4Q(M) 9302 requirements. We do not require a specific deployment report. However, when contingencies arise, we may re-instate the ACC-A4Q(AR) 9303 report to request such data.

4.2. Reporting Requirements. Units are required to report on deployed aircraft in accordance with Operational Plans (OPlans) under which they are tasked for support. They must comply with guidelines on reporting established by the MAJCOM and Joint Task Force they are tasked to support. During deployments, the unit's primary reporting role will be to the deployed headquarters with informational copies to their home base and supporting MAJCOM, e.g., 388 FW aircraft deployed to OEF will report to the Joint Force Commander (JFC) or Joint Force Air Component Commander (JFACC) (as applicable) with information copies forwarded to 388 MOS/MXOO Hill AFB. When Maintenance Management Analysts are not deployed, deployed commanders will designate an individual or activity to perform reporting requirements. (**T-2**) Deployed reporting to HQ ACC will only be required for: wartime operations, contingencies, major deployments, and real-world crises; deployments to exercises such as Red Flag, Gunsmoke, or participation in Air Warrior, etc. are not reported as deployed.

4.2.1. Personnel at home-station will report deployed aircraft information under the deployed section tab of the RCS: ACC-A4Q(M)9302, Monthly Maintenance Performance Indicators Report template. Refer to paragraphs **3.2.5.2.1.** and **3.2.5.2.2.** for deployed data preparation and paragraph **3.2.5.4.** for deployed comments preparation. (**T-2**)

4.3. Development of Analysis Deployment Package. Upon deployment notification, each unit will develop a deployment package for their MMA section. The package should identify equipment and supplies required for each type of deployment commitment, e.g., bare-base operation, limited communications, or full-blown operation. Things to consider when developing this package are the equipment needed to operate the Integrated Maintenance Data System (IMDS) e.g., NIPRNET computers and printers. MMA should also identify required software, e.g., MIAP Thick Client, word-processing, spreadsheet, database, and how many days/months of office supplies are required. Before deployment, compile a list of points of contact (POC) at base level, MAJCOM, deployed headquarters and units, and access to manuals on operating the IMDS. Units should also have written manual backup procedures for IMDS documentation. Gather all applicable instructions and manuals the deployed analyst may need. In addition, wing or command level analysts at deployed locations are encouraged to contact their replacement(s) at the earliest possible time to inform them of any training or job knowledge requirements needed to perform the assigned duties at the deployed location(s). (**T-2**)

4.4. CAMS for Mobility (G081) Training. Maintenance Analysis responsibilities at some deployed locations may require the use of G081. If training is needed, analysts can access the G081 Analysis Training program (course number A2ADU00OCB4041) via the 367th Training Support Squadron's Air Force Aircraft Maintenance and Munitions Training site. The 367th Training Support Squadron is located at Hill AFB. The G081 Analysis Training program will familiarize the student with G081 GUI screens, specifically the program used to produce batch

reports. The Interactive Multimedia Flight POC can be reached at DSN 586-4014. It is highly recommended this training occurs prior to deployment departure.

4.5. Deployed Operation Weekly Report. During deployments, senior leaders may require a minimum set of data elements for briefings and analyses of problem areas. Your deployed unit's specific report format will depend on your deployed commander's requirements. Contact the ACC/A4MO Analysis Team office at DSN 574-4810 for guidance developing a local template.

TOM D. MILLER, Brigadier General, USAF
Director of Logistics, Engineering,
and Force Protection

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

AFPD 10-9, *Lead Command Designation and Responsibilities for Weapon Systems*, 08 Mar 2007

AFI 10-601, *Operational Capability Requirements Development*, 06 Nov 2013

AFI 21-101, *Aerospace Equipment Maintenance Management*, 21 May 2015

AFI 21-103, *Equipment Inventory, Status, and Utilization Reporting*, 16 Dec 2016

AFI 63-101_20-101, *Integrated Life Cycle Management*, 09 May 2017

AFI 21-101_ACCSUP, *Aerospace and Equipment Maintenance Management*, 19 Apr 2017

AFI 21-103_ACCSUP, *Equipment Inventory, Status, and Utilization Reporting*, 06 June 2017

