Entergy

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NL-17-088

July 13, 2017

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Stop O-P1-17
Washington, D.C. 20555-0001

Subject: Licensee Event Report # 2017-001-00, "Single Flow Barrier Access Point Found Unbolted"
Indian Point Unit No. 3
Docket No. 50-286
DPR-64

Dear Sir or Madam:

Pursuant to 10 CFR 50.73(a)(1), Entergy Nuclear Operations Inc. (ENO) hereby provides Licensee Event Report (LER) 2017-001-00. The attached LER identifies an event where there was a Safety System Functional Failure and a common cause inoperability of the Emergency Core Cooling System while in Hot Shutdown due to violation of the design basis for Containment sump debris barrier, which is reportable under 10 CFR 50.73(a)(2)(v)(D) and 10 CFR 50.73(a)(2)(vii). This condition was recorded in the Entergy Corrective Action Program as Condition Report CR-IP3-2017-02737.

IE22
NRR

There are no new commitments identified in this letter. Should you have any questions regarding this submittal, please contact Mr. Robert Walpole, Manager, Regulatory Assurance, and Indian Point Energy Center at (914) 254-6710.

Sincerely,

AJV/trj

cc: Mr. Daniel H. Dorman, Regional Administrator, NRC Region I
NRC Resident Inspector's Office
Ms. Bridget Frymire, New York State Public Service Commission

NRC FORM 366 (04-2017) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 03/31/2020

LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Indian Point Unit 3	05000286	1 OF 6

4. TITLE

Single Flow Barrier Access Point Found Unbolted

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
										05000
05	14	2017	2017	- 001	- 00	07	13	2017	FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*			
4	☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
	☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
	☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
	☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
10. POWER LEVEL	☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
	☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
0%	☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(C)	☐ 73.77(a)(1)
	☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☒ 50.73(a)(2)(v)(D)	☐ 73.77(a)(2)(i)
	☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☒ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(ii)
		☐ 50.73(a)(2)(i)(C)	☐ OTHER Specify in Abstract below or in NRC Form 366A	

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT	TELEPHONE NUMBER *(Include Area Code)*
Dennis Main	914-254-5479

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
A	BQ	GATE	E251	Y					

14. SUPPLEMENTAL REPORT EXPECTED	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO				

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On May 14, 2017, at 0233 hrs, Indian Point Unit 3 entered Mode 4 as part of coming out of outage 3R19 and preparing for power operations. Operations test group was preparing for performance of 3-PT-CS004, Residual Heat Removal (RHR) Check Valve Testing. The team gathered for a pre-job brief in accordance with the requirements of EN-HU-102, Human Performance Traps &Tools Procedure. At the time the only allowable access point to the Inner Crane Wall was through the double gate combination of Gates D and E, which require one gate to be maintained closed and secured at all times. Workers needed to enter inside of the Crane Wall to perform a portion of the valve lineup required by 3-PT-CS004. After unbolting and opening the gate, the two operators and a contract Radiation Protection (RP) Technician went through gate C despite a posted sign stating that the gate was not to be utilized in modes 1 through 4. While the valve manipulations were in progress the NRC Resident Inspector was also conducting a tour of the Vapor Containment (VC) and identified that gate C was opened. This gate being open in this plant condition resulted in a safety system functional failure, since with the gate unsecured this made the containment sumps inoperable.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Indian Point Unit 3	05000-286	2017	- 001	- 00

NARRATIVE

Indian Point Unit 3 commenced shutdown for refueling outage 3R19 at 2000 hrs on March 12, 2017. At 0928 hrs on March 13, 2017, Mode 5, Cold Shutdown, was entered. At this point containment integrity was no longer required per Technical Specifications (TS).

On May 14, 2017, at 0233 hrs Unit 3 entered Mode 4, Hot Shutdown, in preparation for returning the unit to power operations. On May 14, 2017, dayshift, Operations Test Group was scheduled to perform 3-PT-CS004, Residual Heat Removal (RHR) Check Valve testing. This test requires operators to go inside the Vapor Containment (VC) Inner Crane Wall to perform valve manipulations. A pre-job brief in accordance with EN-HU-102, the Human Performance Traps &Tools Procedure was held that discussed the job task, dose rates, stay times, heat stress and the plant being in Mode 4. A radiological brief in accordance with EN-RP-101 was also held that discussed dose rates and radiological conditions before the two operators and a radiation protection (RP) technician entered the Vapor Containment. A containment entry brief per OAP-007, Containment Entry And Egress, was not held.

Entry inside the 46ft VC Crane Wall requires personnel to go through one of four crane wall entrances. Three entry points have a single gate (gates A, B and C) and one entry point has a double gate (gates D and E). In Mode 1, 2, 3, or 4, entry inside the Crane Wall SHALL use the double gate entry point via Gates D and E. One gate SHALL remain shut and secured at all times to maintain flow channeling and sump operability. Securing gates requires using slide latch which can be performed from inside or outside of the gate. The organization with the largest job scope requiring VC entry is responsible for coordinating the VC entry, and ensuring a brief is conducted.

