

November 8, 2002

MEMORANDUM TO: Christopher I. Grimes, Program Director  
Policy and Rulemaking Program  
Division of Regulatory Improvement Programs, NRR

FROM: Joseph L. Birmingham, Project Manager */RA EMcKenna for/*  
Policy and Rulemaking Program  
Division of Regulatory Improvement Programs, NRR

SUBJECT: SUMMARY OF OCTOBER 17, 2002 MEETING WITH THE NUCLEAR  
ENERGY INSTITUTE (NEI) TO DISCUSS THE RADIOACTIVE  
MATERIAL CONTROL PORTION OF THE OCCUPATIONAL  
RADIATION SAFETY CORNERSTONE

On October 17, 2002, Nuclear Regulatory Commission (NRC) staff met with representatives of NEI at NRC headquarters in Rockville, Maryland. Meeting participants are listed in Attachment 1 of this memorandum. The meeting was to discuss proposed Frequently Asked Questions (FAQs) for the Significance Determination Process (SDP) and other radiation safety issues.

The FAQs concerned (1) worker electronic dosimeter alarms not reported promptly to Health Physics, (2) an ALARA issue that is not within the scope of the Occupational Exposure Control Effectiveness Performance Indicator (PI), (3) electronic dosimeter placement determined "after-the-fact" to not have been located at the maximum point of deep dose equivalent (DDE), and (4) an administrative error that does not, in itself, represent a performance deficiency. The group discussed the proposed FAQs and made changes to the wording. The FAQs with the word changes incorporated are in Attachment 2 of this memorandum.

Ralph Andersen, of NEI, asked about the status of the "hot particle" exposure issue. Roger Pedersen, of NRC, responded that a change package had been developed and had been routed to the regions for comment. Mr. Andersen also discussed a proposed action to confirm the understanding of the meaning of "shallow dose equivalent from hot particle exposure." It was suggested that he bring a draft letter to the next public meeting for comment and, after receiving staff comments, send it to the NRC Division of Regulatory Improvement Programs.

Roger Pedersen, of NRC, discussed possible changes to the SDP to clarify what situations could or do compromise the ability to assess dose. The staff did not have a proposal at this time but is working on this. The staff also discussed with NEI that a generic communication, such as an information notice, was likely to be issued to address recent concerns where radioactive intakes (internally deposited activity) could mask external contamination. No details are available on the generic communication at this time.

The group then discussed the issue of dosimeter placement. Ralph Andersen said that many licensees use or reference guidance from the Institute of Nuclear Power Operations (INPO) for dosimeter placement; however, the staff guidance to NRC inspectors does not recognize the INPO guidance as sufficient. Some licensees have heard that they may be issued a finding for

referencing the INPO guidance. Mr. Andersen said that the problem for licensees is that there is no guidance available from the NRC. He also said that, under some guidance documents, a single dosimeter placed on the center of the chest would be considered sufficient. The staff agreed that there was a concern but did not expect licensees to be issued a finding unless an actual violation resulted. The group discussed several possible approaches but no resolution was reached. The staff agreed to look into the possibility that inspectors were enforcing procedural issues rather than performance issues. The staff also agreed to look into methods for approving criteria for dosimeter placement.

There were no comments from the public and having discussed all of the agenda items the meeting was adjourned.

Project No. 689

Attachments: As stated

cc w/att: See list

**List of Attendees for October 17, 2002 Meeting  
Occupational Radiation Safety Cornerstone**

<b>NAME</b>	<b>ORGANIZATION</b>
Ralph Andersen	NEI
Roger Pedersen	NRC/NRR/IEHB
Kathy Halvey Gibson	NRC/NRR/IEHB
Jim Wigginton	NRC/NRR/IEHB
Charles Hinson	NRC/NRR/IEHB
Joseph Birmingham	NRC/NRR/RPRP

Occupational Exposure Control Effectiveness Performance Indicator (PI)  
Frequently Asked Questions

