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SUBJECT: Comment on draft reg guide task DG-8004 re radiation protection programs. Reg guide provides good guidance for maintaining effective radiation protection programs aimed at achieving occupational doses that are ALARA.

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Docket No. 50-397

Regulatory Publications Branch
Office of Administration
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Gentlemen:

**SUBJECT: COMMENTS ON DRAFT REGULATORY GUIDE DG-8004
RADIATION PROTECTION PROGRAMS FOR NUCLEAR
POWER PLANTS**

The Washington Public Power Supply System (Supply System) has reviewed the subject draft Regulatory Guide and provides our comments for your consideration.

In general, we find that the draft Regulatory Guide provides good guidance for maintaining effective radiation protection programs aimed at achieving occupational doses that are as low as reasonably achievable (ALARA). Specific comments are included in the attachment to this letter.

We appreciate the opportunity to review and comment on proposed regulatory guides. Should you have any questions on our comments, please contact me at (509) 372-5238.

Very truly yours,

G. C. Sorensen, Manager
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ATTACHMENT

Comments on Draft Regulatory Guide DG-8004 Radiation Protection Programs for Nuclear Power Plants

Page 2, Section B, Line 2

Delete the words "considered to be."

Basis for comment:

Establishing and conducting effective radiation protection programs is important.

Page 2, Section B, Line 7 through 10

Delete the sentence "although the NRC staff recognizes..."

Basis for comment:

The statement is not needed. It is recognized that licensees establish their own administrative control levels to assure that regulatory limits are not exceeded.

Page 5, Section C.2, Line 5

Delete the word "and" in the sentence "...administration as well as (and) qualification..."

Basis for comment:

Typographical error

Page 8, Section C.3.1.4

Item Number 1 - states that the surveillance procedures should describe "...and location of radioactive materials." It is not clear what the objective of this statement is, or how a licensee is to comply. The "location of radioactive materials" within the plant radiological controlled area changes daily in the normal work process. This statement needs to be clarified.

Page 9, Section C.3.1.4

Item Number 6 - delete the phrase "...issuing radiation work permits"

Basis for comment:

The term "radiation work permits" is not necessarily standard at all facilities. The issuance of such permits is a part of work planning; therefore, the phrase is not required.

Page 9, Section 3.2.1, Line 3

It is not clear what is intended with the term "for identification."

Page 10, Section 3.2.3

Item 3 - delete the phrase "including the use of radiation work permits."

Basis for comment:

It is inappropriate for a regulatory guide to specify the means to be used to control work. The essential regulatory guidance is that radiation protection standards be established. A licensee may choose to control work by some means other than a radiation work permit (RWP).

Page 10, Section 3.2.3, Line 5

Delete the term "radiation work permit" in the sentence beginning "An effective radiation work permit program..." Replace with the term "work planning," so the sentence would read: "An effective work planning program..."

Basis for comment:

The regulatory requirement is to have a work planning or work control process. It may be called something other than a Radiation Work Permit Program and still meet the requirement.

Page 12, Section C.4

Delete the requirement for "experts from outside the facility" and delete the phrase "which may include suggested goals and standards that foster improvements in the program."

Basis for comment:

The regulatory requirement should be for a self-evaluation. That evaluation can be conducted effectively by an independent in-house organization. The use of outside experts should be a decision left to the facility management. The purpose of the evaluation is to determine if the program content and quality is such that it results in accomplishing its stated objectives. It is inappropriate for the Regulatory Guide to state that the evaluation suggest goals and standards to improve if the program is already meeting the regulatory standards.

Page 13, Section C.4.3

In the paragraph titled "Radiation Protection Supervisory Reviews," revise the sentence as follows: "Onsite radiation protection supervisors should be involved in the performance and documentation of reviews..."

Basis for comment:

It is important that the supervisor evaluate the effectiveness of the radiation protection staff; however, the supervisor should have the option to delegate the actual performance and documentation of the review.

