

BWR OWNERS' GROUP

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SUBJECT: **STANDARD TECHNICAL SPECIFICATIONS FOR PERMANENTLY
DEFUELED BWR PLANTS**

Attached are the BWR Standard Technical Specifications for Permanently Defueled BWR Plants. These Technical Specifications are based on industry meetings and discussions with the NRC staff. These Standard Technical Specifications have been reviewed by the BWROG, and are endorsed by the BWROG for use by the NRC to develop a Standard Technical Specifications for Permanently Defueled BWR Plants NUREG.

If you have any questions regarding this transmittal or any other issues, please contact Harry Pontious, Chair BWROG TSICC at (815) 357-6761 Ext. 2231 or myself at (205) 992-5940.

Regards,



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Standard Technical Specifications for Permanently Defueled BWR Plants

1. INTRODUCTION

The Improved Standard Technical Specifications (ISTS) for operating plants were developed based on four criteria agreed on by industry and NRC representatives and codified in 10 CFR 50.36. The ISTS for BWR plants are contained in NUREG-1433 and NUREG-1434.

Three of the primary goals of the process to develop ISTS were to standardize the Technical Specification format for all licensees, eliminate unwarranted and inappropriate requirements from the Technical Specifications, and to standardize the information contained in the Technical Specifications. To accomplish these goals, requirements in the previous Standard Technical Specifications were evaluated against the four criteria for retention in the ISTS. The LCOs meeting at least one of the four criteria were retained in the ISTS and developed into the ISTS format. Individual Licensees use the four criteria to modify the ISTS for their respective Technical Specifications (TS) based on their specific design and existing licensing basis. By retaining LCOs that meet these criteria, the industry and NRC provide assurance that each facility is operated without posing an undue risk to the health and safety of the public.

The permanently defueled condition is a subset of the conditions bounded by the operating ISTS. The intention of the attached standard guidance is to provide the same level of safety for permanently defueled BWR plants as for operating BWR plants in the same defueled condition, and use the lessons of ISTS development and usage for format, standardization, and content development.

2. Permanently Defueled TS Development Process

The current ISTS for operating reactors already addresses the defueled state. Therefore, the ISTS was used as the starting point for the development of the permanently defueled TS. To develop the permanently defueled TS, Revision 1 of NUREGs 1433 and 1434 were screened for requirements applicable to the defueled condition. NRC approved TSTFs 65 Rev. 1, 76 Rev. 1, 121 Rev 0, and 152 Rev. 0 were incorporated into the document. TSTF 258 Rev. 4 was also incorporated into the document because of the expectation that it will be approved by the NRC and its relevance to the affected requirements. Requirements that were not applicable to the defueled condition were removed. Additionally, the assumption was made that the Licensee had evaluated its plant for a dropped irradiated fuel assembly and demonstrated by analysis that after sufficient radioactive decay has occurred off-site doses resulting from a fuel handling accident remain below the Standard Review Plan limits (well within 10 CFR 100) without crediting the operation of any engineered safety features.

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The only system LCO in the ISTS that was determined to meet any of the four 10 CFR 50 criteria for retention in the TS at a permanently defueled BWR plant is Spent Fuel Storage Pool Water Level (NUREG-1433 LCO 3.7.8), Fuel Pool Water Level (NUREG-1434 LCO 3.7.7). This LCO is retained to support the dropped irradiated fuel assembly Design Basis Accident which is the only event used in developing the ISTS that is still applicable for a permanently defueled BWR plant. This water level provides for the scrubbing of iodine following a fuel handling accident.

These standard Technical Specifications for permanently defueled plants contain two requirements that are not included in the Improved Standard Technical Specifications (ISTS) for operating plants. The first new requirement is an administrative program, and the second is that all fuel handling operations shall be directly supervised by a qualified individual. The new program is the Spent Fuel Pool Integrity Monitoring Program. This program provides controls to implement the commitments in the FSAR to monitor and maintain Spent Fuel Pool and the associated spent fuel storage racks to ensure that they remain within their design basis. This program is being added to provide a higher visibility for the on going maintenance of the spent fuel pool and the associated spent fuel storage racks. This program was felt to be necessary for permanently defueled plants even though it is not required for operating plants due to the uncertainties associated with staffing levels and the potential for significant modification activities which could occur for a permanently defueled plant.

