Navy Air Energy Conservation (Air ENCON) Program

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

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May 22, 2012
New Orleans, LA
1. REPORT DATE
   22 MAY 2012

2. REPORT TYPE

3. DATES COVERED
   00-00-2012 to 00-00-2012

4. TITLE AND SUBTITLE
   Navy Air Energy Conservation (Air ENCON) Program

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

6. AUTHOR(S)

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
   Naval Air Systems Command, 47123 Buse Road, Patuxent
   River, MD, 20670

8. PERFORMING ORGANIZATION
   REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

10. SPONSOR/MONITOR’S ACRONYM(S)

11. SPONSOR/MONITOR’S REPORT
    NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
    Approved for public release; distribution unlimited

13. SUPPLEMENTARY NOTES
    Presented at the NDIA Environment, Energy Security & Sustainability (E2S2)
    Symposium & Exhibition held 21-24 May 2012 in New Orleans, LA.

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:
    a. REPORT
       unclassified
    b. ABSTRACT
       unclassified
    c. THIS PAGE
       unclassified

17. LIMITATION OF
    ABSTRACT
    Same as
    Report (SAR)

18. NUMBER
    OF PAGES
    14

19a. NAME OF
    RESPONSIBLE PERSON

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std Z39-18
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.

![Graphs showing fuel consumption by function and by total USG liquid fuel use.](image-url)
Snapshot of Naval Aviation Fuel Use

FY 2010 Fuel Consumption by T/M/S

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?