# Department of Energy
Washington, DC 20585

December 22, 2006

Mr. John J. Grossenbacher
President and Laboratory Director
Battelle Energy Alliance, L.L.C.
P.O. Box 1625, MS 3750
Idaho Falls, ID 83415

Subject: Price-Anderson Amendment Act (PAAA) Program Review

Dear Mr. Grossenbacher:

From September 11-12, 2006, the Office of Health, Safety and Security's Office of Enforcement conducted an onsite review of the Battelle Energy Alliance (BEA) Price-Anderson Amendments Act (PAAA) Program. Our review included a verification of the effectiveness of your noncompliance screening and reporting processes, an evaluation of your issues management processes, and a limited review of management and independent assessment programs.

Overall, we found your PAAA program to be mature, effectively implemented, and one of the better programs reviewed by this office. Our review identified several program strengths which included the following:

- The BEA PAAA Program is a mature and established program and benefits from having an experienced and qualified PAAA Coordinator.

- The PAAA Program appears well-supported by BEA senior management. The PAAA Coordinator reports frequently to senior management (via the Operations Council) on performance trends, etc.

- The BEA PAAA Program is well-integrated into other BEA quality improvement related programs. BEA procedures for causal analysis, corrective actions, and issues management all contain references and requirements for PAAA – related issues.

- BEA is making appropriate NTS reportability decisions regarding identified PAAA noncompliances. BEA NTS reports were also found to compare very favorably to other reviewed sites in both their timeliness of issuance and their high percentage of self-identified (versus event or externally identified) issues.

- Each formal causal analysis requires the use of two causal analysis techniques and often includes a human performance review. Formal causal analysis results are validated by a qualified peer reviewer.

- The amount and level of trending performed by BEA provides both facility/program and sitewide perspectives on data. Several examples were noted in which trending analyses resulted in the identification of issues which received subsequent corrective action.

Our review also identified a limited number of weaknesses which included the following:

- Reviewed BEA assessments differed widely in quality. While some clearly provided a review of performance, others merely re-stated procedural requirements and provided no evidence that implementation was assessed.

- Review of the BEA FY 2006 Independent Assessment schedule identified that all planned assessment activities for the areas of Nuclear Safety and Quality Assurance were limited to smaller-scope surveillances. No larger program-type assessments (i.e., instrument calibration program, criticality safety program) were scheduled.

- The Radiological Control Organization's program for trending of radiological issues lacks the level of sophistication commonly seen at other Department of Energy sites. Radiological issues are not categorized by significance, and corrective actions had not been identified for the functional areas identified as the major contributors to the total number of events.

I am aware that the above assessment program weaknesses had been previously identified by your staff and are the subject of ongoing corrective actions. Our review of current assessment activities indicated that your corrective actions have yet to result in consistent improvement in the adequacy of completed assessments.

Details of the review are provided in the enclosure. No reply to this letter is required. If you have any questions regarding this review, please contact me at (301) 903-4283.

Sincerely,

Anthony A. Weadock
Acting Director
Office of Enforcement
Office of Health, Safety and Security

Enclosure: Program Review

cc: Al Wagner, BEA PAAA Coordinator
Sherry Kontes, BEA PAAA Coordinator

**Price-Anderson Amendments Act Program Review**
**Battelle Energy Alliance Idaho National Laboratory**

## I. Introduction

From September 11-12, 2006, the Office of Health, Safety and Security's (HSS) Office of Enforcement performed an onsite review of the Battelle Energy Alliance (BEA) Idaho National Laboratory (INL) Price-Anderson Amendments Act (PAAA) Program. Although BEA is a relatively new contractor at INL (contract awarded in February 2005), the BEA PAAA Program remains largely unchanged from the prior contractor's program except for the inclusion of Argonne National Laboratory – West activities within its scope. The prior contractor's (Bechtel BWXT) PAAA Program was reviewed in August 2002, and was viewed as having strong and effective performance.

This current review included a verification to determine if contractor screening and reporting processes were still functioning effectively. The review also included an evaluation of contractor processes for trending, tracking, and resolving quality issues, and a review of BEA's management and independent assessment programs.

Overall, the BEA PAAA Program was viewed as mature and effective, with necessary program elements in place and several notable program strengths. The Office of Enforcement review did identify a limited number of areas for improvement, which should be addressed to ensure appropriate mitigation consideration during possible future enforcement actions as well as continued exercise of discretion for noncompliances of lesser significance. The results of the review are summarized below.

