



NRL/VXS-1



2011 UPDATE





VXS-1 2011 Milestones

- NP-3D
 - Acquired 4th P-3 aircraft, P-3C BUNO 158912
 - OADT and PASS conducted throughout 2011
 - AMLEP 2011 operations out of Dakar, Senegal
 - Local area and Barbers Point, HI flights
 - Missile Defense Agency (PMRF/Southern California) range clearance events
 - DARPA atomic clock vibration testing
 - JIEDDO support and platform development for future in-theatre operations
- RC-12 Mission
 - Supported Joint NRL TEW - NAVSEA Platform Emissions Testing (CA, VA)
- Scan Eagle UAV aircraft
 - Supported ONR and USMC programs
- MZ-3A Airship
 - Provided S&T development platform for planned Blue Devil systems and lighter-than-air ground/flight training to Blue Devil personnel
 - Exercises with DEVGRU and NPS





VXS-1 2012 Outlook

- NP-3D
 - AMLEP has already requested support in FY12
 - Missile Defense Agency is anticipated to have one event in late FY12, due to 8 months of depot maintenance on 442
 - Continued JIEDDO support and platform development for future in-theatre operations
 - Johns Hopkins Applied Physics Lab in coordination with N775 plans to conduct multiple phases of testing throughout FY12
- RC-12
 - Plans for additional NRL TEW vulnerability testing
- Scan Eagle UAS
 - Continued support to ONR and USMC programs with potential for additional NOAA shipboard flights
- MZ-3A Airship
 - Provided S&T development platform for planned Blue Devil systems and lighter-than-air ground/flight training to Blue Devil personnel





NRL: The U. S. Navy's Corporate Laboratory



Establishment

- Idea followed the sinking of the Lusitania in 1915
- Secretary Josephus Daniels Established Naval Consulting Board with Edison Chair, meeting October 7, 1915
- August 29, 1916 Congress appropriates funds to establish the Lab
- Delayed by WW-I, Assistant Secretary of the Navy, Theodore Roosevelt, Jr. Commissions the Lab at Bellevue site on July 2, 1923



"GOVERNMENT SHOULD MAINTAIN A GREAT RESEARCH LABORATORY TO DEVELOP GUNS, NEW EXPLOSIVES AND ALL THE TECHNIQUE OF MILITARY AND NAVAL PROGRESSION WITHOUT ANY VAST EXPENSE."

THOMAS A. EDISON,
THE NEW YORK TIMES MAGAZINE
SUNDAY, MAY 30, 1915

Mission

- To conduct a broadly based multidisciplinary program of scientific research and advanced technological development directed toward maritime applications of new and improved materials, techniques, equipment, systems and ocean, atmospheric, and space sciences and related technologies.
- Primary in-house research for the physical, engineering, space, and environmental sciences
- Broadly based applied research and advanced technology development program in response to identified and anticipated Navy and Marine Corps needs
- Broad multidisciplinary support to the Naval Warfare Centers
- Space & space systems technology development & support

Lines of Business

- Sensors, Electronics, and Electronic Warfare
- Materials/Processes
- Battle space Environments
- Undersea Warfare
- Information Systems Technology
- Space Platforms
- Technology Transfer





Scientific Development Squadron ONE (VXS-1)



- NAS Patuxent River, Maryland
- Military Certified and Operated
- Deployable worldwide
- Fixed Wing Research Aircraft
 - 2 NP-3D
 - 1 P-3C
 - 2 RC-12
 - 1 APS-145 Rotodome NP-3D
- Additional Available Platforms
 - 4 Scan Eagle UAS
 - 1 MZ-3A Airship
- Experience integrating a wide range of equipment and sensors
 - RADAR
 - LiDAR
 - Hyperspectral
 - Photogrammetric
 - Magnetic
 - Gravity
 - Electro-optic
 - Dropsonde





Research Configured NP-3D



- Combat Theater capable
- Configurable Interiors
- Project/Research Electrical Load Centers
- 50 – 100 AMPs available
- Modified Bomb Bay equipment pallets
- 20” floor rails to accommodate up to 10 equipment/operator consoles
- 10,000 lb equipment payload
- Support up to 11 project specialists on flights up to 12 hours in duration
- Aircraft Navigational data access
- Wing wiring to support up to 10 external pod's
- Research configured nose/tail
- Project dedicated static pressure port
- Project Communication





NP-3D Bomb Bay Equipment Platform



This is the main project payload mounting location for sensors, large antennas, radar, etc., and it can be outfitted with a large spherical radome.

