



AIR VEHICLE ENGINEERING OVERVIEW

Presented by:

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Deputy Director, AIR4.3A

Air Vehicle Engineering Department (4.3)

Research and Engineering (4.0)

Naval Air System Command

7 November 2007



NAVAIR Public Release 698

Distribution Statement A – “Approved for public release; distribution is unlimited”

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PRIMARY POC:
Mr. Jerry Rubinsky
AIR 4.3 SBIR Coordinator



Naval Aviation: Navy and Marine Corps Air Systems



- ... TO DEVELOP, ACQUIRE AND SUPPORT AIRCRAFT AND RELATED SYSTEMS WHICH CAN BE OPERATED AND SUSTAINED AT SEA**
- ... TO WORK WITH INDUSTRY ON BEHALF OF THE USER TO DELIVER OUR PRODUCTS AND SERVICES**



COMPARATIVE SCALING
USS GEORGE WASHINGTON (CVN-73)
OVERLAID ON TYPICAL AIRFIELD RUNWAY
(12,000 FT.X150 FT)

OUR CORE FOCUSES ON WHERE WE ARE DIFFERENT





Extreme Environments





Science and
Technology

Acquisition

In-Service Support



SEA BASED AIRCRAFT &
SYSTEMS / UNMANNED AERIAL
VEHICLES (UAVs)



MARITIME WEAPONS



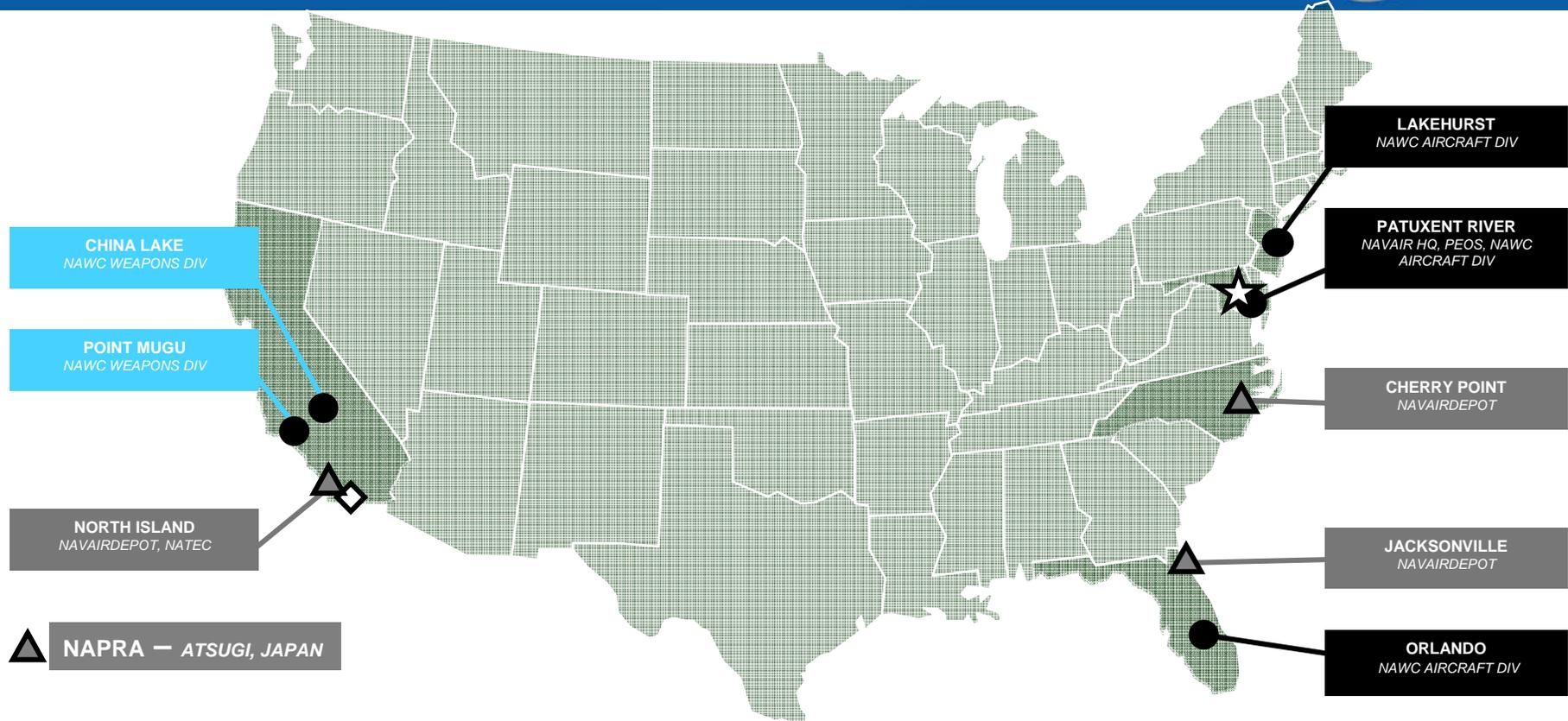
MISSION SYSTEMS & SENSORS
AIR ASW / ASUW



