



Entergy Nuclear Northeast
Indian Point Energy Center
450 Broadway, GSB
P.O. Box 249
Buchanan, NY 10511-0249
Tel 914 254 6700

Lawrence Coyle
Site Vice President

NL-15-026

February 27, 2015

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
11555 Rockville Pike, OWFN-2FL
Rockville, MD 20852-2738

SUBJECT: Indian Point Energy Center's Fourth Six-Month Status Report for the Implementation of Order EA-12-051 Modifying Licenses with Regard to Requirements for Reliable Spent Fuel Pool Instrumentation (TAC Nos. MF0737 and MF0738)
Indian Point Unit Numbers 2 and 3
Docket Nos. 50-247 and 50-286
License Nos. DPR-26 and DPR-64

- References:**
1. NRC Order Number EA-12-051, Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation, dated March 12, 2012 (ML12054A682)
 2. NRC Interim Staff Guidance JLD-ISG-2012-03, Compliance with Order EA-12-051, Reliable Spent Fuel Pool Instrumentation, Revision 0, dated August 29, 2012
 3. NEI 12-02, Industry Guidance for Compliance with NRC Order EA-12-051, "To Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation", Revision 1, dated August 2012
 4. Entergy letter to NRC (NL-12-145), Initial Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051), dated October 29, 2012
 5. Entergy letter to NRC (NL-13-043), Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation, dated February 27, 2013

A001
NRC

6. Entergy letter to NRC (NL-13-109), Indian Point Energy Center's First Six-Month Status Report for the Implementation of Order EA-12-051 Modifying Licenses with Regard to Requirements for to Reliable Spent Fuel Pool Instrumentation (TAC Nos. MF0737 and MF0738), dated August 27, 2013
7. Entergy letter to NRC (NL-14-029), Indian Point Energy Center's Second Six-Month Status Report for the Implementation of Order EA-12-051 Modifying Licenses with Regard to Requirements for to Reliable Spent Fuel Pool Instrumentation (TAC Nos. MF0737 and MF0738), dated February 27, 2014
8. Entergy letter to NRC (NL-14-109), Indian Point Energy Center's Third Six-Month Status Report for the Implementation of Order EA-12-051 Modifying Licenses with Regard to Requirements for to Reliable Spent Fuel Pool Instrumentation (TAC Nos. MF0737 and MF0738), dated August 27, 2014

Dear Sir or Madam:

On March 12, 2012, the Nuclear Regulatory Commission ("NRC" or "Commission") issued an order (Reference 1) to Entergy. Reference 1 was immediately effective and directed Entergy to install reliable spent fuel pool level instrumentation. Specific requirements are outlined in Attachment 2 of Reference 1.

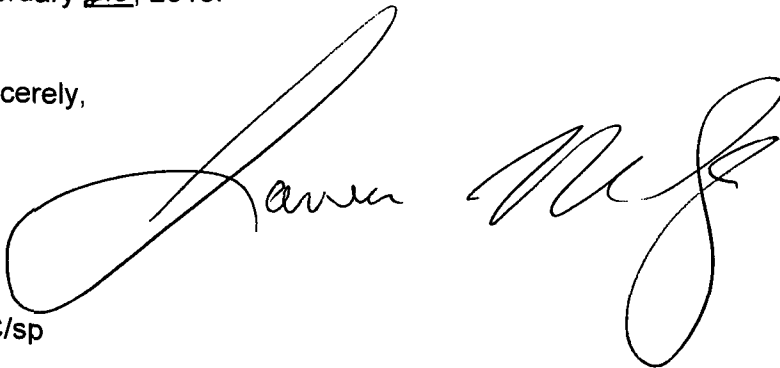
Reference 1 required submission of an initial status report 60 days following issuance of the final interim staff guidance (Reference 2) and an overall integrated plan pursuant to Section IV, Condition C. Reference 2 endorses industry guidance document NEI 12-02, Revision 1 (Reference 3) with clarifications and exceptions identified in Reference 2. Reference 4 provided the Entergy initial status report regarding spent fuel pool instrumentation. Reference 5 provided the Entergy overall integrated plan.

Reference 1 requires submission of a status report at six-month intervals following submittal of the overall integrated plan. Reference 3 provides direction regarding the content of the status reports. The purpose of this letter is to provide the fourth six-month status report pursuant to Section IV, Condition C.2, of Reference 1, that delineates progress made in implementing the requirements of Reference 1. The attached report provides an update of milestone accomplishments since the last status report (Reference 8), including any changes to the compliance method, schedule, or need for relief and the basis, if any.

There are no new commitments identified in this submittal. If you have any questions concerning the content of this letter, please contact Mr. Robert Walpole, Manager, Regulatory Assurance at (914) 254-6710.

I declare under penalty of perjury that the foregoing is true and correct. Executed on
February 26, 2015.

