



SM-1 Nuclear Power Plant, VA

U.S. ARMY CORPS OF ENGINEERS
FACT SHEET as of February 1, 2015

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AUTHORIZATION: Atomic Energy Act of 1954 and Army Regulation 50-7

TYPE OF PROJECT: Army Deactivated Nuclear Power Plant Program

PROJECT PHASE: Decommissioning Studies/Planning

CONGRESSIONAL INTEREST: Senators **Kaine** and **Warner (VA)** and Representative **Beyer (VA-08)**

BACKGROUND: The SM-1 Nuclear Power Plant is located on the western shore of the Potomac River within the boundaries of Fort Belvoir in Fairfax County, Virginia. It is approximately 17 miles south by southwest from the center of Washington D.C.



The construction of the SM-1 at Fort Belvoir was completed in 1957, and it achieved its first criticality in April 1957. The SM-1 was a single-loop 10 megawatt-thermal (MWT) pressurized water reactor delivering a net 1,750 kilowatts of electrical power. It was the first nuclear power reactor to provide electricity to a commercial power grid in the United States. The SM-1 Reactor operated from April 1957 to March 1973. Fort Belvoir was home to the U.S. Army Engineer Reactors Group (USAERG), and the SM-1 was used for training the multi-service crews that would operate the various plants in the program. The reactor was stationary with a medium power range, which was between 1,000 and 10,000 kilowatt-electric (kWe).

Deactivation was performed on the SM-1 Reactor from 1973-1974, in accordance with the SM-1 Decommissioning and Conversion Plan as approved by the Army Reactor Systems Health and Safety Review Committee (ARCHS). This consisted of removal of the nuclear fuel, minor decontamination, shipment of necessary radioactive waste, sealing the pressure vessel, and installing appropriate warning signs and monitoring devices.

After the completion of the facility deactivation and conversion, a third party radiological survey by the U.S. Army Environmental Hygiene Agency verified that known areas of radioactive contamination had been decontaminated to acceptable levels or were properly controlled. The ARCHS approved the SM-1 Post-Decommissioning Environmental Monitoring Plan, which has been used to provide on-going surveillance of the decommissioned facility.

In October 1996, the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) took extensive surveys of the SM-1 and surrounding environment to determine the radiological status of the facility at that time. In 2005, a Historical Site Assessment was developed using operational records and data collected from the 1996 USACHPPM Surveys. In 2009/2010 Characterization Surveys were completed and the Report was finalized in 2013.

