HOLTEC PALISADES, LLC

HOLTEC DECOMMISSIONING INTERNATIONAL, LLC

DOCKET NO. 50-255

PALISADES NUCLEAR PLANT

RENEWED FACILITY OPERATING LICENSE

Renewed License No. DPR-20

1. The Nuclear Regulatory Commission (NRC or the Commission) having previously made the findings set forth in Operating License No. DPR-20, dated February 21, 1991, has now found that:

   A. The application for Renewed Operating License No. DPR-20 complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I, and all required notifications to other agencies or bodies have been duly made;

   B. [deleted];

   C. Actions have been identified and have been or will be taken with respect to: (1) managing the effects of aging on the functionality of structures and components that have been identified to require review under 10 CFR 54.21(a)(1) during the period of extended operation, and (2) time-limited aging analyses that have been identified to require review under 10 CFR 54.21(c), such that there is reasonable assurance that the activities authorized by this renewed operating license will continue to be conducted in accordance with the current licensing basis, as defined in 10 CFR 54.3 for the facility, and that any changes made to the facility's current licensing basis in order to comply with 10 CFR 54.29(a) are in accordance with the Act and the Commission's regulations;

D. The facility will operate in conformity with the application, the provisions of the Act, and the regulations of the Commission;

E. There is reasonable assurance: (i) that the activities authorized by this renewed operating license can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;

F. Holtec Palisades, LLC (Holtec Palisades) is financially qualified and Holtec Decommissioning International, LLC (HDI) is financially and technically qualified to engage in the activities authorized by this renewed operating license in accordance with the Commission's regulations set forth in 10 CFR Chapter I;

G. Holtec Palisades and HDI have satisfied the applicable provisions of 10 CFR Part 140, "Financial Protection Requirements and Indemnity Agreements" of the Commission's regulations;

H. The issuance of this renewed operating license will not be inimical to the common defense and security or to the health and safety of the public;

I. After weighing the environmental, economic, technical, and other benefits of the facility against environmental and other costs and considering available alternatives, the issuance of this renewed Facility Operating License No. DPR-20, subject to the conditions for protection of the environment set forth herein, is in accordance with 10 CFR Part 51 (formerly Appendix D to Part 50), of the Commission's regulations and all applicable requirements have been satisfied; and

J. The receipt, possession, and use of source, byproduct, and special nuclear material as authorized by this renewed operating license will be in accordance with 10 CFR Parts 30, 40, and 70.

2. Renewed Facility Operating License No. DPR-20, is hereby issued to Holtec Palisades and HDI as follows:

A. This renewed license applies to the Palisades Plant, a pressurized light water moderated and cooled reactor and electrical generating equipment (the facility). The facility is located in Van Buren County, Michigan, and is described in the Palisades Plant Updated Final Safety Analysis Report, as supplemented and amended, and in the Palisades Plant Environmental Report, as supplemented and amended.

B. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses:

(1) Pursuant to Section 104b of the Act, as amended, and 10 CFR Part 50, "Licensing of Production and Utilization Facilities," (a) Holtec Palisades to possess and use, and (b) HDI to possess and use, the facility at the designated location in Van Buren County, Michigan, in accordance with the procedures and limitation set forth in this license;

(2) HDI, pursuant to the Act and 10 CFR Parts 40 and 70, to possess source, and special nuclear material that was used as reactor fuel, in accordance with the limitations for storage, as described in the Updated Final Safety Analysis Report, as supplemented and amended;

(3) HDI, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use byproduct, source, and special nuclear material as sealed sources that were used for reactor startup, sealed sources that were used for reactor instrumentation and are used in the calibration of radiation monitoring equipment, and that were used as fission detectors in amounts as required;

(4) HDI, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use in amounts as required any byproduct, source, or special nuclear material for sample analysis or instrument calibration, or associated with radioactive apparatus or components; and

(5) HDI, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to possess, but not separate, such byproduct and special nuclear materials that were produced by the operations of the facility.

C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations in 10 CFR Chapter I and is subject to all applicable provisions of the Act; to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) [deleted]

(2) The Technical Specifications contained in Appendix A, as revised through Amendment No. 273, and the Environmental Protection Plan contained in Appendix B are hereby incorporated in the license. HDI shall maintain the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

(3) [deleted]

(4) [deleted]

(5) Movement of a fuel cask in or over the spent fuel pool is prohibited when irradiated fuel assemblies decayed less than 90 days are in the spent fuel pool.

(6) Develop and maintain strategies for addressing large fires and explosions and that include the following key areas:

a. Fire fighting response strategy with the following elements:
   1. Pre-defined coordinated fire response strategy and guidance
   2. Assessment of mutual aid fire fighting assets
   3. Designated staging areas for equipment and materials
   4. Command and control
   5. Training of response personnel

b. Operations to mitigate fuel damage considering the following:
   1. Protection and use of personnel assets
   2. Communications
   3. Minimizing fire spread
   4. Procedures for implementing integrated fire response strategy
   5. Identification of readily-available pre-staged equipment
   6. Training on integrated fire response strategy
   7. Spent fuel pool mitigation measures

c. Actions to minimize release to include consideration of:
   1. Water spray scrubbing
   2. Dose to onsite responders

(7) [deleted]

(8) [deleted]

D. [deleted]

E. HDI shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans, which contains Safeguards Information protected under 10 CFR 73.21, is entitled: "Palisades Nuclear Plant Physical Security Plan."

HDI shall fully implement and maintain in effect all provisions of the Commission-approved cyber security plan (CSP), including changes made pursuant to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The Palisades CSP was approved by License Amendment No. 243 as supplemented by changes approved by License Amendment Nos. 248, 253, 259, and 264.

F. [deleted]

G. Holtec Palisades and HDI shall have and maintain financial protection of such type and in such amounts as the Commission shall require in accordance with Section 170 of the Atomic Energy Act of 1954, as amended, to cover public liability claims.

