

Enclosure 2

Handouts discussed during the November 19, 2014 ROP WG Public Meeting

Whitepaper of the Reactor Oversight Process Task Force
To Clarify the Granting of Participation Credit During a HAB Drill/Exercise

Issue

NEI 99-02, page 56, lines 28 to 37, allows sites to grant participation credit to Key Positions in the TSC and EOF for a Hostile Action Based (HAB) Drill/Exercise when the positions are not afforded the opportunity to perform DEP. However in some instances, the Drill/Exercise is designed so that Key Positions in the TSC or EOF are afforded the opportunity to perform DEP. In this case the page 54 clarification is not required and the criteria of the third and fourth sentence do not apply to the Drill/Exercise. Confusion exists on the above point. Therefore, the below clarification is recommended for incorporation into NEI 99-02.

Current Text (NEI 99-02, Page 56, Lines 28 – 37)

Credit can be granted to Key Positions for ERO Participation for a Security related Drill or Exercise as long as the Key Positions are observed evaluating the need to upgrade to the next higher classification level and/or evaluating the need to change protective action recommendations. Key TSC Communicator and Key EOF Communicator may be granted participation credit as long as the Key Position performs a minimum of one offsite (state/local) update notification. If an individual participates in more than one Security-related Drill/Exercise in a three year period, only one of the Security-related Drills/Exercise can be credited. A station cannot run more than one credited Security-related Drill/Exercise in any consecutive 4 quarter period. Objective evidence shall be documented to demonstrate the above requirements were met.

Proposed Text

Some Hostile Action-Based (HAB) drills or exercises may have all DEP indicator opportunities performed in the Control Room (e.g., initial declaration of a Site Area Emergency with escalation to a General Emergency prior to activation of ERO facilities), while others could have initial opportunities performed in the Control Room and subsequent opportunities performed in the TSC and/or EOF. For key ERO positions that normally perform a DEP indicator opportunity, the following guidance should be used to assign ERO Participation indicator credit resulting from participation in an HAB drill or exercise.

Key ERO Position	Drill Scenario Did Provide a DEP Opportunity for this Position	Drill Scenario Did NOT Provide a DEP Opportunity for this Position
<ul style="list-style-type: none"> • TSC Senior Manager • EOF Senior Manager 	Count ERO Participation per normal practice	Count ERO participation provided that the position was observed evaluating the need to upgrade to the next higher emergency classification level
Key TSC and EOF positions responsible for developing PARs	Count ERO Participation per normal practice	Count ERO participation provided that the position was observed evaluating the need to change protective action recommendations
<ul style="list-style-type: none"> • Key TSC Communicator • Key EOF Communicator 	Count ERO Participation per normal practice	Count ERO participation provided that the position performed at least one update notification to OROs

For HAB drills and exercises involving no DEP opportunities in the TSC and EOF:

- An individual may receive ERO Participation indicator credit only once during a three-year period.
- Only one HAB drill/exercise may be credited for ERO Participation indicator purposes in any consecutive 4-quarter period.

There is no credit limitation on HAB drills and exercises that include DEP opportunities in the TSC and/or EOF; ERO participation credit should be assigned in the normal manner for these drills and exercises. Objective evidence shall be documented to demonstrate the above requirements were met.

