



# **MK 51 MAWS**

## **Modular Advanced Weapon System**

17 May 2010

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**NSWC/Port Hueneme Division**  
**Louisville Detachment**

# Agenda

- **Recap of the Origin of the MK 51 Weapon System**
- **Patrol Coastal Installation and Firing Event**
- **Path Forward for the MK 51**
- **NAVAIR Path Forward for the M230 30mm Cannon and Ammunition**

# MK 45 Weapon System



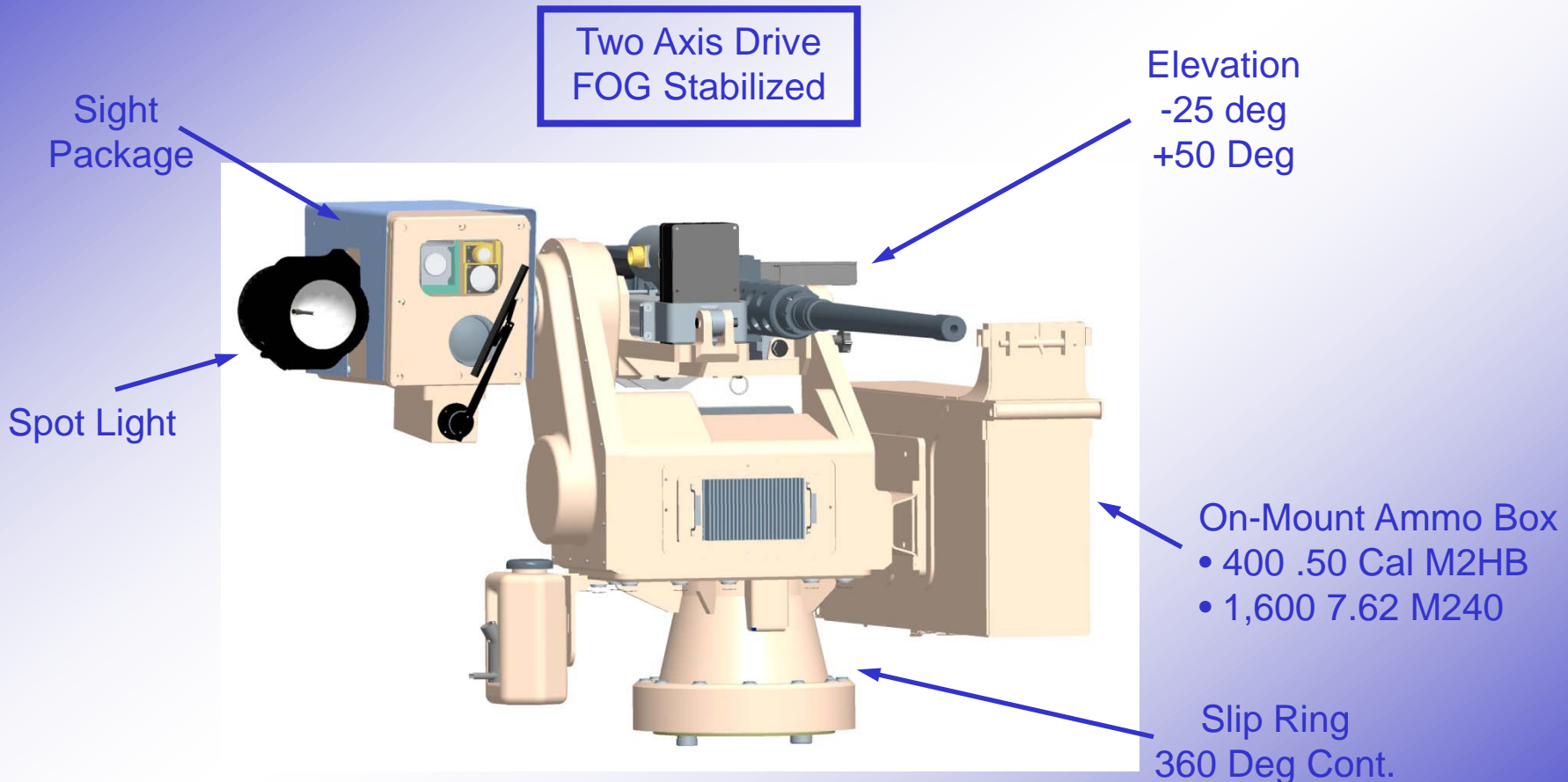
HSV 2 SWIFT



USCG 87' Patrol Boat  
COCHITO

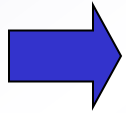
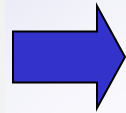
# Naval Expeditionary Overwatch (NEO)

## Gunslinger Spiral 3 Mount

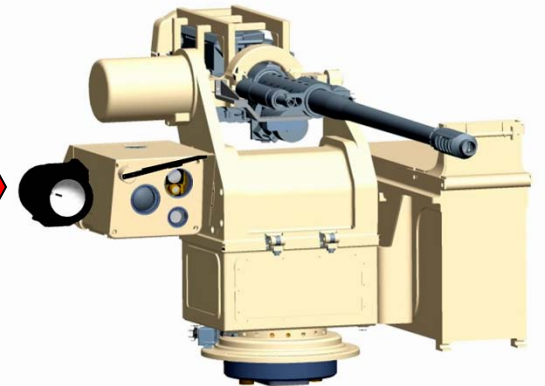
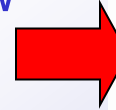


