PROPRIETARY INFORMATION - WITHHOLD UNDER 10 CFR 2.390
UPON REMOVAL OF ENCLOSURE 2, THIS LETTER IS UNCONTROLLED

HOLTEC
DECOMMISSIONING
INTERNATIONAL

Krishna P. Singh Technology Campus, 1 Holtec Blvd., Camden, NJ 08104
Telephone (856) 797-0900
Fax (856) 797-0909

HDI PNP 2024-023

May 9, 2024

U.S. Nuclear Regulatory Commission
ATTN: Justin C. Poole NRR/DOR/LPL I
Washington, DC 20555-0001

Palisades Nuclear Plant
NRC Docket No. 50-255
Renewed Facility Operating License No. DPR-20

Subject: Pre-Submittal Meeting Presentation – Palisades Nuclear Plant License Amendment Request to Approve the Biasi Critical Heat Flux (CHF) Correlation for Use with the Palisades Main Steam Line Break (MSLB) Analysis

Holtec Decommissioning International (HDI) is submitting the presentation material for the May 15, 2024, public meeting between the NRC and Holtec on Palisades Nuclear Plant License Amendment Request to Approve the Biasi Critical Heat Flux (CHF) Correlation for Use with the Palisades Main Steam Line Break (MSLB) Analysis.

Enclosure 1 contains a publicly available non-proprietary presentation. Enclosure 2 contains confidential and proprietary information for the closed session of the meeting. Enclosure 2 information will be submitted separately from this letter. HDI requests that Enclosure 2 be withheld from public disclosure in accordance with 10 CFR 2.390 and an Affidavit is also included with this letter as Enclosure 3.

If you have any questions or require any additional information, please contact Jim Miksa, Manager of Regulatory Assurance, Palisades Nuclear Plant at (269)764-2945.

Respectfully,

Jean A. Fleming

Digitally signed by Jean A. Fleming
Date: 2024.05.09 08:56:50 -04'00'

Jean A. Fleming
Vice President of Licensing and Regulatory Affairs
Holtec International

Enclosure(s):

1. Pre-Submittal Meeting Presentation - Palisades Nuclear Plant License Amendment Request to Approve the Biasi Critical Heat Flux (CHF) Correlation for Use with the Palisades Main Steam Line Break (MSLB) Analysis – (Non-Proprietary Information)

2. Pre-Submittal Meeting Presentation (closed session) - Palisades Nuclear Plant License Amendment Request to Approve the Biasi Critical Heat Flux (CHF) Correlation for Use with the Palisades Main Steam Line Break (MSLB) Analysis – (Proprietary Information – Withhold Under 10 CFR 2.390)

3. Framatome, Inc. Affidavit Supporting Withholding of Proprietary Information in accordance with 10 CFR 2.390

cc: NRC Region III Regional Administrator
NRC Decommissioning Inspector – PNP
NRC Project Manager PNP
Designated Michigan State Official

**Enclosure 1**

**HDI PNP 2024-023**

**Pre-Submittal Meeting Presentation - Palisades Nuclear Plant License Amendment Request to Approve the Biasi Critical Heat Flux (CHF) Correlation for Use with the Palisades Main Steam Line Break (MSLB) Analysis – (Non-Proprietary Information)**

20 Pages Follow

www.holtec.com

HOLTEC
INTERNATIONAL

# Pre-Submittal Meeting

## Palisades Nuclear Plant

## License Amendment Request to Approve the Biasi Critical Heat Flux (CHF) Correlation for Use with the Palisades Main Steam Line Break (MSLB) Analysis

May 15, 2024

# Meeting Agenda

HOLTEC INTERNATIONAL

- Introductions
- Purpose & Outcome
- Background
- License Amendment Request (LAR) Content
  - Reason for Proposed Change
  - Description of Proposed Change
  - Power Operations Licensing Basis (POLB) Impacted Documents
  - Technical Considerations
  - Precedent
  - No Significant Hazards Consideration
  - Environmental Assessment
- Schedule
- Questions

# Introductions

- U.S Nuclear Regulatory Committee (NRC) Staff
- Holtec Decommissioning International, LLC (HDI)
  - Jean Fleming – Holtec International, Vice President of Licensing and Regulatory Affairs
  - Jim Miksa – HDI, Regulatory Assurance Manager for Palisades
  - Gregg Baustian – HDI, Licensing Engineer
- Framatome
  - Morris Byram – Framatome Licensing and Regulatory Affairs
  - Mihnea Anghelescu - Framatome

