Life-Cycle Maintenance in a War-Time Environment

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OPNAV N434

DoD Maintenance Symposium 2010
Tampa, Florida

Ship Maintenance Construct

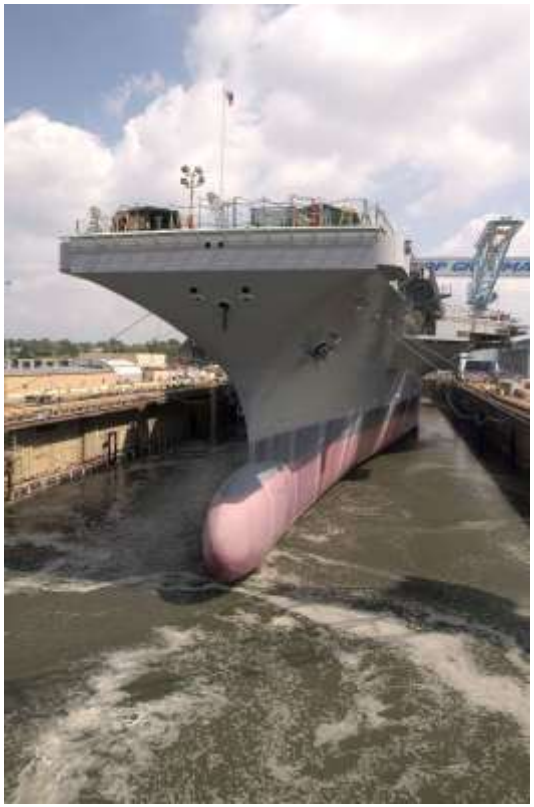
Three levels

- **Organizational**
  - Within capability of ship's force
- **Intermediate**
  - Sub tenders & Regional Maintenance Centers
- **Depot**
  - Full facilities and capabilities

Conducted by public and private sectors

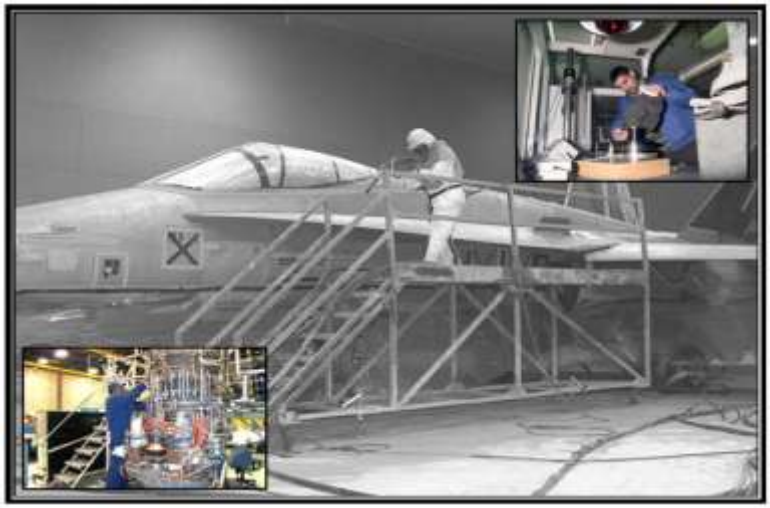
- **Nuclear powered submarines**
  - Predominantly public sector (naval shipyards)
- **Non-nuclear surface ships**
  - Largely private sector
- **Nuclear powered aircraft carriers**
  - Largely private sector for refueling and non-nuclear work
  - Largely public sector for propulsion plant work

Depot avails every 22-36 months



Aviation Maintenance Construct

- **Conducted by public (organic, inter-service) and private sectors**
  - ~ 3,500 aircraft (USN/USMC) in over 40 Type/Model/Series (TMS)
  - ~ 9,000 engines in over 40 TMS engines (70+ different engines and modules)
- **Airframe Depot Maintenance**
  - Integrated Maintenance Concept (IMC) - Calendar-Based
  - Scheduled Depot Level Maintenance (SDLM) - Calendar-Based
  - In-Service Repair (ISR) – On-flight line, as required
- **Engine Depot Maintenance – rework/repair of whole engines beyond the capability of intermediate level maintenance activity**
  - Calculated Total Failure Rate (Mean Engine Flight Hours Between Repair) x Flight Hours
  - The engine integrated budget (flying hour program, depot maintenance [engines], and Engine Reliability Fix [ERF] (Program Related Logistics, Component Improvement Program, Power Plants Change) takes the best reliability and most economical readiness approach. Balances reliability investment against repair costs
- **IMC/P – concept/program provides the following benefits:**
  - Maintenance tasks are performed by the appropriate skill level unconstrained by traditional locations
  - Reduced Depot Out of Service Time, increased availability
  - Improved Aircraft material condition
  - Integration between Sailors and Depot Artisans

