



# Naval C4 Systems Integration



**Maj Ryan Ackland**  
Naval Systems Integration Officer



“The Marine Corps must be able to fight at sea; from the sea, and from the land to the sea; operate and persist within range of adversary long- range fires; maneuver across the seaward and landward portions of complex littorals; and sense, shoot, and sustain while combining the physical and information domains to achieve desired outcomes.”



“Adversary advances in long-range precision fires *make closer Naval Integration an imperative*. The focal point of the future integrated naval force will shift from traditional power projection to meet the new challenges associated with *maintaining persistent naval forward presence to enable sea control and denial operations*.”

**General David H. Berger, Commandant of the Marine Corps**  
**38<sup>th</sup> Commandant of the Marine Corps Commandant’s Planning Guidance**



- The MCTSSA Naval Integration Team provides integration testing, system engineering expertise, and operating forces technical support for USMC and USN afloat C4 systems.
- Focus Areas:
  - Operational readiness Amphibious ship and MEU
  - Validation of mission-based capabilities for deploying MEUs
  - JSF Shipboard C5I System Integration
  - MAGTF Afloat Integration Environment for testing/experimentation



**Naval Integration is directly in line with guidance from the CMC, CNO, and SECNAV**



## Marine Corps:

### Supporting Establishment:

- USMC C4 System Program Offices
- MCSC Afloat C4 Systems Integration Team
- HQMC C4
- CD&I
- JSF Joint Program Office
- VMX-1
- MCOTEA

### Fleet Marine Force:

- FMFPAC/FMFLANT
- Marine Expeditionary Unit (MEU)
- Marine Expeditionary Brigade (MEB)
- Marine Expeditionary Force (MEF)
- SPMAGTF
- MARCOMDETs / ACDs



### Navy:

### Supporting Establishment:

- NIWC-PAC/NIWC-LANT
- NAVWAR PEO C4I
  - PMW 150 – C2 Systems
  - PMW 160 – Afloat Networks
  - PMW 170 – Communications
  - PMW 750 – Carrier/Air Integration
- NAVWAR PEO EIS
- IWS-10
- OPNAV N95

### Fleet:

- L-class ships
- Expeditionary Strike Groups (ESGs)
- Numbered Fleets
- SURFPAC/SURFLANT
- PACFLEET/USFFC



Naval Information Warfare Center



PACIFIC





- **Enhanced Readiness for deploying MEUs and embarked SPMAGTFs on L-class ships**
- **GCSS-WAN Optimization**
- **GCCS-M Engineering**
- **Leveraging virtualization for COP**
- **Validating operational mission threads**
- **Integration of JSF C5I systems:**
  - **Advanced Field Artillery Tactical Data System (AFATDS)**
  - **Joint Automated Deep Operations Coordination System (JADOCS)**
  - **Common Aviation Command and Control System (CAC2S) Afloat**





- **Training**
- **Lack of Persistent C4 environment**
- **Labor-Intensive Network Re-Builds**
- **Variety and Complexity of Shipboard Networks**
- **Shared USN/USMC COP**
- **Navy Modernization Process / AVAILs**
- **Navy Certification Process (AI/SIT)**
- **Interoperability / Requirements**
- **GCSS-MC in a C2 contested environment**





- **Upcoming MCTSSA Contract**
  - \$150m ceiling / 5 years
- **Opportunities:**
  - Virtualization of shipboard network architectures (CANES/ISNS/SWAN) for lab testing and training
  - Automated shipboard network configuration tools
  - Mobile Ship Self Defense System (SSDS) suite for JSF C5I integration testing
  - JSF land-based avionics simulator
  - Emulation of shipboard radio equipment for lab testing
  - SCIF for intel system testing



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**MARINE CORPS TACTICAL SYSTEMS SUPPORT ACTIVITY**  
*Making Marines More Capable*

