

Site Summary – Building 4005

Site Identification:

Building 4005
Uranium Carbide Fuel Pilot Plant
Molten Salt Test Facility
Includes Building 4705, Substation

Operational Use/History:

- Constructed in 1958.
- Building 4005 was constructed for non-nuclear testing of thermodynamic characteristics of proposed coolants for the Organic Moderated Reactor Experiment and Piqua reactors.¹
- During the middle 1960s, Building 4005 was converted into a small-scale production facility to study the operations associated with manufacturing reactor fuel assemblies out of uranium carbide. The facility operated for a period of nine months during 1966-1967, first using depleted uranium, and later enriched uranium.¹
- In 1967, equipment was removed and surfaces decontaminated to permit non-radiological use of the building.¹
- Beginning in 1972, Building 4005 was used as the Molten Salt Test Facility, a non-nuclear test facility consisting of the Molten Salt Test Bed and the Process Demonstration Unit.¹
- Completion of removal of contaminated systems was completed in 1993. Previous decontamination efforts in the late 1970s involved removal of the underground radioactive liquid holdup tanks outside the building. The drain lines from the buildings were capped and left in place. The drain lines were removed during another decontamination effort in 1987.¹
- Demolished in 1996.

Site Description:

- Building 4005 was a tilt-up concrete structure with Butler aluminum siding and several windows. The structure was 80 feet long (running north to south), and 60 feet wide.
- Building 4005 was divided into several portions, including a small administration area, change rooms, chemistry laboratories, storage rooms and a large high-bay area.²
- Several concrete pads sat east of the building and held various equipment from the Molten Salt Oxidation project and the radioactive filter plenums.
- Building 4005 was connected to a holding tank by drain lines.
- Serviced by Substation 4705.

Relevant Site Information:

- Radioactive material in the form of depleted and enriched uranium was managed at this facility.² Accordingly, the contaminant of concern for Building 4005 is uranium.
- During operation as the Uranium Carbide Fuel Pilot Plant, considerable difficulties were experienced with the air exhaust system scrubbers and filters, including a fire in 1967. Radiological contamination was restricted to the exhaust ducts.²
- There have been several incidents associated with Building 4005 that could have resulted in a release to the environment:
 - In January 30, 1967, a uranium fire occurred in a retention tank of a vacuum system. Tank ducting was burned through, allowing a release of contaminated smoke to the building. No release outside the building was thought to have occurred (A0606).
 - On August 8, 1991, contaminated oil dripped from a radioactive exhaust duct, contaminating a concrete pad. The total activity for the spill was approximately 4 nCi, and all contamination was successfully cleaned up (A0215).
- Building 4005 was connected to a sanitary leach field by drain lines that extended from various laboratories and work areas in the building to two underground holding tanks. The leach field was disconnected and abandoned in 1960-61, when the Santa Susana Field Laboratory (SSFL) sewer treatment plant was constructed. It is not likely that the leach field, septic tanks and drain lines were impacted by radiological constituents because work involving regulated radiological materials did not begin until 1966.³ The drain lines and tanks were removed in 2001 at the same time the septic tanks were removed. Sampling of soil under drain lines, leach fields and septic tanks did not detect any contamination.

Radiological Surveys:

- Rocketdyne performed a characterization survey in 1987 to confirm that residual contamination remained in ventilation systems and drain lines.⁴
 - The survey showed that several areas were contaminated at levels above Department of Energy (DOE) release limits: room 113, room 110E, four remaining radioactive exhaust ducts and both radioactive exhaust filter plenums.
 - Maximum beta levels: 107,954 dpm/100cm² for the rooms (Acceptable limit is 1,000 dpm/100cm²).
 - Maximum alpha levels: 2,467 dpm/100cm² (Acceptable limit 1000 dpm/100cm²).
 - Maximum beta levels: 6,302 dpm/100cm² in the exhaust ducts (Acceptable limit 1000 dpm/100cm²).
 - No other residual contamination was present.
- Rocketdyne performed a final survey in September 1993.^{2,5}
 - Derived concentration guideline levels (DCGLs) for soil were as follows:
 - U-234 < 23.17 pCi/g (total).