## II. General Implementation

BEA implements a de-centralized PAAA Program, with screening of various information sources and decisions regarding PAAA applicability and reportability being performed by Compliance Officers and Compliance Coordinators within the various laboratory divisions and/or programs. Trending of issues is performed by the Compliance Officers/Coordinators on a quarterly basis.

The BEA PAAA Coordinator provides overall direction and administration of the BEA PAAA Program, and annually assesses the performance of the Compliance Officers and Coordinators. The PAAA Coordinator reports to the Director of the Environment, Safety, Health and Quality organization (ESH&Q).

BEA has established an Operations Council which meets regularly to review site performance issues and trending information. The PAAA Coordinator routinely reports on PAAA and/or NTS issues at that meeting.

Implementation of the BEA PAAA Program is described in site procedure LWP-13820 Rev. 1, *Identification, Reporting, and Resolution of Price-Anderson Noncompliances*. Various other site procedures (i.e., those dealing with Cause Analysis, Issues Management, Corrective Action Management) also contain PAAA requirements or functions.

The following program strengths were noted:

- The BEA PAAA Program is a mature and established program and benefits from having an experienced and qualified PAAA Coordinator.

- The PAAA Program appears well-supported by BEA senior management. The PAAA Coordinator reports frequently to senior management (via the Operations Council) on performance trends, etc.

- The BEA PAAA Program is well-integrated into other BEA quality improvement related programs. BEA procedures for causal analysis, corrective actions, and issues management all contain references and requirements for PAAA – related issues.

- The self-assessment program implemented by the BEA PAAA Coordinator (assessing PAAA activities of the Compliance Officers/Coordinators) appears to be effective. The PAAA Coordinator developed a comprehensive set of formal criteria for the assessments, and completed assessments were found to have identified areas for performance improvement.

The Office of Enforcement did note that the BEA PAAA Program has not been assessed by an external group (such as a PAAA Coordinator from another site) within the past few years.

## III. Identification and Screening

The Office of Enforcement evaluated performance in this area by interview of cognizant personnel and review of BEA screening documentation. Screening of potential PAAA noncompliance issues is performed by the Compliance Officers and Compliance Coordinators within the various facilities and projects. Identified issues are entered into the Issue Communication and Resolution Environment (ICARE) system, the single issue tracking system used by the INL.

One weakness in the area of screening was identified during the prior 2002 Program Review. That review identified that Noncompliance Reports (NCR) related to suppliers (vendors and subcontractors) were not being consistently screened for PAAA applicability. In response, the BEA supplier surveillance procedure (MCP-2489) was revised to require reporting of supplier deficiencies (captured as either NCRs or Issue Reports) into the ICARE system, where they receive subsequent review for PAAA applicability. The current review failed to identify similar concerns, indicating that the corrective action is effective.

Within the scope of the above review, the Office of Enforcement identified several program strengths. The review determined that a variety of information sources were being screened and that PAAA screening decisions were routinely conservative. Findings from various assessments were cross-checked and found to have been screened with appropriate determinations.

The review also identified that BEA's procedure LWP-13820 includes a requirement that issues entered into the ICARE system be screened for PAAA applicability within 15 days. Compliance Officer/Coordinator performance in this area is routinely assessed by the PAAA Coordinator. The Office of Enforcement noted that issue screening was consequently being performed in a very timely fashion.

## IV. Evaluation of Noncompliance Tracking System Reportability

Noncompliance Tracking System (NTS) reportability determinations are initially made by the Compliance Officers/Coordinators during the initial PAAA screen, with review and coordination by the PAAA Coordinator and approval by the PAAA Approval Authority (currently the Deputy Laboratory Director for Operations). The review of this area identified the following strengths:

- BEA is making appropriate NTS reportability decisions regarding identified PAAA noncompliances. BEA NTS reports were also found to compare very favorably to other reviewed sites in both their timeliness of issuance and their high percentage of self-identified (versus event or externally identified) issues.

- Requirements in the BEA PAAA Program, causal analysis, and issues management procedures collectively ensure that NTS reports each include the following (as applicable): an associated formal causal analysis, an extent of condition review, and an effectiveness assessment.

- In addition to meeting the Office of Enforcement's suggested criteria for NTS reporting, BEA has developed expanded site-specific reporting thresholds and supplemental guidance related to making determinations as to the programmatic nature of a noncompliance.