Proposed ROP Task Force Meeting Dates for 2015

2015	Task Force Prep Meeting	NRC Public Meeting	Notes
January	Weds, Jan. 14	Thurs, Jan. 15	<ul style="list-style-type: none"> MLK Holiday January 19, 2015
February	Weds, Feb. 18 via webinar	Thurs, Feb. 19 via webinar	<ul style="list-style-type: none"> Presidents' Day holiday is Monday, February 16 NRC holding end-of-cycle meetings Feb 9-13?
March	Tues, March 17	Weds, March 18	<ul style="list-style-type: none"> RIC is March 10-12
April	Tues, April 14 via webinar	Weds, April 15 via webinar	<ul style="list-style-type: none"> NRC updating web site April 22-24
May	Tues, May 19	Weds, May 20	<ul style="list-style-type: none"> Commission briefing on ROP expected late May. NEI's Nuclear Energy Assembly is May 13-15 Memorial Day holiday is Monday, May 25
June	Tues, June 16 via webinar	Weds, June 17 via webinar	
July	Tues, July 14	Weds, July 15	<ul style="list-style-type: none"> Independence Day holiday is Saturday, July 4 NRC updating web site July 22-24. MSPI Workshop likely July 27-29
August	No meeting	No meeting	<ul style="list-style-type: none"> Meeting via webinar to be scheduled if needed.
September	Tues, Sept. 15	Weds, Sept. 16	<ul style="list-style-type: none"> Labor Day holiday is Monday, September 7
October	Tues, Oct. 20 via webinar	Weds, Oct. 21 via webinar	<ul style="list-style-type: none"> Columbus Day, October 12 NRC updating web site October 22-23
November	Tues, Nov. 17	Weds, Nov. 18	<ul style="list-style-type: none"> Veterans' Day holiday is Monday, November 9 Thanksgiving holiday is Thursday, November 26
December	No meeting	No meeting	<ul style="list-style-type: none"> Christmas holiday is Friday, December 25 Meeting via webinar to be scheduled if needed.