AIRCRAFT PLATFORM INTERFACE
SHIP & EXPEDITIONARY



AIRCREW / MAINTENANCE
TRAINING SYSTEMS



- ★ NAVAIR HQ
- NAVAL AIR WARFARE CENTER
- ◇ LOGISTIC SUPPORT ACTIVITY
- ▲ NAVAL AIR DEPOT
TRANSITIONING TO
FLEET READINESS CENTERS

WEAPONS WEST COAST HUB

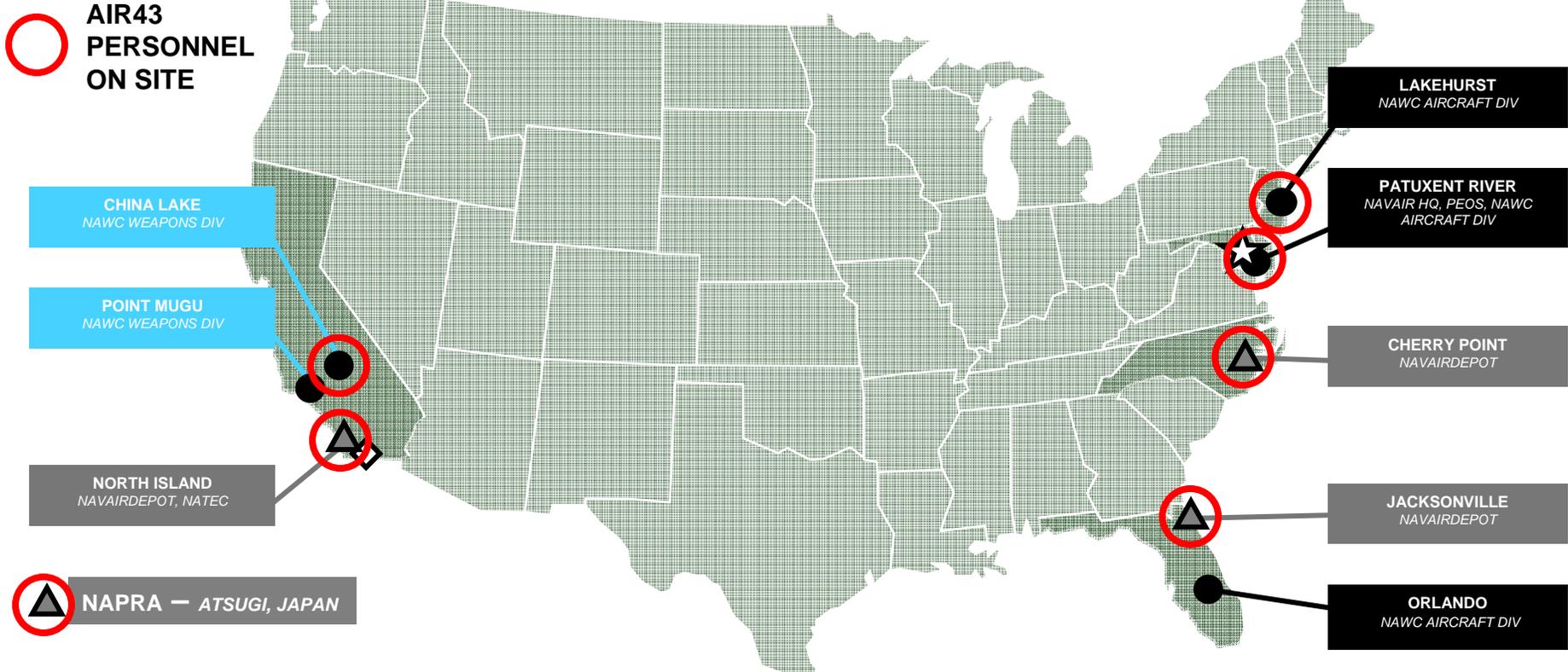
- MISSILES / FREEFALL WEAPONS
- WEAPON SYSTEM INTEGRATION
- ELECTRONIC WARFARE SYSTEMS
- LAND RANGE / SEA RANGE
- NON LETHAL WEAPONS