Mount Weight Approx. 265 (No Gun or Ammo)  
Overall Dimensions with M2HB = 29.4"H x 38"W x 65.2"D  
Working Radius with M2HB = 42.2"

# Modular Advanced Weapon System (MAWS) Development



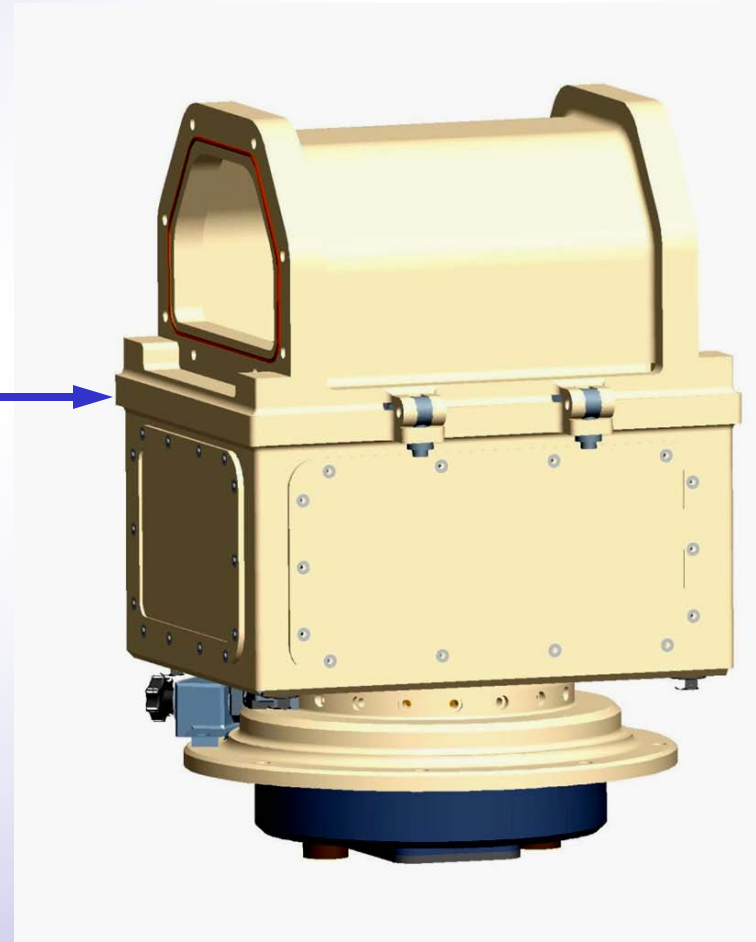
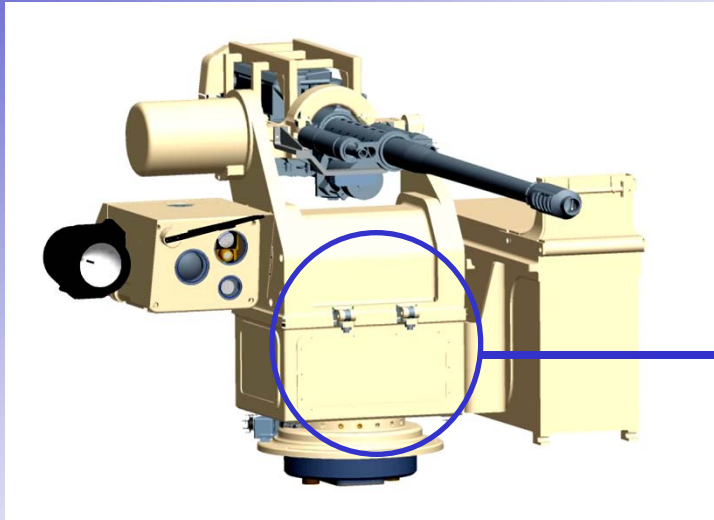
Repackage current  
MK 45 and MK 45 LW  
Systems and add  
new capabilities into  
a new Modular Advanced  
Weapon System (MAWS)





