

Fuel for the Pacific Fleet

Modernized Point Loma Facility Earns LEED Certification, Keeps Fuel Flowing

After serving its country for a century, one of the U.S. Navy's biggest refueling facilities for its ships, submarines and aircraft, on Naval Base Point Loma, required a major recapitalization and environmental cleanup.

By 2004, the Navy had determined the 54 obsolete storage tanks at the Point Loma Naval Supply Systems Command Fleet Logistics Center (NAVSUP FLC) San Diego had exceeded their service lives, and some of the soils beneath them required petroleum contaminants remediation.

"That's when Burns & McDonnell was brought aboard to provide full design and construction support services for a \$193 million program to rebuild and modernize the Point Loma fuel facility," says Robert Kulash, project manager.

The project was the largest construction effort ever within the Defense Logistics Agency, and the biggest project ever undertaken by the Burns & McDonnell Fueling Group.

It wasn't only the size that made the project challenging. The project was slated for

a hillside next to upscale residential neighborhoods, and it was to meet Leadership in Energy and Environmental Design (LEED) Silver standards.

But Robb Perue, the Burns & McDonnell lead mechanical engineer for the program, notes the "biggest challenge was to develop the new facility within a smaller footprint while keeping the existing fuel depot in full operation during construction."

Historic Site, Modern Needs

The facility's history as a military fuel depot began in 1904 with its establishment as a coaling station. The first fuel oil tank was erected in 1918, followed by a pump house in 1921; the majority of its 28 riveted-steel, aboveground storage tanks were built in the 1930s.

After Japan attacked Pearl Harbor in 1941 and brought the U.S. into World War II, those aboveground tanks were surrounded with reinforced concrete walls for protection.

Another 26 underground and aboveground fuel tanks, the last completed in 1957, brought the total fuel storage capacity at Point Loma to 1 million barrels (42 million gallons).

NAVSUP FLC San Diego serves the Navy's fleet in the eastern Pacific and other approved foreign ships operating along the West Coast.

Aircraft at the nearby Marine Corps Air Station Miramar and Naval Air Station North Island also are supplied fuel by Point Loma. In total, the depot handles 7.7 million barrels (323.4 million gallons) of jet and diesel fuel annually, and stores and issues several grades of lubrication oil.

Construction Amid Operations

To keep fuel flowing during the project, Burns & McDonnell engineers designed a phased construction plan, with the first step being installation of a temporary fuel pipe and valve system to the underground tanks. Construction began in March 2009.

Ten of the 1930s-vintage aboveground tanks were demolished and replaced with eight new



The eight new storage tanks occupy a smaller site than the tanks they replaced, while maintaining a storage capacity of 1 million barrels at the Point Loma NAVSUP FLC San Diego.

storage tanks with a combined capacity of 1 million barrels. While the eight new tanks occupy a smaller site, the Point Loma facility has the same storage capacity as it did with 54 tanks.

Other critical components of the facility were a new pump building and a control tower/operations building to monitor operations at the adjacent fueling pier.

Support facilities include spill containment and leak monitoring; fire protection; pipeline receipt and dispensing facilities; a lube oil storage facility; tanker truck loading and unloading stands; additive injection

contaminated soil was processed through a low temperature thermal desorption unit on-site. The soil was then reused during construction.

The larger underground tanks also were properly prepared, closed in place and filled with remediated soil rather than being removed, reducing soil disruption and disposal costs. This process saved taxpayers about \$10 million.

Operation and Certification

The renovated fuel depot facility opened in May 2013.



The new pump building provides a safe environment for maintenance, and the pumping and controls system provides operational capacity and flexibility not previously available.

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capability; new power distribution; security systems; and stormwater drainage improvements.

A system to reclaim usable fuel and remove and capture contaminated water from shipboard compensated fuel storage tanks and cargo tanks also was designed by Burns & McDonnell.

David Garrett, a senior associate in the Burns & McDonnell Water Group, designed a fuel oil recovery facility that separates the water, other contaminants and oil so they can be properly handled and reused or disposed.

Environmental Cleanup

Significant environmental cleanup work was also required. Grant Smith, director of aviation services at Burns & McDonnell, estimates a million gallons of fuel had leaked over the decades from storage tanks and pipelines that did not have modern containment systems.

Stakeholders accepted a remediation plan that removed some contaminated soil, cleaned it on-site and encapsulated the remainder. Approximately 50,000 tons of



The project began with a charge to achieve LEED certification, but the team exceeded that, reaching LEED Silver. Features that contributed to the achievement included sedimentation basins for controlling quality of water discharged, maximizing the use of natural ventilation, optimized diversion of construction waste from landfills, an electric vehicle plug-in station, and use of white roof panels and white liners in the dike areas to reduce heat island effects.

“Helping us get the LEED certification was great, and our working relationship with Burns & McDonnell engineers and management was fantastic,” says Steve Frey, regional fuel director for the Navy FLC.

The project received the Steel Tank Institute’s 2012 American Petroleum Institute (API) Flat Bottom Oil Storage Tank of the Year Award and a 2014 Merit Award from the American Council of Engineering Companies in California.

Burns & McDonnell also received the highest possible Architect-Engineer Contract Administration Support System, or ACASS,

rating, an overall exceptional architect-engineer performance evaluation.

“This nearly decadelong project had numerous stakeholders, including the various commands of the Department of Defense, federal, state and local environmental agencies, community government, the operators, the naval base, the design team, the construction team and other affected design and construction projects,” says Jeff Seib, Burns & McDonnell project manager at Point Loma from 2004-13, now retired. “Keeping all these entities informed and moving in the same positive direction was a true challenge. The result proves that these diverse entities with differing goals can still achieve a mutually satisfying and beneficial result and an even better, more efficient facility.”

Up Next

Burns & McDonnell designed and is now providing construction services for the next phase of Point Loma improvements, a replacement fuel pier, expected to be completed in early 2017. Part of the existing pier is more than 100 years old, built when Point Loma was a coaling station for steamships.

The new pier, the first double-deck fueling pier for the Navy, is Marine Oil Terminal Engineering Maintenance Standards (MOTEMS)-compliant, with phased construction maintaining fueling capability throughout construction.

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