AFMAN 33-363, *Management of Records*, 01 March 2008

Prescribed Forms

No Forms Prescribed

Adopted Forms

AF Form 847, *Recommendation for Change of Publication*

Abbreviations and Acronyms

AFLMA—Air Force Logistics Management Agency

AGE—Aerospace Ground Equipment

AMU—Aircraft Maintenance Unit

AMXS—Aircraft Maintenance Squadron

ASD—Average Sortie Duration

CLS—Contractor Logistics Support

CND—Cannot Duplicate

COMACC—Commander Air Combat Command

DDR—Data Documentation Record

DIFM—Due In For Maintenance

FCF—Functional Check Flight

FMC—Fully Mission Capable

FSE—Flying Scheduling Effectiveness

IMDS—Integrated Maintenance Data System

JDD—Job Data Documentation

JFC—Joint Force Commander

JFACC—Joint Force Air Component Commander

LCN—Logistics Control Number

LPI—Logistics Performance Indicator

LRS—Logistics Readiness Squadron

MAJCOM—Major Command

MC—Mission Capable

MDS—Mission Design Series

MESL—Mission Essential Systems List

MMA—Maintenance Management Analysis

MIAP—Multi-host Internet Access Portal

MICAP—Mission Impaired Capability Awaiting Parts

MIS—Maintenance Information System

MX—Maintenance

NIPRNET—Nonsecure Internet Protocol Router Network

NLT—Not Later Than

NMC—Not Mission Capable

NMCM—Not Mission Capable Maintenance

NMCS—Not Mission Capable Supply

NMCB—Not Mission Capable Both

NRTS—Not Repairable This Station

NSN—National Stock Number

OCF—Operational Check Flight

OPlan—Operations Plan

OPR—Office of Primary Responsibility

OPS—Operational

PAA—Primary Aircraft Authorized

PAI—Primary Aircraft Inventory

PDAI—Primary Development/Test Aircraft Inventory

PMAI—Primary Mission Aircraft Inventory

PMC—Partially Mission Capable

PMCB—Partially Mission Capable Both

PMCM—Partially Mission Capable Maintenance

PMCS—Partially Mission Capable Supply

PMEL—Precision Measurement Equipment Laboratory

POAI—Primary Other Aircraft Inventory

POC—Point of Contact

PTAI—Primary Training Aircraft Inventory

RCS—Report Control Symbol

RDS—Records Disposition Schedule

RSP—Readiness Spares Package

SIPRNET—Secret Internet Protocol Router Network

TAI—Total Aircraft Inventory

TCTD—Time Change Technical Directive

TCTO—Time Change Technical Order

TNMCM—Total Not Mission Capable Maintenance

TNMCS—Total Not Mission Capable Supply

TNG—Training

TST—Test

UTE—Utilization Rate

WST—Weapon System Teams

WUC—Work Unit Code

Terms

Adjusted Sorties Scheduled—The sum of total sorties scheduled (home base, off station, deployed, and adds for end of the fiscal year UTE close out) minus any UTE cancellations. This formula is used when calculating the FSE.

Aircraft Availability—Percentage of a fleet that is in a Mission Capable condition and not in a Depot possessed status or Unit Possessed Non Reportable (UPNR) possession. **NOTE:** The metric may be created at the Mission Design (MD)/MDS level or may be grouped by fleet (e.g., Aggregate, Bombers, Fighters) to determine "Aircraft Availability."

Air Abort—An air abort is a sortie that could not continue its primary or alternate mission. An air abort for the same discrepancy during an FCF/OCF is not counted in the air abort rate. If the aircraft air aborts on a different component during the FCF/OCF, it is counted in the air abort rate. (Related: see IFE)

Air Abort Rate—This is a leading indicator of aircraft reliability. It is the percentage of missions aborted in the air per 100 sorties flown. The rate only includes air aborts caused by Maintenance or Operations. An air abort for the same discrepancy during an FCF/OCF is not

counted in the air abort rate. If the aircraft air aborts on a different component during the FCF/OCF, it is counted in the air abort rate.

Aircraft Possession—A key factor in metrics. The Air Force mandates each aircraft will always be owned or "possessed" by a designated organization. Possession is an indicator of an organization's or aircraft fleet's health. Aircraft that are under the control of their owning base are possessed by that organization. An aircraft that requires depot level maintenance/inspection, regardless of the physical location, is temporarily possessed by depot as prescribed in AFI 21-103. In calculating the various aircraft maintenance metrics, possession is calculated in units of hours normally for specific time periods (e.g., monthly, annual). Reference AFI 21-103 for further information.

Attrition (Aircraft)—Aircraft required to replace primary aircraft inventory losses. Do not confuse this term with computing scheduling attrition rates (e.g., Weather) for developing the flying schedule.

Awaiting Maintenance (AWM) Rate—The total deferred discrepancies for maintenance, divided by possessed aircraft. See definition of deferred discrepancy. When computing AWM rate include all maintenance events (despite locally assigned code) that can be attributed to local maintenance (not depot) delays

Awaiting Parts (AWP) Rate—The total deferred discrepancies requiring parts and have a valid supply requisition number, divided by possessed aircraft. See definition of deferred discrepancy.

Break—An aircraft that lands with an overall aircraft landing status of Code-3. The determination of landing status will be based on the applicable aircraft MESL. A break for the same discrepancy during an FCF/OCF is not counted as a new break. If the aircraft breaks on a different component during the FCF/OCF, it IS considered a new break.

Break Rate—This is a leading, flying-related metric. It is the percentage of sorties that land with an overall aircraft landing status of Code-3. This metric primarily indicates aircraft system reliability. It may also reflect the quality of aircraft maintenance performed. If Fix Rates are used as a measurement of maintainability, the Break Rate is the complementary measurement of reliability. For true evaluation of equipment/system reliability, measurements must be taken at the system/subsystem level. It is also an excellent predictor of parts demand. Several indicators that follow break rate are Mission Capable, Total Not Mission Capable for Supply, Cannibalization Rate, and Repeat/Recur

Cancellation (CX)—A sortie that could not fly its scheduled time and date prior to crew show.