H. [deleted]

I. [deleted]

J. [deleted]

K. This license is effective as of the date of issuance and until the Commission notifies the licensee in writing that the license is terminated.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

J. E. Dyer, Director
Office of Nuclear Reactor Regulation

Attachments:

1. Appendix A – Permanently Defueled Technical Specifications

2. Appendix B – Environmental Protection Plan

Date of Issuance: January 17, 2007

PALISADES PLANT

RENEWED FACILITY OPERATING LICENSE DPR-20

APPENDIX A

PERMANENTLY DEFUELED TECHNICAL SPECIFICATIONS

As Amended through Amendment No. 272

1.0 USE AND APPLICATION

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1.2 Logical Connectors
1.3 Completion Times
1.4 Frequency

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3.7.16 Spent Fuel Pool Storage

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5.0 ADMINISTRATIVE CONTROLS

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5.4 Procedures
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1.0 USE AND APPLICATION

1.1 Definitions

----------NOTE----------
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.
CERTIFIED FUEL HANDLER	A CERTIFIED FUEL HANDLER is an individual who complies with provisions of the CERTIFIED FUEL HANDLER training and retraining program required by Specification 5.3.2.
NON-CERTIFIED OPERATOR	A NON-CERTIFIED OPERATOR is a non-licensed operator who complies with the qualification requirements of Specification 5.3.1.

1.0 USE AND APPLICATION

1.2 Logical Connectors

PURPOSE

The purpose of this section is to explain the meaning of logical connectors.

Logical connectors are used in Technical Specifications (TS) to discriminate between, and yet connect, discrete Conditions, Required Actions, Completion Times, Surveillances, and Frequencies. The only logical connector that appears in TS is AND. The physical arrangement of this connector constitutes logical conventions with specific meanings.

BACKGROUND

Levels of logic may be used to state Required Actions. These levels are identified by the placement (or nesting) of the logical connectors and by the number assigned to each Required Action. The first level of logic is identified by the first digit of the number assigned to a Required Action and the placement of the logical connector in the first level of nesting (i.e., left justified with the number of the Required Action).

1.2 Logical Connectors

EXAMPLES The following example illustrates the use of logical connectors.

EXAMPLE 1.2-1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LCO not met.	A.1 Suspend . . . AND A.2 Initiate . . .	

In this example the logical connector AND is used to indicate that when in Condition A, both Required Actions A.1 and A.2 must be completed.

1.0 USE AND APPLICATION

1.3 Completion Times

PURPOSE

The purpose of this section is to establish the Completion Time convention and to provide guidance for its use.

BACKGROUND

Limiting Conditions for Operation (LCOs) specify minimum requirements for ensuring safe storage and handling of spent nuclear fuel. The ACTIONS associated with an LCO state Conditions that typically describe the ways in which the requirements of the LCO can fail to be met. Specified with each stated Condition are Required Action(s) and Completion Time(s).

DESCRIPTION

The Completion Time is the amount of time allowed for completing a Required Action. It is referenced to the discovery of a situation (e.g., variable not within limits) that requires entering an ACTIONS Condition unless otherwise specified, providing the facility is in a specified condition stated in the Applicability of the LCO.

The Completion Time begins when a Certified Fuel Handler (CFH) on the shift crew with responsibility for plant operations makes the determination that an LCO is not met and an ACTIONS Condition is entered.

Required Actions must be completed prior to the expiration of the specified Completion Time. An ACTIONS Condition remains in effect and the Required Actions apply until the Condition no longer exists or the plant is not within the LCO Applicability.

1.3 Completion Times

EXAMPLE

The following example illustrates the use of Completion Times with different Required Actions.

EXAMPLE 1.3-1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Spent Fuel Pool boron concentration not within limit.	A.1 Suspend movement of fuel assemblies in the Spent Fuel Pool. AND A.2 Initiate action to restore Spent Fuel Pool boron concentration to within limit .	Immediately Immediately

Condition A has two Required Actions. Each Required Action has its own separate Completion Time. Each Completion Time is referenced to the time that Condition A is entered.

The Required Actions of Condition A are to immediately suspend movement of fuel assemblies in the Spent Fuel Pool and initiate action to restore Spent Fuel Pool boron concentration within limit.

IMMEDIATE COMPLETION TIME

When "Immediately" is used as a Completion Time, the Required Action should be pursued without delay and in a controlled manner.

1.0 USE AND APPLICATION

1.4 Frequency

PURPOSE

The purpose of this section is to define the proper use and application of Frequency requirements.

DESCRIPTION

Each Surveillance Requirement (SR) has a specified Frequency in which the Surveillance must be met in order to meet the associated LCO. An understanding of the correct application of the specified Frequency is necessary for compliance with the SR.

The "specified Frequency" is referred to throughout this section and each of the Specifications of Section 3.0, Surveillance Requirement (SR) Applicability. The "specified Frequency" consists of the requirements of the Frequency column of each SR.

The use of "met" and "performed" in these instances conveys specific meanings. A Surveillance is "met" only when the acceptance criteria are satisfied. Known failure of the requirements of a Surveillance, even without a Surveillance specifically being "performed," constitutes a Surveillance not "met." "Performance" refers only to the requirement to specifically determine the ability to meet the acceptance criteria.

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EXAMPLES

The following examples illustrate the type of Frequency statements that appear in the Technical Specifications (TS).

EXAMPLE 1.4-1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Verify level is within limit.	7 days

Example 1.4-1 contains one type of SR encountered in the TS. The Frequency specifies an interval of 7 days during which the associated Surveillance must be performed at least one time. Performance of the Surveillance initiates the subsequent interval. Although the Frequency is stated as 7 days, an extension of the time interval to 1.25 times the stated Frequency is allowed by SR 3.0.2 for flexibility. The measurement of this interval continues at all times, even when the SR is not required to be met per SR 3.0.1 (such as when a variable is outside specified limits, or the facility is outside the Applicability of the LCO). If the interval specified by SR 3.0.2 is exceeded while the facility is in a specified condition in the Applicability of the LCO, then SR 3.0.3 becomes applicable.

If the interval as specified by SR 3.0.2 is exceeded while the facility is not in a specified condition in the Applicability of the LCO for which performance of the SR is required, then SR 3.0.4 becomes applicable. The Surveillance must be performed within the Frequency requirements of SR 3.0.2, as modified by SR 3.0.3, prior to entry into the specified condition or the LCO is considered not met (in accordance with SR 3.0.1).

