



New London Nuclear Submarine Base



Retrocommissioning Study

New London CT

USN Project#

Scope: Retrocommissioning Study

Overview:

VS Energy was selected as the Mechanical Electrical retrocommissioning firm along with Lassel Architects to as the building envelope firm to perform a retrocommissioning study with the stated objective of identifying 24,000 mmbtu of potential energy avoidance per annum of readily implementable projects. The scope of work included evaluation of 18 of the 72 buildings on the site including 8 dormitory facilities, 7 training facilities, recreation facility, torpedo munitions facility, and the submarine simulation center. All facilities were served by the site central steam / cogeneration facility for heating, with a variety of cooling systems ranging from direct expansion air handling systems, building central chilled water plants and absorption chillers. A comprehensive survey and inventory of mechanical equipment, lighting survey and analysis, and equipment life evaluation was also performed as a component of the retrocommissioning study. The time period under the contract term was 120 days to complete.

Stated Objectives / Problems:

Identify 2.4 B Btu/yr in avoidance

Upgrade / Replace Pneumatic Controls and outdated electronic controls

Upgrade / Replace outdated cooling technology

Evaluate new lighting technology and lighting control

Identify repairs required for sustainable operation

Improve IAQ and indoor environmental stability

Improve utility metering / cost allocation

VS Energy Process:

Prior to receipt of contract, VS Energy received the NLON allocation spreadsheet which was the mechanism used to allocate energy consumption (electric, water, and steam) to each building on the site as there were very few building electric, steam and water meters. The consumption was allocated based on a subject analysis of the use of the building, and the building square footage. Review of the allocations yielded highly variable annual consumptions, with little or no correlation to weather or changes in building occupancy. Absent the availability of true metered baselines, IPMVP option C, whole building comparison, was eliminated as a possible Measurement and Verification (M&V) option.

Project Team identified that all M&V plans would be prepared in accordance with IPMVP options A or B.

Over 400 dataloggers collecting 968 data points sampled on a 5 minute basis were deployed in the 18 buildings for a period of 3 months to collect data for use in baseline generation. Our Energy Engineering and auditing team performed over 2300 man hours of on site energy auditing of the buildings. Data collected was utilized to complete the NAVFAC (Naval Facilities) Equipment Assessment document, estimating equipment remaining useful life, and identifying failed or imminent failure equipment. Data collected, along with individual measurements and Engineer and Auditor observations was used to prepare the potential conservation measures, and construct credible and realistic estimates of energy avoidance and ROM construction costs, as well as commentary of other IAQ, operations and reliability issues.

Results:

Final conceptual engineering was completed, cost avoidance estimates and report prepared with a total of 27,000 mmbtu of energy avoidance per annum. 25,400 mmbtu of the 27,000 mmbtu identified were mechanical and electrical systems repairs, retrofits or upgrades identified by VS Energy. The project total maximum capital expenditure estimate was \$11.7 million USD for 18 buildings.

After final review with NAVFAC, projects were submitted to MIDLANT for capital expenditure approval for FY 2013. Jan 2013, approval for funding for 8 buildings was received, with a capital expenditure limit of \$4.8 million USD.