



# Assured Access:

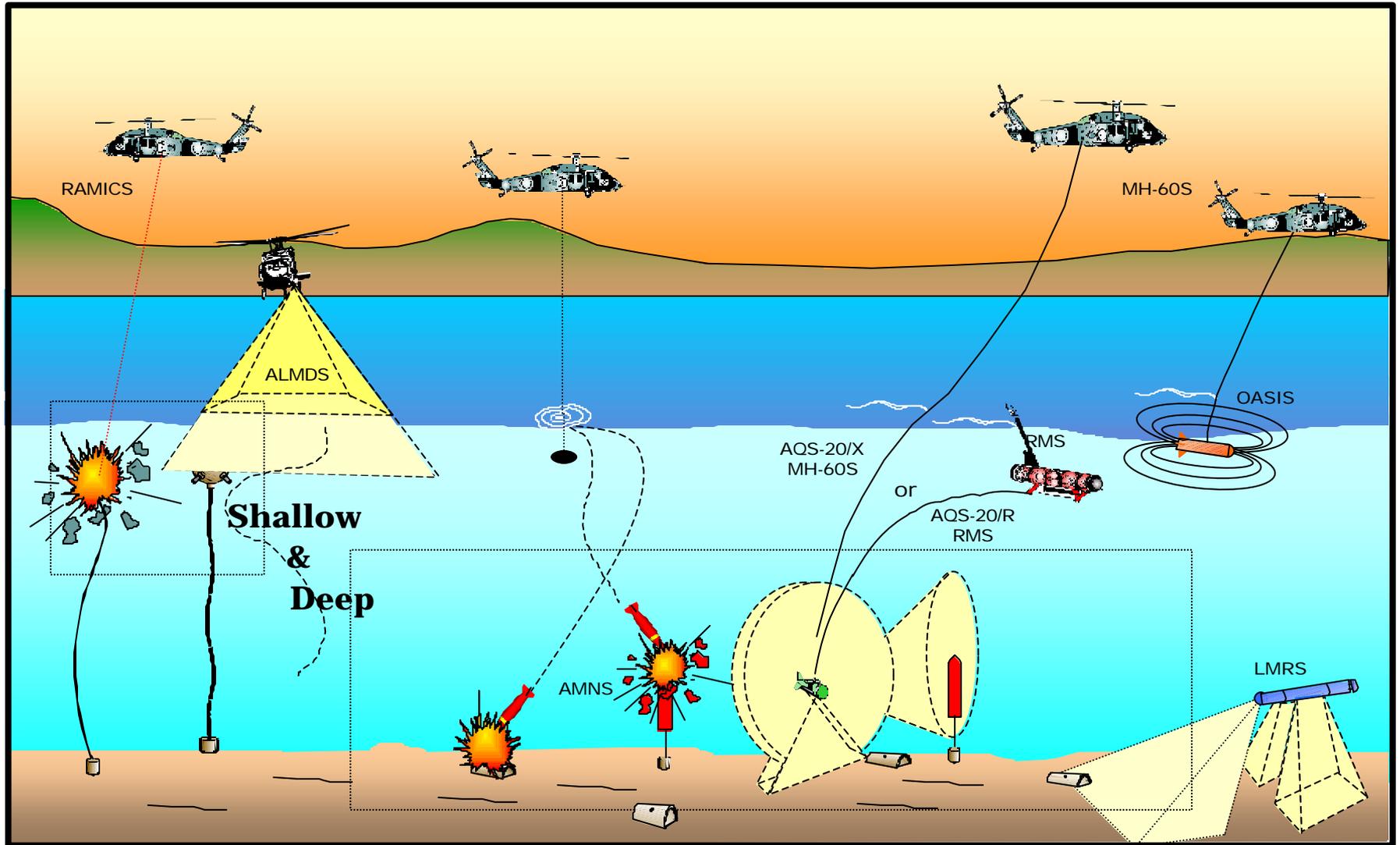
## Expeditionary Maneuver Warfare

National Defense Industrial Association  
Expeditionary Warfare Conference

31 Oct, 2001

CAPT Tom Davilli, Mine Warfare - OPNAV: N752

# The Next Generation of MCM Systems



# Next Generation Systems

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- Completely new / improved capabilities
  - AQS-20X/R: major helo hunting improvements & ID
  - LMRS: SSN's long duration covert unmanned ISR
  - ALMDS: helo-based rapid moored detect/classification
  - AMNS: helo-based deep selective neutralization
  - RMS: long duration low observable unmanned ISR
  - RAMICS: helo-based rapid/selective neutralization
  - OASIS: helo-based self-contained influence sweep

# Next Generation Systems

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- Get the men out of the minefield
- Accelerate timelines
- Compatibility within the CVBG
- Flexibility to move into the ARG
- Easily imported into Dedicated MCM force
  
- A step toward the “Generation after Next”

# What Organic MCM Will Provide

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- See & Avoid Hunting, embedded MCM ISR
- Punch Through Clearance
- Risk Reduction - right NOW, 24/7/180
- Full range of MCM capabilities
- Compatible within the CVBG/ARG
- Flexibility to operate throughout the BG

Battle Space Awareness + Neutralization Tools

# What Organic MCM Will Not Provide

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- A “Silver Bullet” solution
- A substitute for Dedicated MCM forces
- An “In Stride” MCM capability

# Fielding Plan, Organic Deliveries

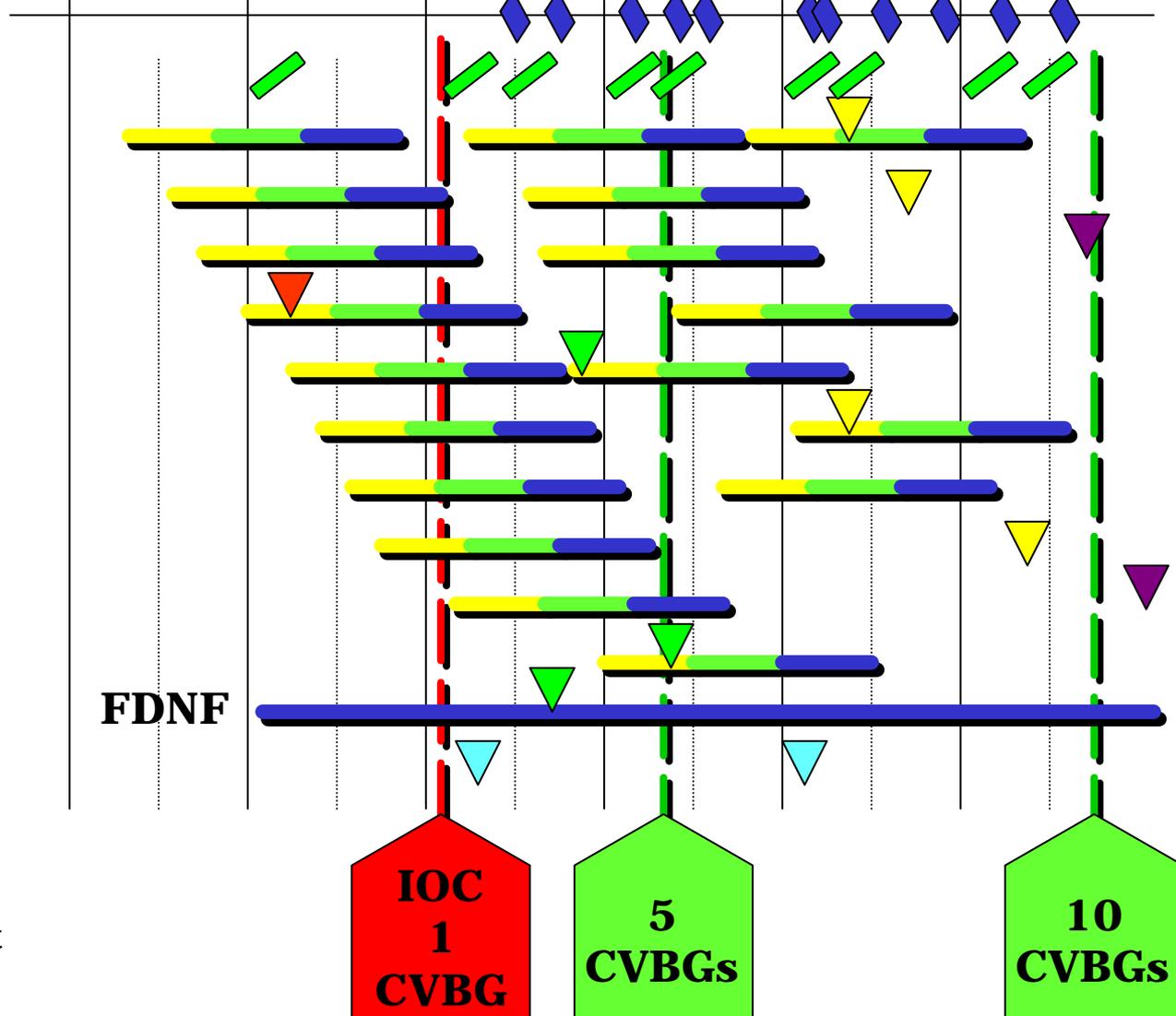
## CVBGs (10 CVWs)