## V. Corrective Action Management

BEA processes related to quality problem investigation, causal analysis, and corrective action management are described in the following procedures:

- LWP-13845, Rev. 2, *Causal Analysis Program*
- LWP-13840, Rev. 0, *Corrective Action System*
- PDD-13810, *Issues Management Program*.

The Office of Enforcement's review of this area included discussion with cognizant personnel and review of the above procedures and other documentation providing evidence of program implementation. Specific details are discussed in the appropriate section below.

### A. Causal Analysis

Procedure LWP-13845 adequately describes the roles, responsibilities, training, and qualification requirements for the investigation and analysis process. Appendix A of the procedure provides comprehensive guidance for performing an investigation and analysis to determine causes. Formal training is required for personnel assigned to perform both the apparent cause determination and for the more complex formal cause analysis. The procedure also requires personnel to maintain proficiency for formal causal analysis by establishing minimum participation requirements to keep their certification active.

A graded approach, described in the Corrective Action System procedure, is used to establish the scope of the investigation and rigor of causal analysis. All deficiencies are classified as significant or adverse using a risk based process. NTS reportable deficiencies are generally deemed significant. Deficiencies categorized as significant require a formal investigation and causal analysis and those categorized as adverse require a less rigorous determination of apparent causes. The depth and scope of the investigation and analysis process are left to the discretion of the assigned personnel. Reviews for recurring issues and, as applicable, extent of condition are required for both significant and adverse deficiencies**.**

Appendix A of procedure LWP-13845 describes appropriate investigation steps and provides a palate of causal analysis tools. All formal causal analyses typically require the use of a minimum of two causal analysis techniques. Procedural guidance is provided for five analysis techniques, including human error investigation. Once completed, all formal causal analysis results also require validation by an independent qualified peer reviewer.

In conjunction with the above review, the Office of Enforcement noted that the PAAA Program procedure includes a recommendation to perform an evaluation of assessment effectiveness for NTS reportable noncompliances. However, a similar requirement to review assessment program effectiveness as part of the investigation of other significant deficiencies was not identified in other issues management procedures.

The Office of Enforcement reviewed the following two causal analysis reports to evaluate the investigation/causal analysis process:

- Causal Analysis Report for NTS-ID-BEA-INLPROGM-2005-0001 (Sitewide Assessment Process) dated November 2005

- Causal Analysis Report for NE-ID-BEA-AL-2006-0002 (Personnel Contamination Incident) dated August 2006

The Office of Enforcement noted the scope of the investigations and causal analyses described in both of the above reports appeared to be comprehensive and thorough. Both analyses evaluated extent of condition and reviewed for precursor events. Both included the application of two analysis techniques in addition to a human error evaluation.

In summary, the following program strengths were identified in association with the above review:

- Formal training and certification is required for BEA personnel performing causal analysis. Minimum participation requirements are also established to ensure proficiency is maintained.

- Each formal causal analysis typically requires the use of two causal analysis techniques which may also include a human error evaluation. Formal causal analysis results are validated by a qualified peer reviewer.

- A graded approach is used to establish the scope of the investigation and rigor of causal analysis. Deficiencies categorized as significant (including NTS reportable noncompliances) require a formal investigation and root cause analysis.

B. Corrective Actions/NTS Report Closeout

BEA procedure LWP-13840 adequately describes the roles and responsibilities, screening and categorization of issues, and the graded approach to analysis and correction of deficiencies. BEA utilizes a central issue and corrective action tracking system called the ICARE. Issues entered into ICARE are validated by the Cognizant Director, reviewed to determine if they are recurring, and categorized as a reportable occurrence, nonconforming item, deficiency, safety concern, or other. Deficiencies

are classified as adverse or significant by the Cognizant Director and must be corrected by an assigned Responsible Manager. The Responsible Manager determines whether a generic issue exists and initiates the required level of investigation and causal analysis, discussed in more detail above. Significant deficiencies require an extent of condition review by the Responsible Manager.

The Responsible Manager is required to complete the corrective action planning process within 30 days or 45 days for an Occurrence Reporting and Processing System (ORPS) reportable deficiency. The corrective action plan is required to include identification of the necessary evidence to validate completion of each corrective action. All corrective actions and schedules are documented and tracked in ICARE. Schedules that are revised due to corrective actions that could not be completed on time require concurrence from the same levels of management that were originally required, and the changes are documented in ICARE. Completed corrective actions for significant deficiencies require an independent verification review of the evidence of completion. In addition, a validation assessment is required to determine the effectiveness of corrective actions following acceptance by the independent verification that corrective actions have been completed.

