

January 11, 2007

James Schon
Environmental Manager
Alcoa Intalco Works
4050 Mountain View Road
PO Box 937
Ferndale, WA 98248-0937

RE: Questions and Comments on the Intalco BART analysis

Dear Mr. Schon;

Thank you for the analysis report and the discussion we had on December 17, 2007 to discuss elements of the report. Since that meeting we have progressed in our review of the report and have the following questions and comments. These comments and questions include concerns and issues we discussed at the meeting. They are included with this letter as Attachment 1.

If your responses could be submitted in a month, (by February 15, 2008) the application could stay on schedule for processing.

If there are any questions, please do not hesitate to contact Clint Bowman for all modeling related questions at 360.407.6815, cbow461@ecy.wa.gov. For all other topics, contact myself (Bob Burmark, 360.407.6812, rbur461@ecy.wa.gov) or Al Newman at 360.407.6810, anew461@ecy.wa.gov.

Sincerely,

Robert C. Burmark
Environmental Engineer

CC: Alan Newman, Ecology
Clint Bowman, Ecology
James Jones, Alcoa Global Business Services

RB:kd

Attachment 1: Questions and Comments on the Intalco BART analysis.

Question 1: Section 4.3: Please document the rationale for using the 1 km dispersion modeling. In addition, include a written discussion of how the met file was produced, along with evaluation metrics on the met file. Ecology's preference is to utilize only the 4 km gridded data, unless there is a valid reason to use a smaller resolution, such as was needed for the Alcoa Wenatchee facility.

Specifically, to utilize the 1 km data, you need to submit a comparison of model performance between the 4 km and 1 km data. This would need to demonstrate that the 4 km output was not producing realistic wind fields. To use the finer grid, there should be performance statistics to persuade us that the 1 km output better describes the wind fields, than the 4 km data.

Because no evaluation was submitted with the report, you need to submit model performance statistics for wind direction and wind speed. The usual ones as supplied by the program, METSTAT, will suffice. They should be calculated for the following observation sites: KBLI, KBVS, KCLM, CYVR, CYYJ, Marblemount (MBMWI), Wells Creek (WCSWI), Smith Island (SISWI), Hurricane Ridge (HUR52), Mt Walker (TWALK), and Sandy Point (C1394).

Clint Bowman, our senior modeler believes the data completeness for these sites is high enough to provide the desired comparison. The statistics should be computed for both the 4 km and the 1 km wind fields. He is open for suggestions of appropriate additional or alternate sites.

Mr. Bowman recognizes that model performance statistics for small grid spacings often do not show the expected degree of improvement and there is a need for additional weight of evidence to be used in the assessment. Therefore, there should be a discussion of the dominant wind fields on selected high impact days, showing the improvement in using the 1 km model output. I recommend that you call or email Clint for further discussion.

Question 2: Section 5.1, SO₂ controls: Please evaluate ammonia based scrubbing technologies. An ammonia scrubbing technology is reported to exhibit the same removal efficiency as wet limestone scrubbing, and was a 'finalist' for the Centralia Power Plant reasonably available control technology evaluation in 1996/7. It has also been used at the Cominco lead and zinc smelter in Trail BC. It does not seem to have the temperature dependence that lime or limestone scrubbing have.

Question 3: Page 5-14 Bake furnace usage of SNCR. Can the ammonia or urea be injected into the bake furnace flues before the exhaust gas has cooled below the reaction temperature? If this is possible, what effects would it have on natural gas usage and emissions in the bake furnace?

Question 4: Page 5-14: What characteristics of your SO₂ wet scrubber proposal cause it to create extra particulate emissions? Other facilities with more mist eliminator washing equipment do not seem to generate wet scrubber particulate at the rate of your proposal. Table 5-2 indicates an 88% reduction of SO₂, but a 42% increase in PM_{2.5}. Please explain this further.

Question 5: Section 5.2.1, pages 5-17: A quick review of the application of limestone wet scrubbing to coal fired power plants has not indicated a need to increase PM emission limits as a result of scrubber installations. TransAlta's Centralia Power Plant did not have to change its very low PM limit to account for particulate from the wet scrubbers installed on that facility. Please provide reference information on why a well functioning mist eliminator system, cannot continue to meet the current potline primary system PM limitation.

