

# Fleet Launches Aircraft Energy-Saving Initiatives

## Air ENCON Program Targets Refueling Practices for Savings

**NAVAL AVIATORS ARE** evaluating energy-saving refueling practices as part of a program aimed at standardizing fleet-driven energy best practices that do not adversely impact mission or safety.

The Naval Aviation Energy Conservation (Air ENCON) program is driving the fleet-wide implementation of these practices across the entire operational spectrum, from training and ground operations to maintenance and flight operations.

As part of the beta launch running through December 2013, the program distributes quarterly squadron “energy report cards” and solicits fleet feedback and additional energy saving ideas, said Michael Olszewski, NAVAIR Propulsion and Power, Air ENCON deputy program lead.

Air ENCON directly supports the Chief of Naval Operations’ goal to increase efficiency and reduce fuel consumption afloat by 15 percent by 2020. Naval aviation operates more

and Super Hornets,” said Quinn, an F/A-18F Weapons Systems officer. Other participating aircraft platforms include the H-60 Seahawk, E-2 Hawkeye, C-2 Greyhound, EA-6B Prowler and P-3C Orion.

“While several energy conservation practices have been used by carrier air wings and squadrons, they are not practiced consistently across the fleet,” Quinn said.

“This prompted the Navy Task Force Energy, Aviation Working Group to

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—Michael Olszewski

“Our goal is to enable the Navy to fly more efficiently by providing options to fleet commanders who manage flight hours,” said Lt. Cmdr. Daniel Quinn, Air ENCON program lead, with Commander, Naval Air Force, U.S. Pacific Fleet (CNAP), Force Readiness. The team also includes Commander, Naval Air Force Atlantic (CNAL) and Naval Air Systems Command (NAVAIR).

than 3,700 aircraft that consume more than 600 million gallons of petroleum-based fuels each year. Resource constraints and mission requirements demand increased operational capability be extracted from each gallon of fuel.

“Air ENCON is focusing first on the largest consumers, F/A-18 Hornets

develop the Air ENCON program,” Olszewski said. In 2011, the Naval Aviation Enterprise (NAE) established the team to identify, validate and institutionalize energy-conservation best practices across the naval aviation community.

“A panel of aviators, engineers and analysts evaluates operational energy conservation initiatives from across

the fleet, industry and academia,” Olszewski said.

“Once validated, the practices are standardized and incorporated into pre-deployment training,” Quinn said. Fleet feedback and additional ideas fuel the cycle.

“As the ‘technical conscience’ of the fleet, NAVAIR ensures that changes in operational behavior do not negatively impact system safety, performance or readiness,” Olszewski said. “Our technical responsibilities include engineering support, data analysis and risk management.”

To date, Air ENCON has validated several energy conservation practices, including Short-cycle Mission and Recovery Tanking (SMART) in-flight refueling, and expanded use of mobile refueling trucks in place of “hot pit” refueling stations.

### Refueling Carrier-based Aircraft

“In 2009, Carrier Air Wing (CVW) 7 pioneered the SMART practice, saving about 1.7 million gallons of fuel during 120 fly days,” Quinn said.

“The traditional tanking practice began in 2002, when the Super Hornet took over the S-3 Viking role as in-flight refueling tanker with a ‘5-wet configuration,’” Quinn said.

In a standard tanking configuration, the Super Hornet carries one centerline refueling tank and four auxiliary tanks, totaling about 28,000 pounds or 4,118 gallons of fuel. Excessive weight and drag cause the tanker to consume more fuel than usual, leaving only

about 5,000 pounds or 735 gallons of fuel to refuel other aircraft.

“Once launched, the Hornet tanker remains airborne for the complete mission, or sortie, cycle of about 1.5 hours—burning fuel the entire time,” Quinn explained. In addition, fuel that is not transferred in flight must be consumed or jettisoned for the tanker to achieve a safe landing weight.

In comparison, a Super Hornet in a SMART configuration carries only the centerline refueling pod and 14,000 pounds or 2,059 gallons of fuel.

The tanker launches to refuel the aircraft returning from their mission then lands within about 20 minutes. “Referred to as “Yo-yo Tanking” in the fleet, this method can still deliver up to 5,000 pounds of fuel per tanker without incurring undue drag, weight or efficiency penalties,” Quinn said.



F/A-18F Super Hornets perform the SMART refueling practice that saves energy by configuring a Super Hornet tanker with only the centerline refueling tank. The tanker launches to refuel the aircraft returning from their mission then lands within about 20 minutes. Referred to as “Yo-yo Tanking” in the fleet, this method delivers up to 5,000 pounds of fuel per tanker without incurring undue drag, weight or efficiency penalties.

*MC Specialist Seaman Zachary A. Anderson*

### Refueling Aircraft Ashore

The truck refueling process was documented at Naval Air Station (NAS) Lemoore, California, where 85 percent of mission refueling is delivered by truck instead of by hot pit refueling.

“Hot pit refueling occurs when an aircraft lands, taxis to a hot pit refueling area and waits in line to refuel with engines running,” Quinn said.

“As much as 70 gallons of fuel is consumed or wasted while the aircraft waits to take on 2,000 gallons,” Quinn said. “That adds up to millions of gallons a year.”

With truck refueling, the aircraft shuts down, and a truck brings the fuel to the aircraft. However, once the engine is shut down, a turnaround inspection, which may take up to an hour, must be conducted. “While timing may be an issue that necessi-



An EA-6B Prowler and an F/A-18E Super Hornet perform a refueling exercise during an air power demonstration aboard the aircraft carrier USS John C. Stennis (CVN 74).

MC Specialist Seaman Jose L. Hernandez

## Air ENCON emphasizes the strategic importance of conserving energy.

—Lt. Cmdr. Daniel Quinn

tates hot pit refueling, a flight schedule can be built around truck refueling,” said Quinn.

Air ENCON’s goal is to encourage other naval air stations, such as NAS Oceana, Virginia, to use truck refueling 85 to 88 percent of the time.

“It’s an easy sell,” Quinn said. “Without infrastructure, capital or manpower investment, about 240,000 gallons per year can be saved at NAS Oceana alone. Other facilities would achieve additional savings.”

### Culture Change

“Thanks to Air ENCON, the word is getting out and the culture is changing. The Fleet Readiness Training Plan (FRTTP) now requires one day of SMART training as part of a squadron’s pre-deployment training,” said Quinn.

The Secretary of the Navy (SECNAV) has said energy management will be a mandatory Commanding Officer

Fitness Report and Counseling Record (FITREP) element.

“Air ENCON emphasizes the strategic importance of conserving energy,” Quinn said. “While we have been accustomed to having plenty of fuel available, it may not always be the case.”

Saving fuel also gives warfighters more tactical options, such as more time loitering, more time to stay on post to support a convoy on the ground, or more time on the training range.

Air ENCON plans to implement the program fleetwide in January 2014 for active-duty Navy squadrons. The U.S. Marine Corps has also expressed interest in future collaboration.

To submit an energy conservation idea or for more information on



Air ENCON, visit <http://airencon.dodlive.mil>.

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