Cannot Duplicate (CND)—The code used when reporting for on-equipment when a discrepancy could not be recreated under test/trouble-shooting conditions.

Cannibalization (CANN)—A removal of a serviceable part from a weapon system, system, support system or equipment end item or engine to replace an unserviceable part on another aircraft or engine. It reflects part reliability, spares funding, and depot support in the repair process. Cannibalization actions also include the removal of a serviceable part to fill Readiness Spares Packages (RSP). All chargeable cannibalizations must satisfy an existing supply requisition (e.g., MICAP) and to meet priority mission requirements with an obligation to replace the removed item. This is the only metric reported quarterly to Congress by congressional mandate.

Cannibalization Rate—This is a leading indicator that reflects the number of cannibalization actions. It is the average number of ―T‖ cannibalization actions per 100 sorties. Per T.O. 00-20-2, paragraph 5.2.4, cannibalization actions from depot aircraft are valid after written approval from the System Monitor at AFMC. These approved cannibalizations will be counted in the cannibalization rate. Since LRS relies on the back shops and depot for replenishment, this indicator can also be used, in part, to indicate back shop and depot support.

Capability Code (CAP CODE)—The status of a system/subsystem at the end of a sortie. It reflects the type of performance of a system that occurred during the sortie. Capability codes not only indicate how the individual system performed on the aircraft, but also if the system was in operation during the sortie.

Contractor Logistics Support (CLS)—Non-government managed logistics processes such as supply and/or maintenance performed by civilian contractors that is intended to cover the total life cycle of a weapon system. Reference AFI 63-101 for further information.

CY/FY Cumulative—The calendar (Jan - Dec) or fiscal year (Oct - Sep) cumulative performance of an indicator.

Deferred (or Delayed) Discrepancy—Malfunctions or discrepancies not creating a NMC or PMC condition for the aircraft and are not corrected ―on the spot‖ are considered deferred discrepancies. Although minor maintenance actions must sometimes be deferred or delayed to a more opportune time, maintenance should try to keep this rate as low as possible. If delayed discrepancies can't be scheduled/combined with a more extensive maintenance action, maintenance schedulers should routinely schedule their aircraft down for a day when required to work deferred discrepancies. The MIS provides the opportunity to create additional codes to further expand the AWM/AWP codes for management purposes. This program is a way for the MXG/CC to identify areas of concern and will be at the discretion of the MXG/CC to determine what codes will be included in AWM/AWP but each deferred discrepancy will be counted as either AWM or AWP.

Deferred (or Delayed) Discrepancy Rate—This is a leading indicator that should be closely evaluated in comparison to other metrics. This rate represents the average deferred discrepancies across the unit's average possessed aircraft fleet. The only exception is awaiting depot input. The delayed discrepancy rate counts only Awaiting Maintenance (AWM) and Awaiting Parts (AWP).

Deviation—Departure from the printed weekly flying schedule.

Fix Rate—This is a leading indicator showing how well the repair process is being managed. It is a percentage of aircraft sorties with a landing status code of 3 (includes system cap codes 3 and 4) returned to a flyable status in a certain amount of time (clock hours). Refer to AFI 21-103 and MAJCOM directives for maintenance start time (e.g., engine shut down, ―first‖ chock). Problems found by maintenance after the aircraft lands (ground found) are not considered in the fix time. The fix time stops when all Landing Status Code 3 with system capability code 3/4 Pilot Reported Discrepancies (PRDs) are fixed even if the aircraft remains NMC. This metric is used to track ―dead time‖ in aircraft repair processes because it measures the speed of repair and equipment maintainability. This includes breaks and fixes that occur at any location (off-station, etc.).

4-Hour Fix Rate—The cumulative percentage of landing status Code-3 breaks fixed within 4 hours. The break is considered fixed when all CAP Code-3 or 4 PRDs are corrected. For fighters,

except contractor-maintained training aircraft, an aircraft break and a 4-hour fix interval is equivalent to a surge sortie opportunity lost in wartime.

8-Hour Fix Rate—The cumulative percentage of landing status Code-3 breaks fixed within 8 hours. The break is considered fixed when all CAP Code-3 or 4 PRDs are corrected.

12-Hour Fix Rate—The cumulative percentage of landing status Code-3 breaks fixed within 12 hours. The break is considered fixed when all CAP Code-3 or 4 PRDs are corrected.

24-Hour Fix Rate—The cumulative percentage of landing status Code-3 breaks fixed within 24 hours. The break is considered fixed when all CAP Code-3 or 4 PRDs are corrected.

Flying Scheduling Effectiveness (FSE) Rate—This is a leading indicator used to measure how well the unit planned and executed the weekly flying schedule. The FSE rate is the percentage of sorties flown as scheduled. It also indicates unit turmoil caused by flying schedule deviations. The flying schedule developed by tail number is the baseline upon which the FSE is derived by comparing each day's deviations. Deviations that decrease the FSE from 100 percent include: scheduled sorties not flown because of maintenance, supply, operations, weather, higher headquarters (HHQ), air traffic control, sympathy, or other reasons; early takeoffs, late takeoffs, and adds as defined in AFI 21-101, ACC Supplement, Chapter 15. Disruptions to the flying schedule can cause turmoil on the flightline, sending a ripple effect throughout other agencies, and adversely impact scheduled maintenance actions.