Guidance for designs other than Boiling Water Reactor (BWR) plants should be addressed based on the respective NUREGs 1430, 1431, and 1432, Rev. 1.

3. Development of Plant Specific Submittal

NEI 96-06, Improved Technical Specification (ITS) Conversion Guidance, provides guidance on the process for using the NUREGs and the four criteria to develop Licensee specific ITS. NEI 96-06 also provides guidance on the submittal development process for conversion submittals. Although all of the guidance is not applicable to the conversion to Technical Specifications for permanently defueled plant, it does provide useful guidance for the conversion process if the Licensee has not previously converted to the ISTS.

Requirements that are removed from the Technical Specifications in many cases are relocated to other control mechanisms. Guidance can be found in the following NRC documents identifying NRC expectations which should be addressed:

Standard Technical Specifications for Permanently Defueled BWR Plants

Administrative Letter 95-06 - Relocation Of Technical Specification

Administrative Controls Related To Quality Assurance

Administrative Letter 96-04 - Efficient Adoption Of Improved Standard Technical
Specifications

Generic Letter 88-12 - Removal of Fire Protection Requirements From Technical
Specification

Generic Letter 89-01 - Implementation Of Programmatic And Procedural Controls
for Radiological Effluent Technical Specifications

The number of the retained LCO is maintained consistent with the numbering for Improved Standard Technical Specifications for operating plants. Plants converting to these standard Technical Specifications for permanently defueled plant which had not previously converted to the ISTS may wish to modify the numbering.

4. Permanently Defueled TS

Attached are Permanently Defueled TS.

1.0 USE AND APPLICATION

1.1 Definitions

The defined terms of this section appear in capitalized type and are applicable throughout these Technical Specifications and Bases.

Term

Definition

ACTIONS

ACTIONS shall be that part of a Specification that prescribes Required Actions to be taken under designated Conditions within specified Completion Times.

2.0 SAFETY LIMITS

Not applicable.

3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

LCO 3.0.1

LCOs shall be met during the specified conditions in the Applicability, except as provided in LCO 3.0.2.

LCO 3.0.2

Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met.

If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required unless otherwise stated.

LCO 3.0.3

Not Used.

LCO 3.0.4

Not Used.

LCO 3.0.5

Not Used.

LCO 3.0.6

Not Used.

LCO 3.0.7

Not Used.

SURVEILLANCE REQUIREMENT (SR) APPLICABILITY

SR 3.0.1

SRs shall be met during the specified conditions in the Applicability for individual LCOs, unless otherwise stated in the SR. Failure to meet a Surveillance, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the LCO. Failure to perform a Surveillance within the specified Frequency shall be failure to meet the LCO except as provided in SR 3.0.3. Surveillances do not have to be performed on variables outside specified limits.

SR 3.0.2

The specified Frequency for each SR is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met.

SR 3.0.3

If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the LCO not met may be delayed, from the time of discovery, up to 24 hours. This delay period is permitted to allow performance of the Surveillance.

If the Surveillance is not performed within the delay period, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered.

When the Surveillance is performed within the delay period and the Surveillance is not met, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered.

SR 3.0.4

Not Used.

Section 3.1

Not Used.

Section 3.2

Not Used.

Section 3.3

Not Used.

Section 3.4

Not Used.

Section 3.5

Not Used.

Section 3.6

Not Used.

[3.7] PLANT SYSTEMS

[3.7.1] Fuel Pool Water Level.

LCO [3.7.1] The fuel pool water level shall be \geq [23] ft over the top of irradiated fuel assemblies seated in the spent fuel storage pool [and upper containment fuel storage pool racks].

APPLICABILITY: During movement of irradiated fuel assemblies in the [associated/spent] fuel storage pool.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Fuel pool water level not within limit.	A.1 Suspend movement of irradiated fuel assemblies in the [associated/spent] fuel storage [pool(s)].	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.1.1 Verify the fuel pool water level is \geq [23] ft over the top of irradiated fuel assemblies seated in the storage racks of the [associated/spent] fuel storage [pool(s)].	7 days

Section 3.8

Not Used.

Section 3.9

Not Used.

Section 3.10

Not Used.

4.0 DESIGN FEATURES

4.1 Site Location

Site Location [Text description of site location.]