AIRCRAFT EAST COAST HUB

- AIR VEHICLES
- PROPULSION & POWER
- AVIONICS & SENSORS
- SHIP INTERFACE & SUPPORT SYSTEMS
- LAUNCH & RECOVERY
- UAVS
- ATLANTIC TEST RANGE AND GROUND SYSTEMS TEST FACILITIES
- HUMAN PERFORMANCE / SIMULATOR SYSTEMS



NAVAIR MAJOR SITES – 4.3 ON SITE PERSONNEL



- ★ NAVAIR HQ
- NAVAL AIR WARFARE CENTER
- ◇ LOGISTIC SUPPORT ACTIVITY
- ▲ NAVAL AIR DEPOT
TRANSITIONING TO FLEET READINESS CENTERS

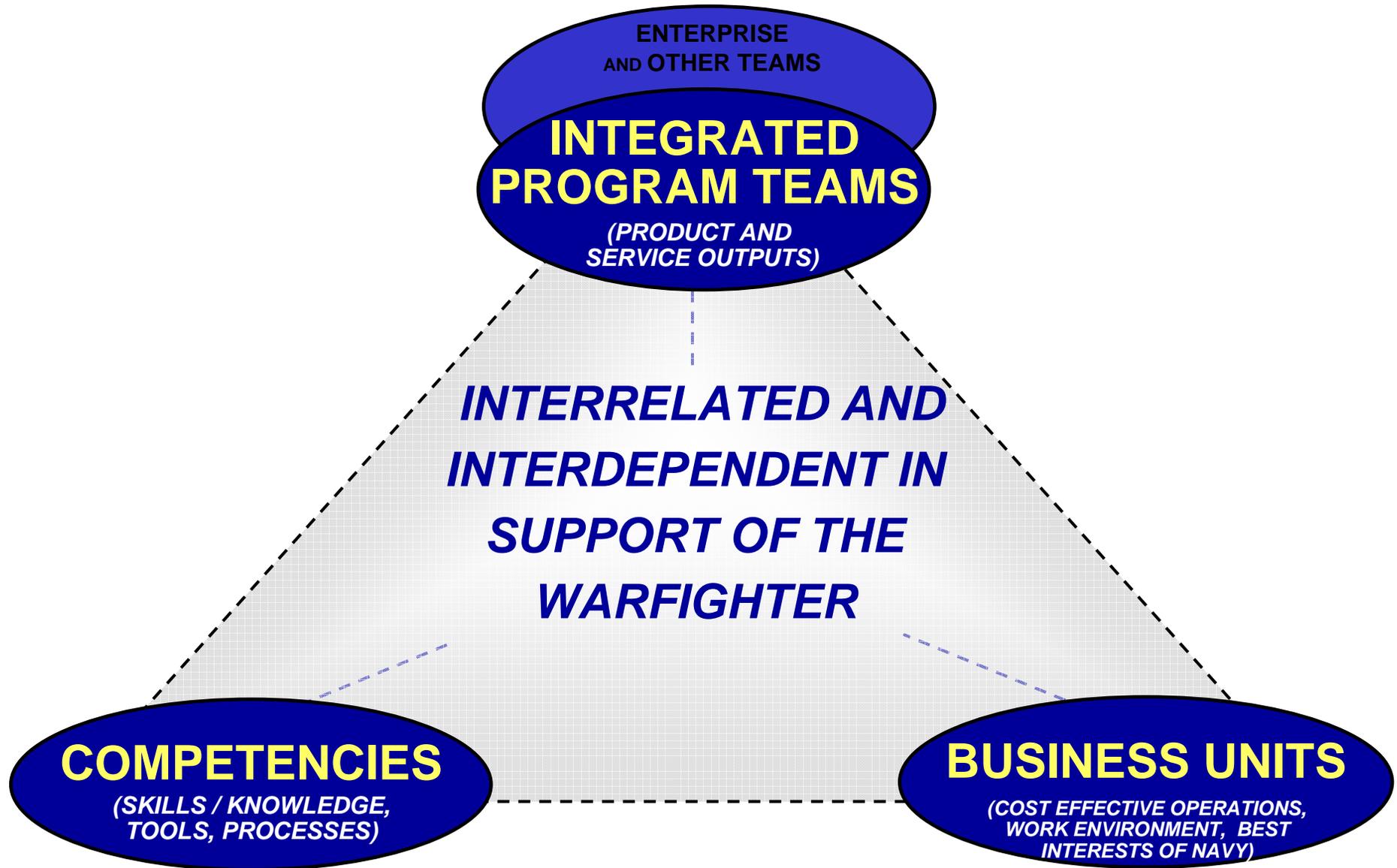
WEAPONS WEST COAST HUB

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AIRCRAFT EAST COAST HUB

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Systems Engineering Division AIR4.3.1



Systems Engineering Division

Aeromechanics

Structures



Air Vehicle Systems Engineering Division

Mission : To manage and lead Air Vehicle Integrated Product Teams. We develop Air Vehicle requirements, maintain Air Vehicle configuration, manage risk, and measure technical performance focusing on Fleet needs over the entire life cycle of a weapon system.



Our goal is to achieve an integrated, balanced Air Vehicle system solution that meets cost, schedule, and performance objectives

Subsystems

Other Engineering Depts



Aeromechanics Division

AIR4.3.2



Aeromechanics Division