# Modular Advanced Weapon System (MAWS)

## Common Base Assy

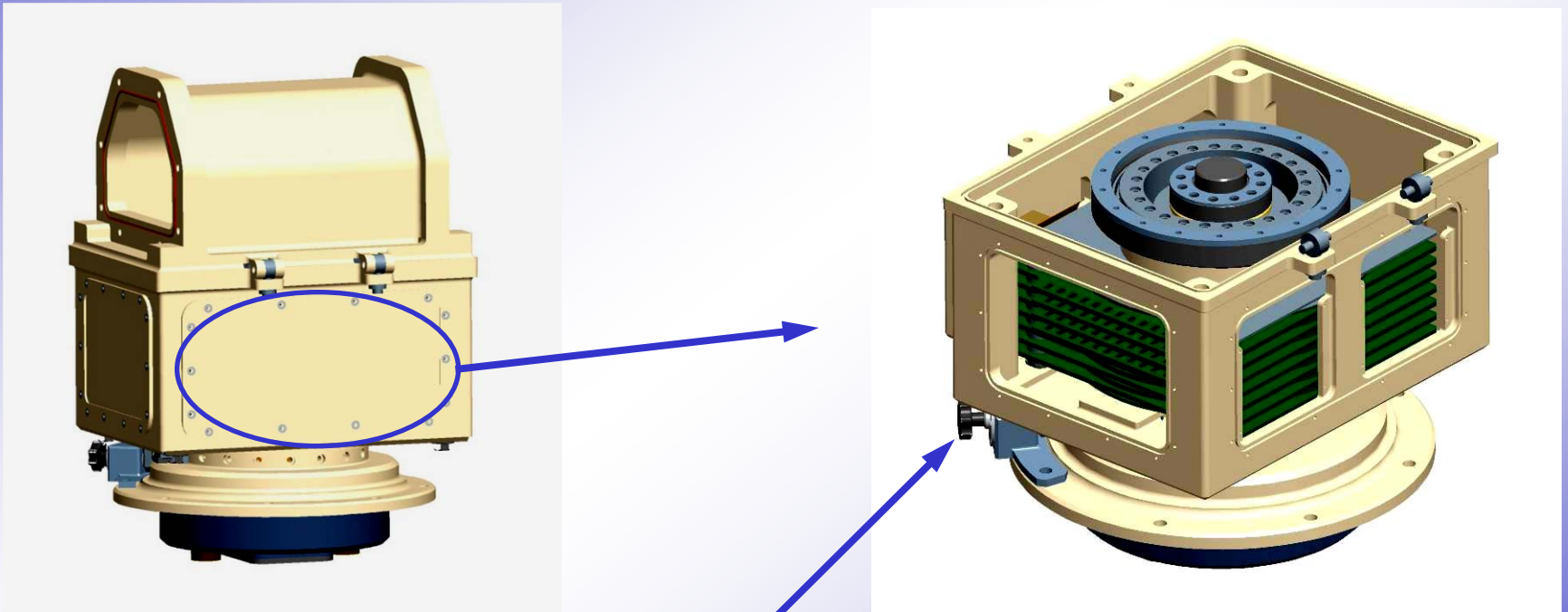


Base Structure Contains:

- Azimuth power drive
- Slip-Ring
- In gimble electronics (Amp Box)

# Modular Advanced Weapon System (MAWS)

## Integral Slip Ring



Scaleable slip-ring design allows the addition of circuit paths as needed for payload requirements