1.4 Frequency

EXAMPLES (continued)

EXAMPLE 1.4-2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Verify...	Prior to storing a fuel assembly…

Example 1.4-2 illustrates a one time performance Frequency. This type of Frequency does not qualify for the extension allowed by SR 3.0.2.

2.0 (Deleted)

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.

3.0 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.
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 or up to the limit of the specified Frequency, whichever is greater. This delay period is permitted to allow performance of the Surveillance. The delay period is only applicable when there is a reasonable expectation the surveillance will be met when performed. A risk evaluation shall be performed for any Surveillance delayed greater than 24 hours and the risk impact shall be managed. 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	Entry into a specified condition in the Applicability of an LCO shall only be made when the LCO's Surveillances have been met within their specified Frequency, except as provided by SR 3.0.3.

3.7 FACILITY SYSTEMS

3.7.14 Spent Fuel Pool (SFP) Water Level

LCO 3.7.14 The SFP water level shall be ≥ 647 ft elevation.

----------NOTE----------
SFP level may be below the 647 ft elevation to support fuel cask movement, if the displacement of water by the fuel cask when submerged in the SFP, would raise SFP level to ≥ 647 ft elevation.

APPLICABILITY: During movement of irradiated fuel assemblies in the SFP,
During movement of a fuel cask in or over the SFP.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. SFP water level not within limit.	A.1	Suspend movement of irradiated fuel assemblies in SFP.	Immediately
	AND		
	A.2	Suspend movement of fuel cask in or over the SFP.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.14.1	Verify the SFP water level is ≥ 647 ft elevation.	7 days

3.7 FACILITY SYSTEMS

3.7.15 Spent Fuel Pool (SFP) Boron Concentration

LCO 3.7.15 The SFP boron concentration shall be ≥ 1720 ppm.

APPLICABILITY: When fuel assemblies are stored in the Spent Fuel Pool.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. SFP boron concentration not within limit.	A.1 Suspend movement of fuel assemblies in the SFP. AND	Immediately
	A.2 Initiate action to restore SFP boron concentration to within limit.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.15.1	Verify the SFP boron concentration is within limit.	7 days

3.7 FACILITY SYSTEMS

3.7.16 Spent Fuel Pool Storage

LCO 3.7.16 Storage in the spent fuel pool shall be as follows:

a. Each fuel assembly and non-fissile bearing component stored in a Region I Carborundum equipped storage rack shall be within the limitations in Specification 4.3.1.1 and, as applicable, within the requirements of the maximum nominal planar average U-235 enrichment and burnup of Tables 3.7.16-2, 3.7.16-3, 3.7.16-4 or 3.7.16-5,

b. Fuel assemblies in a Region I Metamic equipped storage rack shall be within the limitations in Specification 4.3.1.2, and

c. The combination of maximum nominal planar average U-235 enrichment, burnup, and decay time of each fuel assembly stored in Region II shall be within the requirements of Table 3.7.16-1.

APPLICABILITY: Whenever any fuel assembly or non-fissile bearing component is stored in the spent fuel pool or the north tilt pit.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of the LCO not met.	A.1 Initiate action to restore the noncomplying fuel assembly or non-fissile bearing component within requirements.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.16.1	Verify by administrative means each fuel assembly or non-fissile bearing component meets fuel storage requirements.	Prior to storing the fuel assembly or non-fissile bearing component in the spent fuel pool

Table 3.7.16-1 (page 1 of 1)
Spent Fuel Minimum Burnup and Decay Requirements
for Storage in Region II of the Spent Fuel Pool and North Tilt Pit

Nominal Planar Average U-235 Enrichment (Wt%)	Burnup (GWD/MTU) No Decay	Burnup (GWD/MTU) 1 Year Decay	Burnup (GWD/MTU) 3 Year Decay	Burnup (GWD/MTU) 5 Year Decay	Burnup (GWD/MTU) 8 Year Decay
≤ 1.14	0	0	0	0	0
> 1.14	3.477	3.477	3.477	3.477	3.477
1.20	3.477	3.477	3.477	3.477	3.477
1.40	7.951	7.844	7.464	7.178	6.857
1.60	11.615	11.354	10.768	10.319	9.847
1.80	14.936	14.535	13.767	13.187	12.570
2.00	18.021	17.502	16.561	15.875	15.117
2.20	21.002	20.417	19.313	18.499	17.611
2.40	23.900	23.201	21.953	21.034	20.050
2.60	26.680	25.905	24.497	23.487	22.378
2.80	29.388	28.528	27.006	25.879	24.678
3.00	32.044	31.114	29.457	28.243	26.942
3.20	34.468	33.457	31.698	30.397	29.008
3.40	36.848	35.783	33.920	32.544	31.079
3.60	39.152	38.026	36.059	34.615	33.077
3.80	41.419	40.226	38.163	36.650	35.049
4.00	43.661	42.422	40.257	38.673	37.007
4.20	45.987	44.684	42.415	40.778	39.028
4.40	48.322	46.950	44.588	42.877	41.041
4.60	50.580	49.158	46.690	44.911	43.003

(a) Linear interpolation between two consecutive points will yield acceptable results.

(b) Comparison of nominal assembly average burnup numbers to these in the table is acceptable if measurement uncertainty is ≤ 10%.

Table 3.7.16-2 (page 1 of 1)
Spent Fuel Minimum Burnup Requirements for
Storage in Region 1B (three-of-four loading configuration)
of the Main Spent Fuel Pool

Nominal Planar Average U-235 Enrichment (Wt%)	Burnup (GWD/MTU) (Batches L and later)	Burnup (GWD/MTU) (Batches A through K)
≤2.10	0	1.0
2.40	4.1	5.1
2.60	6.7	7.7
2.80	9.5	10.5
3.00	12.2	13.2
3.20	14.9	15.9
3.40	17.6	18.6
3.60	20.2	21.2
3.80	23.0	24.0
4.00	25.7	26.7
4.20	28.4	29.4
4.40	31.1	32.1
4.54	33.0	34.0

(a) Linear interpolation between two consecutive points for nominal planar average U-235 enrichments between 2.10 and 4.54 will yield acceptable results.

(b) Comparison of nominal assembly average burnup numbers to these in the table is acceptable if measurement uncertainty is ≤ 10%.

