


Target Support in a Resource Constrained Environment

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Ranges and Targets Readiness Branch Head

OPNAV Prisoner #N433

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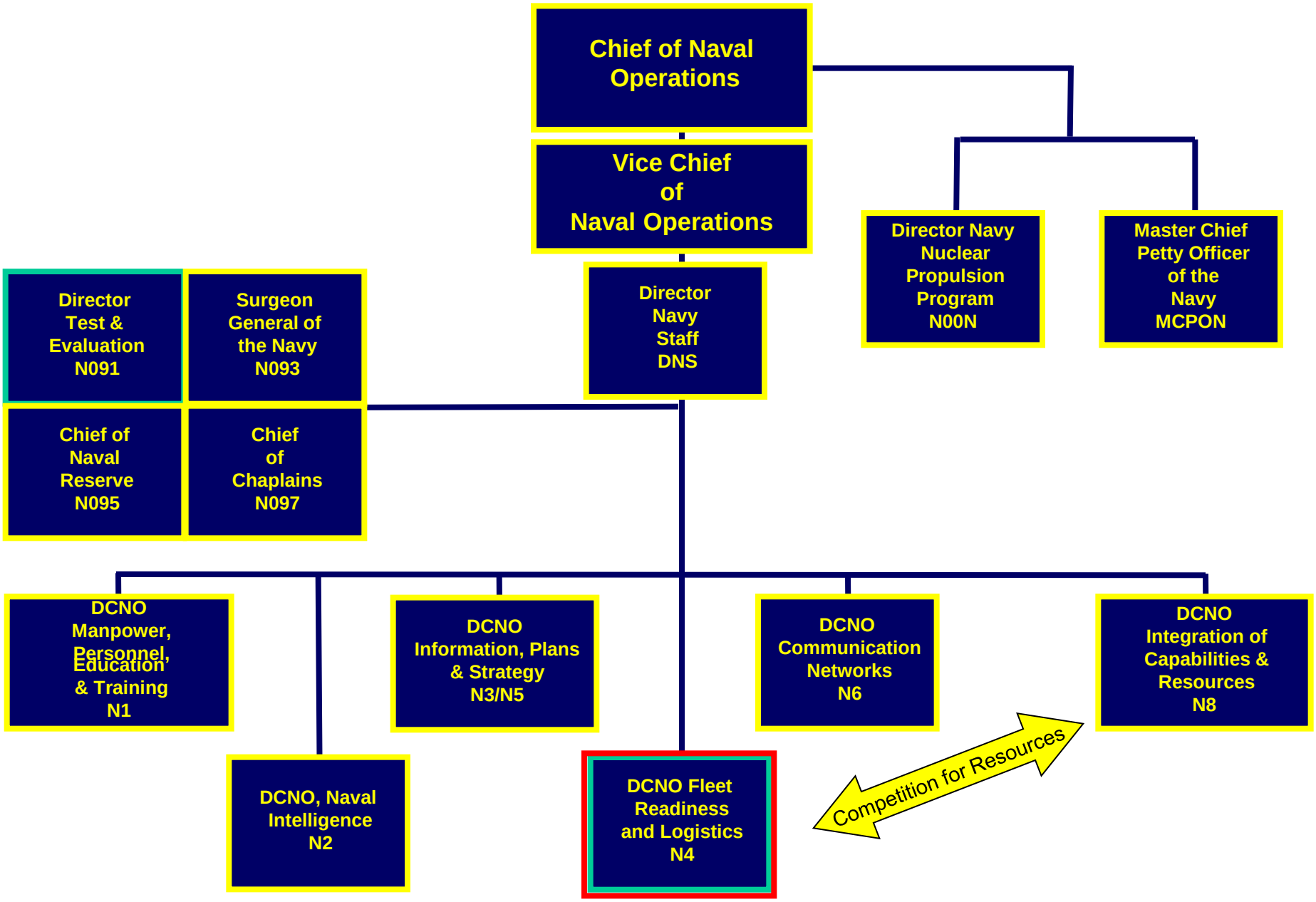
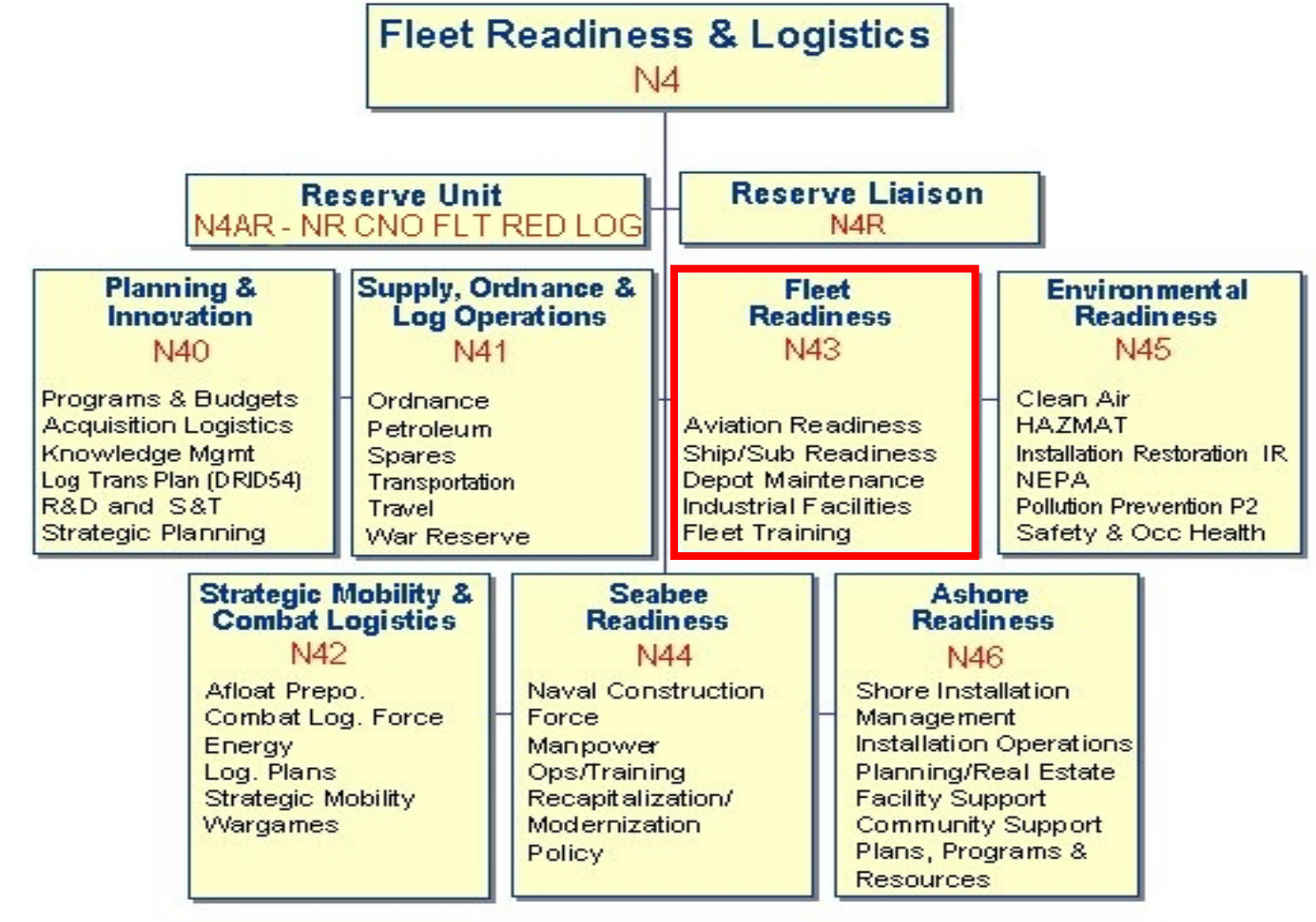
Overview