4.2 Reactor Core

Not Used

4.3 Fuel Storage

4.3.1 Criticality

4.3.1.1 The spent fuel storage racks are designed and shall be maintained with:

- a. Fuel assemblies having a maximum [k-infinity of [1.31] in the normal reactor core configuration at cold conditions] [average U-235 enrichment of [4.5] weight percent];
- b. $k_{eff} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in [Section 9.1 of the FSAR]; and
- c. A nominal [6.5] inch center to center distance between fuel assemblies placed in the storage racks.

[4.3.1.2 The new fuel storage racks are designed and shall be maintained with:

- a. Fuel assemblies having a maximum [k-infinity of [1.31] in the normal reactor core configuration at cold conditions] [average U-235 enrichment of [4.5] weight percent];
- b. $k_{eff} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in [Section 9.1 of the FSAR];

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- c. $k_{eff} \leq 0.98$ if moderated by aqueous foam, which includes an allowance for uncertainties as described in [Section 9.1 of the FSAR]; and
- d. A nominal [6.50] inch center to center distance between fuel assemblies placed in storage racks.]

4.3.2 Drainage

The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation [185 ft].

4.3.3 Capacity

- 4.3.3.1 The spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than [2324] fuel assemblies.
 - [4.3.3.2 No more than [800] fuel assemblies may be stored in the upper containment pool.]
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5.0 ADMINISTRATIVE CONTROLS

5.1 Responsibility

[Reviewer's Note: Titles for members of the unit staff shall be specified by use of an overall statement referencing an ANSI Standard acceptable to the NRC staff from which the titles were obtained, or an alternative title may be designated for this position. Generally, the first method is preferable; however, the second method is adaptable to those unit staffs requiring special titles because of unique organizational structures.

The ANSI Standard shall be the same ANSI Standard referenced in Section 5.3, Unit Staff Qualifications. If alternative titles are used, all requirements of these Technical Specifications apply to the position with the alternative title as apply with the specified title. Unit staff titles shall be specified in the Final Safety Analysis Report or Quality Assurance Plan. Unit staff titles shall be maintained and revised using those procedures approved for modifying/revising the Final Safety Analysis Report or Quality Assurance Plan.]

5.1.1 The plant manager shall be responsible for overall unit activities and shall delegate in writing the succession to this responsibility during his absence.

The plant manager or his designee shall approve, prior to implementation, each proposed test, experiment or modification to systems or equipment that affect the safe storage of irradiated fuel.

5.2 Organization

5.2.1 Onsite and Offsite Organizations

Onsite and offsite organizations shall be established for unit activities and corporate management, respectively. The onsite and offsite organizations shall include the positions for activities affecting safe storage of irradiated fuel.

- a. Lines of authority, responsibility, and communication shall be defined and established throughout highest management levels, intermediate levels, and all organization positions accountable for the safe storage of irradiated fuel. These relationships shall be documented and updated, as appropriate, in organization charts, functional descriptions of departmental responsibilities and relationships, and job descriptions for key personnel positions, or in equivalent forms of documentation. These requirements, including the plant specific titles of those personnel fulfilling the responsibilities of the positions delineated in these Technical Specifications, shall be documented in the [FSAR/QA Plan];
- b. The plant manager shall be responsible for overall unit activities and shall have control over those onsite activities necessary for maintenance and storage of the irradiated fuel in a safe condition;
- c. A specified corporate officer shall have corporate responsibility for overall plant nuclear safety and shall take any measures needed to ensure acceptable performance of the staff in operating, maintaining, and providing technical support to the facilities associated with the safe storage of irradiated fuel; and
- d. The individuals who train the unit staff, carry out health physics, or perform quality assurance functions may report to the appropriate onsite manager; however, these individuals shall have sufficient organizational freedom to ensure their independence from unit activity pressures.

5.2.2 Unit Staff

The unit staff organization shall include the following:

- a. All fuel handling operations shall be directly supervised by a qualified individual.

5.2 Organization

- b. Administrative procedures shall be developed and implemented to limit the working hours of personnel who perform safety related functions (e.g., health physicists, non-certified operators, and key maintenance personnel).

The controls shall include guidelines on working hours that ensure adequate shift coverage shall be maintained without routine heavy use of overtime.

Any deviation from the above guidelines shall be authorized in advance by the plant manager or the plant manager designee, in accordance with approved administrative procedures, and with documentation of the basis for granting the deviation. Routine deviation from the working hour guidelines shall not be authorized.

