

1998 Annual Report

Price-Anderson

Nuclear Safety Enforcement Program

Office of Enforcement and Investigation

Environment, Safety and Health

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I. ANNUAL REPORT HIGHLIGHTS

This report summarizes activities in the Department of Energy (DOE) Price-Anderson Amendments Act (PAAA) Enforcement Program in calendar year 1998 and highlights improvements planned for 1999.¹ The DOE Enforcement Program is operated by the Office of Enforcement and Investigation in the DOE Headquarters Office of Environment, Safety and Health (referred to in this report as EH-Enforcement), with input from PAAA Coordinators and technical advisors in DOE Field and Program Offices.

The DOE Enforcement Program issued 13 Notices of Violation (NOV) in 1998 for cases involving significant or potentially significant nuclear safety violations. Eleven of these NOV's included civil penalties or monetary remedies totaling \$1,235,000.² Highlights of these actions include the following:

- ◆ **Disabling of Safety System and Records Falsification, Lockheed-Martin Idaho Technologies Co.**
This case involved two related events. DOE issued an NOV for unauthorized disabling of a reactor seismic scram safety subsystem. A possible civil penalty of \$55,000 was fully mitigated for this problem due to Lockheed-Martin Idaho Technology Company's (LMITCO) self-identification and reporting of the problem and their comprehensive corrective actions. In the second event, DOE issued an NOV, with a civil penalty of \$55,000, for failure to conduct prestartup surveillances, preparation of false records, and failure to initiate corrective action documentation promptly. No mitigation was given for this violation due to prior opportunities to disclose the problem to management and DOE and a supervisor's involvement in that failure. Civil penalty: \$55,000.
- ◆ **Radiological Contamination of Workers at Lawrence Livermore National Laboratory, University of California.** Five workers shredding a contaminated high efficiency particulate air filter were exposed to radiation; one worker received exposures beyond permissible limits. DOE issued an NOV for 1 Severity Level I and 3 Severity Level II problems. Civil penalty: \$159,375 (waived due to statutory exemption).
- ◆ **Bioassay Program and Radiological Control Deficiencies at Mound, Babcock & Wilcox of Ohio.** DOE issued an NOV for numerous deficiencies in the planning and conduct of a prefilter replacement that resulted in workers being exposed to radiological conditions exceeding the safety limits of their respiratory protection equipment. DOE also issued an NOV for deficiencies in the internal dose evaluation, or bioassay, program, for failure to provide timely analyses for numerous workers. Civil penalty: \$165,000.
- ◆ **Multiple Work Control and Quality Improvement Failures at the High Flux Isotope Reactor, Lockheed Martin Energy Research.** DOE issued an NOV for problems associated with gradual deterioration of the emergency backup reactor cooling pump motors without corrective action; inadvertent actuation of the emergency depressurization system due to worker errors; and the loss of an emergency shutdown system due to operator errors followed by subsequent operation of the reactor for several hours. Each set of violations was assessed at Severity Level II, with partial mitigation (25 percent) due to the breadth of the contractor's investigation and sitewide actions. Civil penalty: \$123,750.
- ◆ **Unplanned Uptakes and Exposures at Rocky Flats, Kaiser-Hill Company.** These events involved small, unplanned [radioactive material] uptakes by 2 workers, with 17 workers receiving a small radiation dose due to inadequate dose assessment for areas adjacent to radiological work areas and 1 worker receiving an exposure while performing a radioactive source leak test. In lieu of a DOE investigation and enforcement proceeding, DOE and the contractor agreed to a Consent Order acknowledging the problems and stipulating a monetary remedy. This action is the first use of a Consent Order resolution by DOE for a PAAA issue. DOE chose this approach based on the positive past performance of Kaiser-Hill in identifying, investigating and correcting problems and on their timely and aggressive response to these problems. Monetary remedy in lieu of civil penalty: \$100,000.

¹ PAAA - The 1988 Price-Anderson Amendments Act (P.L.) No. 100-408 required DOE to enforce compliance with its nuclear safety requirements.

² Of the \$1,235,000 total, \$425,625 were waived due to the statutory exemption for specific not-for-profit contractors.

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In addition to the NOV's, DOE issued nine Enforcement Letters, which require that effective corrective actions be made and reported. Additional cases were evaluated; but, in recognition of contractor initiative in identifying, reporting and correcting issues, no enforcement actions were taken.

The 13 enforcement actions taken by DOE in 1998 represented the same level of enforcement activity as in 1997. The Figures below summarize the level of enforcement activity in 1998 and prior years.

Figure I-1: Summary of 1998 Enforcement Activity

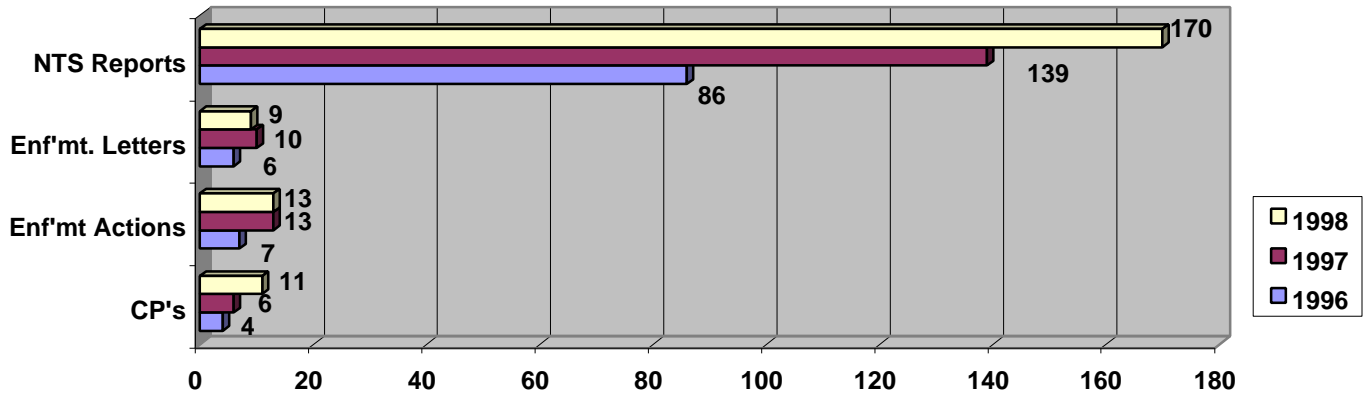


Figure I-2: Noncompliances Reviewed By DOE

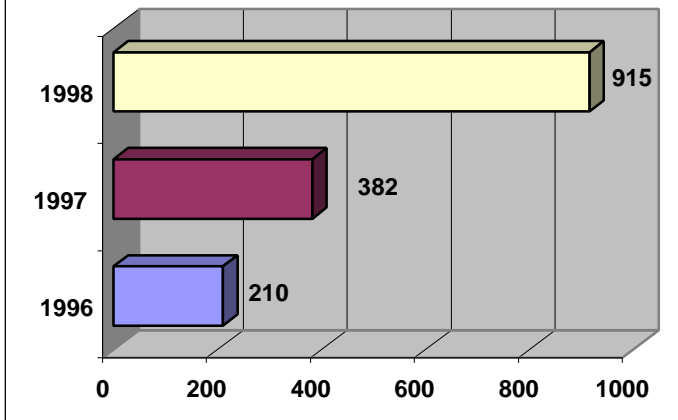
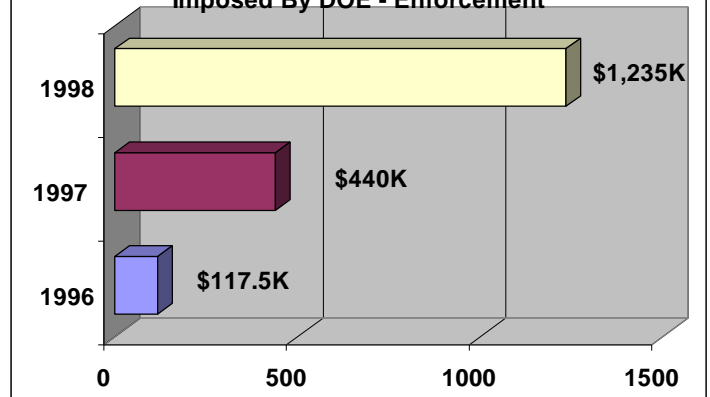


Figure I-3: Penalties & Monetary Remedies Imposed By DOE - Enforcement



The NOV's generally involved events that had significant or potentially significant consequences to workers or the public and inadequate action on the part of the contractor until prompted by DOE or disclosed by an adverse event. The civil penalties were fully paid in all cases except where the contractor had a not-for-profit status and, thus, was exempt from civil penalties.

DOE currently enforces two substantive nuclear safety rules: Quality Assurance (10 CFR 830.120) and Occupational Radiation Protection (10 CFR 835). In addition, certain other requirements may be enforced under the Act (e.g., 10 CFR 820.11). Contractors implemented requirements in 1995 and DOE began enforcement in 1996. DOE identified more than 900 cases of nuclear safety requirement non-compliance of sufficient importance for DOE review. In the vast majority of cases DOE had chosen not to take enforcement action based on the positive actions by the contractor or the low safety significance of the case. Sections II and III summarize the principal cases in 1998 where DOE took action and provide examples where DOE mitigated action based on contractor initiative.

II. SIGNIFICANT ENFORCEMENT ACTIONS

Disabling of Safety System and Falsification of Records at ATR-C

On September 21, 1998, DOE issued an NOV to LMITCO. The NOV cited two violations of nuclear safety requirements involving disabling of a safety system and three violations involving failure to perform surveillances as specified in procedures, falsification of records, and failure to promptly initiate corrective action documentation.

On October 31, 1997, an electrical lead on the seismic scram subsystem detector in the Advanced Test Reactor-Critical (ATR-C) Facility was found disconnected. The ATR-C is a low-power (100-watt) reactor designed to test prototypical experiments before irradiation of the actual experiments in the ATR. The seismic scram subsystem is designed to actuate an automatic shutdown of the reactor if seismic movement is detected. The disconnection of the electrical lead was not authorized. This action violated 10 CFR 830.120(c)(2)(i). The investigation found that ATR-C was operated on three occasions without the seismic scram subsystem shown to be in an operable condition, violating facility technical specifications.

LMITCO's investigation of the disconnected seismic switch uncovered three instances in which surveillances could not have been completed in their entirety by the two operators who purportedly performed them. LMITCO procedures required that steps be performed jointly by two operators, with one completing the surveillance and the other verifying the work. On two different dates, three surveillance procedures were signed off as completed when one of the operators was not even in the ATR-C Facility. LMITCO did not promptly report these surveillance deficiencies or the potential falsification of surveillance records

into DOE's Noncompliance Tracking System (NTS). Although the failure to have two operators present was found by the ATR-C reactor manager, he failed to initiate the corrective action process to ensure that the problem was reported to the cognizant manager, evaluated, and corrected per the quality assurance program. The supervisor only orally advised the operators of the proper method to perform the surveillance.

