

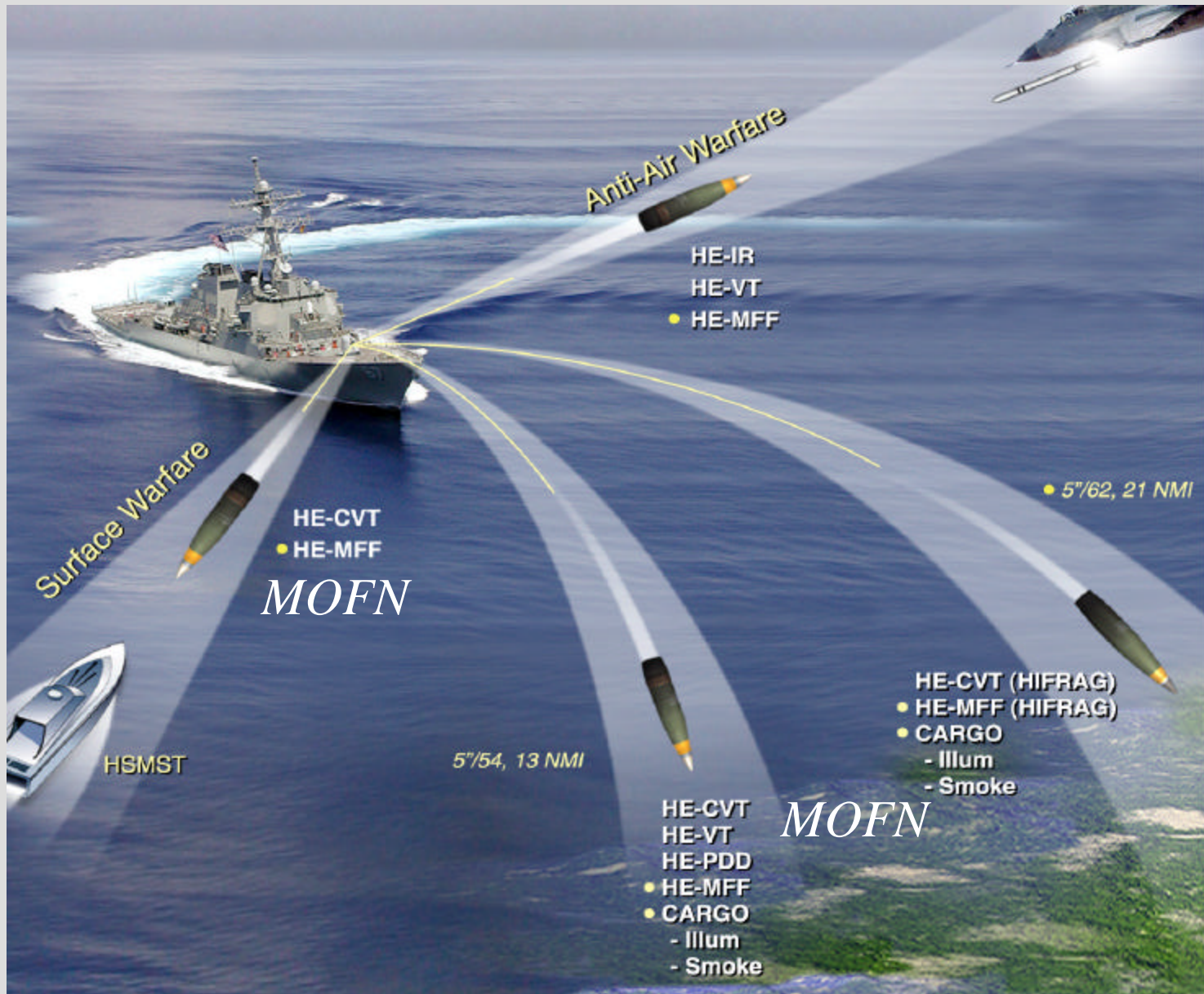


EX 437
Multi-Option Fuze
for Navy

Chad Finch
Naval Surface Warfare Center Dahlgren

47th Annual Fuze Conference
“Enhancing Weapon Performance”
April 8-10, 2003

5" Conventional Ammo



M762A1 to MK 432 Conversion



M762A1

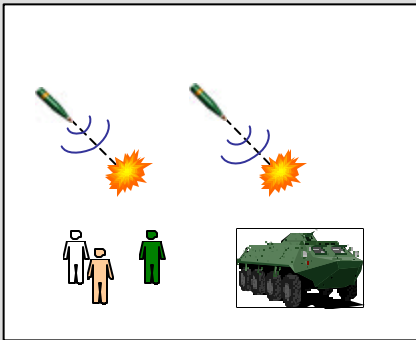


MK 432 MOD 0

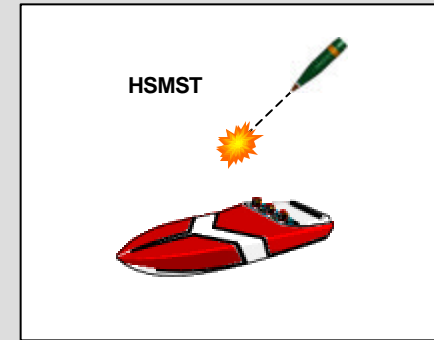
M782 Multi-Option Fuze for Artillery

Operational Modes

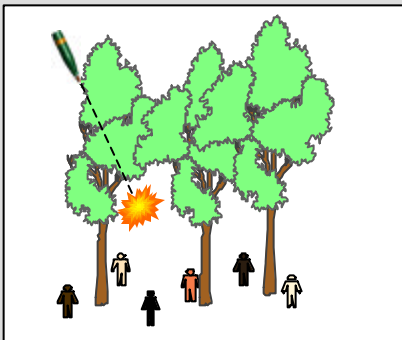
Surface Proximity (HOB)



Electronic Time (ET)



Point Detonating Delay



Point Detonating (PD)



What is “Navalization”?

A “Navalized” MOFA must be:

- Compatible with Navy guns
 - Changes to fuze’s inductive coil / circuit
 - Changes to fuze’s inductive interface (software)
 - Increased precision in electronic time mode
 - High Speed Maneuvering Surface Target (HSMST)
- Safe in Navy guns
 - Changes to S&A to increase arming distance
 - Changes in software to delay charging of firing circuit

Compatible with Navy Guns

- MOFA will not set with MK 34 Fuze Setter
- MOFA inductive coil similar to M762A1
- For M762A1 to MK 432 conversion
 - Replaced M762A1 coil w/ MK 419 MFF coil