Controls shall be included in the procedures to require a periodic independent review be conducted to ensure that excessive hours have not been assigned.

5.0 ADMINISTRATIVE CONTROLS

5.3 [Spent Fuel Storage Facility] Staff Qualifications

Reviewer's Note: Minimum qualifications for members of the [spent fuel storage facility] staff shall be specified by use of an overall qualification statement referencing an ANSI Standard acceptable to the NRC staff or by specifying individual position qualifications. Generally, the first method is preferable; however, the second method is adaptable to those [spent fuel storage facility] staffs requiring special qualification statements because of unique organizational structures.

- 5.3.1. Each member of the unit staff shall meet or exceed the minimum qualifications of [Regulatory Guide 1.8, Revision 2, 1987, or more recent revisions, or ANSI Standard acceptable to the NRC staff]. [The staff not covered by Regulatory Guide 1.8 shall meet or exceed the minimum qualifications of [Regulations, Regulatory Guides, or ANSI Standards acceptable to NRC staff].
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5.0 ADMINISTRATIVE CONTROLS

5.4 Procedures

- 5.4.1 Written procedures shall be established, implemented, and maintained covering the following activities:
- a. The applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978;
 - b. The permanently defueled emergency plan;
 - c. Quality assurance for effluent and environmental monitoring;
 - d. Fire Protection Program implementation; and
 - e. All programs specified in Specification 5.5.
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5.5 Programs and Manuals

The following programs shall be established, implemented, and maintained.

5.5.1 Offsite Dose Calculation Manual

- a. The ODCM shall contain the methodology and parameters used in the calculation of offsite doses resulting from radioactive gaseous and liquid effluents, in the calculation of gaseous and liquid effluent monitoring alarm and trip setpoints, and in the conduct of the radiological environmental monitoring program; and
- b. The ODCM shall also contain the radioactive effluent controls and radiological environmental monitoring activities and descriptions of the information that should be included in the Annual Radiological Environmental Operating, and Radioactive Effluent Release, reports required by Specification [5.6.2] and Specification [5.6.3].
- c. Licensee initiated changes to the ODCM:
 1. Shall be documented and records of reviews performed shall be retained. This documentation shall contain:
 - i. Sufficient information to support the change(s) together with the appropriate analyses or evaluations justifying the change(s), and
 - ii. a determination that the change(s) maintain the levels of radioactive effluent control required by 10 CFR 20.1302, 40 CFR 190, 10 CFR 50.36a, and 10 CFR 50, Appendix I, and not adversely impact the accuracy or reliability of effluent, dose, or setpoint calculations;
 2. Shall become effective after the approval of the plant manager; and
 3. Shall be submitted to the NRC in the form of a complete, legible copy of the entire ODCM as a part of or concurrent with the Radioactive Effluent Release Report for the period of the report in which any change in the ODCM was made. Each change shall be identified by markings in the margin of the affected pages, clearly indicating the area of the page that was changed, and shall indicate the date (i.e., month and year) the change was implemented.

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5.5.2 Radioactive Effluent Controls Program

This program conforms to 10 CFR 50.36a for the control of radioactive effluents and for maintaining the doses to members of the public from radioactive effluents as low as reasonably achievable. The program shall be contained in the Offsite Dose Calculation Manual (ODCM), shall be implemented by procedures, and shall include remedial actions to be taken whenever the program limits are exceeded. The program shall include the following elements:

- a. Limitations on the functional capability of radioactive liquid and gaseous monitoring instrumentation including surveillance tests and setpoint determination in accordance with the methodology in the ODCM;
- b. Limitations on the concentrations of radioactive released in liquid effluents to unrestricted areas, conforming to ten times the concentration values in Appendix B, Table 2, Column 2 to 10 CFR 20.1001-20.2402;
- c. Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM;
- d. Limitations on the annual and quarterly doses or dose commitment to a member of the public from radioactive materials in liquid effluents released from the facility to unrestricted areas, conforming to 10 CFR 50, Appendix I;
- e. Determination of cumulative and projected dose contributions from radioactive effluents for the current calendar quarter and current calendar year in accordance with the methodology and parameters in the ODCM at least every 31 days;
- f. Limitations on the functional capability and use of the liquid and gaseous effluent treatment systems to ensure that appropriate portions of these systems are used to reduce releases of radioactivity when the projected doses in a period of 31 days would exceed 2% of the guidelines for the annual dose or dose commitment, conforming to 10 CFR 50, Appendix I;