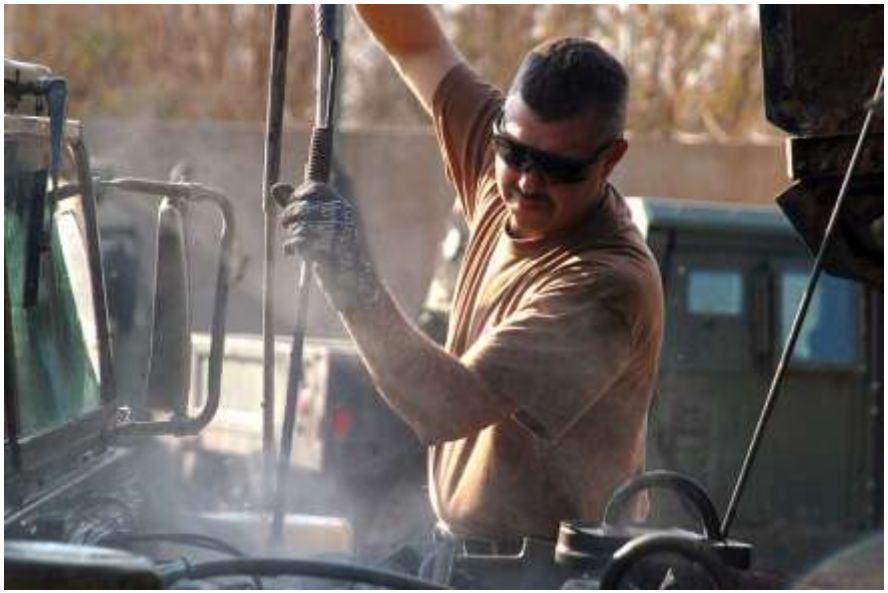


Aviation maintenance is required today, for service life used yesterday, to provide readiness tomorrow

Expeditionary Maintenance Construct

- Majority of life support equipment in Operation Iraqi Freedom (OIF) divested (unserviceable, 6+ years in theater)
- Serviceable equipment “lifted and shifted” to Operation Enduring Freedom (OEF)
- Post OEF: Reset enduring MRAP requirement, controlled equipment, civil engineer support equipment, and small craft. Divest unserviceable life support equipment.

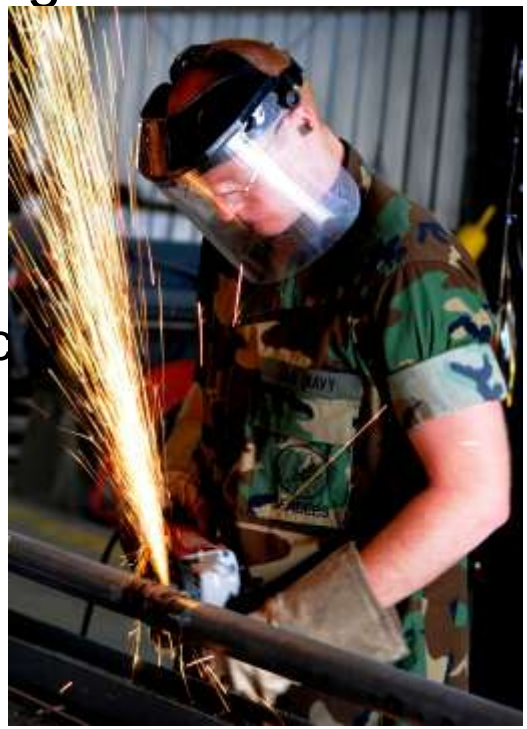
- **Maintenance:**
  - Organic maintenance performed in theater
  - Some theater depot capacity via Army, USMC, and Joint Program Office.
  - Remaining depot requirement via CONUS facilities.



Total Ownership Cost Reduction of Expeditionary Equipment is a High Priority

Expeditionary Class Maintenance Plan

- Naval Facilities Engineering Command Expeditionary Program Office developing plan
- Goal: Plans and procedures for equipment maintenance for Navy expeditionary forces
  - Parallels existing US Navy ship maintenanc plans
- Cost model as a sub-component of the maintenance plan
  - Integrated logistics overhaul (ILO)
  - Scale readiness up or down based on investment



- Lean Six Sigma (LSS) used to reduce “down” time / turnaround time (or both) when equipment is serviced at the unit or depot level.

Questions?