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REGION IX
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Questions and Answers About EPA's Role in the Building Decontamination and Decommissioning Program at the Boeing/Rocketdyne Santa Susana Field Laboratory

1. What is the Building Decontamination and Decommissioning (D&D) program at the Boeing/Rocketdyne Santa Susana Field Laboratory (SSFL)?

The SSFL is located in the Simi Hills of eastern Ventura County, California. In 1946, predecessors of the present site owner, Boeing, Inc., established the SSFL as a rocket engine test site. The 2,700-acre site is divided into four administrative areas (Areas I, II, III, and IV) and a buffer zone. Area IV occupies 290 acres in the western end of SSFL. The U.S. Department of Energy (DOE) and Boeing/Rocketdyne both conducted nuclear operations and research in Area IV of the SSFL from the early 1950s to1988 when the operations were phased out. The DOE leased property at the SSFL for the nuclear work and will eventually return the land back to Boeing/Rocketdyne. The nuclear operations resulted in some radiological contamination of buildings, materials, soils and groundwater.

The DOE is responsible for cleanup of radiological contamination to below specified levels before releasing facilities from its regulation. Since the mid-1970s, the DOE and Boeing/Rocketdyne have been conducting D&D of the facilities previously used for nuclear programs. DOE uses the D&D process to characterize, cleanup (if needed), and release from regulation buildings or land where radiological materials were used or stored. As part of the building D&D process, DOE investigates potential radioactive contamination associated with a building and cleans up contamination exceeding DOE standards. DOE's investigations include redundant building radiological surveys by Rocketdyne/Boeing, the Oak Ridge Institute for Science and Education (ORISE, a DOE contractor), and the California Department of Health Services Radiological Health Branch (DHS).

DOE's current radiological standards (DOE Order 5400.5) for releasing buildings for unrestricted use are specified in the Nuclear Regulatory Commission's 1974 Regulatory Guide 1.86, which specifies activity limits for removable and residual radioactivity on building surfaces.

2. Who has legal responsibility for overseeing the Building D&D process in Area IV of the SSFL?

DOE is responsible for overseeing the building D&D for DOE operations at SSFL and the California DHS provides oversight of the others. The Atomic Energy Act specifies that DOE policies, orders, and regulations guide the D&D process for the nuclear facilities formally used

by DOE. DHS has no direct authority to regulate DOE facilities, but DOE requests DHS concurrence on all buildings prior to releasing them for other uses. The EPA does not currently exercise any legal authority over the radiological contamination at SSFL.

Boeing/Rocketdyne also conducted its own nuclear research activities within Area IV of the SSFL. The Atomic Energy Commission (AEC) originally licensed these activities. Later, the licensing authority became the Nuclear Regulatory Commission (NRC). The State of California, as an "Agreement State" under the Atomic Energy Act, is currently the licensor of these operations. Currently, the DHS licenses the possession, use, transfer and disposal of radioactive materials in California (with the exception of special nuclear material, which is still licensed by the NRC). DHS is the regulatory agency formally charged with overseeing the D&D and approving the release of DHS-licensed facilities.

3. Why is the U.S. Environmental Protection Agency (EPA) involved in the Decontamination and Decommissioning of buildings at the Boeing/Rocketdyne SSFL?

In 1996, the EPA was asked by some members of the community to perform an independent technical examination of the DOE and Boeing/Rocketdyne D&D activities at the SSFL. The primary concerns expressed by the community were whether or not:

- The previous surveys sampled in the appropriate places,
- The original measurements were accurate,
- Independent interpretation of the information would produce different conclusions about site conditions, and
- Workers in released buildings would be exposed to unacceptable radiation risks.

In a letter to 4 members of the Rocketdyne Cleanup Coalition, dated November 8, 1996, EPA committed to conducting verification surveys at three buildings to address the community's concerns. The DOE agreed to EPA's involvement, recognizing that the Agency's independent review might help build public confidence in the DOE's cleanup and closure activities at Area IV.

4. What work has EPA done to independently assess the DOE and Boeing/Rocketdyne D&D activities?

EPA's independent assessment included: (1) reviews of previous decommissioning survey workplans and final radiological survey reports for eleven buildings, and (2) performance of confirmation radiological surveys (field measurements and laboratory analysis of samples) for eight of those buildings. EPA's contractor, Tetra Tech EM, Inc. (Tetra Tech) reviewed documentation of previous D&D work and surveyed Buildings 12, 29, 363 and 59 in January, October and December 2000 and surveyed Buildings 11, 19, 55 and 100 in October 2001.

Tetra Tech also reviewed the documentation of the D&D work performed for buildings 9, 23, and 28, which were unavailable during the EPA survey events. Buildings 23 and 28 had been demolished, and Building 9 was not accessible due to ongoing proprietary work. Additionally,

EPA did not survey Building 24 or the Radioactive Materials Handling Facility (RMHF) because they are not scheduled for release until 2006 and 2008, respectively and decontamination has not been completed at these buildings.

An EPA representative was present on-site overseeing Tetra Tech during the verification surveys. EPA also invited community members to observe the verification surveys conducted by the contractor. Community members observed the verification surveys and in some instances selected locations where samples of concrete, steel and removable radioactivity (swipe samples) were collected for laboratory analysis.

EPA reviewed Tetra Tech's findings and developed conclusions and recommendations about the D&D work performed by Boeing/Rocketdyne.

5. What were the goals of the EPA document reviews and verification surveys and how were they achieved?

The goal of the EPA document reviews and verification surveys was to provide an additional level of oversight to serve as a basis for addressing the community concerns identified above.

