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BT Fuze Products Division

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**



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M762A1/M767A1 ET Fuze

Artillery • Electronic Time 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**

PGMM



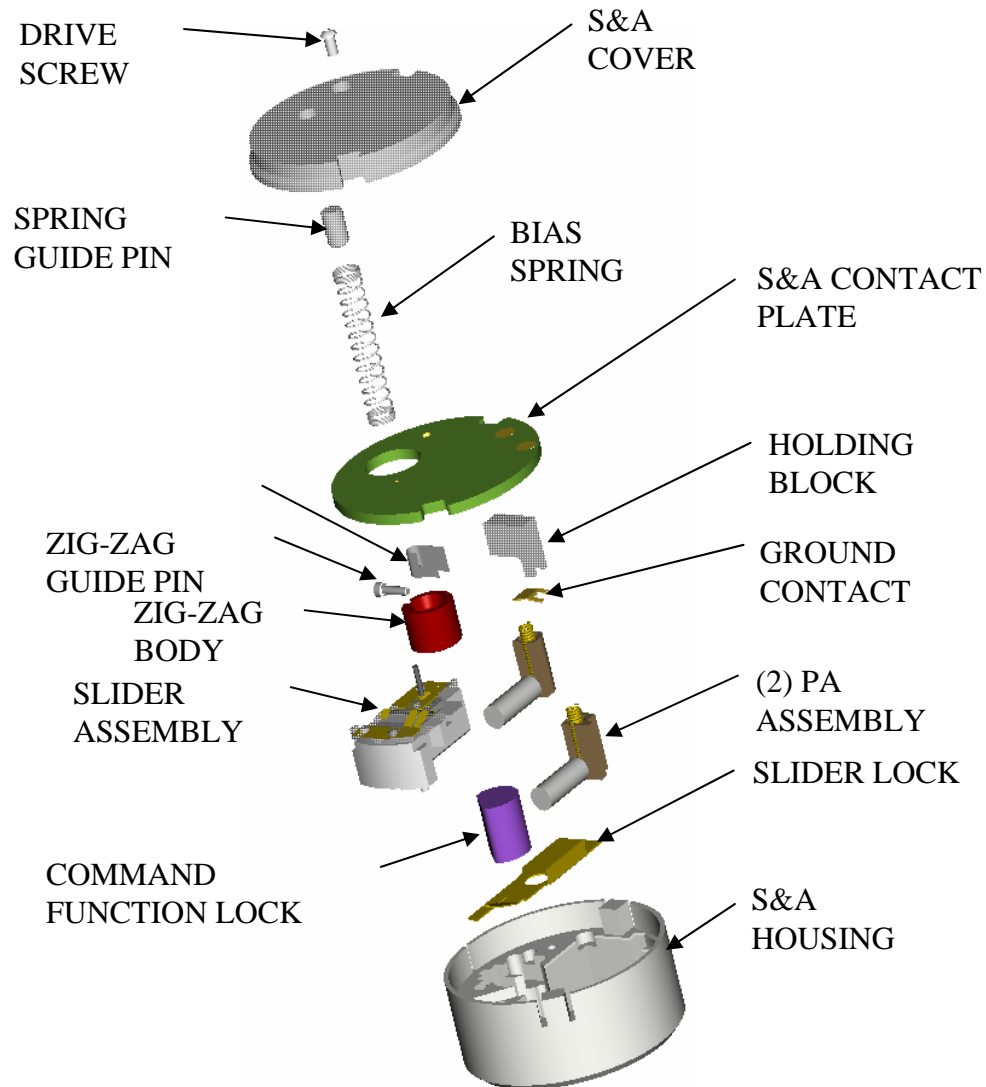
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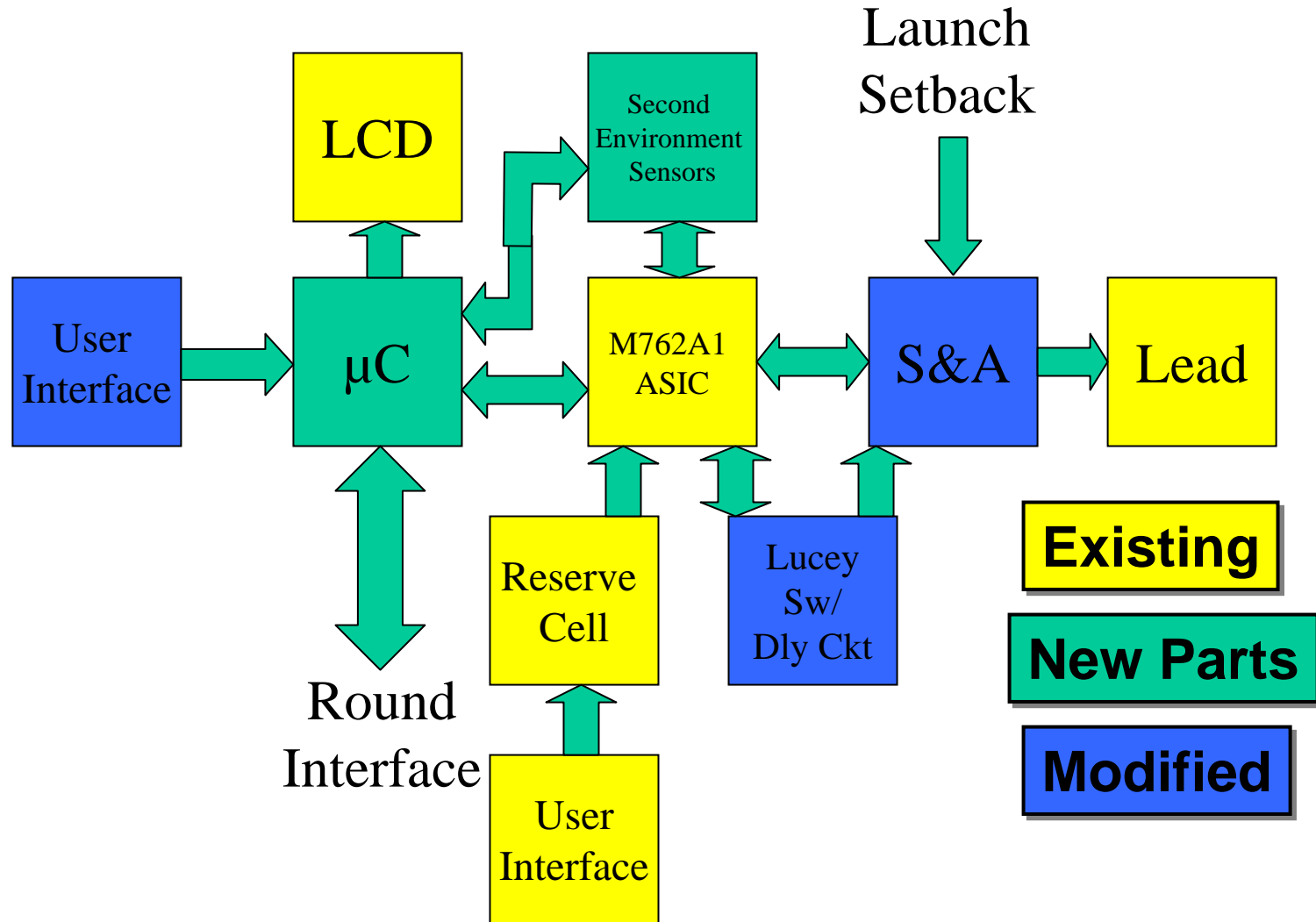