Sincerely,


LC/sp

Attachment: Indian Point Energy Center's Fourth Six-Month Status Report for the
Implementation of Order EA-12-051 Modifying Licenses with Regard to
Requirements for Reliable Spent Fuel Pool Instrumentation

cc: Mr. Douglas V. Pickett, Senior Project Manager, NRC NRR DORL
Mr. Daniel H. Dorman, Regional Administrator, NRC Region 1
NRC Resident Inspectors Office
Mr. John B. Rhodes, President and CEO, NYSERDA
Ms. Bridget Frymire, New York State Dept. of Public Service
Ms. Jessica A. Kratchman NRC NSIR DPR DDEP IRIB

ATTACHMENT TO NL-15-026

ENTERGY'S FOURTH SIX-MONTH
STATUS REPORT FOR THE
IMPLEMENTATION OF ORDER EA-12-051 MODIFYING LICENSES
WITH REGARD TO REQUIREMENTS FOR RELIABLE SPENT
FUEL POOL INSTRUMENTATION

ENTERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 and 3
DOCKET NOS. 50-247 and 50-286

Indian Point Energy Center's (IPEC) Fourth Six Month Status Report for the Implementation of Order EA-12-051 Modifying Licenses with Regard to Requirements for Reliable Spent Fuel Pool Instrumentation

1. Introduction

Entergy Nuclear Operations, Inc. (Entergy) developed an Overall Integrated Plan (Reference 1) for Indian Point Energy Center (IPEC), documenting the requirements to install reliable spent fuel pool level instrumentation (SFPI), in response to Reference 2. This attachment provides an update of milestone accomplishments since the last status report, including any changes to the compliance method, schedule, or need for relief/relaxation and the basis, if any.

2. Milestone Accomplishments

The following milestone(s) have been completed since August 27, 2014 and are current as of January 31, 2015.

- Respond to ISE RAIs dated November 8, 2013 – Complete.

3. Milestone Schedule Status

The following provides a line item update to milestone schedule to support the Overall Integrated Plan. It provides the activity status of each item, and whether the expected completion date has changed. The dates are planning dates subject to change as design and implementation details are developed.

| Milestone | Target Completion Date | Activity Status | Revised Target Completion Date |
|--|------------------------------|-----------------|--------------------------------|
| Unit 3 Reliable SFPI Installed | Spring 2015 Refueling Outage | In Progress | N/A |
| Unit 2 Reliable SFPI Installed | Spring 2016 Refueling Outage | In Progress | N/A |
| Respond to NRC RAIs (Received June 25, 2013) (Reference 3) | August 23, 2013 | Complete | N/A |
| Respond to ISE RAIs dated November 8, 2013 (Reference 4) | September 30, 2014 | Complete | N/A |

4. Changes to Compliance Method

There are no additional changes to the compliance method.

5. Need for Relief/Relaxation and Basis for the Relief/Relaxation

IPEC expects to comply with the Order implementation date and no relief/relaxation is required at this time.

6. Open Items from Overall Integrated Plan and Interim Staff Evaluation

IPEC has received an Interim Staff Evaluation (Reference 4) that includes 15 RAIs. There were 3 additional RAIs received prior to the October 2014 NRC Audit Visit (Reference 6), for a total of 18 RAIs. The following table provides the status of these 18 RAIs. The RAI responses provided are applicable to both Unit 2 and Unit 3. However, the NRC Audit Visit Report (Reference 6) indicates that it would be determined in the future if another audit visit is necessary for Unit 2, therefore, all of the Unit 2 RAIs are considered open until that determination is made.

| RAI # | IP2 Response Status | IP3 Response Status |
|--------------|---|---------------------------------------|
| 1 | Submitted in Reference 7 | Closed During NRC Audit (Reference 6) |
| 2 | Uploaded to e-portal September 30, 2014 | Closed During NRC Audit (Reference 6) |
| 3 | Uploaded to e-portal September 30, 2014 | Closed During NRC Audit (Reference 6) |
| 4 | Uploaded to e-portal September 30, 2014 | Closed During NRC Audit (Reference 6) |
| 5 | Uploaded to e-portal September 30, 2014 | Closed During NRC Audit (Reference 6) |
| 6a | Uploaded to e-portal September 30, 2014 | Closed During NRC Audit (Reference 6) |
| 6b | Uploaded to e-portal September 30, 2014 | Closed During NRC Audit (Reference 6) |
| 6c | Uploaded to e-portal September 30, 2014 | Closed During NRC Audit (Reference 6) |
| 7 | Uploaded to e-portal September 30, 2014 | Closed During NRC Audit (Reference 6) |
| 8 | Uploaded to e-portal September 30, 2014 | Closed During NRC Audit (Reference 6) |
| 9 | Uploaded to e-portal September 30, 2014 | Closed During NRC Audit (Reference 6) |
| 10 | Uploaded to e-portal September 30, 2014 | Closed During NRC Audit (Reference 6) |
| 11 | Submitted in Reference 7 | Closed During NRC Audit (Reference 6) |
| 12 | Submitted in Reference 7 | Closed During NRC Audit (Reference 6) |
| 13 | Uploaded to e-portal September 30, 2014 | Closed During NRC Audit (Reference 6) |
| 14 | See Section 9 (See Note) | See Section 9 (See Note) |
| 15a | Submitted in Reference 7 | Closed During NRC Audit (Reference 6) |
| 15b | Submitted in Reference 7 | Closed During NRC Audit (Reference 6) |
| 16 | See Section 9 | Closed During NRC Audit (Reference 6) |
| 17 | See Section 9 | Closed During NRC Audit (Reference 6) |
| 18a | See Section 9 (See Note) | See Section 9 (See Note) |
| 18b | See Section 9 (See Note) | See Section 9 (See Note) |
| 18c | See Section 9 (See Note) | See Section 9 (See Note) |

Note: These RAIs were listed as Open Items in the NRC Audit Visit Report (Reference 6).