### IDTC



- = CVW OAMCM
- = FRS OAMCM
- = BGs # 2, 3, & 4
- = 2nd FRS OAMCM?
- = BGs # 5, 6, 7, & 8
- = BGs # 9 & 10
- = DDG w/ RMS
- = LMRS Detachment

FY04   FY05   FY06   FY07   FY08   FY09



# How Organic MCM Fits In

Command, Control, Communications, Computers

Environmental Awareness

Intelligence

Surveillance

Interdiction

Self-Protection

Exploration / Hunting

Avoidance/Navigation

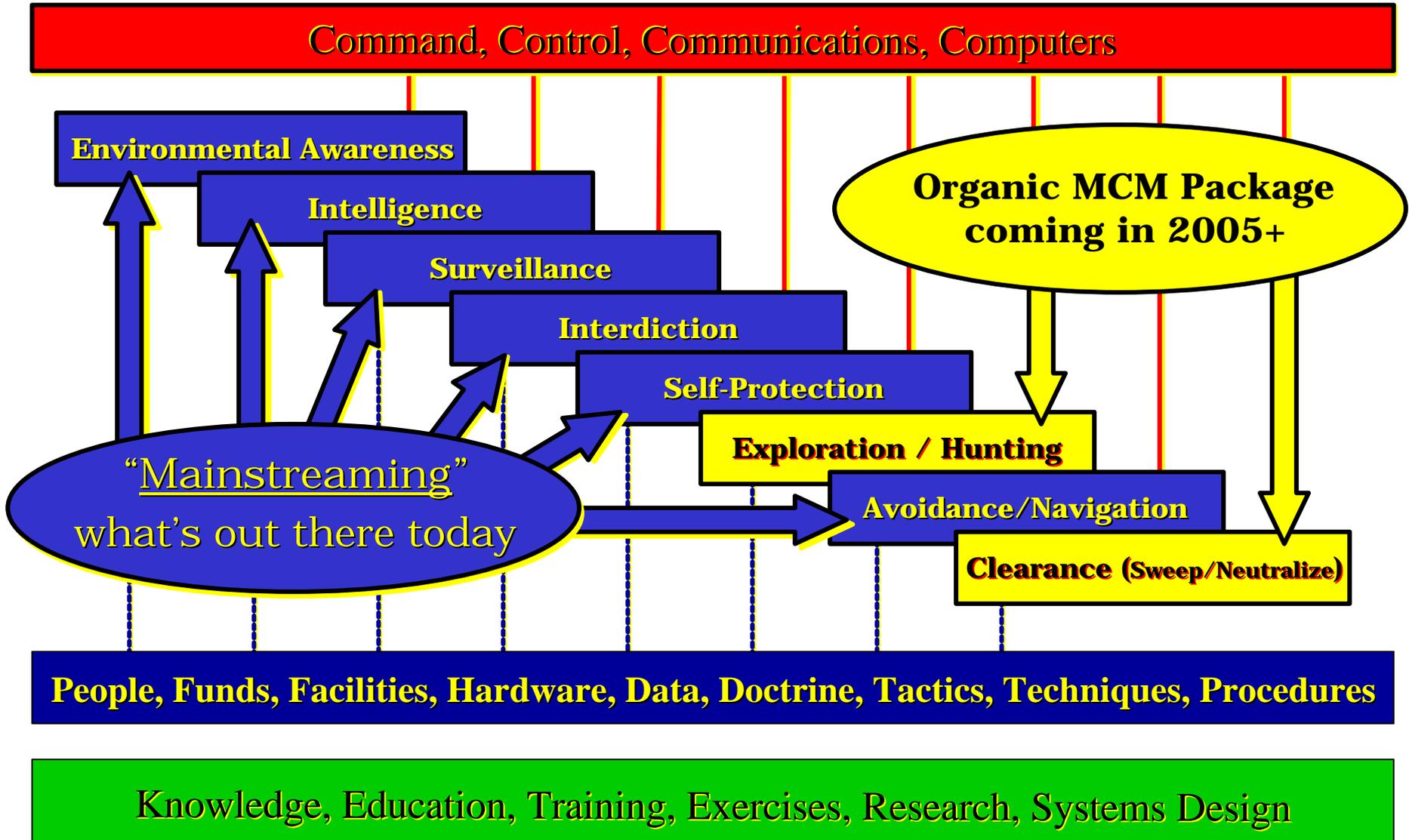
Clearance (Sweep/Neutralize)

Organic MCM Package  
coming in 2005+

People, Funds, Facilities, Hardware, Data, Doctrine, Tactics, Techniques, Procedures

Knowledge, Education, Training, Exercises, Research, Systems Design

# Mainstreaming: “The Rest of the Story”



# Mainstreaming & Implementing OMCM

- CFFC (CLF) responsible & lead for:
  - Mainstreaming MIW as a core fleet competency
  - Implementing Navy's Organic MCM program

# Recent Accomplishments

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- Fleet Mine Warfare CONOPs signed
- C2F & C3F JTFEX Mine Warfare improved
- Dedicated MCM deployments ICW FltEx's
- Fleet MCM OPTASK being re-written to become standing MIW OPTASK
- BG beginning to pick up MIW early in IDTC
- CFFC/CLF Wall to Wall MIW review

# Thoughts on the Future

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- Information Dominance
- Precision maneuver
- Unmanned operations
- Stealth

# Future Issues

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- Information Dominance - ISR & C3
  - Developing required HUMINT
  - Threat acquisition & full tactical exploitations
  - Environmental awareness/data bases
  - Strategic, Theater & Force covert ISR access
  - Organic/dedicated MCM ISR systems
  - Universal susceptibility/vulnerability awareness
  - Fused real time common picture
  - Tactical Decision Aids
  - Situational awareness tools

# Future Issues

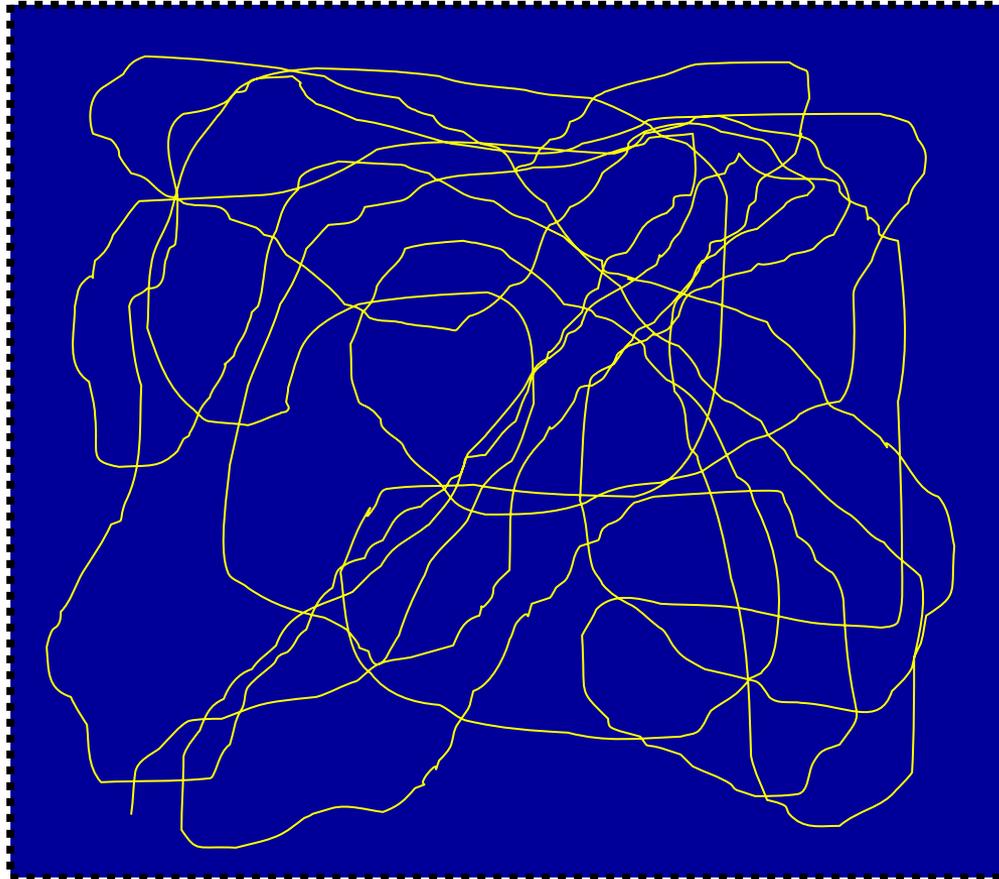
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- Precision Maneuver
  - core competency: makes knowledge actionable
  - reduces the need for neutralization
  - significantly lowers risk in any situation

Ships, craft, & vehicles must be capable of receiving or prescribing complex tracks and precisely navigating these tracks, repeatedly.