5.5 Programs and Manuals

- g. Limitations on the dose rate resulting from radioactive material released in gaseous effluents from the site to areas at or beyond the site boundary shall be in accordance with the following;
 - 1. For noble gases: a dose rate ≤ 500 mrem/yr to the whole body and a dose rate ≤ 3000 mrem/yr to the skin, and
 - 2. For iodine-131, iodine-133, tritium, and all radionuclides in particulate form with half-lives greater than 8 days: a dose rate ≤ 1500 mrem/yr to any organ.
- h. Limitations on the annual and quarterly air doses resulting from noble gases released in gaseous effluents from each [spent fuel storage facility] to areas beyond the site boundary, conforming to 10 CFR 50, Appendix I;
- i. Limitations on the annual and quarterly doses to a member of the public from iodine-131, iodine-133, tritium, and all radionuclides in particulate form with half lives > 8 days in gaseous effluents released from each [spent fuel storage facility] to areas beyond the site boundary, conforming to 10 CFR 50, Appendix I;
- j. Limitations on the annual dose or dose commitment to any member of the public, beyond the site boundary, due to releases of radioactivity and to radiation from uranium fuel cycle sources, conforming to 40 CFR 190.

[The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the Radioactive Effluent Controls Program surveillance frequency.]

5.5.3 Technical Specifications Bases Control Program

This program provides a means for processing changes to the Bases of these Technical Specifications.

- a. Changes to the Bases of the Technical Specification shall be made under appropriate administrative controls and reviews.
- b. Licensees may make changes to Bases without prior NRC approval provided the changes do not involve either of the following:
 - 1. a change in the TS incorporated in the license; or

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2. a change to the updated FSAR or Bases that involves an unreviewed safety question as defined in 10 CFR 50.59.
- c. The Bases Control Program shall contain provisions to ensure that the Bases are maintained consistent with the updated FSAR.
- d. Proposed changes that meet the criteria of Specification 5.5.3b above shall be reviewed and approved by the NRC prior to implementation. Changes to the Bases implemented without prior NRC approval shall be provided to the NRC on a frequency consistent with 10 CFR 50.71(e).

5.5.4 [Spent Fuel Storage Pool] [and Upper Fuel Pool] Program

This program provides controls to help assure that the [spent fuel storage pool] [and upper fuel pool] are maintained as described in the [FSAR]. The program shall include controls for monitoring and responding to the condition of the [spent fuel storage pool] [and upper fuel pool].

[5.5.5] Explosive Gas and Storage Tank Radioactivity Monitoring Program

This program provides controls for potentially explosive gas mixtures contained in the [Waste Gas Holdup System], [the quantity of radioactivity contained in gas storage tanks or fed into the offgas treatment system, and the quantity of radioactivity contained in unprotected outdoor liquid storage tanks]. The gaseous radioactivity quantities shall be determined following the methodology in [Branch Technical Position (BTP) ETSB 11-5, "Postulated Radioactive Release due to Waste Gas System Leak or Failure"]. The liquid radwaste quantities shall be determined in accordance with [Standard Review Plan, Section 15.7.3, "Postulated Radioactive Release due to Tank Failures"].

The program shall include:

- a. The limits for concentrations of hydrogen and oxygen in the [Waste Gas Holdup System] and a surveillance program to ensure the limits are maintained. Such limits shall be appropriate to the system's design criteria (i.e., whether or not the system is designed to withstand a hydrogen explosion);
- b. A surveillance program to ensure that the quantity of radioactivity contained in [each gas storage tank and fed into the offgas treatment system] is less

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than the amount that would result in a whole body exposure of ≥ 0.5 rem to any individual in an unrestricted area, in the event of [an uncontrolled release of the tanks' contents]; and

- c. A surveillance program to ensure that the quantity of radioactivity contained in all outdoor liquid radwaste tanks that are not surrounded by liners, dikes, or walls, capable of holding the tanks' contents and that do not have tank overflows and surrounding area drains connected to the [Liquid Radwaste Treatment System] is less than the amount that would result in concentrations less than the limits of 10 CFR 20, Appendix B, Table 2, Column 2, at the nearest potable water supply and the nearest surface water supply in an unrestricted area, in the event of an uncontrolled release of the tanks' contents.