Flight Test

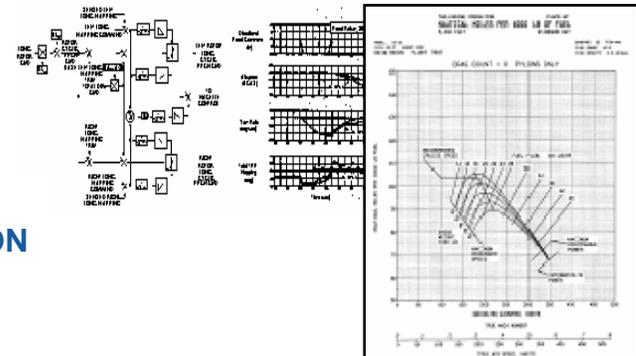


**FLIGHT TEST PLANNING
DATA / ANALYSIS VALIDATION
RISK REDUCTION**



Simulation

Analysis



**FLIGHT CLEARANCE
FLIGHT ENVELOPE EXPANSION
FLEET SUPPORT**

**NATOPS DEVELOPMENT
CONTROL LAW DEVELOPMENT
SPEC COMPLIANCE / GUIDANCE
TACTICAL UTILITY ASSESSMENT**

**Aeromechanics
Interface**

**PRE-FLIGHT TEST PREDICTIONS
DATA BASE DEVELOPMENT
MISHAP INVESTIGATIONS**



Wind Tunnel Testing



Structures Division

AIR4.3.3



Structures Division

Research

Next Generation Service Life Tracking
 Risk Quantification
 Enhanced Failure Prediction
 New Structural Mfg & Repair Concepts
 Calculation Management System
 Flight and Ground Test Methodologies

Acquisition

Design & Certification Criteria
 IPT Staffing
 Command and Ktr Consulting
 Structural/Dynamic Ground & Flight Test Requirements Definition
 Airworthiness Certification & Flight Clearance

In-Service Engineering

Direct Fleet Support
 Depot Production Support
 Engineering Investigations
 Aircraft Modification/Enhancements
 In-Service Damage Repair Design/Certification
 Battle Damage Repair Design/Certification
 Follow-on Test & Evaluation, Stores Integration
 Service Life Assessment/Extension
 Inventory Management/Tracking