# Precision Nav & Risk Reduction

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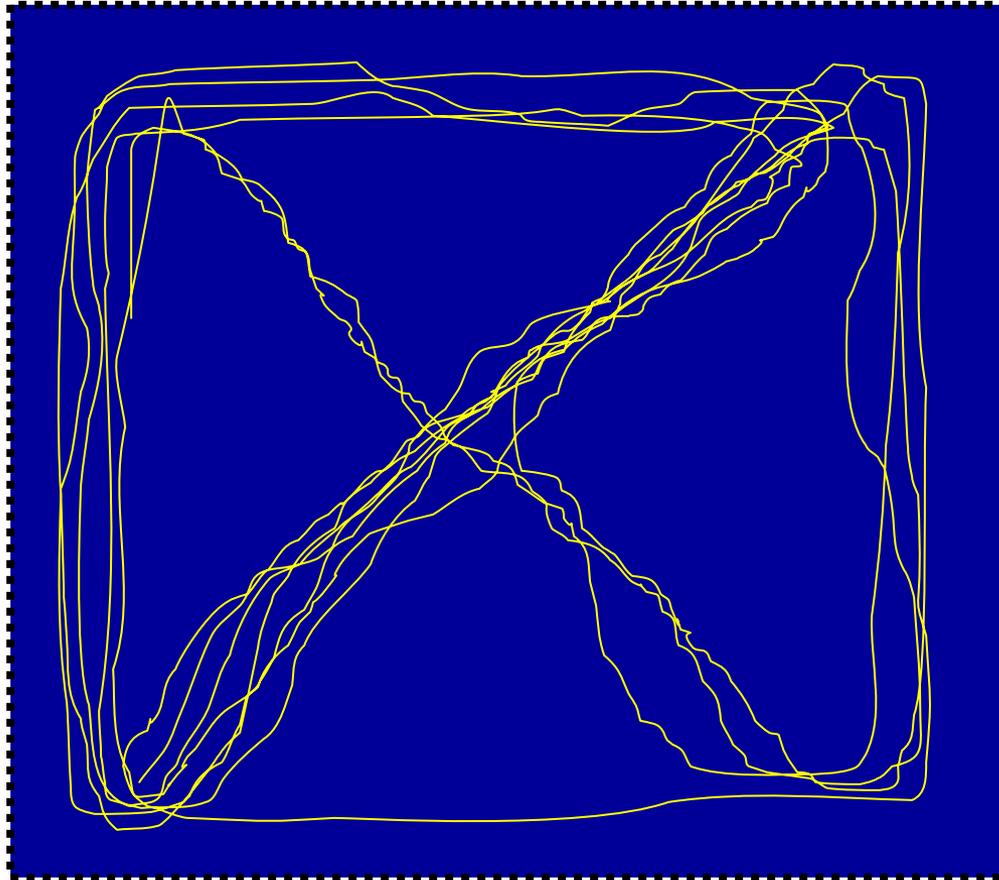
CVOA

30NM X 30NM

Random  
Navigation

# Precision Nav & Risk Reduction

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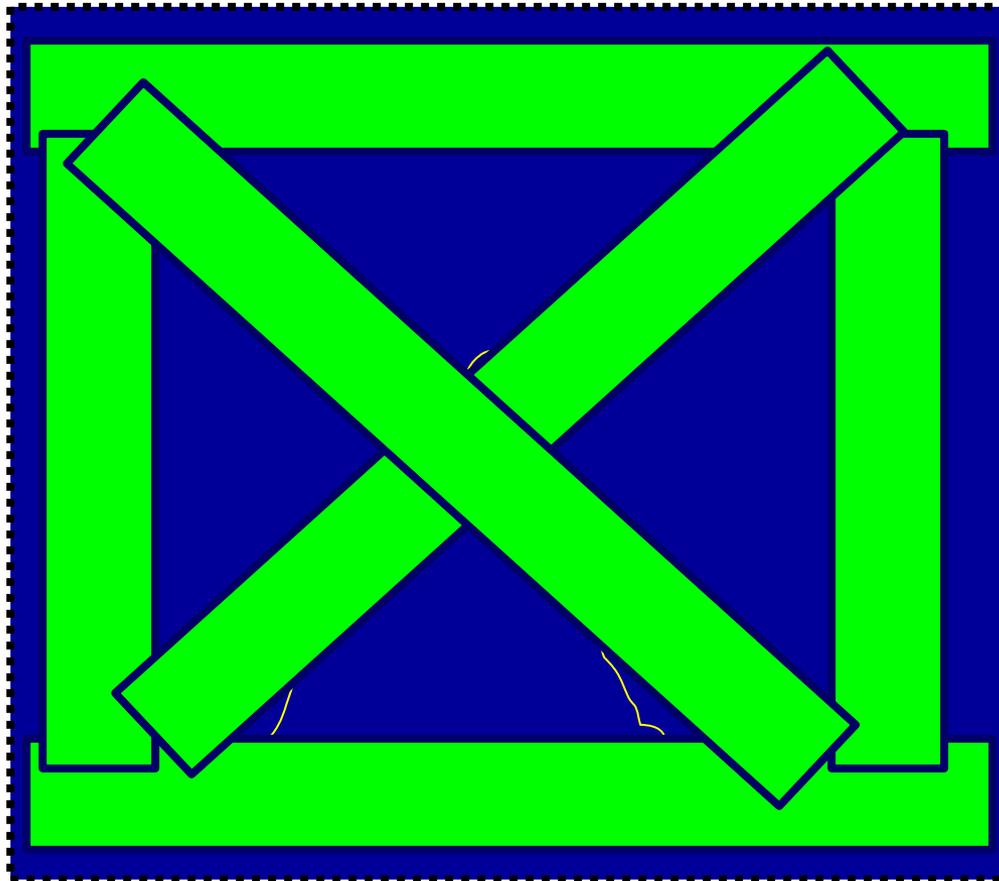
CVOA

30NM X 30NM

Purposeful  
Navigation  
to  
reduce risk

# Precision Nav & Risk Reduction

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CVOA

30NM X 30NM

Purposeful  
Navigation  
also  
reduces  
MCM effort

# Future Issues

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- Unmanned Operations
  - End “One platform/One Sensor/One Kill” model
    - Operational Timeline & Economic drivers
  - New model: One platform/many sensors/  
many neutralizers/many sweeps, at once
    - MCM/MHC with multiple UUVs as a first step?
    - MCS (X) with 100 UUVs, 10 USVs, & 10 UAVs?
    - Helo deployment/recovery?
    - Multi-mission re-configurable (FP/ASW/ASU/etc?)
  - Export to other platforms/hosts
    - CVBG/ARG/USCG/MSB/USN MMA/USAF
    - Coalition partners/platforms

