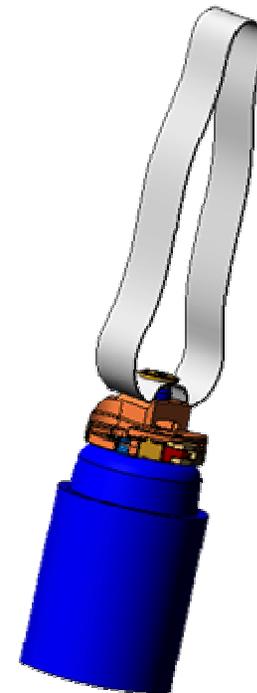


Self Destruct Fuze for M864 Projectiles / MLRS Rockets

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Self Destruct Fuze



- Why is SDF Important?
- Current Programs
 - GMLRS
 - M864
- ATK Solutions
 - Design
 - Safety
- Test Results



Why is SDF Important ?



- The occurrence of Unexploded Ordnance (UXO) on the battlefield is too high
 - Published estimates place dud rate of current fuze (M223) at 4%
 - Based on Operation Desert Storm (ODS) data, just a 2% dud rate would leave approx. 170,000 duds on the battlefield*
 - Costs to clear UXO from combat areas is extremely high
 - UXO is both a combat and a humanitarian issue
 - DoD Policy is to reduce UXO to less than 1% beginning in FY05
- Self-destruct fuze required to meet the < 1% UXO DoD policy

* US GAO Report, September 2002

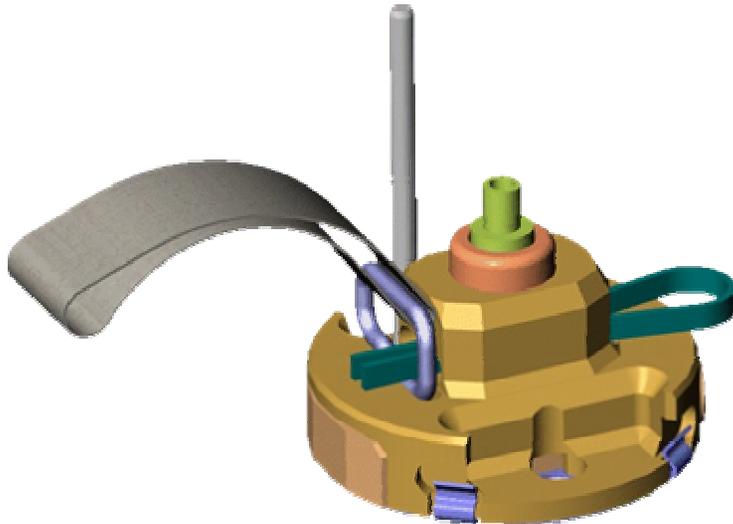


Current US Army Programs to Reduce UXO



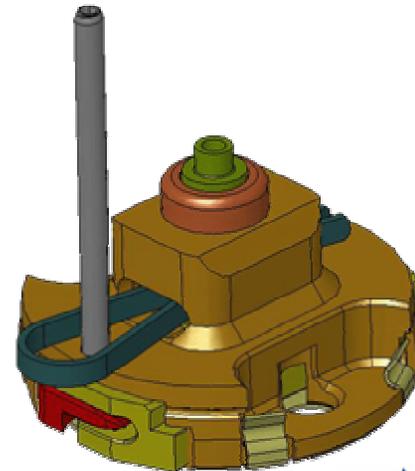
➤ GMLRS Rocket

- Provide SDF's on new and recapitalized M77 grenades
- Support US and NATO production of GMLRS beginning in FY05
- Support FMS for inclusion in MLRS and ERMLRS



➤ M864 Artillery

- Provide SDF's on recapitalized M42/M46 grenades
- Support US recapitalization of M864 artillery rounds
- Recapitalize 180,000 M864 rounds with SDF's



Program Requirements



➤ GMLRS

- Primary Mode Reliability – 95% minimum
- Hazardous Duds – 1% maximum
- Primary mode with self-destruct and self-neutralization functions
- Compatible with M77 grenade
- Meet MIL-STD-1316E



