



# **NAWCAD**

# **Air Systems Group (ASG)**

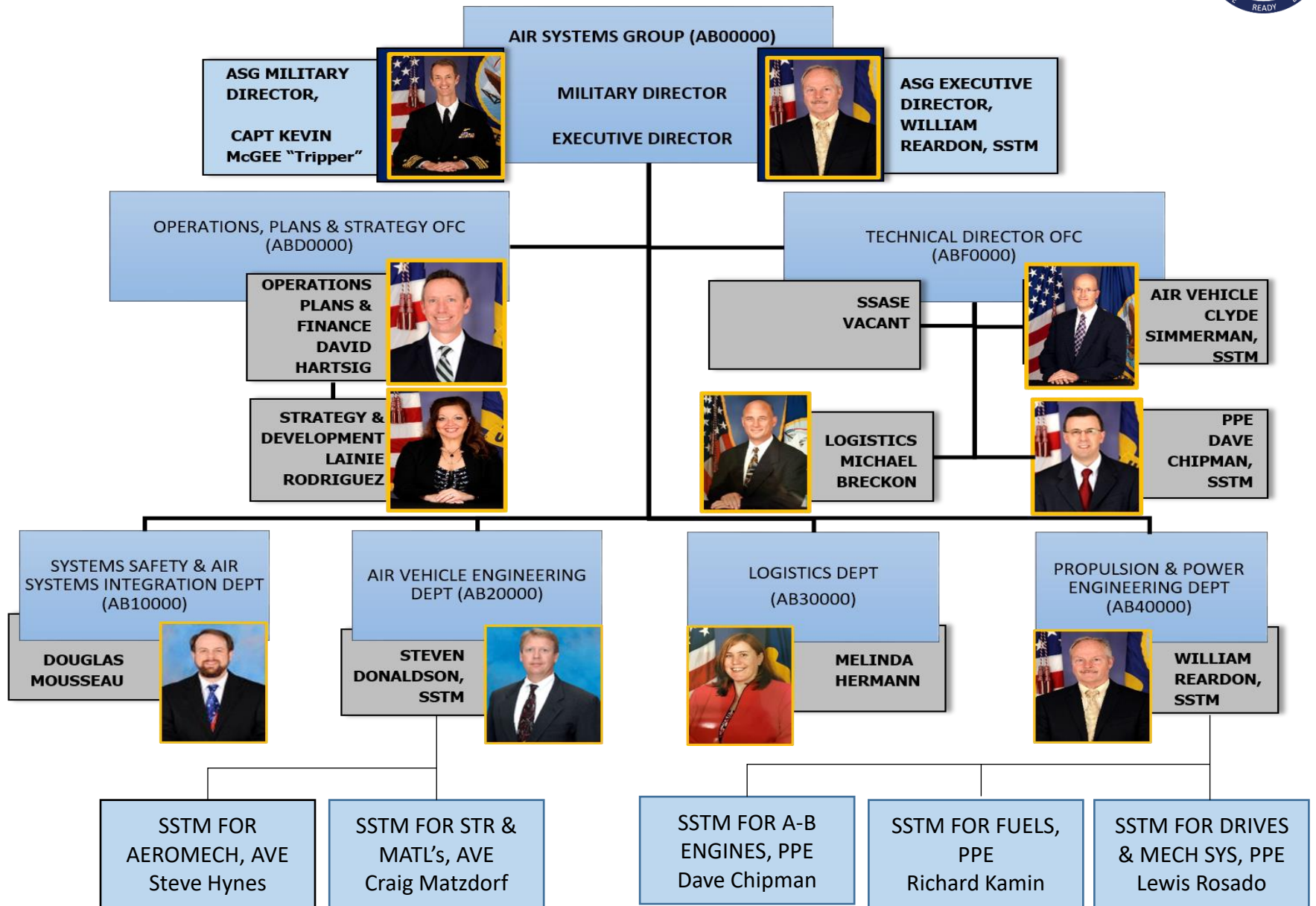
**9 May 2022**

Presented to: Industry Day

Presented by: ASG Leadership Team



# ASG Leadership Team



# Top Level Responsibilities

- ASG Technical Authorities:

- Airframe
- Air vehicle subsystems
  - Electrical
  - Thermal
  - Hydraulic
  - Landing
- Aeromechanics and performance
- Engines
- Drive systems
- Materials
- RDT&E of these systems
- Logistics support for these systems



- Systems Safety for all NAVAIR technical domains



# System Safety, Air Systems Integration & Logistics (SSASI) Department

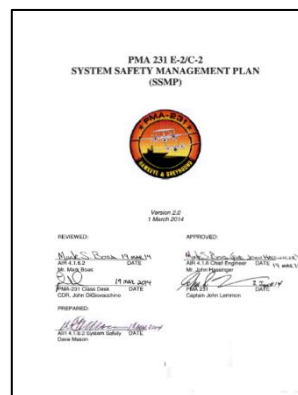


## System Safety

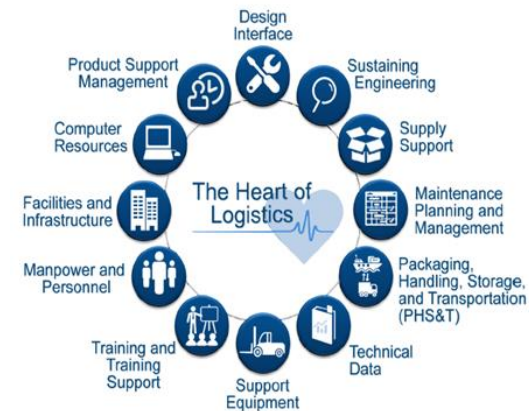
- Identify, manage, and support resolution of potential safety hazards
- Develop, implement and maintain System Safety Management/Program Plans (SSMP/SSPP)
- Manage Development and Sustainment System Safety Risk Assessment (SSRA) process and execution
- Lead System Safety Working Groups (SSWG) to ensure common understanding between fleet, PMAs, OEMs and NAWC personnel of safety concerns

FREQUENCY	SEVERITY	CATASTROPHIC	CRITICAL	MARGINAL	NEGLECTIBLE
FREQUENT 1-10 (1E-3)	A	HIGH (1)	HIGH (3)	SERIOUS (7)	MEDIUM (13)
PROBABLE 1-10 (1E-4)	B	HIGH (2)	HIGH (5)	SERIOUS (9)	MEDIUM (16)
OCCASIONAL 1-10 (1E-5)	C	HIGH (4)	SERIOUS (6)	MEDIUM (11)	LOW (18)
REMOTE 1-10 (1E-6)	D	SERIOUS (8)	MEDIUM (10)	MEDIUM (14)	LOW (19)
IMPROBABLE 1-10 (1E-7)	E	MEDIUM (12)	MEDIUM (15)	MEDIUM (17)	LOW (20)

Hazard Risk Index Matrix



System Safety Mgt Plan

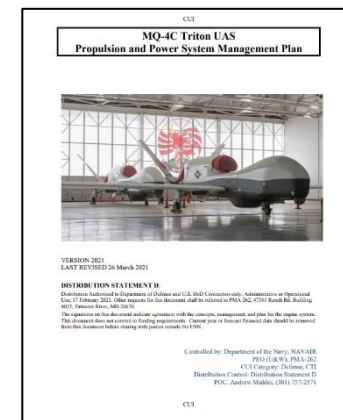


## Air Systems Engineering and Logistics

- Cross-domain systems engineering and logistics functions for S&T, acquisition, sustainment and readiness needs – direct PMA support
- Provide high-level of expertise in Air Vehicle and Propulsion & Power domains and interfaces
- Influences weapon system design & provides effective, timely product support capabilities that drive best-value product support planning & execution