The seismic subsystem violation had regulatory significance because the subsystem is classified as a safety system and the contractor could not establish that the reactor was operated within the required technical specifications. This violation was classified as a Severity Level II problem. A civil penalty in the amount of \$55,000 would normally have been assessed. However, in consideration of LMITCO's timely identification and reporting of the problem and its taking comprehensive corrective actions, the civil penalty was fully mitigated.

The failure to properly conduct prestartup surveillances, the preparation of false surveillance records, and the failure to promptly initiate corrective action documentation are of significant regulatory concern to DOE. DOE depends on the integrity of its contractors to ensure compliance with procedures and to prepare accurate information for ensuring safety and communicating this to DOE. In this case, the ATR-C Facility reactor manager, an experienced supervisor and veteran ATR-C staff member, doubted that his subordinates properly completed the procedures at all (i.e., either at the dates and times recorded or later) and withheld this information. Given the regulatory significance associated with the failure to document nuclear operations completely and accurately, these violations were categorized as Severity Level II. To underscore the impor-

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tance of DOE's ability to rely on documentation provided by its contractors, a civil penalty in the amount of \$55,000 was assessed. No adjustments were considered appropriate.

Contamination of Workers at LLNL

On March 9, 1998, DOE issued an NOV to Lawrence Livermore National Laboratory (LLNL) with one Severity Level I and three Severity Level II violations. The NOV was issued as a result of an intake of radioactive material by five workers during shredding of an air filter containing as much as [a specified amount of radioactive material]. This amount is substantially higher than the limit established in the LLNL Operational Safety Procedure (OSP). The resultant committed effective dose equivalent to one of the workers was estimated to be [a specified dose range] and the committed dose equivalent to the worker's bone to be [a specified dose range]. These doses are [multiples of] the respective regulatory limits established in 10 CFR 835.

DOE investigated the event and determined that LLNL failed to implement its radiological protection requirements and the quality controls necessary to protect its workers. DOE concluded that violations of DOE nuclear safety requirements involving quality assurance (10 CFR 830.120) and occupational radiation protection (10 CFR 835), including the following failures, had occurred:

1. The only continuous air monitor (CAM) system with alarm capability in the shredder area was not turned on, and the HEPA filters were not monitored to determine radiation levels or surface contamination levels.
2. Several LLNL procedures to maintain personnel radiation exposures as low as reasonably achievable (ALARA) were not implemented. For example, portable radiation monitoring equipment was not available; the contaminated HEPA filter ex-

ceeded radioactive waste specifications; the waste disposal requisition form was not reviewed as required; a modification of the shredder's ventilation system, as well as previous changes in operations between June 1997 and July 1997 had not been reviewed and approved; and the entry in the inspection log for July 2, 1997, incorrectly stated that the CAM alarm system was operational.

3. Processes to detect and prevent quality problems were not adequately established and implemented. For example, from October 1994 until July 1997, radioisotopes of at least one waste filter were incorrectly identified and significantly underestimated. Workers repeatedly did not comply with the LLNL OSP requirements. Additionally, Hazardous Waste Management system operators had not been trained and qualified for CAM operation.

All of these circumstances and failures contributed to the radiological contamination of workers on July 2, 1997. It was of particular concern to DOE that LLNL had identified in a November 1996 report significant and potentially widespread problems of workers not adhering to LLNL OSPs, but LLNL failed to take adequate corrective actions that could have prevented the shredder incident.

DOE classified the radiological exposure of a worker as a violation of Severity Level I. The other three violations, which involved inadequate work control and work place monitoring as well as an inadequate quality improvement process, were separately classified as Severity Level II violations. A civil penalty of \$75,000 for the Severity Level I violation and \$28,125 for each of the three Severity Level II violations would normally have been assessed. The three Severity Level II violations included a 25 percent mitigation in the base civil penalty to reflect the progress LLNL had made since the

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event to evaluate the broader causes and identify comprehensive corrective actions. However, since LLNL is exempt from a civil penalty by statute, DOE waived the total civil penalty of \$159,375. In its letter of March 9, 1998, DOE stressed that full and adequate implementation of the corrective actions will be monitored closely by DOE.

Radiological Work Control and Bioassay Program Deficiencies at Mound

DOE issued an NOV and a civil penalty to Babcock & Wilcox of Ohio, Inc. (BWO), for a number of violations indicative of deficiencies in radiological work processes at DOE's Mound, Ohio, site.

The first set of violations was associated with the changing of exhaust ventilation system prefilters for [a building] in February 1998. This work involved a potential for significant airborne radiological contamination and required careful planning and execution to ensure worker exposures would be kept As Low As Reasonably Achievable (ALARA.) DOE's evaluation found that monitoring was not performed as required to document radiological conditions, verify effectiveness of process controls to reduce radiation exposures, or detect changes in radiological conditions. Administrative controls intended to keep exposures ALARA were not adhered to, and work was not performed in accordance with BWO's procedures.

Two weeks after the filter replacement, air sampler results were quantified, and it was found that workers had been exposed to airborne radioactive [material] in concentrations exceeding those allowed for the respiratory protection equipment worn. As a result of the exposure, radiological monitoring personnel determined that a worker had to be placed on work restriction. However,

that worker was not notified of the work restriction until several days later and continued performing unrestricted work until notified.

The second set of violations pertained to the bioassay program. The bioassay program provides quantitative measurements of any radioactive materials taken into a worker's body. During late 1997 and early 1998, the Mound site was installing and testing new hardware, software and procedures for bioassay analysis. Problems in the installation process led to a variety of bioassay program violations.

First was a failure to ensure continuity of bioassay services as required by the quality assurance plan. This failure occurred when the Mound bioassay laboratory accumulated a backlog of samples to be counted, but contingency plans were not implemented to reduce the backlog. Consequently, the site failed to meet turn-around times required by internal guidelines and failed to provide workers with timely notification of positive results. Finally, on May 1, 1998, DOE imposed a stand-down of all radiological work requiring bioassay monitoring.

Contributing to the breakdown in counting capacity was a failure to sufficiently control design interfaces between vendor software and Mound databases. DOE concluded that processes to detect, prevent and correct quality problems in the bioassay laboratory and the internal dosimetry group were not sufficiently comprehensive. DOE also concluded the management assessment process was deficient and did not provide adequate review to identify and correct problems in the bioassay program.

The issues raised by these violations were symptomatic of a management failure across several contractor organizations at the site. Despite the attention given to the bioassay program over the last several years by DOE, includ-

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ing the imposition of civil penalties on the previous contractor, significant deficiencies continued to go uncorrected.

These violations were each classified as Severity Level II and assessed a civil penalty totaling \$165,000. This amount included partial mitigation (50 percent) for the portion of the penalty attributed to the bioassay program deficiencies, based on self-identification and reporting of the problems and the extent of corrective actions.

Multiple Work Control and Quality Improvement Failures at the High Flux Isotope Reactor

DOE issued an NOV and civil penalty to Lockheed Martin Energy Research Corporation for violations surrounding a number of events at the High Flux Isotope Reactor (HFIR), in Oak Ridge, Tennessee. The HFIR is an 85-MW isotope production and test reactor with the capability of performing a variety of irradiation experiments.

The first set of violations involved a gradual deterioration of the emergency backup reactor cooling pump (“pony”) motors. From 1995 to mid-1997, testing indicated that electrical resistance in these motors was deteriorating. This deterioration was not corrected before it led to a serious quality problem—the occurrence of multiple simultaneous failures of the motors during a test on July 5, 1997. Additionally, DOE’s investigation found that Lockheed-Martin personnel informally changed the test process through a discussion with engineering personnel, and did not follow their formal review and approval process to document and accept the change in the test procedure. As a result, personnel performing the test were not following the approved, written test procedure.

The second set of violations was associated with an inadvertent actuation of the emergency depres-

surization system (EDS). During a July 5, 1997, evolution, personnel failed to properly align the cooling systems to ensure coolant temperatures remained within specified limits. This failure violated a HFIR Technical Safety Requirement and an operating procedure. Contrary to procedure, personnel restarted a pony motor without proper authorization from the control room. This unauthorized action pumped a cool slug of water into the vessel and triggered the EDS. Despite the EDS actuation, an occurrence that should have prompted management evaluation of whether testing should continue, testing continued into the next shift on July 6, 1997. This failure violated the company’s conduct of operations procedure.

The third set of violations was associated with a January 4, 1998, event where the cadmium nitrate tank overflowed and the cadmium nitrate supply did not comply with requirements. Cadmium nitrate was relied on as a backup emergency reactor shutdown system. DOE’s investigation found that personnel had, on multiple occasions, refilled the cadmium nitrate tank without use of an operating procedure as required to control this evolution. On January 4, 1998, an operator left the tank unattended while filling it. Additionally, this operator performed his midshift rounds without using an existing, approved check sheet. Instead, the operator obtained and completed the check sheet only after completing the rounds and returning to the control room. These actions were contrary to the conduct of operations procedure. For a period of several hours, with the reactor at full power, the inventory of cadmium nitrate was less than the amount required by Technical Safety Requirements for emergency shutdown of the reactor. Although no adverse safety consequence resulted from these violations, they did substantially reduce the safety margin for operating the HFIR. Such operating failures during an emergency could lead to serious results for workers and the public. DOE was particularly

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concerned about these violations because there was a failure by Lockheed-Martin management to recognize the programmatic significance of the issues. Each of the three sets of violations was judged to be Severity Level II, with a base civil penalty of \$55,000. Mitigation for identification and reporting was not given, since the problems were disclosed by events rather than contractor initiative. Partial mitigation of the penalty (25 percent) was given in recognition of the breadth of Lockheed-Martin's investigative and corrective actions.

Radiological Release and Contamination of Workers at INEEL

DOE issued two separate NOVs: the first to LMITCO, which is the DOE prime contractor for the Idaho National Engineering and Environmental Laboratory (INEEL); and the second to MAC Isotopes, L.L.C., which is a privatized subcontractor to LMITCO that uses INEEL facilities and services for the production of radioisotopes for commercial use. Both NOVs were issued for failing to have adequate radiological work control processes in place for maintenance work on a hot cell manipulator. As a result, [] radioactive material was uncontrollably released into [a Test Reactor Area building], causing small exposures to six workers, as well as contamination of the entire building, which was closed for 3 weeks for decontamination.

DOE investigated this event and associated circumstances and concluded that the work document preparation and review, as well as the ALARA planning and review, were deficient. These tasks failed to define the full scope of the maintenance work and associated radiological hazards and did not communicate them to workers and management. The [radioactive material] release was caused by multiple failures to follow INEEL

procedures and deficiencies in radiological control training.

DOE concluded that violations of DOE nuclear safety quality assurance and radiological protection regulations had occurred. The following five violations were identified by DOE:

1. Work controls were inadequate, work orders were incomplete, and prejob briefings were deficient.
2. Training of radiological control technicians did not include on-the-job training for manipulator repair in a hot cell and did not address characteristics of the [radioactive] source.
3. Multiple ALARA deficiencies existed, including the failure to submit a work order for ALARA committee evaluation, the failure to identify contingency plans when reaching one of the Radiation Work Permit's limiting conditions (measured dose rate exceeded [a specified value]), the failure to determine an airborne hazard index for [radioactive material] processing activities, and the failure to perform job specific air sampling.
4. Radioactive contamination control techniques did not address the characteristics of [the form of the rad. mat.], resulting in a release into the facility.
5. Surveys to characterize the radiological status of the manipulator arm were not performed.