Secondary Containment Event Reports due to Open Doors or Lowering Vacuum

Event Date	Event Notification Number	Licensee Event Report Number	Facility	Vendor	Secondary Containment Door Issue?	Secondary Containment Vacuum Issue?	Alternate Source Term NRC Safety Evaluation	Apparent Cause	Duration	Event Description	Proposed Corrective Action
03/06/2014	49880	324-2014-001	Brunswick	BWR	Yes	No	ML021480483	Design / Equipment	minutes - 1	The inner door failed to latch and opened as an employee was opening the outer door.	Implement a design change to install a new interlock for the secondary containment airlock doors.
03/13/2014	49910	325-2014-003	Brunswick	BWR	Yes	No	ML021480483	Design / Equipment	minutes - 1	An employee was exiting secondary containment at the same time an employee was entering secondary containment. The interlock systems have known physical vulnerabilities and require maintenance of moving parts to guarantee proper function. It is possible for the door position switch or plunger to stick in intermittent cases, particularly if the door is experiencing heavy use during an outage.	Short term is that video monitoring equipment was installed to be used for ingress and egress. Long term is implement a design change to install a new interlock for the secondary containment airlock doors.
03/17/2014	49921	325-2014-003	Brunswick	BWR	Yes	No	ML021480483	Design / Equipment	seconds - 10	See 3/13/2014 Event.	See 3/13/2014 Event.
01/22/2014	49758	461-2014-001	Clinton	BWR	No	Yes	ML052570461	Equipment	minutes - 7	Loss of secondary containment pressure due to the spurious closure of a ventilation damper. A prematurely degraded air supply solenoid responded to a minor perturbation of supply voltage or surge of current on the bus by dropping out during ventilation startup resulting in isolation of the damper and a ventilation system trip.	The prematurely degraded solenoid has been replaced. This solenoid is currently replaced on an 8-year Preventive Maintenance frequency and was most recently replaced on 11/25/13. The cause of the premature failure of the solenoid is being evaluated by an independent laboratory.
08/25/2013	49307	397-2013-007	Columbia	BWR	No	Yes	ML062610440	Design / Equipment	minutes - 3	Secondary containment vacuum was lost during a suddenly occurring thunderstorm. The cause for the event was determined to be failure of the Reactor Exhaust Air/Reactor Outside Air system to automatically maintain a stabilized negative differential pressure in the Reactor Building. The system controller is not designed to respond to very quick changes in building differential pressure as was experienced during this period of suddenly shifting wind direction and increasing wind speed.	Corrective actions include investigating methods to alert operations to a potential issue with secondary containment before vacuum is lost.
01/09/2014	49709	397-2014-001	Columbia	BWR	No	Yes	ML062610440	Design / Equipment	minutes - 3	Loss of secondary containment vacuum due to external weather event (three temperature related transients and one wind related transient). The exhaust ventilation fan is required to adjust its flow to maintain a vacuum above the TS required value of 0.25 in wg. The cause of secondary containment vacuum not being maintained greater than or equal to 0.25 inwg was due to improper tuning of the Reactor Building Outside Air differential pressure controllers. The transient response of the controllers were not properly tuned to compensate for sudden pressure changes that are expected during operation of the pressure control system.	Actions are being taken to update the current calibration procedures to reflect the optimum control system tuning for the system, and increasing margin in secondary containment by lowering the differential pressure set point on the controllers. Columbia is also investigating methods to alert operations to a potential issue with secondary containment before the Technical Specification secondary containment pressure is reached.
01/15/2014	49729	397-2014-001	Columbia	BWR	No	Yes	ML062610440	Design / Equipment	minutes - 6	See 1/09/2014 Event.	See 1/09/2014 Event.
02/17/2014	49834	397-2014-001	Columbia	BWR	No	Yes	ML062610440	Design / Equipment	minutes - 2	See 1/09/2014 Event.	See 1/09/2014 Event.
