OKLAHOMA CITY
AIR LOGISTICS CENTER

TEAM TINKER

PEWG and Tinker Air Force Base

Mickey Conklin
PEWG Program Executive
OKCALC/LR
james.conklin@tinker.af.mil

23 Jan 07

Integrity - Service - Excellence
**Report Documentation Page**

Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

<table>
<thead>
<tr>
<th>1. REPORT DATE</th>
<th>2. REPORT TYPE</th>
<th>3. DATES COVERED</th>
</tr>
</thead>
<tbody>
<tr>
<td>23 JAN 2007</td>
<td></td>
<td>00-00-2007 to 00-00-2007</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4. TITLE AND SUBTITLE</th>
<th>5a. CONTRACT NUMBER</th>
<th>5b. GRANT NUMBER</th>
<th>5c. PROGRAM ELEMENT NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEWG and Tinker Air Force Base</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6. AUTHOR(S)</th>
<th>5d. PROJECT NUMBER</th>
<th>5e. TASK NUMBER</th>
<th>5f. WORK UNIT NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)</th>
<th>8. PERFORMING ORGANIZATION REPORT NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oklahoma City Air Logistics Center, OKCALC/LR, Tinker AFB, OK, 73145</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)</th>
<th>10. SPONSOR/MONITOR’S ACRONYM(S)</th>
<th>11. SPONSOR/MONITOR’S REPORT NUMBER(S)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>12. DISTRIBUTION/AVAILABILITY STATEMENT</th>
<th>13. SUPPLEMENTARY NOTES</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>14. ABSTRACT</th>
<th>15. SUBJECT TERMS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>16. SECURITY CLASSIFICATION OF:</th>
<th>17. LIMITATION OF ABSTRACT</th>
<th>18. NUMBER OF PAGES</th>
<th>19a. NAME OF RESPONSIBLE PERSON</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. REPORT</td>
<td>Same as Report (SAR)</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>unclassified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. ABSTRACT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>unclassified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. THIS PAGE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>unclassified</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Overview

- PEWG
- HVOF
- New Starts at TAFB
PEWG

A Propulsion Community Collaboration for Advanced Turbine Engine Technology Insertion
PEWG Mission

• Work within the military propulsion community to discover and insert safe, clean, and effective manufacturing and repair technologies to improve product
  – Performance
  – Sustainability, affordability, availability
  – Competitiveness with foreign technology
Improvement Targets

• New engine and part manufacture
  – Component design
  – Industrial processes

• Fielded engine repair
  – Repair methods
  – MRO processes
Technology Readiness Levels

• Identify project opportunity
  – S&T TRL 7 development
  – Component improvement
  – Process improvement

• Test and demonstrate
  – Real part, real engine
  – Shop floor

• Qualify specification changes
Guidance for PEWG Project Proponents

1. Show evidence your technology is TRL Level 7+
2. Identify specific GTE components that will benefit
3. Identify specific benefits that will accrue
4. When requested by PEWG Management, provide information required by source of project funds
5. Nominate projects by contacting the PEWG Management Office Bob.Bondaruk.ctr@tinker.af.mil
6. Proponents may be invited to present at PEWG meeting – For details visit www.pewg.com
HVOF
TINKER FACILITY

• TWO BOOTHs SHARING ONE CONTROL ROOM

Sulzer Metco Diamond Jet Controller

9MP DJ Powder Feeder

Sulzer Metco Diamond Jet Gun

Cryogenic Oxygen Supply

• ONE BOOTH DEDICATED FOR BLADE COATING

Fanuc M16i Robot

M16i Robot/ Sulzer Metco 9HL Turntable

Temperature Measurement

• Temperature Display
HVOF Qualification

TF33 No 4 Hub
AMS 2447-__

F101 2nd Fan Disk  Inconel 718

F100 Balance Nozzle Segment  AMS 2447-__

F118 1st stage Aior Seal  Inconel 718
Summary HVOF

- Successful technology insertion
- Qualified on TF 33 & F100 component families
- Planning 2 new booths for FY08
HVOF

Fixture Setup

Step One

Step Two

Step Three

Step Four

Step Five

Step Six

Step Seven

Step Eight: Cooling Air

This page shows an exploded view of the fixture setup. Click on the appropriate box to go directly to that particular step in the process.
New Starts

• SermeTel W Cr+6 replacement coatings
  – SermeTel, Alseal, and CERAL

• TBC coating removal inefficiencies
  – High Frequency Forced Pulse Waterjet

• Plasma Coating Removal
  – Qualifying citric acid benign solutions

• Gatorgard equipment replacement
  – Eliminating proprietary process
New Starts (cont’d)

• Supersonic Particle Deposition (SPD)
  – ESTCP ARL collaboration
  – TF33 and F100

• NLOS Cr+6
  – ESTCP collaboration Nano Phosphorous Cobalt

• Field level repair capability
  – Hand held laser
Summary

• PEWG management office now at TAFB

• HVOF project successful and expanding

• New starts are in progress

• Summer PEWG, Phoenix, June 25-28
  – Registration www.pewg.com