Air Force Aircraft Maintenance Metrics

Colonel Amy Bouchard
Asst Deputy Chief of Staff for Logistics
AF/A4PE
Overview

• Why?
• Strategic Landscape
  • AF Priorities
  • Today’s Fiscal Environment
• Maintenance Metrics Background
• Where we are
• Where we are going: Aircraft Availability
Performance Metrics for Maintenance—Why?

- Tenets of performance analysis
  - AF flies, fixes and launches weapons systems
  - Focus on these processes
  - Metrics and standards build clear expectations
  - Comparison is good

The purpose of analysis is not analysis...the purpose of analysis is insight.
Our priorities are clear:

-- Winning the Global War on Terrorism

-- Developing and caring for our Airmen

-- Modernizing and recapitalizing our aircraft and equipment

- 2006 Air Force Posture Statement

The U.S. Air Force must remain ready to Fly and Fight
Increasing Operating Costs

Aircraft readiness rates steady, but costs to operate and maintain fleet over the last decade are up 87%
Today’s Fiscal Environment

Aging Aircraft Inventory

Cost to Operate the Fleet

Increasing Age of Aircraft

Aging alone is not the issue – it is the decreasing military utility of some aircraft
Today’s Fiscal Environment

Cost to Operate the Fleet
Aging Aircraft Inventory

Fiscal Environment

Budget growth is slowing

10% Growth
Slowing

Fiscal Realities

I n t e g r i t y   -   S e r v i c e   -   E x c e l l e n c e
**Total USAF Aircraft Inventory**

<table>
<thead>
<tr>
<th>A/OA10</th>
<th>356</th>
<th>C-9</th>
<th>3</th>
<th>MC-130</th>
<th>62</th>
<th>T-51</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC-130</td>
<td>23</td>
<td>CV-22</td>
<td>4</td>
<td>MH-53</td>
<td>31</td>
<td>T-6</td>
<td>272</td>
</tr>
<tr>
<td>AT-38</td>
<td>7</td>
<td>E-3</td>
<td>32</td>
<td>MQ-1</td>
<td>82</td>
<td>TC-130</td>
<td>1</td>
</tr>
<tr>
<td>B-1</td>
<td>67</td>
<td>E-4</td>
<td>4</td>
<td>MQ-9</td>
<td>5</td>
<td>TC-135</td>
<td>3</td>
</tr>
<tr>
<td>B-2</td>
<td>21</td>
<td>E-8</td>
<td>17</td>
<td>NC-130</td>
<td>1</td>
<td>TE-8</td>
<td>1</td>
</tr>
<tr>
<td>B-52</td>
<td>94</td>
<td>EC-130</td>
<td>24</td>
<td>NC-135</td>
<td>1</td>
<td>TG-10</td>
<td>21</td>
</tr>
<tr>
<td>C-12</td>
<td>28</td>
<td>F117</td>
<td>52</td>
<td>NKC-135</td>
<td>2</td>
<td>TG-12</td>
<td>1</td>
</tr>
<tr>
<td>C-130</td>
<td>486</td>
<td>F-15A-D</td>
<td>485</td>
<td>OC-135</td>
<td>2</td>
<td>TG-14</td>
<td>14</td>
</tr>
<tr>
<td>C-17</td>
<td>157</td>
<td>F-15E</td>
<td>223</td>
<td>RC-135</td>
<td>22</td>
<td>TG-15</td>
<td>5</td>
</tr>
<tr>
<td>C-20</td>
<td>11</td>
<td>F-16A-D</td>
<td>1317</td>
<td>RC-26</td>
<td>11</td>
<td>TU-2</td>
<td>5</td>
</tr>
<tr>
<td>C-21</td>
<td>76</td>
<td>F-22</td>
<td>73</td>
<td>RQ-4</td>
<td>7</td>
<td>U-2</td>
<td>29</td>
</tr>
<tr>
<td>C-32</td>
<td>6</td>
<td>HC-130</td>
<td>33</td>
<td>T-1</td>
<td>179</td>
<td>UH-1</td>
<td>92</td>
</tr>
<tr>
<td>C-37</td>
<td>9</td>
<td>HH-60</td>
<td>101</td>
<td>T-37</td>
<td>204</td>
<td>UV-18</td>
<td>3</td>
</tr>
<tr>
<td>C-38</td>
<td>2</td>
<td>KC-10</td>
<td>59</td>
<td>T-38</td>
<td>495</td>
<td>VC-25</td>
<td>2</td>
</tr>
<tr>
<td>C-40</td>
<td>7</td>
<td>KC-135D/E/R/T</td>
<td>533</td>
<td>T-41</td>
<td>4</td>
<td>WC-130</td>
<td>22</td>
</tr>
<tr>
<td>C-5</td>
<td>108</td>
<td>LC-130</td>
<td>10</td>
<td>T-43</td>
<td>8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Grand Total**: 6018
Performance Metrics
Influence Behavior

