52nd NDIA Fuze Conference

“Smart Fuzing – Adding Intelligence to Fuzing Solutions”

Air Force Acquisition Strategy
13-15 May 2008

Michael W. Campbell
Director, 679th ARSS
Eglin AFB, FL
DSN 872-8787, ext 2328

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.
Purpose

- Provide information on what we are doing at the Air Armament Center to improve our program results
- Foster alignment of expectations between our Government teams and our Industry counterparts
- Get creative juices flowing on “both sides of the table” to develop better ways to establish and execute our programs
- Integrate and rationalize improvement efforts

On-Time, On Cost… CRADLE-TO-GRAVE! For Our Warfighters
LtGen Hoffman

On restoring credibility in Air Force acquisition:

... I mentioned the widespread view that our weapon systems cost too much and take longer than predicted. We need to ensure "false optimism" does not cloud our judgment. I am a natural optimist, but we need to be firmly grounded in reality as we assess program risk. Wanting something badly does not make it happen. This is especially important as we start a program...do we have a solid lock on the requirements, have we included all the elements of the program, do we have our best estimate of cost and schedule? Once we define the start of the program, we will be forever measured by that definition so take the time to do it right.

We are on a quest to launch more realistic programs and bolster existing programs.
What are the Expectations?

- Safe, effective, **reliable**, affordable products on time and **within budget**

- Ownership of product health **without** legal wrangling

- **Realistic** marketing and budget entries

- Technical competencies to leverage **leading edge** technologies

- **Agility** to surge or decrease production and respond to changing rule-sets
# Integrating & Rationalizing Improvement Efforts

## Sub-Functional Pillars

<table>
<thead>
<tr>
<th>Systems Engineering</th>
<th>Risk Assessment &amp; Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost Estimating</td>
<td>Programming</td>
</tr>
<tr>
<td>Reliability</td>
<td>Financial Execution</td>
</tr>
<tr>
<td>Technology &amp; Integration Readiness</td>
<td>Earned Value Management System</td>
</tr>
<tr>
<td>Manufacturing Readiness</td>
<td>Award &amp; Incentive Fees</td>
</tr>
<tr>
<td>Logistics Health Assessment</td>
<td>Contractor Performance Assessment Report</td>
</tr>
</tbody>
</table>

**Integrate and Rationalize for Workable Program Constructs**
Red Flags for Weapons Programs*

1) Relying on COTS/NDI to meet Robust Military Requirements
   - Systems Engineering – Staffing and Tasks

2) Going into SDD without RR or “SDD-readiness” phase

3) Lack of early wind tunnel and instrumented captive carry

4) Program Plans, Budget, IBR missing key elements
   - Explicit requirements/verification of captive carry and in-flight reliabilities and service life
   - Transition to Production
   - Reliability Growth program
   - Safety-of-flight analyses at design reviews

5) Contractors decline to make an offer

6) Back-loaded development budget

*From Study of Troubled Weapon Programs 1997-2007
High-Confidence Programs

Key Characteristics*

- Good “Should-Cost” Estimate
- Budget/Cost Estimate alignment
- Approved time-phased CDD requirements
- Program office resourcing
- Requirements stability
- Budget stability mechanism
- Incremental program plan
- Short-duration capability release/production schedules
- SDD phase no greater than 6 years
- Technical maturity assessment thresholds met
- Integrated sustainment and depot strategy
- Realistic test planning; Approved IOT&E plan
- Life-cycle acquisition strategy – time certain success incentive
- Executing according to “plan”
- Probability of Program Success (PoPS) measures

* As Defined by Develop & Sustain Weapon Systems (D&SWS) design teams
Engineering: Design, verification, manufacturing, and quality, throughout voluminous supplier base -- determines fate of programs.
Team Dynamics

Mixed messages from the Bosses & the “System”

Warfighters
Capability Needs
Budget Choices

Program Execution Team
What’s In, What’s Out
How Much Risk?

How do we use the Information?

Is the Information Compelling?