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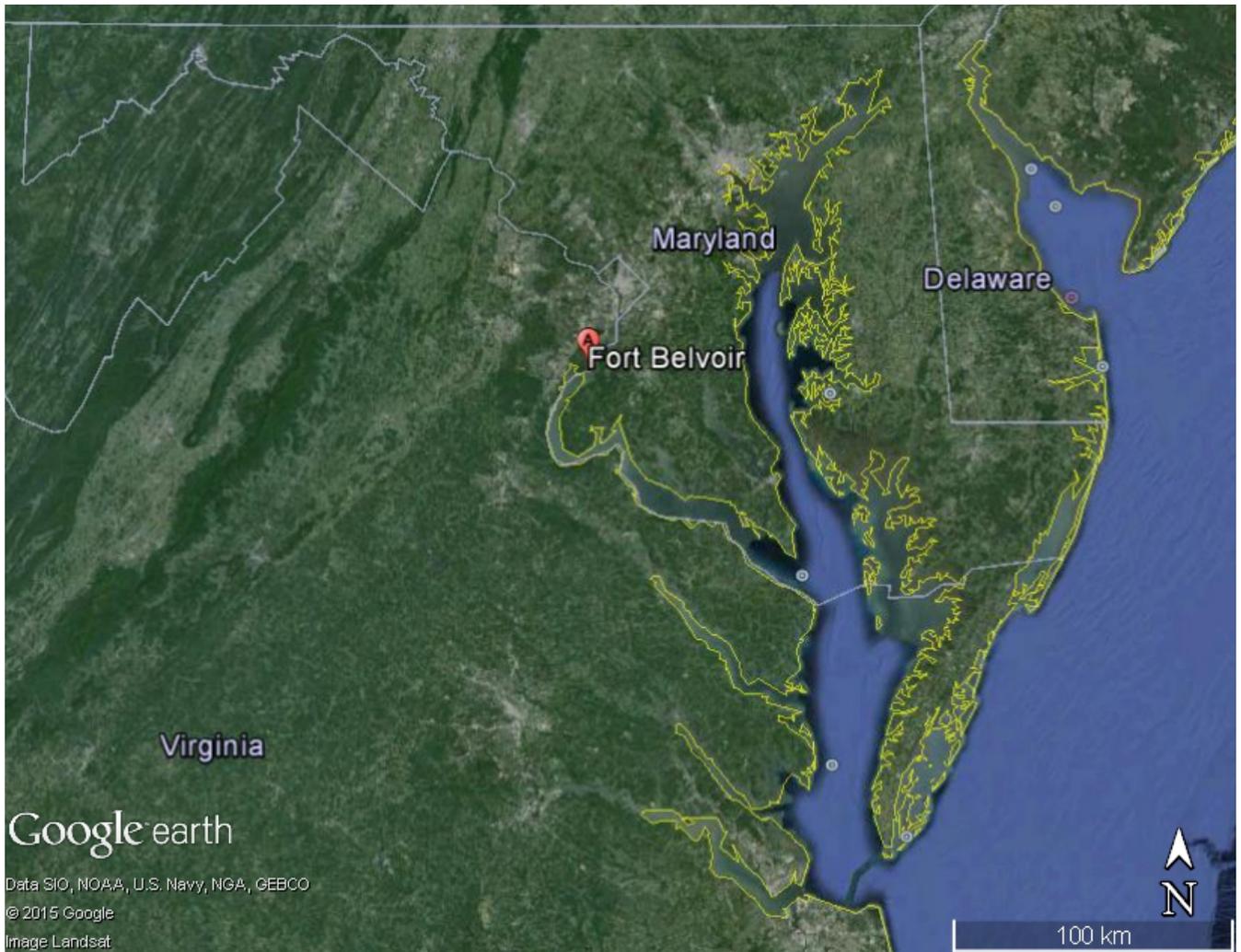
The Historical Site Assessment and Characterization Surveys support the decommissioning study process outlined in Army Regulation 50-7. This process is performed by USACE, at the direction of the Army Reactor Office, to better define disposal activity costs.

The decommissioning strategy that was developed in the 1970's recommended that the deactivated reactors be placed into a safe storage mode that would allow the shorter-lived radionuclides to decay. It was expected that delaying decommissioning would reduce radioactive waste volumes and worker exposures. However, subsequent studies indicated that the levels of contamination present within the reactors would not be reduced by decay sufficiently to allow for release of the facilities without significant decontamination being performed. Additionally, concern regarding the increasing cost and decreasing availability of radioactive waste disposal led the Army Reactor Office (ARO) to recommend that an assessment be performed of the SM-1 reactor. The assessment allowed for a more accurate decommissioning cost estimate, which addresses projected changes in disposal options.

USACE developed a management plan for conducting an All Hazards Assessment, which contained provisions for four phases of work to be performed. Phase I included a Historical Records Review and Disposal Alternatives Investigation. Phase II, included performing a characterization survey and decommissioning cost estimate. Phases III and IV deal with decommissioning planning, design, and execution.

STATUS: During Fiscal Year (FY) FY14, USACE Baltimore District awarded a contract to begin the decommissioning planning. Decommissioning planning will continue through FY18, at which point USACE will be poised to contract for the implementation of decommissioning. Decommissioning could commence as early as FY20.

For more information regarding the SM-1 Nuclear Power Plant project, please contact Brenda Barber, CENAB-EN-H, (410) 962-0030, e-mail brenda.m.barber@usace.army.mil.



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