# Purpose & Outcome

HOLTEC INTERNATIONAL

- Purpose:
  - Present proposed change to the Palisades Nuclear Plant (PNP) operating license basis
    - Adopt Topical Report titled EMF-2310 (P)(A), Revision 1, Supplement 2P-A, Revision 0, "SRP Chapter 15 Non-Loss of Coolant Accident Methodology for Pressurized Water Reactors" (ML23109A086 April 10, 2023 )
    - Referred to as EMF-2310 Supplement 2 going forward
- Outcome:
  - Solicit NRC Staff questions and comments ahead of submittal
  - Provide schedule information to support NRC resource allocation

# Background

HOLTEC INTERNATIONAL

- PNP Main Steam Line Break (MSLB) Design Basis Accident (DBA) is described in Palisades Updated Final Safety Analysis Report (UFSAR) Chapter 14.14, Revision 35 (ML21125A285)
  - Aligns with Standard Review Plan (SRP) Event 15.1.5
- PNP MSLB analysis performed in accordance with Framatome non-LOCA Transient / Steam Line Break methodology
  - EMF-2310 (P)(A), Revision 1, "SRP Chapter 15 Non-LOCA Methodology for Pressurized Water Reactors," Framatome ANP, May 2004 (ML041810031 June 17, 2004)
  - Referred to as EMF-2310 going forward
- Framatome notified PNP of a deviation associated with Critical Heat Flux (CHF) correlations utilized on MSLB analyses prior to PNP permanent shutdown for decommissioning
- Framatome determined Modified Barnett CHF correlation and associated limit non-conservatively predicting DNB for some MSLB cases analyzed
  - Calvert Cliffs 1 & 2, Millstone, St. Lucie 1 & 2 and PNP affected
  - All affected plants utilized Combustion Engineering (CE) designed fuel

# Background

HOLTEC INTERNATIONAL

- Existing CHF correlation limit was non-conservative for Palisades High Thermal Performance (HTP) spacer grid fuel
- MSLB reanalyzed with New Biasi CHF correlation limit as an alternative option
  - Biasi CHF correlation is an approved correlation in EMF-2310
- Revised MSLB analysis completed but not fully incorporated into PNP licensing basis prior to Plant shutdown at end of Fuel Cycle 28, May 2022
- Framatome requests review and approval of topical report EMF-2310 Supplement 2 (ML22060A118 February 24, 2022)
  - Provides a justification for the use of a design limit for the Biasi Critical Heat Flux (CHF) correlation suitable for application to High Thermal Performance (HTP) and High Mechanical Performance (HMP) grids in Framatome PWR methodologies
  - PNP not included in topical report based on plans that PNP would permanently cease power operation

# Background

- PNP Docketed 10 CFR 50.82(a)(1) Certifications, Permanent Cessation Power Operations, Permanent Removal of Fuel from Reactor Vessel

  (ML22164A067 June 13, 2022)

  - Palisades had stopped work towards incorporation of Biasi CHF correlation into PNP licensing basis

- NRC approves topical report EMF-2310 Supplement 2

  (ML23023A116 February 9, 2023)

- NRC holds a public meeting for Holtec to present a proposed regulatory framework for return of PNP to power operations (May 24, 2023)

# Background

- PNP Staff engage with Framatome to complete resolution of MSLB CHF Correlation Deviation (October 2023)

- Framatome provides Technical Report ANP-4083 Revision 0, "Applicability of Biasi Critical Heat Flux Correlation to Palisades Fuel" January 2024
  - Referred to as ANP-4083 going forward
  - Justification for extension of topical report EMF-2310 Supplement 2 to PNP
  - Extends the applicability of an HTP design limit for the Biasi CHF correlation for use in safety analyses of Palisades HTP Combustion Engineering (CE) design 15 x 15 fuel
  - The revised range of applicability is based on the HTP CHF test database
  - Application of Biasi limited to post-scram MSLB transients

# LAR Content

HOLTEC INTERNATIONAL

- Detailed Description of the Proposed Change
- Technical Evaluation of the Proposed Change
- Regulatory Evaluation
  - Applicable Regulatory Requirements
  - Precedent
  - No Significant Hazards Consideration
- Environmental Evaluation
- Technical Report ANP-4083
  - Proprietary Version of Document
  - Affidavit for withholding Proprietary Information
  - Non-proprietary Version of Document

# Reason for Proposed Change

- Obtain NRC Staff approval to incorporate the Biasi Critical Heat Flux (CHF) correlation methodology EMF-2310 Supplement 2 into PNP MSLB post-scram licensing basis
  - Technical Report ANP-4083 provides justification