Question 6: Sections 5.2.3 and 5.2.4: NO_x reductions: Emission reductions anticipated from use of advanced firing system (20% less fuel and NO_x, resulting in 27 tpy less emissions) and/or use of the LoTO_x control system (90% control, 122 tpy less emissions) are stated. How were the baseline NO_x emission rates established, that the tons per year reduction is based on?

Question 7: Section 5.3.4, Page 5-22: The report notes the cost and adverse impacts of using the existing domestic water supply, from implementation of the wet scrubbing system. As an alternative to using water from the existing potable system, is it possible for the company to develop a separate non-potable system, exclusively for the emissions control system? If so, what might development of a new water supply for the wet scrubber use only cost? Can the company get a credit from not having to purchase water from the domestic supply?

Question 8: Page 5-23: Not to disregard the small degree of visibility improvement projected by use of either combustion controls or the LoTO_x system on the anode bake furnace, and the fact that a scrubber is not proposed, what is the estimated capital cost and cost effectiveness in \$/ton removed, for these systems? Ecology recognizes that on page 5-21 it was stated that cost data for the LoTO_x system was not readily available, but still would like to get some idea of the magnitude of costs and the cost effectiveness of a LoTO_x installation.

General questions

G1: We would like to have an electronic copy of as much of the application as possible. Word is preferred, but pdf is acceptable as long as it allows cut and pasting of all materials into a Word document and in Word format, not bitmapped.

G2: We need copies of all spread sheets or other documents, related to quantifying the baseline emissions to each emission point listed in Tables 3-1 and 4-1 through 4-4. Based on footnote 2 to Table 2-6 of the Nov. 28, 2007 Site-Specific Modeling Report for BART analysis at Alcoa Inc-Intalco Facility, Ferndale, Washington, (Appendix A) this information was submitted to TRC Environmental Corp. by Mike Palazzolo of Alcoa.

G3: We need the same information for the proposed emissions, reflecting the potential BART controls that were evaluated by modeling.

G4: Appendices C and D: Why are the SO₂ control costs different in the Hatch report than in Environ's cost analysis? (71 million versus 80 million for the potline scrubber and 8.9 million versus 10 million for the anode bake furnace scrubber). The body of the report indicates that Environ's costs were based on the Hatch report results, but the connection is not made between these 2 appendices.

G5: Did Hatch evaluate the installation of three absorber vessels sized at 50% capacity each, rather than 2 vessels sized at 100% capacity? Having 3 absorber vessels would allow for one absorber to be out of service, while still maintaining full scrubbing capacity and the goal of a centralized potline SO₂ control system, of a bake furnace control system. Wouldn't the capital costs be reduced if, instead of 2 absorber vessels and support equipment sized at 100% capacity, you were to build 3 absorber vessels with 50% capacity each? How much of a cost difference would this change make?

G6: Appendix D Please indicate the basis for increasing the handling and erection multiplier to 80% from the EPA default of 40%. An increase due to retrofitting is understandable, but doubling the costs of handling and erection needs to be justified. Any specific site characteristics and access issues, related to installation of new ducting over the existing potlines, to the central treatment center for the potline emissions, needs to be explained. Similarly, what constraints justify the increase in handling and erection multiplier for the bake furnace?

G7: Appendix D, control cost analyses. Please justify the need for 4 new maintenance personnel that work one shift per day, 5 days per week, in addition to, one new maintenance person for other shifts simply to maintain the scrubber system. Are maintenance personnel not shared with other process units?

Similarly, one operator per shift, just to operate the wet scrubbing system, is more than the other facilities I am familiar with. In those facilities, plant operators control overall plant operation from a central control room. Only a couple of facilities have separate control rooms, covering subsets of the whole plant's operations and these still coordinate with the main control room.

Potline maintenance material costs, seem to be referenced to a low sulfur boiler system, rated at 1.3 million BTU/hr heat input. Why is this, the right reference for maintenance materials?