UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BLVD.
KING OF PRUSSIA, PA 19406-2713

July 7, 2016

Mr. John Dent
Site Vice President
Entergy Nuclear Operations, Inc.
600 Rocky Hill Road
Plymouth, MA 02360-5508

SUBJECT: PILGRIM NUCLEAR POWER STATION – TEMPORARY INSTRUCTION 2515/191 INSPECTION REPORT 05000293/2016013

Dear Mr. Dent:

On May 26, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Pilgrim Nuclear Power Station (PNPS). The enclosed report documents the inspection results, which were discussed on May 26, 2016, with you and other members of your staff.

The inspection examined activities conducted under your license as they relate to the implementation of mitigation strategies and spent fuel pool instrumentation orders (EA-12-049 and EA-12-051) and Emergency Preparedness Communication/Staffing/Multi-Unit Dose Assessment Plans, your compliance with the Commission's rules and regulations, and with the conditions of your operating license. Within these areas, the inspection involved examination of selected procedures and records, observation of activities, and interviews with plant personnel. Based on the results of this inspection, no violations of NRC requirements were identified.

In accordance with Title 10 of the *Code of Federal Regulations* 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of the NRC's Agencywide Documents Access and Management System (ADAMS).

ADAMS is accessible from the NRC Web site at http://www.nrc.gov/readingrm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Marc S. Ferdas, Chief
Technical Support and Assessment Branch
Division of Reactor Projects

Docket No. 50-293
License No. DPR-35

Enclosure:
Inspection Report 05000293/2016013
w/Attachment: Supplementary Information

cc w/encl: Distribution via ListServ

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.	50-293
License No.	DPR-35
Report No.	05000293/2016013
Licensee:	Entergy Nuclear Operations, Inc. (Entergy)
Facility:	Pilgrim Nuclear Power Station
Location:	600 Rocky Hill Road Plymouth, MA 02360
Dates:	May 23 – May 26, 2016
Inspectors:	W. Cook, Senior Reactor Analyst, Division of Reactor Safety (DRS) E. Carfang, Senior Resident Inspector, Pilgrim T. Dunn, Operations Engineer, DRS B. Pinson, Resident Inspector, Pilgrim C. Cahill, Senior Reactor Analyst, DRS (Observer) M. Brown, Chief, Orders Management Branch, Japan Lessons-Learned Division, Office of Nuclear Reactor Regulations, (Observer) D. Jackson, Chief, Operations Branch, DRS (Observer)
Approved by:	Marc S. Ferdas, Chief Technical Support and Assessment Branch Division of Reactor Projects

SUMMARY OF FINDINGS

Inspection Report 05000293/2016013; 05/23/2016 – 05/26/2016; Pilgrim Nuclear Power Station (PNPS); Temporary Instruction (TI) 2515/191, Inspection of the Implementation of Mitigation Strategies and Spent Fuel Pool Instrumentation Orders and Emergency Preparedness Communication/Staffing/Multi-Unit Dose Assessment Plans.

The inspection covered a one week inspection by a senior reactor analyst, an operations engineer, a senior resident inspector, and a resident inspector. No findings were identified. The U.S. Nuclear Regulatory Commission's (NRC's) program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5.

REPORT DETAILS

4. OTHER ACTIVITIES

4OA5 Other Activities

TI 2515/191 – Inspection of the Implementation of Mitigation Strategies and Spent Fuel Pool Instrumentation Orders and Emergency Preparedness Communication/Staffing/Multi-Unit Dose Assessment Plans

The objective of TI 2515/191, "Inspection of the Implementation of Mitigation Strategies and Spent Fuel Pool Instrumentation Orders and Emergency Preparedness Communication/Staffing/Multi-Unit Dose Assessment Plans," is to verify: (1) that licensees have adequately implemented the mitigation strategies as described in the licensee's Final Integrated Plan (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15202A415) and the NRC's plant safety evaluation (ADAMS Accession No. ML16008B077); (2) that licensees have installed reliable water-level measurement instrumentation in their spent fuel pools (SFPs); and (3) that licensees have implemented emergency preparedness enhancements as described in their site-specific submittals and NRC safety assessments, including dose assessment capability, enhancements to ensure that staffing is sufficient, and that communications can be maintained during beyond-design-basis external events.