M762A1 Coil



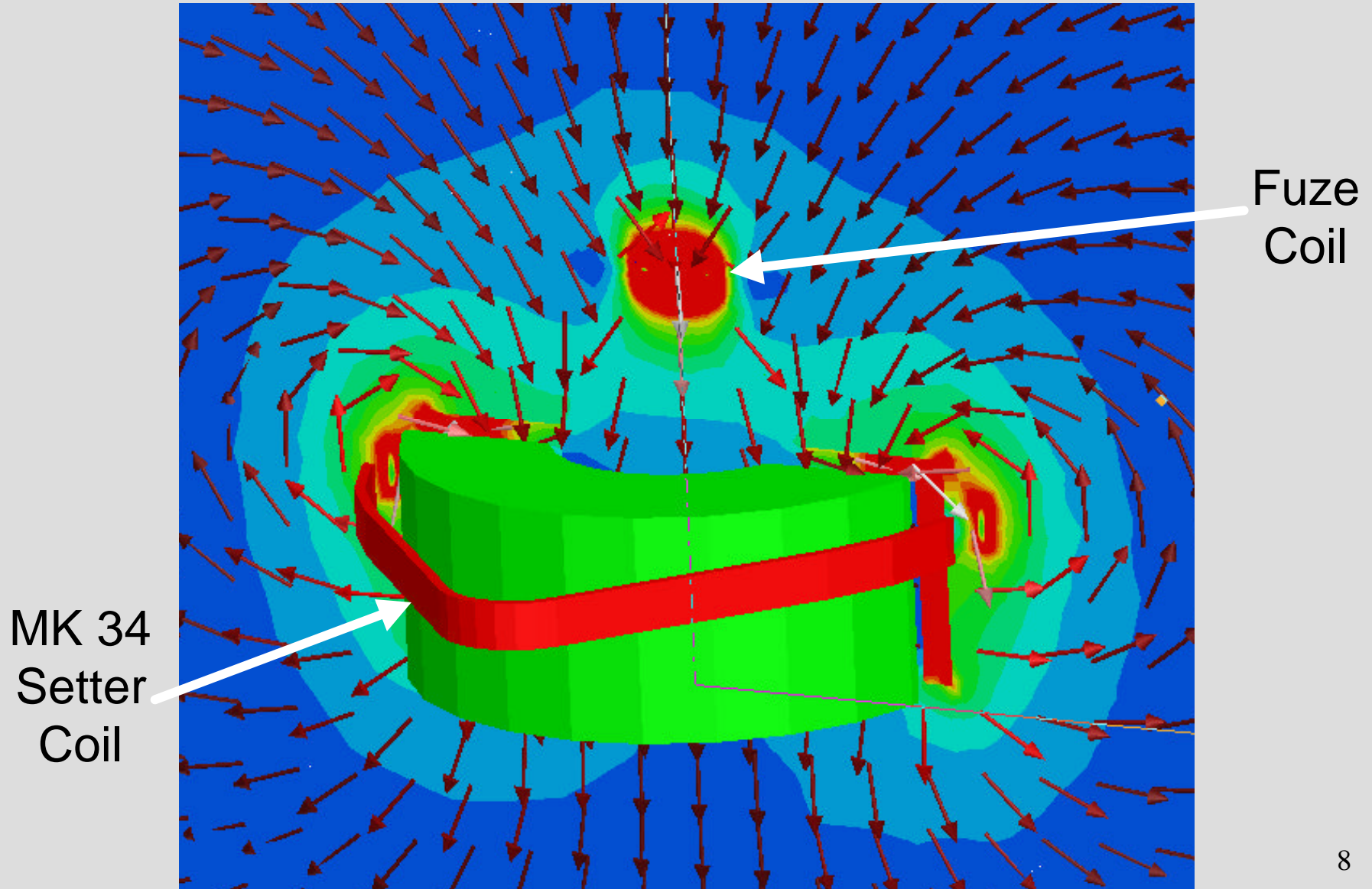
MK 432 Coil

Compatible with Navy Guns

- For M782 MOFA to EX 437 conversion
 - MK 419 coil will not fit into MOFA
 - Proximity sensor limits available space
- Promising results from initial testing
 - 575 turns w/ 38 awg wire (fits on MOFA bobbin)
 - Small ferrite core (fits under MOFA bobbin)
 - Series resonant circuit



Compatible with Navy Guns





Compatible with Navy Guns

- MOFA uses a 23-bit binary message
 - ET is settable in 0.1 second increments
- Navy requires a 26-bit binary message
 - *“We’re kicking it up a notch!”*
 - to allow setting in 0.01 second increments
 - A must have for engaging HSMST



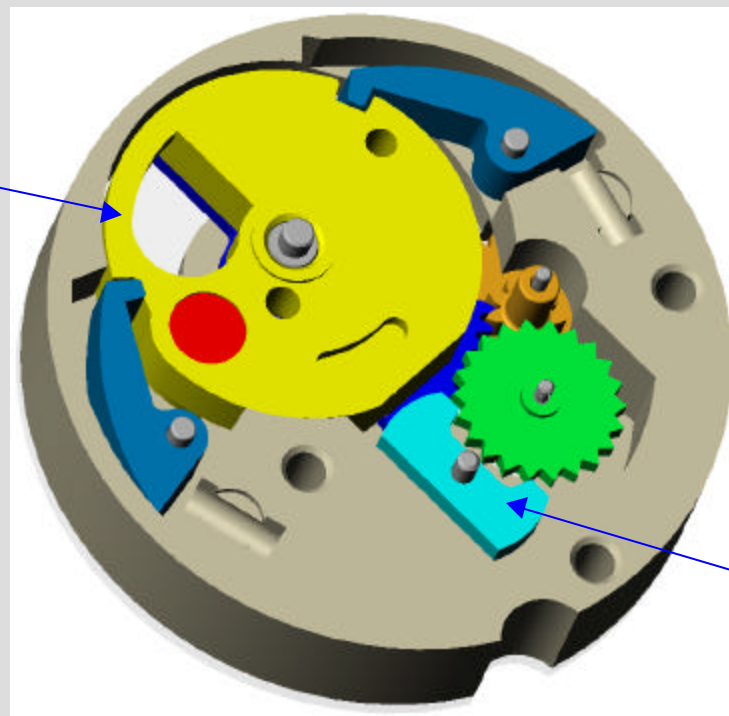
Safe in Navy Guns

- MOFA uses an M739-type S&A
 - Minimum arming distance of 205 ft in the 5” gun
- Conducted a study to assess hazard for arming distances between 200 and 4800 ft
 - Assuming a fuze function at arming
 - All distances posed a 1-D risk (MIL-STD-882C)
- Selected 400 feet as the minimum arming distance
 - Gets fuze beyond stern of ship
 - Requirement for close in engagement

Safe in Navy Guns

- M739 was modified in early '80s in a joint Army-Navy PIP
 - 375 ft no-arm distance verified

Change Rotor
Material to
Aluminum



Increase
Moment of
Inertia



Program Strategy

- Maximize commonality with MOFA
 - Follow the M762A1 - MK 432 example
- Strong Navy-Army-Industry Team



NSWC Crane



ARDEC



NSWC Dahlgren



Industry



Basic Approach

- Π Feasibility / Risk Reduction Effort - 3rd Qtr '02
 - Π Issued competitive small purchase contracts
 - Π ARDEC - began software upgrade
 - Π Develop S&A model
- Π Issue Competitive RFP - Jan '03
 - S&A, inductive set, software development
 - 400 fuze qualification build & test
 - 5,000 fuze production option

Schedule

EX 437 Milestones	2003				2004				2005			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Contract Award		▲										
PDR				▲								
Lot A				▲	▲	▲						
CDR							▲					
Lot B / Qual							▲	▲	▲			
Production										▲	▲	