

Site Summary – Building 4363

Site Identification:

Building 4363
Mechanical Component Development and Counting Building
Research and Development Laboratory Building

Operational Use/History:

- Transferred from the Rocketdyne Division to the Atomics International (AI) Division in 1956-1957 to support expansion of the AI activities at Santa Susana Field Laboratory (SSFL).¹
- The Mechanical Component Development and Counting Building and was used for sodium systems in support of the Sodium Reactor Experiment (SRE) from before 1959 until 1963.¹
- Building 4363 likely had a radioactivity counting room which may have been moved from the Engineering Test Building Annex in 1957.¹
- Building 4363 has been used primarily for storage since 1963.¹
- A decontamination effort was conducted in 1995.²
- Building 4363 was demolished in 2001; the sanitary leachfield system was removed in 2002.

Site Description:

- Building 4363 was a 1,400-square-foot structure with four work bays (240 square feet each) placed side by side, a rest room and several small utility rooms. Concrete walls separated the bays. The north and south walls were sheet metal with partial wall panels on the inside wall surfaces. The roof was constructed from composition panels with asphalt base topping. The building sits on a concrete foundation, which extends around the building to form a perimeter walkway and loading dock.
- Building 4363 had an associated leachfield measuring 100 x 4 x 3 feet with a septic tank capacity of 1,500 gallons.²

Relevant Site Information:

- Building 4363 was used to support the SRE. Contamination of Building 4363 resulted from work on a component containing contaminated sodium from the SRE Core I accident, which occurred in Building 4143 in 1959. The SRE accident dispersed low enriched uranium and mixed fission products in the sodium, which was the same type of contamination found at 4363.¹
- Records indicate that in 1962 work was done on a valve or pump that contained a small amount of the directly contaminated sodium coolant. Dosimetry readings of two people assigned to the building support this assertion.¹

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- The primary contaminants of concern for this site are uranium, mixed fission and activation products.³

Radiological Surveys:

- In 1992, stored equipment was removed from Bay 4 and fixed beta contamination was detected on the floor. A more comprehensive survey conducted in 1993 detected additional radioactive contamination on the west wall and overhead horizontal surfaces in Bay 4 (i.e., ducting, piping and light fixtures).⁴
 - Gamma spectrometry results of wall scraping indicated the presence of Cs-137 and low enrichment uranium (2.75%), and presumed Sr-90 activity. These results indicated that the activity resulted from work being performed on components containing contaminated sodium from SRE.
 - Detectable activity on the floor area ranged from 25,000 to 142,000 dpm/100 cm² beta and hot spots on the west wall ranged from 25,000 to 730,000 dpm/100 cm² beta.
 - Contamination on overhead horizontal surfaces (i.e., piping, ducts light fixtures etc.) ranged from 7,300 to 33,000 dpm/100 cm² beta.
 - The remaining part of the building was not surveyed.
- Following a decontamination effort, Rocketdyne performed a final status survey for all of Building 4363 and the surrounding area in 1995.⁴
 - The entire area was surveyed for total and removable alpha and beta contamination, and ambient gamma.
 - Total and removable alpha and beta limit: 5,000 and 1,000 dpm/100 cm², respectively.
 - Ambient gamma limit: < 5 µR/hr (background was 13.1).
 - Maximum total alpha: 23.9 dpm/100 cm².
 - Maximum removable alpha: 6.88 dpm/100 cm².
 - Maximum total beta: 805 dpm/100 cm².
 - Maximum removable beta: 29.9 dpm/100 cm².
 - Maximum ambient gamma: 1.31 µR/hr above background.
- During the 1996 Area IV Radiological Characterization Survey, soil samples were taken at one location in the vicinity of Building 4363.⁵ None of the measurements were distinguishable from background and all the measurements were below the acceptable concentration levels established by Boeing and presented in document N001SRR140131.⁵
- ORISE performed an independent verification survey in October 1996.³
 - Surface scans for alpha, beta and gamma activity and direct measurements for total alpha and total beta activity were performed on floors, walls, loading dock and concrete slab surrounding the building. These levels were compared to the guidelines specified in DOE 5400.1:
 - Surface scans identified one area of total maximum direct beta radiation on the north door of Bay 4, but all other areas were within the range of ambient site background.

- Total 1 m² average alpha: 79 dpm/100 cm².
- Total 1 m² average beta: 1300 dpm/100 cm².

Total maximum surface activity levels ranged from less than 34 to 110 dpm/100 cm² and less than 230 to 6,200 dpm/100 cm² for alpha and beta respectively. This was below the allowable maximum limits of 3,000 and 15,000 dpm/100 cm² respectively.

Removable gross alpha: < 9 dpm/100 cm².

Removable gross beta: < 15 dpm/100 cm².

