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Title: Response to Ken Silver's "Perspective on the LAHDRA Project"

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Response to Ken Silver's "Perspective on the LAHDRA Project"

Mike McNaughton, January 8, 2010

The comments on the LAHDRA report are available at

<http://www.lahdra.org/meetings/Comments%20Received%20Regarding%20the%20Draft%20Final%20Report%20of%20CDC.pdf>

These include comments by LANL (LA-UR-09-4700 and LA-UR-09-5381) and also comments by Ken Silver titled "Peer Review of Draft Final LAHDRA report dated June 2009"(Silver 2009). On page 4 of Ken Silver's comments he writes:

The major finding of the LAHDRA project is that plutonium air emissions from DP West were much larger than LANL's official, published reports. The never-published 1990 analysis by Dr. Jack Nyhan was on the right track. But, according to LAHDRA, emissions were even greater than Dr. Nyhan and his technician (Barry Drennon) estimated.

Year	Nyhan (1990)	LAHDRA Report (Table 17-1)
1951	2.1	7.7
1952	2.9	12.3
1953	2.2	6.2

Previous comments submitted by LANL to LAHDRA, LA-UR-09-4700 and LA-UR-09-07841, demonstrated that Table 17-1 of the LAHDRA report is incorrect. The following sections show that Jack Nyhan's results are also incorrect.

Jack Nyhan's unpublished paper is in the LAHDRA repository <http://docsleuth.lahdra.org/default.aspx> ; the repository number is 2406. The numbers referred to by Ken Silver are on page 208 of 236 (as counted by Adobe Reader; it is also labeled as page 203 at the bottom of the sheet.) Starting at the 3rd line, Jack Nyhan writes:

Stack emission data for TA-21-12 is presented in Tables XIV and XV. This data shows that TA-21-12 made a significant contribution to stack emissions of plutonium at TA-21. For example, for the years 1951, 1952, and 1953, Building 12 accounted for 32%, 38%, and 24% of the annual stack emissions for all of DP West of 2.04, 2.85, and 2.14 Ci of Pu239, respectively (Table XV).

Table XV is on page 178 of 236 (numbered as page 173 at the bottom of the sheet.) These numbers were obtained from Ed Hyatt's first memo (Hyatt 1955a, dated October 26, 1955) by adding the 12 monthly numbers. These sums can be seen as faint handwritten numbers on the copy of Hyatt's memo in the LAHDRA repository.

Table XV of Jack Nyhan's paper lists data for the four stacks. These data are from Tables 1 and 2 of Hyatt's memo (Hyatt 1955a). In addition Nyhan lists data for the four main air ducts from DP-West buildings 2, 3, 4, and 5. These data are obtained from Tables 3 and 4 of Hyatt's memo (Hyatt 1955a).

The four air ducts fed the single large plenum of TA-21 building 12, and this plenum fed the four stacks, so the air-duct data and the stack data measured the same air stream before and after the filter in the plenum. The second paragraph of Hyatt's memo states:

The last column in Tables 3 and 4 is an indicated efficiency calculated from the total activity per month released through all stacks and the total activity through all main air ducts entering the filter house. This column is actually an index of air cleaning on a monthly basis.

Therefore, it is incorrect to add these data. The correct use of these data is to divide them in order to deduce the filter efficiency as Ed Hyatt did.

Jack Nyhan copied Ed Hyatt's data without being aware of the mathematical error, which is approximately a factor of 20, as described in the LANL comments submitted to LAHDRA, LA-UR-09-4700, and the detailed calculations prepared at Tom Widner's request, LA-UR-09-07841. Furthermore, Jack Nyhan incorrectly adds the stack data to the air duct data without being aware that these are measurements of the same air flow, before and after the filter. Therefore, Nyhan's results are too high by a factor of approximately 50 to 80.

Note that most of Hyatt's memo (Hyatt 1955a) is concerned with the efficiency of the filters. In 1955, the filters were not very efficient because the particle sizes were generally less than 1 micro-meter mass median aerodynamic diameter, and efficient HEPA filters had not been developed at that time.

In summary, the emissions from TA-21 reported by Jack Nyhan are incorrect as a result of two major errors.

References

Hyatt 1955a: Hyatt EC, "Total Activity Released from D.P. West Stacks," Memorandum to Dean D. Meyer, dated October 26, 1955, LAHDRA repository No. 0199; also available as LANL ERID #1710.

LA-UR-09-4700: "Comments on the draft final LAHDRA report dated June 2009," Los Alamos National Lab (LANL) report, submitted to LAHDRA and available at <http://www.lahdra.org/meetings/Comments%20Received%20Regarding%20the%20Draft%20Final%20Report%20of%20CDC.pdf>.

LA-UR-09-5381: "Details related to airborne plutonium releases from the DP West Building 12 stacks." August 2009. Los Alamos National Lab (LANL) report, submitted to LAHDRA and available at <http://www.lahdra.org/meetings/Comments%20Received%20Regarding%20the%20Draft%20Final%20Report%20of%20CDC.pdf>.

LA-UR-09-07841: "Activity Released from DP West Stacks in 1954 and 1955," Michael W McNaughton, William F Eisele, Jeffrey J Whicker, November 2009.

Nyhan 1990: "SWMU Descriptions and Identifications of Data Needs: TA-21 Surface Units Aggregate at Los Alamos, NM," by John W. Nyhan, September 1990, LAHDRA repository No. 2406.

Silver 2009: "Peer Review of Draft Final LAHDRA report dated June 2009," Ken Silver, December 15, 2009, available at <http://www.lahdra.org/meetings/Comments%20Received%20Regarding%20the%20Draft%20Final%20Report%20of%20CDC.pdf>.