# Current Comparative Search Rates

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Small UUV, Single Vehicle

$A \times 100$

Mk-7, Single Dolphin

$A \times 75$

Mk-8, Single Dolphin

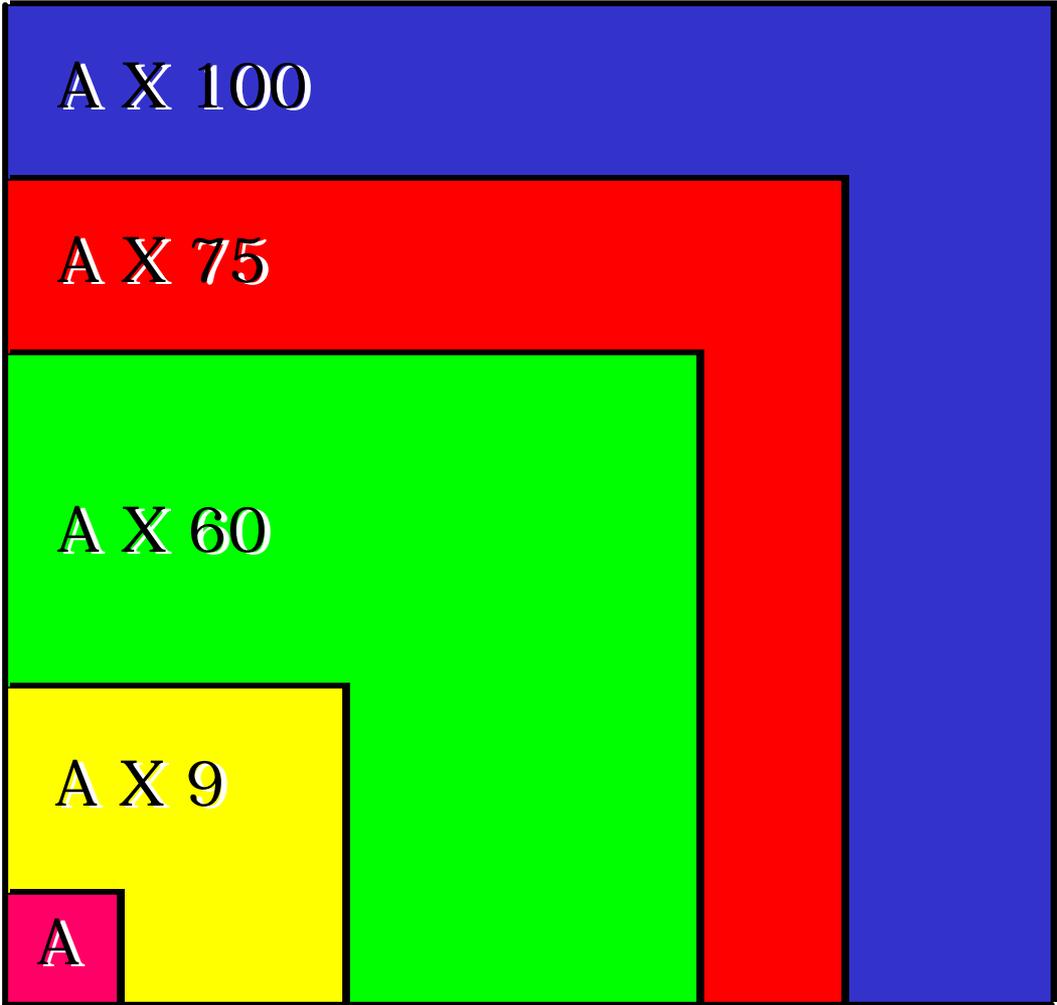
$A \times 60$

VSW Det, 6 Dive Pairs

$A \times 9$

EOD MCM, Det 2 Dive Pairs

$A$



System	Search Rate
Small UUV, Single Vehicle	$A \times 100$
Mk-7, Single Dolphin	$A \times 75$
Mk-8, Single Dolphin	$A \times 60$
VSW Det, 6 Dive Pairs	$A \times 9$
EOD MCM, Det 2 Dive Pairs	$A$

# SMCM Future Concepts

2000

2010

2020

2030

2040

2050

DTE: 1:1:1  
Serial Ops

DTE: 1:4:4  
Parallel Ops

DTE: 1:100:40  
Parallel & Scalable Ops

MCM Class

MHC Class

Unmanned,  
Autonomous, Remote  
Sensors/Sweeps/Kill

MCS (X-O), Command & Host

MCS (X-C), Command & Host

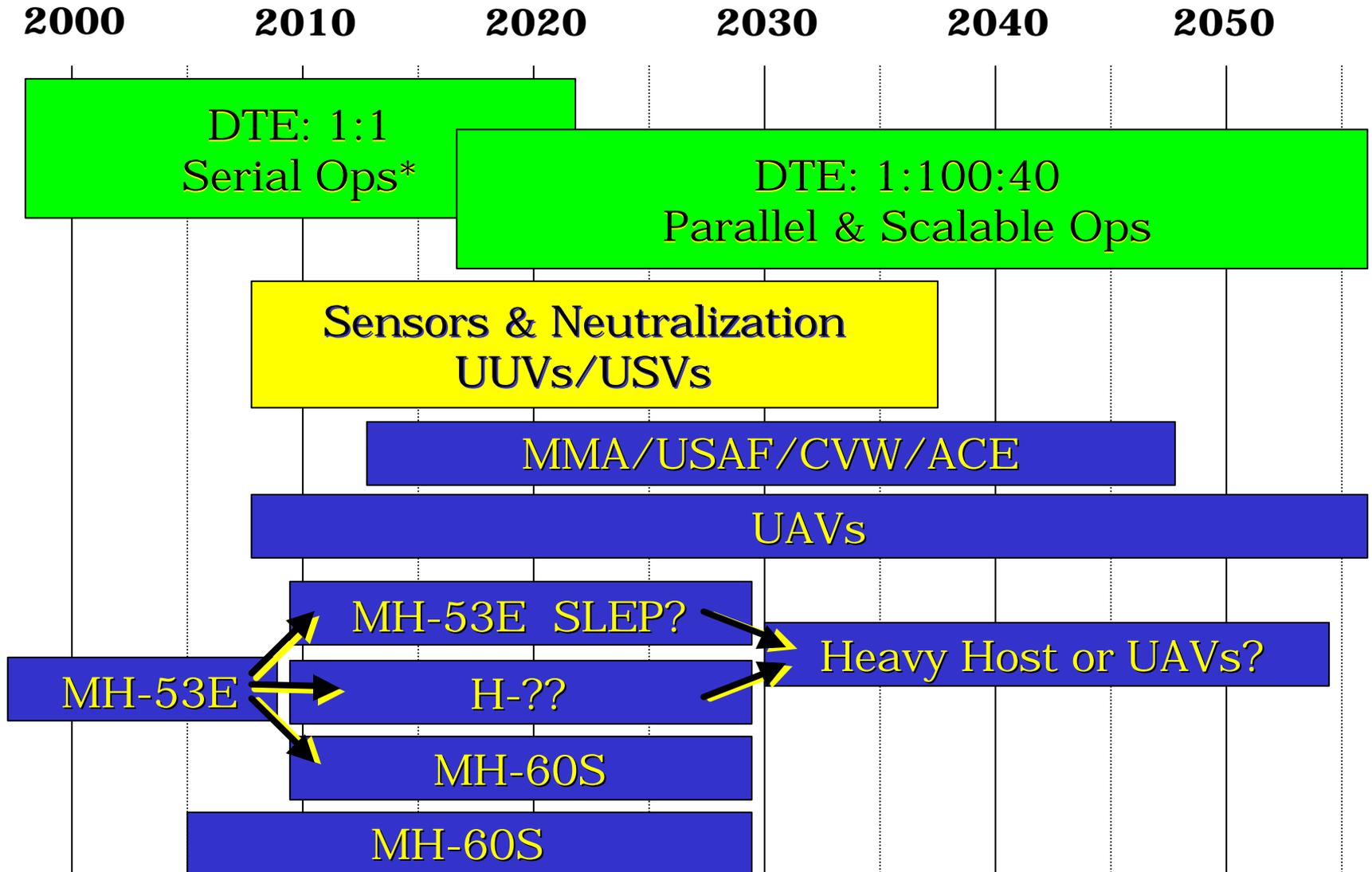
UUV  
Inject

Mid-Life  
Upgrade

Evolution  
Preps

Sensors & Neutralization  
UUV / USV / UAV

# AMCM Future Concepts



# Future Issues

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- Stealth - Signature Control
  - ship, craft, & vehicle design
  - signature management systems
  - monitoring & maintenance programs
  - tactical signature manipulation