- Exposure rate measurements ranged from 10 to 13 μR/hr.
 - Average background: 13 μR/hr.
- DHS also performed a verification survey in 1996.
- EPA conducted an oversight verification survey in 2001 for alpha and beta.⁶ The surveys included scans and fixed point measurements for alpha and beta. In addition, the survey included swipe samples for removable contamination and concrete samples for isotopic analysis. The COCs for 4363 were mixed fission products and uranium on the floors and walls.⁷
 - Acceptable limits for the survey were consistent with NRC regulatory guide 1.86 and the proposed site-wide release criteria.⁴
 - Fixed point measurements of the building identified one point of elevated alpha and beta-gamma readings (alpha was 49.8 +/- 38 dpm/100 cm² and beta gamma was 4753 +/- 565).
 - All other results were below the acceptable limits.
 - EPA field measurements confirmed the conclusions reached by both Rocketdyne and ORISE.

Status:

- The California Department of Health Service (DHS) released the facility for unrestricted use July 9, 1998.⁶
- The building was demolished in 2001 and the sanitary leach field was removed in 2002.⁸

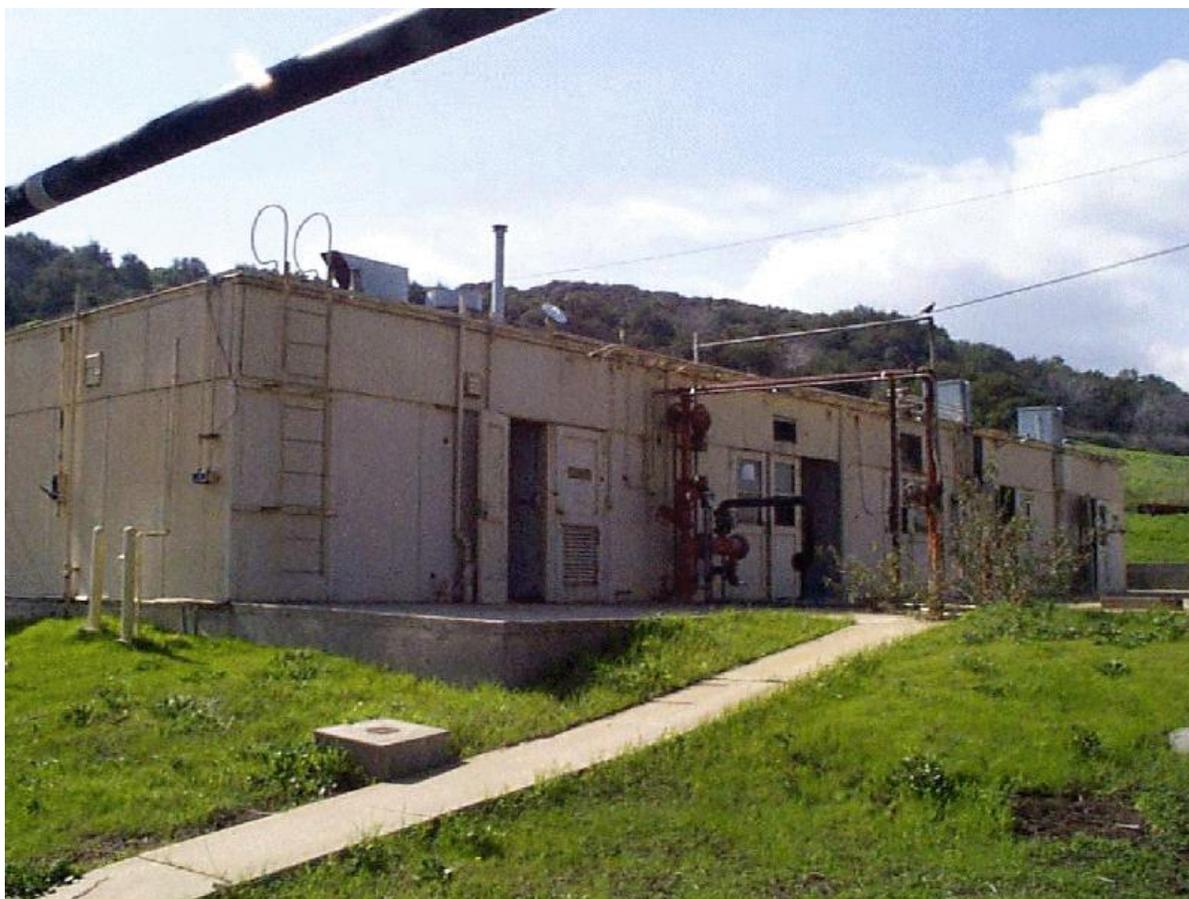
References:

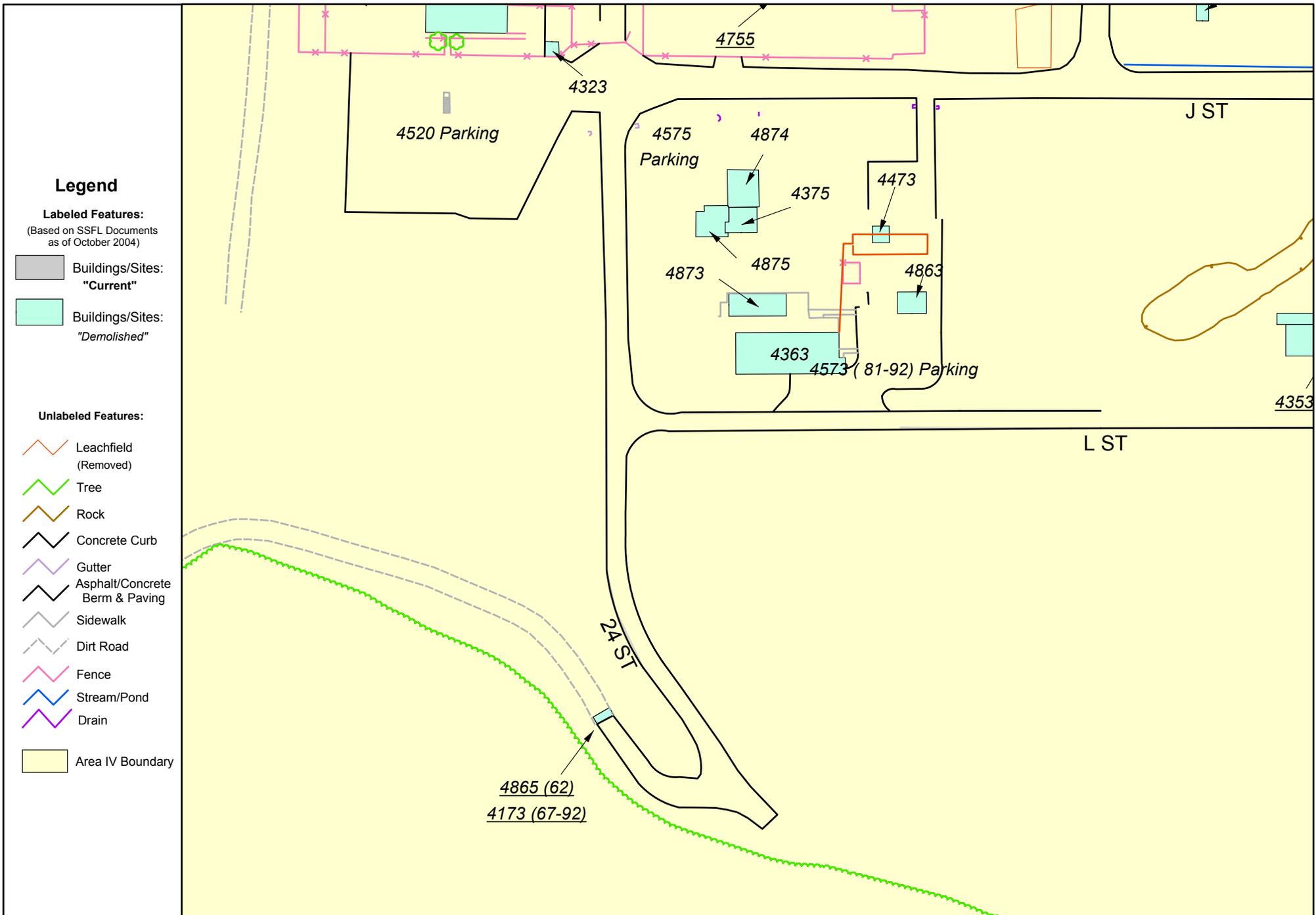
- 1- Rockwell International, Internal Letter, "Study of Possible Source of Radioactive Contamination in T363," from R. J. Tuttle to P. D. Rutherford, September 9, 1994.
- 2- Rocketdyne Report, 363-AR-0001, "Decontamination and Decommissioning of Building T363," September 25, 1997.
- 3- ORISE Document, no document number, "Verification Survey of Building T363, SSFL, Rockwell International, Ventura County, California," Vitkus, T. J., and J. R. Morton, October 1996.
- 4- Rocketdyne Report, SSWA-ZR-0002, "Final Radiological Survey Report for Building T363," June 21, 1996.

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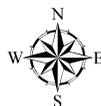
- 5- Rocketdyne Report, A4CM-ZR-0011, "Area IV Radiological Characterization Survey Final Report," August 15, 1996.
- 6- DHS/RHB, Untitled Letter, from David Wesley (DHS/RHB) to James Barnes. July 9, 1998.
- 7- U.S. EPA Report, no document number, "Final Oversight Verification and Confirmation Radiological Survey Report for Buildings T-012, T-029, and T-363," December 20, 2002.
- 8- Personnel Interview, Dan Trippeda, August 12, 2003.
- 9- Historical Site Photographs from Boeing Database.
- 10- SSFL Area IV, ETEC Industrial Planning Maps, 1962-1992.

Photograph – Building 4363

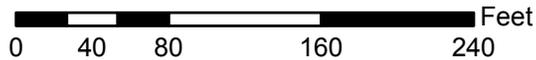




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1 inch equals 100 feet



DATE:

May 2005

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 AREA IV
 Santa Susana Field Laboratory, CA