

Miniature Day/Night Sight- Crew Served Weapons (MDNS-CSW)

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Presented to NDIA Small Arms Symposium



- ➡ **Mission & Concept**
- ➡ **Purpose of The Acquisition**
- ➡ **Requirement Background**
- ➡ **Description of CSW Components**

MDNS-CSW System Mission: An Operator equipped with the MDNS-CSW system is able to recognize, engage, and defeat enemy personnel and targets during Urban Warfare and open combat to the max effective range of the host weapon. The MDNS-CSW allows Operators to transition from day to night or obscured visibility while retaining the ability to accurately acquire and target threats.

- ➡ **The MDNS-CSW System Is An Integrated System Utilizing An RS-232 (or similar non-proprietary) Bus To Enable Operator Control Of All Subsystem Functions From The RCM**
- ➡ **All Combat Critical Controls Will Be Controlled By RCM Mounted Switches**
- ➡ **Non-Critical Component Functions Controlled By GUI**
- ➡ **ECOS-H Optical Will Not Be Required To Meet Remote Control Requirement**
- ➡ **Ballistic Processor Module Will Interface With All Sighting Systems To Provide Targeting Data**

SOPMOD ORD 5 - Core Small Arms
(Threshold) ...Design For Use On:

M4A1 Carbine
M203 Grenade Launcher

ORD Annexes - Additional Weapons
...Harden For Use On, and possibly
develop versions for:

SCAR
CQBR (Mark 18)
M14 and Mark 14 Enhanced Battle Rifle
AK-47/AK74 Series Assault Rifle
MK46 LMG / M249 SAW Machineguns
MK48 Machineguns

M2-HB .50 Cal Machinegun (~1850 SOF units, ~150K Units US, ~6M Units W-Wide)