Page 14, Section C 4.3

Retitle the paragraph "Corporate or Contract Audits" to "Independent Audits" and revise the sentence to read: "Offsite, independent audits and evaluations..."

Basis for comment:

It is inappropriate for a Regulatory Guide to suggest that contract or vendor personnel need to be used in order to achieve an independent audit and evaluation of the licensee program. Many licensees use personnel from other licensees to perform this function. The regulatory concern should be that the audit be independent.

B. DISCUSSION

Establishing and conducting effective radiation protection programs at commercial nuclear power plants is ~~considered to be~~ important to ensure that individual and collective radiation exposures of employees and members of the public under the licensee's program are below the regulatory dose limits and are ALARA. X

The ALARA concept is an integral part of the overall radiation protection program. ~~Although the NRC staff recognizes that licensees generally establish their own administrative control levels below the dose limits specified in the regulation, the NRC staff does not recommend any specific dose values for use as administrative control levels.~~

Licensees are encouraged to selectively use quantitative analyses to specify ALARA levels (see ICRP Publication No. 37, Ref. 1). The quantitative approach is useful for situations in which both costs and benefits (dose reduction) can be quantified, such as for shielding design or analysis of large-scale equipment or system decontamination methods. ALARA practices involve the balancing of costs and benefits, not dose minimization. Furthermore, the magnitude of both individual and collective doses may be important to an analysis. However, many ALARA implementing procedures, though based on sound operating practice, do not lend themselves to a quantified analysis.

Control of the sources of the radiation fields that result in occupational radiation exposure, "radiation source control," is an important component of the radiation protection program at a nuclear power plant. Radiation source control is being accomplished through chemical control, cobalt source replacement, preconditioning of metal surfaces, and decontamination, particularly chemical decontamination. Although some aspects of radiation source control have been considered to be a part of the ALARA effort, radiation source control is included separately in this guide to emphasize its importance in controlling occupational radiation exposure.

Additional information on radiation protection programs for commercial nuclear power plants can be found in Section 12 of the NRC Standard Review Plan, "Radiation Protection" (Ref. 2).

This guide supplements and is consistent with previous guidance documents on radiation protection programs at commercial nuclear power plants, for example, Regulatory Guide 8.8, "Information Relevant to Ensuring that Occupational

involved in monitoring radiation protection performance, and holding workers, supervisors, and line managers accountable for their radiation protection performance.

Principal aspects of an effective radiation protection program include organization and administration as well as ~~and~~ qualification and training. X

2.1 Organization and Administration

The description of the radiation protection organization should provide details on the following:

1. Functions of individual components within the radiation protection organization;
2. Radiation protection functions and responsibilities of support organizations other than the radiation protection organization, e.g., operations and engineering;
3. Minimum staffing required, by shift, for each component in the radiation protection organization;
4. Radiation protection functions performed by contractor services (especially those functions performed during outages unique to the situation being addressed);
5. Radiation protection functions performed by a corporate or centralized licensee organization, including the responsible individuals by position and their responsibilities; and
6. Functions and assignments of those persons with responsibilities in emergencies. (See NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Ref. 4.) Reference to an NRC-approved emergency plan is acceptable.

The organizational structure of the plant should be such that the radiation protection manager has direct access to the plant manager on matters concerning radiation protection. (See Regulatory Position 1.b(3) of Regulatory Guide 8.8, Ref. 3.)

- Control of access to radiation areas
- Radiation shielding
- Process instrumentation and controls
- Control of airborne contaminants and gaseous radiation sources
- Crud control
- Isolation and decontamination
- Resin and sludge treatment systems

A licensee should have an administrative dose control system that tracks both planned and actual doses to individuals, especially when doses approach the administrative limits established for the facility or the annual dose limits of 10 CFR 20.1201. In addition, the licensee's dose recordkeeping system should permit analysis for trends and ALARA purposes.