Mechanical S&A Solution selected by ARDEC, Lockheed, ATK and Raytheon

PGMM



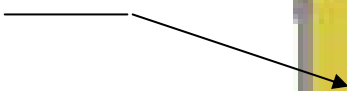
PGMM



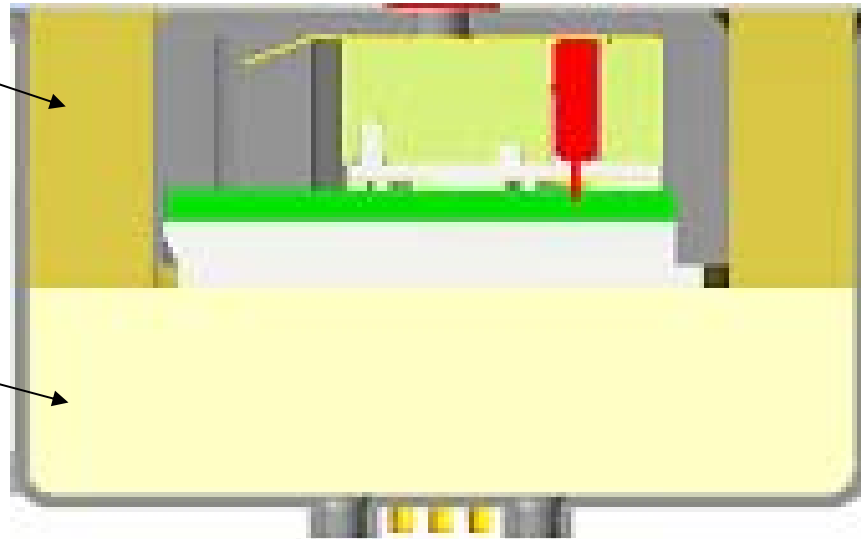
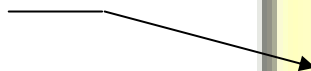