- Navy Target Program 101
- Emergent Unmet Requirements
- Inventory Challenges
- Target Program Cost Reduction Strategies
- “Joint” Use of Targets
- Joint Target Opportunities

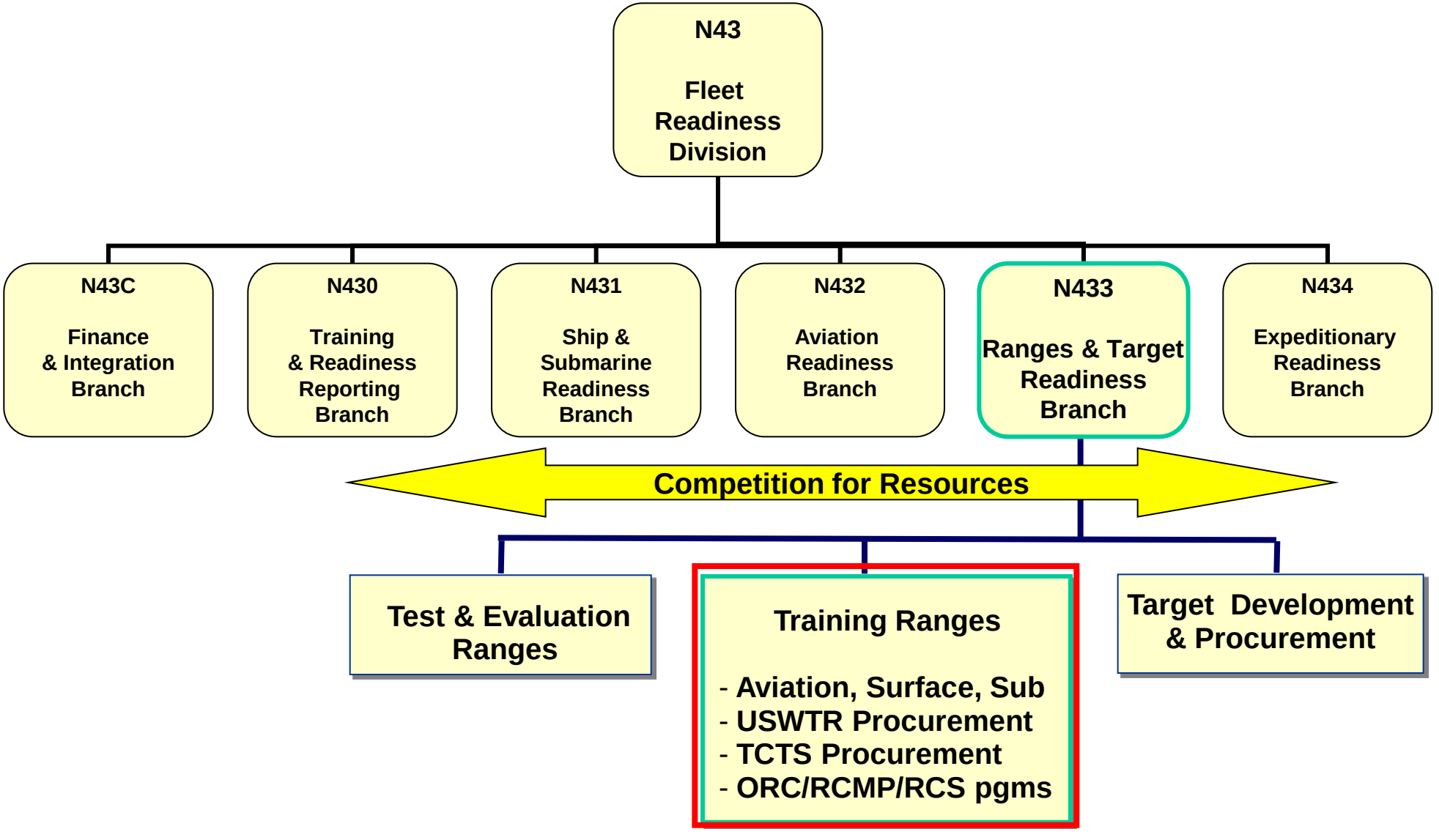
OPNAV Organization





Competition for Resources among N4 Directorates

OPNAV N43


N43
Fleet Readiness Division
N43C
Finance & Integration Branch
N430
Training & Readiness Reporting Branch
N431
Ship & Submarine Readiness Branch
N432
Aviation Readiness Branch
N433
Ranges & Target Readiness Branch
N434
Expeditionary Readiness Branch
Competition for Resources
Test & Evaluation Ranges
Training Ranges
- Aviation, Surface, Sub
- USWTR Procurement
- TCTS Procurement
- ORC/RCMP/RCS pgms
Target Development & Procurement

Navy Targets Program

- **Primary Focus: Ship Self Defense Weapon System Tests**
  - Anti-Ship Cruise Missile Threat
  - Air Threat
  - Surface Swarm / Fast Attack Craft Threat
  - Mine Threat

- **Target Types**
  - Aerial
  - Surface
  - Subsurface/Submarine
  - Mine
  - Moving Land Target
  - NOT:
    - Helicopter
    - UAV
    - Static Land Targets

- **Training (Presentations and Live-Fire)**
  - Anti-Air Warfare
  - Surface Warfare/Counter Swarm
  - Anti-Submarine Warfare/Counter-Mine
  - Strike Warfare

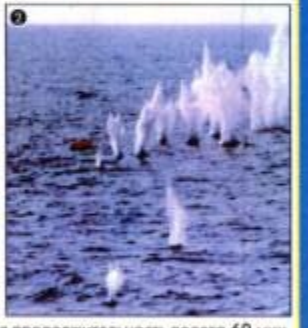
International "Interest"

ВОЗДУШНАЯ РАКЕТА-МИШЕНЬ (РМ) BQM-74E «ЧУКАР» (Chukar), разработанная компанией «Нортроп-Грумман», состоит на вооружении ВМС США и ряда других стран. Она предназначена для имитации атаки противокорабельной ракеты вероятного противника со схожими тактико-техническими характеристиками на корабль (или на береговой объект) во время отработки вопросов противовоздушной обороны корабля (группы кораблей). Старт РМ может осуществляться с пусковой установки (ПУ), размещенной на берегу или на корабле, с применением твердотопливного стартового ускорителя или с борта военно-транспортного самолета типа С-130 «Геркулес». В качестве