The team verified that plans for complying with NRC Orders EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design Basis External Events," (ADAMS Accession No. ML12054A735) and EA-12-051, "Order Modifying Licenses With Regard to Reliable Spent Fuel Pool Instrumentation," (ADAMS Accession No. ML12056A044) were in place and were being implemented by Entergy. The team also verified that Entergy had implemented staffing and communication plans provided in response to the March 12, 2012, request for information letter and multi-unit dose assessment information provided per COMSECY-13-0010, "Schedule and Plans for Tier 2 Order on Emergency Preparedness for Japan Lessons Learned," dated March 27, 2013 (ADAMS Accession No. ML12339A262).

The team discussed the plans and strategies with Entergy personnel, reviewed documentation, completed a tabletop exercise involving a beyond-design-basis event leading to an extended loss of offsite power and, where appropriate, performed plant walk downs to verify that the strategies could be implemented as stated in Entergy's submittals and the NRC staff prepared safety evaluation. For most strategies, this included verification that the strategy was feasible, procedures and/or guidance had been developed, training had been provided to plant staff, and required equipment had been identified and staged. Specific details of the team's inspection activities are described in the following sections. Documents reviewed for each section of this report are listed in the Attachment.

1. Mitigation Strategies for Beyond-Design-Basis External Events

a. Inspection Scope

The team examined Entergy's established guidelines and implementing procedures for the beyond-design-basis mitigation strategies. The team assessed how the Entergy staff coordinated and documented the interface/transition between existing off-normal and emergency operating procedures at PNPS with the newly developed mitigation strategies. The team selected a number of mitigation strategies and conducted plant walk downs with licensed operators and responsible plant staff to assess: the adequacy and completeness of the procedures; familiarity of operators with the procedure objectives and specific guidance; staging and compatibility of equipment; and the practicality of the operator actions prescribed by the procedures, consistent with the postulated scenarios.

The team verified that a preventive maintenance program had been established for the Diverse and Flexible Coping Strategies (FLEX) portable equipment, and that periodic equipment inventories were in place and being conducted. Additionally, the team examined the introductory and planned periodic/refresher training provided to the Operations and PNPS staff most likely to be tasked with implementation of the FLEX mitigation strategies. The team also reviewed the introductory and planned periodic training provided to the Emergency Response Organization personnel.

b. Assessment

Based on samples selected for review, the team verified that Entergy satisfactorily implemented appropriate elements of the FLEX strategy as described in the plant specific submittals and the associated safety evaluation. The team determined that Entergy was in compliance with NRC Order EA-12-049.

The team verified that Entergy satisfactorily:

- Developed and issued FLEX Support Guidelines (FSGs) to implement the FLEX strategies for postulated external events;
- Integrated their FSGs into their existing emergency operating procedures and off-normal procedures such that entry into and departure from the FSGs were clear when using existing plant procedures;
- Protected FLEX equipment from site-specific hazards;
- Developed and implemented adequate testing and maintenance of FLEX equipment to ensure their availability and capability;
- Trained their staff to ensure personnel proficiency in the mitigation of beyond-design-basis events; and
- Developed procedures to ensure that the necessary off-site FLEX equipment would be available from off-site locations.

The team verified that observations made during the inspection were entered into Entergy's corrective action program.

c. Findings

No findings were identified.

2. Spent Fuel Pool Instrumentation

a. Inspection Scope

The team examined PNPS's newly installed SFP instrumentation. Specifically, the team verified the sensors were installed as described in the plant specific submittals and the associated safety evaluation, and that the cabling for the power supplies and the indications for each channel were physically and electrically separated. In addition, the team verified that Entergy had evaluated the environmental conditions and accessibility of the instrumentation.