Similar radiological work planning and control problems had occurred at INEEL previously but they were not corrected to preclude a recurrence.

DOE classified each of the five violations as Severity Level II, with a base civil penalty of \$25,000 for each. DOE considered escalating the civil penalty because INEEL failed to fully implement corrective actions from previous events

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with similar underlying causes. However, since the inadequate corrective action issue was cited in the violations with a combined civil penalty of \$125,000, further escalation was not deemed appropriate.

The NOV issued to MAC Isotopes included the first and a combination of the third and fourth violations for which LMITCO was cited. DOE concluded that the facility-specific corrective actions and the voluntary suspension of radioisotope production warranted a 50 percent mitigation of the base civil penalty for a total civil penalty of \$25,000 for the two Severity Level II violations issued to MAC Isotopes.

Multiple Criticality Safety Infractions and Explosion at Hanford PFP

In March 1998, DOE issued an NOV to the Fluor-Daniel Hanford Company, operator of the DOE Hanford Site, with a civil penalty of \$140,625. The NOV was issued for recurring infractions of criticality safety procedures at the Plutonium Finishing Plant (PFP) and for inadequate emergency response to an explosion at [a facility at the PFP]. DOE concluded that violations of DOE nuclear safety quality assurance requirements had occurred. The NOV included three Severity Level II violations for criticality safety infractions and a fourth one related to the explosion.

1. Temporary Storage and Transportation of [Radioactive Material]: In December 1996, in violation of PFP criticality safety administrative controls, subcontractor Babcock and Wilcox Hanford Company (BWHC) placed [a specified amount of radioactive material] in temporary storage without closing and latching the lid, transported the material container, and located it near a nonisolating wall with an undetermined amount of [radioactive material] on the other side.
2. Placement of [Radioactive Material] Containers in Glovebox: Contrary to the PFP Criticality Prevention Specification and glovebox postings, BWHC, on multiple occasions, placed containers of [radioactive material] in a glovebox.
3. Detection and Prevention of Quality Problems: Contrary to PFP Operating and Criticality Safety Procedures, BWHC failed to identify, control, and correct criticality safety problems. The shift manger knew about the infractions discussed in items 1 and 2 above, but failed to control and correct the conditions. Also, BWHC workers discovered that the semiannual criticality safety inspection for a PFP vault had not been performed during the previous 18 months.
4. Work Control Process: Work control failures before and in response to the [] tank explosion in May 1997 included (a) failure to perform surveillance of emergency breathing apparatus devices; (b) failures to make proper and timely notifications of the emergency condition following the explosion; (c) failure to perform proper radiological surveys prior to personnel being released from the site; and (d) several instances of personnel failure to take cover when a "Take-Cover" condition was instituted. A significant radiological release did not occur as a result of the explosion; however, DOE concluded that substantial degradation of defense-in-depth occurred by breaching the facility confinement and by multiple noncompliances in implementation of the emergency plan.

DOE was particularly concerned that the rigor of conduct of operations, especially the procedural violations of criticality safety controls, and the actions in response to the [] explosion, represented a continuing problem to establish and implement sound safety standards and to ensure that employees and subcontractors conduct op-

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erations in accordance with those established standards and procedures.

DOE classified each of the four violations as Severity Level II, based on degradation of criticality safety and safety features and the failure to implement emergency response procedures. No mitigation of the base civil penalty of \$37,500 was found to be warranted for the first three violations because contractor identification and corrective actions were not adequate or timely. DOE noted in the NOV that for more recent criticality safety events, an improvement in the contractor's actions was evident. DOE determined that a partial mitigation of 25 percent of the base civil penalty was given based on the contractor's comprehensive and responsive site-wide emergency response corrective actions. Effectiveness of these corrective actions was subsequently demonstrated in the response to a [explosive material] discovery about 7 months after the [facility] explosion.

Multiple Work Control and Radiological Failures at LANL

On September 21, 1998, DOE issued an NOV to the Los Alamos National Laboratory (LANL), University of California, as a result of numerous events that occurred after July 7, 1997, at the Chemistry and Metallurgy Research (CMR) facility. These events led to a stand-down of all normal operations within CMR from September 2, 1997, to April 1998. The following events and failures by LANL to take required actions were identified.

1. A series of incorrect unreviewed safety question determinations (USQDs) by LANL, with a potential for operating outside the approved safety authorization basis.
2. Performance of unauthorized work on July 28, 1997, including work outside normal hours and

lack of application of locks and tags, leading to an air pressure inversion in [a wing] of the CMR.

3. Improper response to contamination events. On August 14, 1997, [radioactive material] contamination was found on the clothing of a worker in [a room]. However, a radiation survey to determine the extent of removable contamination was not performed, the contaminated area was not posted, and access was not controlled, as required by procedures.
4. Failure to perform air-flow checks in an open front box in [a room] prior to performing work, as required by procedures. The reversed air flow was from contaminated boxes and hoods into corridors. Exhaust ventilation for the open front box was clogged by a glove, causing the release of [radioactive material into the room]. The contaminated area was not posted, a nonconformance report was not prepared, the system was not controlled to prevent usage, and personnel access was not restricted when contamination was discovered.
5. Partial lowering of a hot-cell shield door on August 20, 1997, in violation of entry procedures with potential exposure of personnel to an unsuspected source of radioactive material of [a specified dose rate] at a distance of 1 foot. High radiation access controls were not in place, and high-radiation-area warning signs were not posted.
6. Ashing of a potentially radioactively contaminated mop head without procedures, leading to a fire in an oven.

DOE conducted an investigation and evaluation of these matters and concluded that violations of DOE nuclear safety requirements involving the Quality Assurance Rule (10 CFR 830.120) and the Occupational Radiation Protection Rule (10

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CFR 835) had occurred. It was of particular concern to DOE that LANL had not addressed these problems in a more timely and effective manner following a fire and explosion in November 1996 in order to preclude continuance of events that could present a risk to workers or the public. Accordingly, DOE issued four Severity Level II violations with a waived civil penalty of \$112,500 that collectively encompassed the infractions. A consideration of 25 percent mitigation was applied based on LANL's more formal work controls.

Unplanned Uptake and Exposures at Rocky Flats—DOE Consent Order

On April 14, 1998, DOE and Kaiser-Hill Company executed a Consent Order Agreement to resolve noncompliances associated with multiple radiological events. The following events occurred at the Rocky Flats Environmental Technology Site between January 1996 and January 1998: (1) 2 workers received an unplanned [radioactive material] uptake during a CERCLA Tank Remediation Project conducted by Rocky Mountain Remediation Service (RMRS), a sub-contractor to Kaiser-Hill; (2) 17 workers received small radiation exposures as a result of inadequate assessment of area dosimetry data for several offices adjacent to rooms containing radioactive material and; (3) an RMRS sealed source custodian received unnecessary exposure while performing a radioactive source inventory and leak test.

Although the actual safety significance of these events was low, and none resulted in radiation exposures at or near the limits specified in 10 CFR 835, DOE was concerned because collectively the events indicate significant weaknesses in the controls necessary to perform work safely.

DOE evaluated the results of the internal investigations of these events conducted by the Kaiser-

Hill team and determined that the findings and conclusions with respect to these events were comprehensive. DOE concluded that these investigations disclosed all relevant facts and objectively assessed the actual, potential, or programmatic safety significance of these events. DOE's approval of the Kaiser-Hill team's aggressive investigation of these events, coupled with similar comprehensive initiative and actions in a number of prior cases, led DOE to conclude that any further investigation into these matters by DOE was unnecessary and unwarranted.

DOE also evaluated and agreed with the adequacy of the corrective actions completed and scheduled for implementation to correct work control deficiencies and to prevent recurrence of these or similar events in the future. As a result of the Kaiser-Hill team's aggressive response to these three events and during previous events, and to encourage similar responsiveness in the future, DOE elected to execute a Consent Order in accordance with

10 CFR 820.23 in lieu of possible enforcement proceedings, NOV, or civil penalties. With the Consent Order, Kaiser-Hill agreed to remit a \$100,000 monetary remedy in recognition of the programmatic work planning and control problems identified as a result of their internal investigations.

The payment agreed to by Kaiser-Hill was (1) significantly reduced from what could have been proposed through the formal enforcement process, (2) in recognition of the reduced impact on Kaiser-Hill, which did not have to support a comprehensive investigation by DOE, and (3) reflective of the benefits to DOE, which did not have to undertake such an effort along with enforcement proceedings. DOE acknowledged that Kaiser-Hill's execution of and payment in accordance with the Consent Order did not constitute or imply admission by Kaiser-Hill of potential

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regulatory violations. Payment of the monetary remedy closed any consideration of DOE taking enforcement action for these noncompliances subject to timely and comprehensive completion of corrective actions. Both DOE and Kaiser-Hill agreed that the sum paid by Kaiser-Hill to resolve this matter would not be considered a reimbursable cost. As with a civil penalty, the monetary remedy was remitted to the Treasurer of the United States.

III. DEFERRED ENFORCEMENT ACTIONS

DOE in many instances has forgone enforcement action due to contractor initiative in identifying and reporting noncompliances and taking comprehensive corrective actions. In a number of other cases DOE has not taken action due to the relatively low safety significance of the noncompliance. These actions by DOE serve as an incentive to contractors to develop the desired safety management culture. The following are examples of cases in which DOE, after review and investigation, chose to defer enforcement action based on desired actions by the contractor. In these examples, an Enforcement Letter was issued to identify DOE's view of the seriousness of the problem and to emphasize DOE's expectation that the root causes be corrected to preclude recurrence.

Breakdowns in Work by Subcontractors at Rocky Flats

DOE evaluated several cases reported into the NTS by Kaiser-Hill Company, involving recurring weaknesses in the implementation of the quality assurance requirements applicable to the work of Kaiser-Hill and its subcontractors at Rocky Flats.

In one NTS report, Kaiser-Hill described repetitive problems with work performed by a subcontractor, Rocky Flats Engineers and Constructors (RFEC). The problems involved inadequacies with work control documentation, radiological work permits, and radiological postings over a 3-month period.

In another NTS report, Kaiser-Hill described deficiencies in 179 RFEC field-fabricated and installed seismic supports for various fire protection, cooling, chilled, and domestic water piping in the attic of Building 371. A field verification walkdown by RFEC determined that 154 of 179 supports were not constructed per the design documents, even though some

management and quality assurance signoffs had occurred.