- Supports restart of PNP for Fuel Cycle 29 (Fall 2025)

# Description of Proposed Change

HOLTEC INTERNATIONAL

- Following NRC approval of this amendment, incorporate EMF-2310 Supplement 2 into the list of analytical methods in the core operating limits Report (COLR)

- Revise PNP UFSAR Chapter 14.14 MSLB analysis to include newly approved Biasi methodology
  - EMF-2310 Supplement 2
  - Technical Report ANP-4083

- PNP Technical Specification 5.6.5 list of methods includes EMF-2310 and allows for future NRC approved revisions to be listed in the COLR

# POLB Impacted Documents

- Core Operating Limits Report (COLR) Revision 20 (ML19045A279 February 14, 2019)
  - Most recent version prior to the 10 CFR 50.82(a)(1) decommissioning certifications
  - Will be basis for COLR revisions resulting from this LAR
- UFSAR will be restored to Revision 35 (ML21125A285)
  - Last docketed power operations version of the UFSAR that was in effect prior to the 10 CFR 50.82(a)(1) decommissioning certifications
  - Will be the version of the PNP Power Operations UFSAR Chapter 14.14, MSLB analysis description and references, revised as a result of this LAR

POLB = Power Operations Licensing Basis

# Technical Considerations

HOLTEC INTERNATIONAL

- Applicable Accident and Transient Analyses
  - UFSAR Chapter 14.14 Revision 35 post-scram MSLB analysis
- Evaluation of the Proposed Change
  - The same CHF test data for developing the HTP DNB correlation (currently part of PNP licensing basis) was used in the Biasi design limit development
  - All Limitations and Conditions specified in the EMF-2310 Supplement 2 Safety Evaluation Report (SER), with one exception, are applicable to the Palisades plant
    - Exception is the guide tube outer diameter range since PNP 15x15 fuel does not have guide tubes
    - PNP fuel design includes guide bars on the fuel assembly periphery which is a non-limiting location for DNB
  - PNP Combustion Engineering (CE) design 15 x 15 HTP fuel meets all applicable requirements imposed by the EMF-2310 Supplement 2 SER
- Applicable Regulations
  - 10 CFR 50, Appendix A, "General Design Criteria for Nuclear Power Plants"
    - Criterion 10 – Reactor Design

# Precedent

- EMF-2310 Supplement 2 has been approved for use in similar plants for the same intended application
  - Calvert Cliffs Units 1&2 (CE 14x14)
  - Millstone Unit 2 (CE 14x14)
  - St Lucie Unit 1 (CE 14x14)
  - St Lucie Unit 2 (CE 16x16)

- Palisades fuel is a CE 15x15 design

# No Significant Hazards Consideration

- No significant increase in the probability or consequences of an accident
  - No design changes
  - No change to accident initiators or precursors
  - Accident analysis acceptance criteria will continue to be met

- No new or different kind of accident
  - No change to operational parameters
  - No physical plant modification
  - No new accident scenarios, transient precursors or failure mechanisms

- No reduction in margin of safety
  - Margin of safety unaffected since MSLB analysis predicts no fuel failures
  - No effect on plant systems

# Environmental Assessment

HOLTEC INTERNATIONAL

- 10 CFR 51.22(c)(9) Categorical Exclusion
- No Significant Hazards Consideration
  - No significant increase in the probability or consequences of an accident
  - No new or different kind of accident
  - No reduction in margin of safety
- No significant change in the types or significant increase in the amounts of any effluents that may be released offsite
  - No physical plant changes
- No significant increase in individual or cumulative public or occupational dose
  - Does not affect plant radiation zones
  - Does not adversely impact radiologically controlled zones

# Schedule

| Title | Submit | Request Approval | Effective |
|---|---|---|---|
| Exemption | Sep 2023 | Dec 2024 | Aug 2025 |
| License Transfer | Dec 2023 | Jan 2025 | Aug 2025 |
| Power Ops Tech Specs | Dec 2023 | Jan 2025 | Aug 2025 |
| Power Ops Admin Tech Specs | Feb 2024 | Mar 2025 | Aug 2025 |
| 10 CFR 50.82(a)(7) - Post-Shutdown Decommissioning Activities Report (PSDAR) | Apr 2024 | N/A | Apr 2024 |
| Notification of Intent to Pursue Subsequent License Renewal | Apr 2024 | N/A | N/A |
| Emergency Plan – Power Ops | May 2024 | May 2025 | Aug 2025 |