The team verified that Entergy had approved procedures for maintenance, testing, calibration, and use of the primary and backup SFP instrumentation channels. The team also verified that the procedures followed the industry guidance contained in Nuclear Energy Institute 12-02, "Industry Guidance for Compliance with NRC Order EA-12-051, "To Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," and that these procedures were part of an existing Entergy process to be maintained.

b. Assessment

Based on samples selected for review, the team determined that Entergy satisfactorily installed and established appropriate operating and maintenance controls for the SFP instrumentation as described in the plant specific submittals and the associated safety evaluation. The team determined that Entergy was in compliance with NRC Order EA-12-051.

The team verified that Entergy satisfactorily:

- Installed the SFP instrumentation sensors, cabling, and power supplies to provide physical and electrical separation as described in the plant specific submittals and safety evaluation;
- Installed the SFP instrumentation display in the accessible location, and environmental conditions as described in the plant specific submittals;
- Trained their staff to ensure personnel proficiency with the maintenance, testing, and use of the SFP instrumentation; and
- Developed and issued procedures for maintenance, testing, and use of the reliable SFP instrumentation.

The team verified that observations made during the inspection were entered into Entergy's corrective action program.

c. Findings

No findings were identified.

3. Staffing and Communication Request for Information

a. Inspection Scope

Through discussions with plant staff, review of documentation, and plant walk downs, the team verified that Entergy had implemented required changes to staffing, communications equipment, and facilities to support an extended loss of all AC power (ELAP) scenario as described in Entergy's staffing assessment and the NRC safety evaluation. The team also verified that Entergy had implemented dose assessment (including releases from SFPs) capability using site-specific dose assessment software, as described in Entergy's dose assessment submittal.

b. Assessment

The team reviewed information provided in Entergy's dose assessment submittal and in response to the NRC's March 12, 2012, request for information letter (ADAMS Accession No. ML12053A340), and verified that Entergy satisfactorily implemented enhancements pertaining to Near-Term Task Force Recommendation 9.3, response to a large scale natural emergency event that results in an ELAP and impedes access to the site.

The team verified the following:

- Entergy satisfactorily implemented required staffing changes to support an ELAP scenario;
- Emergency preparedness communications equipment and facilities were sufficient for dealing with an ELAP scenario; and
- Entergy implemented dose assessment capabilities (including releases from SFPs) using PNPS's site-specific dose assessment software and approach.

The team verified that observations identified during the inspection were entered into Entergy's corrective action program.

c. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On May 26, 2016, the team presented the inspection results to Mr. John Dent, Site Vice President, and other members of the PNPS staff. The team verified that no proprietary information was retained by team members or documented in this report.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Licensee personnel:
P. Benbort, Security Manager
J. Bonner, Fukushima Project Engineer
R. Byrne, Regulatory Assurance
D. Calabrese, Emergency Preparedness Manager
B. Chenard, Engineering
F. Clifford, Operations Assistant Manager
J. Dent, Site Vice President
J. Edelhauser, Fukushima Project
G. Flynn, Operations Manager
R. German, Nuclear Plant Operator
W. Hendy, Training Instructor
M. Jacobs, NIOS Manager
K. Jenks, Fukushima Project Manager
J. Macdonald, General Manager Plant Operations
D. Noyes, Recovery Director
J. Parmenter, Emergency Preparedness Senior Planner
E. Perkins, Regulatory Assurance Manager
B. Rancourt, Design Engineering
M. Romeo, RAPID
E. Skorupski, Maintenance Manager
W. Townes, FLEX Marshal, Palisades Operations Department
G. Vonderesch, Recovery Manager

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

Opened and Closed

None

Discussed

None

LIST OF DOCUMENTS REVIEWED

Procedures
5.3.26, RPV Injection During Emergencies, Revision 29
5.3.31, Station Blackout, Revision 21
5.3.36, Extensive Damage Mitigation Guidelines (EDMG) Support Procedures and Strategies, Revision 11
5.9.1, Extended Loss of AC Power (ELAP), Revision 1
5.9.2, (FSG-1) Alternate Reactor Vessel Cooling, Revision 1