Functional Check Flight (FCF)—The flight of an aircraft, in accordance with the applicable dash -6 manual, to verify the airworthy condition of the aircraft. This check may also reflect the quality of aircraft maintenance performed. Landing code status of a Code-3 for a FCF will not count against the break rate for the same system/subsystem tested. (See Operational Check Flight).

Ground Abort—Event after crew show time that prevents a "crew ready" aircraft from becoming airborne. Ground aborts are categorized as maintenance (GAA, GAB, GAC), operations, HHQ, weather, sympathy, other, etc. A ground abort for the same discrepancy during an FCF/OCF is not counted in the ground abort rate. If the aircraft ground aborts on a different component during the FCF/OCF, it is counted in the ground abort rate.

Ground Abort Rate—The number of ground aborts (including spare ground aborts) per sortie attempts. This rate includes only ground aborts caused by Maintenance, Operations, and Supply. Ground abort rates can gauge both aircraft reliability and quality of maintenance performed. A ground abort for the same discrepancy during an FCF/OCF is not counted in the ground abort rate. If the aircraft ground aborts on a different component during the FCF/OCF, it is counted in the ground abort rate.

Hangar Queen (HQ)—A unit possessed aircraft (to include those in UPNR status) that has not flown for more than 30 consecutive days.

Hourly UTE Rate—This is the average hours flown per authorized aircraft /systems per month.

In-flight Emergency (IFE)—A declaration of an emergency by the pilot during flight. An IFE does not constitute an air abort unless the primary or alternate mission could not be completed.

JDD Error Rate—The percentage of records found in error in the IMDS JDD subsystem during the Data Integrity Team (DIT) review. For JDD error rate computations, a record is one Detail

Data Record (DDR). When a DDR contains more than one documentation error, the JDD error rate will reflect one error for the entire DDR. Report the uncorrected error rate to the group.

Logistics—This term, when used in reference to aircraft maintenance, will consider anything concerning maintenance, weapons, supply, transportation, plans or contracting.

Maintenance/Operations (MX/OPS) Deviation Rate—The number of maintenance and operations deviations divided by adjusted sorties scheduled multiplied by 100. Reflects the number of deviations within unit control. The MX/OPS deviation rate is a subset of FSE. Only count the MX/OPS deviations used to compute the FSE rate.

Maintenance Scheduling Effectiveness (MSE)—This is a leading indicator that measures success in the unit's ability to plan and complete inspections and periodic maintenance on-time per the maintenance plan. Deviations to the plan are recorded. A low MSE rate may indicate a unit is experiencing turbulence on the flightline or in the back shops. This indicator is primarily used as feedback to maintenance managers on the success and adherence to scheduled maintenance plans and actions. To compute the MSE, you must know the number of maintenance actions scheduled and accomplished as scheduled along with each action's weighted value (based on the importance of the event and established by MAJCOM directives). Reference AFI 21-101, ACC Supplement, Chapter 15for further guidance.

Mission Capable (MC) Rate—This is a lagging indicator. The MC rate is used to measure an overall unit's capability. It is the percentage of possessed hours for aircraft that are FMC or PMC for specific measurement periods (e.g., monthly or annual). A low MC rate may indicate a unit is experiencing many hard breaks, parts supportability shortfalls or workforce management issues. Look for workers deferring repairs to other shifts, inexperienced workers, lack of parts from LRS, poor in-shop scheduling, high cannibalization rates or training deficiencies. High commitment rates may also contribute to a lower MC rate. The key is to focus on negative trends and identify systemic, underlying causes. Root factors of the MC rate should be measured, evaluated and reported through the use of the TNMCM, TNMCS and NMCB rates.

Mission Impaired Capability Awaiting Parts (MICAP)—Expedited backorders in the supply system when material is not available for issue, and required by the customer to satisfy mission requirements in a short or expedited period of time. Expedite backorders are appropriate when needed material causes the customer a work stoppage or negatively impacts the mission. A "1A" MICAP is for an NMCS condition which is reportable in Section Two of the MPI 9302 report. A "JA" MICAP is for PMCS conditions.

Not Mission Capable Both (NMCB) Rate—The percent of possessed time an aircraft/system is not mission capable due to both maintenance and supply.

Not Mission Capable Maintenance (NMCM) Rate—The percent of possessed time an aircraft/system is not mission capable due to maintenance.

Not Mission Capable Supply (NMCS) Rate—The percent of possessed time an aircraft/system is not mission capable due to supply.

Not Repairable This Station (NRTS)—A status condition determined during shop processing of an item. It indicates that the item cannot be repaired at base level.

Operational Check Flight (OCF)—The first flight of an aircraft that has had extended downtime or extensive maintenance at the request of maintenance to validate a maintenance action. An OCF should not be used to avoid repeat or recur discrepancies.