# Modular Advanced Weapon System (MAWS)

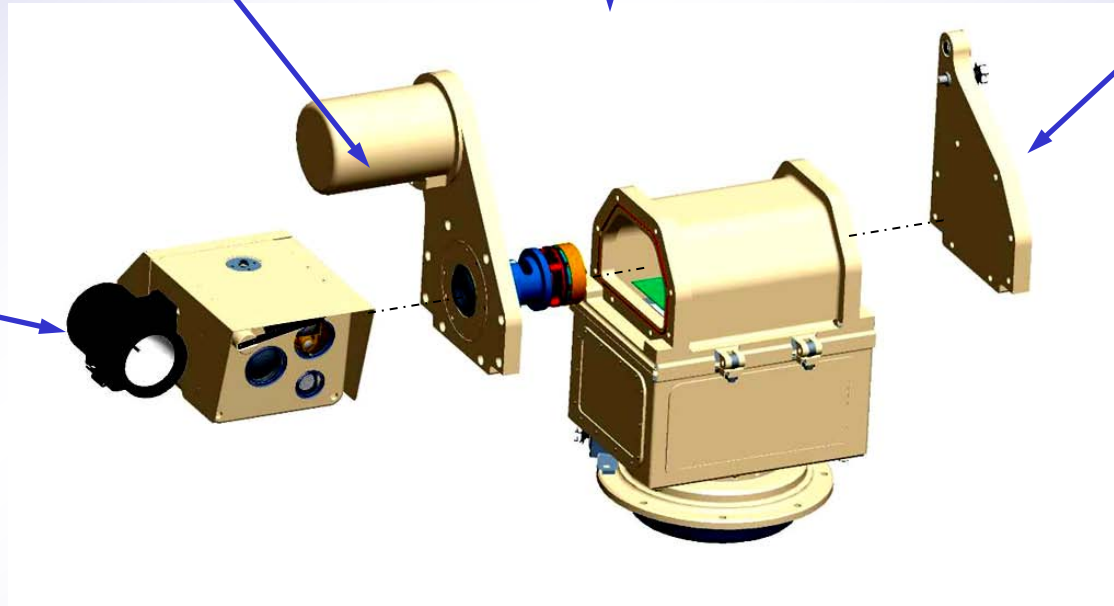
## Three Axis Configuration

Three Axis Drive Trunnion Assy  
contains independent sight  
and payload drives



Support Trunnion

Sight  
Assy

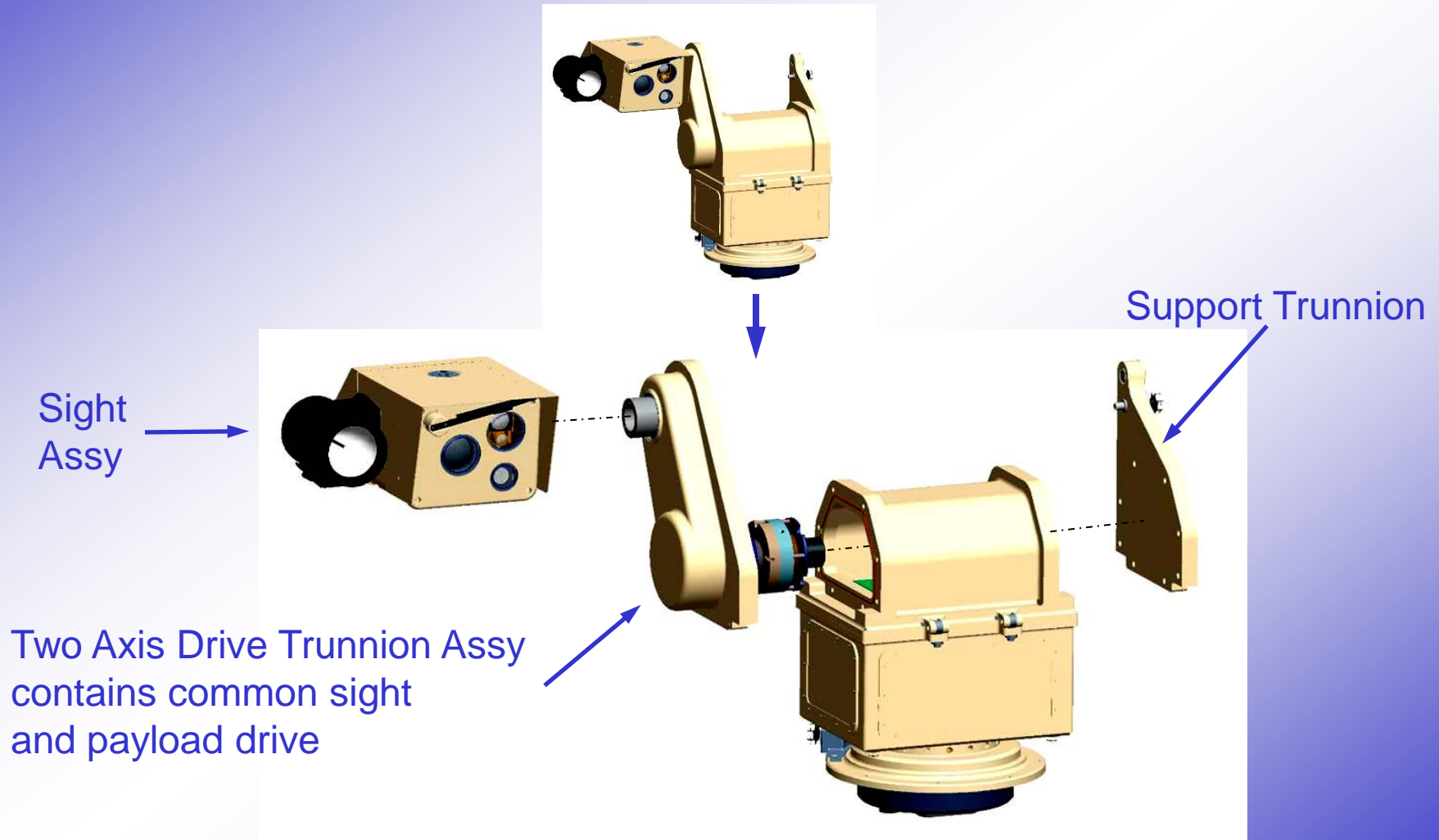


Common Mechanical and Plug and Play Electronic Interfaces



# Modular Advanced Weapon System (MAWS)

## Two Axis Configuration

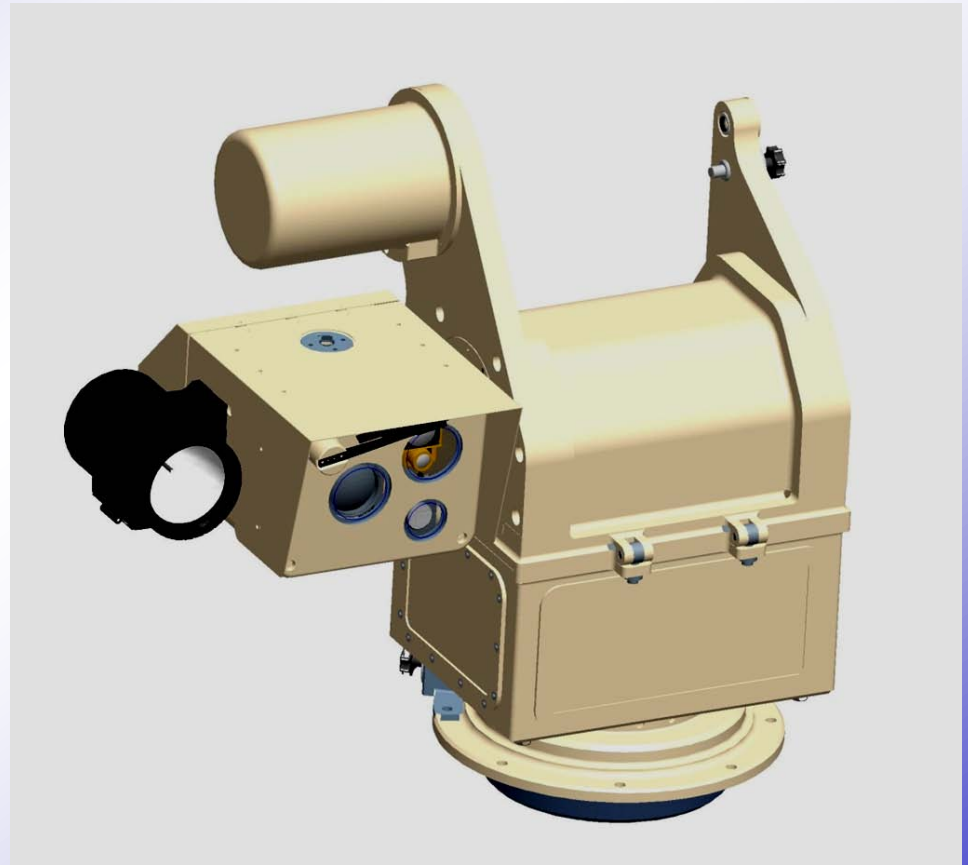


Common Mechanical and Plug and Play Electronic Interfaces

# Modular Advanced Weapon System (MAWS)

## Sight Interface

- Sight interface has common mechanical and electrical interfaces for plug and play compatibility between sight packages



# Modular Advanced Weapon System (MAWS)

## Principle Concept

- **Modular Advanced Weapon System**
  - **Modular/Scaleable design is adaptable to many payloads and various performance requirements**
  - **Lightweight**
    - **Baseline construction – Aluminum weldments, castings when possible**
    - **Objective – Composite manufacture when possible**
      - **Composite Study Funded**
  - **Cost**
    - **Modular design allows configuration options that satisfy cost/performance requirements**

# Modular Configuration Options

M2HB .50 cal



M240 7.62



MK 19 40mm



Common Base Assy