Table 3.7.16-3 (page 1 of 1)
Spent Fuel Minimum Burnup Requirements for
Storage in Region 1C (four-of-four loading configuration)
of the Main Spent Fuel Pool

Nominal Planar Average U-235 Enrichment (Wt%)	Burnup (GWD/MTU) (Batches L and later)	Burnup (GWD/MTU) (Batches A through K)
≤1.35	0	1.0
2.40	20.7	21.7
2.60	24.5	25.5
2.75	27.5	28.5
2.80	28.2	29.2
3.00	31.0	32.0
3.20	33.9	34.9
3.40	36.7	37.7
3.60	39.5	40.5
3.80	42.4	43.4
4.00	45.2	46.2
4.20	48.0	49.0
4.40	50.8	51.8
4.54	52.8	53.8

(a) Linear interpolation between two consecutive points for nominal planar average U-235 enrichments between 1.35 and 4.54 will yield acceptable results.

(b) Comparison of nominal assembly average burnup numbers to these in the table is acceptable if measurement uncertainty is ≤ 10%.

Table 3.7.16-4 (page 1 of 1)
Spent Fuel Minimum Burnup Requirements for
Storage in Region 1D (three-of four loading configuration)
of the North Tilt Pit

Nominal Planar Average U-235 Enrichment (Wt%)	Burnup (GWD/MTU) (Batches L and later)	Burnup (GWD/MTU) (Batches A through K)
≤2.35	0	1.0
2.40	0.5	1.5
2.60	2.4	3.4
2.80	4.3	5.3
3.00	6.2	7.2
3.20	8.1	9.1
3.40	10.0	11.0
3.60	11.9	12.9
3.80	13.8	14.8
4.00	15.7	16.7
4.20	17.7	18.7
4.40	19.6	20.6
4.54	20.9	21.9

(a) Linear interpolation between two consecutive points for nominal planar average U-235 enrichments between 2.35 and 4.54 will yield acceptable results.

(b) Comparison of nominal assembly average burnup numbers to these in the table is acceptable if measurement uncertainty is ≤ 10%.

Table 3.7.16-5 (page 1 of 1)
Spent Fuel Minimum Burnup Requirements for
Storage in Region 1E (four-of-four loading configuration)
of the North Tilt Pit

Nominal Planar Average U-235 Enrichment (Wt%)	Burnup (GWD/MTU) (Batches L and later)	Burnup (GWD/MTU) (Batches A through K)
≤1.48	0	1.0
2.40	13.9	14.9
2.60	16.9	17.9
2.80	19.9	20.9
3.00	23.0	24.0
3.20	26.0	27.0
3.30	27.5	28.5
3.40	28.7	29.7
3.60	31.0	32.0
3.80	33.3	34.3
4.00	35.6	36.6
4.20	37.9	38.9
4.40	40.2	41.2
4.54	41.8	42.8

(a) Linear interpolation between two consecutive points for nominal planar average U-235 enrichments between 1.48 and 4.54 will yield acceptable results.

(b) Comparison of nominal assembly average burnup numbers to these in the table is acceptable if measurement uncertainty is ≤ 10%.

4.0 DESIGN FEATURES

4.1 Site Location

The Palisades Nuclear Plant is located on property owned by Holtec Palisades, LLC on the eastern shore of Lake Michigan approximately four and one-half miles south of the southern city limits of South Haven, Michigan. The minimum distance to the boundary of the exclusion area as defined in 10 CFR 100.3 shall be 677 meters.

4.2 (Deleted)

4.3 Fuel Storage

4.3.1 Criticality

4.3.1.1 The Region I (See Figure B 3.7.16-1) Carborundum equipped fuel storage racks incorporating Regions 1A, 1B, 1C, 1D, and 1E are designed and shall be maintained with:

a. Irradiated fuel assemblies having a maximum nominal planar average U-235 enrichment of 4.54 weight percent;

b. Keff < 1.0 if fully flooded with unborated water, which includes allowances for uncertainties as described in Section 9.11 of the FSAR;

c. Keff ≤ 0.95 if fully flooded with water borated to 850 ppm, which includes allowances for uncertainties as described in Section 9.11 of the FSAR;

d. Regions 1A, 1B, and 1C have a nominal 10.25 inch center to center distance between fuel assemblies;

e. Regions 1D and 1E have a nominal 11.25 inch by 10.69 inch center to center distance between fuel assemblies;

f. Region 1A is defined as a subregion of the Region I storage racks located in the main spent fuel pool and is subject to the following restrictions. Fuel assemblies (or fissile bearing components) located in Region 1A shall be in a maximum of two-of-four checkerboard loading pattern of two fuel assemblies (or fissile bearing components) and two empty cells. Designated empty cells may contain non-fuel bearing components in accordance with Section 4.3.1.1m.2. below;

4.3.1 Criticality (continued)

g. Region 1B is defined as a subregion of the Region I storage racks located in the main spent fuel pool and is subject to the following restrictions. Fuel assemblies (or fissile bearing components) located in Region 1B shall be in a maximum of three-of-four loading pattern consisting of three fuel assemblies (or fissile bearing components) and one empty cell. Fuel assemblies in Region 1B shall meet the enrichment dependent burnup restrictions listed in Table 3.7.16-2. Designated empty cells may contain non-fuel bearing components in accordance with Section 4.3.1.1m.2. below;

h. Region 1C is defined as a subregion of the Region I storage racks located in the main spent fuel pool and is subject to the following restrictions. Fuel assemblies (or fissile bearing components) located in Region 1C may be in a maximum of four-of-four loading pattern with no required empty cells. Fuel assemblies in Region 1C shall meet the enrichment dependent burnup restrictions listed in Table 3.7.16-3;

i. Interface requirements for the main spent fuel pool between Region 1A, 1B, and 1C are as follows. Region 1A, 1B, and 1C can be distributed in Region I, in the main spent fuel pool, in any manner provided that any two-by-two grouping of storage cells and the assemblies in them correspond to the requirements of 4.3.1.1f., 4.3.1.1g., or 4.3.1.1h. above;

j. Region 1D is defined as a subregion of the Region I storage rack located in the north tilt pit and is subject to the following restrictions. Fuel assemblies (or fissile bearing components) located in Region 1D may be in a maximum of three-of-four loading pattern consisting of three fuel assemblies (or fissile bearing components) and one empty cell. Fuel assemblies in Region 1D shall meet the enrichment dependent burnup restrictions listed in Table 3.7.16-4;

k. Region 1E is defined as a subregion of the Region I storage rack located in the north tilt pit and is subject to the following restrictions. Fuel assemblies (or fissile bearing components) located in Region 1E may be in a maximum of four-of-four loading pattern with no required empty cells. Fuel assemblies in Region 1E shall meet the enrichment dependent burnup restrictions listed in Table 3.7.16-5;