1. Worker electronic dosimeter alarms not reported promptly to Health Physics

Question: While in a high radiation area (HRA) removing scaffold, workers inadvertently dislodged lead shielding around a hot spot flush rig and created conditions that required posting a locked HRA (dose rates in excess of 1 rem per hour). Several minutes later when they moved to a location closer to the hot spot, the three scaffold workers received dose rate alarms. Upon receiving the alarms, they immediately left the area and the alarms cleared. After reading their dosimeters and verifying that they had not received any unexpected dose, they discussed the alarms with their supervisor and concluded that the momentary alarm was not unexpected since general area dose rates in the HRA could have caused the alarms. When the three workers attempted to log out of the RCA at the access control point, Health Physics (HP) discovered that all three individuals received a "Dose Rate" alarm on their electronic dosimeters. Independent from the ensuing exposure investigation, and approximately within the same time period (within minutes), a HP technician found radiation levels in excess of 1 rem per hour when performing a routine survey to support removal of the hot spot flush rig. The HP technician established proper controls and posting for the area and discovered that local shielding around the flush rig had been disturbed. Does this count against the technical specification high radiation area occurrence PI?

Answer: Yes, because the circumstances represent the creation of a technical specification high radiation area (> 1,000 mrem/hour) without the proper corrective actions (i.e., posting and controls) being taken. The dosimeter alarms that occurred represented an opportunity for timely corrective action to be taken by Health Physics, i.e., to re-evaluate the radiological conditions in the area and establish proper controls and posting. The opportunity was "missed" when the workers did not promptly notify Health Physics about the dosimeter alarms. If Health Physics had been promptly notified and responded properly in a timely manner, this would not count against the PI.

2. ALARA issue that is not within the scope of the Occupational Exposure Control Effectiveness PI

Question: The scope of a job changed such that completion of the job would involve additional collective dose with regard to the original estimate. From the time that the work activities deviated from the original plan to the time that ALARA staff documented a revision to the plan and a new collective dose estimate, an individual received more than 100 mrem TEDE from external dose while continuing to work on this job. During this timeframe, the worker was performing activities outside of the original work plan. The time period from deviation from the original plan to documentation of the revised plan and dose estimate for the job is approximately one day. The licensee defines an "unintended exposure event" for TEDE in their procedures as a situation in which a worker receives 100 mrem or more above the electronic dosimeter dose alarm set point for a given RCA entry. On this job, all of the workers maintained their individual dose below the electronic dosimeter dose alarm for every RCA entry performed. Is this situation an "unintended exposure event"?

Answer: No, the described circumstances appear to represent an ALARA issue, not a performance deficiency with regard to the scope of the Occupational Exposure Control Effectiveness PI. The purpose of the PI is to address the Occupational Radiation Safety Cornerstone objective of "keep[ing] occupational dose to individual workers below the limits specified in 10 CFR Part 20 Subpart C." During development of the Performance Indicators, it

was decided not to pursue a PI for the ALARA-based objective in the Occupational Radiation Safety Cornerstone. That objective is met through the ALARA inspection module. Further, with regard to "Unintended Exposure", the PI states that it is "incumbent on the licensee to specify the method(s) being used to administratively control dose." In this case, the licensee has apparently selected the use of electronic dosimeter alarm set points as the method for administratively controlling external dose, in which case the applicable criterion for the PI would be if the external dose exceeded the alarm set point by 100 mrem or more.

3. Electronic dosimeter placement determined "after-the-fact" to not have been located at the maximum point of DDE

Question: During a review of electronic dosimeter (ED) /TLD discrepancies of eddy current workers, it was noted that for two of the workers, the electronic dosimeter under-reported the dose compared to the recorded official dose by TLD. An investigation revealed the following:

- . Multiple TLDs were placed on each worker for work on the platform. Locations included the head, chest, upper left and upper right arms.

- . A single electronic dosimeter was placed on either the right or left upper arm, depending on which arm the worker was most likely to use when manipulating the robot inside the man way.

- . A "jump ticket", containing the authorized dose was used for each entry.

- . The radiation protection technicians used telemetry connected to the ED to control exposures. Video and voice communications were also part of the remote monitoring system.