7. Potential Interim Staff Evaluation Impacts

There are no additional potential impacts to the Interim Staff Evaluation identified at this time except for those identified in Section 6.

8. References

The following references support the updates to the overall integrated plan described in this attachment.

1. Entergy letter to NRC (NL-13-043), "Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," dated February 27, 2013 (ADAMS Accession No. ML13072A082).
2. NRC Order Number EA-12-051, "Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," dated March 12, 2012 (ADAMS Accession No. ML12054A682).
3. "Request for Additional Information Overall Integrated Plan in Response to Order EA-12-051, 'Reliable Spent Fuel Pool Instrumentation' Entergy Operations, Order No. EA-12-051 (TAC Nos. MF0737 and MF0738)," dated June 25, 2013 (ADAMS Accession No. ML13169A127).
4. "Indian Point Nuclear Generating Unit Nos. 2 and 3 – Interim Staff Evaluation and Request for Additional Information Regarding the Overall Integrated Plan for Implementation of Order EA-12-051, Reliable Spent Fuel Pool Instrumentation (TAC Nos. MF0737 and MF0738)," dated November 8, 2013 (ADAMS Accession No. ML13298A805).
5. "Summary of the November 26, 2013, Public Meeting to Discuss Industry Responses to Staff Interim Evaluations for Spent Fuel Pool Instrumentation," dated December 26, 2013 (ADAMS Accession No. ML13347B030).
6. "Indian Point Nuclear Generating Unit Nos. 2 and 3 – Report for the Onsite Audit Regarding Implementation of Mitigating Strategies and Reliable Spent Fuel Instrumentation Related to Orders EA-12-049 and EAI-12-051 (TAC NOS. MF0744, MF0745, MF0737, AND MF0738)," dated December 9, 2014 (ADAMS Accession No. ML14335A642)
7. Entergy letter to NRC (NL-14-109), Indian Point Energy Center's Third Six-Month Status Report for the Implementation of Order EA-12-051 Modifying Licenses with Regard to Requirements for to Reliable Spent Fuel Pool Instrumentation (TAC Nos. MF0737 and MF0738), dated August 27, 2014
8. Donald C. Cook Nuclear Plant, Units 1 and 2 - Report for the Onsite Audit of MOHR Regarding Implementation of Reliable Spent Fuel Pool Instrumentation Related to Order EA-12-051 (TAC NOS. MF0761 and MF0762) dated August 27, 2014 (ADAMS Accession No. ML14216A362)

9. Responses to the Interim Staff Evaluation Requests for Additional Information

RAI #14

Please provide a list of the procedures addressing operation (both normal and abnormal response), calibration, test, maintenance, and inspection procedures that will be developed for use of the spent SFP instrumentation. The licensee is requested to include a brief description of the specific technical objectives to be achieved within each procedure.

The immediately following replaces what was provided to the NRC during the audit based on the open item identified in the audit report (Reference 6).

The following operations procedure has been developed for IPEC Unit 3; a comparable procedure is planned for Unit 2:

| Procedure | Description |
|---|---|
| 3-FSG-011, Alternate Makeup and Cooling | New procedure which provides actions to restore Spent Fuel Pit (SFP) level using an alternate makeup source for a Beyond Design Basis External Event (BDBEE) resulting in an Extended Loss of AC Power (ELAP). This procedure includes remote Spent Fuel Pool Level Indicator operation, the location of the displays, and cautionary statements such as an EMI/RFI exclusion zone around the displays. |

The following table is a list of Preventative Maintenance (PM) tasks planned to be developed for the Entergy fleet:

| Task Name | Objective | Frequency of Occurrence |
|---|--|-------------------------|
| Channel Calibration Check | To validate that the MOHR instruments (both channels) are displaying the correct spent fuel pool level within the accuracy of the instruments. | 2Y |
| Channel Check/Panel Functional Check | To check each channel against each other for comparison and to perform functional assessments of each panel. | 1Y |
| Operator Rounds/System Engineering Walkdown | Operator Rounds is intended to observe the system status via panel display, switch positions and indicating lights, to validate the MOHR instrumentation system is operating satisfactorily from its intended power source, and to detect obvious external signs of deterioration. | As Required |
| Signal Processor Clock Battery Replacement | To prevent failure of the onboard clock battery and adverse impact to the signal processor operating system. | 10Y |

SFPI RAI #16

Describe actions taken to verify electromagnetic compatibility with the vendor's limited test.

