Navy Air Energy Conservation (Air ENCON) Program

NDIA Environment, Energy Security, and Sustainability Symposium (E2S2)

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**Navy Air Energy Conservation (Air ENCON) Program**

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Executive Summary

- Air-ENCON is a key component of the Navy’s drive to achieve SECNAV’s goals of reducing fuel and energy use across the Fleet

- Goals: Reduce reliance on petroleum and create a culture of conservation in NAE, without impacting mission or safety
  - Primary focus is to reduce non-mission fuel burn
  - A 4% overall reduction is equivalent to about 21 million gallons, or roughly $85 million per year

- Approach is to foster innovation – initial practices being developed:
  - Hot Pit Refueling
  - SMART
  - Reverse Vertical Separation Minimum (RVSM)
Program Supports the Navy’s Energy Vision

- CNO signed the Navy Energy Vision in October 2010 and established Task Force Energy to drive implementation
  - Maritime
  - Expeditionary
  - Aviation
  - Shore
- Aviation Working Group (AWG) proposed creation of Air Energy Conservation (Air ENCON) program, modeled after successful Incentivized ENCON (iENCON) program
- Air ENCON Integrated Product Team (IPT) is responsible for direct program implementation Reports to CNAF N40, who is responsible for overall program success
- Program supports SECNAV’s five energy goals towards Energy Security and Independence
Energy consumption by the numbers - DoD & Navy

- In 2010, the U.S. burned 7.1 billion barrels of fuel per year, roughly 25% of world demand – the Federal Government is 2% of this.
- For every $1 rise in the price of petroleum, the Navy’s fuel bill increases by $31 million per year.

Total USG Liquid Fuel Use

DoD Fuel Use

US Navy Fuel Use by Function

- Maritime
- Aviation
- Shore
- Expeditionary

<table>
<thead>
<tr>
<th>Sector</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>DoD</td>
<td>93%</td>
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<tr>
<td>Other</td>
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<tr>
<td>US Navy</td>
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<tr>
<td>Total USG</td>
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- 42% Maritime
- 51% Aviation
- 6% Shore
- 1% Expeditionary
Snapshot of Naval Aviation Fuel Use

Key Facts:

- FY2010 consumption was 580 million gallons
- F/A-18’s consume over 50% of naval aviation fuel
- Fixed wing accounts for 91% versus rotary

Key Issues:

- Defining and reducing non-mission consumption
- Maintaining proper Readiness (i.e., flight hours)
- Not impacting Contingency Operations
- Not impacting Safety
Air-ENCON Objectives

Establish a Naval Air Enterprise-wide program that:

– Reduces reliance upon petroleum
– Promotes a culture of energy awareness
– Identifies and communicates best practices
– Eliminates inefficient policy/cultural paradigms
– Rewards innovation and most efficient utilization of energy resources

Without adversely impacting mission or safety

Contributes to CNO Target to Reduce Energy Use Afloat by 15% by 2020
Key Elements of Program

- **Develop Process innovations**: Assess fuel saving best practices identified within the NAE for potential wide deployment through Air ENCON Program. This includes conducting risk assessments and detailing the changes in standard work packages.

- **Establish Metrics and Reporting**: Establish a baseline of consumption and a measurement and reporting scheme that accounts for deployment phases and is applied at the unit level.

- **Communicate, train, and implement changes**: Effectively communicate program intent and policy and process change detail to the right stakeholders (e.g., leadership, aviators, maintenance personnel)

- **Recognize and reward progress**: Develop an awards and recognition element that facilitates program adoption, encourages innovation, and builds a “Culture of Conservation”
Communications Strategy and Products

- Conducted a stakeholder analysis to identify information needs and available media channels
- Developed a Strategic Communications plan to guide media development and implementation
- Developing a series of communications products to deliver key messages
- A key information portal will be the Air ENCON Web site
Measuring Success (Metrics)

- Key metric will be overall fuel reduction
  - Program will track fuel use by squadron over time
  - Quarterly reports on Squadron and Fleet usage

- Program will also track total usage and fuel efficiency by TMS

- Metrics will account for Operational fuel usage

- Program will incorporate “Soft Metrics” to measure change
  - Awareness
  - Fuel reporting compliance
  - Training attendance
  - Identification and submission of innovations
Process Innovations form the Core of the Program

- Reduced fuel dump
  - Short-Cycle Mission and Recovery Tanking (SMART)
  - Operations and Maintenance Coordination

- Cold Refueling
  - Replace “hot pit” refueling with “cold” truck refueling for fixed-wing aircraft
  - 2006 Lemoore study savings

- Other initiatives
  - Reduced Vertical Separation Minimum
  - Minimize external stores in-transit
Short-cycle Mission And Recovery Tanking (SMART)

• Benefits to SMART have already been reported and verified
  – Carrier Air Wings 5 and 7
    o NSAWC Journal Article – Winter 2008
    o 2009 deployment
  – Continued Fleet Utilization

• Potential Savings
  – 65% reduction in tanker burn demonstrated by CVW-7/3
    o Reduced tanker flight time and increased tanker CV recovery
    o Reduces amount of fuel carrier needs to be resupplied with, creating Navy-wide savings
Truck ("Cold") Refueling

• 2006 Lemoore Study examined truck vs. "hot pit" refueling
  – "Hot pit" refueling cost 18 minutes and 70 gallons per aircraft per refueling
  – Expanded truck refueling reduced use of hot pits by approximately 50%

• Additional Benefits
  – Increased aircraft component lifetimes, squadron Temporary Assigned Duty (TAD) personnel, reduced aircrew downtime

• Additional Costs
  – Truck maintenance, refueling personnel

• Already performed in parts of aviation community (MH-60 etc.)
Other practices under consideration

• RVSM Certification allows F-18s to fly between 28,500 and 41,000 feet (where the vertical separation between aircraft is reduced to 1,000 ft) over the continental US
  – More efficient fuel use during cross-country flights

• Minimize external stores carriage to mission essential

• Fueling/Defueling Practices
  – Appropriate fuel use for FCLP
  – Appropriate fuel load for maintenance

• Maintenance
  – Ground support equipment to perform maintenance without APU
QUESTIONS?