Air Systems Integration Activities



Propulsion System Management Plan



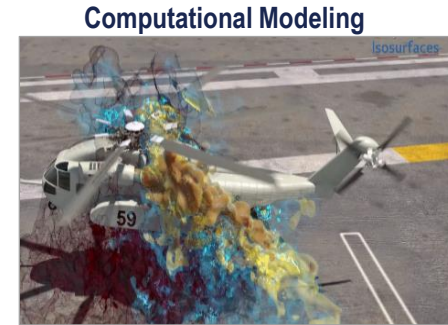
# Air Vehicle Engineering Department



Provides Aeromechanics, Structures, Materials, and Subsystems engineering and logistics expertise, to include airworthiness determinations, technology development, system acquisition, and product support for all naval aviation – NATOPS, NATIP, General Series Manual development and maintenance, new and revised engineering specifications and standards, Failure and Root Cause Analyses, Launch and recovery envelopes for all carrier-based TMS (recently completed on CVN-78)

## Aerodynamic/Wind Tunnel/Flight Testing:

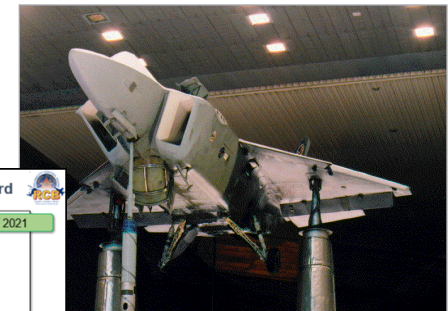
- Blended with M&S produces high-fidelity representation of vehicle capabilities
- Aero-Performance, Stability and Control, Store Separation, Ship Anemometer placement



Computational Modeling

## Aeromechanics :

- Performance Chart development, Mission Planning Systems, KPP determinations and assessments
- Aeromechanics Safety Investigation Support Team (ASIST) – Failure investigation and mishap event reconstructions
- Flight Controls/Vehicle Management System Design - JSF and F/A-18E/F Precision Landing Mode (MAGIC CARPET)
- Piloted simulation /Flight Controls: CH-53K Exhaust Gas Re-ingestion



Wind Tunnel Testing

## Materials:

- Corrosion-resistant design -Corrosion Protective Material Design
- Failure Investigation/determination/RCCA
- Advanced Primer, Topcoats and Survivability (LO) coatings/materials

Corrosion Health Assessment (CHA) Scorecard

FY21 GOAL Complete 10th manned platform baseline by 30 SEPT 2021

Platform	TMS Baseline	PSM/TMS Loss Schedule	Recovery Plan Establishment	Recovery Plan Execution	PSM Corrosion Recovery Plan Lead
F/A-18E/F					Woody Payton
F/A-18A-D					
H-1 (AH-1Z & UH-1Y)					Craig Shaw
H-60R					Karl Guldhammer/ Bill Stevens
H-60S					Walter Schaefer
E-6B					
MC-22					
F-35					
F-35B					
F-35C					
H-36					
E-2C					
AV-8B					
C-130					

Populated by COMFRC F35 Age Exploration Program

CHA Scorecard RESET

RECOVERY PLAN BRIEFING SCHEDULE

	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
P-18										
E-6										
H-60										
MC-22										
P-8A										
P-35										

## Subsystems:

- Fire Protection/Suppression System development, design and test
- F-35 Tailhook Shank and Damper design
- Component Lifting and Overhaul
- Cargo Loading/Unload/Release and Fastrope/Cargo Loading Certification
- Physiological Episode Evaluations and Design Solutions



Cargo Lab

## Structures:

- Structural Life Determination and Fatigue Life Management
- Aircraft Structural Limits
- Aircraft Repair and Repair Development
- Launch and Recovery Certifications - CVN EMALS/AAG Certification