Note: The following response was provided for NRC review during the October 2014 NRC Audit Visit; this RAI was closed by the NRC Audit Team (Reference 6).

The NRC Audit of MOHR was in conjunction with the NRC's review of D.C. Cook's SFPI OIP, however the audit report also applies to other licensees using the MOHR technology to comply with the requirement of Order EA-12-051 (Reference 8). In this report, the NRC stated:

As a result of the NRC staff's evaluation of the EMC testing results, the staff identified a generic open item applicable to all licensees using this technology to identify any additional measures, site-specific installation instructions or position taken to address the potential effect of an EMC event on the SFPI equipment

To address this concern, Ops procedure 3-FSG-011, Section 4, notes includes a cautionary statement to preclude radio usage within close proximity to the displays when taking a reading.

In addition, no system voltages being affected or installed are greater than 125 Volts, and new instrumentation cables in the Fuel Storage Building and Fanhouse are being installed in rigid steel conduit where practical to limit the amount of EMI emitted by the new wiring. The isolation transformer being installed in the power circuit of each SFPI circuit will limit the introduction of any noise or harmonics (typically referred to as "total harmonic distortion," or THD) into the safety related instrument buses that may be generated by the new equipment.

SFPI RAI #17

Please provide a final configurations of the IP2 and IP3 SFP area, clearly depicting the SFP monitoring Level 1, 2, and 3, the planned locations/placement of the primary and back-up SFP level sensor/probe, and the proposed routing of the cables that will extend from the sensors toward the location of the read-out/display device.

Note: The following response was provided for NRC review during the October 2014 NRC Audit Visit; this RAI was closed by the NRC Audit Team (Reference 6); however, the first sentence of the original response has been revised below for clarification purposes (the changes are editorial only).

Figure 1 & Figure 2 depict an elevation view of the Unit 2 & Unit 3 final SFP Monitoring Levels.

As stated in IPEC's Third Six-Month Status Report (Reference 7), there were several changes made to the probe locations and channel routing shown in Attachments 1 and 3 of the OIP (Reference 1). For both units, the Channel A probe is shown where the Channel B probe is located, and the Channel B probe is shown where the Channel A probe is located. Additionally for Unit 2, the location of the Channel B probe in the SFP and the routing of both channels has been altered from the OIP. Updated cable routing and probe locations are shown below in Figure 3 through Figure 6.