OAP-007 contains a NOTE prior to step 4.1.7 stating that the responsible VC Coordinator SHALL perform the pre-entry briefing. Step 4.1.7 directs a pre-entry briefing per EN-HU-102 and directs that as a minimum certain items must be covered in this briefing. One of these items is Crane Wall entry gate requirements with direction to refer to Precautions and Limitations P&L 2.31.1.

Personnel entering the VC for 3-PT-CS004 did not receive this required briefing on VC Crane Wall Entry Gates since OAP-007 was not utilized. Therefore the two operators and the RP technician were not made aware of the requirements for gate use when going inside the crane wall.

When entering the VC, the two operators and the RP technician went directly to Gate C. This is the normal gate that had been used for entry inside the crane wall during the outage. When the gate was reached, one operator proceeded to undo the bolt used to secure Gate C. The gate contains a sign stating it is not to be used with the unit in Modes 1 through 4. Installation of the sign was a corrective action for CR-IP3-2013-00975 (While fencing the Reactor Coolant Drain Tank (RCDT) during the Locked High Radiation Area (LHRA) down-posting on initial entry after shutdown, the RP work party entered through the wrong gate (bolted gate) and left the gate unbolted until it was identified by a third party).

The operator who unbolted the gate stated he did not notice the sign when he unbolted and opened the gate. The second operator stated that he did not see the sign since the RP technician was between him and the gate. After unbolting and opening the gate, the operators and the RP technician went inside the crane wall and performed the valve lineup for 3-PT-CS004. The event recollections document that the gate was unbolted and open for approximately three to five minutes.

While the two operators and the RP technician were inside the crane wall, an NRC inspector also entered the VC. The NRC inspector was briefed by Radiation Protection in accordance with EN-HU-102, OAP-007 and EN-IS-108, Working in Hot Environments. This brief was performed by the same person who gave the RP brief to the two operators and the RP technician.

The NRC inspector and another RP technician proceeded to Gate C where they discovered the gate was not secured in place. The RP technician notified the Control Room of the unsecured gate.
The Shift Manager contacted a third operator who was on 68ft VC and directed him to check the status of Gate C and secure it if it was unsecured.

At this time the two operators and the RP technician that were inside the crane wall exited through Gate C and noticed the second rad tech. It was at this point that the first operator stated he noticed the sign on Gate C stating the gate was not to be opened in Modes 1, 2, 3 and 4. The operator closed and bolted the gate.

CR-IP3-2017-02737 was initiated due to Gate C being opened above Cold Shutdown. At 1532 hrs on May 14, 2017, the Control Room made an 8-hour notification (non-emergency event) on the NRC Hotline due to Unit 3 VC 46ft Gate C being unbolted in Mode 4. This is a condition which could have prevented the fulfillment of the safety function of structures or systems needed to mitigate the consequences of an accident.

Stand downs were conducted with the dayshift and nightshift operations crews. Field Senior Reactor Operator (SRO) oversight was implemented for all testing and evolutions.

Cause of Event

Direct Cause: Operators removed the bolt securing Gate C in the closed position and opened the gate to gain entry to the inner crane wall area in performance of 3-PT-CS004.

Root Cause: The root cause of the event is – Lack of Commitment to Program Implementation – The standards and procedural requirements of OAP-007 are not uniformly adhered to or enforced by all levels of the organization. Specifically, the requirements of OAP-007 regarding the requirements to have a VC

coordinator for VC entries as well as the responsibilities of the VC coordinator are either not understood or not adhered to. Additionally, the significance of the Crane Wall gates and the requirement to use the double gate access when above Mode 5 have not been fully integrated into the thought and work processes of all work groups that enter the crane wall. This is evidenced by the recurrence of issues with Crane Wall gates despite multiple Apparent Cause Analyses and subsequent corrective actions performed by several groups. This caused the condition since an OAP-007 VC Entry brief was not performed so the entry team was not aware of the restriction to use only Gates D and E and the added restriction that one of these two gates must be closed and secured at all times. (FO03)

Contributing Cause #1 – The 1st contributing cause is Inadequate Task Barrier – The bolt on Gate C was not sufficient to overcome a Human Performance (HU) Error and prevent opening Gate C in a Mode where it was required to remain closed and secured. A better method of securing the gate by using a controlled lock instead of a bolt would have made it much more difficult for operators to gain access through this gate. (FP08)

Contributing Cause #2 – The 2nd contributing cause is Poor use of HU Tools – Collectively the team exhibited poor use of HU tools. The group was focused on the task at hand and missed additional requirements that were in effect based on plant condition (Tunnel Vision). The operators and RP that entered the VC assumed it was okay to use Gate C because it was the gate they had been using to access the inner Crane Wall throughout the outage (Wrong Assumptions / Habit Intrusion). The operators and RP failed to notice and read the sign on Gate C stating that the gate was not to be opened in Modes 1, 2, 3 and 4 (Unawareness).