Another NTS report described a programmatic breakdown in the management of subcontractors performing nuclear safety related activities at Rocky Flats. Kaiser-Hill cited cases of (1) RFEC violations of work control requirements during removal of an air sampler, (2) use of incorrect design standards and inadequate procedures by subcontractors, (3) inadequate implementation of procedures by Roy F. Weston Inc. when replacing underground tanks, and (4) failure of the Denver West Remediation and Construction Company to have a documented management assessment program. Kaiser-Hill concluded that it and its subcontractors had not devoted sufficient attention to subcontractors' performance.

In another NTS report, Kaiser-Hill described the results of Kaiser-Hill and RFEC audits that found five of the nine 10 CFR 830.120 criteria assessed had significant deficiencies. Due to these findings, Kaiser-Hill moved aggressively to ensure that RFEC promptly addressed these programmatic problems. RFEC submitted a corrective action plan, and its performance under the plan is being supervised by Kaiser-Hill.

As integrating management contractor, Kaiser-Hill has responsibility for the performance of subcontractors under its direction. Although a breakdown in the implementation of the Quality Assurance Rule requirements had occurred with some of the subcontractors, and in the oversight of subcontractors by Kaiser-Hill, it is also evident that processes were in place to self-identify these problems and to implement corrective action. Kaiser-Hill and its subcontractors identified the deficiencies before they resulted in a more serious condition adverse to safety. Additionally, comprehensive and timely corrective actions were taken. To reinforce DOE's en-

DEFERRED ENFORCEMENT ACTIONS

forcement policy, as described in 10 CFR 820, Appendix A, encouraging contractors to develop and maintain effective self-assessment and corrective action processes, enforcement action was not taken in this case.

Failure to Maintain Radiation Monitoring Equipment Operational at INEEL

On August 4, 1998, DOE issued an Enforcement Letter to LMITCO concerning repetitive noncompliance with the Quality Assurance Rule (10 CFR 830.120) work process requirements. The repetitive noncompliance resulted in six occurrences where radiation monitoring instruments required by the facility Safety Analysis Report (SAR) were found to be inoperable. No actual personnel exposure or adverse consequence resulted from these inoperable instruments, but DOE concluded that the repetitive nature of these noncompliances could have contributed to personnel exposure if an accidental release had occurred when these instruments were inoperable.

The occurrences included (1) an inoperable stack monitor at the Idaho Chemical Processing Plant; (2) operability of a Criticality Safety Alarm System that was questionable because of inadequate calibration and repair activities at the Nuclear Material Inspection and Storage (NMIS) facility; (3) discovery that the setpoint of the NMIS Criticality Alarm System did not comply with the SAR; (4) removal of the Test Reactor Area stack monitors from service without required notification to operations

management; (5) inadequate maintenance of filters that caused radiation monitoring instruments at the Material Development Facility to be out of compliance with operability requirements; and (6) discovery of several radiation alarm monitors where the alarm function was not operable at the Advanced Test Reactor.

LMITCO discovered the repetitive aspect of these noncompliances as part of their implementation of corrective actions resulting from a prior DOE Enforcement Action, EA- 97-09. LMITCO determined that no single common cause was evident for the six occurrences identified, although most dealt with deficiencies in the conduct of operations. An evaluation conducted by DOE of these occurrences determined that an attitude of indifference toward, and lack of awareness of, Operational Safety Requirements/Technical Specification Requirements existed and contributed to these occurrences. DOE also determined this attitude was apparent in facility workers, facility managers, and other management staff.

DOE elected to defer enforcement action for the noncompliance with the Quality Assurance work process requirements. This decision was based upon the self identification of these occurrences, including the repetitive aspect of this problem by LMITCO and the timely and comprehensive corrective actions. In addition, DOE identified the low safety significance of each of the occurrences as an additional factor in the decision to forego enforcement action.

IV. ACCOMPLISHMENTS

Operational Procedures

During June 1998, DOE published two operational procedures: *Operational Procedures for Enforcement* and *Operational Procedures for Identifying, Reporting, and Tracking Nuclear Safety Noncompliances under Price-Anderson Amendments Act of 1988*. DOE published both procedures to incorporate process improvements and lessons learned from its first years of enforcement experience.

Operational Procedures for Enforcement provides procedures to implement DOE's Enforcement Policy described in 10 CFR 820, Appendix A, as amended. The issuance of this document superseded DOE-HDBK-1987-95 on the same subject. This procedure included changes to address various topics not covered in sufficient detail in the older document, including the following:

- ◆ Clarification of self-disclosing events,
- ◆ Explanation of what constitutes willful violations,
- ◆ Escalation of Severity Level by DOE if other factors are appropriately considered;
- ◆ Explanation of when DOE may conclude that an Enforcement Conference is unnecessary in certain limited enforcement cases; and
- ◆ Clarification of DOE's authority for informal information gathering when conducting an investigation.

Operational Procedures for Identifying, Reporting, and Tracking Nuclear Safety Noncompliances under Price-Anderson Amendments Act of 1988 describes DOE's expectations about effective identification and reporting of non-compliances with DOE's nuclear safety rules. It replaces the DOE-HDBK-1989-95 on the same subject. The changes in the new operational procedure include the following:

- ◆ Revising the reportability threshold to replace use of the term "minor" with the term "reportable";
- ◆ Providing more up-to-date examples of reportable cases;
- ◆ Relaxing reporting criteria for administrative issues by removing certain categories of issues; and
- ◆ Relaxing reporting criteria for certain categories of operational events or conditions.

A summary of the changes is included in the Operational Procedures document.

Enforcement Guidance Supplements

In March 1998, DOE issued Enforcement Guidance Supplement 98-01 to assist contractors in understanding particular requirements of 10 CFR Part 820 and the Enforcement Policy, 10 CFR 820, Appendix A. Specifically, DOE provided clarification on the following two issues.

1. Duration of investigations conducted pursuant to 10 CFR 820.21. DOE retains jurisdiction of an enforcement action until it is satisfied that corrective actions have been completed by the contractor.
2. Transcript Requirements. The requirements of 10 CFR 820.10(c) that no *ex parte* communications take place between Department decisionmakers and regulated contractors without being made part of the public record do not prevent normal information exchanges between DOE Field Office personnel and the contractor nor do they prevent normal information gathering by Field Office personnel.

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DOE issued a second Enforcement Guidance Supplement in December 1998. The second document was issued after DOE contractors raised questions about the scope of DOE enforcement when transportation issues were directly or indirectly involved in an incident. In Enforcement Guidance Supplement 98-02, DOE clarified that, in general, the nuclear safety rules apply up to the point of release for offsite transportation and following the acceptance of material after completion of transportation.

Web Site Enhancements

DOE established an Internet Web Site³ in 1996 to explain the program's congressional mandate and to make available full-text versions of relevant Federal regulations, DOE standards, Office of General Counsel interpretations, program operating procedures, and enforcement actions. To meet an increased demand for information, DOE added advanced features to the Enforcement and Investigation Web Site in 1998. In addition to the aforementioned items, persons visiting the web site can obtain the following information:

- ◆ Downloadable copies of revised program procedures and other items of interest;
- ◆ Press Releases;
- ◆ Most recently published Annual Report; and
- ◆ Enforcement staff contact information.

The web site now enables users to register for and gain access to the NTS and to register for the Annual DOE Coordinators Enforcement Workshop.

³Enforcement and Investigation Web Site Internet Address: <http://tis.eh.doe.gov/enforce/>

Noncompliance Tracking System Update

To keep pace with changing technology and to make the system more usable and accessible to DOE and contractor personnel, DOE updated the NTS in 1998 from a text-based telnet system into a web-based graphical system. As part of the update (1) the NTS was made year-2000 compliant, (2) the system was redesigned to accommodate new information needs, (3) the records created under the old system were moved into the new system, and (4) training classes were sponsored by DOE.

Increased Enforcement of Bioassay Issues

Through its investigation and enforcement activities, EH-Enforcement has found a number of compliance problems with contractor bioassay programs across the complex. The following problems were identified:

1. Administrative mechanisms to collect job-specific bioassay samples were not adequate to ensure that all samples were submitted as specified in Radiation Work Permits.
2. In some instances, contractors failed to develop appropriate comparative metrics for evaluation of bioassay data. In other cases, contractors used scientifically incorrect methods to determine whether bioassay results should be treated as positive.
3. Contractors did not always properly evaluate bioassay results.
4. Weaknesses in some contractor bioassay quality assurance practices were noted.

On November 24, 1998, DOE announced, through a memorandum to DOE and contractor PAAA Coordinators, its intention to expand

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enforcement of all aspects of contractor internal dose evaluation programs beginning April 1, 1999. Until that time contractors were advised to review their programs and ensure that their bioassay programs were in compliance with regulatory requirements, including in the problem areas summarized above.

Awards

In 1996 DOE established the DOE Price-Anderson Coordinator of the Year Award to recognize individual Federal Price-Anderson Coordinators for their leadership and contributions to the enforcement program. In 1998, DOE presented two Field Office Price-Anderson Coordinators with this award, Lloyd Nelson of the DOE Brookhaven Group and Lisa Bressler of DOE Rocky Flats.

Consent Orders

10 CFR Part 820.23 authorizes DOE to issue Consent Orders in appropriate cases. A Consent Order is an agreement signed by DOE. It stipulates (1) conclusions of fact or law, (2) a monetary remedy to be paid by the contractor, and (3) corrective actions to be taken by the contractor. DOE may choose such an approach to close a potential violation if the contractor has met certain criteria, including self-identification of the problem with timely reporting into the NTS; comprehensive corrective actions; a thorough and objective investigation on the part of the contractor; and, most importantly, the contractor's consistent track record of such discovery and response to compliance issues.

The use of Consent Orders allows DOE to focus its resources on more serious cases. The Consent Order approach benefits the contractor by avoiding the burden of supporting a DOE investigation and receiving generally lower monetary outlays than would have been experi-

enced from a full DOE investigation and enforcement action. If the contractor does not comply with the terms of the Consent Order, DOE may proceed with an enforcement action against the contractor.

On April 14, 1998, DOE issued its first Consent Order. DOE agreed to the Consent Order after determining that the contractor had quickly reported the violation, had conducted a timely and comprehensive investigation of the event, and had completed timely and comprehensive corrective actions in response to potential violation issues.⁴ This case is discussed in more detail in Section III of this report.

Training

In December 1998, DOE sponsored its Annual DOE Price-Anderson Coordinators Workshop. This workshop offers specialized training to DOE Price-Anderson Coordinators and is designed to develop their skills and keep them informed of recent developments and planned changes in the enforcement environment.

The workshop approach involved case reviews of the major enforcement actions over the past year, including facts of the case, enforcement outcome, and key enforcement considerations.

Docket File Review

In September and October 1998, EH-Enforcement performed a review of docket files to assess the completeness of contractor Quality Assurance Plans (QAPs) and Radiation Protection Plans (RPPs) and to assess the level of consistent commitments in the revisions to the originally approved contractor plans.

⁴ EA 98-03 Consent Order between the U.S. Department of Energy and Kaiser-Hill Company, L.L.C.

