



Department of Energy
Washington, DC 20585

January 4, 2002

Mr. Woodrow Jameson
President
Fluor Fernald, Inc.
P.O. Box 538704
Cincinnati, OH 45253-8704

EA-2001-06

Subject: Preliminary Notice of Violation and Proposed Imposition of Civil Penalty
(\$55,000)

Dear Mr. Jameson:

This letter refers to the Department of Energy's (DOE) evaluation of several problems and events occurring during calendar years 2000 and 2001 in association with the Waste Pits Remedial Action Project (WPRAP). In August 2000 your staff identified a problem with elevated airborne radioactivity levels at the WPRAP T321 trailer. This long-standing deficiency resulted in a significant number of workers receiving unplanned and unmonitored radiation exposures.

DOE also evaluated deficiencies related to WPRAP operator training and qualification, and the performance of Conduct of Operations (ConOps) surveillances. These deficiencies were identified in a recent DOE-FEMP review, which served as an input to the Office of Price-Anderson Enforcement (OE) investigation.

An Investigation Summary Report describing the results of DOE's investigation was issued to Fluor Fernald, Inc., on October 11, 2001. An Enforcement Conference was held on November 14, 2001, in Germantown, Maryland, with members of your staff to discuss these issues. A Conference Summary Report is enclosed. Based on our evaluation of these problems and events, DOE has concluded that violations of the Occupational Radiation Protection Rule (10 CFR 835) and Quality Assurance Rule (10 CFR 830.120) have occurred. The violations are described in the enclosed Preliminary Notice of Violation (PNOV).

Section I of the PNOV relates to the elevated airborne radioactivity levels at the WPRAP T321 trailer. The violation includes a Severity Level II problem for multiple radiological program deficiencies associated with the event, namely the lack of appropriate air monitoring and the failure to maintain worker exposures As Low As Reasonably Achievable (ALARA). As a result of these deficiencies, 23 personnel received

unplanned and unmonitored exposures for the period of December 1999 – August 2000.

Section II of the PNOV contains a violation describing deficiencies in the quality improvement area. Specifically, examples were noted in which Fluor Fernald processes were not effective in controlling and resolving identified deficiencies in a timely manner. These examples include (1) the failure to ensure that issues identified in the ConOps Monitor Reports were placed in an appropriate corrective action process; (2) the failure to correct deficiencies initially identified by Fluor Fernald relating to the operator training program; and (3) the failure to take sufficient corrective actions following an earlier WPRAP airborne radioactivity event to preclude or correct in a more timely fashion the subsequent T321 problem. A single Severity Level II violation was issued for the collective WPRAP deficiencies in the quality improvement area.

To emphasize the need for continued rigorous management attention to the waste remediation activities at Fernald, I am issuing the enclosed PNOV in response to these violations, with a total civil penalty of \$55,000. No mitigation was provided for timely self-identification since the violations were either long-standing in nature or identified by DOE. DOE recognizes, however, that once identified, Fluor Fernald promptly reported the deficiencies into DOE's Noncompliance Tracking System (NTS). DOE also recognizes that Fluor Fernald had proactively reported "roll-up" Conduct of Operations and Radiological Control programmatic issues at WPRAP into the NTS earlier during 2001, and was undertaking corrective actions for those issues.

Fifty percent mitigation for both violations was provided in recognition of your comprehensive and timely corrective actions relative to the subject events once they were identified, and in light of Fluor Fernald's historically strong PAAA performance with respect to the self-identification and correction of regulatory issues.

The above referenced violations illustrate several lessons learned from a management perspective with potentially significant impact on nuclear safety, including the following:

- The need for improved incorporation of ALARA principles into new facility design or modification
- The need for timely and aggressive action in addressing identified deficiencies and precursor conditions
- The need to ensure that compensatory or "workaround" measures instituted during startup situations are followed-up with appropriate longer-term measures.

