Department of Energy
Washington, DC 20585

September 14, 2009

Mr. John J. Grossenbacher
President and Laboratory Director
Battelle Energy Alliance, LLC
2525 North Fremont Avenue
Idaho Falls, Idaho 83415-3695

Dear Mr. Grossenbacher:

The U.S. Department of Energy's (DOE) Office of Enforcement, within the Office of Health, Safety and Security, conducted an evaluation of the deficiencies associated with the Occurrence Reporting and Processing System (ORPS) report NE-ID--BEA-NRAD-2008-0003, *Shim Rod #2 Failure to SCRAM.* Our evaluation included a review of documents and discussions with site personnel. Documents reviewed included the Battelle Energy Alliance, LLC (BEA) *Cause Analysis Report and Corrective Action Plan NE-ID—BEA-NRAD-2008-0003, Shim Rod #2 Fails to drop after Reactor Scram*, dated March 12, 2008.

The subject ORPS report described a September 30, 2008, failed scram event associated with the Neutron Radiography (NRAD) Reactor. During the event, the operator attempted to manually scram the NRAD Reactor by pushing the manual scram button. The expected action as the result of pushing the manual scram button was for three control rods to be automatically inserted into the reactor core by gravity, thus shutting down the reactor. On this date, shim rod #1 and the regulating rod inserted into the reactor core, but shim rod #2 did not insert as expected. Three more attempts were made to insert shim rod #2 into the reactor by pushing the manual scram button, each time holding the button a few seconds longer; and on the fourth attempt, the rod inserted into the reactor core and the reactor was placed in secure mode.

Upon identification of the shim rod #2 irregularities on September 30, 2008, BEA performed an investigation/cause analysis and developed a corrective action plan. This investigation uncovered two prior instances (August and September 2008) in which shim rod #2 did not immediately insert into the reactor as expected after the manual scram button was pushed. In both cases, the problem was attributed to operator inexperience and/or error in depressing the button, and no follow-up investigation or documentation of the problem was performed by BEA.

On December 3, 2007, the DOE issued Enforcement Action 2007-06 to BEA as a result of a 2006 event involving the unplanned shutdown of the NRAD Reactor. That 2006 event involved a number of deficiencies associated with reactor operations, including violations of the Technical Safety Requirements and

operating procedures. An underlying issue associated with that event was the acceptance by the reactor operating staff of a longstanding quality problem (failure of the reactor flux regulator to engage). Rather than formally identifying, documenting and resolving that problem, NRAD operating staff adopted informal processes to temporarily resolve the problem when it occurred.

The Office of Enforcement recognizes that fundamental differences exist between the 2006 NRAD event and the 2008 NRAD failed scram event. In the recent event, the control rod functional issues were not longstanding in nature and were appropriately addressed once recognized. Additionally, operating procedures were complied with during the event. The Office of Enforcement also notes that the shim rod #2 operability issue did not prevent the ability of the reactor operator to safely shut down the reactor, as only two rods inserted into the reactor are necessary to shut it down.

The Office of Enforcement is concerned with the operating staff's response to the two prior (August and September 2008) instances in which shim rod #2 failed to insert upon the first activation of the manual scram button. These instances represented conditions outside the normally expected response; however, in both cases the condition was attributed to operator error without appropriate follow-up. The BEA investigation of the event appropriately noted this concern, stating that the event involved operators "who did not demonstrate healthy skepticism and a questioning attitude when evaluating and responding to equipment performance anomalies." The BEA investigation also noted that the operators and supervisor involved with these events did not adequately communicate unexpected equipment responses to management. The Office of Enforcement notes that similar deficiencies were demonstrated during the 2006 NRAD event, indicating that corrective actions taken by BEA in response to that prior event have not been institutionalized among the operating staff.

While reviewing this event, the Office of Enforcement monitored BEA's activities associated with the troubleshooting and ultimate replacement of shim rod #2. Although your initial repairs were not effective in resolving the issue, your subsequent evaluation and troubleshooting efforts (as described in your May 6, 2009 letter) represent a more comprehensive approach and the resulting corrective actions appear to have been effective in resolving the shim rod #2 irregularities.

Based on the above evaluation, DOE concludes that one or more potential violations of 10 C.F.R. Part 830 Subpart A, *Quality Assurance Requirements*, occurred in association with the subject event. In recognition of (1) the fundamental differences between the two events as described above and (2) BEA's self-identification of shim rod #2 deficiencies, DOE has determined that further investigation is not warranted at this time. However, DOE remains concerned that prior corrective actions related to the formality of operations have not been fully successful, and this letter is intended to highlight that fact to you

and senior BEA management and to ensure that continuing attention is directed towards improvement in this area. In conjunction with the Idaho Operations Office and the Office of Nuclear Energy, we will continue to monitor NRAD operational performance and BEA's implementation of corrective actions in this matter.

No response to this letter is required. Should you have any questions, please contact me at (301) 903-2178 or have your staff contact Mr. Glenn Morris, Director, Office of Price-Anderson Enforcement, at (301) 903-7707.

Sincerely,

John S. Boulden III
Acting Director
Office of Enforcement
Office of Health, Safety and Security

cc: Alan Wagner, BEA
Richard Azzaro, DNFSB