MK44 Minigun
M240 Series
Mk-19 40mm Machinegun
MK-47 ALGL

M72 LAAW
AT4-CS
MAAWS
MK11, MK12, MK13, & MK15 Sniper Rifles
M-24 Sniper Rifle



SOPMOD Block III MDNS-CSW
Weapons of Interest



MDNS-CSW Purpose



MDNS-CSW Purpose



MDNS-CSW Purpose



MDNS-CSW Purpose



MDNS-CSW Purpose



MDNS-CSW Purpose



MDNS-CSW Purpose

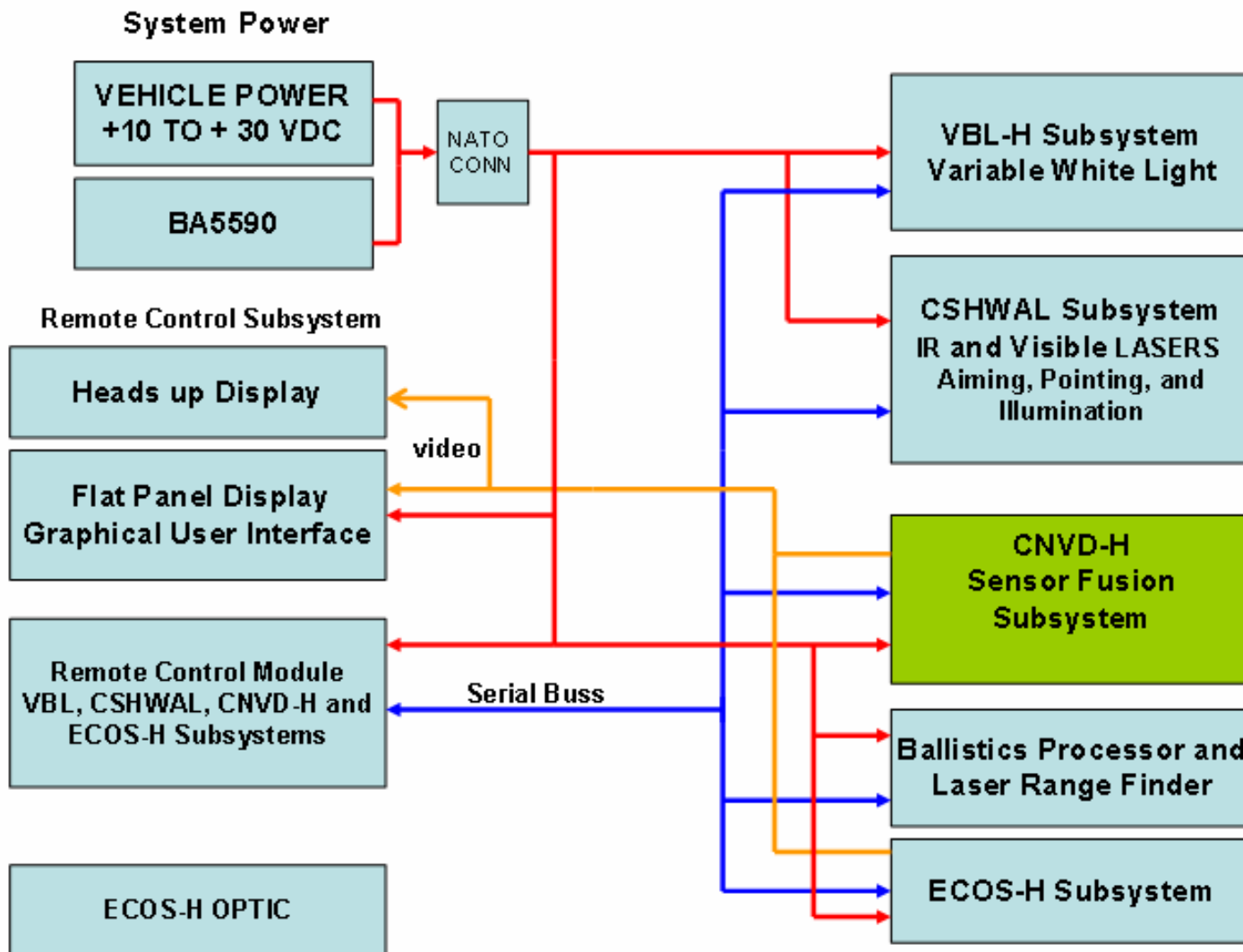




- 1990's to 2005 various expedient CS aiming and signature suppression items... not system integrated
- FY 06 CSHWAL and WQM Market Surveys
- Project Initiated by Requirements W-IPT's June/July 06
- MDNS-CSW Synopsis published September 06
- Draft Performance Specification published Oct 06
- Roadmap Vetted through Requirements W-IPT Dec 06
- CSW Spec under revision for Full System Acquisition
Similar to MDNS Block II

- ➡ **Crew Served Heavy Weapon Aiming Laser (CSHWAL)**
- ➡ **Visible Bright Light - Heavy (VBL-H)**
- ➡ **Remote Control Subsystem (RCS)**
- ➡ **Rail Interface System - Heavy (RIS-H)**
- ➡ **Enhanced Combat Optical Sight - Heavy (ECOS-H)**
- ➡ **Optical “Back-Up” Sight (ECOS-H Optical)**
- ➡ **Clip-On Night Vision Device - Heavy (CNVD-H)**
- ➡ **Ballistic Processor Module (BPM)**
- ➡ **Improved Flash Hider (IFH)**

MDNS-CSW Block Diagram



- IR And Visible Laser
- IR Illumination
- IR Laser Divergence (0.5-10mrad)
- Visible Laser Divergence (0.5-10mrad)
- IR Illumination Beam Divergence (0.5mrad- 40°)
- Pulsed Operation Capable
- IFF (Identify Friend or Foe) Capable
- Weight Less Than 4 lbs (T), 1 lb (O)
- External Power and Onboard Back-Up
- Control Of All Functions From RCM