I CAN DO IT!

DO YOU HEAR ME?

COMPETITION FOR BUDGET
FRAGMENTED AUTHORITIES
(REQUIREMENTS, PROGRAMMING, ACQUISITION)

START AGGRESSIVE SDD ASAP
Accurate Cost Estimates
Proven Acquisition Approach

SDD is where we spend most of the development dollars, and determine most of the production and sustainment costs for Weapons.

- Structure **ROBUST SDD-Readiness Phase** to size a **realistic SDD phase**
  - Block requirements into increments - Deliver in 3-6 year SDD phases
  - Execute SDD-Readiness contract(s) for each increment
  - **Demonstrate** technologies in robust environment
  - Mature design to PDR or later
  - **Build SDD plan** including Integrated Baseline Review (Design, V&V, OT, Transition to production and support) during readiness phase
  - Program funds to realistic cost estimate based on detailed SDD Plan and rigorous benchmarking

- Conduct Rigorous Milestone A & B Reviews whether required or not

Launch incremental and realistic SDD phases that position programs for long term success.
Win-Win Business Arrangement

U.S. Taxpayer, Congress, OSD, Service(s), Best Value

Affordable, Combat Ready Products to Warfighters

Stockholders, Corporate Construct, Suppliers, Marketing, Profits

Requirements Resources Reports

Government and Industry Team

ACCOUNTABLE

Accountable

Accountable

Profits New Business Reputation

Develop and Execute Win-Win Strategies in an Atmosphere of Teamwork and Trust
Acquisition Strategy Example

Hard Target Void Sensing Fuze
Hard Target Void Sensing Fuze

- **System Description: Potential Joint Program (AF/Navy/FMS)**
  - Capable of defeating hardened and deeply buried targets
  - Increased survivability over inventory hard target fuzes
  - Capable of sensing multiple voids
  - Used with legacy penetrators BLU-109 and BLU-113/122

- **Program Priorities**
  - #1 – Maturity (Risk)
  - #2 – Performance
  - #3 - Cost
## Technology Readiness Levels
### Program Planning

<table>
<thead>
<tr>
<th></th>
<th>FY08</th>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accelerometers</strong></td>
<td>7</td>
<td>7</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Potting / Component Mounting / Producibility</strong></td>
<td>4</td>
<td>7</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lessons Learned – HTSF, MEHTF, STRIFE, RIVAL plus Lab, Sled, &amp; Flight Tests</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Interface Software</strong></td>
<td>9</td>
<td>9</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JDAM Proven</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Algorithms – Void Sensing</strong></td>
<td>6</td>
<td>7</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Previous/Current Programs – HTSF &amp; MEHTF Plus Lab, Sled &amp; Flight Tests</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>9</td>
<td>9</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JDAM Proven</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Explosive Interface</strong></td>
<td>9</td>
<td>9</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FMU-143/FMU-152</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fuze System</strong></td>
<td>4</td>
<td>7</td>
<td>9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Lab, Sled & Flight Tests

Multiple Proven Programs

Technology Readiness Levels

U.S. AIR FORCE

HTVSF
Manufacturing Readiness Levels
Program Planning

- Producibility/Manufacturing key to acq strategy
  - Initial MRL assessments made w/in 60 days after contract award
  - Leverage ManTech Support
  - Iterative Contractor MRRs & Government PRRs in JCTD and SDD
  - Critical Process Elements
    - Identified for each offeror in the JCTD Phase
    - Maturity of elements considered in the down-select process

- Planning to achieve MRL 6 during JCTD
Acquisition Strategy

Acquisition Approach

- **JCTD – Full and Open Competition**
  - Carry two contractors through JCTD for 27 months
  - Firm Fixed Price Contract – $8.85M per contractor plus option for 20 residuals
  - Rolling down-select for SDD and Production

