February 15, 2005

MEMORANDUM TO: Cathy Haney, Program Director
Policy and Rulemaking Program
Division of Regulatory Improvement Programs, NRR

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

SUBJECT: SUMMARY OF FEBRUARY 8, 2005 PUBLIC MEETING ON RECENT EFFECTIVE DOSE EQUIVALENT RESEARCH

On February 8, 2005, Nuclear Regulatory Commission (NRC) staff met with representatives of NEI and industry in a public meeting at NRC headquarters in Rockville Maryland to discuss recent research on effective dose equivalent (EDE) calculation. Attachment 1 is a list of meeting attendees. Attachment 2 is the material presented by industry at the meeting (ADAMS Accession # ML050410007)

After introductions, industry provided an overview of the data that the research had developed. The data was developed using a method of calculating the dose received by a representative phantom. Industry hoped that the method potentially could be used to determine a realistic dose received by occupational radiation workers. Industry characterized the presentation as a step toward developing a method that industry and the NRC might use in the future after further refining the approach.

Industry presented tables that indicated the ratio of the “monitored dose” (the result of method applied to the calculated response of dosimeters on the surface of the phantom) to the “actual dose” (the EDE determined by calculating the dose to the various tissues modeled in the phantom and applying the appropriate weighting factors) from a radiation source located at several X and Y coordinates in each Z plane around a mathematical phantom. A ratio greater than 1.0 indicates that the proposed dosimetry method results in a conservative dose estimate for the simulated exposure. Each table presents data for a different Z plane along the length of the phantom (see Attachment 2).

The group discussed the data presented with the staff asking questions about the presentation format and the implications of the data itself. Issues identified in the data included; 1) when the source is centrally located in front of the body, a single chest dosimeter reading may overestimate the EDE by a factor of more than 5; 2) the proposed dosimetry method gives generally conservative results for point sources closer than a foot from the body; however 3) this is not true for all exposure geometries (source locations).

The industry noted that 1) above represents the majority of exposure situations, and pointed out that this over reporting of dose can bias an ALARA analysis, resulting in limited resources possibly not being applied where they could reduce the most dose. In general, the staff agreed that, used within its limitations, the method gave conservative results and provided more realistic estimates of dose. The industry indicated that their next step was to modify the

dosimetry method to eliminate the situations where it doesn't give conservative results and/or clearly identify those situations where this method should not be applied.

The staff and industry agreed to meet again when additional information was available.

The NRC then opened the meeting for public comment. One comment elicited the response that the phantom represented an androgynous radiation worker and was intended only for occupational application and did not represent the general public. Industry answered a comment about the use of such a method by noting that, if the method could be adapted for use at nuclear power plants, it would allow industry to make more realistic estimates of the dose that might be received from a given exposure. Industry noted that it took very seriously the need to keep radiation doses as low as reasonably achievable. The group answered several additional questions concerning this method and then adjourned the meeting.

Project No. 689
Attachments: As stated
cc: w/atts: See list

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Attachments: As stated
cc: w/atts: See list

Distribution: Summary of Mtg. w/NEI regarding recent EDE research 2/08/05
ADAMS/PUBLIC OGC ACRS
Email
BBoger
DMatthews/FGillespie
CHaney
SKlementowicz
RPedersen
TQuay
RNimitz, Region I
RAlexander, Region III
MShannon, Region IV
LRicketson, Region IV
AHsia, RES

Nuclear Energy Institute Project No. 689

cc: Via email

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Accession: #ML050460376

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DATE	02/15/2005	02/15/2005	02/15/2005

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List of Attendees for February 8, 2005
Meeting on EDE Research

NAME	ORGANIZATION
Gene Imbro	NRC\DE\EMEB
Goutam Bagchi	NRC\DE\EMEB
Cliff Munson	NRC\DE\EMEB
Kamal Manoly	NRC\DE\EMEB
Yong Li	NRC\DE\EMEB
Joseph Birmingham	NRC\DRIP
Cedric Jobe	NEI
Adrian Heymer,	NEI
Bob Kassawara	EPRI
Robert Kennedy	RPK Structural Mechanics
Bill Schmidt	MPR, et al.

Attachment 1