- U-235 < 5.54 pCi/g (total).
 - U-238 < 24.55 pCi/g (total).
- The survey found that Building 4005 and adjacent yards were acceptably free of contamination and recommended that the facility be released for unrestricted use.
- Oak Ridge Institute for Science and Education (ORISE) and the California Department of Health Services (DHS) performed verification surveys in 1994.⁶

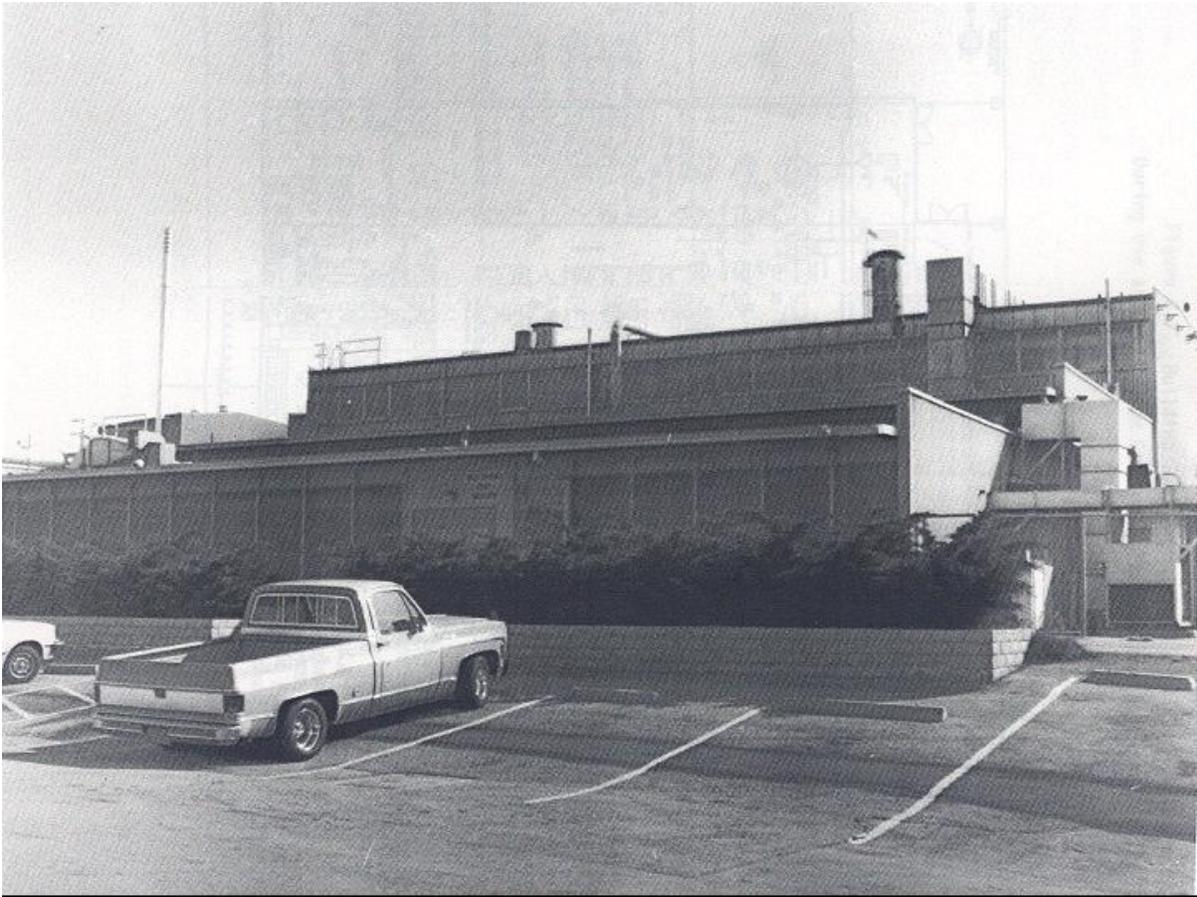
Status:

- DHS released Building 4005 and the surrounding soil for unrestricted use in March 1995.⁷
- Building 4005 was demolished in 1996.

References:

- 1- Rockwell International Document, 005-AN-0002, “Decontamination and Decommissioning (D&D) of the Uranium Carbide Pilot Fuel Facility – Building T005,” September 28, 1993.
- 2- Rocketdyne Report, 005-ZR-0001, “Final Radiological Survey of Building 005,” September 21, 1993.
- 3- Rocketdyne, Internal letter, “Sanitary Leachfield at T005,” from R.J. Tuttle, October 29, 1987.
- 4- ETEC Document, GEN-ZR-0003, “Radiological Survey of Building T005,” November 16, 1987.
- 5- Rocketdyne Report, 005-SP-0001, “Building 005 Final Survey Procedure,” December 9, 1992.
- 6- ORISE Report, 94/K-14, “Verification Survey of Buildings 005, 023, and 064, Santa Susana Field Laboratory, Rockwell International, Ventura County, California,” October 1994.
- 7- DHS/RHB, Untitled letter, from Ben Kapel (DHS/RHB) to Phil Rutherford. April 5, 1995.
- 8- Historical Site Photographs from Boeing Database.
- 9- SSFL Area IV, ETEC Industrial Planning Maps, 1962-1992.