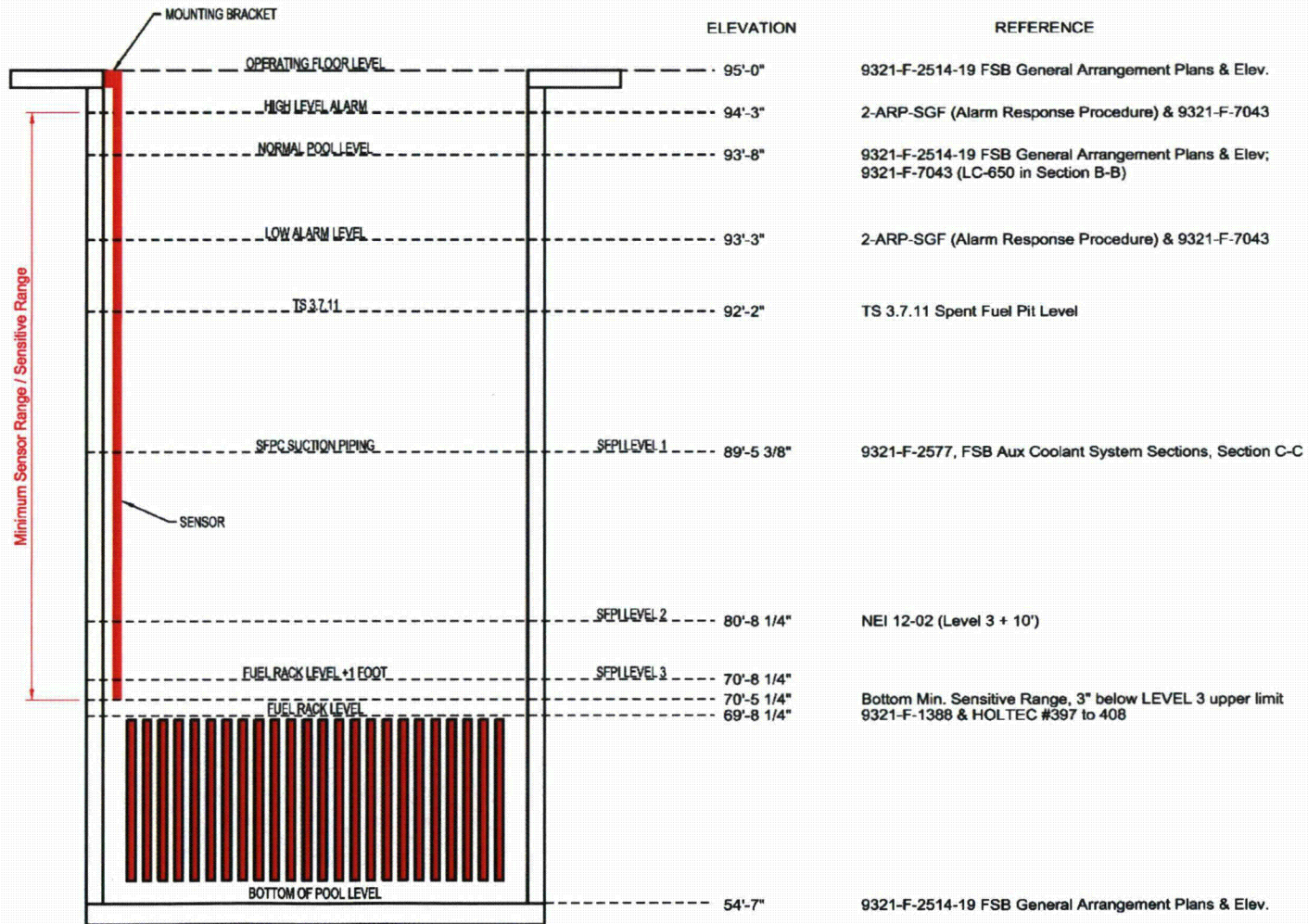


Figure 1: Unit 2 SFP Elevation View with Levels Indicated

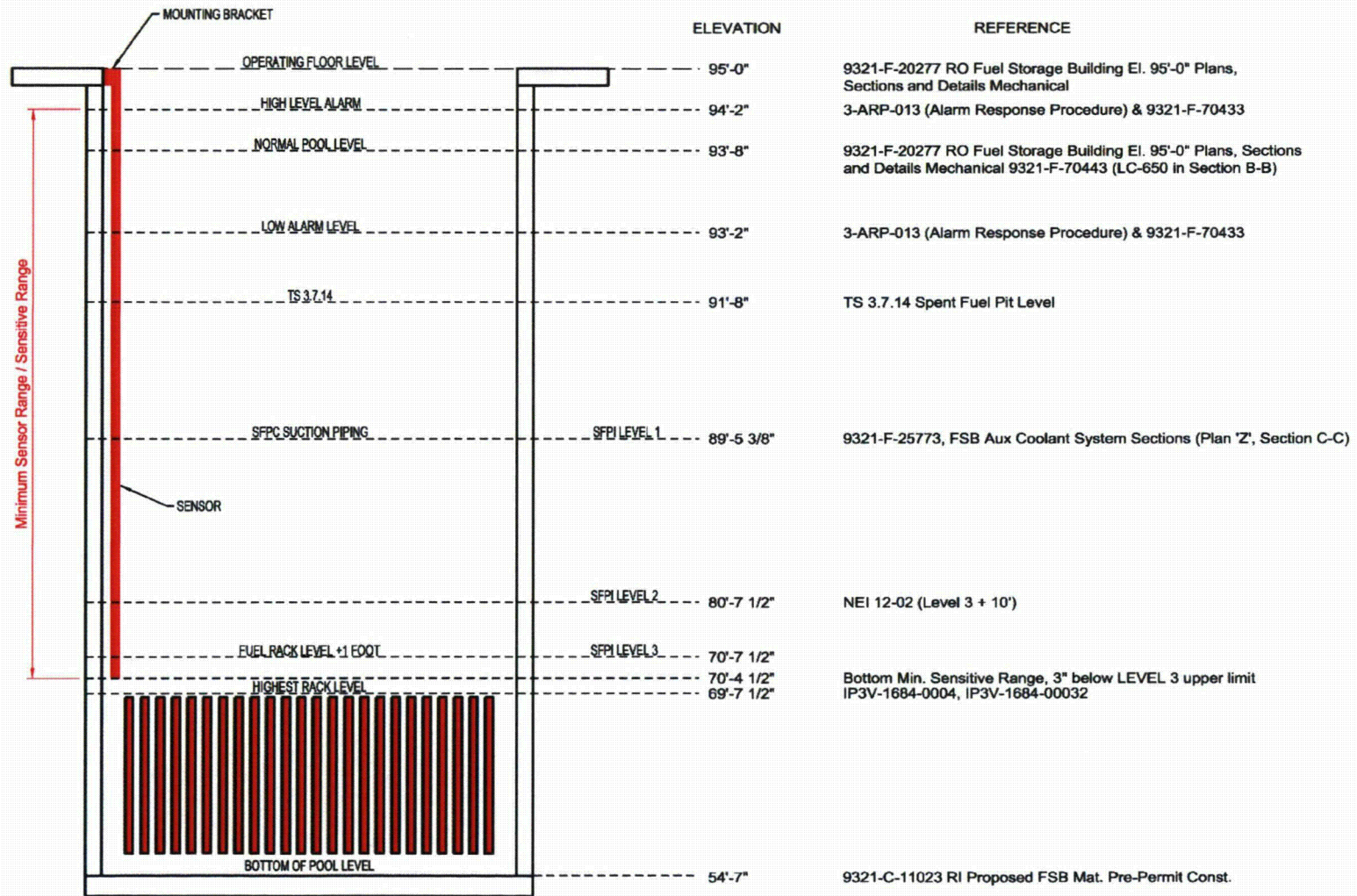


Figure 2: Unit 3 SFP Elevation View with Levels Indicated

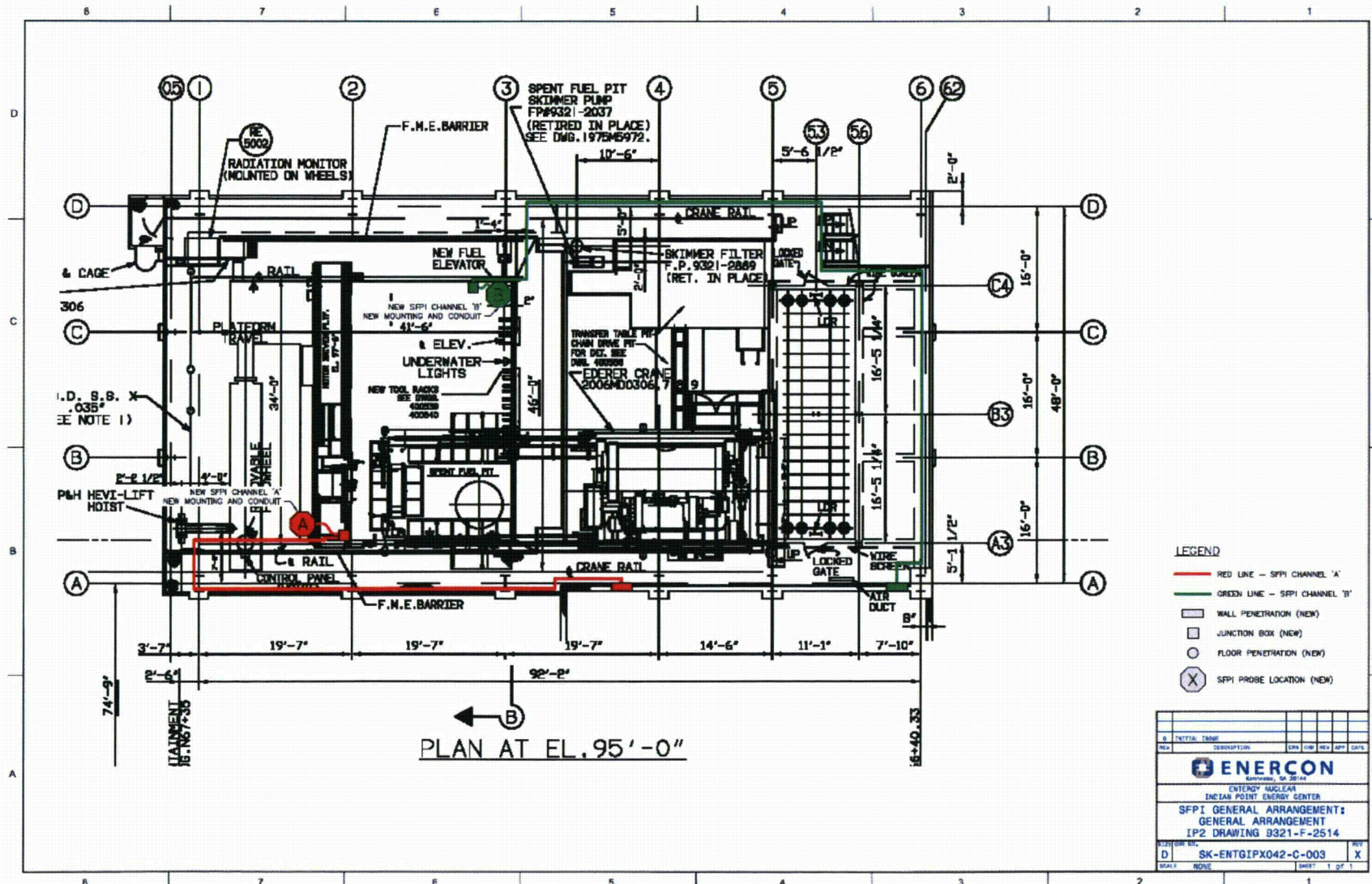


Figure 3: Unit 2 SFPI General Arrangement Drawing 1

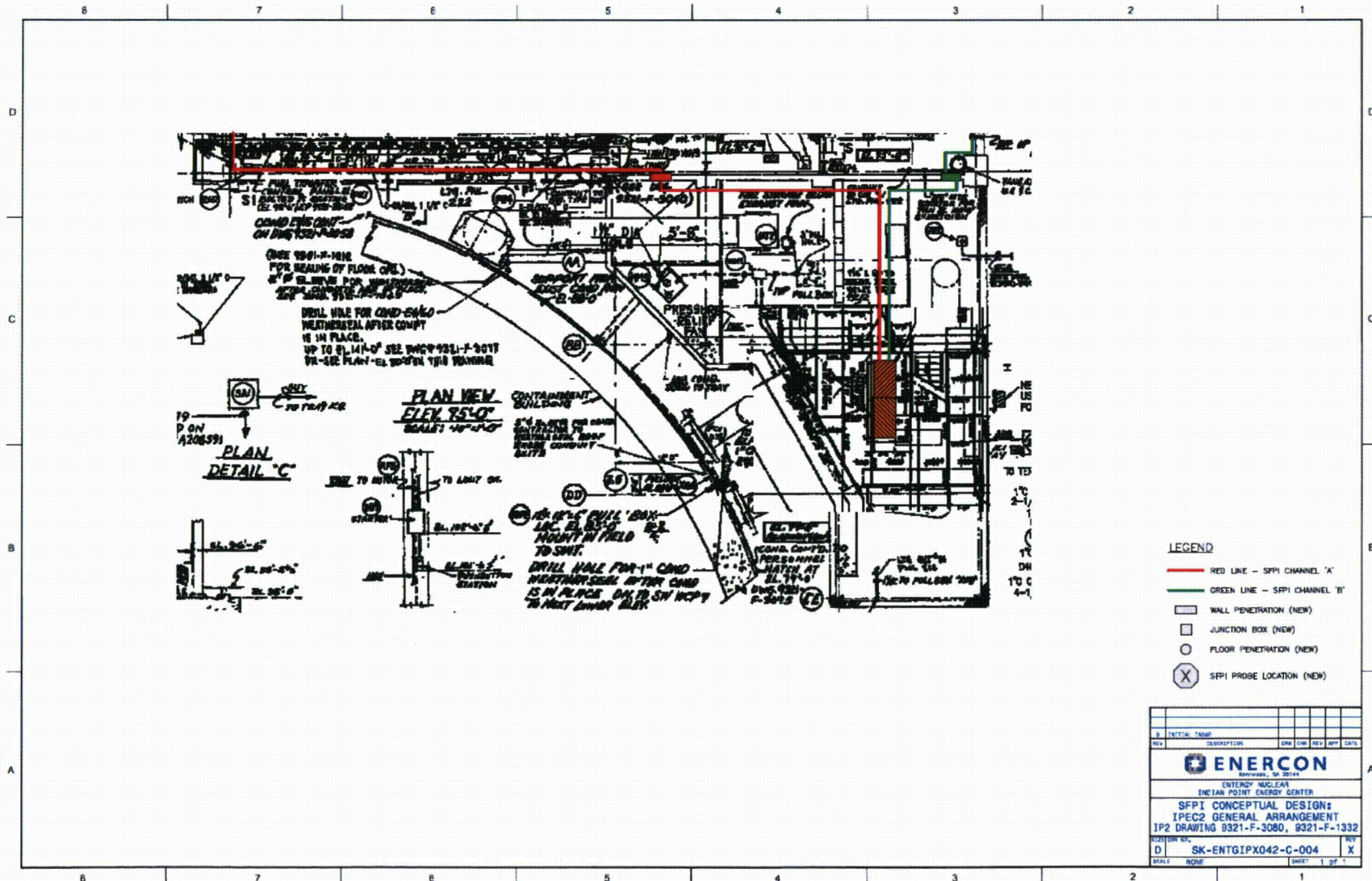


Figure 4: Unit 2 SFPI General Arrangement Drawing 2

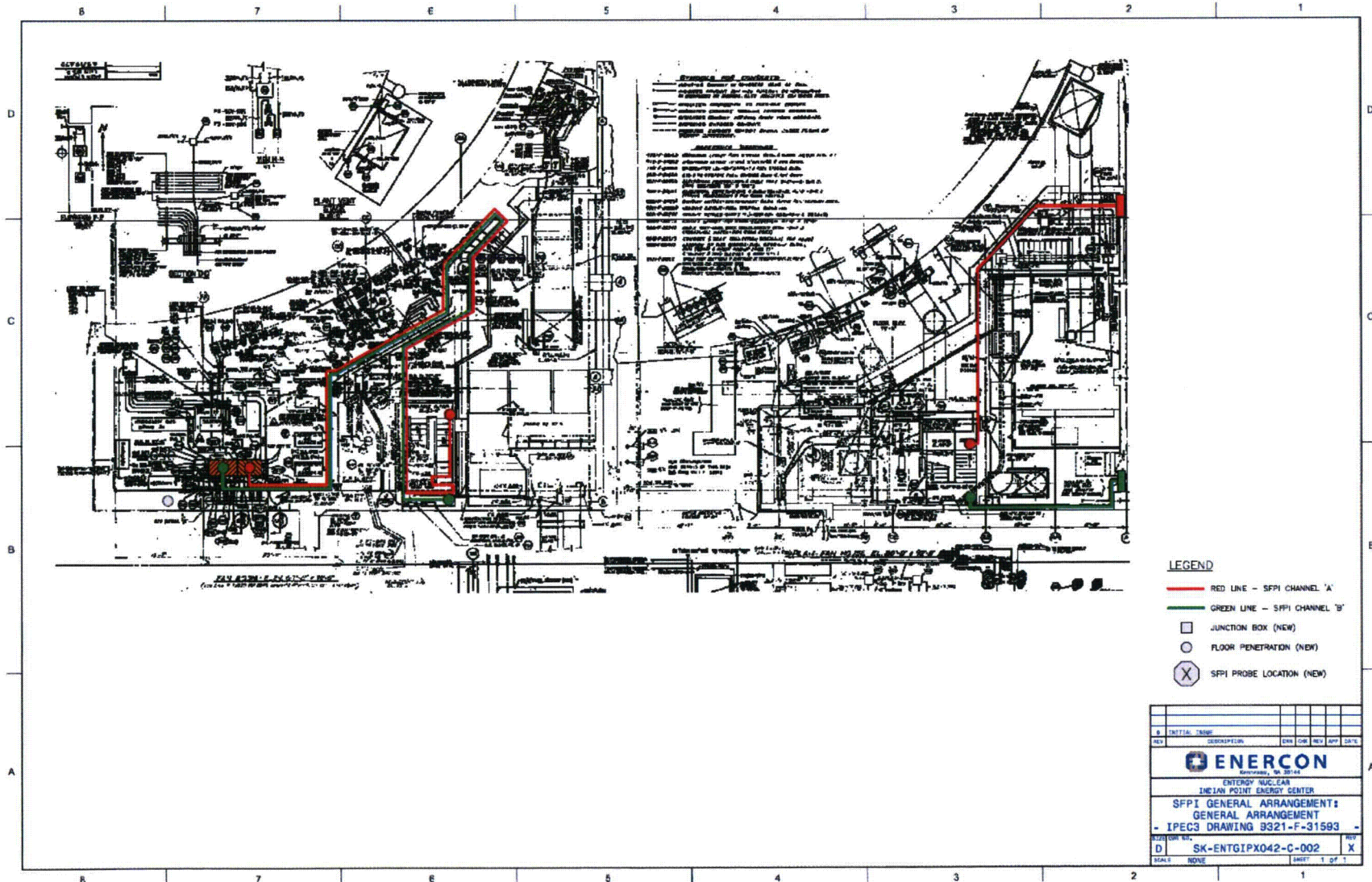


Figure 6: Unit 3 SFPI General Arrangement Drawing 2

SFPI RAI #18

Please provide the following:

- a) **A description of the plans for ensuring that necessary channel checks, functional tests, periodic calibration, and maintenance will be conducted for the level measurement system and its supporting equipment.**
- b) **Information describing compensatory actions when both channels are out-of-order, and the implementation procedures.**