маршевого двигателя применен турбореактивный J400-WR-404 «Вильямс». Ракета-мишень оборудована аппаратурой линии телеуправления. При необходимости приводнение аппарата может выполняться парашютным способом с целью возвращения на корабль и дальнейшего использования. Основные ТТХ BQM-74E «Чукар»: длина 3,9 м, размах крыла 1,76 м, диаметр 0,35 м, стартовая масса при запуске с рельсовой ПУ 270 кг, с самолета – 211 кг, максимальная скорость полета 270 м/с, максимальная дальность полета 900 км, высота полета над уровнем моря 2–12 200 м, максимальное время полета 1 ч 36 мин, уровень аэродинамических перегрузок 6 g.

ЗВО – 3/2010

НА ПОЛИГОНАХ МИРА

ых государств в рамках учебно-
продолжается отработка вопро-
шной обороны кораблей (коро-
ок) от ударов противокорабель-
оятного противника, в том числе
ет-мишеней (РМ). Дистанционно
-мишени, развитие которых про-
явления ПКР с новыми характе-
ают во время учебных стрельб
ипажа и средств ПВО корабля
ально приближенную к боевой.
РМ BQM-74E «Чукар» с фрегата
эл Б. Робертс» ВМС США (1) и
де учений «Унитас» (2). (Основ-
данной мишени см. на цветной
«Си Дарт» с британского эсминца
проекта 42 (3) для поражения РМ «Мирач-100/5» (Mirach, 4). Основные ТТХ мишени: разработана компанией «Селекс Галилео», высота полета 3–12 500 м, максимальная скорость полета 925 км/ч, уровень аэродинамических перегрузок (УАП) до 8 g, максимальная продолжительность полета 60 мин. РМ «Ирис Джет» (Iris Jet), запущенная с фрегата ВМС Нидерландов (5). Разработана компанией «ЗСигма» (концерн ЕАДС). Максимальная скорость полета 850 км/ч, высота полета 10–12 000 м, УАП до 6 g, максимальная продолжительность полета 60 мин. Поражение воздушной мишени «Скюа» (Skua, 6 и 7). Разработана южноафриканской компанией «Денел дайнэмикс», ее длина 6 м, размах крыла 3,6 м, масса 160 кг, максимальная скорость полета 0,86М на высоте 10 000 м, дальность действия радиоканала управления 200 км, высота полета 10–10 700 м).