4.3 Fuel Storage

4.3.1 Criticality (continued)

l. Interface requirements for the north tilt pit between Region 1D and 1E are as follows. Region 1D and 1E can be distributed in Region I in the north tilt pit in any manner provided that any two-by-two grouping of storage cells and the assemblies in them correspond to the requirements of 4.3.1.1j. or 4.3.1.1k. above;

m. Non-fissile bearing component restrictions are as follows:

1. Non-fissile material components may be stored in any designated fuel location in Region 1A, 1B, 1C, 1D, or 1E without restriction.

2. The following non-fuel bearing components (NFBC) may be stored face adjacent to fuel in any designated empty cell in Region 1A or 1B.

(i) The gauge dummy assembly and the lead dummy assembly may be stored face adjacent to fuel in any designated empty cells with no minimum required separation distance.

(ii) A component comprised primarily of stainless steel that displaces less than 30 square inches of water in any plane within the active fuel region may be stored in any designated empty cell as long as the NFBC is at least ten locations away from any other NFBC that is in a designated empty cell, with the exception of 4.3.1.1m.2.(i) above.

3. Control blades may be stored in both fueled and unfueled locations in Regions 1D and 1E, with no limitation on the number.

4.3 Fuel Storage

4.3.1.2 The Region I (See Figure B 3.7.16-1) Metamic equipped fuel storage racks are designed and shall be maintained with:

a. Fuel assemblies having a maximum nominal planar average U-235 enrichment of 4.95 weight percent;

b. Keff < 1.0 if fully flooded with unborated water, which includes allowances for uncertainties as described in Section 9.11 of the FSAR;

c. Keff ≤ 0.95 if fully flooded with water borated to 850 ppm, which includes allowances for uncertainties as described in Section 9.11 of the FSAR;

d. A nominal 10.25 inch center to center distance between fuel assemblies;

e. Irradiated fuel assemblies;

f. Two empty rows of storage locations shall exist between the fuel assemblies in a Carborundum equipped rack and the fuel assemblies in an adjacent Metamic equipped rack; and

g. A minimum Metamic B^{10} areal density of 0.02944 g/cm^2.

4.3.1.3 The Region II fuel storage racks (See Figure B 3.7.16-1) are designed and shall be maintained with:

a. Fuel assemblies having maximum nominal planar average U-235 enrichment of 4.60 weight percent;

b. Keff < 1.0 if fully flooded with unborated water, which includes allowances for uncertainties as described in Section 9.11 of the FSAR.

c. Keff ≤ 0.95 if fully flooded with water borated to 850 ppm, which includes allowance for uncertainties as described in Section 9.11 of the FSAR.

d. A nominal 9.17 inch center to center distance between fuel assemblies; and

e. Irradiated fuel assemblies which meet the maximum nominal planar average U-235 enrichment, burnup, and decay time requirements of Table 3.7.16-1.

4.3.1.4 (Deleted)

4.3 Fuel Storage

4.3.2 Drainage

The spent fuel storage pool cooling system suction and discharge piping is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 644 ft 5 inches.

4.3.3 Capacity

The spent fuel storage pool and north tilt pit are designed and shall be maintained with a storage capacity limited to no more than 892 fuel assemblies.

5.0 ADMINISTRATIVE CONTROLS

5.1 Responsibility

5.1.1 The plant manager shall be responsible for overall facility operation and shall delegate in writing the succession for this responsibility during absences.

The plant manager or designee shall approve, prior to implementation, each proposed test, experiment or modification to systems or equipment that affect safe storage and maintenance of spent nuclear fuel.

5.1.2 The shift manager shall be responsible for the shift command function.

5.0 ADMINISTRATIVE CONTROLS

5.2 Organization

5.2.1 Onsite and Offsite Organizations

Onsite and offsite organizations shall be established for facility staff and corporate management, respectively. The onsite and offsite organizations shall include the positions for activities affecting the safe storage and handling of spent nuclear fuel.

a. Lines of authority, responsibility and communication shall be established and defined for the highest management levels through intermediate levels to and including all facility organization positions. These relationships shall be documented, and updated, as appropriate, in the form of organization charts, functional descriptions of departmental responsibilities and relationships, and job descriptions for key positions, or in equivalent forms of documentation. These requirements and the plant specific equivalent of those titles referred to in these Technical Specifications shall be documented in the FSAR.

b. The plant manager shall be responsible for overall facility safe operation and shall have control over those onsite activities necessary for safe storage and maintenance of spent nuclear fuel.

c. A specified corporate officer shall have corporate responsibility for the safe storage and handling of spent nuclear fuel and shall take any measures needed to ensure acceptable performance of the staff in operating, maintaining and providing technical support to the facility to ensure safe management of spent nuclear fuel.

d. The individuals who train the CERTIFIED FUEL HANDLERS and those who carry out radiation protection and quality assurance functions may report to the appropriate onsite manager; however, they shall have sufficient organizational freedom to ensure their ability to perform their assigned functions.

5.2.2 Facility Staff

The facility staff organization shall include the following:

a. Each duty shift shall be composed of at least one shift manager and one NON-CERTIFIED OPERATOR. The NON-CERTIFIED OPERATOR position may be filled by a CERTIFIED FUEL HANDLER.

b. Oversight of fuel handling operations shall be provided by a CERTIFIED FUEL HANDLER.