Personnel Availability (PA)—Personnel availability simply provides a measure of manning status. It compares the number of personnel authorized to the number of personnel available. A maintenance manager may find it useful to review data based on skill level. In which case, compare the personnel authorized to the number of personnel holding a specific skill level. The number authorized is based on the Unit Manning Document. The number available includes only those available for duty, which excludes those who are reassigned, on leave, Temporary Duty (TDY), etc.

Phase Flow (PF) Average—This leading metric measures the average phase time remaining on the fleet. It should be approximately half the inspection interval and should appear as a diagonal line when the fleet PF average is portrayed graphically in a TDI. A phase TDI is a product that shows hours remaining until the next phase on each aircraft possessed by a unit. However, a unit may have good reasons to manage its phase flow so the data points define a pattern other than a diagonal line. For example, in preparation for a long-distance overseas deployment, a unit may need to build up the average phase time (average fleet time) remaining on its fleet, because phase capability may be limited for a short time. Beware of gaps or groupings, especially on aircraft with less than half the time remaining to phase.

Pilot Reported Discrepancy—Any maintenance event recorded against a sortie to include ground aborts but excluding any redball maintenance events (Cap codes 2,3,4,5,9)

Possessed Aircraft—Aircraft under a wing commander's operational control and responsibility IAW AFI 21-103, Equipment Inventory, Status and Utilization Reporting.

Primary Aircraft Inventory (PAI)—Aircraft assigned to meet primary aircraft authorization. (Includes PDAI, PMAI, POAI, and PTAI.)

Primary Mission Aircraft Inventory (PMAI)—Aircraft assigned to a unit for performance of its wartime mission (Possession codes: CA, CC).

Primary Training Aircraft Inventory (PTAI)—Aircraft required primarily for technical and specialized training of crew personnel or leading to aircrew qualification (Possession code: TF).

Primary Development/Test Aircraft Inventory (PDAI)—Aircraft assigned primarily for the test of the aircraft or its components for purposes of research, development, test and evaluation, operational test and evaluation, or support for testing programs (Possession code: CB).

Primary Other Aircraft Inventory (POAI)—Aircraft required for special missions not elsewhere classified.

Recur Rate—A recurring discrepancy on an aircraft occurs on the second through fourth sortie or attempted sortie after corrective action has been taken and the system or subsystem is used. The discrepancy must indicate the same malfunction as the original discrepancy and was cleared by maintenance (including CNDs/no-defect-noted, etc). A high recur rate may indicate lack of thorough troubleshooting; inordinate pressure to commit aircraft to the flying schedule for subsequent sorties; or a lack of experienced, qualified, or trained technicians. Examine each recur discrepancy and look for trends.

Repeat Rate—A repeat discrepancy on an aircraft occurs on the next sortie or attempted sortie after corrective action has been taken and the system or subsystem is used. The discrepancy must indicate the same malfunction as the original discrepancy and was cleared by maintenance (including CNDs/no-defect-noted, etc). A high repeat rate may indicate lack of thorough troubleshooting; inordinate pressure to commit aircraft to the flying schedule for subsequent sorties; or a lack of experienced, qualified, or trained technicians. Examine each repeat discrepancy and look for trends.

Repeat/Recur (R/R) Discrepancy Rate—This metric is a leading indicator. It is the total number of repeat and recur system malfunctions compared to the total number of aircrew discrepancies. A high R/R rate may indicate lack of thorough troubleshooting; inordinate pressure to commit aircraft to the flying schedule for subsequent sorties; or a lack of experienced, qualified or trained technicians. The more complex the weapon system and the greater the operations tempo, the more susceptible a unit is for repeat or recurring discrepancies. Examine each R/R discrepancy and look for trends. The goal should be to keep all repeat and recurring discrepancies to a minimum.

Scheduled Sortie—An aircraft scheduled for flight by tail number on the weekly flying schedule and confirmed on the daily flying schedule. Incentive flights are considered scheduled sorties and published in the weekly schedule. Functional Check Flights (FCF) and Operational Check Flights (OCF) are excluded.

Sortie—A sortie begins when an aircraft becomes airborne or takes off vertically and begins forward movement. It ends when the aircraft returns to the surface (except for continuation sorties in MAF) and meets one of the following: the engines are stopped, or the aircraft is on the surface for more than five minutes, or a change is made in the crew.

Sortie Attempts—Includes sorties flown and ground aborts not spared.

Sortie UTE Rate—The average sorties flown per authorized aircraft per month.

Spare Ground Abort—Event after crew show time that prevents a "crew ready" aircraft from becoming airborne, but is replaced by a spare that meets the mission requirement. Spare ground aborts are categorized as maintenance (e.g., GAA, GAB, GAC). The difference between a ground abort and a spare ground abort is the scheduled line is accomplished, where the ground abort is not scheduled. A spare ground abort is not a deviation, but can cause a deviation such as late take-off. Spare ground aborts count in the Ground Abort Rate but do not count towards FSE.