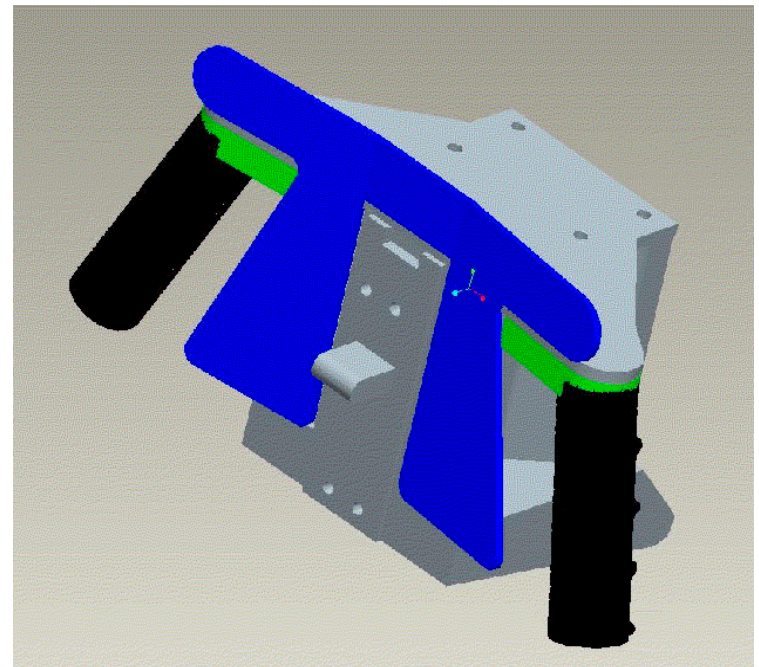
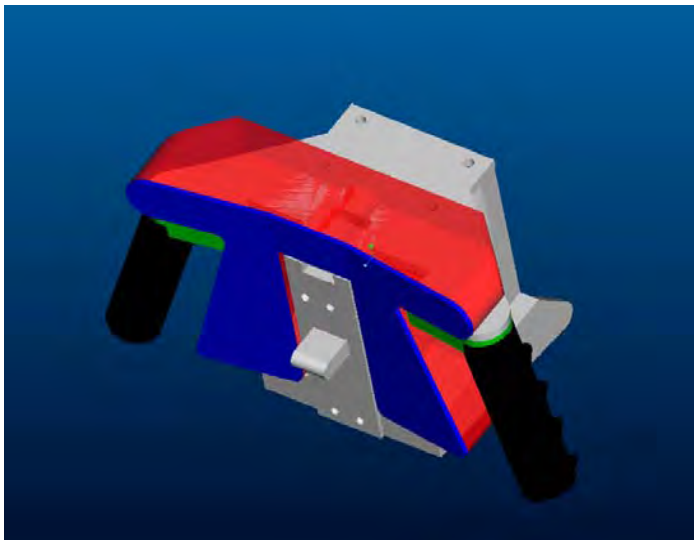
CONCEPT IMAGE

- ➔ Range of 1000 meters
- ➔ Variable Strobe (1-30 F/S)
- ➔ Variable Beam Angle (1°- 20°)
- ➔ Variable Intensity Control
- ➔ Control of All Functions From RCS
- ➔ Less than 11" L x 8" W x 8" H
- ➔ Weight Less Than 10 lbs (T), 8 lbs (O)

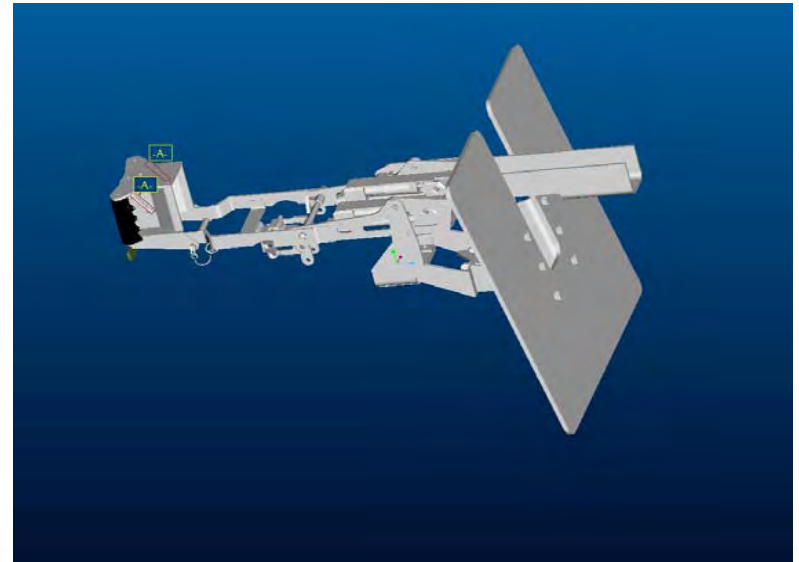


CONCEPT IMAGE

- Controls All Functions of The MDNS-CSW System
- This Concept Drawing Shows Control Surface For Bid Sample Submittal
- Final Design Will Incorporate LCD Screen



- Provides Mounting Surfaces Forward of The Ballistic Shield
- RIS-H Mounts to The MK93 Mount, Providing Decreased Felt Recoil to MDNS-CSW Components



- **Two Components**
 - **ECOS-H Digital**
 - **ECOS-H Optical**
- **Targets from 0- Max Effective Range**
- **Maintain Situational Awareness**
- **External Power and Onboard Back-Up**
- **Control Of All Functions From RCM**
- **Compatible With Ballistic Processor**
For Disturbed Reticle Targeting



CONCEPT IMAGE



- **Multiple Mode Selections**
- **Image Intensification**
- **Thermal Imaging**
- **Fusion Mode**
- **Targets from 0- Max Effective Range**
- **Maintain Situational Awareness**
- **External Power and Onboard Back-Up**
- **Control Of All Functions From RCM**
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CONCEPT IMAGE