Aerial Targets

SUPERSONIC

AQM-37C

GQM-163A (SSST/Coyote)

ZGQM-173A Multi-Stage Supersonic Target (MSST)
(development)

SUBSONIC

BQM-34S

BQM-74E

Sub-Sonic Aerial Target (SSAT)
(development)

FULL SCALE

QF-4

QF-16

Ground Targets

QLT-1C

Moving Land Target

Kairos Autonomi

Seaborne Targets

POWERED

High Speed Maneuverable Seaborne Target (HSMST)

Fast Attack Craft Target (FACT)

QST-35

Ship Deployable Seaborne Target (SDST)

TOWED

Low Cost Modular Target (LCMT)

Polyethylene Tow Target (PETT)

Low Cost Towed Target (LCTT)

Anti-Submarine Warfare Targets

MK 39/ Expendable Mobile Anti-Submarine Warfare Training Target (EMATT)

MK 30 Mod 2

MK 30 Mod 1

Mine Warfare Targets

MK 44 MOD 0/1

MK 46 MOD 1

MK 47 Mod 0

MK 48 MOD 0

MK 49 Mod 0

MK 50 Mod 0

MK 51 Mod 0

MK 52 Mod 0

MK 53 Mod 0/1

MK 57 Mod 0/1

MK 58 Mod 0

MK 59 Mod 0

MK 74 Mod 0

MK 75 Mod 0

Target Program Challenges

- **Fiscal Environment – Global Cooling**
- **Emergent Requirements**
- **POM vs Execution Year Planning**
- **Inventory Droughts**

Fiscal Realities

We are headed for permanent white water!

Emergent Requirements

- **Fleet's Return to Aegis Missile Live-Firing for Training**
  - Increase operator proficiency
  - Stresses limited subsonic target inventory
- **Counter Swarm Tactics – Live Fire Training**
  - Assumptions: 100xHSMSTs per coast
  - Stresses limited surface target inventory

USS Bataan (LHD-5) Fast Inshore Attack Craft exercise

Emergent Requirements

- **Fleet's Return to Aegis Missile Live-Firing for Training**
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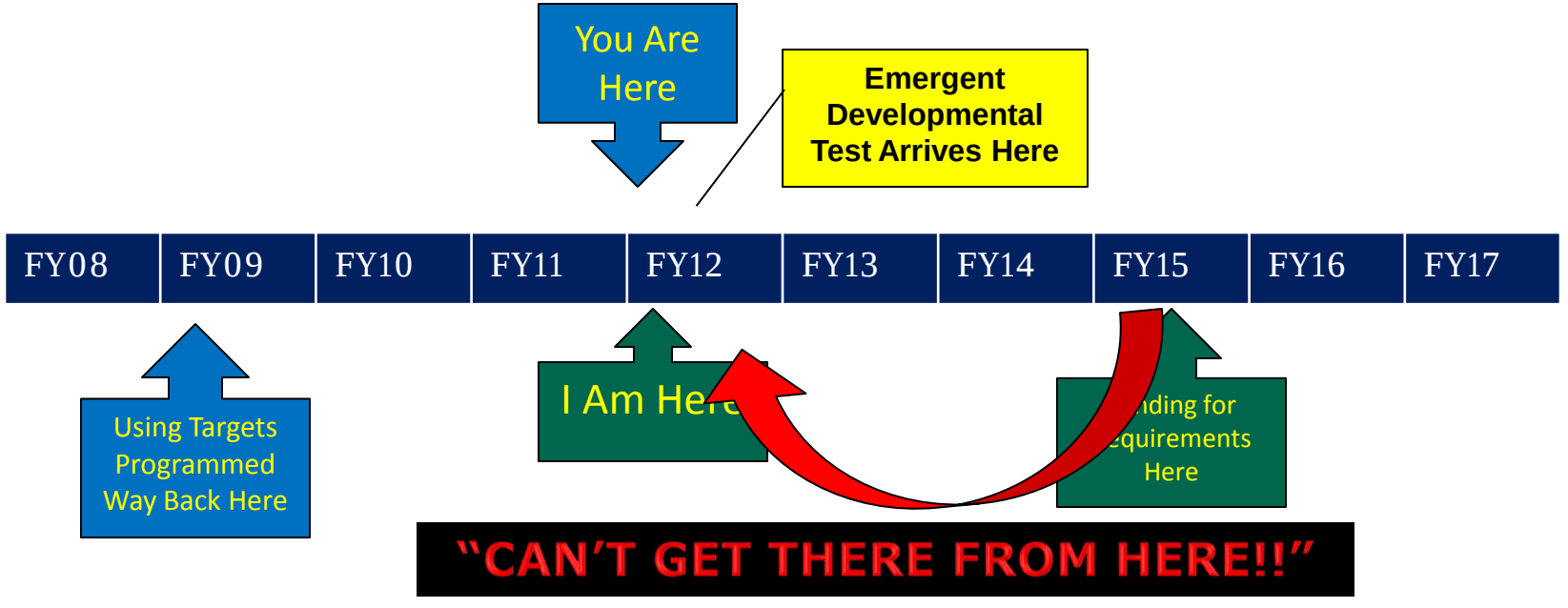
  - Stresses limited subsonic target inventory
- **Counter Swarm Tactics – Live Fire Training**
  - Assumptions: 100xHSMSTs per coast
  - Stresses limited surface target inventory
- **Urgent Operational Needs / Quick Reaction Assessment**
  - Fast Attack Craft emergent threat
    - Engagement systems under rapid development
    - Advanced Precision Kill Weapon System / Griffin / Spike / 20mm / Medusa
  - Directed Energy Weapons
    - Maritime Laser Demo
  - UAVs
  - Ballistic Anti-Ship Missile