Dimensions:132.36"L x 70"W x 35"H (Available volume shown on this slide)

Dimensions (Radome):72" Dia x 29"H

Weight:800 lbs

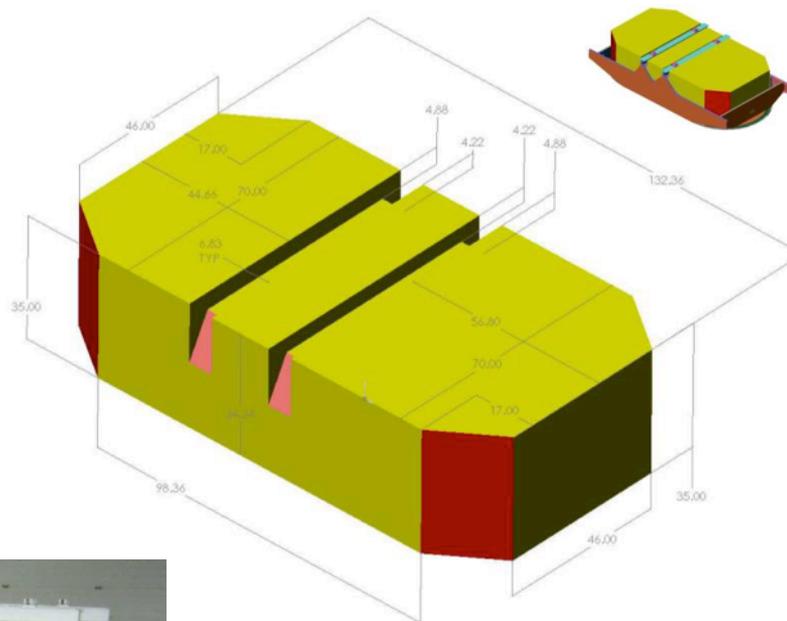
Material:Aluminum construction

Payload:Up to 3000 lbs

Interface:Standard P-3 Bomb Bay Pylons

Installs in P-3 Aircraft Bomb Bay

Access to equipment:Bottom

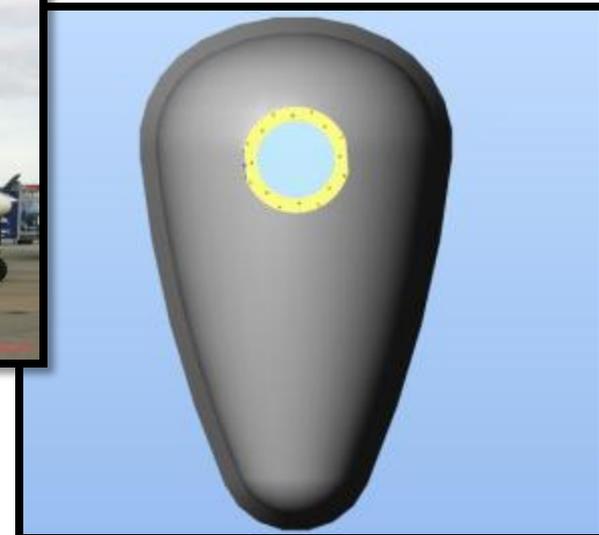
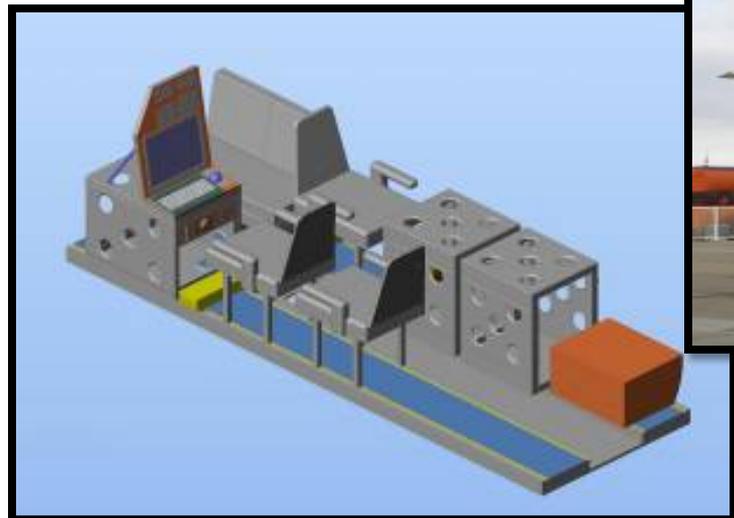




RC-12



- Lower Belly Radome to accommodate radar/electro optic projects
- Engines wired to support project specific generator
- 25 or 60 AMPs available
- Research Load center
 - Provide Circuit Breakers with 115Volts AC for project equipment
 - Isolate projects from basic A/C systems
- Floor rails to support up to three operator/equipment stations
- 1,200 lb equipment payload
- Removable seats, (can be utilized for transporting personnel/parts in support of projects)

