

January 12, 2010

MEMORANDUM TO: Edward Roach, Acting Chief
Health Physics Branch
Division of Construction Inspection
& Operational Programs
Office of New Reactors

FROM: Robert Kellner, Health Physicist **/RA/**
Health Physics Branch
Division of Construction Inspection
& Operational Programs
Office of New Reactors

SUBJECT: SUMMARY OF DECEMBER 15, 2009, CATEGORY 2 PUBLIC MEETING
WITH THE NUCLEAR ENERGY INSTITUTE TO DISCUSS HEALTH
PHYSICS ISSUES FOR NEW REACTORS

On December 15, 2009, the Nuclear Regulatory Commission (NRC) staff held a teleconference meeting with members of the Nuclear Energy Institute (NEI) to discuss new reactor health physics issues. Enclosure 1 lists the meeting attendees.

A public meeting notice was issued on November 10, 2009, and was posted on the NRC's external (public) web page (Agencywide Document Access Management System (ADAMS) Accession No. ML093100675). The notice included the meeting agenda, which was also available as a handout at the meeting. The discussions included:

- General COLA/DCD Application Status and Lessons Learned
- Status of Industry Radiation Protection Templates
- Radiological Aspects of Construction and Pre-Operation
- Regulatory Updates and Perspectives
- Miscellaneous Topics of Interest

NRC provided status updates of COLA and DCD applications and lessons learned from the review process. Information provided included NRC staff review of the Turkey Point proposed use of deep well injection, the ongoing transition from Bellefonte to Vogtle as the RCOL for AP-1000, AP-1000 shield building load basis, and progress of the EPR and USAPWR design applications. NRC also noted a generic issue with the lack of health physics detail being provided in the initial responses to HP related RAIs which leads to supplemental RAIs and follow-up with the applicant. In many cases the responses do not seem to be answered by a person familiar with the radiological aspects of the question, but rather a person who is only familiar with licensing.

NRC asked if NEI was aware that the latest draft of NEI Template NEI 08-02, Corrective Action Processes for New Nuclear Power Plants During Construction, does not include any provisions for addressing radiation protection related issues during construction. NEI stated that they were not familiar with NEI 08-02 but would look into the template and provide information at the next meeting.

NEI presented draft problem statements on the planned radiological aspects of construction and pre-operation discussion topics of:

- 1) Excavation & dredging of soil & sediments, and pumping of surface and groundwater
- 2) Exposure of workers from a neighboring operational nuclear plant
- 3) Use of radioactive sources not licensed under the COL.

The problem statements were revised by NEI to include the applicable regulations and associated Regulatory Guides and are included as Enclosure 2. During development of the problem statements NEI identified many interrelated aspects of all topics, and that a collocated Part 50 licensee will have responsibilities prior to, and after, a Part 52 COL is issued. Lengthy discussion of the topics resulted in general agreement that the most important aspect of new reactor construction, on sites with existing collocated reactors, is that both the existing Part 50 licensee and the Part 52 COL licensee need to understand their responsibilities under their individual licenses, and communicate with each other to ensure work activities at one facility will not adversely impact the adjacent licensee. NRC agreed to follow-up on several questions about regulatory positions that were identified for the January meeting.

The problem statements to be discussed during the January meeting are:

- 1) Training of the Engineering Procurement and Construction (EPC) Staff
- 2) Site Characterization (Groundwater)
- 3) Rad Protection Staff Mobilization

NRC stated that the Inspection Manual Chapters related to New Reactor Construction (MC 2501, MC 2502, MC 2503, and MC 2504) have been published and publically available. NEI asked about availability of the inspection procedures and when deployment of construction inspectors would occur. NRC stated that the inspection procedures and the schedule for deployment of inspectors have not been finalized.

In the area of regulatory updates, NRC stated that DC/COL-ISG-014, Interim Staff Guidance on Assessing Ground Water Flow and Transport of Accidental Radionuclide Releases (ISG-014), should be issued for public comment within the next few weeks. NRC stated that the staff has provided information about buried piping in new reactors to the Commission, but the memo has not been finalized at this time. NRC stated that 10 CFR 20.1406 reviews have identified additional review related to secondary piping in particular condensate piping. NRC also stated that the Office of Research is working on updates/revision of the many Series 8 Regulatory Guides, specifically RG 8.2, 8.8, 8.7, 8.10, and 8.34. NRR, NRO and RES are also working on RG 4.23 regarding residual radioactivity which should be released for comment during the second quarter of 2010.

E. Roach

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NRC asked NEI about applicability of the industry voluntary initiative concerning buried piping integrity to new reactors. NEI stated that they will provide additional information at the next meeting.

NRC stated that work is continuing on development of the public workshops for soliciting input for the 10 CFR Part 20 and Part 50 Appendix I Reg. Revisions. Workshops will not be scheduled until after the RIC in March 2010. NRC also stated that the beta versions of the updated LADTAP and GASPAR codes have been received from the contactor and are being evaluated and tested.

The next meeting is scheduled for January 20, 2010. NRC and NEI agreed on meeting dates of February 17, 2010, March 24, 2010, and April 21, 2010. All upcoming scheduled meetings will be held at the White Flint complex.