Side View of S&A Design

Mechanical S&A

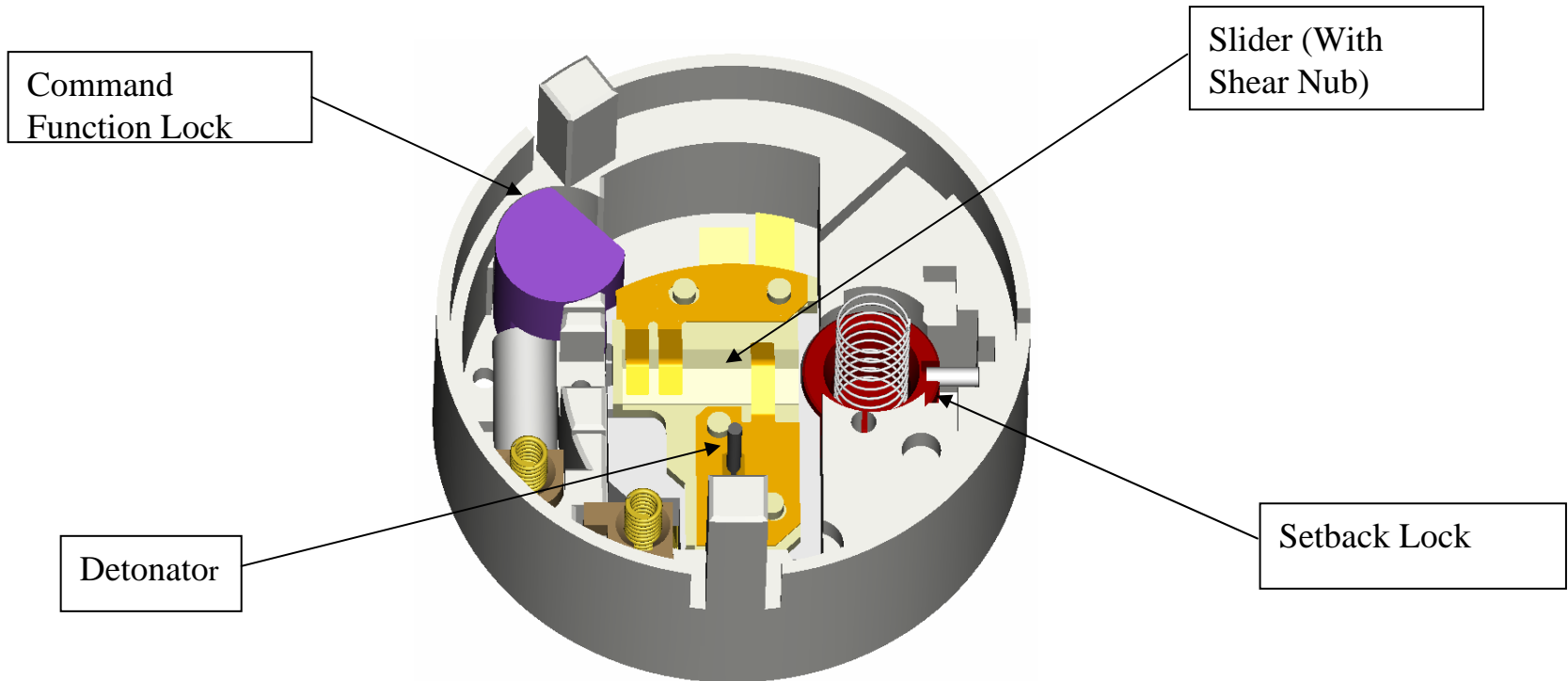


**Electrical Support
Circuitry**

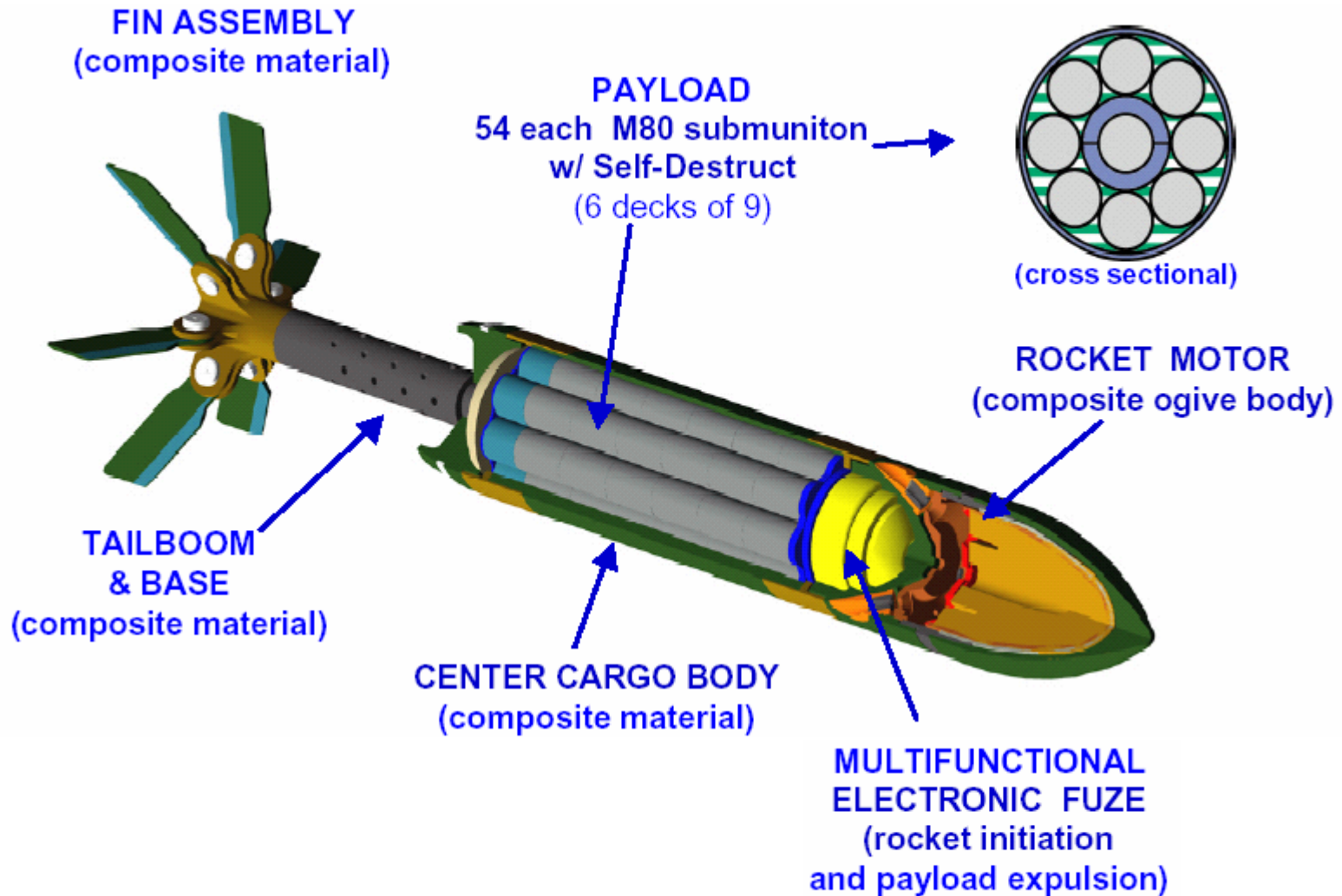




S&A Design

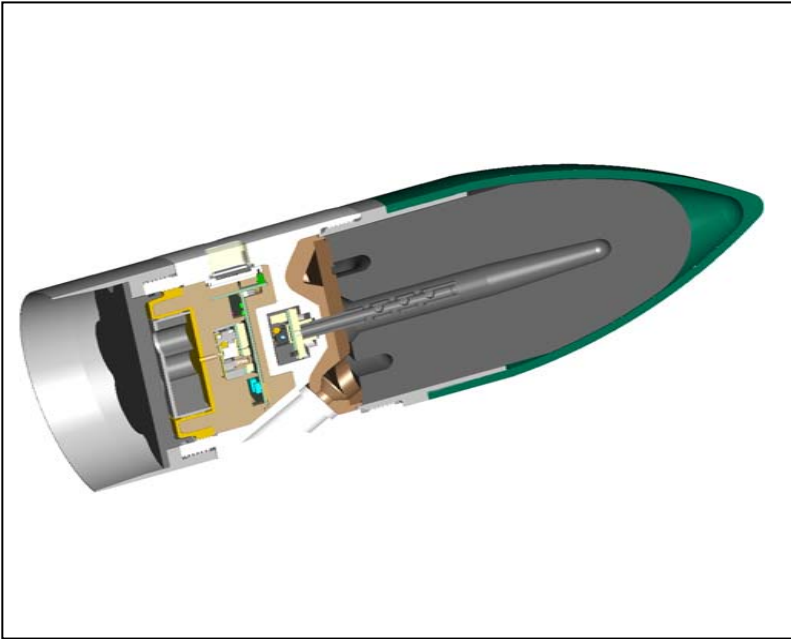


XM984



XM984 Mortar Extended Range DPICM

Mortar • Future Multifunction Electronic Fuze



- M762 fuze technology