M230LF 30mm



M134 7.762mm Gatling Gun



Long Range Acoustical Device  
LRAD 500 and Optics Package



LW25 25mm with LRAD 500



Surveillance Payload  
w/ Alternative Spotlight

# Patrol Coastal At-Sea Demonstration

- **Funded by IWS3C**
- **Supported by PCRON**
- **Objectives**
  - **Safely demonstrate the advantages the MK 51 Weapon System**
    - **Optics**
    - **Remote operation**
    - **Stabilization**
    - **Location improvement**
    - **Ability for ship's crew to remove and stow the cannon**
- **Schedule**
  - **TEMPALT SIDs finalized by 15 May**
  - **Install TEMPALT 01-24 June 09**
  - **Install MK 51 31 Aug – 4 Sept 09**
  - **Demonstrated Sept 09**



# **Demonstrated Weapon Choice**

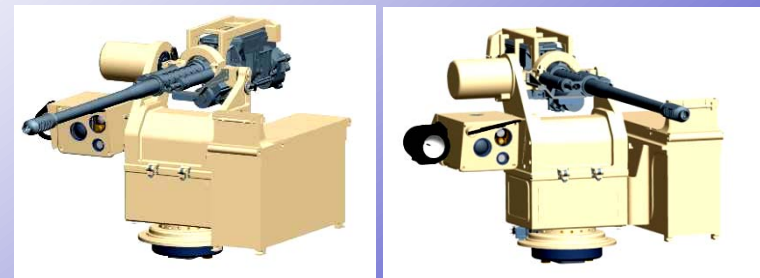
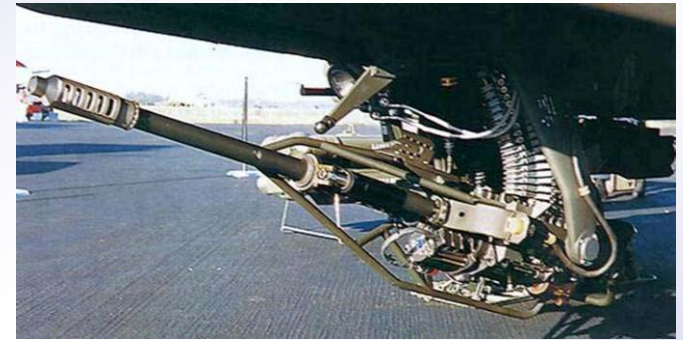
# ATK M230LF

- **Details:**

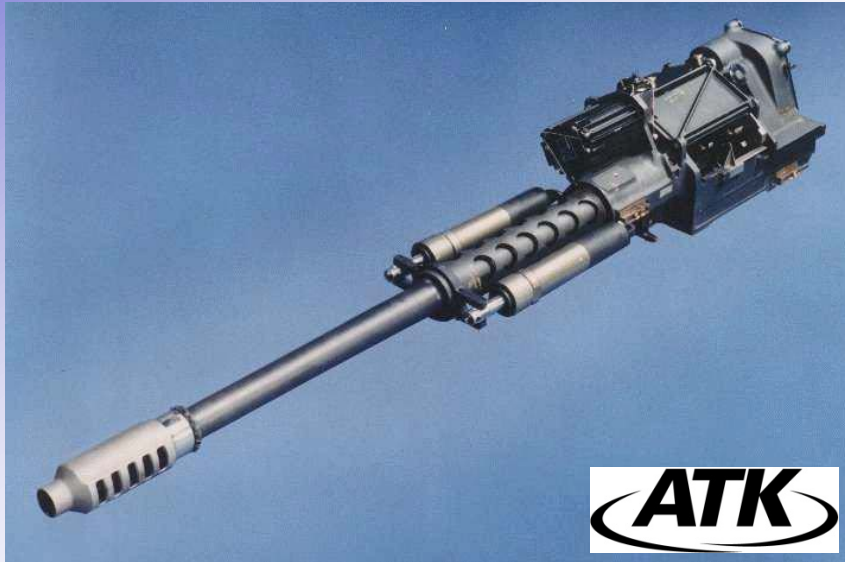
- 30mm Chain Gun
- Effective Range - ~2,500 Yards
- Lightweight - Approx. 160 lbs
- Fires electric primed ammunition
- M230 linkless Chain Gun used on Army AH-64 Apache Helicopter and MH-60 Aircraft
- M230LF variant being applied to this program is derived from the M230 with the follow modifications:
  - Modified feeder for linked ammunition
  - Added recoil attenuation buffers
  - Percussion firing mechanism – upgrade kit