Total Abort Rate—This is a leading indicator of aircraft reliability. It is the total number of aborts (air, ground and spare ground) per sortie attempts. Air/ground aborts for the same discrepancy during an FCF/OCF are not counted in the total abort rate. If the aircraft air/ground aborts on a different component during the FCF/OCF, it is counted in the total abort rate. The number of air and ground aborts should match those used for the individual Air and Ground Abort Rates.

Total Active Inventory (TAI)—Aircraft assigned to operating forces for mission, training, test, or maintenance functions (includes primary aircraft inventory, backup aircraft inventory, and attrition reserve).

Total Not Mission Capable Maintenance (TNMCM) Rate—The percent of possessed time an aircraft/system is not mission capable due to maintenance (NMCM) and not mission capable for

both maintenance and supply (NMCB). Though a lagging indicator, the TNMCM rate is perhaps the most common and useful metric for determining if maintenance is being performed quickly. It is the average percentage of possessed aircraft (calculated monthly/annually) that are unable to meet primary assigned missions for maintenance reasons (excluding aircraft in "B-Type" possession identifier code status). Any aircraft that is unable to meet any of its wartime missions is considered Not Mission Capable (NMC). Maintenance managers should look for a relationship between other metrics such as R/R, Break Rate, and Fix Rate to the TNMCM Rate. A strong correlation could indicate heavy workloads (e.g., people are over tasked), poor management, training problems or poor maintenance practices. The TNMCM is also called "out for maintenance."

Total Not Mission Capable Supply (TNMCS) Rate—The percent of possessed time an aircraft/system is not mission capable due to supply (NMCS) and not mission capable for both maintenance and supply (NMCB). Though this lagging metric may seem an "LRS responsibility" because it is principally driven by availability of spare parts, it is often directly indicative of maintenance practices. For instance, maintenance can keep the rate lower by consolidating feasible cannibalization actions to as few aircraft as practical. This monthly/annual metric is the average percentage of possessed aircraft that are unable to meet primary missions for supply reasons. TNMCS is based on the number of airframes out for "1A" MICAP parts that prevent the airframes from performing their mission (NMCS is not the number of parts that are "1A" MICAP). Maintenance managers must closely monitor the relationship between the Cannibalization Rate and TNMCS. TNMCS is also called "out for supply."

Upgrade Training (UT) Rate—This metric reflects the percentage of technicians in upgrade training. The goal should be to keep the combined total less than 40 percent because the higher the number, the greater the training burden. Training should be given high priority, as the number of personnel in training (and more importantly, the quality of the maintenance training program) invariably affects other aircraft metrics (e.g., R/R or Fix Rate) in ways that may not be immediately obvious.

Use Rate—Hours flown per month divided by average possessed aircraft. Often the average possessed aircraft will be less than the authorized aircraft due to depot/DFT/CFT, this rate provides an indicator as to the actual usage of the aircraft that are available.

Utilization (UTE) Rate—The average number of sorties or hours flown per authorized aircraft/system per month. See the Hourly and Sortie UTE Rate Definitions. The UTE rate is a leading indicator, but serves as a yardstick for how well the maintenance organization supports the unit's mission. The UTE rate is the average number of sorties or hours flown per Primary Aerospace vehicle Authorized (PAA) per month as found in the HAF/A3O PB documents. This measurement is primarily used by operations in planning the unit's flying hour program. Maintenance uses this measurement to show usage of assigned aircraft. Since UTE rates are used for planning, actual UTE rates (computed at the end of the month) are used to evaluate the unit's monthly accomplishment against the annual plan. Typically, Combat AF (CAF) units measure the sortie UTE rate, while MAF units measure the hourly UTE rate to more accurately measure the combined performance of operations and maintenance.

Yearly UTE Goal—The annual sortie or hourly UTE rate target for a unit.

Attachment 2

ALGORITHMS FOR LOGISTICS - MAINTENANCE PERFORMANCE INDICATORS

A2.1. Maintenance Management Metrics. Metrics provide a measurement of performance and capability. Leaders, supervisors and technicians must have accurate and reliable information to make decisions. Primary concerns of maintenance managers are how well the unit is meeting mission requirements, how to improve equipment performance, identifying emerging support problems, and projecting future trends. Maintenance management metrics—sometimes called maintenance performance measures or indicators—are a crucial form of information used by maintenance leaders to improve the performance of maintenance organizations, equipment and people when compared with established goals and standards. Metrics often take the form of an "MC Rate Graph" or a "Status of Personnel Training Slide", presenting a gauge of an organization's effectiveness and efficiency. Properly used, metrics are roadmaps that help determine where you've been, where you're going, and how (or if) you're going to get there.

A2.1.1. The overarching objective of AF maintenance is to maintain aircraft and equipment in a safe, serviceable and ready condition to meet mission needs. Maintenance management metrics serve this overarching objective and shall be established or maintained by Headquarters AF, Major Commands, Wings and/or Squadrons to evaluate/improve equipment condition, personnel skills and long-term fleet health. Metrics shall be used at all levels of command to drive improved performance and adhere to well-established guidelines. Metrics must be:

A2.1.1.1. Accurate and useful for decision-making.

A2.1.1.2. Consistent and clearly linked to goals/standards.

A2.1.1.3. Clearly understood and communicated.

