



# **USCG Vertical UAV Spectrum Issues**

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# Integrated Deepwater System

INTEGRATED COAST GUARD SYSTEMS  
DEEPWATER

- **Performance Based:**
  - Focus on capabilities not assets
  - Not a one for one replacement
- **Acquisition Strategy:**
  - Partner with system integrator
  - Acquire integrated system of surface, air, C4ISR, and logistics systems



## Overarching Objective:

**Maximize Operational Effectiveness  
while Minimizing Total Ownership Costs**



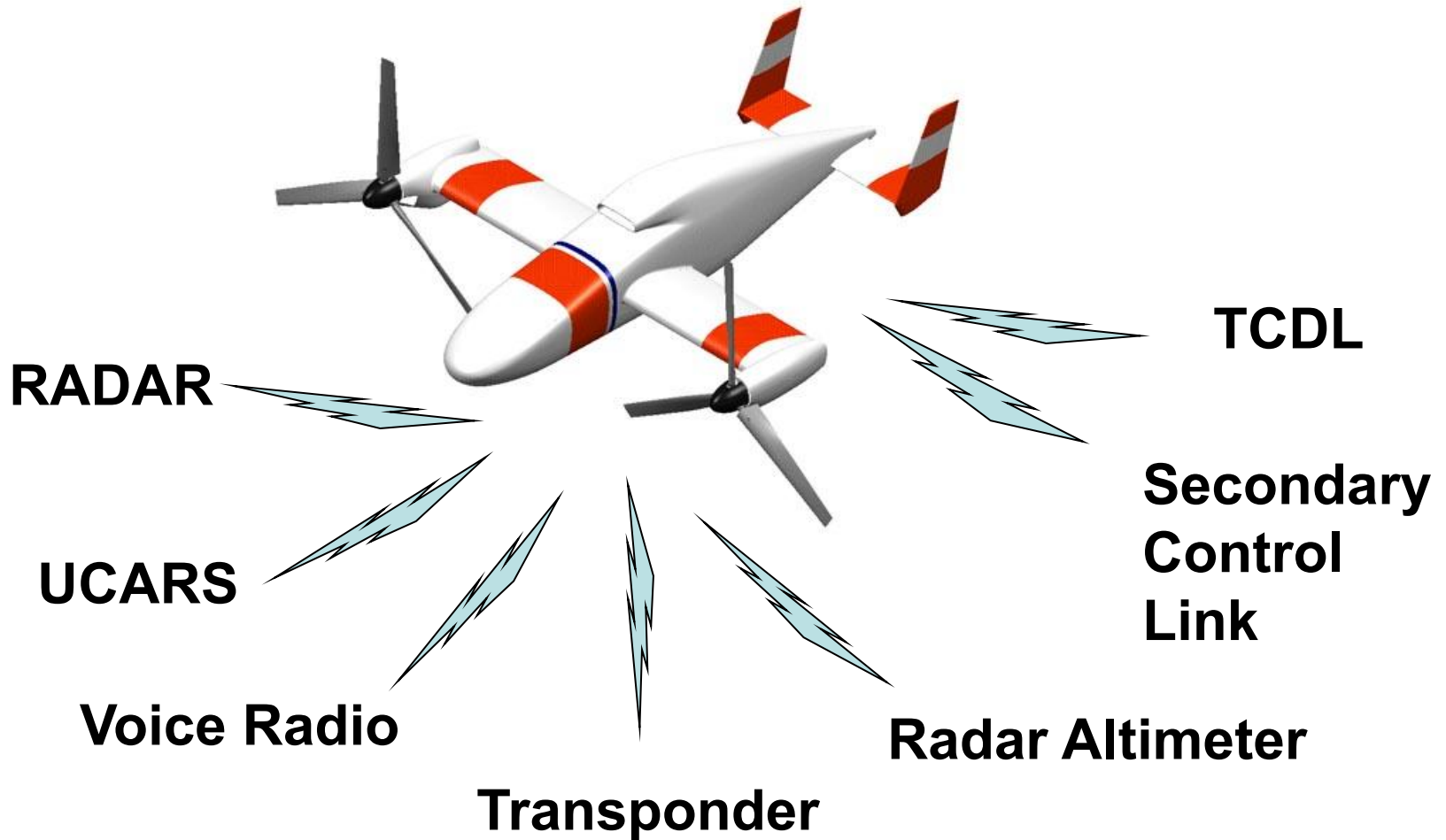
# HV-911 (Bell Eagle Eye)