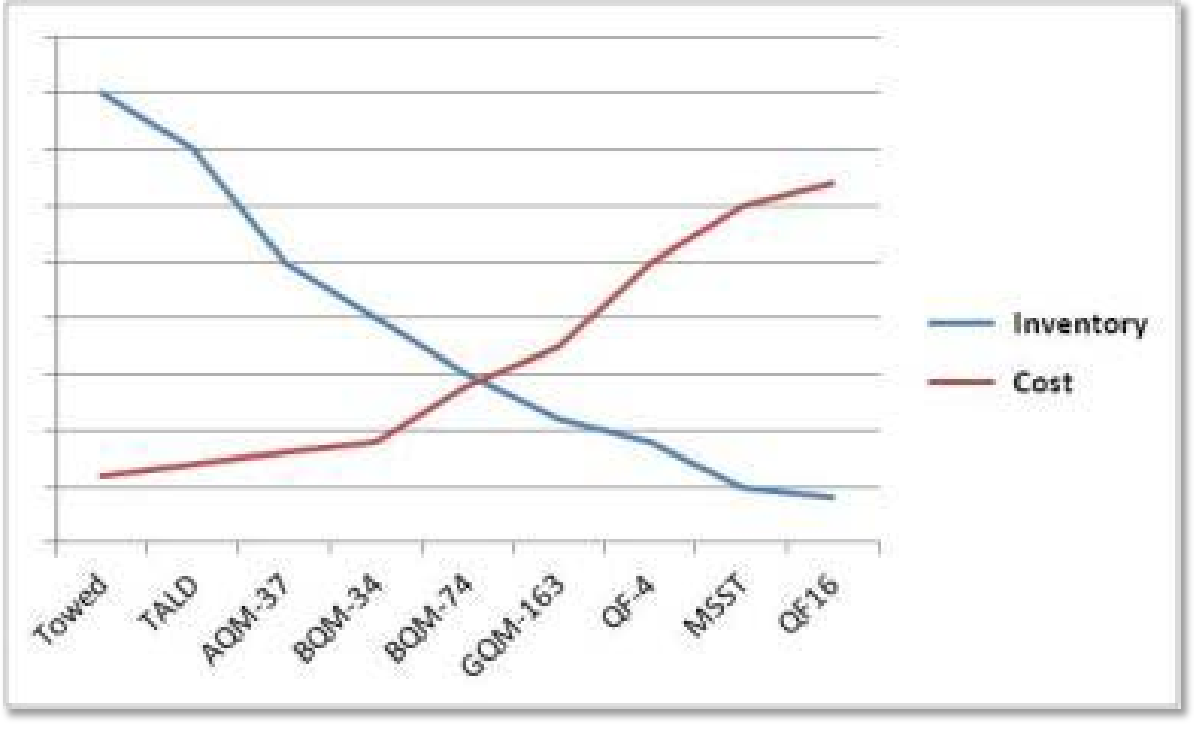
POM vs Execution Year Planning

- **Targets Provided Today were Programmed in 2008**
  - POM-11 Planning began in October 2008
  - POM-11 Finalized April 2009
  - Procurement in 2011 -> 2012 Delivery
- **POM14 Planning = Deliveries in 2015!**
- **Increased Execution Year Requirements -> Out-year Programs at Risk**



Inventory Challenges

- **Threat Realism**
  - Signature: RF Signal, RCS, IR
  - Profile: Dive, Sea-Skimming
  - ↑ Capabilities = ↓ Inventories



Target Tradeoffs

LENGTH

Self-Deployable Surface Target (SDST) 11.5 ft

Poly-Ethylene Tow Target (PETT) 15 ft

Low Cost Modular Target (LCMT) 16 ft /24 ft

High Speed Maneuvering Surface Tgt (HSMST) 26 ft

Fast Attack Craft Target (FACT) 50 ft

TOP SPEED/SEA STATE(SS)

25 knots SS2

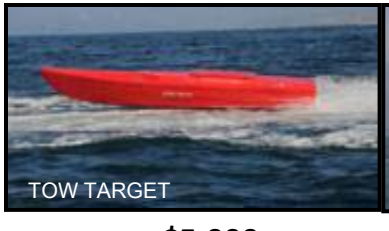
25-30 knots SS1

48 knots SS0
20 knots SS2

46+ knots SS0
35 knots SS3

56+ knots SS0
50 knots SS2

REPLACEMENT COST



~$5,000

~$15,000

~$35,000

~$180,000

~$700,000

Inventory Challenges

- **Threat Realism**
  - Signature: RF Signal, RCS, IR
  - Profile: Dive, Sea-Skimming
  - ↑ Capabilities = ↓ Inventories
- **Multiple Target Operating Sites**
  - Minimal on-hand inventory requirements
  - Backup targets on the rail
- **Subsonic Aerial Target Gap**
  - 5 year production gap from BQM-74 contract to SSAT first delivery
  - MILCON requirement to support BQM-34 move from Wallops to Dam Neck
  - Over 100 non-RFI BQM-34s (Legacy control systems)
- **Target Recovery Reliability**
  - Recoverable targets lost at sea

"Have you seen me?"

LAST SEEN:

Cape Verde Coast Guard reported BQM-74 sighting approx 20 miles offshore. Chukar believed to have escaped AEGIS CSSQT firing event in 2005

Target Program Cost Reductions

Four pillars to Navy Target Total Cost Ownership accountability

- **Target Survivability**
- **Inventory Preservation**
- **Enterprise Developmental/Operational Testing**
- **“Joint” Target Support**

Aggressive Expenditures

USS Greenbay (LPD-20)