- **Known Issues:**

- M230LF Not Type Classified
- Requires some degree of design finalization by ATK
- Level of Marinization unknown

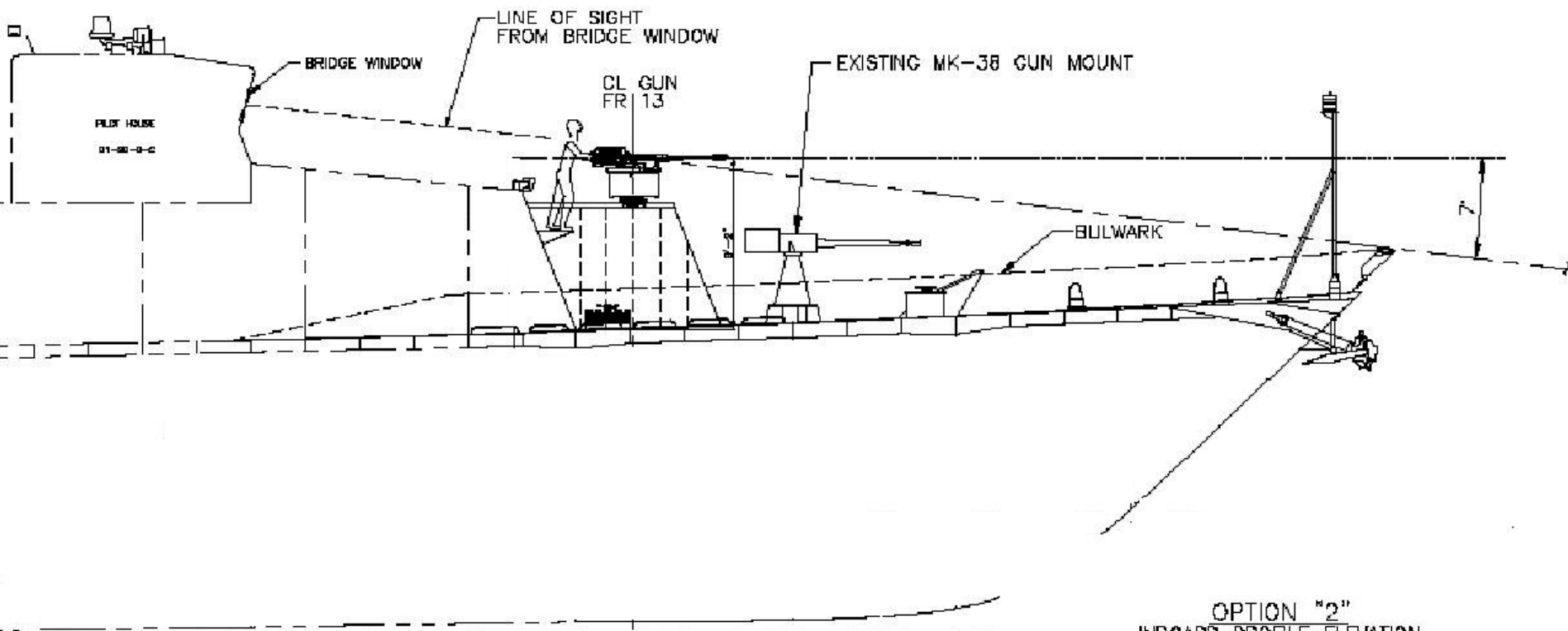


# MK 51 Weapon System w/M230 Integrated



MK 51/MAWS

**PC Location Option  
for Sept 09 Demonstration**



OPTION "2"  
 INBOARD PROFILE ELEVATION  
 (N) GUN INSTALLED FWD ELEX RM @ FR 13  
 W/ NEW PLATE/DK HSE  
 4" HIGH GUN FOUNDATION