- c) **Additional information describing expedited and compensatory actions in the maintenance procedure to address when one of the instrument channels cannot be restored to functional status within 90 days**

The immediately following replaces what was provided to the NRC during the audit based on the open item identified in the audit report (Reference 6).

- a) SFPI channel/equipment maintenance/preventative maintenance and testing program requirements to ensure design and system readiness are established in accordance with Entergy's processes and procedures and in consideration of vendor recommendations to ensure that appropriate regular testing, channel checks, functional tests, periodic calibration, and maintenance is performed. See response to SFPI RAI #14 for a list of procedures and PM tasks being developed.
- b) Both primary and backup SFPI channels incorporate permanent installation (with no reliance on portable, post-event installation) of relatively simple and robust augmented quality equipment. Permanent installation coupled with stocking of adequate spare parts reasonably diminishes the likelihood that a single channel (and greatly diminishes the likelihood that both channels) is (are) out-of-service for an extended period of time. Control of compensatory actions for out of service SFPI channel(s) will be controlled by inclusion in the Plant's Technical Requirements Manual (TRM); the following is the draft proposed TRM for SFPI:

TRM 3.10 BEYOND DESIGN BASES COMPONENTS

TRM 3.10.C Spent Fuel Pool Level Instrumentation

TRO 3.10.C The primary and back-up spent fuel pool level instruments shall be OPERABLE.

APPLICABILITY: At all times.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|--|-----------------|
| A. The primary or back-up spent fuel pool level instrument does not meet the OPERABLE requirements. | A.1 Restore spent fuel pool level instrument to OPERABLE status AND | 90 days |

| | | |
|---|---|-------------|
| | A.2 If not restored within two weeks, present a report to OSRC giving why out of service and plan to repair | 14 Days |
| B. Action A.1 completion time not met. | B.1 Initiate actions to implement compensatory measures such as use of alternate suitable equipment or supplemental personnel | Immediately |
| C. The primary and back-up spent fuel pool level instruments do not meet the OPERABLE requirements. | C.1 Restore one of the channels of instrumentation. | 24 hours |
| D. Required Action and associated Completion Time of Condition C not met | D.1 Initiate actions to Implement compensatory measures such as use of alternate suitable equipment or supplemental personnel | Immediately |

Note: Compensatory measures under consideration are use of alternate suitable equipment or supplemental personnel.

c) The requested information is provided in the RAI-18.b response.