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the Explosive Gas and Storage Tank Radioactivity Monitoring Program surveillance frequencies.]

5.6 Reporting Requirements

The following reports shall be submitted in accordance with 10 CFR 50.4.

5.6.1 Occupational Radiation Exposure Report

----- NOTE -----

A single submittal may be made for a multiple station. The submittal should combine sections common to all units at the station.

A tabulation on an annual basis of the number of station, utility, and other personnel (including contractors), for whom monitoring was performed, receiving an annual deep dose equivalent > 100 mrem and the associated collective deep dose equivalent (reported in person-rem) according to work and job functions (e.g., surveillance, inservice inspection, routine maintenance, special maintenance [describe maintenance], waste processing). This tabulation supplements the requirements of 10 CFR 20.2206. The dose assignments to various duty functions may be estimated based on pocket ionization chamber, thermoluminescent dosimeter (TLD), electronic dosimeter, or film badge measurements. Small exposures totalling < 20 percent of the individual total dose need not be accounted for. In the aggregate, at least 80 percent of the total deep dose equivalent received from external sources should be assigned to specific major work functions. The report covering the previous calendar year shall be submitted by April 30 of each year. [The initial report shall be submitted by April 30 of the year following initial criticality.]

5.6.2 Annual Radiological Environmental Operating Report

----- NOTE -----

A single submittal may be made for a multiple unit station. The submittal should combine sections common to all units at the station.

The Annual Radiological Environmental Operating Report covering facility activities during the previous calendar year shall be submitted by May 15 of each year. The report shall include summaries, interpretations, and analyses of trends of the results of the Radiological Environmental Monitoring Program for the reporting period. The material provided shall be consistent with the objectives outlined in the Offsite Dose Calculation Manual (ODCM), and in 10 CFR 50, Appendix I, Sections IV.B.2, IV.B.3, and IV.C.

5.6 Reporting Requirements

The Annual Radiological Environmental Operating Report shall include the results of analyses of all radiological environmental samples and of all environmental radiation measurements taken during the period pursuant to the locations specified in the table and figures in the ODCM, as well as summarized and tabulated results of these analyses and measurements [in the format of the table in the Radiological Assessment Branch Technical Position, Revision 1, November 1979]. [The report shall identify the TLD results that represent collocated dosimeters in relation to the NRC TLD program and the exposure period associated with each result.] In the event that some individual results are not available for inclusion with the report, the report shall be submitted noting and explaining the reasons for the missing results. The missing data shall be submitted in a supplementary report as soon as possible.

5.6.3 Radioactive Effluent Release Report

----- NOTE -----

A single submittal may be made for a multiple unit station. The submittal shall combine sections common to all units at the station; however, for units with separate radwaste systems, the submittal shall specify the releases of radioactive material from each unit.

The Radioactive Effluent Release Report covering facility activities in the previous year shall be submitted prior to May 1 of each year in accordance with 10 CFR 50.36a. The report shall include a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the facility. The material provided shall be consistent with the objectives outlined in the ODCM and Process Control Program and in conformance with 10 CFR 50.36a and 10 CFR Part 50, Appendix I, Section IV.B.1.

[5.7 High Radiation Area]

As provided in paragraph 20.1601(C) of 10 CFR Part 20, the following controls shall be applied to high radiation areas in place of the controls required by paragraph 20.1601(a) and (b) of 10 CFR Part 20:

5.7.1 High Radiation Areas with Dose Rates Not Exceeding 1.0 rem/hour at 30 Centimeters from the Radiation Source or from any Surface Penetrated by the Radiation

- a. Each entryway to such an area shall be barricaded and conspicuously posted as a high radiation area. Such barricades may be opened as necessary to permit entry or exit of personnel or equipment.
- b. Access to, and activities in, each such area shall be controlled by means of radiation Work Permit (RWP) or equivalent that includes specification of radiation dose rates in the immediate work area (s) and other appropriate radiation protection equipment and measures.
- c. Individuals qualified in radiation protection procedures and personnel continuously escorted by such individuals may be exempted from the requirement for an RWP or equivalent while performing their assigned duties provided that they are otherwise following plant radiation protection procedures for entry to, exit from, and work in such areas.
- d. Each individual or group entering such an area shall possess:
 1. A radiation monitoring device that continuously displays radiation dose rates in the area; or
 2. A radiation monitoring device that continuously integrates the radiation dose rates in the area and alarms when the device's dose alarm setpoint is reached, with the appropriate alarm setpoint; or
 3. A radiation monitoring device that continuously transmits dose rate and cumulative dose information to a remote receiver monitored by radiation protection personnel responsible for controlling personnel radiation exposure within the area; or
 4. A self-reading dosimeter (e.g., pocket ionization chamber or electronic dosimeter) and,