5.2 Organization

5.2.2 Facility Staff (continued)

c. Shift crew composition may be less than the minimum requirement of 5.2.2a. for a period of time not to exceed 2 hours in order to accommodate unexpected absence of on-duty shift crew members provided immediate action is taken to restore the shift crew composition to within the minimum requirements and all the following are met:

1) No fuel movements are in progress, and

2) No movement of loads over fuel are in progress, and

3) No unmanned shift positions during shift turnover shall be permitted due to an incoming shift crew member being late or absent.

d. A radiation protection technician shall be on site during the movement of fuel and during the movement of loads over fuel. The position may be vacant for not more than 2 hours, in order to provide for unexpected absence, provided immediate action is taken to fill the required position.

e. At least one person qualified to stand watch in the control room (NON-CERTIFIED OPERATOR or CERTIFIED FUEL HANDLER) shall be present in the control room when nuclear fuel is stored in the spent fuel pool.

f. The shift manager shall be a CERTIFIED FUEL HANDLER.

g. (Deleted)

5.0 ADMINISTRATIVE CONTROLS

5.3 Facility Staff Qualifications

5.3.1 Each member of the facility staff shall meet or exceed the minimum qualifications of ANSI/ANS 3.1-1978 for comparable positions with exceptions specified in the Quality Assurance Program Manual (QAPM).

5.3.2 A NRC approved training and retraining program for CERTIFIED FUEL HANDLERs shall be maintained.

5.3.3 (Deleted)

5.3.4 (Deleted)

5.3.5 (Deleted)

5.0 ADMINISTRATIVE CONTROLS

5.4 Procedures

5.4.1 Written procedures shall be established, implemented, and maintained covering the activities referenced below:

a. The procedures applicable to the safe storage of spent nuclear fuel recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978.

b. (Deleted)

c. Not used;

d. All programs specified in Specification 5.5.

5.0 ADMINISTRATIVE CONTROLS

5.5 Programs and Manuals

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

5.5.1 Offsite Dose Calculation Manual (ODCM)

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 (1) the radioactive effluent controls and radiological environmental monitoring activities and (2) descriptions of the information that should be included in the Radiological Environmental Operating Report, and Radioactive Effluent Release Report required by Specification 5.6.2 and Specification 5.6.3.

c. Changes to ODCM:

1. Shall be documented and records of reviews performed shall be retained. This documentation shall contain:

a. Sufficient information to support the change together with the appropriate analyses or evaluations justifying the changes, and

b. A determination that the change will maintain the level 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 approval by the plant manager.

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 to 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 (e.g., month/year) the change was implemented.

5.5 Programs and Manuals

5.5.2 (Deleted)

5.5.3 (Deleted)

5.5.4 Radioactive Effluent Controls Program

A program shall be provided conforming with 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 (1) shall be contained in the Offsite Dose Calculation Manual (ODCM), (2) shall be implemented by operating procedures, and (3) 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 material 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. Limitation on the annual and quarterly doses or dose commitment to a member of the public from radioactive materials in liquid effluents released from each plant to unrestricted areas conforming to 10 CFR 50, Appendix I,

e. 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;

5.5 Programs and Manuals

5.5.4 Radioactive Effluent Controls Program (continued)

f. Limitations on the annual and quarterly air doses resulting from noble gases released in gaseous effluents from each unit to areas beyond the site boundary conforming to 10 CFR 50, Appendix I,

g. 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 greater than 8 days in gaseous effluents released from each plant to areas beyond the site boundary conforming to 10 CFR 50, Appendix I,

h. Limitations on the annual doses 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.

5.5.5 (Deleted)

5.5.6 (Deleted)

5.5.7 (Deleted)

5.5.8 (Deleted)

5.5.9 (Deleted)

5.5.10 (Deleted)

5.5.11 (Deleted)

5.5 Programs and Manuals

5.5.12 Technical Specifications (TS) 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 TS 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 require either of the following:

1. A change in the TS incorporated in the license; or

2. A change to the updated FSAR or Bases that requires NRC approval pursuant to 10 CFR 50.59.

c. The Bases Control Program shall contain provisions to ensure that the Bases are maintained consistent with the FSAR.

d. Proposed changes that meet the criteria of Specification 5.5.12.b. 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).

5.5.13 (Deleted)

5.5.14 (Deleted)

5.5.15 Process Control Program

a. The Process Control Program shall contain the current formula, sampling, analyses, tests, and determinations to be made to ensure that the processing and packaging of solid radioactive wastes based on demonstrated processing of actual or simulated wet solid wastes will be accomplished in such a way as to assure compliance with 10 CFR 20, 10 CFR 71, Federal and State regulations, and other requirements governing the disposal of the radioactive waste.

5.5 Programs and Manuals

5.5.15 Process Control Program (continued)

b. Changes to the Process Control Program:

1. Shall be documented and records of reviews performed shall be retained as required by the Quality Program. This documentation shall contain:

a) Sufficient information to support the change together with the appropriate analyses or evaluation justifying the change(s) and

b) A determination that the change will maintain the overall conformance of the solidified waste product to existing requirements of Federal, State, or other applicable regulations.

2. Shall become effective after approval by the plant manager.

5.5.16 (Deleted)

5.5.17 (Deleted)

5.0 ADMINISTRATIVE CONTROLS

5.6 Reporting Requirements

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

5.6.1 (Deleted)

5.6.2 Radiological Environmental Operating Report

The Radiological Environmental Operating Report covering the operation of the facility during the previous calendar year shall be submitted before May 15 of each year. The report shall include summaries, interpretations, and analysis 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 and in 10 CFR 50, Appendix I, Sections IV.B.2, IV.B.3, and IV.C.

5.6.3 Radioactive Effluent Release Report

The Radioactive Effluent Release Report covering operation of the facility 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 Offsite Dose Calculation Manual and Process Control Program, and shall be in conformance with 10 CFR 50.36a and 10 CFR 50, Appendix I, Section IV.B.1.

5.6.4 (Deleted)

5.6.5 (Deleted)

5.6.6 (Deleted)

5.6.7 (Deleted)

5.6.8 (Deleted)

5.0 ADMINISTRATIVE CONTROLS

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 an 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

5.7 High Radiation Area

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 (continued)

4. 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 continuously displays radiation dose rates in the area, and 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 High Radiation Area

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 shift manager, 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 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 rates in the area and alarms when the device's dose alarm setpoint is reached, with an 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, and with the means to communicate with and control every individual in the area, or

5.7 High Radiation Area

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 (continued)

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 continuously displays radiation dose rates in the area; and 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.

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 continuously 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.