To do this, EPA had Tetra Tech review and evaluate the previous surveys done by Rocketdyne and ORISE documenting the final radiological status of the eleven buildings, as well as the work plans for those surveys and facility records. Tetra Tech's review evaluated the adequacy and completeness of the previous surveys to identify appropriate sampling locations for the verification surveys. The evaluation of the previous surveys considered the practices that were ordinarily used within the industry at the time they were performed, the reliability and sensitivity of the measurement instruments used, the frequency and rigor of the measurement instrument calibration program, the representativeness of sampling locations, the level of detail, the correlation between text and data tables, and the general adequacy of documentation. Tetra Tech's verification surveys of the eight buildings were designed and performed to meet the data quality requirements for a final status survey stated in the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM). The general approach to the verification surveys was to perform:

< Surface measurements (scans) using handheld instruments at locations previously surveyed,
< Surface measurements (scans) using handheld instruments at some locations not previously surveyed, and
< Collection and analysis of a limited number of swipe and solid (concrete or steel) samples from surfaces and areas that might contain radioactivity.

The verification survey locations were selected based on previous survey data, professional judgement, and in some cases at random in order to:

< Evaluate comparability with previous surveys,
< Provide coverage of data gaps in the original survey, and
< Provide additional data for areas previously surveyed.

The objective of the verification surveys was to evaluate and supplement existing data, so they used fewer sampling locations than were used for the previous surveys. For example, Tetra Tech EM, Inc. surveyed approximately 20% of building surfaces and the previous surveys measured up to 100% of the building surfaces.

6. What are the findings of EPA's independent assessment of the DOE and Boeing/ Rocketdyne Building D&D program?

EPA reviewed the findings of the document review and verification surveys and reached the following conclusions:

- The previous surveys sampled in appropriate and representative locations
- The measurements made in previous surveys were accurate
- EPA concurred with the conclusions made by DOE and Rocketdyne about the locations and levels of residual radioactivity
- The residual radioactivity in the buildings does not exceed applicable NRC/DOE exposure levels for unrestricted release

Tetra Tech's review of the previous surveys confirmed that the sampling locations were appropriate, representative, and sufficiently documented to adequately characterize the residual radioactivity. EPA concluded that the independent verification survey data developed by Tetra Tech were of sufficient quality and quantity for use in comparisons with previous radiological surveys. The survey data collected by Tetra Tech showed good agreement with prior surveys, indicating that the measurements reported in the previous surveys were accurate. Additionally, the surface activity measured by Tetra Tech were within the NRC-established limits for residual radioactivity on surfaces of buildings to be released for unrestricted use, and the radiological exposure rates do not exceed the NRC-established exposure limits for unrestricted access.

Although these verification surveys confirmed the adequacy of previous studies for their stated purpose and their conclusions, they were not designed to evaluate the appropriateness of the radiological standards used to determine if a building can be released for unrestricted use or the workplace exposure standards.

7. Why did it take EPA and Tetra Tech EM, Inc. so long to complete the independent assessment of the DOE and Boeing/Rocketdyne D&D program?

EPA's independent assessment included reviews of previous decommissioning survey workplans and final radiological survey reports for eleven buildings, and performance of confirmation radiological surveys for eight of those buildings. In general, it takes considerable time to review complex technical reports, develop and implement effective survey workplans, and to evaluate survey data and write reports for eight buildings. Additionally, key personnel at both EPA and Tetra Tech changed during the D&D assessment. EPA monitored the results and conclusions as they were received and determined that none of these findings indicated that immediate action or other project acceleration was needed to protect public or worker health. All document reviews and survey reports are now complete.

8. EPA and Tetra Tech have been criticized for not conducting a verification survey in the 30-foot-deep reactor test vault in Building 19 and obtaining concrete cores for laboratory analysis. Why was this not done?

When planning the sampling activities at Building 19, EPA decided that it was not necessary to sample in the reactor vault, based on facility use records, previous surveys, lack of exposure pathways, safety issues and logistical problems. During the sampling activity, Sheldon Plotkin requested that we sample in the vault. At this time, safety regulations prevented sampling of the Building 19 reactor vault. Our follow-up review of building use, conditions and previous surveys showed that there was no reason to suspect the presence of residual radioactive contamination in the vault.

The vault was previously surveyed using hand-held scanning instruments and surface swipes by Boeing/Rocketdyne and the Oak Ridge Institute for Science and Education. These two surveys all indicated that radiation levels were within NRC- established limits for unrestricted use.

EPA considers the characterization of radioactivity in the Building 19 reactor test vault to be adequate for the purpose of DOE's D&D procedures. EPA confirmed the conclusions of previous surveys conducted by Rocketdyne and ORISE in other portions of Building 19 and found no reason to suspect that residual radioactivity might still remain in the vault. In addition, the California DHS performed surveys of the reactor test vault and also confirmed that radiation levels were within NRC- established limits for unrestricted use. The California DHS is an independent regulatory agency charged with overseeing the release of licensed facilities that managed radioactive materials.

There is no need to take concrete cores in the vault because these kinds of samples are used to tell us the specific radioactive isotopes that are present in areas of elevated radiation levels identified by the hand-held scanning instruments. No anomalous radiation levels were observed in any of the previous vault surveys.

There is no current exposure in the reactor test vault, because no one has access to the area. In addition, DOE has indicated that there are no plans to demolish Building 19 in the foreseeable future.