Photograph – Building 4005



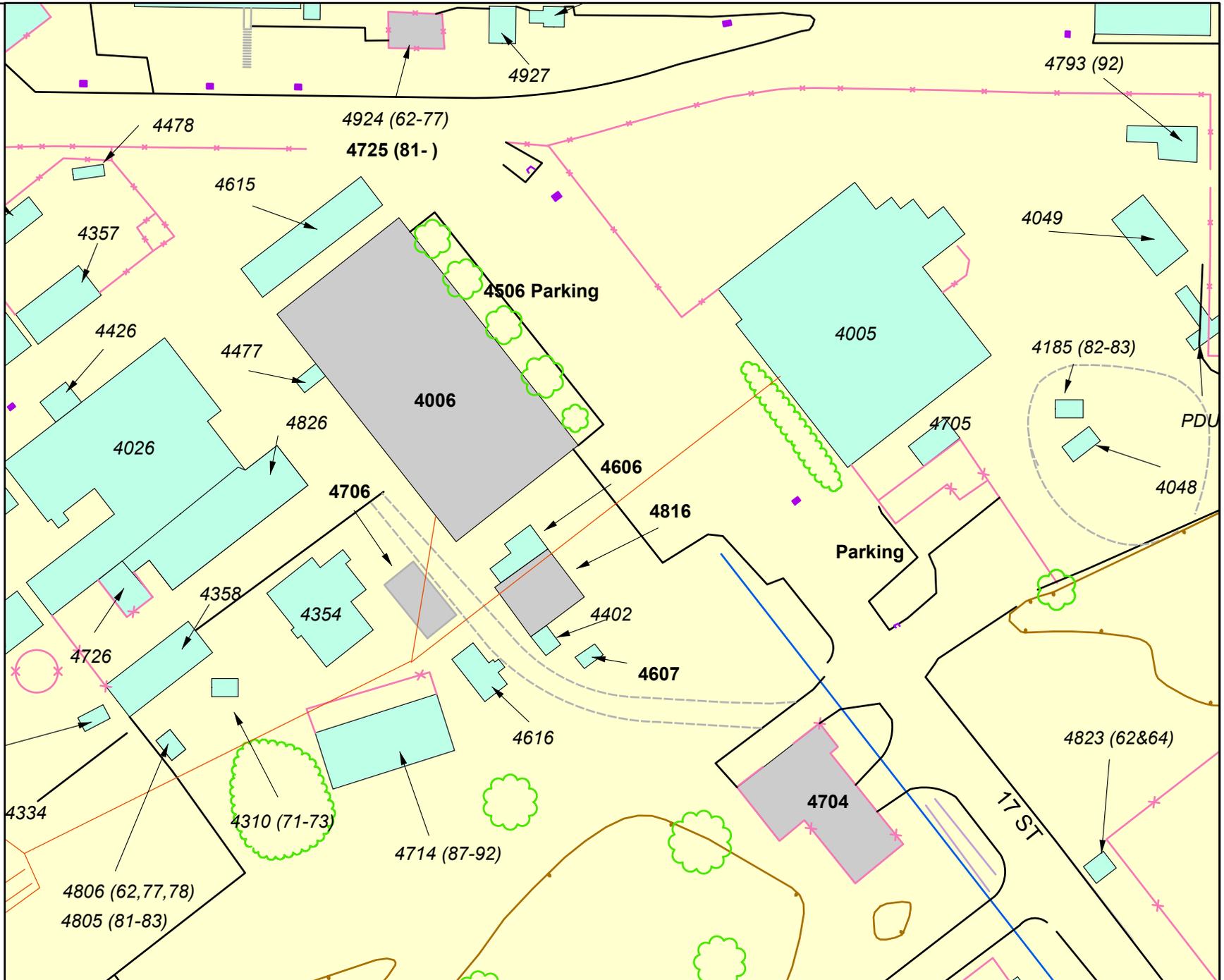
Legend

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



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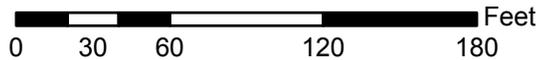


DATE:

May 2005



1 inch equals 75 feet



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