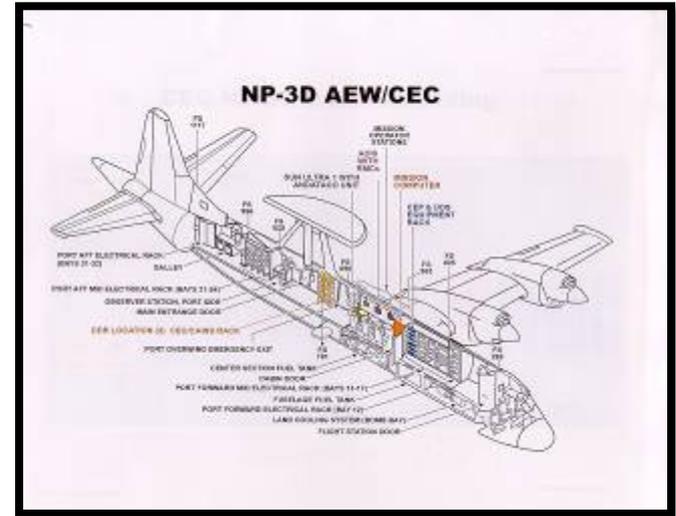




AEW NP-3D Systems Suite



- Hawkeye 2000 suite
- USG-3 CEC
- 50 – 100 AMPs available
- 1,500 lb equipment payload
- AN/APS-145 UHF B-band Radar
 - 360 Degree/Long Range Detection
 - Low radar cross section detection
- MkXII IFF system
 - 360 Degree/IFF Decode
 - Interrogates Mode I, II, III, IV, and C
- Communications Suite
 - 8 UHF Radios (5 VHF capable)
 - Maritime Band
 - 2 HF Radios
 - SATCOM
 - LINK 4 / 11 / 16
- AIS Receiver (Shine Micro)





Scan Eagle UAS



PERFORMANCE

- Max Horizontal Speed 75 knots
- Cruise Speed 48 knots
- Ceiling 19,500 ft
- Endurance 12+ hours

DIMENSIONS

- Wing Span 10.2 ft
- Fuselage Diameter 7 in
- Length 5 ft

WEIGHTS

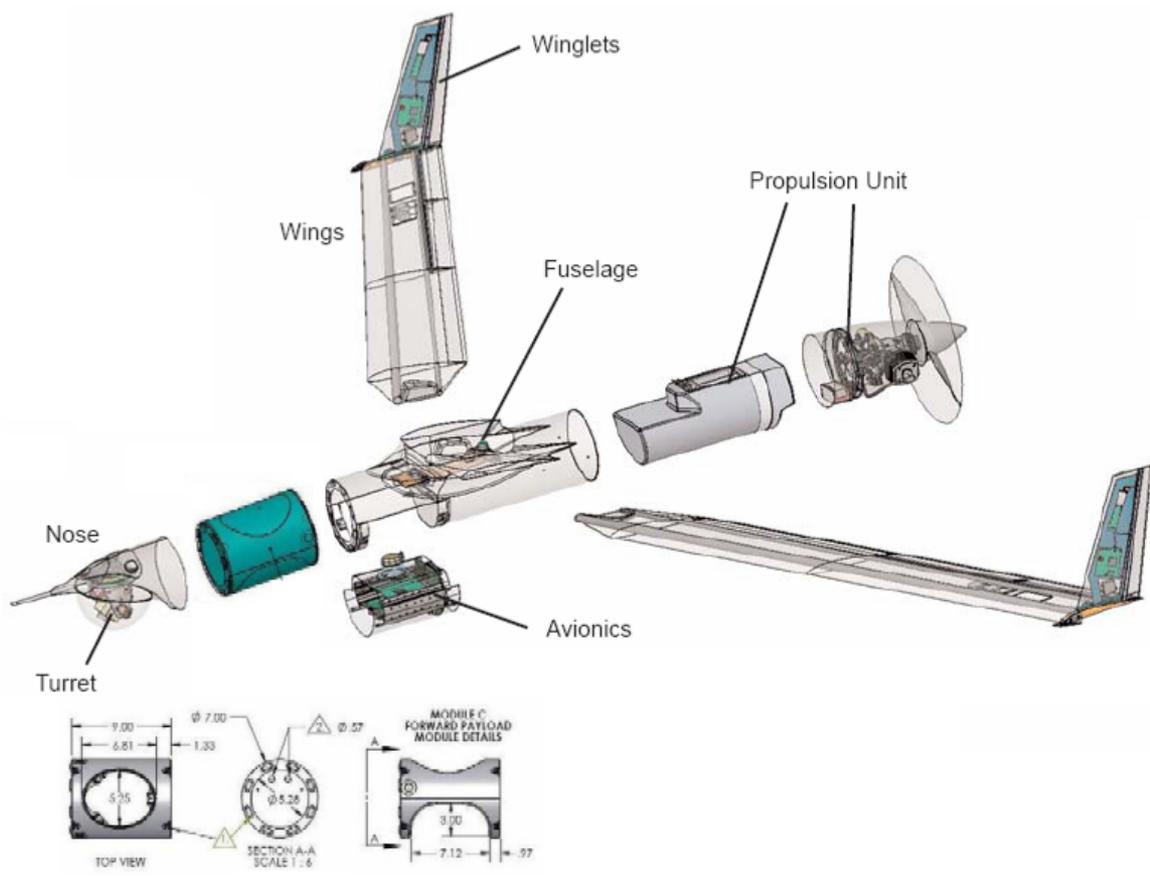
- Empty Weight 28 lb
- Fuel and Payload 15 lb
- Max Fuel 12.1 lb
- Max Takeoff Weight 44 lb