Transition Date - Palisades Transitions from Facility in Decommissioning to Power Operations Plant

# Schedule - Continued

| Title | Submit | Request Approval | Effective |
|---|---|---|---|
| Biasi CHF Correlation Limit | May 2024 | June 2025 | Aug 2025 |
| Supplement to License Transfer Application - Power Operations Quality Assurance Plan | May 2024 | Jan 2025 | Aug 2025 |
| Supplement Power Ops Tech Specs to docket Physical Security Plan for Power Operations | June 2024 | Jan 2025 | Aug 2025 |
| Notification of Readiness to Transition - POLB | Jul 2025 | N/A | N/A |
| Notification of Transition – POLB | Aug 2025 | N/A | Aug 2025 |

Transition Date - Palisades Transitions from Facility in Decommissioning to Power Operations Plant

# Questions

- NRC Staff Questions or Comments?

# Thank You

HOLTEC INTERNATIONAL

Krishna P. Singh Technology Campus
1 Holtec Boulevard
Camden, NJ 08104

Tel: (856) 797-0900
www.holtec.com

**Enclosure 2**

**HDI PNP 2024-023**

**Pre-Submittal Meeting Presentation - Palisades Nuclear Plant License Amendment Request to Approve the Biasi Critical Heat Flux (CHF) Correlation for Use with the Palisades Main Steam Line Break (MSLB) Analysis -**

**(Proprietary Information – Withhold Under 10 CFR 2.390)**

4 Pages Follow

**Enclosure 3**

**HDI PNP 2024-023**

**Framatome, Inc. Affidavit Supporting Withholding of Proprietary Information in accordance with 10 CFR 2.390**

3 Pages Follow

# AFFIDAVIT

1. My name is Morris Byram. I am Manager, Licensing & Regulatory Affairs for Framatome Inc. (Framatome) and as such I am authorized to execute this Affidavit.

2. I am familiar with the criteria applied by Framatome to determine whether certain Framatome information is proprietary. I am familiar with the policies established by Framatome to ensure the proper application of these criteria.

3. I am familiar with the Framatome information contained in the slides in Enclosure 2 to HDI PNP Letter entitled, "Pre-Submittal Meeting Presentation – Palisades Nuclear Plant License Amendment Request to Approve the Biasi Critical Heat Flux (CHF) Correlation for Use with the Palisades Main Steam Line Break (MSLB) Analysis," dated May, 9 2024, and referred to herein as "Document." Information contained in this Document has been classified by Framatome as proprietary in accordance with the policies established by Framatome for the control and protection of proprietary and confidential information.

4. This Document contains information of a proprietary and confidential nature and is of the type customarily held in confidence by Framatome and not made available to the public. Based on my experience, I am aware that other companies regard information of the kind contained in this Document as proprietary and confidential.

5. This Document has been made available to the U.S. Nuclear Regulatory Commission in confidence with the request that the information contained in this Document be withheld from public disclosure. The request for withholding of proprietary information is made in accordance with 10 CFR 2.390. The information for which withholding from disclosure is

requested qualifies under 10 CFR 2.390(a)(4) "Trade secrets and commercial or financial information."

6. The following criteria are customarily applied by Framatome to determine whether information should be classified as proprietary:

(a) The information reveals details of Framatome's research and development plans and programs or their results.

(b) Use of the information by a competitor would permit the competitor to significantly reduce its expenditures, in time or resources, to design, produce, or market a similar product or service.

(c) The information includes test data or analytical techniques concerning a process, methodology, or component, the application of which results in a competitive advantage for Framatome.

(d) The information reveals certain distinguishing aspects of a process, methodology, or component, the exclusive use of which provides a competitive advantage for Framatome in product optimization or marketability.

(e) The information is vital to a competitive advantage held by Framatome, would be helpful to competitors to Framatome, and would likely cause substantial harm to the competitive position of Framatome.

The information in this Document is considered proprietary for the reasons set forth in paragraph 6(d) and 6(e) above.

7. In accordance with Framatome's policies governing the protection and control of information, proprietary information contained in this Document has been made available, on a limited basis, to others outside Framatome only as required and under suitable agreement providing for nondisclosure and limited use of the information.

8. Framatome policy requires that proprietary information be kept in a secured file or area and distributed on a need-to-know basis.

9. The foregoing statements are true and correct to the best of my knowledge, information, and belief.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on: (5/7/2024)

BYRAM Morris Digitally signed by BYRAM Morris
Date: 2024.05.07 17:04:47 -07'00'

(NAME)
morris.byram@framatome.com