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The review found there was no evidence of diminishing commitments, but there were several weaknesses in the clarity and completeness of information contained in the docket files. For example, the review found that revisions to the QAPs and RPPs were not always clear and understandable as to what was changed or replaced; the scope of the revisions and the revision history were not stated; the reason for the change was not included; and no statement was provided to indicate that the plan still satisfied rule requirements.

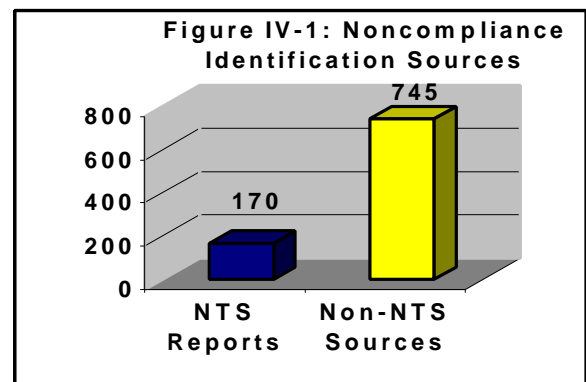
To address these issues DOE intends to revise Part 820 to ensure these plans have the appropriate level of clarity; there is communication with DOE Field and contractor management on their requirements on a regular basis; a listing is posted on the enforcement web page describing the most recent issue of the plans in the docket file; and periodic follow-up audits of material submitted into the docket files are performed.

Cases Considered

DOE considers for investigation a variety of information sources of noncompliances, including NTS reports by contractors and other cases identified by DOE. During this reporting period, over 700 cases of noncompliance with nuclear safety requirements were identified to EH-Enforcement for potential enforcement review.

Between January 1 and December 31, 1998, 170 noncompliance reports were filed into the NTS. (compared with 139 reports in 1997 and 86 reports in 1996). Of these 170 cases, DOE was able to complete the review of 35 reports by December 31, 1998. Additionally, EH-Enforcement closed 92 reports, which had been filed in previous years. It is necessary for the contractor to complete all corrective actions before a noncompliance can be closed. DOE also identified over 433 other noncompliance

cases through review of the Occurrence Reporting System (ORPS), various DOE Field Office reports, EH-Oversight reports, Defense Nuclear Facilities Safety Board trip reports, DOE Field Office assessments, and other sources that identified contractor noncompliances. **Figure IV-1** summarizes the sources for identification of potentially significant noncompliances in 1998, whether they were identified by DOE or the contractor and reported into NTS or were identified through other DOE sources.



DOE's reviews of these noncompliance reports focused on the safety significance of the issues, as well as the degree to which the contractor was demonstrating the desired behavior of aggressive self-identification, reporting, and corrective action. Where DOE was not satisfied that appropriate actions had been taken and that the safety significance warranted further investigation, DOE undertook a more comprehensive review.

The increase in the number of NTS reports in 1998 over 1997 and 1996 indicates a broader acceptance by contractors of the need to identify noncompliance conditions, proactively report them to DOE, and implement timely corrective actions to mitigate those conditions.

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Investigations/Reviews with no Enforcement Action

EH-Enforcement and DOE Field Office Coordinators conducted many comprehensive reviews of noncompliance cases. In some of these they found that the contractor had properly self-identified and reported the problem to DOE and was taking the appropriate action. These cases were often closed with appropriate annotation in the NTS, including documentation of the observations and conclusions of the Field Office PAAA Coordinator. For cases not reported to the NTS, EH-Enforcement similarly considered the safety significance of the issue and the actions taken by the contractor. If satisfied, EH-Enforcement documented the review in its official records. However, if a potential problem had been identified, EH-Enforcement would have encouraged the contractor to initiate an NTS report and could have evaluated and tracked the case through the NTS.

In some cases DOE found it appropriate to issue an Enforcement Letter to the contractor as part of the closeout of the case to clarify a DOE position or to communicate DOE expectations to further enhance resolution of such matters. If an Enforcement Letter was issued, no additional enforcement action was taken subject to satisfactory completion of corrective actions.

In 1998 DOE issued 9 Enforcement Letters to formally close out investigations, as compared with 10 in 1997 and 6 in 1996.

Notices of Violation and Civil Penalties

DOE initiated formal enforcement action in cases for which DOE determined that the circumstances of the case and the actual or potential safety consequences were sufficiently serious. In all cases, NOV's were issued to clearly

communicate DOE's expectations and document violations of DOE nuclear safety requirements with significant actual or potential safety consequences. They also clearly communicated DOE's expectations to contractors including the need to substantially change behavior and practices and emphasized the need for contractors to aggressively focus on a conscientious safety culture that self-identifies noncompliances, reports them to DOE, and takes prompt and effective corrective actions.

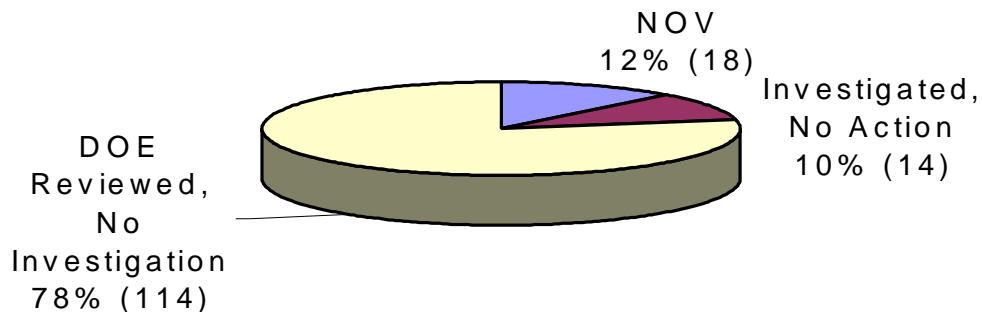
In 1998 DOE issued 13 enforcement actions, 12 of which were NOV's. Ten NOV's were issued with civil penalties and one enforcement action involved a monetary settlement through a Consent Order; these penalties and the settlement totaled \$1,235,000. This activity compares with 13 NOV's, six with civil penalties totaling \$440,000, in 1997. Each NOV issued typically described a number of related examples that were collectively incorporated into a single set of findings. No NOV's were contested in the reporting period.

Figure IV-2 summarizes the enforcement outcomes for the various NTS cases considered and resolved by DOE in 1998. These cases derived from NTS reports where DOE determined that potential safety significance warranted a substantive review. Most cases were closed without enforcement action based on proper initiative by the contractor or DOE conclusions of low safety significance after review. Sections II and III provide examples of selected 1998 EH-Enforcement cases.

Table IV-1 provides a summary of the DOE enforcement actions taken in 1998.

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**Figure IV-2
DOE Actions on NTS Cases
(For Cases Resolved in 1998)**



**Table IV-1
DOE 1998 Enforcement Actions**

EA No.	CONTRACTOR	TYPE	SEVERITY LEVEL	DATE ISSUED	CP AMOUNT
EA 98-01	LLNL	PNOV	I	03/09/98	\$159,375 ¹
EA 98-02	FDH	PNOV	II	03/26/98	\$140,625
EA 98-03	KHLL	CO ²	N/A	06/05/98	\$100,000
EA 98-04	LMITCO	PNOV	II	06/05/98	\$125,000
EA 98-05	MAC	PNOV	II	06/05/98	\$ 25,000
EA 98-06	LLNL	PNOV	II	07/28/98	\$153,750 ¹
EA 98-07	LMES	PNOV	III	09/21/98	N/A
EA 98-08	MKF	PNOV	III	09/21/98	N/A
EA 98-09	WSRC	PNOV	II	09/21/98	\$ 75,000
EA 98-10	LANL	PNOV	II, III	09/21/98	\$112,500 ¹
EA 98-11	LITC	PNOV	II	09/21/98	\$ 55,000
EA 98-12	BWO	PNOV	II	11/16/98	\$165,000
EA 98-13	LMES	PNOV	II	11/16/98	\$123,750

1 Civil penalty waived due to statutory exemption for certain laboratories.

2 Consent Order jointly signed by DOE and the contractor.

V. CHANGES AND IMPROVEMENTS

Experience from DOE's first 3 years of implementing the Enforcement Program, and from the many enforcement actions that have been taken, led to lessons learned. As in prior years, DOE has undertaken continual review of its Enforcement Program and instituted changes to improve its effectiveness. The following are the principal areas in which changes and improvements in the enforcement program are planned for 1999.

Consistent Field Office Involvement

DOE's enforcement program is founded on an approach of making maximum use of existing resources and programs, such as Field Office personnel. These individuals are integral to the enforcement program. They are most aware of conditions that represent potentially significant noncompliances, are most capable of judging corrective action adequacy, and are the most efficient in confirming that corrective actions have been completed. EH-Enforcement structured an arrangement with Field Offices that is based on mutual professional cooperation. In those Offices where the program has worked most effectively, there is a clear understanding of the importance of the enforcement program as a DOE management tool to ensure work of a high quality is performed safely and in a timely, cost effective manner.

The program was established with individual coordinators designated in each Field Office as the point of contact for EH-Enforcement and for contractors on PAAA issues. Over the first 2 years of implementing the enforcement program, substantial variation in program involvement among Field Offices has been experienced.

This variation appears to be related to both differences in the perceived role of the Field Office when interacting with the contractor on

PAAA issues, and divergence among Field Office managers on the extent of desired involvement in the enforcement program. These differing perceptions have manifested themselves in differences in the active involvement in identifying noncompliances, participation with EH-Enforcement in conducting investigations, and in confirming proper completion of corrective actions by the contractors.

Although involvement has improved over the period that the enforcement program has been in place, some offices are less engaged in supporting the program or in uncovering compliance problems that may be candidates for enforcement review. In a few cases, some offices that may have been more supportive in the past appear to have lapsed into a less supportive approach to the program. In the past DOE undertook several initiatives to provide more uniform cooperation, including the following:

- ◆ Annual workshops for Field and Program Office PAAA Coordinators. EH-Enforcement will continue to hold these workshops. A focus of the December 1998 workshop was to cross-feed information about various enforcement cases in the past year. At this workshop, DOE also solicited input from a senior contractor manager to provide his perspective on the PAAA program, the benefits from this regulatory program, and suggested improvements in the program. In prior years DOE has had other guest speakers, including the NRC's Director of Enforcement.

CHANGES AND IMPROVEMENTS

- ◆ Communication between senior EH management and individual Field Office management. Such communication continues to be encouraged to establish more consistent working relationships, understanding of roles, and strategies for focusing on particular contractor problem areas.

EH-Enforcement will continue the above initiatives in 1999; however, it is clear that other steps are required. Where it appears that EH-Enforcement is not getting the full support and cooperation from a particular Field Office, EH will be undertaking a series of PAAA program assessments to evaluate the contractors under that particular Field Office. In a separate section below, the scope and plans for such assessments are discussed.

As one indicator of Field Office participation in the program, **Table V-1** illustrates the relative involvement of different Field Operations Offices for NTS reports where sufficient time has elapsed that Field Office input could be expected. Another indicator of Field Office support to the program is the degree to which their particular DOE contractors are choosing not to report noncompliances into the NTS, as discussed in the next subsection.