- 1000m First round Hit Probability of $P(\text{hit}) = 0.75$
- IR Class 1 Laser
- Laser Shall Not Be Detectable With NVE
- Pulse Coded Output To Minimize Jamming
- Range Of 25m To 2200m
- Laser Range Finder Acquisition Time < 1 Second
- Fire Control Solution Of < 3 Seconds
- Will Incorporate Digital Orientation Unit Capable of 3 – Axis Compensation
- External Power and Onboard Back-Up
- Control Of All Functions From RCM

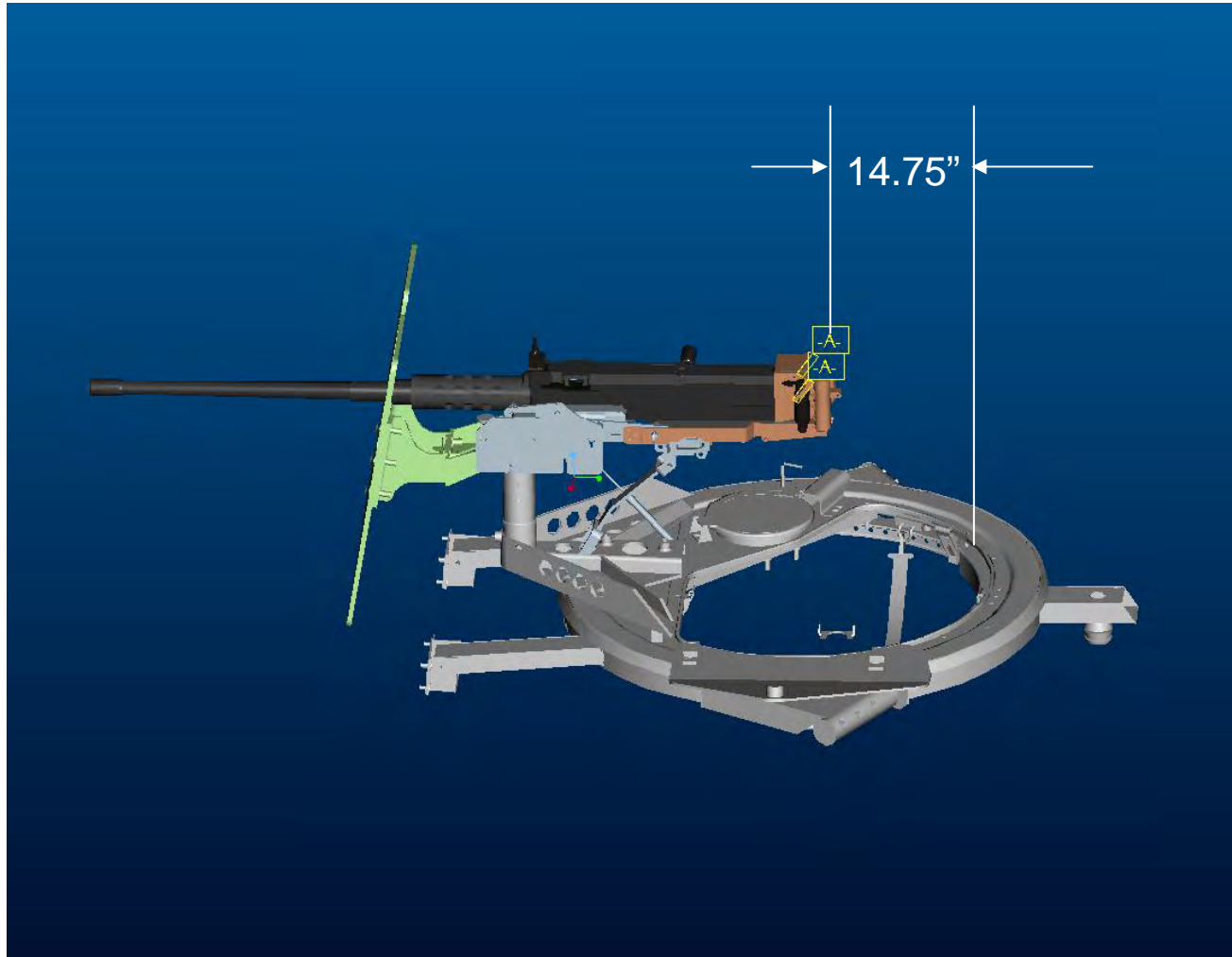


CONCEPT IMAGE

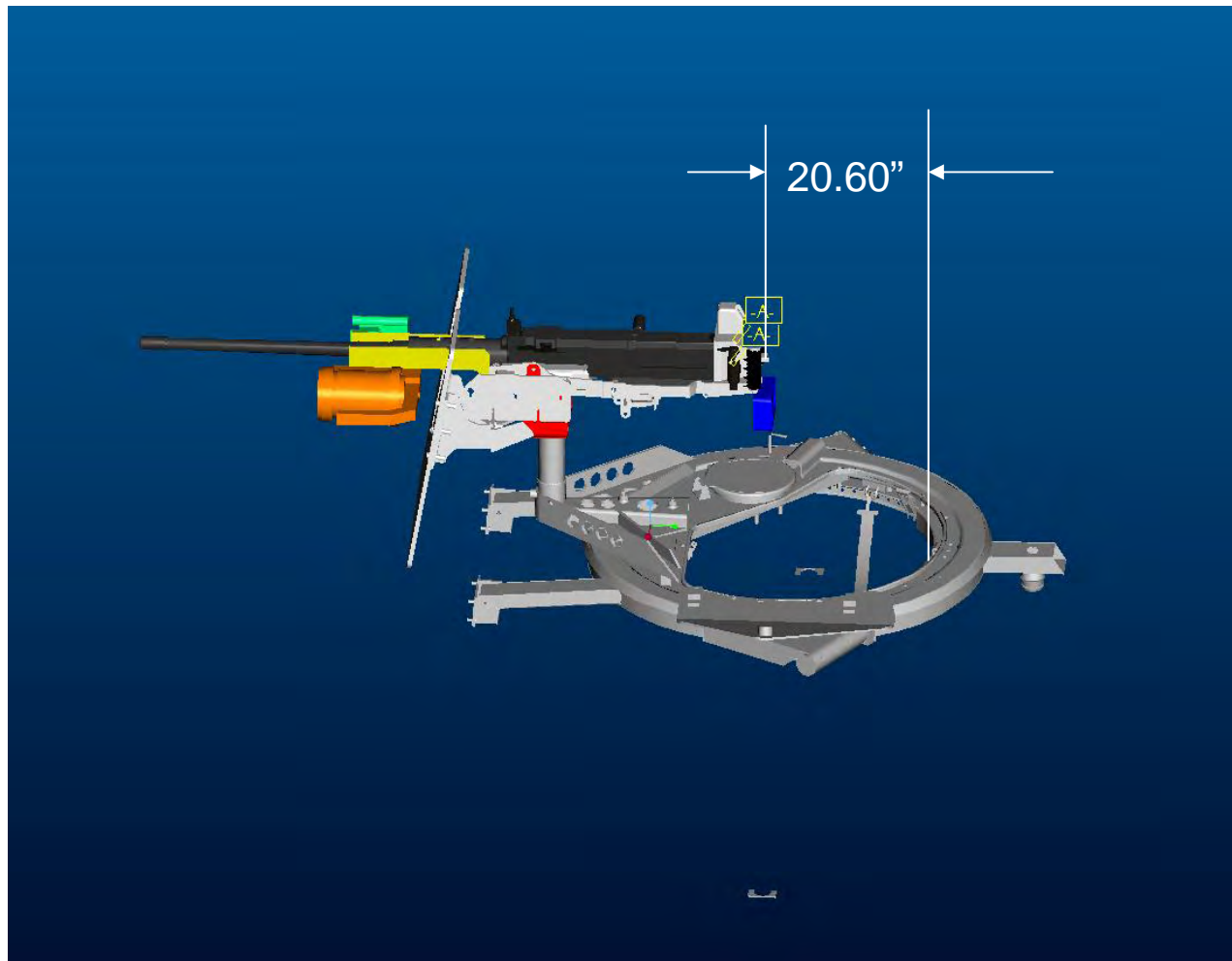
- ➡ Mounts to Unmodified M2 Barrel
- ➡ Requires No Special Tools
- ➡ Reduces Muzzle Flash For Decreased Signature
- ➡ Operator NVE Becomes More Effective



Existing MK 93 in Turret



Modified MK 93 in Turret



Schedule

MDNS-CSW														
	FY06		FY07				FY08				FY09			
Milestones	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Draft Specification for Comment				■										
Pre-Solicitation Industry Conference		▲	▲											
Release Solicitation						▲								
Receive Proposals							▲							
Receive Samples									▲					
DT/OT Testing										■				
Downselect											▲			
Contract Award													▲	



End Result:



Increased Probability of First Round Hit

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