Joint Fuze Technology Program (JFTP) NDIA Fuze Conference

30 July 2014

Joint Fuze Technology Panel
Lawrence Fan (Navy) - Presenter
Charles Kelly (OUSD(AT&L)/S&TS/LW&M)
Timothy Tobik (Air Force)
Philip Gorman (Army)
Outline

• Background and BLUF
• JFTP Process
• Project Highlights
• Key JFTP Events
Bottom Line Up Front

• This program addresses, from a Joint Service perspective, advanced Fuze technology development associated with improving the lethality, reliability, and survivability of munitions and weapon systems.

• Addressing High priority Service weapon fuzing needs & gaps:
  • Cluster fuzing reliability, hard target penetration, cannon proximity fuzing
  • Leveraging DoD Fuze IPT Initiatives and coordination with NAC (National Armaments Consortium)
  • Industry engagement – Technology exchanges, components for evaluation, application of M&S tools
  • Fuze Technology ties to weapon development and acquisition plans – Weapon roadmaps, PM/PEO endorsements

• FY14 JFTP budget
  • 6.2 stabilized at ~$6.0M per year

Numerous JFTP projects completing and transitioning to Services and Industry
**JFTP Service Requirements Flow-Down**

**Air Force Weapon Gaps**

**Army Weapon Gaps**

**Navy Weapon Gaps**

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**JFTP Project Evaluation Criteria**

1. Technology Innovation, Feasibility and Maturity
2. Technical Approach
3. Addresses FATG Goals & Objectives
4. Success Metrics & Deliverables/Milestones
5. Transition & Technology Transfer
6. Leveraging/Cost Sharing
7. Cost Realism
8. Experience & Collaboration
9. Jointness & Addressing Services’ Needs

- Leveraging and Cost Sharing
- Meeting Joint Needs/Gaps
- Transition Strength
Joint Fuze Technology Program
Management Structure

OUSD(AT&L)/PSA/LW&M

Technical Advisory Committee

Joint Fuze Technology Program Oversight Committee

Program Managers (OSD, Service)
Charles Kelly, Lawrence Fan, Phil Gorman, Tim Tobik

FUZE AREA TECHNOLOGY GROUPS

FATGII – Tailorable Effects & Initiation
Chair: Gene Henderson (Army)
Co-Chairs: Daniel Lanterman (Navy), George Jolly (AF)
SME Participants

FATGIII – High Reliability Fuzing
Chair: John Hendershot (Navy)
Co-Chairs: Kelly Oliver (AF), Tom Crowley (Army)
SME Participants

FATGIV – Enabling Fuze Technologies
Chair: Chris Janow (Army)
Co-Chairs: Matt Bridge (AF), Bruce Hornberger (Navy)
SME Participants

FATGI – Hard Target / Survivable Fuzing
Chair: John Kandell (Navy)
Co-Chairs: Shannon Haataja (Army), Howard White (AF)
SME Participants

JFTP Support Staff:
Technical: Danny Hayles, Cliffton Chu
Financial: Jamie Oswald

DISTRIBUTION STATEMENT A. Distribution is unlimited
### JFTP Annual Cycle

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<th>OCT</th>
<th>NOV</th>
<th>DEC</th>
<th>JAN</th>
<th>FEB</th>
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- **Fall Review and Gov’t – Industry Tech Exchange**
  - New Start Projects
  - Continuing Projects
  - Project Plans and YE Report

- **Gov’t Call For WP** → **Submit WP** → **Gov’t Call For Proposal**
- **DOTC Call For WP** → **Submit WP** → **DOTC Call For Proposal**
- **Spring Program Mtg** → **Submit Proposal** → **Select and Prioritize** → **Submit Proposal**
- **Finalize Project Selection & Update Program Plans**
  - TAC Review

**Key**
- **JFTP/FATG Activity**
- **Project/PI Activity**

DISTRIBUTION STATEMENT A. Distribution is unlimited
Budget History and Projections

6.2 Budget

6.3 Budget

FY14 Execution by Service or Activity

Academia 5%
Industry 21%
DOE 8%
Air Force 9%
Other 2%
Army 27%
Navy 28%

Funding Level, Millions

Planned
Actual

FY 09  FY 10  FY 11  FY 12  FY 13  FY 14  FY 15  FY 16  FY 17  FY 18
# Fuze Area Technology Groups