- Regular reviews of Weapon System performance indicators and standards should communicate leadership’s priorities
  - Clear understanding of desired outcomes has a positive affect on personnel performance
- Analysis of performance provides leadership with a way to gauge fleet health and combat capability
- Aircraft performance metrics based primarily on data input into the maintenance and supply information systems
- Air Force develops and publishes metrics standards and goals

Leaders need information, not just data
Maintenance Metrics – Standards Methodology

• Factors used for MC Rate Standard
  • Validated operational requirements documents
  • Flying hour program (FHP)
  • PAA, UTE, Attrition rates, Spares, Turn Pattern, Fly Days

• NMCM Rate Standard
  • Calculated from “known” Sched Mx requirements based on FHP + historical unsched mx trend
  • A realistic approximation of what is required and attainable

• NMCS Rate Standard
  • Ties TNMCS standard to spares funding/requirements

GOAL: Ops-based and Resource-driven
Maintenance Metrics—Levels of Analysis

- Conduct detailed analysis at different levels:
  - Unit Level—AMU/Flying Squadron Team
  - Base/Command Level—Compare like units
  - Enterprise Level—Lead MAJCOM/Program Manager Teams

We need to give our maintainers a tool to achieve “Excellence In All They Do”
Key Maintenance Metrics at Unit Level

- Mission Capable (MC) Rate
  - Includes FMC and PMC hours
- Total Not Mission Capable Supply / Maint (TNMCS / M)
- Abort Rate (Ground/Air)
- Break/Fix Rate
- Repeat/Recur Rate
- Cannot Duplicate Discrepancy Rate
- Deferred Discrepancy Rate
- Cannibalization Rate
- Maintenance Scheduling Effectiveness
- Flying Scheduling Effectiveness
- Flow Days
  - Phase/Isochronal Inspection
  - PDM/Modification
Key Maintenance Metrics at Unit Level (cont.)

- **Utilization Rate—Combat Air Forces**
  - Number of sorties per month
  - Provides maintainer feedback on maintenance contribution to ops/mx team

- **Departure Reliability—Airlift**
  - Did the mission get off on time?
  - Provides maintainer feedback on maintenance contribution to ops/mx team
Key Maintenance Metrics for Fleet Management

- Focus on Trends
  - MC/NMCM/NMCS
  - Manhours / flying hour
  - Cost / flying hour
  - Depot Possessed Aircraft
  - UTE/Departure Reliability
**Fighters**