A2.1.1.4. Based on a measurable, well-defined process.

A2.2. Analysis is crucial to improving organizational performance and is the key component of the metrics management process. Commanders and maintenance managers must properly evaluate maintenance metrics and rely upon the maintenance analysis section for unbiased information. Analysis sections shall draw upon information from various maintenance information systems for data. The Integrated Maintenance Data System-Central Database (IMDS-CDB), G081 (IMDS for Mobility), Reliability and Maintainability Information System (REMIS), Standard Base Supply System (SBSS), Logistics, Instillation and Mission Support – Enterprise View (LIMS-EV), Global Combat Support System – Air Force (GCSS-AF), Combat Ammunition System (CAS), and AF/A4-approved command- unique analysis tools are the primary data sources. A good maintenance manager does not strive to "chase numbers" for the sake of looking good. However, the manager uses metrics to focus resources and personnel to improve maintenance processes. Managers must also clearly understand and communicate the crucial linkage between goals, standards and metrics. The AF sets goals and standards for organizations, personnel and weapons systems that facilitate evaluation, comparisons and improvements. These standards are published separately by senior leadership and should be clearly understood at all levels of command. Leaders at every level must also support analysis and review metrics to properly drive improved performance. Maintenance analysts manage and

track this process, but maintenance metrics, and the resulting improvements they drive, are inherently a leadership responsibility.

A2.3. Primary Maintenance Metrics. Metrics are often grouped into various categories, including leading or lagging indicators. Leading indicators show a problem first, as they directly impact maintenance's capability to provide resources to execute the mission. Lagging indicators follow and show firmly established trends. Maintenance leaders must review sortie production and maintenance health constantly and be knowledgeable about maintenance indicators that highlight trends before they become problems. This section lists the primary maintenance metrics alphabetically with a description and formula as prescribed in AFI 21-103, Attachment 2 for maintenance status codes; and TO 00-20-2, Appendix L for flying codes.

A2.3.1. Maintenance Metrics Algorithms. Use T.O. 00-20-2 as the official source for all maintenance metrics unless otherwise indicated.

A2.3.2. Average Number of Aircraft/Systems Possessed.

Table A2.1. Average Number of Aircraft/Systems Possessed.

TOTAL POSSESSED HOURS (BEGINNING OF MONTH TO PREVIOUS DAY)
((# OF DAYS (BEGINNING OF MONTH TO PREVIOUS DAY)) X 24)

A2.3.3. Average Sortie Duration (ASD).

Table A2.2. Average Sortie Duration (ASD).

HOURS FLOWN
SORTIES FLOWN

A2.3.3.1. Hourly UTE Rate.

Table A2.3. Hourly UTE Rate.

HOURS FLOWN
PAA AIRCRAFT/SYSTEMS

A2.3.3.2. Sortie UTE Rate.

Table A2.4. Sortie UTE Rate.

SORTIES FLOWN
PAA AIRCRAFT/SYSTEMS

A2.3.4. Base Repair Cycle Time.

Table A2.5. Base Repair Cycle Time.

PRE-MAINTENANCE DAYS + REPAIR DAYS + POST-MAINTENANCE DAYS
TOTAL # OF ITEMS TURNED IN

A2.3.4.1. Pre-Maintenance Time.

Table A2.6. Pre-Maintenance Time.

| TOTAL NUMBER OF DAYS IN PRE-MAINTENANCE |
| TOTAL NUMBER OF ITEMS TURNED IN |

A2.3.4.2. Post-Maintenance Time.

Table A2.7. Post-Maintenance Time.

| TOTAL NUMBER OF DAYS IN POST-MAINTENANCE |
| TOTAL NUMBER OF ITEMS TURNED IN |

A2.3.4.3. Repair Time.

Table A2.8. Repair Time.

| TOTAL NUMBER OF DAYS IN REPAIR |
| TOTAL NUMBER OF ITEMS TURNED IN |

A2.3.5. Flying Scheduling Effectiveness Deviation Categories. These rates reflect the sum of all Calculated Deviations in the various cause code categories. All Deviations are defined per AFI 21-101_ACCSUP.

A2.3.5.1. Maintenance (MT_ & GA_) Deviation Rate.

Table A2.9. Maintenance (MT_ & GA_) Deviation Rate.

| MAINTENANCE DEVIATIONS |
| ADJUSTED SORTIES SCHEDULED   X 100 |

A2.3.5.2. Operations (OP_) Deviation Rate.

Table A2.10. Operation (OP_) Deviation Rate.

| OPERATIONS DEVIATIONS |
| ADJUSTED SORTIES SCHEDULED   X 100 |

A2.3.5.3. Supply (SU_) Deviation Rate.

Table A2.11. Supply (SU_) Deviation Rate.

| TOTAL SUPPLY DEVIATIONS |
| ADJUSTED SORTIES SCHEDULED   X 100 |

A2.3.5.4. Higher Headquarters (HQ_) Deviation Rate.

Table A2.12. Higher Headquarters (HQ_) Deviation Rate.

| TOTAL HHQ DEVIATIONS |
| ADJUSTED SORTIES SCHEDULED   X 100 |

A2.3.5.5. Weather (WX_) Deviation Rate.