Improving Contractor Initiative in Identification and Reporting

In 1998 DOE continued to find that some contractors were not sufficiently aggressive in identifying PAAA noncompliances and reporting these to DOE. Additionally, it appeared that a few contractors chose to stop reporting, apparently believing that DOE will not be able to pursue cases if they are not reported and that the Field Office will not challenge this course of action. The record is clear that DOE's enforcement actions have almost all stemmed from cases where DOE uncovered the problem or that the problem was disclosed by an event of

which all parties were aware. DOE almost uniformly declined enforcement action where the problem was uncovered by contractor initiative such as in a self-assessment. The only exceptions have been events resulting from the noncompliances that were so significant that DOE had to take action. Even in such cases civil penalties were mitigated, where appropriate, to provide recognition of contractor initiative.

DOE will continue to monitor the responsiveness of contractor initiative in identifying noncompliances, reporting issues above DOE's reporting threshold into NTS, and taking prompt and effective corrective actions. DOE's monitoring activities will include review of occurrence reports, routine contractor monitoring by Field Office personnel, Defense Board reports, Office of Oversight findings, and worker input. In addition, contractor internal reporting systems will be reviewed when appropriate.

In those cases where contractors have reported very few noncompliances into DOE's NTS system, DOE intends to focus special attention to determine if these contractors are demonstrating a high level of compliance and safety performance or if they are avoiding their responsibility to aggressively identify noncompliances and focus on improving safety of operations. DOE will exercise similar monitoring activities as described above but will also consider a special site-visit to the contractor's facility to review identified noncompliances and other records. DOE conducted one such PAAA Program Assessment in 1998 at the Nevada Test site, and intends to conduct several such similar exercises at other sites.

As a point of information, **Table V-2** summarizes the NTS report frequency by contractor as of December 31, 1998. The contractors listed in the table are those that are direct managing

CHANGES AND IMPROVEMENTS

and operating (M&O) or managing and integrating (M&I) contractors to DOE and are responsible for nuclear facilities. Some of these contractors manage large, complex sites with many nuclear facilities, while others manage smaller sites or sites with few nuclear facilities or radiological activities. Some of these facilities are research laboratories where it may be reasonable that few NTS reports would appear; however, larger sites with many nuclear facilities or radiological hazards should be expected to have multiple NTS reports if the contractor is aggressively identifying, reporting and fixing its problems. Thus a relatively large number of NTS reports by a particular contractor may be indicative of positive contractor initiatives. Accordingly, a direct comparison across all contractors is not appropriate; but the table does show the wide variation in use of NTS by contractors. Contractors with low reporting into NTS, but performing activities with nuclear safety implications, will receive special attention.

PAAA Program Assessments

Since the inception of the PAAA Enforcement Program, DOE has employed an approach that did not mitigate for identification and reporting if a significant nuclear safety occurrence involving several noncompliances had not been reported by the contractor into the NTS. The transmittal letter for the enforcement action clearly communicated DOE's action for not mitigating was due in part to the contractor's failing to report the noncompliances into NTS. Such action by DOE reinforces to contractors the benefit of reporting, as well as the penalty for failing to report. However, experience with the program has shown that some contractors fail to appreciate this potential benefit of mitigation or the risk of not reporting. To provide better balance to this area, DOE will be using another tool. That is to perform an onsite

PAAA program assessment, as was done at the Nevada Test Site in 1998.

To conduct a PAAA Program Assessment, EH-Enforcement will send a team of nuclear safety and regulatory experts to the site for a multiple-day review. The EH-Enforcement team will review the contractor's PAAA screening and reporting program, evaluate a sample of particular cases that are being tracked in the contractor's self-tracking process, and review contractor procedures and implementation of key processes such as quality improvement and self assessment. This assessment is not intended to be an Enforcement Investigation; however, if the assessment uncovered a case or series of cases representing a potentially significant compliance problem, EH-Enforcement could expand the assessment into an Enforcement Investigation.

DOE has already planned such assessments for 1999. DOE's intention is not to be more intrusive of contractor activities, but to verify regulatory compliance for those contractors who do not appear to be aggressive in self-identification and reporting of problems. Contractors who are regularly reporting and demonstrating initiative in uncovering and fixing problems will not be the focus of such assessments.

CHANGES AND IMPROVEMENTS

Need for Additional Enforcement Guidance Regarding Scope of 10 CFR 830.120 (Quality Assurance Rule)

During the review of a number of issues over the past 18 months, EH-Enforcement has identified a number of cases in which both DOE and contractor organizations have incorrectly assumed that the Quality Assurance Rule (10 CFR 830.120) did not apply to a facility, area, or activity if it was classified as less than Hazard Category III under DOE Standard 1027-92 (*Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports*). Standard 1027 provides guidance for determining whether a facility, activity or area requires a SAR based on inventory. However, it does not provide a basis for exclusion from the provisions of 10 CFR 830.120.

10 CFR 830 applies in a graded approach to all DOE reactor and nonreactor nuclear facilities. Nonreactor nuclear facilities are defined as those that conduct activities or operations that involve radioactive and/or fissionable materials in such form and quantity that a nuclear hazard potentially exists to the employees or the general public. This includes those activities related to design, manufacture, and assembly of items for use with radioactive materials in such form or quantities that a nuclear hazard potentially exists, even when no nuclear material is present. The Rule does not specify any minimum for such a hazard.

In 1994 DOE contemplated using Standard 1027 to limit the scope of 10 CFR 830 to those nuclear facilities classified as Category III or higher. However, on February 5, 1996, the DOE Office of General Counsel published in the Federal Register (Vol. 61, No. 24) Notice of Ruling 1995-1, Ruling Concerning 10 CFR Parts 830, "Nuclear Safety Management," and 835, "Occupational Radiation Protection." The

DOE Office of General Counsel is responsible for formulating any interpretation of DOE's nuclear safety requirements.

In Ruling 1995-1, the Office of General Counsel clearly established that the scope of 10 CFR 830 was not limited to activities involving source, byproduct or special nuclear material but applied to all DOE activities that have the potential to cause radiological harm (in the present or future) other than those already explicitly excluded by the rule, such as accelerators, transportation of radioactive material, or incidental use (e.g., check and calibration sources, smoke detectors, etc.). The General Counsel noted that in the Preamble to the final rule adopting 10 CFR 830, the Department rejected comments that requested a threshold to exclude coverage of low hazard facilities and reaffirmed its intent to cover all facilities that involve radioactive material in such form and quantity that a nuclear hazard potentially exists. Nevertheless, confusion has continued to exist over this issue. In retrospect, this confusion appears to be based in part on the continuing open debate about the remaining proposed Part 830 rules, in part on a decision by EH-Enforcement to focus its attention elsewhere in the course of the development of the DOE Enforcement Program and, on occasion, from a desire on the part of some contractors to find a mechanism to avoid accountability under the Quality Assurance Rule.

EH-Enforcement intends in the future to apply the provisions of 10 CFR 830.120 to those facilities, activities, and areas where the activity has the potential to cause radiological harm, unless specifically excluded by Part 830 or an approved exemption issued in accordance with 10 CFR 820.

DOE does not intend to initiate immediate or retroactive enforcement in cases where the activities having the potential to cause radio-

CHANGES AND IMPROVEMENTS

logical harm have been excluded from the scope of 10 CFR 830.120 through the use of Standard 1027. It is recognized that due to early confusion some contractors have prepared implementation plans for 10 CFR 830.120 using Standard 1027 to define a set of nuclear facilities while excluding from the Quality Assurance Rule broader activities that have potential to cause radiological harm. Reclassifying facilities is unnecessary, but some reasonable period of time will be allowed for contractors to assess their existing quality assurance processes for these broader activities. Most DOE sites already implement site wide Quality Assurance plans using the graded approach, and the DOE Quality Assurance Order 0414.1, when implemented through a contract, is identical to the Quality Assurance Rule. Additionally, the key element of the Quality Assurance Rule involving work process control already directly correlates with the Department's efforts in the Integrated Safety Management process. Therefore, this effort will have only a *de minimus* impact.

Over the next several months, EH-Enforcement will work with both DOE and Contractor Price-Anderson Coordinators and the Program Offices to ensure that DOE's nuclear activities are conducted in accordance with the clear intent and scope of the nuclear safety rules. This effort will culminate in the issuance of an Enforcement Guidance Memorandum clearly stating the date after which EH-Enforcement will consider potential enforcement cases in accordance with the defined scope of 10 CFR 830.120 as interpreted by General Counsel Ruling 1995-1.

It should be clear that the graded approach to enforcement based on safety significance remains constant and is unaffected by this issue. The decision to initiate an enforcement action will continue to be based on established criteria as described in the Enforcement Policy and associated guidance.

Increased Focus on Procurement Quality and Vendor Qualification Violations

During the past 2 years EH-Enforcement has experienced an increasing number of contractor violations of the Quality Assurance Rule procurement requirements. These violations have already resulted in one NOV, and one Enforcement Letter. Three additional cases were under review at the end of 1998. Several major areas of concern have been identified from these cases including the failure by Prime Contractors to adequately qualify subcontractors for safety related work and failure to adequately ensure that services and items procured will perform their intended safety function. To date, these deficiencies have resulted in failures of safety components while in service and in the fabrication of safety-related components and systems that do not meet the design specifications.

Adequate control and oversight of the procurement of services and items that involve the safety-related aspects of nuclear facilities is very important in ensuring the overall safety of the nuclear facility, safety of workers, and protection of the public. Defective components or inadequate services may be difficult to detect once they are placed into service or when work is completed. During 1999, EH-Enforcement will place increased emphasis on identifying deficiencies with the contractor processes for procurement of safety-related services and items. It is DOE's intent, through this increased emphasis, to cause contractors to place more focus on proactively self-identifying problems in this area and fixing them before adverse consequences result.

CHANGES AND IMPROVEMENTS

Proposed Change to Part 820 – Implementation and Program Plans

Presently contractors submit implementation plans (IPs) and rule-specific program plans, such as Radiation Program Plans and Quality Assurance Programs, to DOE Program Offices. Field Offices generally perform reviews. In many cases, copies of the IPs and program plans are not submitted to the Docket Clerk. Lacking the current issue of such plans impacts the ability of DOE to perform reviews of particular compliance issues and adversely affects the regulatory process to the detriment of both DOE and its contractors.

To address this issue, an amendment to 10 CFR Part 820 will be proposed to the Office of General Counsel that requires the contractor to submit IPs, program plans, and updates to these to the Docket Clerk when the required DOE approval is received. The proposed rule change will be published in the *Federal Register* for public comment, with the final rule issued after resolution of public comments.

Letter to Operations Office and Contractor Senior Managers

A comprehensive audit of the contractor docket files maintained by EH-Enforcement was performed this year and is discussed further in Section II of this Report. The audit identified that all of the Docket file plans are not up to date and complete. In response to the findings from this audit, EH-Enforcement will issue a letter to DOE and Contractor Management to identify planned corrective actions. DOE will request that contractor and DOE PAAA coordinators review a listing of the current Docket file records and update them where missing information is identified. The listing will be available on the EH-Enforcement Web Page early in 1999. DOE will also identify in this

letter several areas where contractor submittals to the docket file do not contain all necessary information. DOE is requesting that the PAAA coordinators participate in ensuring that future submittals correct the identified deficiencies and are submitted to the docket file in a timely manner. DOE is in the process of amending 10 CFR 820.10 to include specific requirements for submittal of documents to the Office of the Docket Clerk.

