NDIA 48th Annual Fuze Conference

Low Cost Solutions for Modern Munitions

EF Cooper
Director, R&D
Q: Do new weapons designs require new fuzing / S&A’s?

A: Yes, but not necessarily cutting edge or developmental technology

- Cost
- Reliability
- Weight & dimension
- Environments
Low Cost Solutions for Modern Munitions

Contents

- M762A1 or M577 Fuzing High Volume Product Building Block
  - PGMM
  - XM984
  - APKWS Block 1
M762A1/M767A1 ET Fuze

Commander’s Award Winner
Best TACOM-ARDEC Producer

Multi-Year Contract
(awarded 9/2001)
600,000 base plus
100% option potential

- Premier electronic-time artillery fuze
- Designed for 105mm and 155mm artillery
- Used with cargo-dispensing, smoke, and illuminating projectiles
- Converts to M767A1 when used with an explosive booster for HE projectiles
- 99+% Acceptance; 93% Industry
Mechanical S&A Solution selected by ARDEC, Lockheed, ATK and Raytheon
Side View of S&A Design

Mechanical S&A

Electrical Support Circuitry
S&A Design

- Command Function Lock
- Slider (With Shear Nub)
- Detonator
- Setback Lock
**XM984**

**FIN ASSEMBLY**
(composite material)

**PAYLOAD**
54 each M80 submunition w/ Self-Destruct
(6 decks of 9)

**ROCKET MOTOR**
(composite ogive body)

**TAILBOOM & BASE**
(composite material)

**CENTER CARGO BODY**
(composite material)

**MULTIFUNCTIONAL ELECTRONIC FUZE**
(rocket initiation and payload expulsion)

(cross sectional)
XM984 Mortar Extended Range DPICM

*Mortar • Future Multifunction Electronic Fuze*

- M762 fuze technology
- Two-fuze configuration
- Separate timing requirements
APKWS Block -1

• 2.75” Rocket with a guidance & target detection module
• Needed a mechanical system reacting to launch to power up systems electronics
• Answer: an M577 mechanical fuze modification (40 year design)
• Withstands TV, drop, etc
• Live firing trials 100%
• Low cost materials
• Low cost production methods
Lessons Learned

• Benefits of designs derived from production items:
  = reduced development time
  = lower production costs
  = utility with tandem & single warheads
  = no high voltage
  = batteries not needed in all applications
  = precedent cases with safety review boards
  = high 1st turn success rates

• Pure electronics are not a panacea

• Pyrotechnic and mechanical technologies provides reliable & sensible solutions