01/06/2014	49694	282-2014-001	Cooper	BWR	No	Yes	ML092310349	Personnel	minutes - 17	Loss of secondary containment vacuum occurred when a non-licensed plant operator (NLO) was hanging tags in support of maintenance work. During the process of hanging tags, the NLO inadvertently opened the wrong drain valve. When the wrong drain valve was open, the reactor recirculation motor generator (RRMG) exhaust fan discharge damper that was operating closed.	The root cause is the organization was not fully aware of the effects of the cross-over leakage between the reactor building envelope and the RRMG exhaust system. To prevent recurrence of this event, procedures will be revised to ensure adequate precautions are taken to avoid exceeding the -0.25 inches of water column DP requirement, information about the effects of cross-over leakage will be incorporated into the appropriate training materials, and a procedure to directly measure air leakage will be developed.
09/23/2013	49379	237-2013-003	Dresden	BWR	Yes	No	ML062070290	Design / Equipment	seconds - 5	Inner and outer doors open simultaneously due to interlock failure. During this event, the operator in the interlock at the time of failure reported excessive relay chattering in the relay panel. It is believed that intermittent relay malfunction in the circuit degraded the voltage to the diesel side door strike causing this failure to occur.	A modification to improve the interlock door circuit has been identified and the modification is currently in the process of being installed.
11/05/2013	49503	237-2013-004	Dresden	BWR	Yes	No	ML062070290	Design / Equipment	seconds - 1	A door operator operated the turbine side door hand switch allowing personnel traffic to enter the interlock. Simultaneously, the reactor building side door swung open. A recently installed limit switch on the reactor building side door caused the door to make physical contact with limit switch before making flush contact with the magnets in the door frame. The distance between the magnets and the door caused inadequate latching strength. A known design vulnerability exists in the interlock door control logic. The fundamental design of the interlock circuit does not incorporate an exclusive-or logic (XOR) scheme. This means if both doors receive a signal to open at precisely the same time, the logic could allow both doors to open. Simultaneous pushing of the buttons was verified, in both events, to have not occurred by the door operator staged in the interlock. Although this was not an apparent cause of these events, this is a system vulnerability that could lead to an interlock door failure.	As a result of the secondary containment events, site engineering performed an apparent cause evaluation that identified the need to develop a modification to improve the interlock door circuit. Dresden engineering has completed the engineering change, and a modification is currently in process.
11/16/2013	49543	237-2013-007	Dresden	BWR	Yes	No	ML062070290	Design / Equipment	seconds - 5	A worker, staged in the interlock, reported that while opening the Reactor Building side door the Turbine Building side door opened several inches. The apparent cause evaluation identified that the apparent cause of this event was an interlock circuit relay malfunction.	Dresden engineering has completed the engineering change, and the modification is currently awaiting installation.
11/28/2013	49590	249-2013-001	Dresden	BWR	Yes	No	ML062070290	Personnel	minutes - 15	An outer door was held open by laborers while a technician used his key to open the inner interlock door at the same time. When the interlock prevented the inner door from opening, the technician opened the door by using a manual button that defeats the interlock mechanism. The technician did not recognize that there was a change in plant conditions (i.e., the area was restored to part of the Secondary Containment boundary) and believed that it was permissible to override the interlock doors.	Training conducted. Procedures also revised to provide for additional briefs / communications.
03/27/2014	49963	237-2014-001	Dresden	BWR	Yes	No	ML062070290	Design / Equipment	seconds - 5	Inner and outer doors open simultaneously. An apparent cause was not identified, however, the most probable cause was determined to be a failure of the magnetic vane operated limit switch on the door. This determination was based off of historical poor performance of the component.	Complete a modification to the interlock doors and replace the existing limit switches.
12/18/2013	49657	331-2013-006	Duane Arnold	BWR	Yes	No	ML011660142	Design / Equipment	seconds - 10	Inner and outer doors open simultaneously. The apparent cause of the event was determined to be excess strength of a permanent magnet on one of the doors. After the permanent magnet was adjusted, the interlock was able to prevent both doors from opening.	Monthly testing will be revised to check the permanent magnet for proper adjustment.