CHANGES AND IMPROVEMENTS

Table V-1
FIELD OFFICE INVOLVEMENT

Field Office	No. of NTS Reports Closed in 1998 by EH-Enforcement	% of NTS Reports With Field Office Comments On Corrective Actions
Albuquerque Operations Office	27	100 %
Chicago Operations Office	7	86 %
Idaho Operations Office	15	93%
Nevada Operations Office	2	50%
Oak Ridge Operations Office	10	80%
Oakland Operations Office	2	100%
Ohio Operations Office	16	100%
Richland Operations Office	26	100%
Rocky Flats Field Office	12	100%
Savannah River Operations Office	8	100%

CHANGES AND IMPROVEMENTS

**Table V-2
CONTRACTOR NTS REPORTING⁵**

Contractor	Number of 1998 NTS Reports
Ames Laboratory	1
Argonne National Laboratory-East	0
Argonne National Laboratory-West	2
Babcock & Wilcox-Mound	13
Bechtel-Hanford	2
Bechtel-Jacobs Company, LLC	5
Bechtel-Nevada	3
BNFL, Inc.	3
Brookhaven National Laboratory (BNL)	8
Fermi National Accelerator Laboratory	0
Fluor-Daniel Fernald	6
Fluor-Daniel Hanford	36
Kaiser-Hill	15
KC Allied Signal	0
Lawrence Berkeley National Laboratory	0
Lawrence Livermore National Laboratory	2
Lockheed-Martin Energy Research	3
Lockheed-Martin Energy Systems	9
Lockheed-Martin Idaho Technology Co.	17
Lockheed-Martin Science Center	0
Los Alamos National Laboratory	16
MACTEC	2
Manufacturing Sciences Corp.	0
Mason & Hanger	12
MK-Ferguson	0
PNNL	2
Princeton Plasma Physics Laboratory	0
Sandia National Laboratory	1
Stanford University	0
Southeastern University Research Association	1
Westinghouse Savannah River Company	9
West Valley Nuclear Services	2

⁵ NTS Reports through December 31, 1998, for DOE's principal (Management and Operating, Management and Integrating) contractors. Subcontractors may file reports through their respective contractor, who has responsibility for oversight of subcontractor activities. A larger number of NTS reports by a contractor does not correlate to a poor performer, but could be indicative of a more aggressive compliance determination program.

APPENDIX A – ENFORCEMENT PROGRAM OVERVIEW

This section provides an overview of the Department of Energy (DOE) Enforcement Program for those readers who may not be familiar with the overall process. Further details on the process may be obtained through DOE's Enforcement Program procedures referred to within this section or by logging onto the Office of Enforcement and Investigation Web Site at the following address:

<http://tis.eh.doe.gov/enforce/>

Background

DOE has implemented a mechanism to apply sanctions to DOE contractors for unsafe actions or conditions that violate nuclear safety requirements for protecting workers and the public. It provides positive incentives for contractors to strive for an enhanced nuclear safety culture through attention to compliance with requirements, self-identification of problems, reporting noncompliances to DOE, and initiating timely and effective corrective actions. The PAAA Enforcement Program is part of DOE's overall Safety Management Program, which focuses on line management responsibility for safety, comprehensive requirements, competence commensurate with responsibilities, independent oversight and enforcement.¹

The 1988 Price-Anderson Amendments Act² extended indemnification to DOE operating contractors for consequences of a nuclear incident. At the same time, Congress required DOE to begin undertaking enforcement actions against those contractors who violate nuclear safety rules. The PAAA, in effect, required DOE to establish an internal self-regulatory process.

¹ Safety Management principles from October 1994 DOE letter to the DNFSB.

² 42 U.S.C. 228a.

DOE's regulatory basis for its Enforcement Program is published in 10 CFR Part 820, Procedural Rules for DOE Nuclear Activities. Enforcement actions may include issuance of Notices of Violation (NOV) and, where appropriate, civil monetary penalties.

Such enforcement actions require the formal promulgation of rules in accordance with the Administrative Procedure Act, including adequate procedures for public notice and comment. To date, two substantive rules have become enforceable as final rules—Quality Assurance Requirements and Radiation Protection for Workers.³ Additionally, DOE rules on Contractor Employee Protection and Accuracy of Information (submitted to DOE)⁴ have been identified as nuclear safety requirements that are also enforceable.

During late 1994 and in 1995, the Department focused on developing the Enforcement Program infrastructure, providing training for contractor and DOE PAAA Coordinators, and issuance of formal procedures needed to implement the Enforcement Program. DOE's first enforcement action was the issuance of an NOV in April 1996.⁵

³ 10 CFR Part 830.120 and 10 CFR Part 835, respectively.

⁴ 10 CFR Part 708 and 10 CFR Part 820.11, respectively.

⁵ EA 96-01

APPENDIX A – ENFORCEMENT PROGRAM OVERVIEW

Since then DOE has routinely applied its Enforcement Program through issuance of Enforcement Letters, Notices of Violation and imposition of civil penalties.

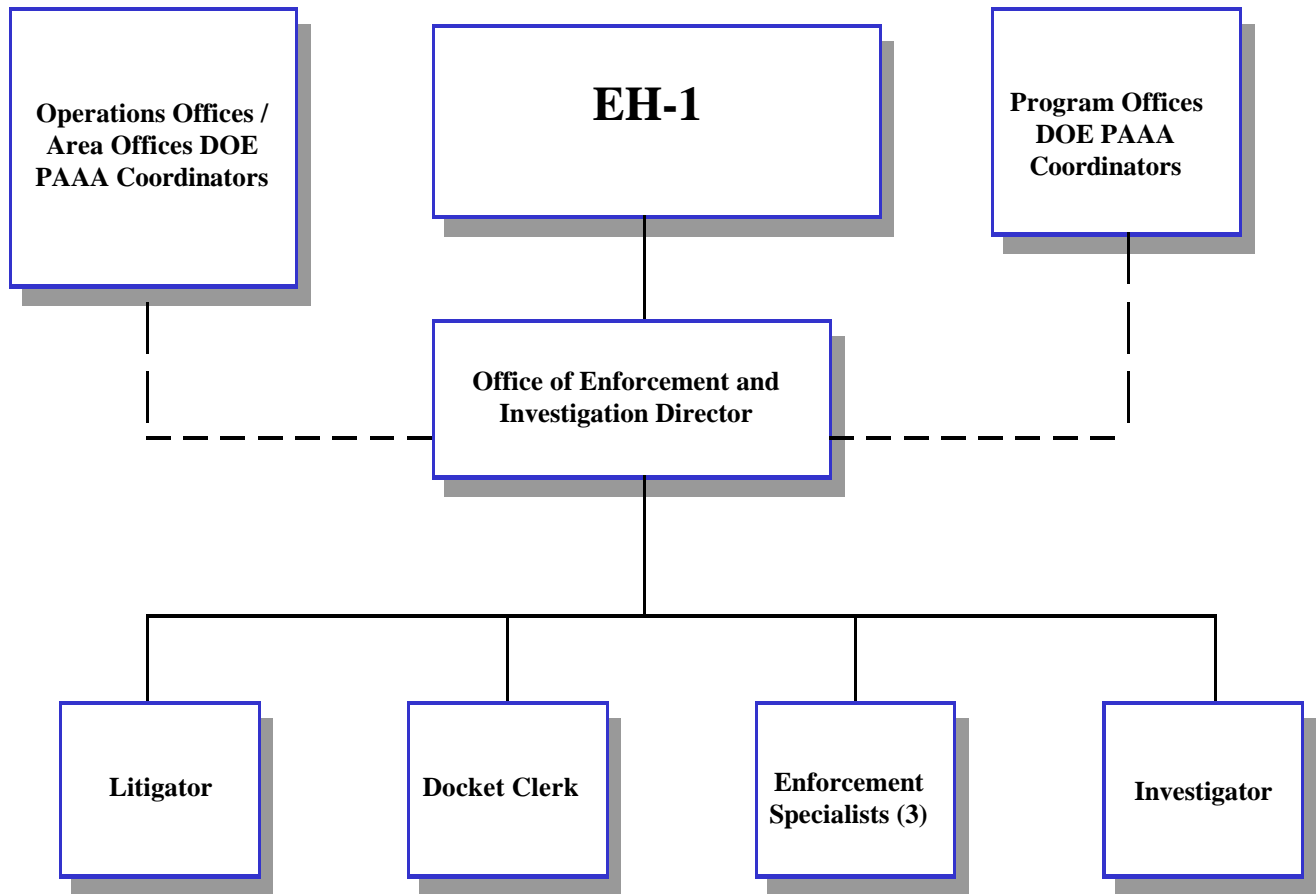
Administration

The DOE Enforcement Program is administered by a relatively small DOE Headquarters EH-Enforcement staff, linked with PAAA Coordinators in Field and Program Offices, and supported by technical experts from DOE Headquarters and field elements. It is structured to

use existing resources and to rely on independent judgments by EH-Enforcement personnel on compliance, safety significance, corrective actions and enforcement action.

The EH-Enforcement staff includes the Director, five full-time enforcement personnel, a Docket Clerk, and an administrative assistant; 3 contractor technical experts; and over 50 Field and Program Office Coordinators, assisted by numerous other DOE technical specialists. Figure A-1 illustrates the DOE enforcement organization network.

Figure A-1: Office of Enforcement and Investigation Organizational Structure
(Note: Dotted lines show matrix support integration)



APPENDIX A – ENFORCEMENT PROGRAM OVERVIEW

Noncompliance Identification and Reporting

DOE expects contractors to implement appropriate steps to ensure that their activities comply with nuclear safety requirements and to self-identify noncompliances. Noncompliances below DOE's reporting threshold may be tracked and closed using a contractor's internal tracking system. These noncompliances are subject to periodic review and audit by Field Office Coordinator personnel. DOE expects that noncompliances above DOE's reporting thresholds⁶ will be reported into the Noncompliance Tracking System.

Additionally, noncompliances may be identified independently through DOE Field Office input, Headquarters reviews, the Defense Board (DNFSB), DOE PAAA Coordinators, DOE Oversight, or other reviews conducted by EH-Enforcement staff. Workers with noncompliance issues may also directly contact EH-Enforcement staff confidentially or contact the site DOE PAAA Coordinator. Additionally, workers may contact the DOE Nuclear Safety Hotline.⁷

EH-Enforcement staff, with input from Field and Program Office management, will decide which noncompliances have the requisite level of safety significance to warrant an investigation. Most cases are closed at this stage without an investigation, based on positive contractor initiative or low safety significance.