Combat System Ships Qualification Trials

Oct 2009

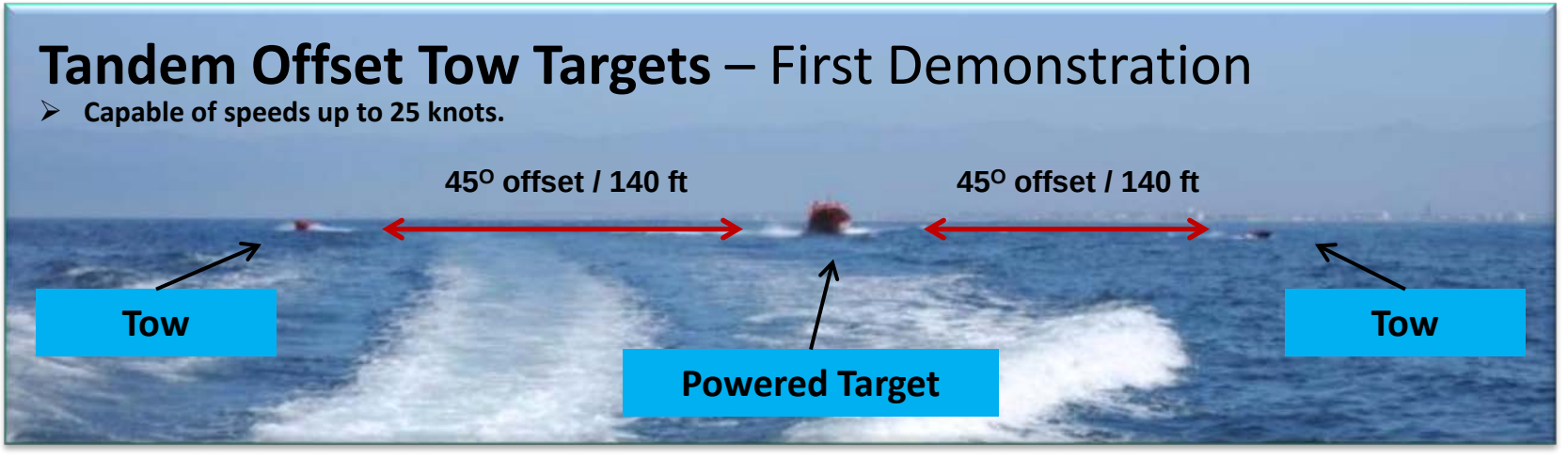
Target Survivability

- **Tight Rules of Engagement**
  - Clear test/training objectives
  - Cease fire when test/training objectives are met
  - Weapon system operator change of mindset/behavior

- **Target Augmentation**
  - Flares / Chaff / Towed decoy
  - Proximity target
  - Kill sensors on skin of target
  - “Humannequin” target
    - impact sensor scoring system

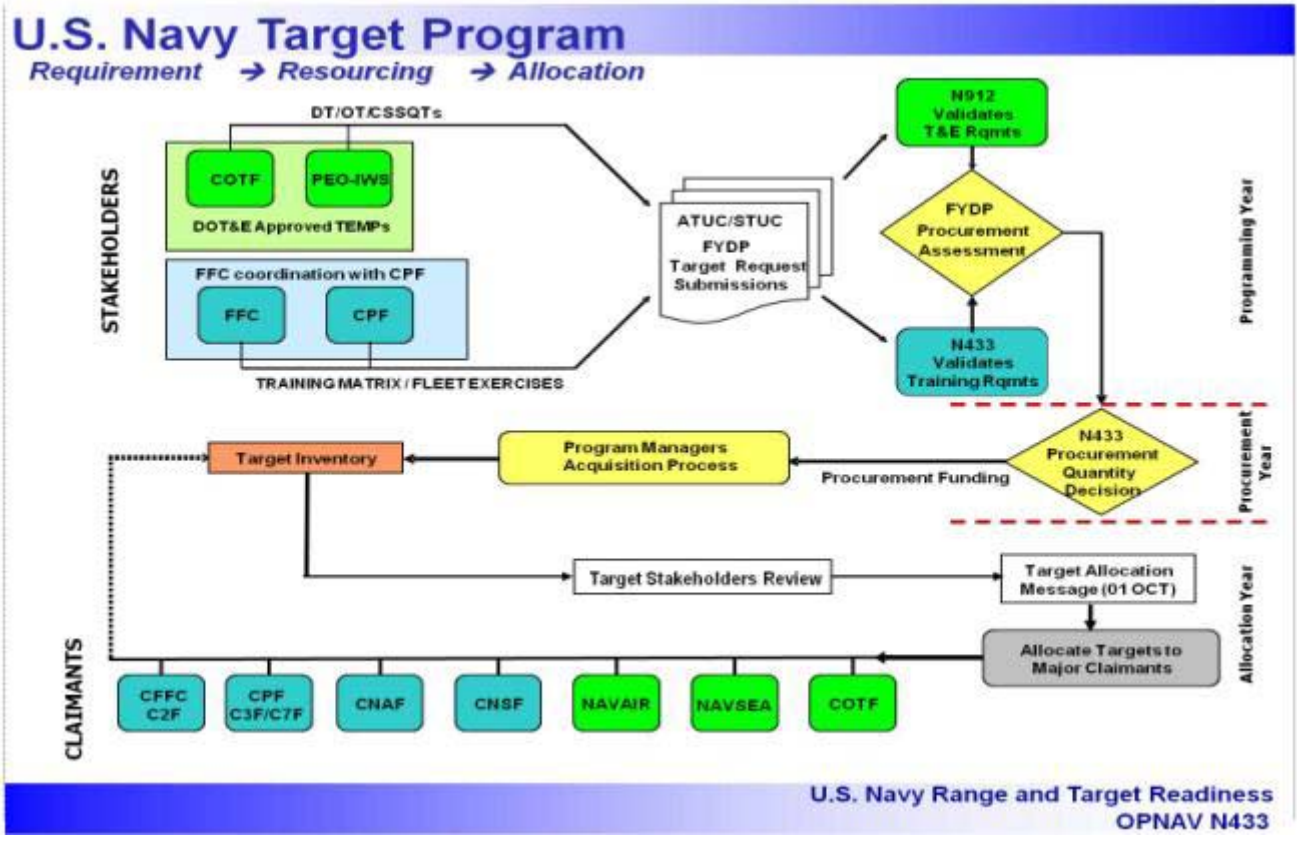
- **Target Substitutes**
  - Press for lower cost target when threat representation is less critical
  - Heavy dependence on Modeling & Simulation
  - Numerous Target Tracking events prior to Live Fire

- **Tow Targets = Increased Raid Count**



Inventory Preservation cont.