BEA monitors the timely completion of corrective actions as a performance metric and provides periodic reports to management. The Office of Enforcement reviewed the metric for corrective action closure in the INL Environmental, Safety, Health, and Quality Quarterly Performance Report and Analysis for the third quarter of FY 2006. The metric identified that 95 percent of (232) scheduled corrective actions were completed on or before the scheduled date. The Office of Enforcement also reviewed NTS corrective action closure timeliness and determined that NTS actions are completed in a timely manner with few exceptions. The Office of Enforcement also selected several examples of completed corrective actions from one NTS report and reviewed the evidence file for completion. In one case, the evidence was based upon an email from the Responsible Manager stating the corrective action was complete. This would not meet the test of an independent verification of closure since it appeared to rely solely on the statement by the Responsible Manager. However, the PAAA Coordinator for the facility identified a more complete evidence file existed at the facility for this corrective action.

In summary, the following program strengths were noted in association with the above review:

- The ICARE system provides a centralized system for the management and tracking of quality problems.

- Corrective actions for significant deficiencies (including NTS reportable noncompliances) receive a closure validation and effectiveness verification.

- Corrective action status (including NTS corrective actions) is routinely tracked and actions are completed in a timely manner.

C. Trending

The Office of Enforcement reviewed BEA programs for trending quality problems by review of trending documentation and discussion with cognizant personnel. This review indicated that trending is performed on multiple levels by BEA. In accordance with procedure LWP-13820, BEA PAAA Compliance Officers and Coordinators perform quarterly trending of locally tracked PAAA noncompliance issues relevant to their area of responsibility. This includes trending of radiological issues by the Radiological Control (RC) organization.

During late 2005 the BEA PAAA Coordinator initiated his own trending program for locally tracked PAAA noncompliances, which supplements the Compliance Officer/Coordinator trending by providing a sitewide perspective and analysis of results. This trending program includes monthly analysis and reporting on a number of specific performance measures.

The BEA Quality Assurance (QA) group also routinely tracks ICARE-identified issues relevant to ESH&Q performance, and provides monthly status reports and quarterly analysis reports to site senior management. In addition to tracking numbers of specific event conditions, the QA group trends a number of metrics related to the effectiveness of BEA's issue identification and resolution processes (i.e., assessment completion, percent of issues identified by external groups, timeliness of issue closure, number of recurring issues).

Within the scope of the above review, the following strength was noted:

- The amount and level of trending performed by BEA provides both facility/program and sitewide perspectives on data and compares favorably with programs observed at other sites. Several examples were noted in which trending analyses resulted in the identification of deficiencies which subsequently received corrective action and (as applicable) NTS reporting.

One weakness was identified specific to the trending of radiological issues by the RC central organization. During early 2006 the RC organization revised their issue trending process to provide a better breakdown of issues by functional area. Although this represents an improvement over their prior approach, the Office of Enforcement noted that the revised program lacks the level of sophistication commonly seen at other DOE sites. Specific deficiencies include the following:

- The tracking program is not described in formal procedures

- Radiological issues are not categorized by significance

- No follow-up or corrective actions have been identified for the functional areas identified as the major contributors to the total number of events.

## VI. Assessment Program

### A. General

As part of this Program Review, the Office of Enforcement evaluated implementation of BEA's management and independent assessment programs. Evaluation activities included a review of relevant procedures and a sample of completed contractor assessments and discussion with cognizant personnel. It should be noted that the Office of Enforcement's review of this area was limited in scope, and does not constitute a comprehensive evaluation of BEA's assessment program.

The Office of Enforcement determined that BEA's Independent and Management Assessment programs are under significant revision. The impetus for the revisions stems in part from a BEA management review (IAS051966, *Implementation and Effectiveness of the ESH&Q Assessment Program)* performed in September 2005. That review determined that many of the assessment activities performed by the Environment, Safety, Health and Quality (ESH&Q) organization did not follow procedural requirements, reported assessment findings using inconsistent terminology, and tended to be superficial, failing to critically evaluate program implementation. A subsequent historical analysis by the BEA PAAA Coordinator identified multiple examples of a failure to fully implement assessment program requirements, and the issue was reported to the NTS (NTS-ID—BEA-INLPROGM-2005-0001). The subsequent formal causal analysis expanded the review of assessment activities and confirmed that the weaknesses noted in the ESH&QA review did exist on a site-wide basis.