➤ M864

- Primary Mode Reliability – 97% minimum
- Self Destruct Reliability – 95% minimum
- Unexploded Ordnance (UXO) – 1% maximum
- Primary mode with self-destruct and self-neutralization functions
- Compatible with M42/M46 grenades
- Meet MIL-STD-1316E

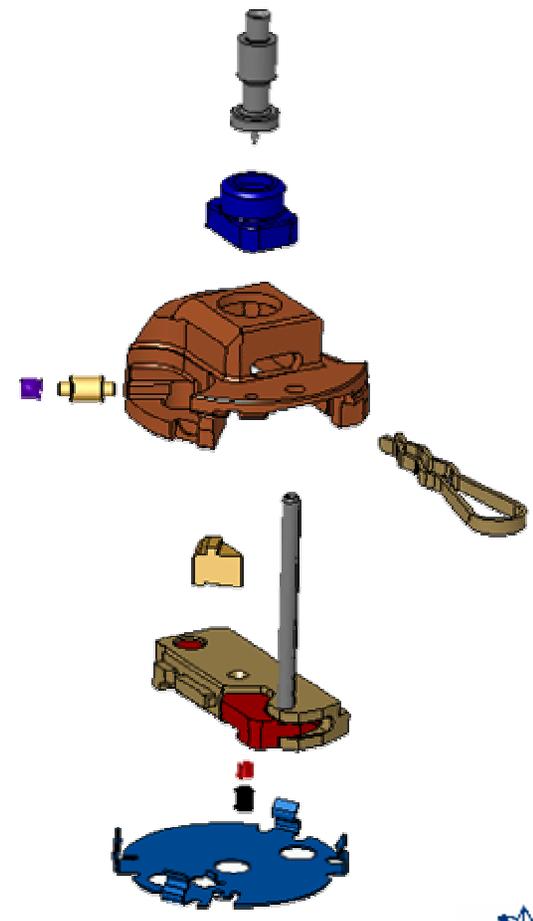




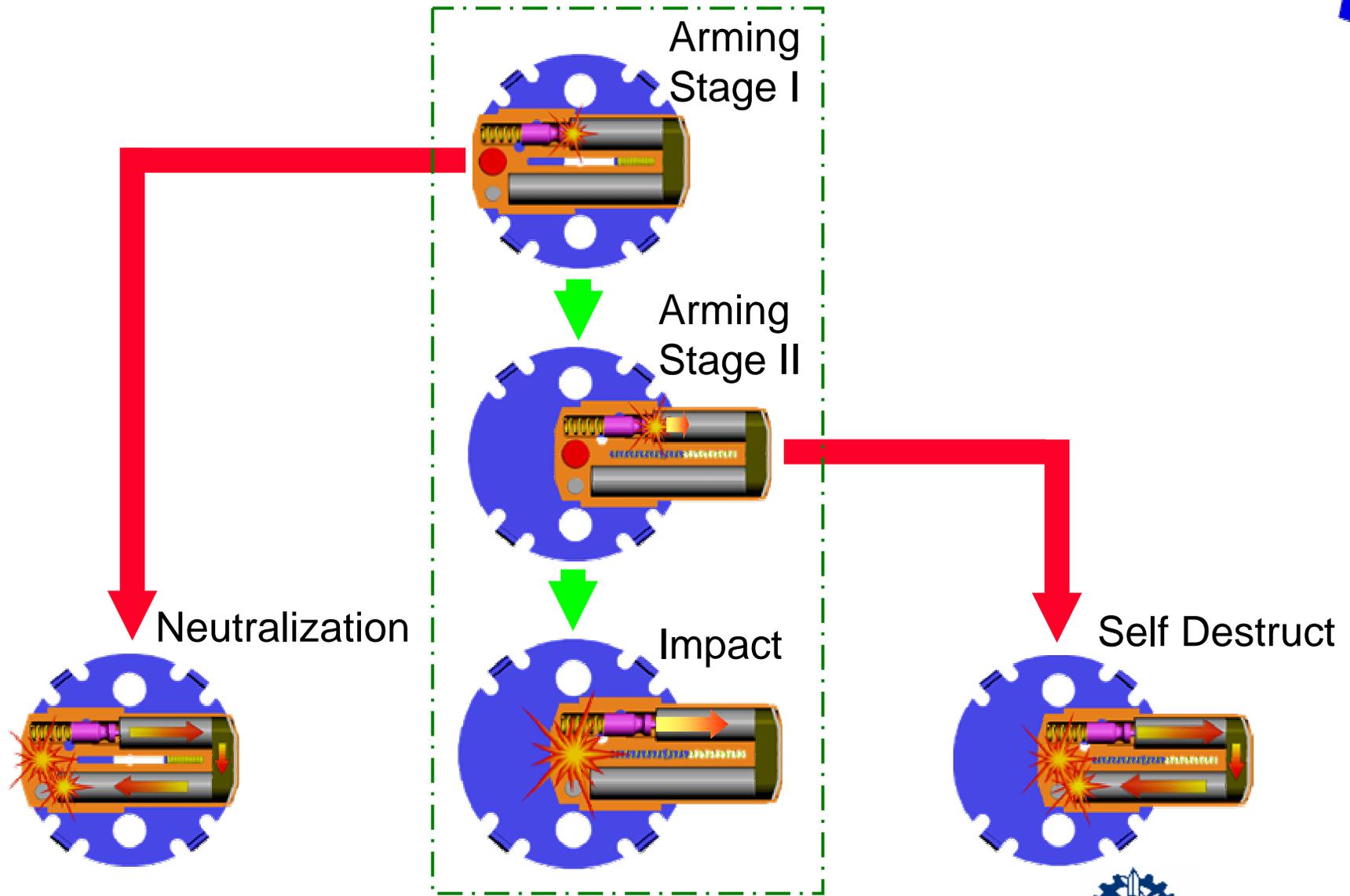
GMLRS



M864



ATK Solution - Fuze Functions

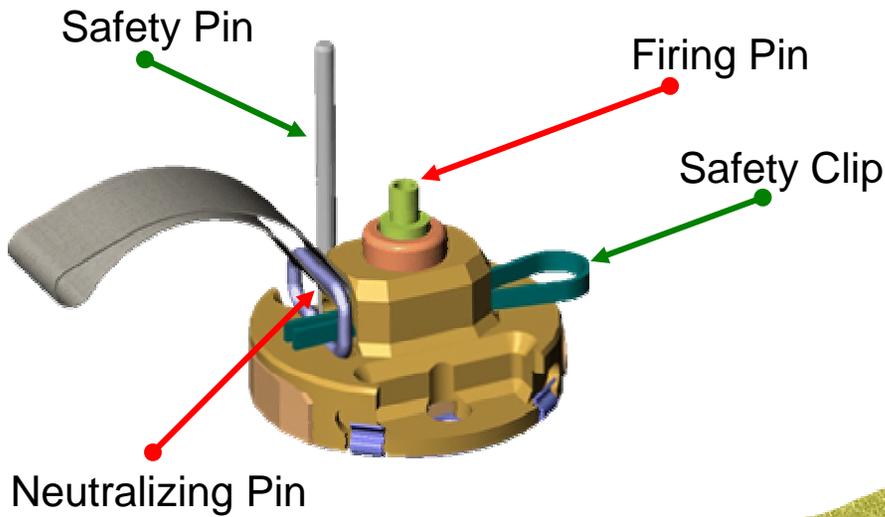


ATK Solution - Fuze Safety

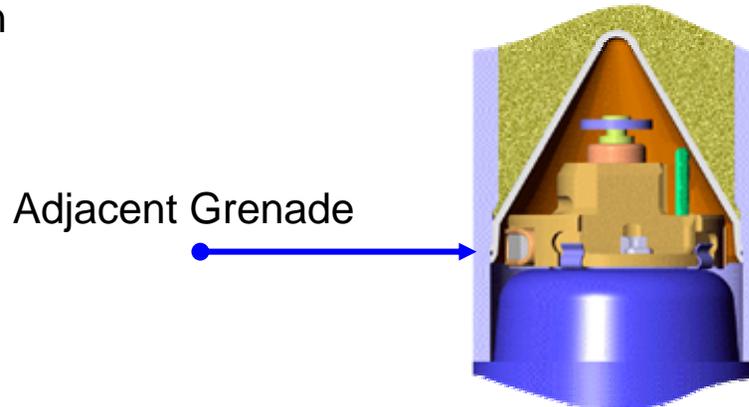
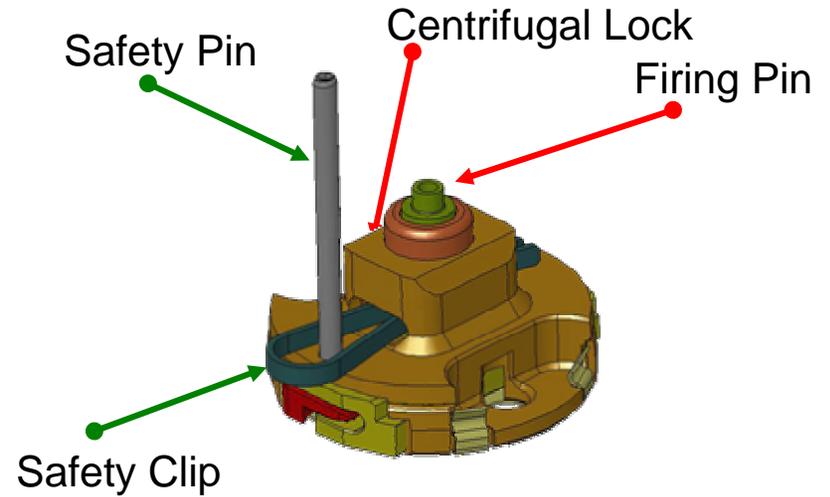


- Two Independent Arming Safeties
- Two Removable Safeties
- Third Arming Safety When Loaded

GMLRS



M864





- Low part count increases reliability