5.9.2.1, FLEX Low Pressure Injection – Pre-Staged Equip (5.2. Use as 1st option if pre-staged)
5.9.2.2, FLEX Low Pressure Injection – CST through Fire Water X-Tie Injection Point to RPV, Revision 2
5.9.2.3, FLEX Low Pressure Injection – FRAC Tank to RPV, Revision 3
5.9.2.4, FLEX Low Pressure Injection – Seawater through CST Injection Point to RPV, Revision 1
5.9.2.5, FLEX Low Pressure Injection – Seawater through Fire Water X-Tie Injection Point to RPV, Revision 1
5.9.4, DC Bus Load Shed & Repower Battery Chargers and Safeguards Panels (FSG-4)
5.9.4.1, DC Load Shedding, Revision 2
5.9.4.2, Repower Battery Chargers D11, D12, D13, D14 and D15, Revision 1
5.9.4.3, Repower Safeguard Panels Y3/Y31, Y4/Y41, Y13 and Y14
5.9.5, Initial Assessment and FLEX Equipment Staging (FSG-5), Revision 2
5.9.5.1, Debris Removal from Deployment Pathways, Revision 2
5.9.5.2, Retrieval and Staging of FLEX Equipment, Revision 2
5.9.5.3, Refuel Diesel Engines, Revision 1
5.9.7, Alternate Spent Fuel Pool Makeup and Cooling (FSG-11), Revision 2
5.9.7.1, Secondary Containment Ventilation, Revision 1
5.9.7.2, Spent Fuel Pool Makeup Using Sandpiper, Revision 2
5.9.7.3, Spent Fuel Pool Makeup through Fire Water X-Tie to RHR/SSW X-Tie
5.9.8, Alternate Containment Cooling and Hydrogen Control (FSG-12), Revision 2
5.9.8.1, Emergency Primary Containment Venting, Revision 1
5.9.8.2, Direct Torus Vent Condensate Removal
5.9.8.3, Backup Nitrogen to Open AO-5025 and AO-5042B, Revision 0
5.9.8.4, Main Stack Condensate Removal and Alternate Vent Path
5.9.9, Transition from FLEX Equipment (FSG-13), Revision 1
5.9.10, BDBEE/ELAP Emergency Response (FSG-100)
5.9.11, BDBEE Communications (FSG-101)
5.9.12, SAFER National Center Equipment Utilization
EOP-01, RPV Control, Revision 14
EOP-02, RPV Control, Failure-To-Scram, Revision 14
EOP-03, Primary Containment Control, Revision 11
EOP-11, Figures, Cautions and Icons, Revision 6
EOP-16, RPV Flooding, Revision 7
EOP-17, Emergency RPV Depressurization, Revision 6
EOP-18, Steam Cooling, Revision 3
EOP-26, RPV Flooding, Failure-To-Scram, Revision 8
EOP-27, Emergency RPV Depressurization, Failure-To-Scram, Revision 5
8.E.19, Fuel Pool and Skimmer Surge Tank Instruments – Critical Maintenance, Revision 40
2.1.49, FLEX Equipment Prestaging Prior to Reactor Head De-tensioning and Re-tensioning" Revision 1
2.2.17, Communications Systems, Revision 43
2.2.85, Fuel Pool Cooling and Filtering System, Revision 94
SEP-PNPS-IST-006, Administration of Non-Code Class Pressure Relief Device Test Program to meet 10CFR50 Appendix B Criterion, Revision 2
8.E.19, Spent Fuel Pool Level Instrument Channel Functional Test, Revision 39
2.1.35, Control Room Readings, Revision 58
EN-OP-201-06, Pilgrim Nuclear Power Station FLEX Program Document, Revision 0
Air Operated S1F Metallic Design Level 1 Ball Valve Sandpiper Double Diaphragm Pump Manufacturer Data Manual, Revision 0508
EN-OP-201-06, Pilgrim Nuclear Power Station FLEX Program Document, Revision 0.