FREQUENCIES (MHz)

- C2/Telemetry: 1350-1390
- Video Downlink: 2300-2500

PAYLOADS

- Sony FCB-EX780 EO Camera
- DRS Tech. E3500 IR Camera

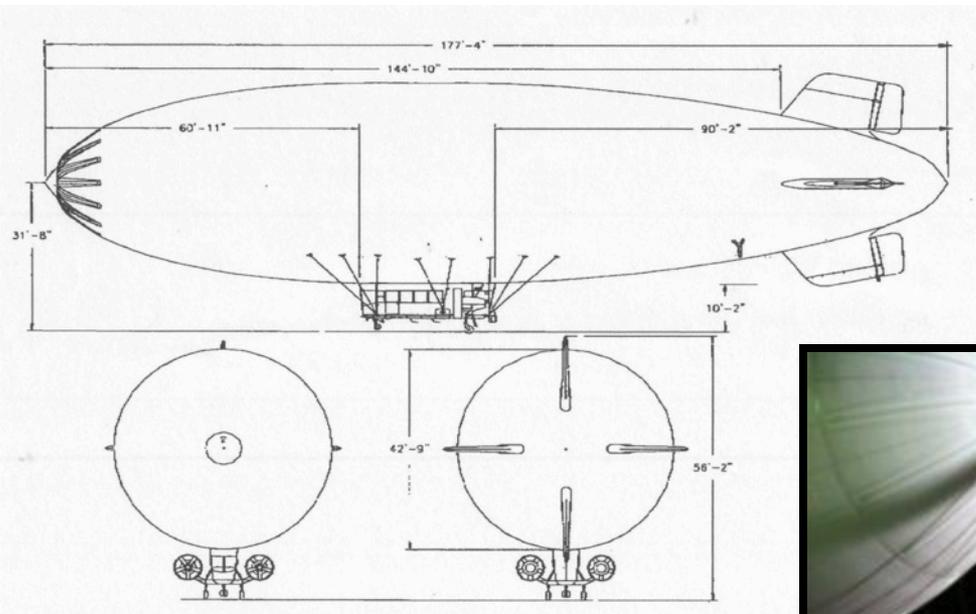


SE UAS has over 100,000 hours of flight time in theater with clearance to operate at multiple locations





MZ-3A Airship



DIMENSIONS

Length 178ft
Height 55ft
Width 46ft

ENVELOPE

Volume 170,000 cu ft
Length 175.5 ft
Diameter 43 ft

PERFORMANCE

Max Speed 45 KIAS
Max Altitude 9500 ft
Fuel Burn @ 30 KIAS = 11 gal/hr
Max ROC / D ~1400fpm/2700fpm
500-2500lb useable load
12 hours max endurance

MAIN PROPUSION

2 x 180HP Lycoming IO-360
Prop 65" diameter, 5-blade

CONTROL CAR/GONDOLA

Overall Length 25.5 ft
Overall Width 6 ft
Interior Length 11.4 ft
Interior Height 6.3 ft
Seating: Pilot + 9 passengers

ELECTRICAL POWER

1x 28 volt DC 90 amp Utility Bus
2.2 kw aux power unit
Provides 2x10 amp 115/60

MOORING RADIUS

Fixed Mast 300 feet
Mobile Mast 200 feet





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VXS-1

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