- Robust fuze housing withstands expulsion environment
- Design has evolved from highly successful M85 SD Fuze, with proven reliability of $< 1\%$ Hazardous Duds in over 60 Million fielded units worldwide
- GMLRS - Long delay time and zero spin environment
- M864 - Arming requires no stored energy

Safe, Proven Design – Ready for Production



Excellent Stabilization Provides Impact Reliability



Perpendicular Impact Produces Desired Lethal Effects





GMLRS Fuze Results

Rocket	Range	Temp	Fired	Funct'd	% Funct'd	Neut'd	% Neut'd	Dud	% Dud
1	65km	Cold	101	98	97.03%	3	2.97%	0	0.00%
2	65km	Hot	101	94	93.07%	7	6.93%	0	0.00%
3	19km	Cold	101	92	91.09%	6	5.94%	3	2.97%
Total			303	284	93.73%	16	5.28%	3	0.99%

Meets Requirement of < 1% Hazardous Duds



M864 Tests at YPG (Jan 04)



M864 Fuze Results

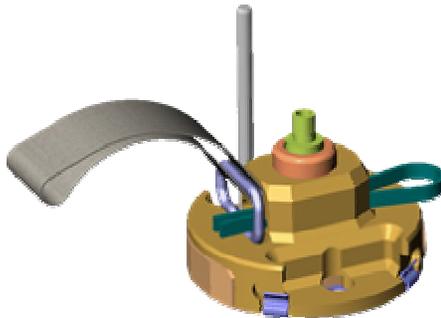
Mode	Range	Charge	Fired	Funct'd	% Funct'd	UXO	% UXO	Haz Dud	% Haz Dud
Primary	24km	5-H	60	56	93.33%	4	6.67%	N/A	N/A
SD	24km	5-H	240	240	100.00%	3	1.25%	0	0.00%
Tactical	24km	5-H	132	130	98.48%	2	1.52%	0	0.00%
Total			432	426		9	2.08%	0	0.00%

No Hazardous Duds





- ATK's Self Destruct Fuze for GMLRS and M864
 - Designed to replace existing M223 fuze for DPICM grenades
 - Adds features for self destruct and self neutralization
 - ATK Team has production experience with over 60 Million pyrotechnic delay fuzes



**Proven Capability to Lower Hazardous Dud Rate
From 4% to Less Than 1%**



End of Presentation