Materials Division

AIR4.3.4



Materials Division

MATERIALS SCIENCE AND TECHNOLOGY

6.1 - 6.4
 SBIRS/ILIR
 Manufacturing Technology
 SERDP/W2210 Pollution Prevention

Metals & Ceramics
 Propulsion Materials
 Avionics
 Corrosion Technology/
 Materials Protection
 Advanced Polymers
 & Composites
 Functional Materials
 Nondestructive Evaluation



ACQUISITION SUPPORT/ RISK ASSESSMENT

Requirements Definition
 Source Selection
 IDR/PDR/CDR
 Materials & Processes
 Specifications/CDRLs
 Design Allowables
 Technology Transition
 Materials & Processes
 Certification
 Award Fee
 Performance Monitor
 Repair Development
 MIL-Handbooks/
 Specifications

FLEET SUPPORT/AIRCRAFT MAINTENANCE

Environmental Compliance
 HAZMAT Minimization
 Aging Aircraft Initiatives
 Maintenance & Repair
 Technologies
 Failure Analysis

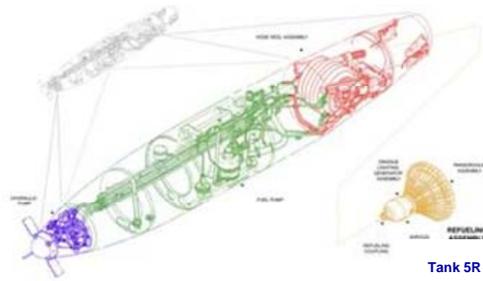
Corrosion Prevention
 Composite Repair
 Operational Chemicals
 Maintenance Manuals
 Materials Deterioration Program
 Mishap Investigation



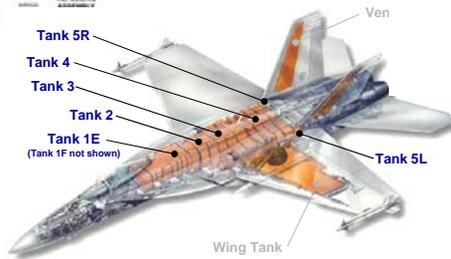
Subsystems Division AIR4.3.5



Subsystems Division



Aerial Refueling Stores



Internal Fuel Tanks



Reservoirs



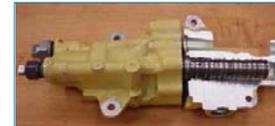
Tubing runs



Accumulators



F-18 Pumps



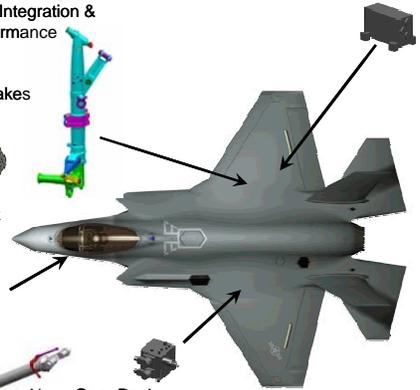
Switching Valves

Brake Control System Design, Installation, Integration & Performance
Main Gear Design, Structural Integration & Performance

Wheels, Tires & Brakes

Landing Gear Door & Uplock Integration & Performance

Nose Wheel Steering



Nose Gear Design, Structural Integration & Performance

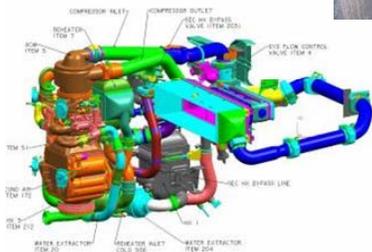
Launch Bar, Holdback Bar & Arresting Hook Integration & Performance



Mechanisms



Airframe Bearings



FIRE PROTECTION

Prevention, Containment, Detection, Suppression

ECS

Cooling and Pressurization for Crew and Avionics

ICE PROTECTION

Detection and Management of Ice Accretion



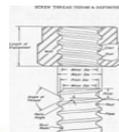
Internal Cargo



Transparencies



Emergency Egress Lighting



Fasteners



External Cargo



QUESTIONS?