Secondary Containment Event Reports due to Open Doors or Lowering Vacuum

Event Date	Event Notification Number	Licensee Event Report Number	Facility	Vendor	Secondary Containment Door Issue?	Secondary Containment Vacuum Issue?	Alternate Source Term NRC Safety Evaluation	Apparent Cause	Duration	Event Description	Proposed Corrective Action
02/18/2014	49838	331-2014-002	Duane Arnold	BWR	Yes	No	ML011660142	Design / Equipment	seconds - 10	Inner and outer doors open simultaneously. The apparent cause of the event was determined to be excess strength of a permanent magnet on one of the doors. After the permanent magnet was adjusted, the interlock was able to prevent both doors from opening.	Monthly testing will be revised to check the permanent magnet for proper adjustment.
05/30/2014	50153	331-2014-003	Duane Arnold	BWR	Yes	No	ML011660142	Design / Equipment	seconds - 10	Inner and outer doors open simultaneously. The apparent cause of the event was determined to be excess strength of a permanent magnet on one of the doors. After the permanent magnet was adjusted, the interlock was able to prevent both doors from opening.	In order to address the lag between the interlock lights turning off and the door latching, monthly testing will be enhanced to document maintenance actions to allow trending, and to quantify the gap between the interlock light turning off and the door latching to improve magnet setup.
11/24/2013	49575	341-2013-003	Fermi	BWR	No	Yes	ML042430179	Equipment	minutes - 3	Low vacuum due to fan trip. The non-safety related ventilation system tripped due to lack of steam flow through a heating coil caused by inadequate draining of the downstream steam trap. Investigation revealed the presence of some corrosion and a cracked drain seat in the associated steam drain. The degraded steam drain was then replaced and tested.	Preventive maintenance is being scheduled to inspect, and clean or replace the ventilation steam traps and strainers
10/22/2013	49462	373-2013-003	LaSalle	BWR	Yes	No	ML101750625	Design / Equipment	seconds - 10	Inner and outer doors open simultaneously. The cause of the event was a less than robust design of the door interlock assembly. Troubleshooting found that the mounting fasteners that secure the entire locking assembly to the frame of door were loose, which prevented the electro-mechanical solenoid operated bolt from properly aligning with the door-mounted catch.	Efforts to install a more robust design for the interlock assembly are in progress. Quarterly preventative maintenance to inspect the assemblies and fasteners and tighten or replace as necessary remain in progress.
02/18/2014	49840	373-2014-001	LaSalle	BWR	Yes	No	ML101750625	Design / Equipment	seconds - 3	Inner and outer doors open simultaneously. The cause of the event was a less than robust design of the door interlock assembly. Troubleshooting found that the mounting fasteners that secure the entire locking assembly to the frame of door were loose, which prevented the electro-mechanical solenoid operated bolt from properly aligning with the door-mounted catch. The degradation of the door closure mechanism and door seal was determined to be due to repeated challenges of the door during personnel ingress/egress.	Efforts to install a more robust design for the interlock assembly are in progress. Quarterly preventative maintenance to inspect the assemblies and fasteners and tighten or replace as necessary remain in progress.
04/30/2014	50076	373-2014-003	LaSalle	BWR	Yes	No	ML101750625	Equipment	seconds - 5	Inner and outer doors open simultaneously. The cause of the event was determined to be that the single mounting bolt holding the armature plate to a door had become disengaged and the plate had fallen to the floor, causing the electromagnetic locking function to fail. The armature mounting bolt had not been properly tensioned and Loctite had not been used during installation of the armature plate. This lock had been installed as a modification to address recurrent problems in maintaining one secondary containment access door closed.	Corrective actions were to reinstall the armature plate with proper tensioning of the mounting bolt and with Loctite applied to the threads. All other susceptible armature plate mountings at LaSalle were inspected and verified for proper torque and use of Loctite.
09/03/2013	49318	353-2013-002	Limerick	BWR	Yes	Yes	ML062210214	Design / Equipment	seconds - 5	Inner and outer doors open simultaneously. Vacuum not maintained within specifications. This event was caused by a non-functional airlock door open indicating light not providing the correct door status.	A periodic routine test of the airlock door open indicating lights will be implemented to identify non-functional door open indicating lights.