- Two-fuze configuration
- Separate timing requirements



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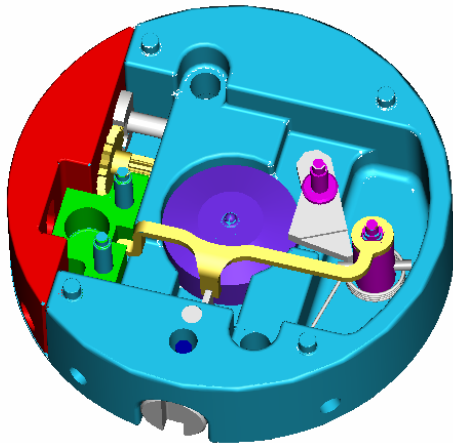
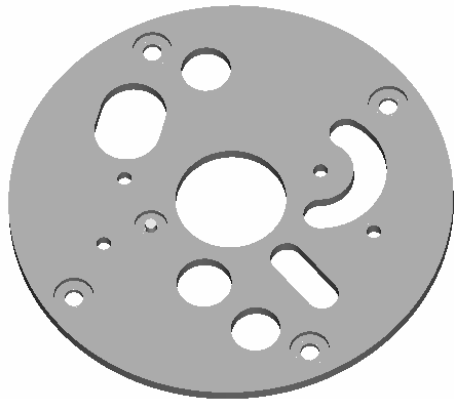
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APKWS Block -1



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