Enclosure:

List of Attendees

Construction and Pre-Operation Radiological Problem Statement *Draft*

cc w/encl: See next page

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cc w/encl: See next page

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|--------|---------------|---------------------|
| OFFICE | NRO/DCIP/CHPB | NRO/DCIP/CHPB (ABC) |
| NAME | R. Kellner | E. Roach |
| DATE | 01/12/10 | 01/12/10 |

OFFICIAL RECORD

**Public Meeting with the Nuclear Energy Institute (NEI)
Discussion of New Reactor Health Physics Topics
December 15, 2009
Meeting Attendees**

| Name | Organization | Name | Organization |
|------------------|---------------------|----------------|---------------------|
| Ed Roach | NRC – HQ | Ed Stutzcage | NRC – HQ |
| William Smith | SNC | Milton Rejeck* | STPNOC |
| Aaron Wilmot* | Westinghouse | | |
| Richard Conatser | NRC – HQ | | |
| Robert Kellner | NRC – HQ | | |
| Ellen Anderson | NEI | | |
| Steve Garry | NRC – HQ | | |
| Moses Coleman | VC Summer/SCANA | | |
| Hosung Ahn | NRC – HQ | | |
| Beaton LaRay | NRC – HQ | | |
| Paul Mothena | VC Summer/SCANA | | |
| Richard Emch | NRC – HQ | | |
| George Cicotte | NRC – HQ | | |
| Stewart Bland | Chesapeake Nuclear | | |
| Tony Pilo* | Progress Energy | | |

* By Telephone

Excavation and Dredging of Soil & Sediments and Pumping of Surface and Groundwater

Problem Statement: Radioactive contamination, resulting from other licensed and non-licensed sources outside the scope of the Combined Operating License (COL), may be present in the soil, sediments, surface water and groundwater of a construction site for a new nuclear power plant. Construction workers may be exposed to this radioactive material during the excavation, dredging and/or pumping of these elements.

Applicability of Regulatory Requirements:

- 10 CFR 19, "NOTICES, INSTRUCTIONS AND REPORTS TO WORKERS: INSPECTION AND INVESTIGATIONS."
- 10 CFR 20, "STANDARDS FOR PROTECTION AGAINST RADIATION."
- 10 CFR 50, Appendix I, "Numerical Guides for Design Objectives and Limiting Conditions for Operation to Meet the Criterion "As Low as is Reasonably Achievable" for Radioactive Material in Light-Water-Cooled Nuclear Power Reactor Effluents."
- USNRC IE Bulletin No. 80-10, "Contamination of Non-radioactive Systems And Resulting Potential For Unmonitored, Uncontrolled Release Of Radioactivity To Environment," May 6, 1980.
- USNRC Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I, Revision 1, October 1977.
- USNRC Regulatory Guide 4.15, "Quality Assurance For Radiological Monitoring Programs (Normal Operations) – Effluent Streams and the Environment," Revision 1, February 1979
- USNRC Regulatory Guide 4.15, "Quality Assurance For Radiological Monitoring Programs (Normal Operations) – Effluent Streams and the Environment," Interim Revision 2, March 2007.

Exposure of Workers

Problem Statement: Workers employed for construction of new nuclear power plants may be exposed to direct radiation and/or radiation from gaseous and/or liquid effluents from other licensed and non-licensed sources outside the scope of the Combined Operating License (COL).

Applicability of Regulatory Requirements:

- 10 CFR 19, "NOTICES, INSTRUCTIONS AND REPORTS TO WORKERS: INSPECTION AND INVESTIGATIONS."
- 10 CFR 20.1301, "Dose limits for individual members of the public."
- 10 CFR 20.1302, "Compliance with dose limits for individual members of the public."
- 10 CFR 19.3, "Definitions." :*Worker* means an individual engaged in activities licensed or regulated by the Commission and controlled by a licensee or regulated entity, but does not include the licensee or regulated entity.
- 10 CFR 20.1003 "Definitions": *Occupational dose* means the dose received by an individual in the course of employment in which the individual's assigned duties involve exposure to radiation or to radioactive material from licensed and unlicensed sources of radiation, whether in the possession of the licensee or other person. Occupational dose does not include doses received from background radiation, from any medical administration the individual has received, from exposure to individuals administered radioactive material and released under § 35.75, from voluntary participation in medical research programs, or as a member of the public.
- 10 CFR 20.1003 "Definitions": *Member of the public* means any individual except when that individual is receiving an occupational dose.
- 10 CFR 20.1003 "Definitions": *Public dose* means the dose received by a member of the public from exposure to radiation or to radioactive material released by a licensee, or to any other source of radiation under the control of a licensee. Public dose does not include occupational dose or doses received from background radiation, from any medical administration the individual has received, from exposure to individuals administered radioactive material and released under § 35.75, or from voluntary participation in medical research programs.
- 10 CFR 20.1003 "Definitions": *Residual radioactivity* means radioactivity in structures, materials, soils, groundwater, and other media at a site resulting from activities under the licensee's control. This includes radioactivity from all licensed and unlicensed sources used by the licensee, but excludes background radiation. It also includes radioactive materials remaining at the site as a result of routine or accidental releases of radioactive material at the site and previous burials at the site, even if those burials were made in accordance with the provisions of 10 CFR part 20.

Use of Radioactive Sources Not Licensed Under the COL

Problem Statement: Workers employed for construction of new nuclear power plants may be exposed to radiation from sources (e.g. radiography and soil density gauges) that are not controlled or monitored under Part 50 or 52 licenses.

Applicability of Regulatory Requirements:

- 10 CFR 19, "NOTICES, INSTRUCTIONS AND REPORTS TO WORKERS: INSPECTION AND INVESTIGATIONS."
- 10 CFR 20, "STANDARDS FOR PROTECTION AGAINST RADIATION."
- 10 CFR 34, "LICENSES FOR INDUSTRIAL RADIOGRAPHY AND RADIATION SAFETY REQUIREMENTS FOR INDUSTRIAL RADIOGRAPHIC OPERATION."
- 10 CFR 150, "EXEMPTIONS AND CONTINUED REGULATORY AUTHORITY IN AGREEMENT STATES AND IN OFFSHORE WATERS UNDER SECTION 274."

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