

Site Summary – Building 4012

Site Identification:

Building 4012
SNAP Critical Test Facility Number 2
Heavy Metal Reflected Fast Spectrum Reactor Critical Test Facility
Energy Technology Engineering Center (ETEC) X-Ray Facility/Storage
Includes Building 4713, Substation

Operational Use/History:

- Constructed prior to 1962.¹⁰
- Building 4012 Operated with SNAP critical assemblies intermittently between 1962 and 1968.¹
- In 1969 and 1970, the critical assembly machine was modified for use in the Heavy Metal Reflected Fast Spectrum Reactor (HMRFSR) project and operated for the HMRFSR project from 1970 to 1972.¹
- In 1979, the concrete portion of Building 4012 was modified for use as an x-ray and source radiography facility.¹
- Building 4012 operated as ETEC X-Ray Facility and Storage from 1979 to 1992.¹
- Demolished in 2003.

Site Description:

- Building 4012 had 1,292 square feet of floor space. In 1986, the passageway and metal portion containing the operations and control rooms of Building 4012 were demolished in order to build the ETEC Sodium Component Test Installation (SCTI) Power Pak section of the Cogeneration Project.¹
- The remaining concrete vault consisted of two rooms, Room 109 (fuel storage/equipment room) and Room 110 (critical cell). A 20-inch borated concrete wall containing fuel storage tubes divided Room 109. An air conditioning duct ran the length of the room over the fuel storage area.
- The critical cell (Room 110) was a concrete chamber with 4-foot thick concrete walls lined with steel and was secured by a heavy shield (vault-type) door.¹
- Serviced by Substation 4713.

Relevant Site Information:

- Radioactive material was managed at Building 4012. The potential contaminants of concern are primarily Cs, Sr, U, Th and Pu.¹
- There are no Incident Reports associated with Building 4012.²

Radiological Surveys:

- In 1985, a comprehensive radiological survey of Building 4012 and surrounding areas was performed.³
 - Allowable limits: Ambient exposure of rate $<5 \mu\text{R/hr}$ above background at 1 meter.
 - Radiological contamination was not detected in the radiography room, radiographer's office and dark room.
 - Contamination levels (maximum dpm was 6,500 dpm alpha/100 cm^2) in rooms 109 and 110 were found to require radiological monitoring and control of waste disposal.
- Initial demolition efforts in Building 4012 were completed in 1986 to accommodate the construction of the Power Pack section of the SCTI Cogeneration Project.⁴
- Final decontamination and decommissioning (D&D) of the remaining portion of Building 4012 was performed in 1995.¹
- Following D&D efforts, a comprehensive final radiological survey was completed.⁴
 - Allowable limits: $<5 \mu\text{R/hr}$ above background at 1 meter; and 1,000 dpm/100 cm^2 removable alpha and beta and 5,000 dpm/100 cm^2 total alpha and beta.
 - The results of the final survey indicated that the facility was suitable for release without radiological restrictions.
- A verification survey was conducted by the Oak Ridge Institute of Science and Education (ORISE) in October 1996.⁵ The total alpha surface activity ranged from less than 34 dpm to 170 dpm in 100 cm^2 of soil. The total beta surface activity ranged from 230 dpm to 480 dpm in 100 cm^2 of soil. The exposure rates were as follows:
 - Limit: $5 \mu\text{R/hr}$ above background.
 - Average background: $14 \mu\text{R/hr}$
 - Observed Rates: $12 \mu\text{R/hr}$ to $15 \mu\text{R/hr}$.
 - ORISE concluded that Building 4012 met DOE guidelines for unrestricted release.
- The California Department of Health Services (DHS) performed a confirmation survey of Building 4012 on July 31, 1996.⁶
- The Environmental Protection Agency (EPA) conducted an oversight verification survey in 2001.⁷ The surveys included scans and fixed point measurements for alpha and beta. The contaminants of concern (COCs) for Building 4012 were mixed fission products, uranium and activation products on the floors and walls.
 - Acceptable limits for the survey were consistent with NRC regulatory guide 1.86 and the proposed site-wide release criteria.⁶
 - None of the field measurements indicated the presence of radionuclides above acceptable limits.
 - EPA field measurements confirmed the conclusions reached by both Rocketdyne and ORISE.

- Immediately following building demolition in 2003, 24 soil samples were taken in a MARSSIM grid pattern over the original building footprint. Gamma spectroscopy did not detect any man-made gamma emitting radionuclides. Subsequent analysis by an outside laboratory did not detect any man-made radionuclides.^{8,9}

Status:

- DOE released the facility for unrestricted use in October 1997.^{10,11}
- DHS concurred with release the release of the facility in November 1997.⁶
- Building 4012 was demolished in 2003.

References:

- 1- Rocketdyne Report, 012-AR-0001, "Decontamination and Decommissioning of Building T012," May 8, 1997.
- 2- Review of Radiation Safety Records Management System, 2003.
- 3- Rocketdyne Report, 355-ZR-0012, "Radiation Survey of Building T012, SCTI Cogeneration Project, Rev. A," June 26, 1985.
- 4- Rocketdyne Report, 012-AR-0002, "Final Radiological Survey Report for Building T012," June 14, 1996.
- 5- ORISE Report, 96-0869, "Verification Survey of Building T012, SSFL, Rockwell International, Ventura County, California," October 1996.
- 6- DHS/RHB, Letter, "Boeing's Request for Concurrence in Release for Use Without Radiological Restriction, Rocketdyne Santa Susana Field Laboratory Building T012," from Gerard Wong (DHS/RHB) to James Barnes, November 26, 1997.
- 7- U.S. EPA Report, Contract Number 68-W-02-021, "Final Oversight Verification and Confirmation Radiological Survey Report for Buildings T-012, T-029, and T-363," December 20, 2002.
- 8- Personnel Interview, Phil Rutherford, April 2004 (Area IV Database for Onsite and Offsite Surveys).
- 9- Boeing Document, RD04-170, "Site Environmental Report for Calendar Year 2003 DOE Operations at The Boeing Company, Rocketdyne Propulsion & Power," September 2004.
- 10- Federal Resister Vol. 62 N0. 195 pg. 52528-52530, "Certification of the Radiological Condition of Building T012 at ETEC near Chatsworth, California," October 8, 1997.
- 11- DOE/CD-ETEC-012, "Certification Docket for the Release of Building T012 at ETEC," November 1997.
- 12- Historical Site Photographs from Boeing Database.
- 13- SSFL Area IV, ETEC Industrial Planning Maps, 1962-1992.

Photograph – Building 4012



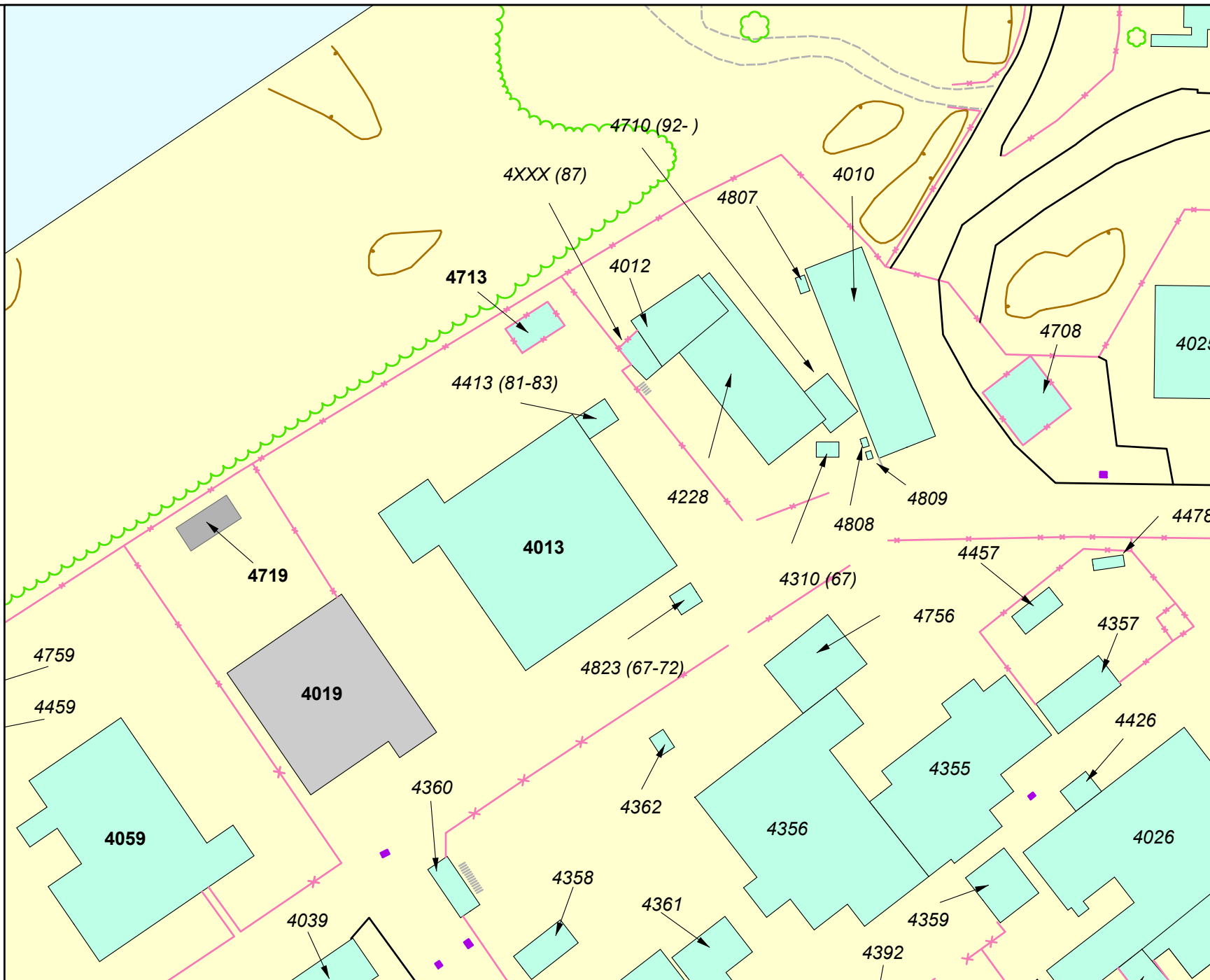
Legend

Labeled Features:
(Based on SSFL Documents
as of October 2004)

- Buildings/Sites:
"Current"
- Buildings/Sites:
"Demolished"

Unlabeled Features:

- Leachfield
(Removed)
- Tree
- Rock
- Concrete Curb
- Gutter
- Asphalt/Concrete
Berm & Paving
- Sidewalk
- Dirt Road
- Fence
- Stream/Pond
- Drain
- Area IV Boundary



DRAWN BY:

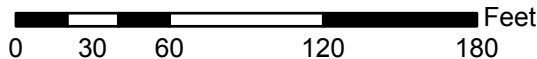


DATE:

May 2005



1 inch equals 75 feet



Site Summary Group L
AREA IV
Santa Susana Field Laboratory, CA