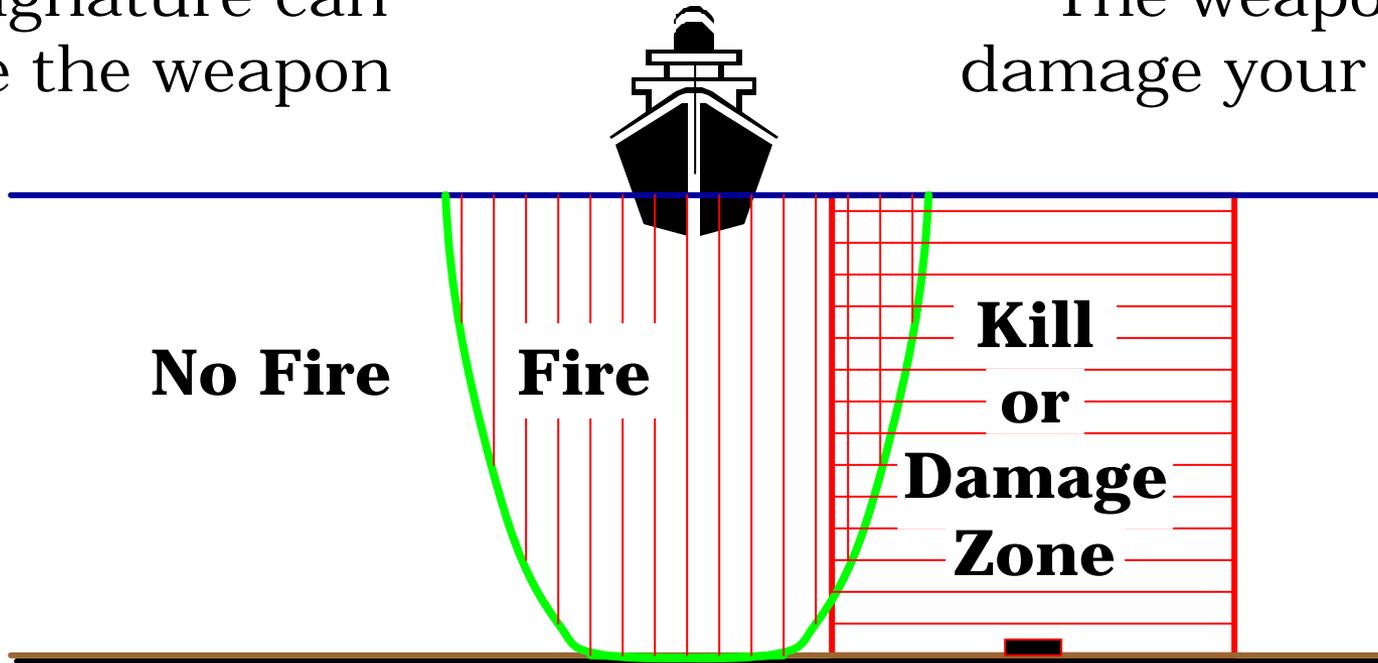
# Signature Awareness / Control

## Susceptibility

Your signature can actuate the weapon

## Vulnerability

The weapon can damage your platform



**No Fire**

**Fire**

**Kill  
or  
Damage  
Zone**

OK

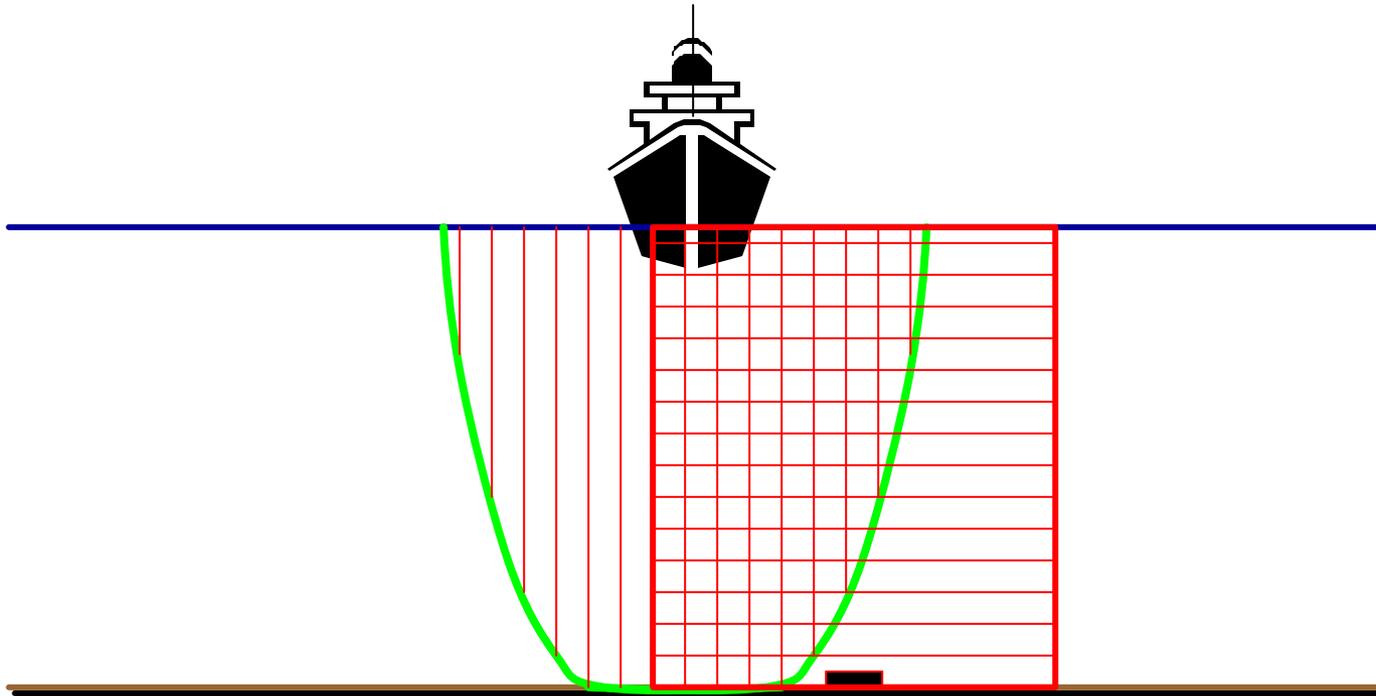
Weapon outside Platform Actuation Range

plus

Platform outside Weapon Danger Area

# Signature Awareness / Control

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Weapon outside Platform Actuation Range

