MD 8.3 Evaluation
Decision Documentation for Reactive Inspection
(Deterministic and Risk Criteria Analyzed)

PLANT: **Monticello**	EVENT DATE: **6/7/13**	DETERMINISTIC CRITERIA EVALUATION DATE: **6/10/13**

Brief Description of the Significant Operational Event or Degraded Condition:

The licensee was relying on inaccurate level indication following RPV head set on about 6/1/2013 until 6/7/2013, when accurate level indication was restored.

The licensee had two indicators (safety related flood up indicator and temporary (i.e., tygon tubing) indicator) for measuring vessel level. The flood up indicator is the normal indicator typically used by operators after the head has been installed. Following the head installation, the licensee was draining the vessel to support ECCS testing. Prior to the drain down, the operators observed that the flood up indicator was inaccurate due to air entrainment. Therefore, the operators relied on the temporary indicator during draining. Following the draining (and prior to beginning ECCS testing), the operators removed the air from the flood up indicator. Although this restored the flood up indicator, it was reading higher than the temporary indicator. Instead of investigating this difference, the operators believed that the temporary indicator was accurate and continued with the testing.

The temporary indicator was in fact inaccurate due to increased pressure (about 2-2.5 lbs) in the RPV from improper venting. This caused the temporary indicator to read about 40 inches lower than the actual level. After the reactor head vent valves were opened, alleviating the pressure, the temporary indicator rose until it matched the refueling indicator. The flood up indicator was actually reading accurately following the removal of the entrained air, but as stated, this was not verified by the operators who continued to rely on the temporary indicator.

The safety significance of the event was low, based on the following:

- **The error was conservative, as the temporary indicator was reading about 40 inches below the actual water level;**
- **The draining activity occurred during startup preparations, so the decay heat load was low; and**
- **There were two other plant level indicators (offscale high consistent with plant conditions) available that would have shown actual water level should the RPV level decrease to about 15 feet above the top of the active fuel**

This event was similar to a 2012 event at Prairie Island Unit 1 where operators had erroneous level RCS level indication during RCS drain down activities. However, in that particular event, the specifics were more significant in that error in indicated level was non-conservative, the decay heat load was near maximum and safety injection was initiated.

The licensee is performing a root cause evaluation of the event and the resident inspectors are following the issue.

Y/N	DETERMINISTIC CRITERIA
N	a. Involved operations that exceeded, or were not included in the design bases of the facility
	Remarks: **The activities involved were normal outage activities following refueling.**
N	b. Involved a major deficiency in design, construction, or operation having potential generic safety implications
	Remarks: **None Identified.**
N	c. Led to a significant loss of integrity of the fuel, primary coolant pressure boundary, or primary containment boundary of a nuclear reactor
	Remarks: **None identified.**
N	d. Led to the loss of a safety function or multiple failures in systems used to mitigate an actual event
	Remarks: **Although the flood up indicator is considered safety-related, there is no evidence that it was reading inaccurately due to the RPV overpressure. The temporary level indication is not considered safety-related.**
N	e. Involved possible adverse generic implications

	Remarks: **During past outages, the licensee has normally discontinued use of the temporary indication following RPV head set. However, due to concerns with the accuracy of the flood up indicator, the operators elected to continue using the temporary level indicator during the draining of the RPV.**
N	f. Involved significant unexpected system interactions
	Remarks: **Although the overpressure of the RPV was unexpected, it was not considered significant. The licensee is still investigating the cause of the overpressure condition.**
N	g. Involved repetitive failures or events involving safety-related equipment or deficiencies in operations
	Remarks: **None identified.**
Y	h. Involved questions or concerns pertaining to licensee operational performance
	Remarks: **The decision by operations to continue with RCS draining without verifying accurate level indication was non-conservative. The operators mistakenly believed that the temporary level indication was accurate and were fortunate that the observed error was in the conservative direction.**

CONDITIONAL RISK ASSESSMENT	
RISK ANALYSIS BY: David Passehl	RISK ANALYSIS DATE: 06/10/13

Brief Description of the Basis for the Assessment (may include assumptions, calculations, references, peer review, or comparison with licensee's results):

The SRAs used IMC 0609 Appendix G, "Shutdown Operations Significance Determination Process" to estimate the risk significance since the plant was shutdown.

Table 1 of Appendix G, "Losses of Control," states that a loss of level control in BWRs occurs when there is an inadvertent loss of 2-feet of RCS inventory or there is an inadvertent RCS pressurization. There was an inadvertent pressurization of about 2-2.5 lbs that caused the condition, therefore Appendix G states that the finding needs to be quantitatively assessed.

The SRAs reviewed Appendix G, Attachment 1, "Phase 1 Operational Checklists for Both PWRS and BWRS. The plant was in Mode 4 late in the refueling outage. The time to boil was more than 13-hours. The applicable Appendix G Checklist was Checklist 8, "BWR Cold Shutdown or Refueling Operation - Time to Boil > 2 Hours: RCS Level < 23' Above Top of Flange."

For this issue there was a level error between the tygon tube level indicator used by plant operators and the refueling/flood up level indicator. The tygon tube level was reading 40-inches lower than actual level. Operators were intending to drain the reactor vessel for ECCS surveillance testing.