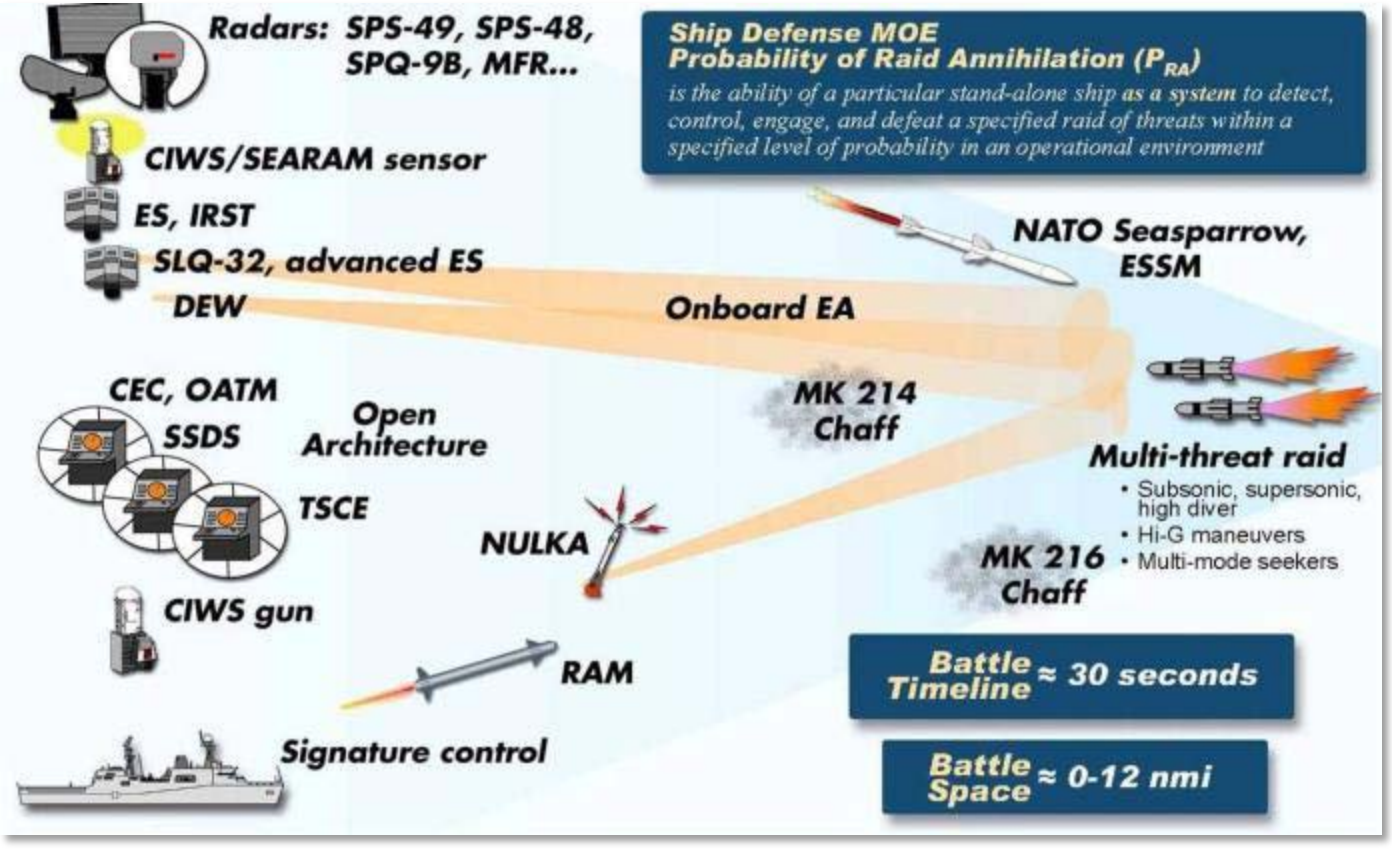
- **Stringent Requirements Validation Process**
  - Requirement must be documented
    - Test and Evaluation Master Plan (TEMP)
    - Training and Readiness Matrix



Inventory Preservation

- **Target Recovery – an "All Hands" effort**
  - Delineated in Test Plan
  - Shooter to assist with locating target
  - Augment target with signaling device(s)
  - Schedule for recovery to occur in daylight
  - Helicopter airborne in vicinity of ops
  - Contracted helicopter service since 1996
    - 675 aerial targets recovered
    - $281M replacement costs avoided

- **Multiple Weapons System Tests vs One Target Set**
  - Consolidation of Air Warfare Ship Self Defense at-sea testing
  - Different hulls, different configurations…same threat models, same range conditions
  - Many specific parameters, assumptions, and limitations are negotiated between the testing and acquisition communities
  - Validate models with live testing



"Joint" Target Support

- **JSF Testing at Pt Mugu and China Lake**
  - BQM-167 (USAF) and BQM-74 (USN)
- **U.S. Army**
  - Joint Land Attack Cruise Missile Defense Elevated Sensor (JLENS)
    - Aerostat tracking of BQM-74s
- **USAF**
  - White Sands – USAF Low Altitude Tracking (BQM-74)
  - F-15 Targeting Capability Upgrades (BQM-74)
  - F-22 Testing at China Lake (BQM-34)
  - F-22 /AFOTEC Testing at Utah Test and Training Range (UTTR) (BQM-74)