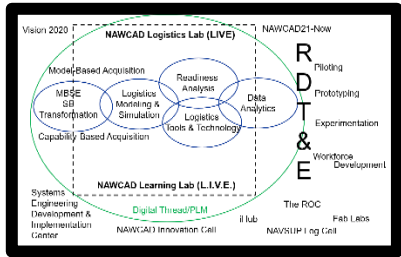
Piloted A/C M&S



# Air Systems Logistics Department



## LIVE Lab



## Maintenance Planning Development & Update



## TEC/WUC assignment & Baseline Reports

WUC	WUC Name	TEC	TEC Name	WUC	WUC Name	WUC	WUC Name	WUC	WUC Name
000001	PLAC	1	0001	PLAC	PLAC	0001	PLAC	0001	PLAC
000002	AVIONICS	1	0001	AVIONICS	AVIONICS	0001	AVIONICS	0001	AVIONICS
000003	AVIONICS	1	0001	AVIONICS	AVIONICS	0001	AVIONICS	0001	AVIONICS
000004	AVIONICS	1	0001	AVIONICS	AVIONICS	0001	AVIONICS	0001	AVIONICS

- Ensures effective and efficient logistics support for Fleet operations by integrating the 12 IPS elements to maximize system supportability, reliability, availability, maintainability, mission effectiveness, & affordability throughout the life cycle
- Influences weapon system design & provides effective, timely product support capabilities that drive best-value product support planning & execution
- Ensures acquisition for sustainment
- Develops logistics plans & determines requirements
- Life Cycle Support of Integrated Program Teams (IPTs) and Enterprise demands in the areas of Maintenance, Technical Data, Supply, Training, Flight Line Reliability and Infrastructure
- Support Reliability Control Board (RCB) Degrador Action Cells (DAC) for PMAs

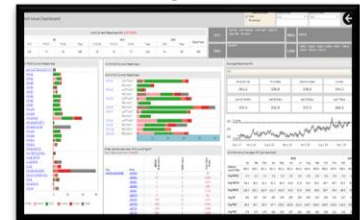
In-Service Ship, New Ship Design, In-Service A/C, ECPs, New A/C



## Advanced Analytical Innovation & Data Science



## RCB Degrador List



## Status Dashboards



## Vector Trend Analysis

## TDP Life Cycle Management

## Operating Materials & Supplies

## Supply Chain Analytics

## DMSMS/Obsolescence

Ensuring each system is designed for supportability & required logistics support is available when systems are fielded

# Propulsion & Power Engineering Department

**Engines, Drive Systems, Power Systems, Fuels & Lubricants, System Control, Performance, Test, Engineering and Logistics expertise, and Propulsion & Power Specific Test Facilities for Navy/DoD Acquisition and Fleet Sustainment**

- Development and In-Service test and evaluation**
  - DoD & Service lead to develop Environmental engine endurance test
  - V-22, H-53K, H-1&60 environmental (Sand/Dust/Salt Water) susceptibility testing
- Propulsion System Life Cycle Management Planning aligned to Platform Safety, Readiness and Cost objectives**
  - Development, Management & Execution of Engine & Propulsion System (life cycle) Management Plans (EMPs & PSMPs) in support of NAE PMAs
- Component Improvement Program (CIP):**
  - Improve reliability, maintainability, durability (>2X Fleet aggregate TOW)
  - Reduce Fleet maintenance cost (~\$100M/Yr Cost Avoidance)
- Navy Operational Energy Programs**
  - REACTS – Resilience, Efficiency, mission Assurance, energy Conservation, Training, energy Security
  - Fuels and Lubricants management for Air/Surface Fleets
- NAE Propulsion Management Board (PMB) Chair/Leadership**
  - Manage Fleet Readiness per OPNAV 13700.2 – Monthly metrics, predictive analysis, issue identification and resource coordination



