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August 25, 1993

MEMORANDUM

TO: Benito Garcia  
Bureau Chief, Hazardous and Radioactive Materials

THRU: *JP* John Parker  
Program Manager, Mixed Waste Section

FROM: *DB* Dave Baggett  
Radiation Specialist, Mixed Waste Section

SUBJECT: Comments on ATI's SOP

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Regarding data for Cs-137 from the Los Alamos water supply well, LA-1B, I have reviewed the standard operating procedures for Analytical Technologies, Inc., concerning gamma spectrometry. They use an intrinsic germanium detector with a multichannel analyzer system, which is computer driven. The count time is 800 minutes and the matrix specific MDL is 4.4 pCi/L. Since their procedure is run from a personal computer, most of the SOP is about how to operate the computer. The following comments apply to the SOP:

- The one formula listed in the SOP is for the determination of the minimum detectable activity, While the variables were defined, no units were given. Also, it was not explained where certain constants came from. While the equation is said to be the same as in their listed references, one of which is NCRP-58, it doesn't appear that these two equations are the same, in that some variables and constants are different.
- Their SOP for determining the method detection limit uses a different equation (based on the student t-test) than their SOP for gamma spectrometry, which is confusing.
- Their procedures do mention using NIST traceable sources for daily QA checks and calibrations. These procedures are acceptable.

In reviewing their data report, it was noted that they included QA spikes and blanks for the strontium analysis, but not for Cs-137. The SOP reports a minimum detectable activity for Cs-137 in water

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of 4.4 pCi/L, which is certainly an acceptable number. NMED samples collected on 5/12/93 were all reported to be below this value.

In conclusion, my review of this analytical report and the SOP provides no reason to doubt the validity of the results. However, both the analytical report and SOP were found to be incomplete.

cc: Bruce Swanton, Program Manager, LANL Technical Section