10/30/2013	Not submitted. Under NRC review.	353-2013-003	Limerick	BWR	Yes	Yes	ML062210214	Design / Equipment	seconds - 10	Inner and outer doors open simultaneously. Vacuum not maintained within specifications. The airlock door self-closing feature failed to fully close and latch the airlock door and the worker did not properly verify the door was latched following use. The airlock door self-closing feature was verified to be working properly but may require assistance to fully latch.	A reactor enclosure airlock design change will be evaluated.
11/10/2013	49526	352-2014-001	Limerick	BWR	Yes	No	ML062210214	Design	seconds - 10	Inner and outer doors open simultaneously. This event was caused by a weakness in the design of the reactor enclosure airlocks since there is no mechanical interlock and the door open indicating light does not prevent simultaneous opening of both airlock doors.	No long term corrective actions planned / stated.
12/18/2013	49651	352-2014-002	Limerick	BWR	Yes	No	ML062210214	Design	seconds - 5	Inner and outer doors open simultaneously. This event was not prevented by the design of the reactor enclosure airlocks since there is no mechanical interlock and the door open indicating light does not prevent simultaneous opening of both airlock doors.	A modification is being evaluated for the airlock doors.
12/18/2013	49659	353-2014-001	Limerick	BWR	Yes	No	ML062210214	Design	seconds - 10	Inner and outer doors open simultaneously. This event was not prevented by the design of the reactor enclosure airlocks since there is no mechanical interlock and the door open indicating light does not prevent simultaneous opening of both airlock doors.	A modification is being evaluated for the airlock doors.
01/09/2014	49706	353-2014-002	Limerick	BWR	Yes	No	ML062210214	Design	seconds - 10	Inner and outer doors open simultaneously. This event was not prevented by the design of the reactor enclosure airlocks since there is no mechanical interlock and the door open indicating light does not prevent simultaneous opening of both airlock doors.	No long term corrective actions planned / stated.
02/06/2014	Not submitted. Under NRC review.	352-2014-003	Limerick	BWR	Yes	No	ML062210214	Design / Personnel	seconds - 10	Inner and outer doors open simultaneously. A worker opened the outboard airlock door prior to allowing the inboard airlock door to go full closed. This event was not prevented by the design of the reactor enclosure airlocks since there is no mechanical interlock and the door open indicating light does not prevent simultaneous opening of both airlock doors.	No long term corrective actions planned / stated.
03/20/2014	Not submitted. Under NRC review.	353-2014-003	Limerick	BWR	Yes	No	ML062210214	Design / Personnel	seconds - 10	Inner and outer doors open simultaneously. Workers simultaneously opened both doors of a reactor enclosure personnel airlock when transporting equipment through the airlock. The cause of the event was a worker deviated from the pre-job briefing instructions regarding one worker being responsible to open and close the airlock doors while the other workers were responsible for pushing the cart through the open door. When the worker deviated from the briefing instructions the worker did not adhere to the airlock door policy. This event was not prevented by the design of thereafter enclosure airlocks since there is no mechanical interlock and the door open indicating light does not prevent simultaneous opening of both airlock doors.	The worker was coached regarding compliance with the responsibilities assigned at the pre-job brief and airlock door use. The lessons learned were communicated to the site.
04/04/2014	Not submitted. Under NRC review.	353-2014-004	Limerick	BWR	Yes	No	ML062210214	Design / Personnel	seconds - 10	Inner and outer doors open simultaneously. One worker opened the outboard door before the other worker had fully closed and latched the inboard door. This event was not prevented by the design of the reactor enclosure airlocks since there is no mechanical interlock and the door open indicating light does not prevent simultaneous opening of both airlock doors.	The workers were coached regarding use of the self-check fundamental. The lessons learned were communicated to the site.
11/20/2013	49562	423-2013-009	Millstone	PWR	Yes	No	ML071450053 ML061990135	Design / Personnel	days - 3	Secondary containment boundary door found not latched. The stiffness of the door can be misleading to persons who pull/push on the door to verify it is latched.	Positive assurance of proper latching of doors continues to be reinforced.