BEA planned corrective actions include better communication of management expectations regarding assessments, development of an assessment feedback tool to determine if an assessment meets management expectations, evaluation and revision of assessment procedures, and establishment of a minimum level of required training/qualification for assessment coordinators and personnel performing management assessments.

Significant revisions are also being made in the area of Independent Assessments (IA). Such assessments were formerly conducted by the Facility Evaluation Board, which has been disbanded under the BEA contract. The responsibility for IAs currently falls within the Independent Oversight Group; however, laboratory management indicated that this responsibility would be transitioning to a new Performance Oversight Group reporting directly to the INL Director. BEA also intends to do more external cross-reviews with ORNL.

The Office of Enforcement's review of selected BEA assessments and supporting documentation identified similar concerns to those identified in the BEA management review. Specifically:

- Assessments differed widely in quality. While some clearly provided a review of performance, others merely re-stated procedural requirements and provided no evidence that implementation or performance was actually assessed. Typically the latter assessments identified no findings or concerns.

- Inconsistent terminology (i.e., "finding", "concern") was used to report assessment results. Such inconsistent terminology can lead to confusion regarding the significance of findings.

- In one example, the stated scope of the assessment differed significantly from what was actually assessed.

- Review of the BEA FY 2006 IA schedule identified that all planned assessment activities for the areas of Nuclear Safety and QA were limited to smaller-scope surveillances. No larger program-type assessments (i.e., instrument calibration program, criticality safety program) were scheduled.

B. Radiological Control Assessments

Within the scope of the above review the Office of Enforcement also evaluated the contractor's program for conducting assessments of the RC Program, including the triennial internal audits required by 10 CFR 835.102.

The BEA RC organization includes a central Radiological Control Manager (RCM) and staff, and RC operational staff matrixed to the various projects and/or facilities. Matrixed RC staff conduct surveillances of RC activities at the project/facility level, while the RCM has responsibility for the 835 triennial assessment program.

The current 835 assessment "cycle" spans from July 2004 to July 2007. The contractor's intent is to conduct quarterly RC assessments to cover all required functional areas; however, several quarterly assessments had been delayed during 2006 and the contractor was conducting one large scope RC assessment during the time period of this review to catch up with the schedule.

The Office of Enforcement's review included evaluation of several completed RC assessments and discussion with the contractor related to the scope and planning for the ongoing RC assessment. Prior to the currently ongoing assessment the contractor conducted formal pre-assessment training for the review team which included training on the assessment procedure and the developed review criteria. This was noted as an improvement from prior practice and a strength.

Within the scope of the above review, the following weaknesses were identified:

- A sampling of completed RC assessments were noted to suffer from the same concerns as noted above in relation to assessment in general, i.e., varying quality, lack of assessment of performance, use of varying terms to indicate findings, etc.

- Copies of RC facilty surveillances performed by matrixed RC staff are not routinely provided to the RCM. Only individual surveillance findings categorized as having "sitewide" applicability are communicated to the RCM. The RCM consequently has little knowledge of the types and findings of RC facility surveillances being performed, and this information is therefore not factored into future 10 CFR 835 triennial assessments. The review also identified at least one RP facility surveillance finding that was not categorized as having sitewide applicability (and therefore not communicated to the RCM) although the finding clearly had such generic applicability.

## VII. Conclusion

The above summarizes the Office of Enforcement's review of the BEA PAAA Program conducted from September 27-28, 2005. The PAAA Program was found to be mature and effectively implemented; in several areas (especially timeliness of screening, NTS report submission, and percentage of self-identified NTS reports) the program compares favorably with all other PAAA Programs reviewed by the Office of Enforcement.

A limited number of weaknesses were noted, however, related to the implementation and overall effectiveness of the contractor's Independent and Management Assessment Programs. These weaknesses had been identified previously by the contractor, reported into the NTS, and were the subject of significant corrective actions. The review of current assessments did not demonstrate that corrective actions had yet to result in overall consistent improvement in the adequacy of completed assessments.

Weaknesses identified during this review should be addressed to facilitate the Office of Enforcement's exercise of discretion for noncompliance conditions that are less significant, for mitigation consideration in any future enforcement action, and to ensure that nuclear safety problems receive appropriate recognition and corrective action. Any actions taken to address these items should be appropriately coordinated with the local DOE office.