[5.7 High Radiation Area]

- i. Be under the surveillance, as specified in the RWP or equivalent, while in the area, of an individual qualified in radiation protection procedures, equipped with a radiation monitoring device that continually displays radiation dose rates in the area; who is responsible for controlling personnel exposure within the area, or
 - ii. Be under the surveillance, as specified in the RWP or equivalent, while in the area, by means of closed circuit television, of personnel qualified in radiation protection procedures, responsible for controlling personnel radiation exposure in the area, and with the means to communicate with individuals in the area who are covered by such surveillance.
- e. Except for individuals qualified in radiation protection procedures, or personnel continuously escorted by such individuals, entry into such areas shall be made only after dose rates in the area have been determined and entry personnel are knowledgeable of them. These continuously escorted personnel will receive a pre-job briefing prior to entry into such areas. This dose rate determination, knowledge, and pre-job briefing does not require documentation prior to initial entry.

5.7.2

High Radiation Areas with Dose Rates Greater Than 1.0 rem/hour at 30 Centimeters from the Radiation Source or from any Surface Penetrated by the Radiation; but less than 500 rads/hour at 1 Meter from the Radiation Source or from any Surface Penetrated by the Radiation

- a. Each entryway to such an area shall be conspicuously posted as a high radiation area and shall be provided with a locked or continuously guarded door or gate that prevents unauthorized entry, and, in addition:
 - 1. All such door and gate keys shall be maintained under the administrative control of the spent fuel storage pool operator, radiation protection manager, or his or her designee.
 - 2. Doors and gates shall remain locked except during periods of personnel or equipment entry or exit.
- b. Access to, and activities in, each such area shall be controlled by means of an RWP or equivalent that includes specification of radiation dose rates in the

[5.7 High Radiation Area]

immediate work area (s) and other appropriate radiation protection equipment and measures.

- c. Individuals qualified in radiation protection procedures may be exempted from the requirement for an RWP or equivalent while performing radiation surveys in such areas provided that they are otherwise following plant radiation protection procedures for entry to, exit from, and work in such areas.
- d. Each individual or group entering such an area shall possess:
 - 1. A radiation monitoring device that continuously integrates the radiation dose rates in the area and alarms when the device's dose alarm setpoint is reached, with the appropriate alarm setpoint; or
 - 2. A radiation monitoring device that continuously transmits dose rate and cumulative dose information to a remote receiver monitored by radiation protection personnel responsible for controlling personnel radiation exposure within the area with the means to communicate with and control every individual in the area; or
 - 3. A self-reading dosimeter (e.g., pocket ionization chamber or electronic dosimeter) and,
 - i. Be under the surveillance, as specified in the RWP or equivalent, while in the area, of an individual qualified in radiation protection procedures, equipped with a radiation monitoring device that continually displays radiation dose rates in the area; who is responsible for controlling personnel exposure within the area, or
 - ii. Be under the surveillance, as specified in the RWP or equivalent, while in the area, by means of closed circuit television, of personnel qualified in radiation protection procedures, responsible for controlling personnel radiation exposure in the area, and with the means to communicate with and control every individual in the area.

[5.7 High Radiation Area]

4. In those cases where options (2) and (3), above, are impractical or determined to be inconsistent with the "As Low As is Reasonably Achievable" principle, a radiation monitoring device that continually displays radiation dose rates in the area.
 - e. Except for individuals qualified in radiation protection procedures, or personnel continuously escorted by such individuals, entry into such areas shall be made only after dose rates in the area have been determined and entry personnel are knowledgeable of them. These continuously escorted personnel will receive a pre-job briefing prior to entry into such areas. This dose rate determination, knowledge, and pre-job briefing does not require documentation prior to initial entry.
 - f. Such individual areas that are within a larger area where no enclosure exists for the purpose of locking and where no enclosure can reasonably be constructed around the individual area need not be controlled by a locked door or gate, nor continuously guarded, but shall be barricaded, conspicuously posted, and a clearly visible flashing light shall be activated at the area as a warning device.
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B 3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