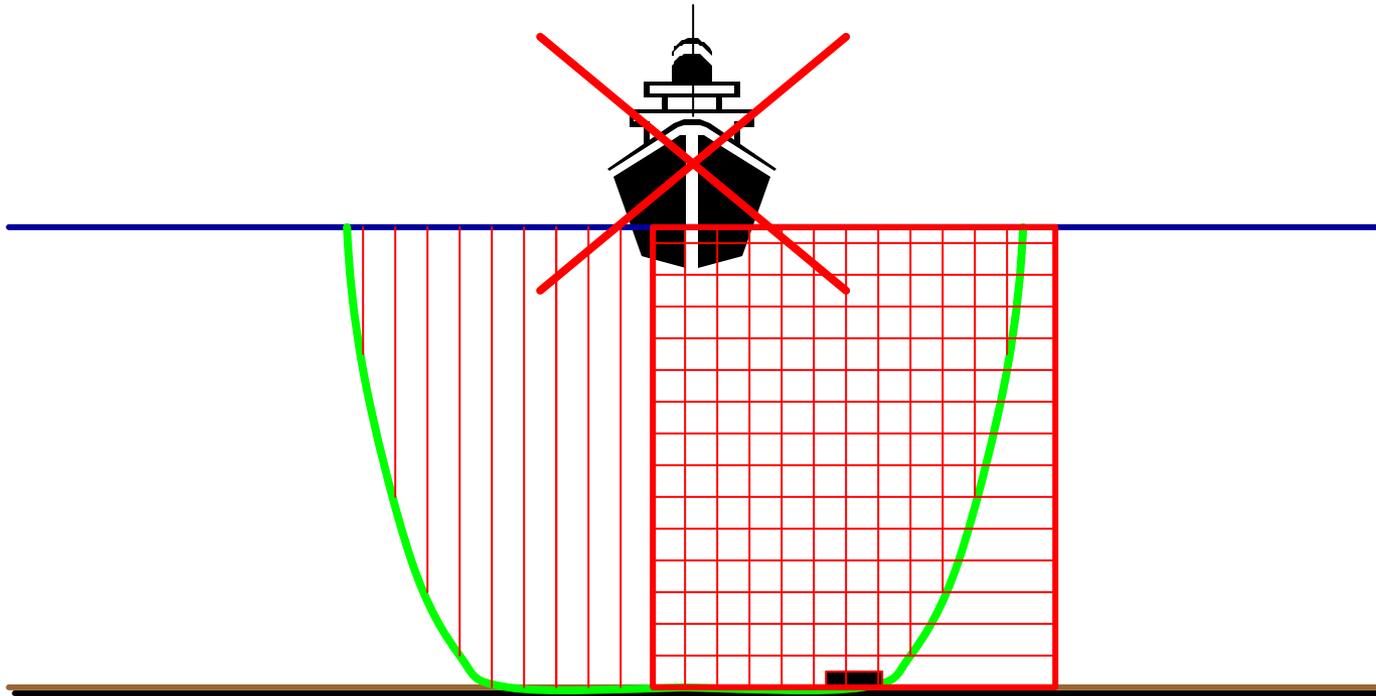
**plus**

Platform inside Weapon Danger Area

OK

# Signature Awareness / Control

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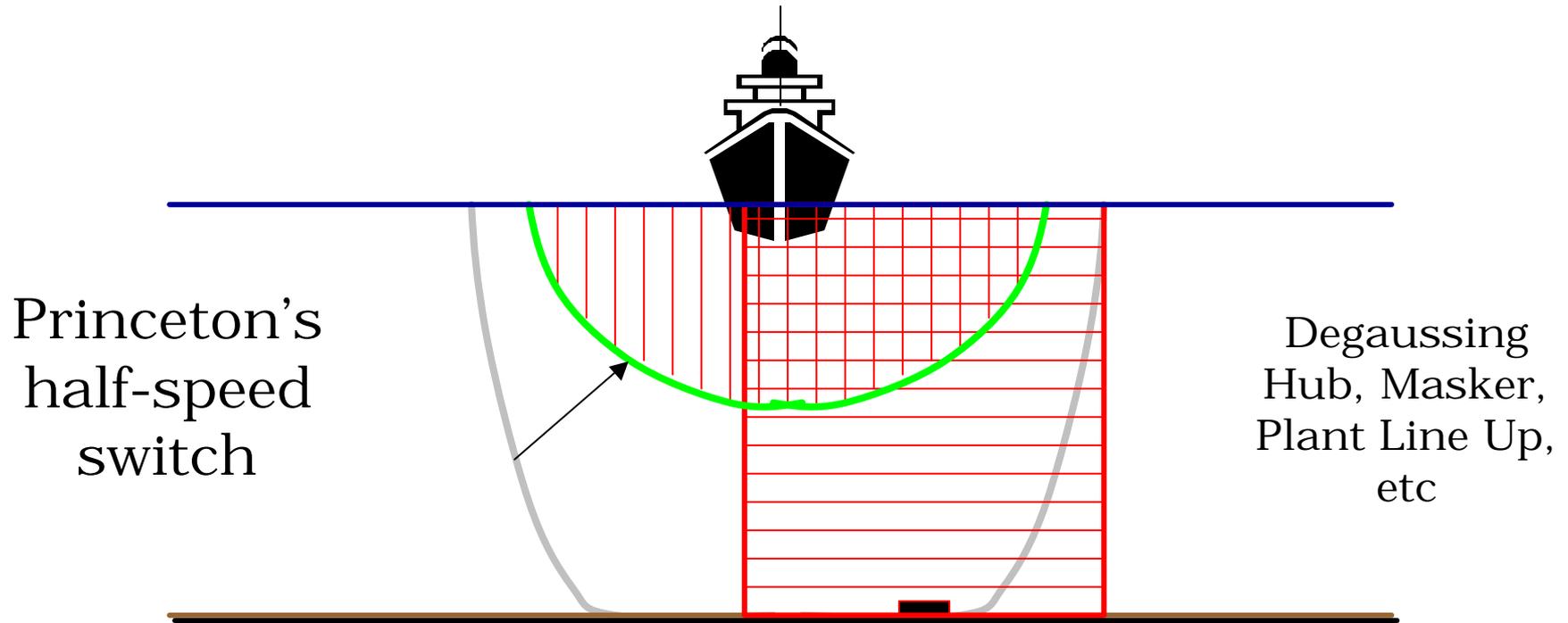


NOT  
OK

Weapon inside Platform Actuation Range  
**plus**  
Platform inside Weapon Danger Area

# Signature Awareness / Control

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Princeton's  
half-speed  
switch

Degaussing  
Hub, Masker,  
Plant Line Up,  
etc

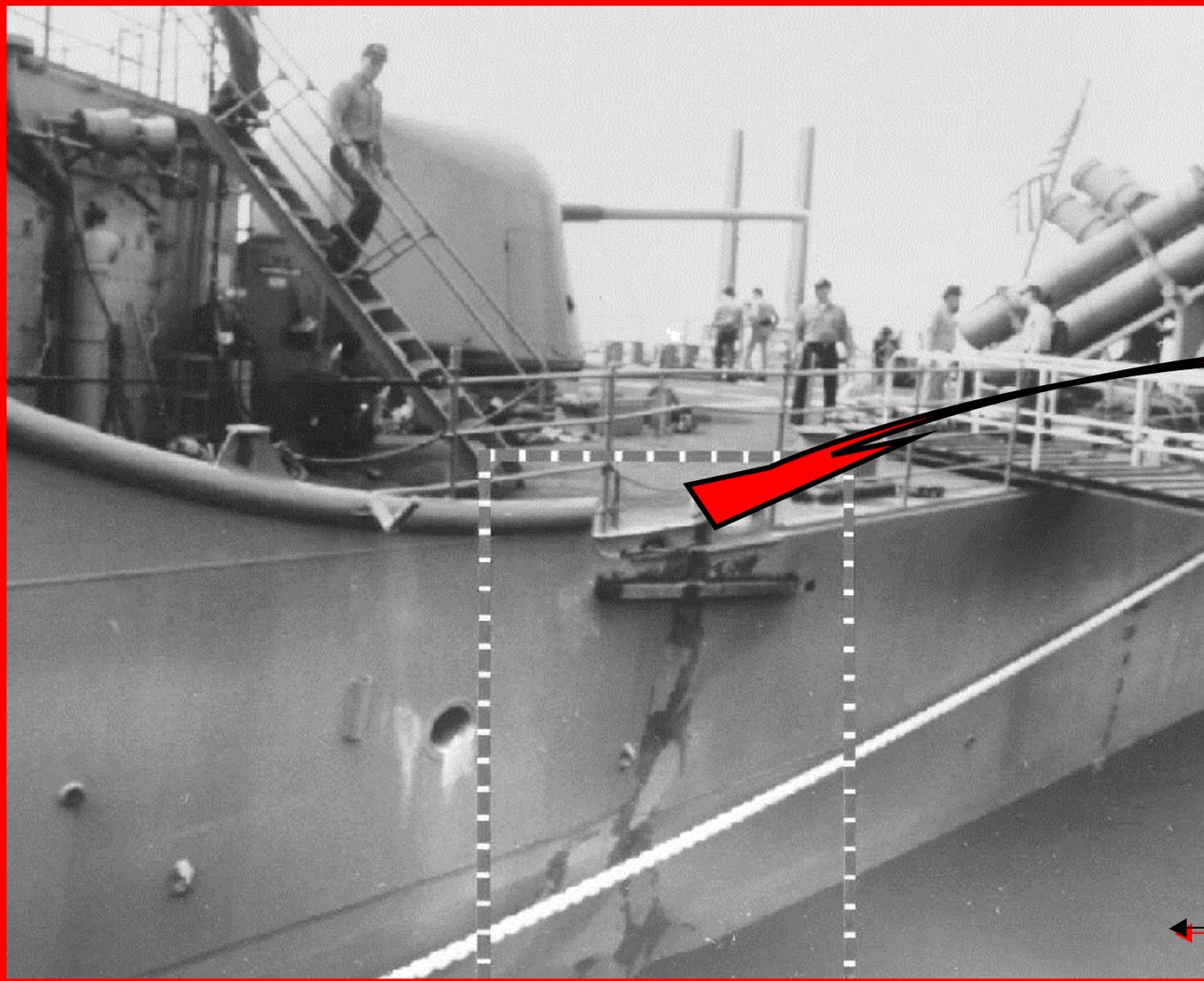
Weapon outside Platform Actuation Range

OK

plus

Platform inside Weapon Danger Area

# Was USS Princeton lucky?



What if that  
Manta  
had been a  
UDM??!!