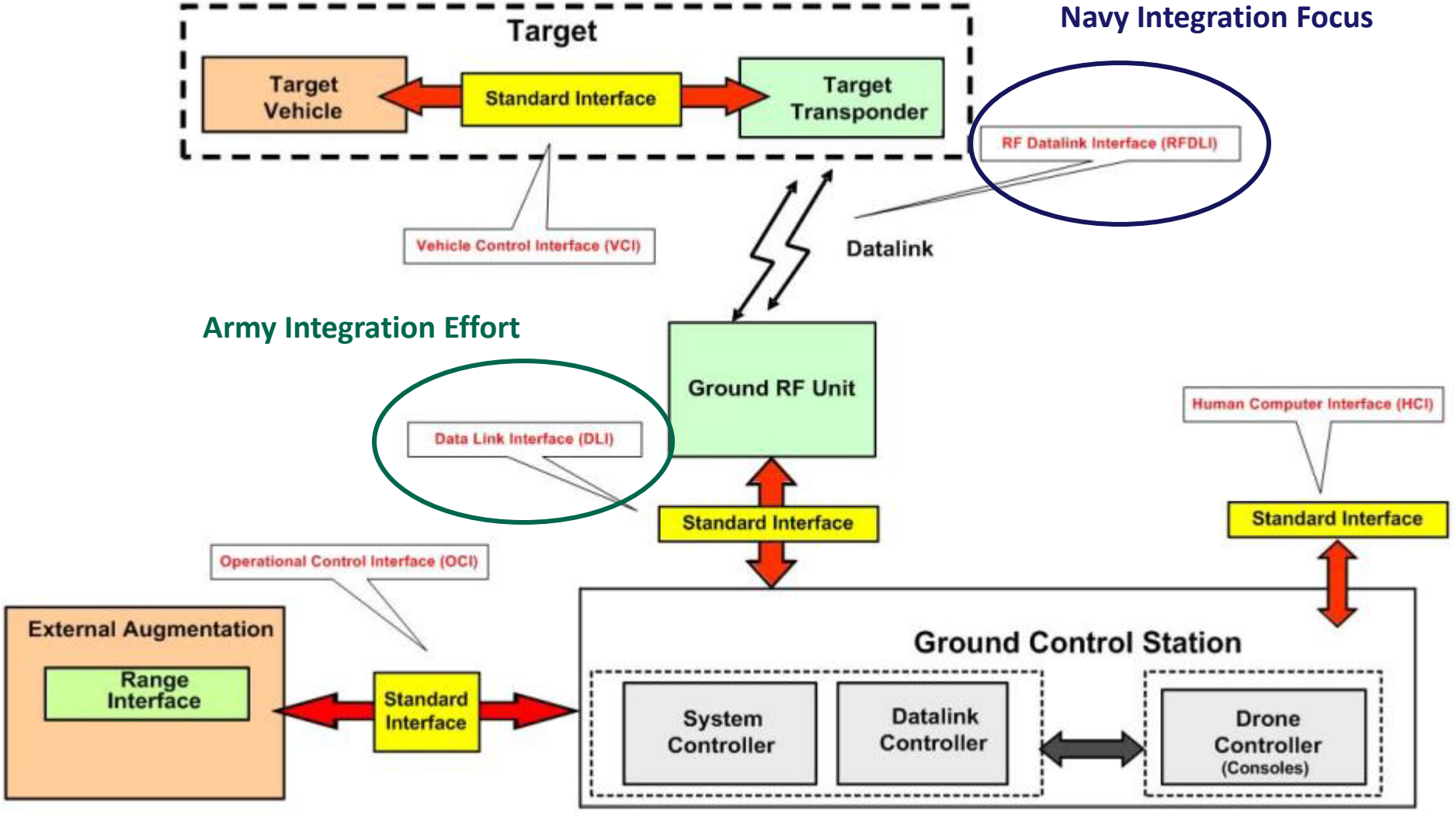
"Joint" Target Support cont.

- **USAF-USN Full Scale Aerial Target (QF-4 / QF-16)**
- **USAF support to Navy Weapons Evaluation Program**
  - BQM-167 targets for air-to-air tactics development
- **Coast Guard**
  - Target support to maritime weapon systems
- **Moving Land Target has USA/USAF interest**
- **Navy has the "Monopoly" on Surface and Mine Targets**

"Joint" Target Control System Development

- **Common Target Control System**
  - DOT&E standard target control interface initiative
    - "Develop Tri-Service Standard Interfaces to reach interoperability by developing hardware independent interfaces for Ground Target Control System, Ground RF unit, and Target transponder"
  - Army updating Data Link Interface (DLI) from DOT&E DLI baseline
    - Army test complete Jan–Feb 2012
  - Navy to assess Army Target Common Control System (ACCS) DLI variant for incorporation into a future Standard Navy Target Control (SNTC) ECP
    - Navy engaging with Army development/testing
  - Navy to recommend a standardized RF DLI format that is optimal for Navy aerial and surface targets
    - OSD to evaluate Navy RF DLI format proposal, if supportable, OSD will socialize with USAF + USA at Target Control Steering Groups for adaptation for service-unique requirements

DOT&E TCS Initiative



Possible Joint Target Opportunities

- **Unmanned Aerial Systems – Threat Surrogate**
  - No Program of Record for the UAV target program
  - Numerous unmet UAV training requirements
    - However, Training customers disagree over threat requirement
  - Navy Aegis program procures Vindicator target services directly from Meggitt
- **Helicopter Target**
  - Navy Training needs unmet
  - Navy Tests (limited) vs Army helicopter targets
- **Hypersonic Development**
  - DOT&E pressing for test against next generation threat
- **Moving Land Target**
  - Kairos Autonomi: 60 targets for Navy training
  - USA/USAF interest

Summary

- **"More with Less" - really?**
  - Requires co-service/tri-service commonality
  - Requires cross service target support
  - Decreased threat representation on most tests

- **Vendor survival requires migration away towards single customer solution**
  - DoD acquisition process makes new development unrealistic for targets
  - Generic -"off the shelf" target solutions are more desirable

Questions?


Photo# 80-G-12906 X-Wing Fighter in catwalk on the USS Long Island after landing accident July 1942
theBRIGADE.com

Backup Slides