**Questions?**





# Backup





# MARINE CORPS TACTICAL SYSTEMS SUPPORT ACTIVITY

## Making Marines More Capable

Global Support





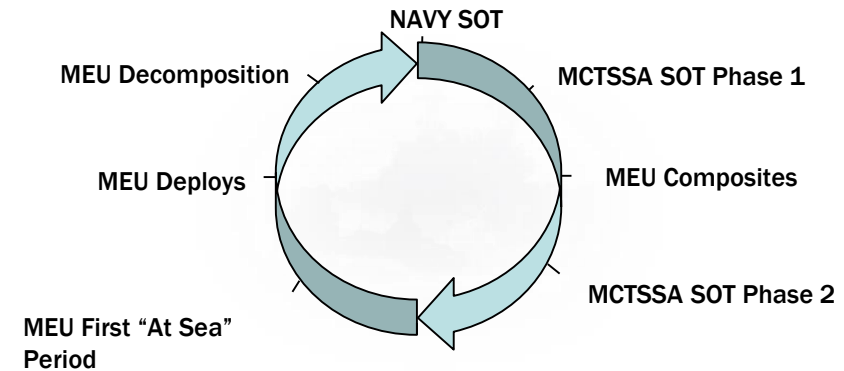
**Purpose:**

- Enhances MEU/ARG readiness
- Integrates tactical C4 systems into the afloat environment
- Validates interoperability of BISOG equipment with USMC Tier II assets
- Validates LFOC and SACC connectivity
- Addresses C4 issues/concerns specific to the MEU or embarked SPMAGTF
- Validates JSF C5I shipboard integration

**C4 Systems Tested:**

- Tactical COP Server (TCS)
- Joint Tactical COP Workstation)
- Advanced Field Artillery Tactical Data System (AFATDS)
- Joint Automated Deep Operations Coordination System (JADOCS)
- MAGTF Router (Ship-to-Shore Communications)
- Global Combat System Support – Marine Corps (GCSS-MC)
- Common Aviation Command and Control System Afloat (CAC2S Afloat)
- Radios/Antennas:
  - Blue in Support of Green (BISOG)
    - EPLRS-DR
    - EMUT
    - SINCGARS
    - HFSAR
    - Iridium
  - Tactical Radios: PCR-117G and PRC-150

**MCTSSA SOT Process:**



**Previous SOT Ships:**

- USS WASP (LHD-1)
- USS ESSEX (LHD-2)
- USS BOXER (LHD-4)
- USS BATAAN (LHD-5)
- USS IWO JIMA (LHD-7)
- USS MAKIN ISLAND (LHD-8)
- USS AMERICA (LHA-6)
- USS SOMERSET (LPD-25)
- USS ANCHORAGE (LPD-23)
- USS JOHN P MURTHA (LPD-26)
- USS RUSHMORE (LSD-47)
- USS ASHLAND (LSD-48)
- USS HARPER'S FERRY (LSD-49)
- USS OAK HILL (LSD-51)



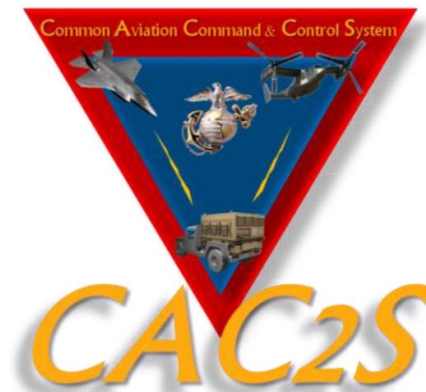
**Program Overview:** Common Aviation Command and Control System (CAC2S) Afloat is the shipboard version of the USMC CAC2S ACAT 1C Aviation C2 Program. It shares a common hardware and software baseline with the USMC POR. It provides the Embarked MAGTF and Amphibious Force with common Air, Surface, Subsurface and Ground tactical picture for Enhanced Situational Awareness. For CAC2S Afloat Flight 0+ and beyond, it provides shipboard Digital Air Control for the Marine Aviation Combat Elements and Enhanced C3BA across the Naval Tactical Grid.

## MCTSSA Support to IWS-10:

- GCCS-M Interface engineering
- Installation Support
- Help Desk Deployed support
- Testing and SOT Integration

## Challenges/Opportunities:

- Combat System for integration testing
- TTP Development for MEU/ARG
- Operator and Maintainer Training





**Purpose:** To provide PMs, MCTSSA personnel, and fleet Marines a realistic physical and network shipboard environment for testing and experimentation venue for afloat C4 systems

**Future Testing Capabilities and Challenges:**

1. Replicate any shipboard network (CANES, ISNS, SWAN)

Method: Software-defined networks (virtualization)

2. Replicate shipboard radio equipment

Method: Procurement of Navy assets or emulated radio assets using software-defined radios

3. Develop interface for ship's combat system for program testing

Method: Mobile SSDS or remote tie-in to other SSDS lab centers

4. Expand afloat integration testing of USMC and USN intel systems

Method: Expand SCIF and increase coordination with PMW-120 and PM Intel Systems