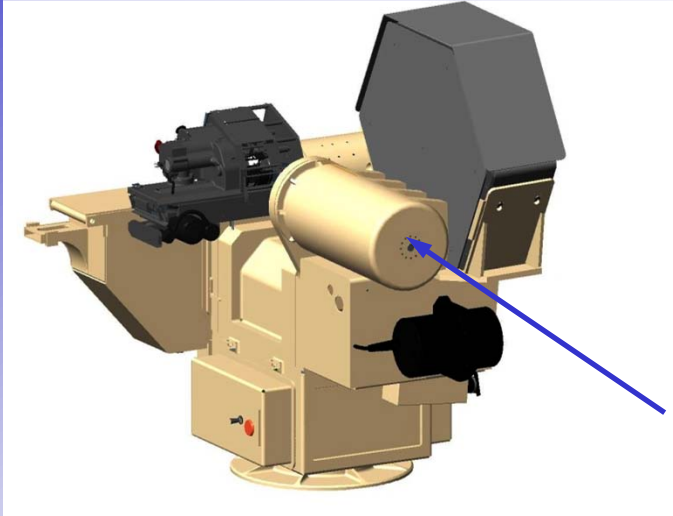
# USS HURRICANE PC 3 Installation



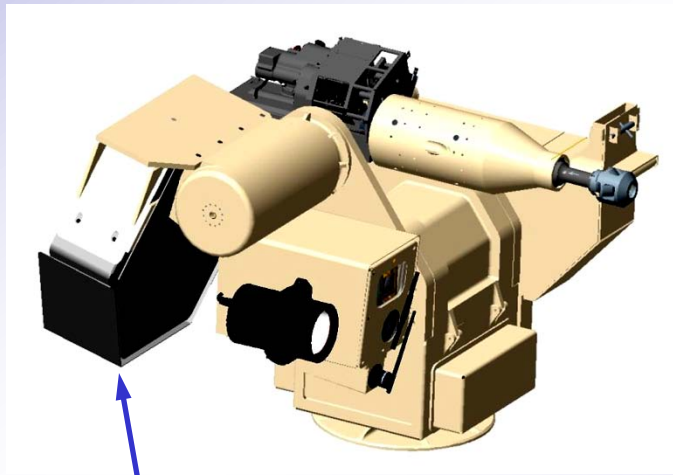
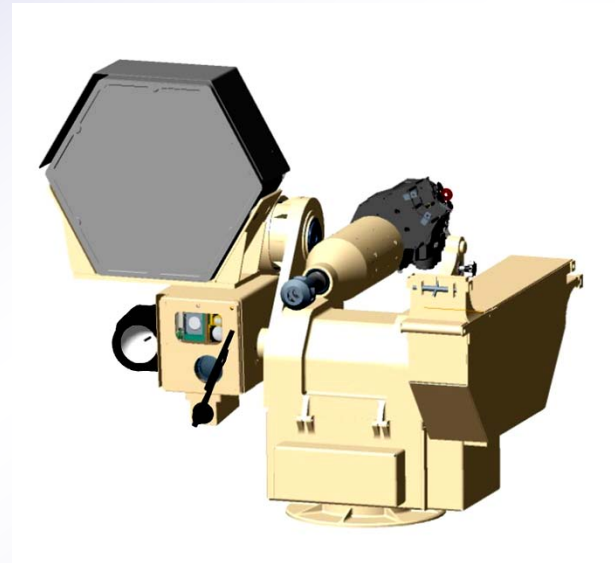
# **Additional Features Under Consideration**

# Modular Advanced Weapon System (MAWS)

## Auxiliary Drive



Auxiliary  
Elevation  
Drive



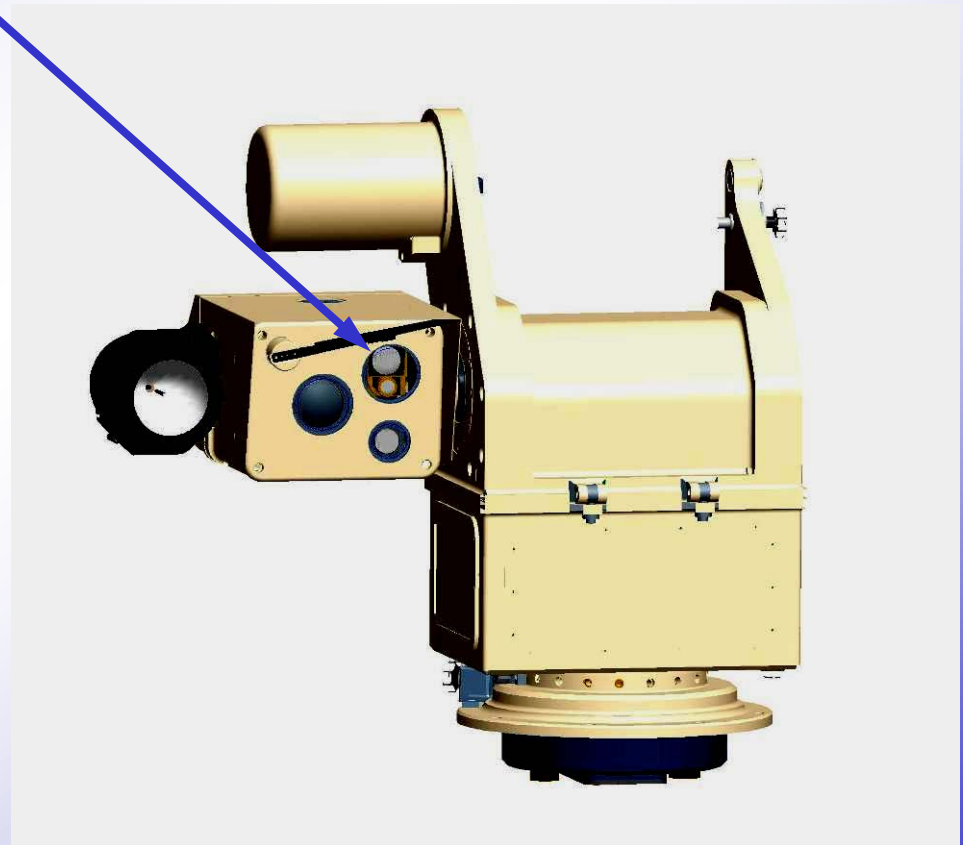
Stowed Position

Proposed configuration for NEO Spiral 2  
to support escalation of force initiative