Table A2.13. Weather (WX_) Deviation Rate.

WEATHER DEVIATIONS	
ADJUSTED SORTIES SCHEDULED	X 100

A2.3.5.6. Sympathy Deviation (SY_) Rate.

Table A2.14. Sympathy Deviation (SY_) Rate.

TOTAL SYMPATHY DEVIATIONS	
ADJUSTED SORTIES SCHEDULED	X 100

A2.3.5.7. Air Traffic Control (ATC) Deviation Rate.

Table A2.15. Air Traffic Control (ATC) Deviation Rate.

TOTAL ATC DEVIATIONS	
ADJUSTED SORTIES SCHEDULED	X 100

A2.3.5.8. Other (OT_) Deviation Rate.

Table A2.16. Other (OT_) Deviation Rate.

TOTAL OTHER DEVIATIONS	
ADJUSTED SORTIES SCHEDULED	X 100

A2.3.5.9. UTE Deviation Rate.

Table A2.17. UTE Deviation Rate.

TOTAL UTE DEVIATIONS	
ADJUSTED SORTIES SCHEDULED	X 100

A2.3.6. Maintenance Man-hours per Flying Hour.

Table A2.18. Maintenance Man-hours per Flying Hour.

TOTAL DIRECT MAN-HOURS DOCUMENTED AGAINST AIRCRAFT AND ENGINES
TOTAL HOURS FLOWN
Note: Excludes PMEL, AGE, SE, and Transient Maintenance Hours.

A2.3.7. Maintenance Scheduling Effectiveness (MSE) Rate.

Table A2.19. Maintenance Scheduling Effectiveness (MSE) Rate.

TOTAL POINTS EARNED	
TOTAL POINTS POSSIBLE	X 100

A2.3.8. Monthly JDD Error Rate after Corrections.

Table A2.20. Monthly JDD Error Rate after Corrections.

(TOTAL DDRS IN ERROR – TOTAL DDRS CORRECTED)	
TOTAL DDRS IN ERROR	X 100

A2.3.9. Monthly JDD Error Rate.

Table A2.21. Monthly JDD Error Rate.

TOTAL DDRS IN ERROR	
TOTAL DDRS CHECKED	X 100

A2.3.10. Personnel Availability (PA) Rate.

Table A2.22. Personnel Availability (PA) Rate.

TOTAL NUMBER OF PERSONNEL AVAILABLE	
TOTAL NUMBER OF PERSONNEL AUTHORIZED	X 100

A2.3.11. Phase Flow (PF) Rate.

Table A2.23. Phase Flow (PF) Rate.

TOTAL HOURS OF ALL POSSESSED AIRCRAFT UNTIL NEXT PHASE	
TOTAL POSSESSED AIRCRAFT ASSIGNED	X 100

A2.3.12. Primary Possessed (PP) Rate.

Table A2.24. Primary Possessed (PP) Rate.

AVERAGE NUMBER OF POSSESSED AIRCRAFT	
TOTAL UNIT AIRCRAFT PAA X 100	

A2.3.13. Repeat/Recur.

A2.3.13.1. Repeat Rate.

Table A2.25. Repeat Rate.

TOTAL REPEATS	
TOTAL PILOT REPORTED DISCREPANCIES	X 100

A2.3.13.2. Recur Rate.

Table A2.26. Recur Rate.

TOTAL RECURS	
TOTAL PILOT REPORTED DISCREPANCIES	X 100

A2.3.13.3. Total Repeat/Recur Rate.

Table A2.27. Total Repeat/Recur Rate.

(TOTAL REPEATS) + (TOTAL RECURS)	
TOTAL PILOT REPORTED DISCREPANCIES	X 100

A2.3.14. Total Delayed Discrepancy Rate (DDR).

Table A2.28. Total Delayed Discrepancy Rate (DDR).

TOTAL (SNAPSHOT) AWM + AWP DISCREPANCIES	
AVERAGE AIRCRAFT POSSESSED	X 100

A2.3.14.1. Awaiting Maintenance (AWM) Rate.

Table A2.29. Awaiting Maintenance (AWM) Rate.

TOTAL (SNAPSHOT) AWM DISCREPANCIES	
AVERAGE AIRCRAFT POSSESSED	X 100

A2.3.14.2. Awaiting Maintenance (AWP) Rate.

Table A2.30. Awaiting Maintenance (AWP) Rate.

TOTAL (SNAPSHOT) AWP DISCREPANCIES	
AVERAGE AIRCRAFT POSSESSED	X 100

A2.3.15. Upgrade Training (UT) Rate.

Table A2.31. Upgrade Training (UT) Rate.

TOTAL NUMBER OF TECHNICIANS IN UPGRADE TRAINING	
TOTAL NUMBER OF TECHNICIANS	X 100

A2.3.16. Workcenter Utilization Rate.

Table A2.32. Workcenter Utilization Rate.

DIRECT MAN-HOURS DOCUMENTED	
DIRECT MAN-HOURS ASSIGNED	X 100