Corrective Actions

The following corrective actions have been or will be performed under Entergy's Corrective Action Program to address the Cause:

- Site clock reset issued to inform the entire site of the event and lessons learned from the event.
- Gate C was closed and secured. All other gates in the Unit 3 46ft VC Crane wall were verified to be closed and secured.
- Stand downs were held with the dayshift and nightshift operations crews to discuss the event and the lessons learned. Field SRO oversight was put in place for testing and evolutions.
- Operator human performance shortcomings were addressed in accordance with the MARC process.
- Ops, Maintenance, Production and Projects Managers agree upon and implement standards and expectations for VC entry including who will fill the position of VC entry coordinator during Modes 1, 2, 3 and 4 and what the expectations for this position are. Incorporate the resulting standards and expectations into OAP-007.

- Lock single access Crane Wall gates. A/B/C gates (and corresponding gates on U2) will have a common key with a label stating that these doors cannot be opened above Mode 5. Keys will be maintained in lock box in Shift Manager Office, to be issued by Shift Manager as needed.

Event Analysis

The event is reportable under 10CFR50.73(a)(2)(v)(D) as a safety system functional failure as the condition could have prevented adequate post-accident core cooling due to Design Basis Accident (DBA) debris blockage of the recirculation and/or the containment sump. An Emergency Core Cooling System (ECCS) train is inoperable if it is not capable of delivering design flow to the Reactor Coolant System (RCS). Individual components are inoperable if they are not capable of performing their design function or supporting systems are not available. TS 3.5.2 (ECCS-Operating) requires three ECCS trains to be operable in Modes 1, 2 and 3, and TS 3.5.3 (ECCS-Shutdown) requires one ECCS RHR subsystem and one ECCS recirculation subsystem to be operable in Mode 4. The licensing and design basis of the ECCS per Updated Final Safety Analysis Report Section 6.2.2 (ECCS System Design and Operation) credits flow channeling barriers installed in containment in response to the resolution of Generic Letter GL-2004-02. The single flow barrier gate that was used for access had no latching mechanism to prevent it from being forced open during a DBA. The unbolted gate was not in accordance with design and not a sufficient robust barrier to prevent debris from entering the Internal Recirculating and Containment Sumps had a DBA occurred while in Mode 4. The condition is also reportable under 10CFR50.73(a)(2)(vii) (common cause inoperability of independent trains or channels) as the condition caused at least one independent train or channel to become inoperable in multiple systems or two independent trains or channels to become inoperable in a single system designed to (D) mitigate the consequences of an accident.

Past Similar Events

A review was performed of the past four years of Licensee Event Reports (LERs) for events that involved SSFFs and/or common cause inoperability of the Engineered Safety Feature System. The review identified two LERs. Unit 2 LER 2016-007-00 – Personnel were moving scaffolding from inside the crane wall to areas outside the crane wall through the two open barrier gates. Having both sump barrier gates open violated ECCS operability basis which requires the sump barrier system to be operable in Modes 1 through 4. This was reported as a safety system functional failure as the condition could have prevented adequate post-accident core cooling due to DBA debris blockage of the recirculation and/or the containment sump. This event was reported under 10 CFR 50.73(a)(2)(v)(D) and

10 CFR 50.73(a)(2)(vii). The apparent cause was a latent organizational weakness associated with the used of procedure OAP-007 which had not been communicated well within the organization.

Unit 3 LER-2013-002-00 – Reported a common cause inoperability of the Emergency Core Cooling System while in Hot Shutdown due to violation of the design basis for Containment sump debris barrier, which was reportability under 10 CFR 50.73(a)(2)(v) and 10 CFR 50.73(a)(2)(vii). Radiation Protection (RP) personnel entered the reactor containment building to install plastic RP fencing for the RCDT. The apparent causes were an inadequate pre-job brief and inadequate procedure for Containment Entry and Egress (OAP-007, 0-RP-RWP-405) due to poor change management. The pre-job brief did not cover the requirement to use the dual sump barrier gate access point when in Modes 1-4, nor did it address the type of fencing allowed.

Safety Significance

There were no actual safety consequences while Gate C was unbolted because there were no accidents or transients during the time period the gate were unbolted and Gate C was immediately secured following identification. Gate C was open and unsecured for a period of 3 to 5 minutes. Therefore, this event had no effect on the health and safety of the public. The risk if no action is taken is Medium and there is a likely chance of reoccurrence if adequate correction actions are not put in place. This was based on referring to EN-HU-104, Engineering Task Risk & Rigor and utilizing Attachments 9.1 Consequence Risk Factors, 9.2 Human Performance Risk Factors, and 9.3 Process Risk Factors. Using Attachment 9.1, the Risk Level associated with having an operability issue affecting multiple trains of safety related systems is considered Medium. Using these attachments and the justification above regarding the potential consequences of this event, this risk level was identified.

The immediate/interim/mitigating actions to reduce the frequency or consequence are:

- Gate C was immediately bolted closed.
- Management Associated Results Company (MARC) process was implemented for the individuals involved in this event.
- Operating crews were coached on the issue.