PLP-NS-FLEXINTRO, Training Material for Introduction to Flex Mitigation Strategies, Revision 0
PLP-EP-FLEXINTRO, Training Material for Introduction to Flex Mitigation Strategies, Revision 2
O-RO-03-04-14, Simulator Scenario #1, Extended Loss of AC Power (ELAP), Revision 0
O-RQ-06-02-98 (03), Simulator Scenario #3, Earthquake, Loss of Off-Site Power, A5 Bus Lockout, Torus Leak, Direct Torus Vent, Loss Level Indication, Revision 1
O-RQ-04-01-206, Training Material for FLEX Modification Overview, Revision 2
O-RQ-04-01-210, Training Material for EOP Revision 3 Changes, Revision 1
O-RQ-04-01-232, Training Material for PNPS Flex Mitigation Strategies, Revision 0
O-RQ-04-01-236, Training Material for Extended Loss of AC Power (ELAP), Revision 0
O-RQ-04-01-232, PNPS Flex Mitigation Strategies, Training Attendance Records
O-RO-03-04-14, PNPS Flex ELAP Simulator Scenario, Training Attendance Records
O-RQ-04-01-206, FLEX Modification Overview, Training Attendance Records
O-RQ-04-01-210, EOP Revision 3 Changes, Training Attendance Records
O-RQ-06-02-98(03), EOP Revision 3 FLEX/ELAP Scenario, Training Attendance Records
PLP-NLO-46, FLEX Case Wheel Loader 1121F, Training Attendance Records

Drawings

Drawing No. E304, Rev. 6, Conduit & Cable Tray Layout; Reactor Building – Area 1 & 3, Elevation 117'-0"
FLEX-05

Calculations

Calculation No. M1411, Temperature Response of Key Rooms During an ELAP Event, Revision 0

Engineering Changes

Engineering Change (EC) 45088
EC 45566 Attachment 6.001, Hose Length Evaluation, dated 11/1/2013
EC 55678 Calculation No. M1411, Temperature Response of Key Rooms during an ELAP Event, dated 3/26/15

Work Orders

00408542	00407421	00403338	00403353	00403357
00403334	00410890	52690199	00408538	00408526
00408530	51542829	51542428	00444317	00407400
00407365	00407638	00407657	00409150	00409147

Other

Report No. PNPS-RPT-13-00004, MOHR EFP-IL SFPI System Battery Life Report, Revision 0
Report No. PNPS-RPT-13-00006, MOHR EFP-IL SFPI System Supplemental EMC Information, Revision 0
PNPS – Safety Evaluation Regarding Implementation of Mitigating Strategies and Reliable Spent Fuel Pool Instrumentation Related to Orders EA-12-049 and EA-12-051 (TAC Nos. MF0777 and MF0778) (ML16008B077)
Entergy Nuclear Operations, Inc. Letter Dated July 17, 2015, PNPS's Notification of Full Compliance with Order EA-12-049 and the Final Integrated Plan (ML15202A536)

Conditions Reports

2016-2737	2016-1646	2016-3385	2016-2039	2016-1838
2016-1846	2016-1415	2016-3504	2015-9724	2015-0261
2016-0164	2016-2613	2016-3730*	2016-3736*	2016-3737*

2016-3739* 2016-3746* 2016-3747* 2016-3749* 2016-3750*
2016-3753* 2016-3755* 2016-3657* 2016-3760* 2016-3763*
2016-3764*
(*indicates that Condition Report was generated as a result of this inspection)

LIST OF ACRONYMS

ADAMS	Agencywide Document Access and Management System
DRS	Division of Reactor Safety
ELAP	extended loss of all AC power
FLEX	Diverse and Flexible Coping Strategies
FSG	FLEX Support Guidelines
NRC	Nuclear Regulatory Commission, U.S.
SFP	spent fuel pool
TI	temporary instruction