The SRAs reviewed Checklist 8 for the initial screening risk assessment. The SRAs determined that the actual event did not increase the likelihood of the loss of RCS inventory, although there was a loss of level indication; since the discrepant level indication was conservative. In addition, the event did not degrade the licensee's ability to terminate a leak path or add inventory, did not degrade the ability to recover decay heat removal once lost, and did not result in any SRVs being unavailable for a heat removal path.

Based on this the SRAs concluded that the estimated conditional core damage probability for the actual event was less than 1E-06, in the range of no additional inspection. The significance of any associated inspection finding will be evaluated per the significance determination process.

The estimated conditional core damage probability (CCDP) is less than 1E-06/yr, which places the risk in the range of no additional inspection.
RESPONSE DECISION
USING THE ABOVE INFORMATION AND OTHER KEY ELEMENTS OF CONSIDERATION AS APPROPRIATE, DOCUMENT THE RESPONSE DECISION TO THE EVENT OR CONDITION, AND THE BASIS FOR THAT DECISION
DECISION AND DETAILS OF THE BASIS FOR THE DECISION: **DRP:Branch 2 recommends that a member of DRS:OL Branch assist the resident's in evaluating this issue. Although the issue does not meet the criteria for additional inspection based on the SRA analysis, the non-conservative decision making by the operators during RCS level changes is of concern. As stated, this event is similar to that occurring at Prairie Island Unit 1 in 2012. In both cases, the root cause was non-conservative decision making by plant operators.**

BRANCH CHIEF REVIEW: Kenneth Riemer, Chief, Reactor Projects, Branch 2 ***/RA/***	DATE: 06/18/13
TSS TEAM LEADER: Julio Lara, Chief, TSS ***/RA/***	DATE: 06/14/13
DIVISION DIRECTOR REVIEW: Gary L. Shear, Director Division of Reactor Safety ***/RA/***	DATE: 06/20/13
DIVISION DIRECTOR REVIEW: Kenneth G. O'Brien, Deputy Director, Division of Reactor Projects ***/RA/***	DATE: 06/26/13
ADAMS ACCESSION NUMBER: EVENT NOTIFICATION REPORT NUMBER (as applicable):	

Note to preparer: If the decision was NOT to perform a reactive inspection, you must complete the rest of the form to fully document the basis for not performing a reactive inspection.

Internal Distribution List is at the end of this document.

Decision Documentation for Reactive Inspection (Deterministic-only Criteria Analyzed)		
PLANT**: Monticello**	EVENT DATE: **6/7/13**	EVALUATION DATE: **6/10/13**
Brief Description of the Significant Operational Event or Degraded Condition:		

REACTOR SAFETY	
Y/N	**IIT Deterministic Criteria**
N	Led to a Site Area Emergency
	Remarks:
N	Exceeded a safety limit of the licensee's technical specifications
	Remarks:
N	Involved circumstances sufficiently complex, unique, or not well enough understood, or involved safeguards concerns, or involved characteristics the investigation of which would best serve the needs and interests of the Commission
	Remarks:
Y/N	**SI Deterministic Criteria**
N	Significant failure to implement the emergency preparedness program during an actual event, including the failure to classify, notify, or augment onsite personnel
	Remarks:
N	Involved significant deficiencies in operational performance which resulted in degrading, challenging, or disabling a safety system function or resulted in placing the plant in an unanalyzed condition for which available risk assessment methods do not provide an adequate or reasonable estimate of risk.
	Remarks: **Although the decision by the operators to continue with draining prior to resolving the level indication issues was non-conservative, it did not result in the loss of a safety function or place the plant in an unanalyzed condition.**

RADIATION SAFETY	
Y/N	**IIT Deterministic Criteria**
N	Led to a significant radiological release (levels of radiation or concentrations of radioactive material in excess of 10 times any applicable limit in the license or 10 times the concentrations specified in 10 CFR Part 20, Appendix B, Table 2, when averaged over a year) of byproduct, source, or special nuclear material to unrestricted areas
	Remarks:
N	Led to a significant occupational exposure or significant exposure to a member of the public. In both cases, “significant” is defined as five times the applicable regulatory limit (except for shallow-dose equivalent to the skin or extremities from discrete radioactive particles)
	Remarks:
N	Involved the deliberate misuse of byproduct, source, or special nuclear material from its intended or authorized use, which resulted in the exposure of a significant number of individuals
	Remarks:
N	Involved byproduct, source, or special nuclear material, which may have resulted in a fatality
	Remarks:
N	Involved circumstances sufficiently complex, unique, or not well enough understood, or involved safeguards concerns, or involved characteristics the investigation of which would best serve the needs and interests of the Commission
	Remarks:
Y/N	**AIT Deterministic Criteria**
N	Led to a radiological release of byproduct, source, or special nuclear material to unrestricted areas that resulted in occupational exposure or exposure to a member of the public in excess of the applicable regulatory limit (except for shallow-dose equivalent to the skin or extremities from discrete radioactive particles)
	Remarks:
N	Involved the deliberate misuse of byproduct, source, or special nuclear material from its intended or authorized use and had the potential to cause an exposure of greater than 5 rem to an individual or 500 mrem to an embryo or fetus
	Remarks:

N	Involved the failure of radioactive material packaging that resulted in external radiation levels exceeding 10 rads/hr or contamination of the packaging exceeding 1000 times the applicable limits specified in 10 CFR 71.87
	Remarks:
N	Involved the failure of the dam for mill tailings with substantial release of tailings material and solution off site
	Remarks:
Y/N	**SI Deterministic Criteria**
N	May have led to an exposure in excess of the applicable regulatory limits, other than via the radiological release of byproduct, source, or special nuclear material to the unrestricted area; specifically • occupational exposure in excess of the regulatory limits in 10 CFR 20.1201 • exposure to an embryo/fetus in excess of the regulatory limits in 10 CFR 20.1208 • exposure to a member of the public in excess of the regulatory limits in 10 CFR 20.1301
	Remarks:
N	May have led to an unplanned occupational exposure in excess of 40 percent of the applicable regulatory limit (excluding shallow-dose equivalent to the skin or extremities from discrete radioactive particles)
	Remarks:
N	Led to unplanned changes in restricted area dose rates in excess of 20 rem per hour in an area where personnel were present or which is accessible to personnel
	Remarks:
N	Led to unplanned changes in restricted area airborne radioactivity levels in excess of 500 DAC in an area where personnel were present or which is accessible to personnel and where the airborne radioactivity level was not promptly recognized and/or appropriate actions were not taken in a timely manner
	Remarks:
N	Led to an uncontrolled, unplanned, or abnormal release of radioactive material to the unrestricted area • for which the extent of the offsite contamination is unknown; or, • that may have resulted in a dose to a member of the public from loss of radioactive material control in excess of 25 mrem (10 CFR 20.1301(e)); or, • that may have resulted in an exposure to a member of the public from effluents in excess of the ALARA guidelines contained in Appendix I to 10 CFR Part 50

	Remarks:
N	Led to a large (typically greater than 100,000 gallons), unplanned release of radioactive liquid inside the restricted area that has the potential for ground-water, or offsite, contamination
	Remarks:
N	Involved the failure of radioactive material packaging that resulted in external radiation levels exceeding 5 times the accessible area dose rate limits specified in 10 CFR Part 71, or 50 times the contamination limits specified in 49 CFR Part 173
	Remarks:
N	Involved an emergency or non-emergency event or situation, related to the health and safety of the public or on-site personnel or protection of the environment, for which a 10 CFR 50.72 report has been submitted that is expected to cause significant, heightened public or government concern
	Remarks:

SAFEGUARDS/SECURITY	
Y/N	**IIT Deterministic Criteria**
N	Involved circumstances sufficiently complex, unique, or not well enough understood, or involved safeguards concerns, or involved characteristics the investigation of which would best serve the needs and interests of the Commission
	Remarks:
N	Failure of licensee significant safety equipment or adverse impact on licensee operations as a result of a safeguards initiated event (e.g., tampering).
	Remarks:
N	Actual intrusion into the protected area.
	Remarks:
Y/N	**AIT Deterministic Criteria**
N	Involved a significant infraction or repeated instances of safeguards infractions that demonstrate the ineffectiveness of facility security provisions
	Remarks:
N	Involved repeated instances of inadequate nuclear material control and accounting provisions to protect against theft or diversions of nuclear material
	Remarks:
N	Confirmed tampering event involving significant safety or security equipment

	Remarks:
N	Substantial failure in the licensee's intrusion detection or package/personnel search procedures which results in a significant vulnerability or compromise of plant safety or security
	Remarks:
Y/N	**SI Deterministic Criteria**
N	Involved inadequate nuclear material control and accounting provisions to protect against theft or diversion, as evidenced by inability to locate an item containing special nuclear material (such as an irradiated rod, rod piece, pellet, or instrument)
	Remarks:
N	Involved a significant safeguards infraction that demonstrates the ineffectiveness of facility security provisions
	Remarks:
N	Confirmation of lost or stolen weapon
	Remarks:
N	Unauthorized, actual non-accidental discharge of a weapon within the protected area
	Remarks:
N	Substantial failure of the intrusion detection system (not weather related)
	Remarks:
N	Failure to the licensee's package/personnel search procedures which results in contraband or an unauthorized individual being introduced into the protected area
	Remarks:
N	Potential tampering of vandalism event involving significant safety or security equipment where questions remain regarding licensee performance/response or a need exists to independently assess the licensee's conclusion that tampering or vandalism was not a factor in the condition(s) identified
	Remarks:

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DECISION AND DETAILS OF THE BASIS FOR THE DECISION: **DRP:Branch 2 recommends that a member of DRS:OL Branch assist the resident's in evaluating this issue. Although the issue does not meet the criteria for additional inspection based on the above information and the SRA analysis, the non-conservative decision making by the operators during RCS level changes is of concern. As stated, this event is similar to that occurring at Prairie Island Unit 1 in 2012. In both cases, the root cause was non-conservative decision making by plant operators.**

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