If an investigation is performed, it involves review of documentation from the contractor, assistance from DOE Field Office personnel, and in some cases, an onsite visit of several days to gather facts about the noncompliance, conduct interviews, and understand contractor actions in response to the noncompliance⁸. Results of the investigation are documented in an Investigation Summary Report.

Enforcement Decisions

The primary consideration in determining whether to take an enforcement action is the actual or potential safety significance of a violation, coupled with a determination of how aggressively the contractor identified, reported and corrected the problem. The potential for mitigation of enforcement actions in particular cases provides a positive incentive for contractors to implement the desired safety culture.

EH-Enforcement works closely with DOE Field and Program Office management in making decisions about what enforcement actions are appropriate based on the findings of the investigation. If necessary, an Enforcement Conference is held with senior contractor management, along with DOE Field and Program Office management, to review the circumstances of the noncompliance, the mitigating factors, and the timeliness and adequacy of corrective actions. DOE also classifies the violation as either Severity Level I (most significant, with actual or potential significant consequences to workers or the public), Severity Level II or Severity Level III (greater than minor significance), based on an assessment of the unique facts of each case.

⁶ DOE's reporting thresholds are contained in *Operational Procedures, Identifying, Reporting and Tracking Nuclear Safety Noncompliances* under Price-Anderson Amendments Act of 1988.

⁷ 1-800-626-6376

⁸ Pursuant to 10 CFR Part 820, the Director, Office of Enforcement and Investigation, may obtain information or evidence for the full and complete investigation of any matter related to a DOE nuclear activity, including classified, confidential, and controlled information.

APPENDIX A – ENFORCEMENT PROGRAM OVERVIEW

Enforcement Process

DOE's process and the regulatory authority for enforcement actions are embodied in a regulation (10 CFR Part 820, Quality Assurance Rule), supplemented by the Enforcement Policy (Appendix A to 10 CFR Part 820) and EH-Enforcement procedures. Following an investigation and, if required, an Enforcement Conference, DOE may pursue a path that includes any of the following, based on the facts and significance of the noncompliance:

- ◆ Enforcement Letter,⁹
- ◆ NOV with no civil penalty,
- ◆ NOV with a civil penalty,
- ◆ Consent Order,
- ◆ Compliance Order; or
- ◆ Referral to the Department of Justice for criminal investigation.

Decisions on severity level, appropriate enforcement action, and magnitude of any civil penalty will be dependent on safety significance, initiative by the contractor in identification and reporting, and timeliness and effectiveness of corrective actions. With appropriate identification, reporting, and corrective actions by the contractor, the Department can waive all or part of the civil penalty and, in some cases, refrain from actions entirely. Civil penalties are limited by statute to a maximum of \$110,000 per violation per day.¹⁰ Severity Level I violations are

⁹ An Enforcement Letter may be used when DOE concludes that a particular noncompliance is not of the level of significance warranted for issuance of a Preliminary NOV. The Enforcement Letter notifies the contractor that DOE will close the noncompliance report when verification is received that corrective actions have been implemented.

¹⁰ On October 2, 1997, DOE amended its Part 820 to increase the maximum civil penalty from \$100,000 to \$110,000 per violation. This increase was accomplished in accordance with the Debt Collection Improvement Act of 1996.

set at 100 percent of the statutory limit per violation per day, i.e., \$110,000. Severity Level II violations are set at 50 percent of the statutory limit (\$55,000) per violation per day, and Severity Level III violations are set at 10 percent of the statutory limit (\$11,000) per violation per day.¹¹

The PAAA statute provides exemption of specifically named DOE not-for-profit entities from any liability for civil penalties; and 10 CFR Part 820 extended this exemption to all not-for-profit DOE contractors that are education institutions. However, DOE is authorized to issue Notices of Violation to all such not-for-profit contractors. Additionally, other activities excluded from DOE's nuclear safety requirements and from enforcement action by DOE include activities regulated by the Nuclear Regulatory Commission or under the authority of the Director, Naval Nuclear Propulsion Program. Activities conducted under the Nuclear Explosives and Weapons Safety Program are also excluded insofar as compliance with nuclear safety rules may have the effect of compromising nuclear safety. This exclusion has proven to be extremely narrow.

In response to a NOV under the PAAA, contractors are required to document specific actions taken and planned to prevent recurrence of similar events. The contractor also either accepts the citation and pays any civil penalty or denies the violation and seeks redress through an escalating series of steps. These steps can include direct communication with EH-Enforcement providing the basis for the contractor's position, appeal to the Secretary of

¹¹ On November 7, 1997, DOE amended its General Statement of Enforcement Policy to simplify the method by which these civil penalties are calculated. (The previous policy based a civil penalty on the type of nuclear facility where the violation occurred.) Under the new policy civil penalties are based solely on the safety significance of the violation.

APPENDIX A – ENFORCEMENT PROGRAM OVERVIEW

Energy, or request for an on-the-record adjudication before an Administrative Law Judge. Settlement can occur at any point in the process.

Another vehicle that can be used by DOE is the Consent Order. In 10 CFR Part 820.23 DOE is authorized to issue Consent Orders in appropriate cases. A Consent Order is an agreement signed by DOE that stipulates the following:

(1) conclusions of fact or law, (2) a monetary remedy to be paid by the contractor, and (3) corrective actions to be taken by the contractor. DOE may choose to use such an approach to close a potential violation case if the issue was identified by the contractor and reported in a timely way; has comprehensive corrective actions; has received a thorough and objective investigation on the part of the contractor; and, most importantly, if the contractor has demonstrated a consistent track record of such discovery and response to compliance issues.

The Consent Order approach benefits the contractor by avoiding the burden of supporting a DOE investigation, and by imposing generally lower penalties than would have been experienced from a full DOE investigation and enforcement action. If the contractor does not comply with the terms of the Consent Order, DOE may proceed with an enforcement action.

The contractor's commitments on corrective actions and schedules for completion become part of the enforcement proceeding record. Field Office personnel verify completion of corrective actions before a case is closed.

Information on a particular enforcement proceeding is available to the public once a Preliminary NOV is issued. The Docket Clerk maintains records at DOE Headquarters.¹² Workers or members of the public may request EH-Enforcement to review an alleged violation. A DOE Hotline (800-626-6376) connects directly with EH-Enforcement and can be called at any time of the day or evening.

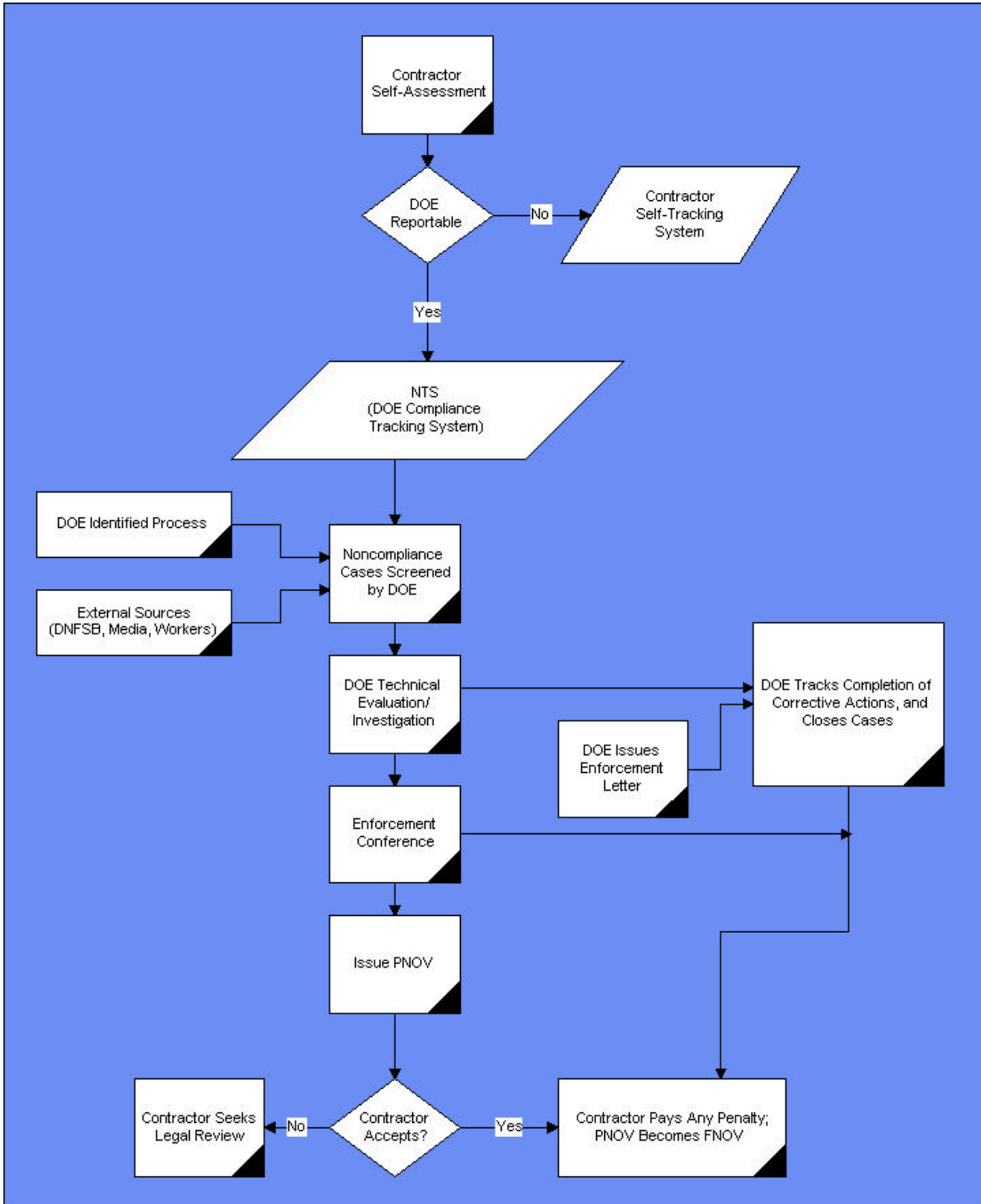
DOE's approach to enforcement involves some relatively innovative methods to avoid manpower intensive inspection forces and to better motivate contractor ownership of compliance and safety. This approach is expected to result in a more effective and efficient regulatory process that, in conjunction with other elements of the DOE Safety Management Program, will improve safety of the public and workers for DOE activities.

Further guidance on DOE's PAAA enforcement process may be found in Operational Procedures for Enforcement, Enforcement of DOE Nuclear Safety Requirements Under Price Anderson Amendments Act of 1988, June 1998. Guidance is also found in 10 CFR Part 820, "Procedural Rules for DOE Nuclear Activities" (Subpart B), and its Appendix A, "General Statement of Enforcement Policy."

¹² Office of the Docket Clerk, Office of Enforcement and Investigation (EH-10), Room 3041, 20300 Century Blvd., Germantown, MD 20874-1290; (301) 903-0112.

APPENDIX A – ENFORCEMENT PROGRAM OVERVIEW

Figure A-2: Summary of DOE Enforcement Process



APPENDIX A – ENFORCEMENT PROGRAM OVERVIEW

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