Tasks that involve significant total exposure should be reviewed by higher level management, such as the radiation protection manager. Criteria should be established for approving tasks that involve high individual or collective doses.

Additional guidance on incorporating the ALARA principle into a radiation protection program, including area controls, monitoring, and radiation work practices, is provided in Regulatory Guide 8.8 (Ref. 3). Further guidance is being developed in draft regulatory guides "Planned Special Exposures," and "Control of Access to High and Very High Radiation Areas in Nuclear Power Plants" that will be issued soon.

3.1.4 Surveillance

The radiation protection program should ensure that the facility is adequately equipped for monitoring in-plant radiation, contamination, and airborne radioactivity for a broad range of routine and accident conditions. The surveillance procedures should describe:

1. The frequency required for surveys for radiation, radioactive contamination, airborne radioactivity, and location of radioactive materials;
2. Situations for which surveys are required;
3. Nature and extent of the surveys;
4. Equipment to be used in the surveys;

NEED Clarification

5. How the surveys will verify the radiological status of all facility areas; and
6. How the survey data will be used in planning work, writing procedures, ~~issuing radiation work permits~~, and performing similar functions.

3.2 Control of the Workplace

The radiation protection program should address methods of controlling radioactive materials, contamination, work practices, and radioactive waste, as well as the individual's responsibility in the workplace.

3.2.1 Control of Radioactive Materials

The description of the radiation protection program should address the means and responsibilities for the control, movement, storage, and inventory of radioactive materials outside of controlled areas; for identification, control, movement, and storage within controlled areas; and for receipt and shipment of radioactive materials. The description should also present criteria for the release of materials from controlled areas for use in uncontrolled areas.

*Need
Clarification*

3.2.2 Control of Contamination

Radioactive contamination of areas, equipment, and personnel should be strictly controlled. Control of radioactive surface contamination helps prevent contamination of personnel and equipment, reduces inhalation of radioactive materials by personnel, reduces skin dose from small particles containing radioactive material, and reduces the spread of radioactivity to the environment from operation of the nuclear facility.

3.2.3 Work Practices

An integrated approach to work planning and work practices should include:

1. Job-specific training, including the use of facility and equipment mock-ups when appropriate;
2. Control of work in radiation areas to ensure that exposures are maintained ALARA and radiation protection procedures are properly carried out, especially for work involving high-activity radiation sources, highly contaminated materials, relatively high individual or collective doses, or complex protective measures;

3. Establishment of radiation protection standards and responsibilities to control work, ~~including the use of radiation work permits~~; and
4. Program evaluations as discussed in Regulatory Position 4 of this guide.

WORK PLANNING

An effective ~~radiation work permit (RWP)~~ program should include training and a clear description of authorities and responsibilities within the program, and it should be integrated with other control activities.

3.2.4 Waste Management

Control of solid radioactive waste is an integral part of plant operations and an indicator of the quality of the facility's radiation protection program. The program should address control of solid radioactive waste to ensure safe packaging of radioactive materials for transportation and to minimize the volume of radioactive waste generated. The volume of solid radioactive waste can be minimized by vigorous implementation of the ALARA principle in work practices. Many of the techniques used to control exposures to ALARA levels, such as work planning and use of good contamination-control practices, result in a decrease in the amount of waste generated.

3.2.5 Individual Responsibility

Day-to-day activities related to radiation protection should be conducted in a manner that adheres to "good operating practices." Individuals should be encouraged to maintain a high degree of awareness of their own work practices and those of other personnel, to maintain high standards for quality, and to comply with the plant's radiation protection requirements.

3.3 Release Consequence Assessment

Assessing the consequences of radioactive releases should include effluent monitoring, environmental monitoring, and dose assessment.

3.3.1 Effluent Monitoring

Section 20.1302 requires measurement of radioactive material in effluents to unrestricted areas to demonstrate compliance with the annual dose limit for individual members of the public. In addition, 10 CFR 50.36a, "Technical Specifications on Effluents from Nuclear Power Reactors," and Appendix I to 10 CFR

relationship between the quantities of radioactive material released in effluents during normal operation and the resultant radiation doses to individuals from the principal environmental pathways of exposure.

