

U.S. Navy Continuing its Long Tradition of Energy Transformation

U-T San Diego

by Secretary of the Navy Ray Mabus

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This past July, the Navy made history during the largest maritime exercise in the world, the Rim of the Pacific Exercise (RIMPAC), by successfully demonstrating for the first time aircraft and surface-ship operations using advanced drop-in biofuels.

Among myriad firsts that day: jets making arrested landings and catapult launches off a nuclear-powered carrier using biofuels, helicopters lifting off a carrier using biofuels, a destroyer refueling while under way, and an instance of air-to-air refueling with biofuels.

Blended with aviation gas and marine diesel, the advanced biofuels were made from algae and non-food waste (used cooking oil). In addition to operating on alternative fuels, including nuclear power, our Great Green Fleet showcased numerous energy efficiency technologies that will increase our range and combat capability.

The Navy has always been a leader in energy and propulsion technologies, moving from sail to coal in the mid-19th century, to oil at the start of the 20th, to nuclear power in the 1950s. The Navy is pursuing energy efficiency measures and alternatives because our reliance on foreign oil is a significant and well-recognized military vulnerability. Much of the world's oil originates from nations beset by cultural strife or worse, and some oppose the United States' role in the world. The international pressures that threaten to disrupt the global supply of oil are building at a time when the global demand for oil is expected to increase dramatically.

In 1994, when I became the U.S. ambassador to Saudi Arabia, the United States consumed slightly less than 18 million barrels per day of fuel and China and India consumed less than 5 million barrels per day combined. Today, while the Energy Information Administration forecasts a modest increase of U.S. consumption to 20 million barrels per day, consumption in China and India has nearly tripled to 13 million barrels per day. At this rate, perhaps as early as the end of this decade, China and India's combined consumption may surpass ours. Such demand can only place ever-greater upward pressure on price.

Our vulnerability to the rapid and unforeseen changes in the price of oil is a huge threat to our readiness. Although the biofuel purchase for the demonstration was significant because of its size relative to previous purchases for testing, it is only four one-hundredths of 1 percent of the Navy's annual fuel consumption. The \$12 million spent on biofuels is what the Department would pay for an increase of less than 1 cent per gallon of oil. As context, in this year alone, the Navy will spend more than \$500 million in additional fuel costs because of rapid oil-price changes.

I firmly believe the Navy should purchase biofuels for sustained operations at prices that are cost-competitive with petroleum. That is official Defense Department policy. Several studies suggest that could happen within 10 years, but we can significantly shorten that timeline if we partner with private industry to bring down costs.

Many times in our history we have supported domestic, defense-critical industries when the immediate return on investment was not financial, but greater national security and increased military strength.

In the late 1880s, the Navy bought steel from Europe for about \$150 per ton to make our ships. Navy leadership decided our dependence on foreign countries for steel was a military vulnerability and sought out domestic suppliers. But domestic steel producers could not compete with European producers unless the Navy was initially willing to pay three times the price. Two decades later, on the eve of World War I, U.S. Navy ships were built completely with domestic, competitively priced steel. The United States was the greatest economic power on Earth, thanks in part to a booming steel industry.

America looked to fuel savings and alternative energy in its drive for victory in World War II. In 1944, Congress passed the Liquid Synthetic Fuels Act, which authorized \$30 million (nearly \$370 million in 2010 dollars) to construct synthetic-fuel demonstration plants. The United States paid \$58 per barrel for that synthetic fuel (\$755 in today's dollars), far higher than \$15 to \$19 per barrel market price for petroleum at the time.

Today, we have an opportunity to make another defense-critical investment in a viable, domestic alternative fuel industry.

In 2009, I established five energy goals for the Navy, including that no later than 2020, we would obtain 50 percent of our energy needs from alternative sources. It is an ambitious goal that requires a commitment from the top of Navy's leadership and the hardworking men and women in uniform who carry out the Navy's mission.

I was proud to have Chief of Naval Operations Jonathan Greenert and the commanders of U.S. Pacific Fleet and U.S. 3rd Fleet join me at the RIMPAC demonstration. Since then, the Navy has achieved several important milestones, including nearing completion of the testing and certification of one type of alternative fuel and the successful demonstration this summer.

Only last year, the (Obama) administration directed the departments of Navy, agriculture and energy to accelerate a viable, domestic advanced biofuel industry, resulting in a commitment by them to contribute \$510 million to that effort. San Diego is actively involved in developing biofuels; the University of California San Diego and San Diego State University are conducting important research on biofuel feedstock, and are coordinating with local companies.

These efforts have helped propel the advanced biofuel industry forward and contributed to the significant reduction in the price of biofuels. Since the Navy's first purchases in 2009 for testing, the price per gallon has dropped by more than half. I believe that if the Navy can fully pursue its initiatives, it will reach cost-competitiveness in 2016 — four years ahead of the 2020 target date.

The Great Green Fleet honors the Great White Fleet that circled the globe beginning in 1907 and introduced America as a global power. It comprised the most advanced ships of its time — battleships made from steel and powered by steam — and represented America's greatness and ingenuity.

Thanks to the men and women of the Navy, we are continuing our long tradition of energy transformation to make our nation more secure.

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