# Modular Advanced Weapon System (MAWS)

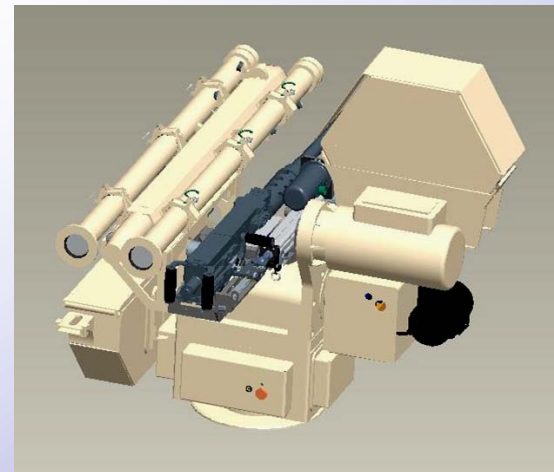
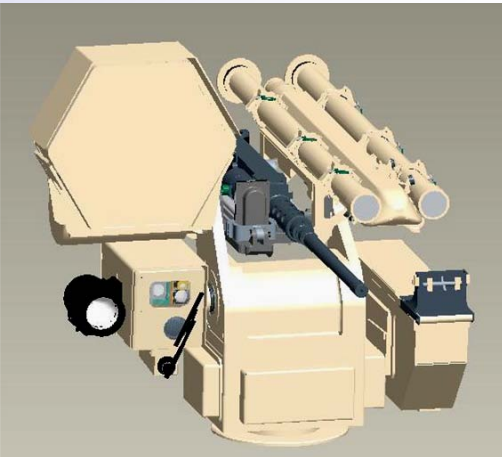
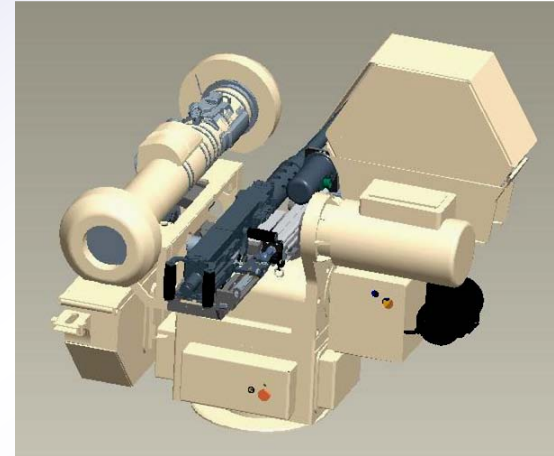
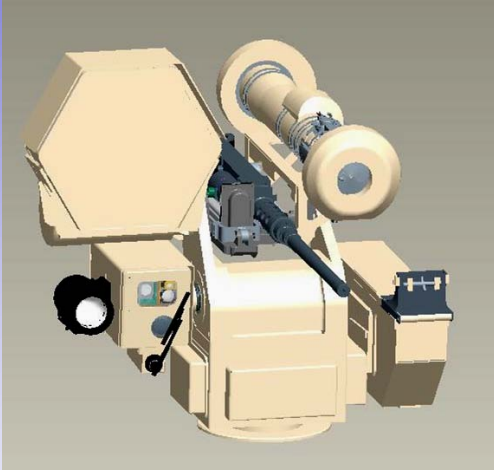
## Laser Designator/Sight Improvements

- Integrate a combination ELRF and designator into the current sight package
- Add an azimuth drive system for the sight to improve the stabilization of the sight
  - Verify accurate designation
  - Allow active target leading



# Modular Advanced Weapon System (MAWS)

## Missile Options







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DSN:757-7412

Comm: 301-757-7412

# Requirement

- **\$3.76M FY10 RDT&E for "M230 30mm Chain Gun Automatic Cannon" on Navy MH-60S aircraft**
- **The 30mm M230 weapon is ultimately desired by fleet, but ammo and gun breech are not HERO-compatible and must be re-designed and qualified for shipboard use.**
- **PMA-242/299 will execute plan to qualify an M230 gun breech and 30 mm ammunition that meets shipboard HERO requirements.**

# Program Plan

- **2<sup>nd</sup> Qtr FY10 Received 18,000 rds of XM950 percussion primed LW30MM TP ammunition from the Army.**
- **4<sup>th</sup> Qtr FY10 Procure 2 percussion fired M230 Chain guns**
- **2<sup>nd</sup> Qtr FY11 Tentative gun qualification ground testing to begin**
- **4<sup>th</sup> Qtr FY11 Finalize TDP and present solution to PMA-299 for A/C integration**

# M230 Qualification



- **Gun System qualification test data to support WSESRB Qualification**
- **Ammunition Feed system testing**
- **Intent to pursue percussion primed ammunition qualification**

Questions?