An example of an acceptable minimum environmental monitoring program, a Branch Technical Position "An Acceptable Radiological Environmental Monitoring Program" (Ref. 10), was provided to nuclear power plant licensees. Further information on the basis and rationale for radiological environmental monitoring programs is available in NUREG-0475, "Radiological Environmental Monitoring by NRC Licensees for Routine Operations of Nuclear Facilities" (Ref. 11); and Health Physics Society Committee Report HPSR-1, "Upgrading Environmental Radiation Data" (Ref. 12).

4. EVALUATE PROGRAM PERFORMANCE

The third area of an effective radiation protection program consists of active self-evaluation of the content and quality of the program activities. Corporate management ~~and experts from outside the facility~~ should perform independent reviews of the facility's program, ~~which may include suggested goals and standards that foster improvements in the program.~~

4.1 Trends and Deficiencies

Plant performance in radiological protection should be monitored through the identification, evaluation, and recording of radiological protection problems and trends. The recording system should include a tracking and analysis feature to identify trends in work practices and in the control of radiation exposure, contamination, and airborne radioactivity. This information can be used to improve the radiation protection program. ANSI N13.6, "Practice for Occupational Radiation Exposure Records Systems" (Ref. 13), describes the use of records related to review of radiation protection programs.

Licensees should establish a system, with appropriate criteria, to identify and track radiation incidents, unusual occurrences, and deficiencies related to radiation protection, as well as to evaluate the circumstances and root causes of these situations.

4.2 Corrective Action and Follow-up

Short- and long-term corrective actions should be developed to preclude recurrence of radiation incidents or deficiencies, as well as to preclude the development of adverse trends. Lessons learned from analyses of previous experience should be integrated into the system.

4.3 Reviews and Audits

The purpose of reviews and audits is to:

1. Identify areas where present performance, if continued, could result in noncompliance with Federal and licensee radiation protection requirements;
2. Evaluate performance using data on individual dose, collective dose, and dose trends;
3. Identify work practices that could be improved, particularly those that result in unnecessary radiation exposure;
4. Evaluate the effectiveness of the radiation protection training; and
5. Identify radiation control problems and determine the root causes of radiation protection incidents.

Reviews and audits should incorporate the following features to assess procedural compliance, technical performance, implementation, and effectiveness of the facility radiation protection program.

- Radiation protection supervisory reviews *be involved in the*
Onsite radiation protection supervisors should ~~periodically~~ *be involved in the* performance and document ^{ation of} reviews of the effectiveness of the radiation protection staff in such areas as radiological work practices, work monitoring, procedural compliance, and survey adequacy.
- Quality assurance audits

Quality assurance audits should be performed by the onsite auditing group. Personnel in the auditing group should have sufficient radiation protection training or experience so they can determine whether

radiation protection functions are being performed as required. The quality assurance program audits should meet the requirements of Appendix B to 10 CFR Part 50.

INDEPENDENT
• Corporate or contract audits

INDEPENDENT Offsite (~~corporate or contract~~) audits and evaluations should be performed to determine whether the radiation protection program complies with the regulations and other requirements and whether plant-wide objectives are being met as well as to identify needed program improvements.

D. IMPLEMENTATION

This section of the guide provides information to license applicants and licensees regarding the NRC staff's plans for using this regulatory guide.

This draft guide has been released to encourage public participation in its development. Except in those cases in which an applicant proposes an acceptable alternative method of complying with specified portions of the Commission's regulations, the method to be described in the active guide reflecting public comments will be used in the evaluation of applications for license renewal or new licenses and for evaluating compliance with 10 CFR 20.1001-20.2401. Adoption of the revised 10 CFR Part 20 is not required until January 1, 1993.