Additionally, it will be important for management to follow-up on the particular deficiencies that are the subject of this enforcement action to ensure that the actions taken have been effective in correcting the underlying problems.

You are required to respond to this letter and to follow the instructions specified in the enclosed PNOV when preparing your response. Your response should document any additional specific actions taken to date to address the safety problems discussed above. Corrective actions will be tracked in the NTS. You should enter into the NTS (1) any additional actions you plan to prevent recurrence and (2) the anticipated completion dates of such actions. After reviewing your response to the PNOV, including your proposed corrective actions entered into NTS, I will determine whether further enforcement action is necessary to ensure compliance with DOE nuclear safety requirements.

Sincerely,



R. Keith Christopher
Director
Office of Price-Anderson Enforcement

Enclosures:
Preliminary Notice of Violation
Enforcement Conference Summary

cc: S. Brechbill, DOE-OH
J. Craig, DOE-OH
W. Best, DOE-OH
S. McCracken, DOE-FEMP
D. Riley, DOE-FEMP PAAA Coordinator
B. Varchol, Fluor PAAA Contractor Coordinator
J. Roberson, EM-1
H. Himpler, EM-5
K. Chaney, EM-31
M. Zacchero, EH-1
T. Weadock, OE
Docket Clerk, OE

Preliminary Notice of Violation

Fluor Fernald, Inc.
Fernald Site

EA-2001-06

As a result of the Department of Energy's (DOE) evaluation of Radiation Protection and Quality Improvement deficiencies associated with the Fernald Waste Pits Remedial Action Project (WPRAP), violations of DOE nuclear safety requirements were identified. In accordance with the "General Statement of Enforcement Policy," 10 CFR 820, Appendix A, DOE is issuing this Preliminary Notice of Violation. The particular violations are set forth below.

I. OCCUPATIONAL RADIATION PROTECTION – TRAILER T321 RADIATION EXPOSURES

- A. 10 CFR 835.403, Air monitoring, section (a)(1) requires that "Monitoring of airborne radioactivity shall be performed...where an individual is likely to receive an exposure of 40 or more Derived Air Concentration (DAC)-hours in a year."

Contrary to the above, monitoring of airborne radioactivity was not performed in the T321 trailer for an approximate eight-month period subsequent to startup of WPRAP thermal dryer operations (from December 1999 to August 2000). Subsequent monitoring results indicated the level of airborne radioactivity during the eight-month period averaged 0.3 DAC of Thorium 230. For workers occupying the T321 trailer continuously (40 hours per week), this airborne radioactivity concentration would result in an exposure of approximately 600 DAC-hrs in a year.

- B. 10 CFR 835.1001, Design and control, requires that "Measures shall be taken to maintain radiation exposure in controlled areas As Low As Reasonably Achievable (ALARA) through physical design features and administrative controls."

Contrary to the above, no effective design features or administrative controls were instituted to limit radiation exposure resulting from the inhalation of airborne radioactivity to personnel occupying the T321 trailer during the period December

1999 to August 2000. As a result, 23 individuals received unplanned exposures ranging from approximately 30 to 330 millirem.

Collectively, these violations constitute a Severity Level II problem.
Civil Penalty - \$27,500

II. QUALITY IMPROVEMENT

10 CFR 830.120(c)(1)(iii), Quality Improvement, requires that "Processes to detect and prevent quality problems shall be established and implemented. Items, services and processes that do not meet established requirements shall be identified, controlled, and corrected according to the importance of the problem and the work affected. Correction shall include identifying the causes of problems and working to prevent recurrence."