- **SDD – Sole Source Contract to JCTD Winner**
  - Cost Plus Fixed Fee with Incentives for Cost, Schedule, and Performance (small FF, larger incentive at end)
  - Estimated Contract Value – $42.4M for 33 months
Production – Sole Source Contract to SDD Contractor
- Firm Fixed Price
- Estimated Contract Value – $195M (1 Basic plus 4 Options)

Sustainment
- Warranty – 10-year service life/20 year shelf life included in production price
- Limited maintenance requirements
  - No spares, training, or additional manpower required
- Life Cycle Surveillance Testing every 3 years
- Transition to ALC by 2018
- Estimated Sustainment: $29M thru 2035
  - Includes LCSTS, Software Upgrades, Labor for Periodic Maintenance, and Support Equipment
Proposal Risk
- PR-1 Capability Risk – Technical Maturity
- PR-2 Capability Risk – Manufacturing Maturity
- PR-3 IMP/IMS Risk

Mission Capability
- MC-1 Mission Systems Capability
- MC-2 Manufacturing Capability
- MC-3 Small Business Participation

Past Performance
- PP-1 Adherence to Cost and Schedule
- PP-2 Systems Engineering

Cost/Price
- CP-1 Cost/Price Realism Risk
- CP-2 Price Reasonableness

Proposal Risk is more important than Past Performance, Mission Capability, and Cost/Price. Past Performance and Mission Capability are of equal importance with Cost/Price being significantly less important.
Proposal Risk – Most Important

Mission Capability  Equal Importance

Past Performance

Cost/Price – Least Important

Proposal Risk is more important than Past Performance, Mission Capability, and Cost/Price. Past Performance and Mission Capability are of equal importance with Cost/Price being significantly less important than any other factor. All evaluation factors other than cost or price, when combined, are significantly more important than Cost/Price; however, Cost/Price will contribute substantially to the selection decision.
Proposal Risk -- Most Important
- PR-1 Capability Risk - Technical Maturity
- PR-2 Capability Risk - Manufacturing Maturity
- PR-3 IMP/IMS Risk

Mission Capability -- Equally Important to Past Performance
- MC-1 Mission Systems Capability
- MC-2 Manufacturing Capability
- MC-3 Small Business Participation – Least Important

Past Performance -- Equally Important to Mission Capability
- PP-1 Adherence to Cost and Schedule
- PP-2 Systems Engineering

Cost/Price -- Least Important, but Contributes Substantially
- CP-1 Cost/Price Realism Risk
- CP-2 Price Reasonableness
Acquisition Strategy
Exit Criteria for JCTD

- Fuze must survive and function during fuze demo while penetrating 5-15K+ psi targets
- Fuze must demonstrate successful capability for detecting and counting more than one void during target penetration
- Fuze must demonstrate time-delay capabilities
- Fuze must demonstrate cockpit programmability
- Fuze must demonstrate trend toward affordability goal
- Assess manufacturing capability to produce up to 100 fuzes per month
Source Selection for JCTD Phase Complete

- Awarded two JCTD contracts 31 Mar 08
  - Alliant Techsystems (ATK), Plymouth MN
  - Thales Missile Electronics, Basingstoke Hampshire UK

JCTD is a Risk Reduction or Pre-SDD Phase
- Heavy focus on Technical & Manufacturing Maturity prior to entering SDD

First Time Using Dual Source Risk Reduction Phase on Air Force Fuze Program to Mitigate Program Risk
It’s a Journey

Move our culture to one that Warfighters and Stakeholders can depend on for realistic expectations, high quality, high performing, and affordable products.

Vision: War Winning Capabilities…On Time, On Cost!
It’s a Journey

Judy A. Stokley
Deputy PEO and Executive Director Air Armament Center

“Wouldn’t it be wonderful if the DoD had to develop a process to allocate the margin we did not spend each year instead of determining which programs to terminate or stretch out due to cost and schedule overruns?”

“Wouldn’t it be wonderful if Combatant Commanders spoke of us, Industry and Government, as those Acquisition people – the ones we can always count on…”

War Winning Capabilities … On Time, On Cost … Cradle-to-Grave