- . Estimated dose for each entry was recorded, based on the electronic dosimeter. The same TLDs were used for multiple entries. As a result, a direct comparison of TLDs to electronic dosimeter readings on a per entry basis could not be performed.

- . Estimated (ED) doses for the two workers, with the highest official doses, were low by 39% and 44%.

- . One of the workers with an authorized dose of 300 mrem for an entry received an estimated (ED) dose of 275 mrem. Using a ratio of TLD to ED dose of either his total exposures or the other worker's total exposures for the job, a corrected dose in the range of 450 to 460 mrem could be calculated for the single entry.

- . Estimated (ED) dose for 12 of 15 workers was low, when compared to the TLD at location of highest recorded exposure.

Does this constitute an unintended exposure occurrence in the Occupational Radiation Safety Cornerstone as described in NEI 99-02?

Answer: No, assuming that a proper pre-job survey and evaluation was performed. Although, in retrospect, it was determined that the estimating device was not placed in the location of highest exposure, it was placed in the area anticipated to receive the highest exposure and used appropriately to keep exposure below the authorized dose per entry. Record dose was properly assigned using the results of the TLD placed at the location of highest exposure.

4. Administrative error that does not, in itself, represent a performance deficiency

Question: A radiation worker entered the containment during power operation. At that time, the containment was a posted locked high radiation area with dose rates > 1,000 mrem per hour. Prior to entering the containment, the worker in error logged onto the wrong radiation work permit (RWP), which did not allow access to a locked high radiation area. In fact, the individual had been approved for entry into the containment, conformed with the controls specified in the correct RWP, and met all other requirements for entry, including being aware of the radiological conditions in the area being accessed, proper electronic dosimeter alarm set points, continuous coverage by Health Physics, etc. There was no "unintended exposure." The single error was related to logging onto the wrong RWP. Does this type of error count against the PI for Technical Specification High Radiation Area (>1,000 mrem per hour) occurrences?

Answer: No, as described, this would not count against the PI. The performance basis of the PI was met because the worker was properly informed about radiological conditions and the proper radiological controls were implemented. The worker's error in logging in on the wrong RWP is an administrative issue that is not considered a deficiency with regard to the performance basis of the PI.

Nuclear Energy Institute

Project No. 689

cc: Via email

Mr. Ralph Andersen, Sr. Proj. Mgr  
Operations  
Nuclear Energy Institute  
rla@nei.org

Mr. Jim Davis, Director  
Operations  
Nuclear Energy Institute  
jwd@nei.org

referencing the INPO guidance. Mr. Andersen said that the problem for licensees is that there is no guidance available from the NRC. He also said that, under some guidance documents, that a single dosimeter placed on the center of the chest would be considered sufficient. The staff agreed that there was a concern but did not expect licensees to be issued a finding unless an actual violation resulted. The group discussed several possible approaches but no resolution was reached. The staff agreed to look into the possibility that inspectors were enforcing procedural issues rather than performance issues. The staff also agreed to look into methods for approving criteria for dosimeter placement.

There were no comments from the public and having discussed all of the agenda items the meeting was adjourned.

Project No. 689  
Attachment: As stated  
cc w/att: See list

Distribution: Mtg. Notice w/NEI re Public Radiation Protection SDP 10/17/02  
ADAMS/PUBLIC OGC ACRS

Email

BSheron            WBorchardt                            JBirmingham  
BBoyer            DMatthews/FGillespie                CHinson  
CGrimes            SWest                                    AHayes  
RPedersen        JWigginton                              TQuay  
KGibson           SKlementowicz                        SMorris, EDO  
AHsia, RES

ADAMS Accession No.: **ML023160023**

DOCUMENT: G:\RPRP\JBirmingham\Msum-new\NEI MSUM 10-17-2002 RP SDP.WPD

OFFICE	RPRP	IEHB	RPRP
NAME	JBirmingham	KGibson	SWest/ <i>EMM for</i> /
DATE	10/29/2002	11/05/2002	11/08/2002