# Electromagnetic Emissions

INTEGRATED COAST GUARD SYSTEMS  
DEEPWATER





# TCDL

- **Tactical Common Data Link**
  - **Aircraft flight (except landing)**
  - **Radar (control & imagery)**
  - **EO / IR camera (control & imagery)**
  - **ARC-210 voice radio (control and voice comms)**
  - **Transponder control**
  
- **10 W aircraft, 2 W cutter**
- **14.3 GHz – 15.3 GHz**
- **Directional antennas on aircraft and cutter**
  - **1.3°**
  
- **Status: Draft Application for Equipment Frequency Allocation (DD Form 1494)**



# Secondary Control Link

- ***TCDL backup***
  - *Flight control, navigation, and air-air radar only*
  
- ***2.5 W***
- ***1,760 - 1,780 MHz aircraft***
- ***1,825 – 1,845 MHz cutter or land***
- ***Omni antenna***
  
- ***Status:***
  - *NTIA-44 Stage 2 (Experimental)*
  - *“No EMC problems are anticipated”*



## ***Unmanned aerial vehicle Common Automatic Recovery System***

- ***Manufacturer: Sierra-Nevada***
  
- ***Precision landing system***
  - ***Cutter based***
  - ***Shore based***
  
- ***Meets shipboard and airborne E3 requirements***
  - ***Mil-Stds-461 & 464***



- ***Airborne System (Transponder)***
  - ***34.82 – 35.12 GHz***
  - ***Directional: 45° horizontal, 20° vertical***
  - ***88 Mw mean power, 125 Mw peak power***
  
- ***Ship System (Radar)***
  - ***34.93 – 35.0 GHz***
  - ***Quasi-directional: ±130° horizontal, 70° up, 10° down***
  - ***0.4 Mw mean power, 1.0 Mw peak power***
  
- ***Status: Draft Application for Equipment Frequency Allocation (DD Form 1494)***





# RADAR

- ***Telephonics RDR-1700CG***
  - *Air to sea*
  - *Air to air*
  - *Weather*
  
- ***9,200 – 9,500 MHz***
  
- ***± 90° horizontal, 20° up, 40° down***
  
- ***1,000 W peak power***



# RADAR

## ■ *Status:*

- *NTIA-44 Stage 2 (Experimental)*
- *“EMC problems may be manageable in fixed frequency mode”*
- *“Electromagnetic compatibility could be problematic in the frequency-agile mode”*



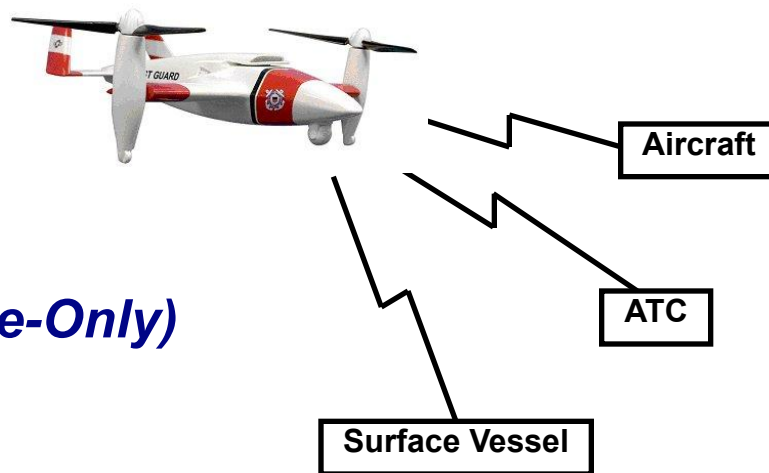
# Communication Radio

- **AN/ARC-210 UHF/VHF (Warrior) multi-band Communications Radio**

- **30 to 400 Mhz / VHF and UHF:**

- 30.000 – 87.985 Mhz FM
- 108.000 – 117.975 Mhz AM (Receive-Only)
- 118.000 – 135.985 Mhz AM
- 136.000 – 155.985 Mhz AM and FM
- 156.000 – 173.985 Mhz FM
- 225.000 – 399.985 Mhz AM and FM

- **Status: Draft Application for Equipment Frequency Allocation (DD Form 1494)**





# Transponder

- ***Raytheon APX-119***
- ***1030 – 1090 MHz***
- ***Omni antenna***
- ***Status: Draft Application for Equipment Frequency Allocation (DD Form 1494)***



# Radar Altimeter

- ***Honeywell HG7210BA01***
- ***4,200 – 4,400 MHz***
- ***Directional antenna – down***
- ***Status: Draft Application for Equipment Frequency Allocation (DD Form 1494)***



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