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*Title:* Planned Maintenance Activities on Stack Sampling Systems  
at LANL TA-55

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*Submitted to:* EPA Region 6



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Mr. George Brozowski  
Environmental Protection Agency, Region 6  
1445 Ross Avenue, 6PD-T  
Dallas, TX 75202

**RE: PLANNED MAINTENANCE ACTIVITIES ON STACK SAMPLING SYSTEMS AT LANL AT TA-55**

Dear Mr. Brozowski:

The 2004 cycle of annual stack sampling system inspections is ongoing. Stacks at several buildings have been inspected and all will be addressed prior to the end of 2004. As we have discussed over the phone, we have one building at which the maintenance and inspection activities require more attention. This letter is to inform you of planned maintenance activities for two stack sampling systems at Technical Area 55 Building 4, the plutonium handling facility at Los Alamos National Laboratory (LANL).

These systems are 2 of the 4 identified as needing further attention after the 2003 annual inspections, as described in the "U. S. Department of Energy Report – 2003 LANL Radionuclide Air Emissions" issued June 2004.

The main processing plant at TA-55, Building 4, has two stacks which are monitored for particulate radionuclides. Each stack exhausts operations from half of the building, and each has multiple levels of HEPA filtration. The stacks are equipped with isokinetic multi-point samplers, designed and installed in accordance with ANSI N13.1-1969. The design of the facility exhaust system is such that single-point sampling is not easily achievable without significant modifications. Therefore, these multi-point samplers were left alone when many LANL facilities were upgraded in the mid-1990s with shrouded probes or more efficient multi-point samplers.

Inspection of the stack sampling systems were conducted in December 2003, in accordance with 40 CFR 61, Appendix B, Method 114, Table 2. During this inspection, visible deposition was noted on the exterior surfaces of the samplers, which triggers cleaning requirement of Table 2.

RRES-MAQ representatives met with TA-55 operations representatives in September to discuss the cleaning of these samplers. It was determined that cleaning & reinstallation

of the existing samplers was not the optimum technical solution. Reasoning behind this decision included the lack of a backup sampling system in case the sampler was damaged during cleaning. Instead, it was suggested to take a two-tiered approach to addressing this problem, addressing both near-term and long-term needs.

For the near term, the facility will purchase and install new multi-point samplers for the existing stack. These will be located at the roof level of Building 4, downstream of the existing sampling location. The new multi-point sampling systems will be Kurz low-loss samplers, which are used at other stacks at LANL and are demonstrated to be effective and robust samplers. These new multi-point samplers are also much more efficient at collecting large particles than the existing systems currently installed in TA-55. These new systems will continue to meet compliance requirements for "existing" stacks, as required in 40CFR61.93(b)(2)(ii). Using these multi-point samplers is strictly an interim solution until a major stack upgrade is completed.

For the long term, the facility is working towards a plan to upgrade the exhaust stacks and sampling systems to single-point shrouded probe samplers. This upgrade is part of an infrastructure reinvestment initiative for this facility. The initiative is a significant financial commitment and requires Congressional line-item funding. The stack upgrade is proposed as a subproject within the TA-55 Reinvestment Project. The upgrade will be required to adhere to federal acquisition requirements and schedule accordingly. Notification of project mission need to Congress and DOE's commitment to this line item is planned to occur this calendar year. Since construction activities will occur in an operating nuclear facility under high security, project planning and design requires systematic engineering review and validation. Conceptual design activities for the upgrades would occur in FY05 with preliminary, final designs, and procurement occurring in FY06/07. Construction activities would occur in FY08. As this initiative is a long-term venture, we are interested in your involvement early in the project planning stage.

There are several advantages of this two-tiered approach. This plan:

- Allows for use of technically superior sampling equipment as an interim solution while preparing for the major facility upgrade to ANSI N13.1-1999 design criteria.
- Provides a technically superior sampling location, closer to the exhaust point of the stack.
- Provides an opportunity to compare measured emissions levels between the older samplers and interim multi-point samplers. This can allow an assessment of the performance of the older samplers.
- Avoids the significant sampling down-time that would occur if existing samplers were removed existing hardware and the interim samplers installed in the same location. Rather, we will have no sampling down time, since existing samplers continue to operate while the interim samplers are installed.
- Locates interim sampling systems outside of the nuclear facility boundary, which allows design and installation to take place much faster and at a much lower cost. Installing the interim samplers at the existing sampling location would commit

- extensive resources for no additional technical gain. Such a commitment may jeopardize the long-term solution of upgrading the building exhaust to ANSI N13.1-1999 criteria.
- Provides a more safe work environment for personnel performing stack sample system inspections. The existing sampling stations require that inspections be performed by opening a port in the stack wall, potentially exposing workers to airborne radioactive material. The interim sampling systems will allow inspection via a borescope, similar to other LANL stacks, an operation that greatly reduces potential exposure levels.

This interim sampler replacement is being treated as a routine maintenance activity under 40CFR61.15(d). Also, since this work will be conducted on support systems and not on any actual source of emissions, the activity is not considered to be a modification by itself. This is in accordance with the RRES-MAQ policy on upgrading stack sample systems, communicated to EPA Region 6 on November 14, 2003. This policy statement is on the Web at the following address:  
<http://www.airquality.lanl.gov/pdf/LA-UR-04-0506.pdf>

LANL has a great deal of experience with this type of work. We have relocated sampling probes at 13 stacks in the CMR building, as well as replaced sampling nozzles on this type of samplers as operations require. Since 1990, LANL has installed or maintained sampling systems on 26 stacks.

LANL does not anticipate any significant difference in reported emissions levels between the existing multi-point samplers and the interim multi-point samplers. The performance of existing systems has been evaluated, and emissions measurements are corrected to account for the efficiency of the existing systems. As mentioned above, the existing and interim sampling systems will be operated together for a time period to assess performance.

The target date for completion of the installation of the interim multi-point sampling systems is by the end of calendar year 2005. RRES-MAQ will communicate the status of this project to you periodically throughout the coming year.

If you have any questions or comments, or require more information, please contact David Fuehne, Rad-NESHAP Team Leader, at [davef@lanl.gov](mailto:davef@lanl.gov) or (505) 665-3850.

Sincerely,

*[Signature on file]*

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Risk Reduction and Environmental Stewardship  
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Sincerely,

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