PALISADES PLANT

RENEWED FACILITY OPERATING LICENSE DPR-20

APPENDIX B

ENVIRONMENTAL PROTECTION PLAN (NON-RADIOLOGICAL)

PALISADES PLANT

ENVIRONMENTAL PROTECTION PLAN

(NON-RADIOLOGICAL)

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1.0 Objectives of the Environmental Protection Plan

The Environmental Protection Plan (EPP) is to provide for protection of environmental values during handling and storage of spent fuel and maintenance of the nuclear facility. The principal objectives of the EPP are as follows:

(1) Verify that the facility is maintained in an environmentally acceptable manner, as established by the FES and other NRC environmental impact assessments.

(2) Coordinate NRC requirements and maintain consistency with other Federal, State and local requirements for environmental protection.

(3) Keep NRC informed of the environmental effects of handling and storage of spent fuel and maintenance of the facility and of actions taken to control those effects.

Environmental concerns identified in the FES which relate to water quality matters are regulated by way of the licensee's NPDES permit.

2.0 Environmental Protection Issues

In the final addendum to the FES-OL dated February 1978 the staff considered the environmental impacts associated with the operation of the Palisades Plant. Certain environmental issues were identified which required study or license conditions to resolve environmental concerns and to assure adequate protection of the environment.

2.1 Aquatic Issues

Specific aquatic issues raised by the staff in the FES-OL were:

The need for aquatic monitoring programs to confirm that thermal mixing occurs as predicted, that chlorine releases are controlled within those discharge concentrations evaluated, and that effects on aquatic biota and water quality due to facility operation are no greater than predicted.

Aquatic issues are addressed by the effluent limitations, and monitoring requirements are contained in the effective NPDES permit issued by the State of Michigan, Department of Natural Resources. The NRC will rely on this agency for regulation of matters involving water quality and aquatic biota.

2.2 Terrestrial Issues

1. Potential impacts on the terrestrial environment associated with drift from the mechanical draft cooling towers. (FES-OL addendum Section 6.3)

2. Potential increase in fogging associated with operation of the mechanical draft cooling towers. (FES-OL addendum Section 6.3).

3. The need for controlled used of herbicides on transmission rights-of-way. (FES-OL addendum Sections 6.3.3)

NRC requirements with regard to the 3 terrestrial issues are specified in Subsection 4.2 of this EPP.

3.0 Consistency Requirements

3.1 Facility Design and Operation

The licensee may make changes in facility design or operation or perform tests or experiments affecting the environment provided such changes, tests or experiments do not involve an unreviewed environmental question, and do not involve a change in the Environmental Protection Plan. Changes in facility design or operation or performance of tests or experiments which do not affect the environment are not subject to the requirements of this EPP. Activities governed by Section 3.3 are not subject to the requirements of this section.

Before engaging in additional construction or operational activities which may affect the environment, the licensee shall prepare and record an environmental evaluation of such activity. When the evaluation indicates that such activity involves an unreviewed environmental question, the licensee shall provide a written evaluation of such activities and obtain prior approval from the Director, Office of Nuclear Reactor Regulation. When such activity involves a change in the Environmental Protection Plan, such activity and change to the Environmental Protection Plan may be implemented only in accordance with an appropriate license amendment as set forth in Section 5.3.

A proposed change, test or experiment shall be deemed to involve an unreviewed environmental question if it concerns (1) a matter which may result in a significant increase in any adverse environmental impact previously evaluated in the final environmental statement (FES) as modified by staff's testimony to the Atomic Safety and Licensing Board, supplements to the FES, environmental impact appraisals, or in any decisions of the Atomic Safety and Licensing Board; or (2) a significant change in effluents [in accordance with 10 CFR Part 51.5(b)(2)] or (3) a matter not previously reviewed and evaluated in the documents specified in (1) of this Subsection, which may have a significant adverse environmental impact.

The licensee shall maintain records of changes in facility design or operation and of tests and experiments carried out pursuant to this Subsection. These records shall include a written evaluation which provide bases for the determination that the change, test, or experiment does not involve an unreviewed environmental question nor constitute a decrease in the effectiveness of this EPP to meet the objectives specified in Section 1.0. The licensee shall include as part of his Annual Environmental Operating Report (per Subsection 5.4.1) brief descriptions, analyses, interpretations, and evaluations of such changes, tests and experiments.

3.2 Reporting Related to the NPDES Permits and State Certifications

Violations of the NPDES Permit or the State certification (pursuant to Section 401 of the Clean Mater Act) shall be reported to the NRC by submittal of copies of the reports required by the NPDES Permit or certification.

Changes and additions to the NPDES Permit or the State certification shall be reported to the NRC within 30 days following the date the change is approved. If a permit or certification, in part or in its entirety, is appealed and stayed, the NRC shall be notified within 30 days following the date the stay is granted.

The NRC shall be notified of changes to the effective NPDES Permit proposed by the licensee by providing NRC with a copy of the proposed change at the same time it is submitted to the permitting agency. The notification of a licensee-initiated change shall include a copy of the requested revision submitted to the permitting agency. The licensee shall provide the NRC a copy of the application for renewal of the NPDES permit at the same time the application is submitted to the permitting agency.

3.3 Changes Required for Compliance with Other Environmental Regulations

Changes in facility design or operation and performance of tests or experiments which are required to achieve compliance with other Federal, State, or local environmental regulations are not subject to the requirements of Section 3.1.

4.0 Environmental Conditions

4.1 Unusual or Important Environmental Events

Any occurrence of an unusual or important event that indicates or could result in significant environmental impact causally related to the handling and storage of spent fuel and maintenance of the facility shall be recorded and promptly reported to the NRC within 24 hours by telephone, telegraph, or facsimile transmissions followed by a written report per Subsection 5.4.2. The following are examples: excessive bird impaction events, onsite plant or animal disease outbreaks, mortality or unusual occurrence of any species protected by the Endangered Species Act of 1973, fish kills, increase in nuisance organisms or conditions and unanticipated or emergency discharge of waste water or chemical substances.

No routine monitoring programs are required to implement this condition.