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<th>FATG I – Hard Target / Survivable Fuzing</th>
<th>FATG II – Tailorable Effects</th>
<th>FATG III – High Reliability Fuzing</th>
<th>FATG IV – Enabling Fuze Technologies</th>
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<tr>
<td>1.1 Improved M&amp;S</td>
<td>2.1 In-Line TE Fuzing</td>
<td>3.1 Fuzing Architecture</td>
<td>4.1 Common / Modular Fuze Architecture</td>
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<td>1.2 Fuze Environment</td>
<td>2.2 Out-of-Line TE Fuzing</td>
<td>3.2 Fuzing Components</td>
<td>4.2 Components Technologies</td>
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<td>1.3 Next Generation Fuzing Hardware</td>
<td>2.3 &quot;Smart&quot; Fuzing for TE</td>
<td>3.3 UXO reduction features</td>
<td>4.3 Proximity Sensors</td>
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<td></td>
<td>2.4 Advanced Fuze</td>
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<td>4.4 Weapons Effects &amp; Damage Assessment</td>
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<td>Initiation Technologies</td>
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<td>4.5 Fuzing Power Sources</td>
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JFTP Project Highlights (FATG I)

JFTP Project 12-G-041, Fuze Modeling Grand Challenge (Session VA)
- The JFTP Fuze Modeling Grand Challenge is in response to an Air Force identified need for “a fundamental understanding of our predictive capabilities”.
- Provides a baseline comparison of computational modeling tools in predicting fuze response using common test platform

JFTP Project 10-095, Hardened Miniature Fuze Technology (HMFT)
- The JFTP Hardened Miniature Fuze Technology project, which capitalized on previous AFRL investments, is establishing new benchmarks for fuze survivability in the ordnance package for AFRL’s High Velocity Penetrating Weapon…its #1 Flagship Capability Program
JFTP Project Highlights (FATG II)

JFTP Project 10-120, Tailorable Effects Explosive Trains

• Systematic scientific based methodology to characterize fuzing/weapon system explosive train design influences.
• Technique leveraged by MOP and the Army’s Tailorable Effects Detonating and Deflagrating Warhead

JFTP Project 10-027, Low-Voltage Command Arm System for Distributed Fuzing Systems (Session IVB)

• Received approval of serial communication based design architectures from Fuze Engineering Standards Working Group (FESWG) in February 2014
JFTP Project Highlights (FATG III)

JFTP Project 10-119, A New Methodology for Explosive Transfer Reliability

- Paradigm shift in characterizing and quantifying explosive transfer reliability utilizing physics based methodologies.
- Instrumental in MOP and Patriot fuze/detonator failure analyses and design of fuzing explosive train concept for AFRL’s High Velocity Penetrating Weapon

JFTP Project 14-G-014: 6.3 Non-Disruptive Umbilical Solutions for High Reliability DPICM Replacement (HRDR) (Session VB)

- Developing the electrical signal distribution in a weapon system with large numbers of submunitions with minimal disruption to the dispense event
- Collaborates with and leverages ONR-USMC S&T efforts to provide high reliability compliant cluster munition fuze.
JFTP Project 10-010, MEMS Retard & Impact Sensors (Session VA)

- Applied MEMS technologies to improve retard and impact sensor precision, reliability, producibility, and cost effectiveness as drop-in replacements for sensors in the FMU-139, FMU-143, and FMU-152 bomb fuzes.

JFTP Project 10-042, Next Generation Proximity Sensors

- Developing a Joint solution for a Next Generation Proximity Sensor (NGPS) that is small, cost-effective, countermeasure-resistant and has broad DoD munition applicability
- Industry partnering process started with NAC to participate at major program reviews (PDR/CDR/TRR)

JFTP Project 14-G-023 6.2 Understanding and Characterizing F-PLD Memory Failure Modes In Fuzes (Session IVA)

- Provide knowledge and issue guidance to fuze and weapon community about Field Programmable Logic Devices for broad, general, standardized, safe and effective use of F-PLDs in fuzing in weapons
JFTP Key Dates

Preliminary FY15 proposal selection - September 2014
JFTP Fall Review and Fuze IPT meeting - 28-20 October 2014
FY16 Call for White Papers - February 2015
FY16 Call for Proposals - May 2015
JFTP Spring Review FY16 Proposals briefed - June 2015
Questions?