V-22 Engine Sand Ingestion Tolerance Testing



Engine Service Life Durability Testing

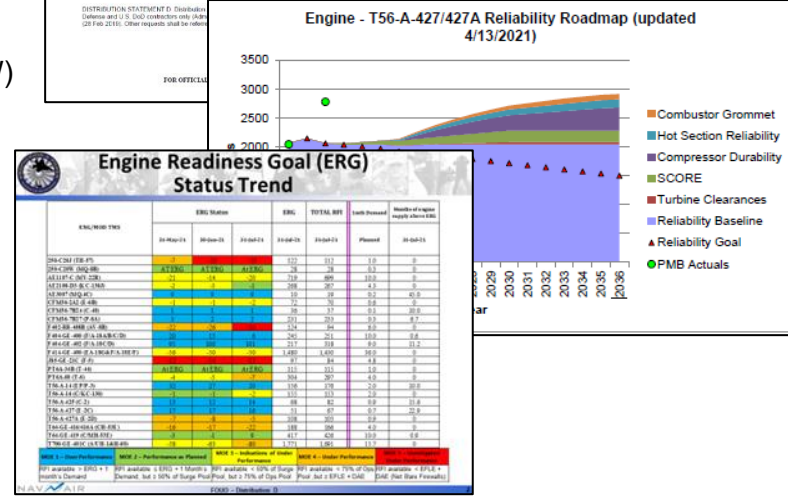
**T56-A-427/427A Engine Management Plan (EMP) FY22**

August 25, 2021

DISTRIBUTION STATEMENT D. Distribution Unlimited (DSIU) contracts only (since 28 Feb 2011). Other requests shall be referred to DSIP/OPS.



F-35 Production Engine Overhaul Acceptance Testing





# ASG Areas of Need



## Product Based Services

- Air Vehicle, Propulsion and Power modeling and simulation, model based systems engineering
- Air Vehicle, Propulsion and Power engineering support
- Systems Safety technical support
- Fuels and lubricants chemical analysis
- Air Vehicle, Propulsion and Power lab test, evaluation and maintenance technical support and engineering
- Administrative support

## General

- Flexibility and Capability to surge across the portfolio
- Quick response to technical needs
- Minimal internal administrative and contract costs





# Upcoming Contracting Opportunities



## Propulsion & Power and Air Systems Technical and Engineering Support Services:

- Competitive Follow On to N0042118C0010
- NAICS Code: 541330
- PSC: R425 Technical and Engineering Services
- Under \$50M
- SeaPort-NxG Task Order is the expected contract vehicle
  - Base with four Options (5 year PoP)
  - Cost plus Fixed Fee (CPFF) Labor CLINs with Cost CLINs for ODCs
- DRAFT RFP Release expected in Oct 2022
- Award expected by June 2023
- ASG is the lead activity for research, systems engineering and integration, engineering analysis and evaluation, test and evaluation, air vehicle, logistical, and in-service engineering support of naval aviation. Systems include: air breathing engines and engine integration for manned and unmanned aircraft and missiles, auxiliary power, secondary and emergency power systems, helicopter transmissions and drive systems, aircraft and engine fuel systems, aircraft systems reliability, fuel, oil and greases for propulsion system engines, gearboxes, propellers and transmissions, and system performance.



# Upcoming Contracting Opportunities



## Propulsion & Power Laboratory Operations and Maintenance Support Services:

- Competitive Follow On to N0042118C0016
- NAICS Code: 541330
- PSC: R425 Technical and Engineering Services
- \$50M – \$100M
- Sources Sought and Market Research is complete
- SeaPort-NxG Task Order is the expected contract vehicle
  - Base with four Options (5 year PoP)
  - Cost plus Fixed Fee (CPFF) Labor CLINs with Cost CLINs for ODCs
- DRAFT RFP Release expected in June 2022
- Award expected in Dec 2023
- This contract will provide engineering, technical, administrative, operation, maintenance, repair, equipment and laboratory upgrades and improvements, equipment procurement, off-site testing and calibration services for the Naval Air Warfare Center, ASG, Propulsion and Power Department (AB4), Patuxent River, Maryland. The Contractor will provide assistance to the Government in the Operations and Maintenance of the Propulsion and Power Test Laboratories.