4.2 Environmental Monitoring

4.2.1 Meteorological Monitoring

A meteorological monitoring program shall be conducted in the vicinity of the plant site for at least two years after conversion to cooling towers to document effects of cooling tower operation on meteorological variables. Data on the following meteorological variables shall be obtained from the station network shown in Figure 4.2.1: precipitation, temperature, humidity, solar radiation, downcoming radiation, visibility, wind direction and wind speed. In addition, studies shall be conducted for at least two years to measure affects of cooling tower drift on vegetation by associated salt deposition, icing or other causes.

Observations shall be made of a series of sample vegetation plots, and chemical analyses shall be made of representative samples of vegetation, soil and collected moisture to establish relative amounts of drift at various locations and influences on plant life. The incidence of icing and fogging on nearby transportation arteries shall be determined. Noise measurements shall be taken with and without the cooling tower in operation at different locations on site and around the surrounding areas. The study program to assess the meteorological and terrestrial effects of cooling tower operation onsite and offsite shall be carried out as follows:

METEOROLOGICAL STUDY

	Sample	Frequency	Objective
(a)	Precipitation	Continuously	To determine if the c.t.* influence natural precipitation processes.
(b)	Temperature	Continuously	To establish c.t.* plume influences on temperature if any.
(c)	Relative Humidity	Continuously	To determine if the c.t.* plume produces an increase in R.H.
(d)	Total Solar Radiation	Continuously	To determine if the c.t.* plume inhibit total solar radiation.
(e)	Total Solar Plus Atmosphere Radiation	Continuously	To determine the presence of nocturnal c.t.* plume.
(f)	Visibility	Continuously	To detect the presence of fog.
(g)	Wind Direction	Continuously	To determine the direction of movement to the c.t.* plume and alterations in wind patterns.

*c.t. - cooling towers

	Sample	Frequency	Objective
(h)	Wind Speed	Continuously	To determine if the c.t.* plume affect local wind speeds.
(i)	Icing	During winter months	To determine if c.t.* plume creates icing problems of nearby highways and roads.
		DRIFT STUDY	
(a)	Precipitation and Analyzed for SO_4 and Ca	Monthly	To establish pattern and rate of drift deposited ions.
(b)	Analysis of Vegetational Composition	Survey 3 times per year (spring, summer, fall)	To determine if c.t.* drift is altering the vegetational composition.
(c)	Vegetational Chemical Analysis	Yearly	To determine if drift deposited elements are concentrating in vegetation.
(d)	Soil Chemical Analysis	Yearly	To determine if drift deposited elements are concentrating in soils.
(e)	Icing	Winter months	To determine if c.t.* drift (ice) is physically damaging to vegetation.

4.2.2 Herbicide Application

The use of herbicides within the transmission corridor rights-of-way shall conform to the approved use of selected herbicides as registered by the Environmental Protection Agency and approved by State authorities and applied as directed by said authorities.

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*c.t. - cooling towers

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Records shall be maintained in the appropriate division office concerning herbicide use. Such records shall include the following in information: commercial and chemical names of materials used; concentration of active material in formulations diluted for field use; diluting substances other than water; rates of application; method and frequency of application; location; and the date of application. Such records shall be maintained for a period of 5 years and be made readily available to the NRC upon request. There shall be no routine reporting requirement associated with this condition.

5.0 Administrative Procedures

5.1 Review and Audit

The licensee shall provide for review and audit of compliance with the Environmental Protection Plan. The audits shall be conducted independently of the individual or groups responsible for performing the specific activity. A description of the organization structure utilized to achieve the independent review and audit function and results of the audit activities shall be maintained and made available for inspection.

5.2 Records Retention

Records and logs relative to the environmental aspects of previous plant operation and the handling and storage of spent fuel and maintenance of the facility shall be made and retained in a manner convenient for review and inspection. These records and logs shall be made available to NRC on request.

Records of modifications to facility structures, systems and components determined to potentially affect the continued protection of the environment shall be retained for the life of the facility. All other records, data and logs relating to this EPP shall be retained for five years or, where applicable, in accordance with the requirements of other agencies.

5.3 Changes in Environmental Protection Plan

Request for change in the Environmental Protection Plan shall include an assessment of the environmental impact of the proposed change and a supporting justification. Implementation of such changes in the EPP shall not commence prior to NRC approval of the proposed changes in the form of a license amendment incorporating the appropriate revision to the Environmental Protection Plan.

5.4 Facility Reporting Requirements

5.4.1 Routine Reports

An Annual Environmental Operating Report describing implementation of this EPP for the previous year shall be submitted to the NRC prior to May 1 of each year. The initial report shall be submitted prior to May 1 of the year following issuance of the operating license. The period of the first report shall begin with the date of issuance of the operating license.

The report shall include summaries and analyses of the results of the environmental protection activities required by Subsection 4.2 of this Environmental Protection Plan for the report period, including a comparison with preoperational studies, operational controls (as appropriate), and previous nonradiological environmental monitoring reports, and an assessment of the observed impacts of the facility operation on the environment. If harmful effects or evidence of trends towards irreversible damage to the environment are observed, the licensee shall provide a detailed analysis of the data and a proposed course of action to alleviate the problem.

The Annual Environmental Operating Report shall also include:

(a) A list of EPP noncompliances and the corrective actions taken to remedy them.

(b) A list of all changes in facility design or operation, tests, and experiments made in accordance with Subsection 3.1 which involved a potentially significant unreviewed environmental issue.

(c) A list of nonroutine reports submitted in accordance with Subsection 5.4.2.

In the event that some results are not available by the report due date, the report shall be submitted noting and explaining the missing results. The missing data shall be submitted as soon as possible in a supplementary report.

5.4.2 Nonroutine Reports

A written report shall be submitted to the NRC within 30 days of occurrence of nonroutine event. The report shall (a) describe, analyze, and evaluate the event, including extent and magnitude of the impact and facility operating characteristics, (b) describe the probable cause of the event, (c) indicate the action taken to correct the reported event, (d) indicate the corrective action taken to preclude repetition of the event and to prevent similar occurrences involving similar components or systems, and (e) indicate the agencies notified and their preliminary responses.

Events reportable under this subsection which also require reports to other Federal, State or local agencies shall be reported in accordance with those reporting requirements in lieu of the requirements of this subsection. The NRC shall be provided a copy of such report at the time it is submitted to the other agency.