Contrary to the above, Fluor Fernald, Inc. processes to identify, control, correct, and prevent recurrence of quality problems were not consistently implemented. Specifically,

- A. Conduct of Operations (ConOps) surveillances performed during the period of June 1999 to November 2000 were not effectively controlling or correcting items, services and processes that did not meet established requirements. A DOE FEMP review of 64 ConOps Monitor Reports generated during the subject period determined that problems identified in the ConOps Monitor Reports were not being formally entered into the site corrective action tracking system as appropriate. The DOE FEMP evaluation of the ConOps Monitor Reports identified approximately 20 of the reports as having identified potentially significant nuclear safety issues.
- B. Corrective actions for a prior unposted Airborne Radioactivity Area (ARA) event at the WPRAP site were not effective in providing for the timely identification of the elevated airborne radioactivity concerns at the T321 trailer. In December 1999, radiological air sampling identified elevated airborne radioactivity concentrations (in excess of ARA posting levels) in the Category II Controlled Area adjacent to the west side of the Material Handling Building. Corrective actions included increasing project air sampling locations; however, the potential for escalated air activity within the adjacent T321 trailer was not recognized and sampling in that area was not initiated until August 2000.
- C. A DOE FEMP review found several instances in which WPRAP operators were not subjected to a final written comprehensive exam as required by WPRAP procedures, and where On the Job Training for some operators and first-line supervisors was not documented in the required Training/Evaluation Standard.

Deficiencies related to this area had previously been noted in a WPRAP ConOps Monitor Report, but had not been addressed by Fluor Fernald in a timely manner until noted in the DOE-FEMP review.

Collectively, these violations constitute a Severity Level II problem.
Civil Penalty - \$27,500

Pursuant to the provisions of 10 CFR 820.24, Fluor Fernald, Inc., is hereby required within 30 days of the date of this Preliminary Notice of Violation (PNOV) to submit a written statement or explanation to the Director, Office of Price-Anderson Enforcement, U.S. Department of Energy, 19901 Germantown Road, Germantown, MD 20874-1290 Attention: Office of the Docketing Clerk, 270CC, Room 3039. Copies should also be sent to the Manager, DOE Ohio Field Office; the Director, Fernald Area Office; and to the Cognizant DOE Secretarial Office for the facilities that are the subject of this Notice. This reply should be clearly marked as a "Reply to a Preliminary Notice of Violation" and should include the following for each violation: (1) admission or denial of the alleged violations; (2) any facts set forth which are not correct; and (3) the reasons for the violations if admitted, or if denied, the basis for the denial. Corrective actions that have been or will be taken to avoid further violations will be delineated with target and completion dates in DOE's Noncompliance Tracking System. In the event the violations set forth in this PNOV are admitted, this Notice will constitute a Final Notice of Violation in compliance with the requirements of 10 CFR 820.25.



R. Keith Christopher
Director
Office of Price-Anderson Enforcement

Dated at Germantown, MD
this 4th day of January 2002

Enforcement Conference Summary

The DOE Office of Price-Anderson Enforcement (OE) held an Enforcement Conference with Fluor Fernald, Inc. (Fluor Fernald) personnel on November 14, 2001, in Germantown, Maryland. OE held the meeting to discuss the facts, circumstances, and corrective actions pertaining to an August 2000 discovery of long-standing elevated levels of airborne radioactivity in a Waste Pits Remedial Action Project (WPRAP) trailer that resulted in a significant number of workers receiving unplanned and unmonitored radiation exposures. The meeting also addressed deficiencies associated with the failure to place issues identified in Conduct of Operations (ConOps) Monitor Reports into an appropriate corrective action process; and the failure to correct operator and supervisor training deficiencies in a timely manner until the issue was subsequently questioned by DOE.

The conference was called to order by R. Keith Christopher, Director, Office of Price-Anderson Enforcement. A list of attendees is attached. Information and key areas discussed at the conference are summarized below, and material provided by Fluor Fernald during the conference was incorporated into the docket file.

Mr. Jamie Jameson, President, Fluor Fernald, provided an introduction of personnel and a corporate commitment to safety and compliance, as well as to thoroughly correct the issues being addressed in the Enforcement Conference. Mr. Dennis Carr, Executive VP and Chief Operating Officer, summarized the scope and goals of the presentation, and provided an overview of the WPRAP.