**QUARTERLY AVAILABILITY RATES**

- A-10
- F-117
- F-15
- F-15E
- F-16

**QUARTERLY MC RATES**

**QUARTERLY NMCM**

**QUARTERLY NMCS**

*Integrity - Service - Excellence*
# Fighter Mission Capable Rates

## 4th Quarter ‘06

<table>
<thead>
<tr>
<th>MD</th>
<th>Active</th>
<th>AFRC/NGB</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MC</td>
<td>TNMCM</td>
<td>TNMCS</td>
</tr>
<tr>
<td>A-10</td>
<td>75.0</td>
<td>19.3</td>
<td>10.7</td>
</tr>
<tr>
<td>203/153 Std</td>
<td>81</td>
<td>17</td>
<td>8</td>
</tr>
<tr>
<td>F-15A/B</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>94 Std</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>F-15C/D</td>
<td>80.3</td>
<td>14.5</td>
<td>8.0</td>
</tr>
<tr>
<td>344/47 Std</td>
<td>81</td>
<td>14</td>
<td>8</td>
</tr>
<tr>
<td>F-15E</td>
<td>75.4</td>
<td>17.0</td>
<td>10.9</td>
</tr>
<tr>
<td>223 Std</td>
<td>80</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>F-16A/B</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>49 Std</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>F-16C/D</td>
<td>82.6</td>
<td>12.6</td>
<td>7.6</td>
</tr>
<tr>
<td>713/542 Std</td>
<td>82</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>F-22</td>
<td>59.4</td>
<td>26.8</td>
<td>21.1</td>
</tr>
<tr>
<td>73 ACC Goal</td>
<td>74</td>
<td>19</td>
<td>16</td>
</tr>
<tr>
<td>F-117</td>
<td>85.6</td>
<td>13.2</td>
<td>2.1</td>
</tr>
<tr>
<td>52 Std</td>
<td>76</td>
<td>22</td>
<td>5</td>
</tr>
</tbody>
</table>

*Integrity - Service - Excellence*
Future Focus—Aircraft Availability

- Enterprise Approach-- forward looking
  - Teaming lead commands with program managers
  - Maximize resource allocation

- Address combat capability “how many aircraft ready?”
  - Drivers are MC, NMCM, and NMCS rates
  - Includes Depot, Mod, TCTO, and other fleet management factors
  - No standards – MDS/fleet AA rate improvement goals

- Aircraft Availability Improvement Plans (AAIP)
  - Aim is to meet eLog21 Goals
  - Increase Equipment Availability by 20%
  - Decrease O&S Cost by 10%
eLog21 Goals – Aircraft Availability

Aircraft Available

20% Increase
Example: F-16 Availability Improvement Initiatives

**Improve F-16 availability to the Warfighter ≥ 82.1% by FY11**

**TNMCM**
Reduce by ≥ 74 A/C

**TNMCS**
Reduce by ≥ 14 A/C

**Depot (AFMC) Possessed by ≥ 3 A/C (FY07)**

**Phase - 47 A/C**
**Fuels - 27 A/C**
- (Tukloc and Forcetec) & new Parker panel seals
- 370 Gallon External Fuel Tanks probes
- External Vent and Pressure Valve redesign

Diagnostic Electronic Start System Controller (DESSC)
ANG Phase inspection lean event
Other inspections reviews
Spider Harness Replacement
Airborne Video Tape Recorder Harness Replacement
Commercial Central Interface Unit
Digital Video Recorder replacement
Color Multi-Function Display System (CMFDS)
Field level initiatives/best practices

**Proactive Demand Leveling (PDL) – 14A/C**
Protest Attention – 34 Flow Day reduction

**Planes should have milestones by year (FY06-FY11)**
Take credit for existing and planned efforts
Capture expected impact on cost and fleet avail

- F-16 Flaps – 4 Flow Day reduction
- Jet Fuel Starter - TBD

**CCIP Cellular Flow – 20 Flow Day reduction**
**CCIP/STAR – 19 to 33 Flow Day reduction**
**Falcon Star – 49 Flow Day reduction**
**F-16 Flight Test – TBD**
**Acceptance Inspection – Reduction from 5 days to 1 day**

**LEGEND**
- **Ongoing Initiatives**
- **Future Initiatives**
Maintenance Metrics—“The Key”

- Documentation and data integrity are only as good as you make them.
- Performance Indicators, standards, and analysis are tools used to understand processes.
- You have to apply the analysis of the data effectively.
- What is watched improves.
- What is watched and compared improves more.
- What is compared and rewarded improves dramatically.
Questions?
U.S. AIR FORCE

Integrity - Service - Excellence