BASES

LCOs	LCO 3.0.1 and LCO 3.0.2 establish the general requirements applicable to all Specifications and apply at all times unless otherwise stated.
LCO 3.0.1	LCO 3.0.1 establishes the Applicability statement within each individual Specification as the requirement for when the LCO is required to be met.
LCO 3.0.2	<p>LCO 3.0.2 establishes that upon discovery of a failure to meet an LCO, the associated ACTIONS shall be met. The Completion Time of each Required Action for an ACTIONS Condition is applicable from the point in time that an ACTIONS Condition is entered. The Required Actions establish those remedial measures that must be taken within specified Completion Times when the requirements of an LCO are not met. This Specification establishes that:</p> <ol style="list-style-type: none">Completion of the Required Actions within the specified Completion Times constitutes compliance with a Specification; andCompletion of the Required Actions is not required when an LCO is met within the specified Completion Time, unless otherwise specified.

Completing the Required Actions is not required when an LCO is met or is no longer applicable, unless otherwise stated in the individual Specifications.

The nature of some Required Actions of some Conditions necessitates that, once the Condition is entered, the Required Actions must be completed even though the associated Conditions no longer exist. The individual LCO's ACTIONS specify the Required Actions where this is the case.

B [3.7] PLANT SYSTEMS

B [3.7.1] Fuel Pool Water Level

BASES

BACKGROUND The minimum water level in the spent fuel storage pool [and upper fuel storage pool] meets the assumptions of iodine decontamination factors following a fuel handling accident.

A general description of the spent fuel storage pool [and upper fuel storage pool] design is found in the FSAR, Section [9.1.2] (Ref. 1). The assumptions of the fuel handling accident are found in the FSAR, Sections [15.7.4] and [15.7.6] (Refs. 2 and 3, respectively).

APPLICABLE SAFETY ANALYSES

The water level above the irradiated fuel assemblies is an explicit assumption of the fuel handling accident. A fuel handling accident is evaluated to ensure that the radiological consequences (calculated whole body and thyroid doses at the exclusion area and low population zone boundaries) are $\leq 25\%$ (NUREG-0800, Section 15.7.4, Ref. 4) of the 10 CFR 100 (Ref. 5) exposure guidelines. A fuel handling accident could release a fraction of the fission product inventory by breaching the fuel rod cladding as discussed in Regulatory Guide 1.25 (Ref. 6).

The fuel handling accident is evaluated for the dropping of an irradiated fuel assembly onto stored fuel bundles. The consequences of a fuel handling accident inside the auxiliary building are documented in References 2 [and 3, respectively]. The water levels in the spent fuel storage pool [and upper fuel storage pool] provide for absorption of water soluble fission product gases and transport delays of soluble and insoluble gases that must pass through the water before being released to the building atmosphere. This absorption and transport delay reduces the potential radioactivity of the release during a fuel handling accident.

The fuel pool water level satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii). The specified water level preserves the assumption of the fuel handling accident analysis (Refs. 2 and 3). As such, it is the minimum required for fuel movement within the spent fuel storage pool [and upper fuel storage pool].

APPLICABILITY This LCO applies whenever movement of irradiated fuel assemblies occurs in the associated fuel storage racks since the potential for a release of fission products exists.

ACTIONS A.1

When the initial conditions for an accident cannot be met, steps should be taken to preclude the accident from occurring. With [either] fuel pool level less than required, the movement of irradiated fuel assemblies in the [associated] storage pool is suspended immediately. Suspension of this activity shall not preclude completion of movement of an irradiated fuel assembly to a safe position. This effectively precludes a spent fuel handling accident from occurring.

SURVEILLANCE REQUIREMENTS SR 3.7.1.1

This SR verifies that sufficient water is available in the event of a fuel handling accident. The water level in the spent fuel storage pool [and upper fuel storage racks] must be checked periodically. The 7 day Frequency is acceptable, based on operating experience, considering that the water volume in the pool is normally stable and water level changes are controlled by unit procedures.

- REFERENCES**
1. FSAR, Section [9.1.2].
 2. FSAR, Section [15.7.4].
 3. FSAR, Section [15.7.6].
 4. NUREG-0800, Section 15.7.4, Revision 1, July 1981.
 5. 10 CFR 100.
 6. Regulatory Guide 1.25, March 1972.