Manta @

325 lbs  
TNT Eq

vs

UDM @

2150 lbs  
TNT Eq

\* vs



# Future Issues

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- Sweeping will remain a crucial capability, hunting is not possible in many tactically significant areas of the world
  - Unmanned clearance sweeping
  - Unmanned emulation sweeping
- Jamming

# Future Issues: Naval Mines

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- Effective even in their most basic form
  - inexpensive means to shape littoral battlespace
  - force protection
  - force multiplier

(After all, why do you think everyone is buying them!?!)

- Future concepts promise major impact
  - integrated with ISR/targeting sensor grid
  - full remote control
  - efficient area weapons, torpedoes
  - cost effective ASW/ASU access-denial

# Wrap Up

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- OMCM timeline is tight - but holding up
  - RAMICS / OASIS delayed for development
- Mainstreaming MIW: core competency
- The future demands on our team
  - Smarter designs, tactics, operations, strategies
  - Better sensors, weapons, sweeps, synergy
  - Cheaper systems/solutions
  - Faster timelines: parallel ops/multiple assets

# Assured Access

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Expeditionary Warfare Division

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# Back Ups

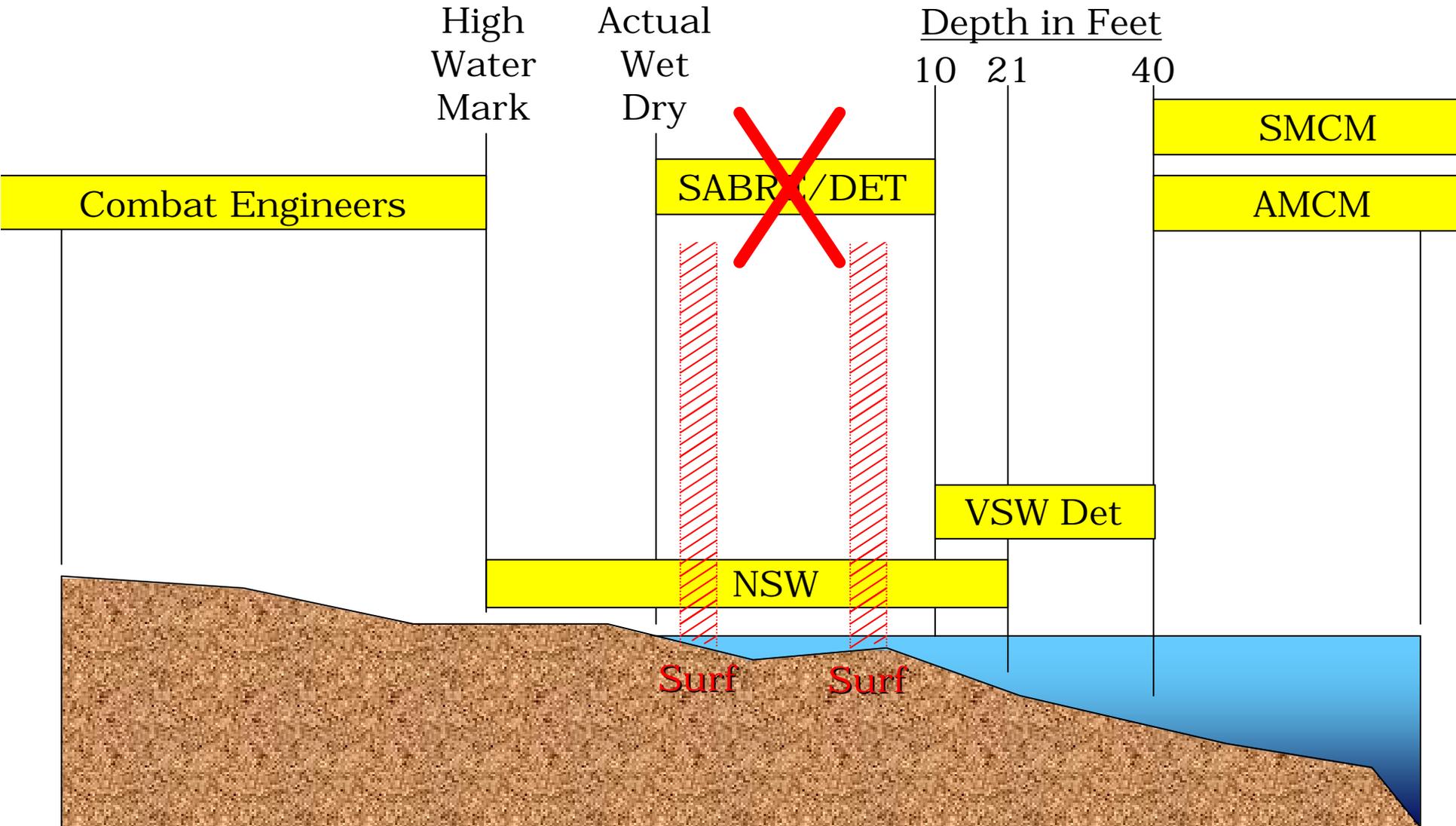
# Breaching Issues

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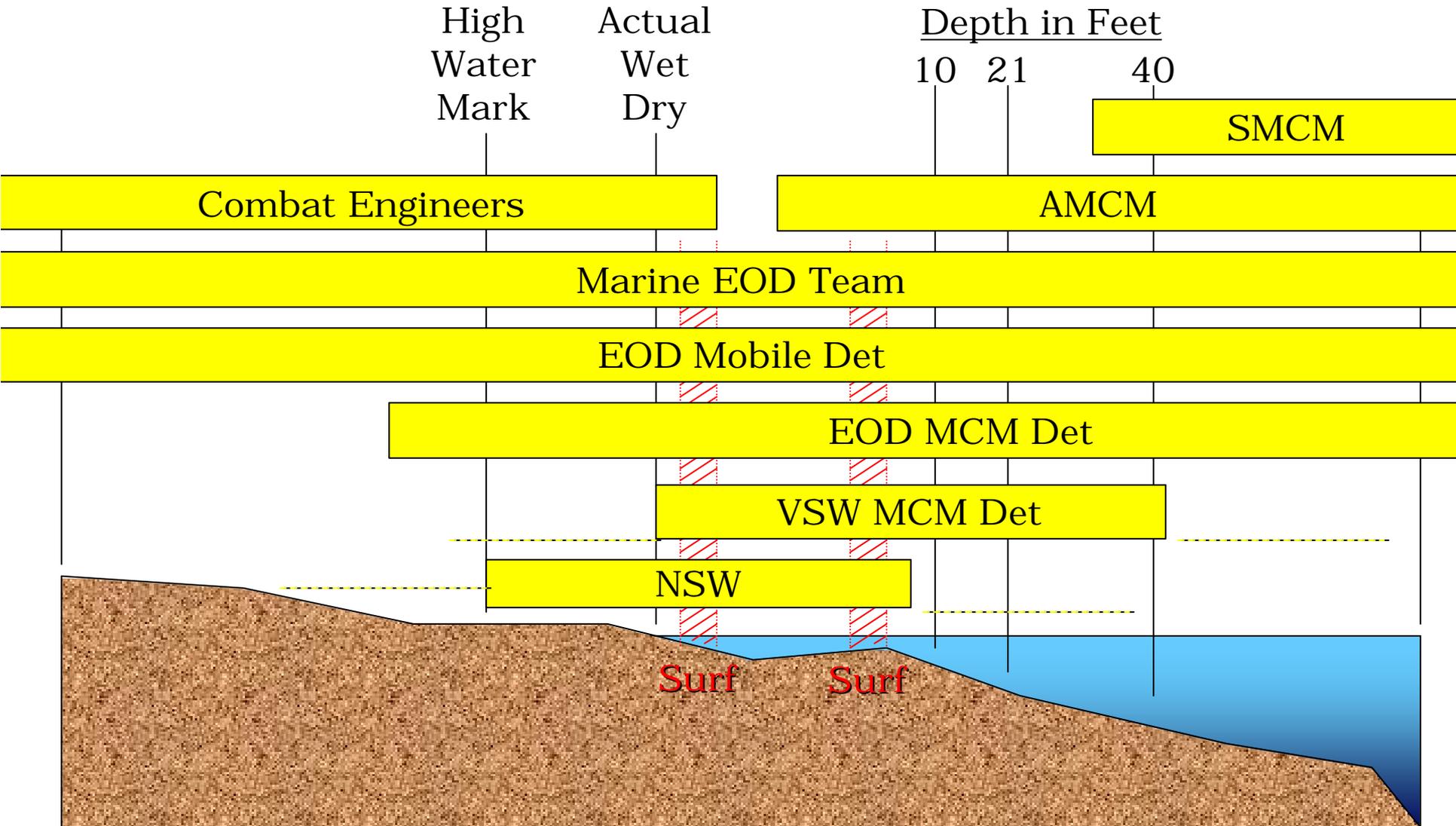
- Lane width & quantity
    - Fleet requirement not established & verified
    - Solution sets highly dependent on geometry & ConOps
  - Family of systems - missing parts?
    - Hydrographic reconnaissance
    - Surf Action Zone surveillance/modeling/visualization
    - Craft & vehicle navigation
    - Area, track, & object marking
- 
- Obstacle & mine detection
  - Obstacle neutralization
  - Mine neutralization