Mr. Stu Hinnefeld, Radiological Control Manager, discussed (1) the elevated airborne radioactivity event at the WPRAP trailer T321, (2) the circumstances that led to the event, (3) the immediate actions taken, and (4) results of the root cause analysis including contributing factors. He also discussed the subsequent instance of unposted airborne radioactivity during the construction of the T321 Annex. He additionally summarized the comprehensive corrective actions taken to preclude recurrence. DOE questioned the linkage of these events to the prior (December 1999) incident of elevated airborne radioactivity at a pad adjacent to WPRAP, and the potential inadequacies of corrective steps taken at that time which might have precluded the situation of unposted and unmonitored airborne radioactivity in trailer T321. In response to these questions, Fluor Fernald acknowledged that the decision not to look further after the December 1999 event was not a good decision.

Mr. Brinley Varchol, Site PAAA Coordinator and Manager of Quality Assurance, then discussed the matter of deficiencies identified in the ConOps Monitor Reports not being

placed in an appropriate corrective action system. He discussed the background concerning the ConOps Monitor Reports. DOE identified the issue in a DOE-FEMP review. A follow-up review by Fluor Fernald found that of 313 sitewide reports, 42 had issues that should have been placed in a formal corrective action system. Mr. Varchol described the immediate actions taken by Fluor Fernald when notified of the problem, the root cause analysis, and the actions taken to preclude recurrence.

Mr. Mark Cherry, the Fluor Fernald WPRAP Project Manager, discussed the matter of several operators not being subjected to a final written comprehensive exam as required by WPRAP procedures. He also discussed the concern where On the Job Training for some operators and first-line supervisors was not documented in the required Training/Evaluation Standard. He described the contributing factor of the Supplemental Management Oversight Plan, which specified certain training requirements, not being identified as a post-start item. He also discussed the immediate actions taken, including a comprehensive review of the entire WPRAP training program, and the actions taken to preclude recurrence.

Mr. Varchol then summarized the PAAA screening and reporting process at Fernald, and provided Fluor Fernald's perspective on potential severity level of the problems and facts to be considered in DOE discretion and mitigation deliberations.

Mr. Carr then closed the contractor presentation by providing a summary of the safety performance of Fluor Fernald at the Fernald site. Mr. Carr concluded that Fluor Fernald acknowledged the weaknesses that led to the events, understood the significance of the problems, and was committed to correct the problems to preclude recurrence. Fluor Fernald representatives did not challenge any of the facts or findings documented in OE's Investigation Summary Report.

Mr. Christopher indicated that DOE would consider the information presented by Fluor Fernald when DOE undertakes its enforcement deliberations. Mr. Christopher then adjourned the conference.

**Enforcement Conference Attendees
November 14, 2001**

DOE

R. Keith Christopher, Director, OE
T. Weadock, OE
H. Wilchins, OE
Steve McCracken, Director, DOE-FEMP
Dave Lojek, DOE-FEMP WPRAP Project
Dennis Riley, DOE-FEMP PAAA Coordinator
Kim Chaney, Director, EM-31
Ned Hallein, EM-31, WPRAP Project Lead
H.P. (Hank) Himpler, DOE-EM PAAA Coordinator
Hank George, SYNERGY Consulting, OE Technical Advisor

Fluor Fernald, Inc.

Woodrow B. (Jamie) Jameson, President
Dennis Carr, Executive VP
Mark Cherry, WPRAP Project Director
Stuart Hinnefeld, Radiological Control Manager
Brinley Varchol, PAAA Coordinator

Referenced NTS Numbers

- 1. NTS-OH-FN-FFI-FEMP-2000-0005**
- 2. NTS- OH-FN-FFI-FEMP-2000-0006**
- 3. NTS- OH-FN-FFI-FEMP-2001-0003**
- 4. NTS- OH-FN-FFI-FEMP-2001-0004**