# Breaching Capabilities: Doctrine



# Breaching Capabilities: Reality?



# Limitations / Considerations

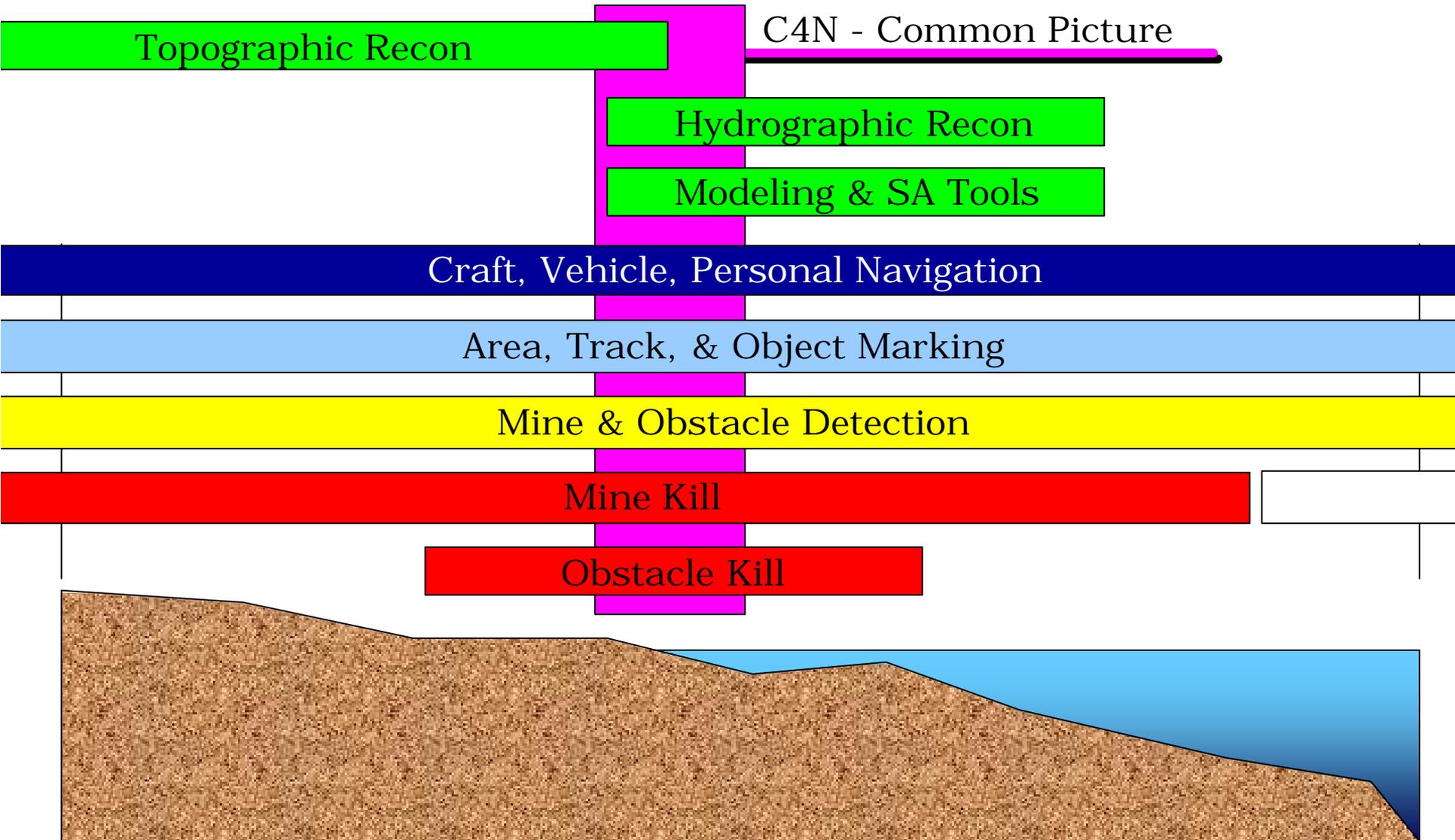
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- Covert / Low Observable / Overt
- Benign / Relatively Benign / Hostile
- Environment
  - day / night
  - sea state
  - surf
  - current
- Footprint / Lift
- Competing Missions

KB03 demo of the operator track capabilities?

# Required Transition Capabilities

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# Mainstreaming & Implementing OMCM

- CFFC (CLF) now responsible / lead to:
  - ❑ integrate offensive/defensive MIW in all warfare areas
  - ❑ develop concepts of operations and employment
  - ❑ coordinate with NWDC for doctrinal alignment with intellectual and operational aspects of MIW
  - ❑ provide operational venues to evaluate OMCM
  - ❑ recommend the way ahead for incorporating OMCM into the Fleet, in concert with dedicated MCM
  - ❑ recommend appropriate education and training
  - ❑ act as the single point of focus for fleet implementation of Mine Warfare

# Op Areas

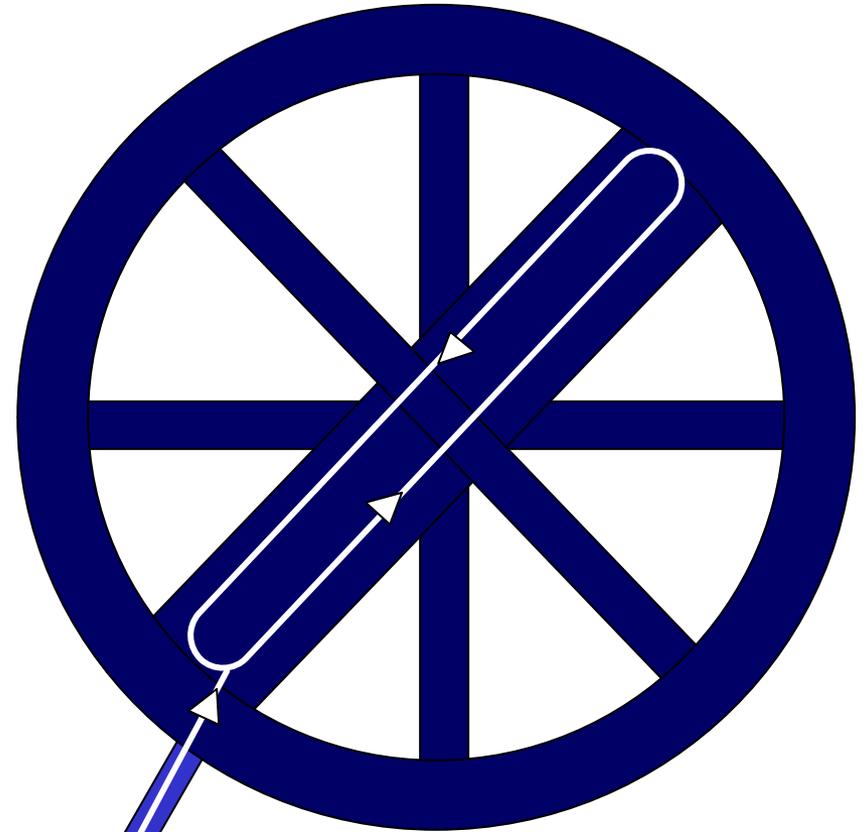
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20 X 20 NM

400 Sq NM

Trading Time & Risk  
for Maneuver Room  
and options

X



116 Sq NM  
70% less  
MCM effort



1st Lt Whitlow  
Mk-105 AMCM Pilot  
Operation End Sweep

LT(jg) Natter  
CHENG  
USS Vireo  
MSC-205