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09/19/2013	49356	263-2013-008	Monticello	BWR	Yes	No	ML062790015	Equipment	seconds - 10	Inner and outer doors open simultaneously. Both doors were simultaneously opened during testing because the surveillance procedure lacked specific direction for the user to obtain visual or audible confirmation that the interlock energized prior to challenging the closed door. In addition the failure of the interlock mechanism contributed to the ability to open both doors simultaneously.	The door interlock was repaired. Station airlock interlock testing procedures will be revised to provide specific instructions to not challenge the opposite door if there is no indication that the interlock activation is present when a door is open.
03/28/2014	49970	263-2014-006	Monticello	BWR	Yes	No	ML062790015	Equipment	seconds - 2	Inner and outer doors open simultaneously. To prevent a breach of secondary containment, each pair of doors is electrically interlocked so only one door may be open at a time. Permissive pushbuttons must be used to open airlock doors. The airlock also has a battery powered alarm system which will sound an alarm if both doors are open at the same time. The two individuals inappropriately applied an opening force to the two secondary containment airlock doors prior to and while depressing the doors' interlock push buttons, defeating the interlock. The airlock interlock should be operated by first depressing the interlock push button, then applying opening force to the door.	Corrective actions include affixing permanent labels next to the interlock push button which provide instructions on how to appropriately open the doors. As an additional measure, plans are in place to replace the doors with doors that have windows. The need for training on proper airlock operation will also be evaluated for inclusion in general access training.
03/12/2014	49906	410-2014-005	Nine Mile Point	BWR	No	Yes	ML081230439	Design / Personnel	hours - 2.5	Loss of vacuum due to sustained high external winds. The causal evaluation of this event identified that procedures do not provide direction to place the Standby Gas Treatment System in service and/or isolate the Reactor Building prior to exceeding the TS limit for secondary containment dP.	The corrective action planned involves revising procedures to provide direction to initiate Standby Gas Treatment and isolate the reactor building during high wind conditions prior to exceeding TS limit for secondary containment dP.
03/24/2014	49948	410-2014-006	Nine Mile Point	BWR	No	Yes	ML081230439	Equipment	minutes - 3	Vacuum lost due to the failure of the auxiliary boilers. The event causal analysis identified that management and oversight of auxiliary boiler operation and maintenance was less than adequate resulting in poor reliability due to hardware deficiencies and chemistry control which caused ground fault trips. The loss of this equipment resulted in challenges to Reactor Building heating and operation of the building ventilation.	Corrective actions planned or taken include: 1) Revising a plant procedure to ensure operating parameters are maintained within specifications during boiler operations and 2) Revising a plant procedure to require a chemistry sample be taken each shift, analyzed and reported to operations when an auxiliary boiler is in operation.
04/02/2014	49985	410-2014-007	Nine Mile Point	BWR	Yes	No	ML081230439	Personnel	seconds - 5	Inner and outer doors open simultaneously. Workers carded into the outer door. Before the outer door could close, one of the workers within the airlock opened the inner door.	Workers involved in the event were coached and counseled on the importance of applying their human performance tools of self-checking and peer-checking especially when passing through secondary containment doors.
06/10/2014	50187	410-2014-008	Nine Mile Point	BWR	No	Yes	ML081230439	Equipment	minutes - 4	Vacuum lost due to fan trip during restoration activities. The cause of the exhaust fan trip was a faulty flow switch.	Revise the Preventative Maintenance strategy for Reactor Building ventilation supply and exhaust fan flow switches. Revise procedures to ensure exhaust and supply fan discharge dampers are 100% open prior to a fan start.
11/17/2013	49547	219-2013-003	Oyster Creek	BWR	Yes	No	ML071080019	Equipment	seconds - 10	Inner and outer doors open simultaneously. The primary causes for this event are ineffective use of visual aids provided by windows on airlock doors and a degraded airlock door interlock. Additionally, the door latch mechanism was found to have a worn lock solenoid.	Maintenance was performed to repair the degraded containment door interlock. Site wide communications were made and signs are being added to provide additional instructions for airlock door operation.
03/04/2014	49870	254-2014-001	Quad Cities	BWR	No	Yes	ML062070290	Equipment	minutes - 3	Vacuum lost due to a failed fuel pool radiation monitor detector that caused the ventilation system to isolate. The detector failure was caused by a manufacturing defect that caused double pulsing on the GM-Tube. The Standby Gas Treatment System was also in operation for a scheduled surveillance.	Corrective actions included replacing the failed radiation monitor detector, and sending the failed detector to the vendor for failure analysis.
04/01/2014	49984	254-2014-002	Quad Cities	BWR	Yes	No	ML062070290	Equipment	seconds - 5	Inner and outer doors open simultaneously due to interlock failure. The cause of the interlock failure was due to a malfunctioning interlock door hydraulic actuator and time delay relays had allowed the second door to open before the first door was secured.	Corrective actions included replacing the failed actuator and adjusting the limit switch. A set point change will be implemented to resolve relay time delay issues.
05/22/2014	50132	254-2014-003	Quad Cities	BWR	Yes	No	ML062070290	Equipment	seconds - 5	Inner and outer doors open simultaneously due to interlock failure. The cause of the interlock failure was due to a bent locking bolt resulting in misalignment of the interlock plungers on a door. The mechanical interlock device could be defeated inadvertently in this condition. A contributing cause of the event was a degraded door indication light. Had the indication been clearly visible, the mechanic would have known the other door was open and would not have challenged the door.	Corrective actions included replacing the bent locking bolt and realigning the door. Other corrective actions include adding steps to the preventive maintenance procedure to inspect door hardware annually and upgrading the door indication lights to LEDs to improve reliability and visibility.
09/19/2013	49362	458-2013-002	River Bend	BWR	Yes	No	ML030760746	Personnel	minutes - 4	Door inadvertently left open. Upon closing a door, the employee mistakenly rotated the handwheel slightly, caused the latch bolts to extend partially. The latch bolts then contacted the outside of the keepers in the door frame, blocking the door open. The employee did not notice that the door was slightly open when he rotated the handwheel to the "closed" position, and then did not properly confirm its security prior to leaving the area.	A briefing memorandum was issued by the plant manager to all site personnel. A stand-down was conducted by the site engineering department, as well as the contractor's organization, to review the event and its causes. Focused observations were conducted in the plant to confirm that all door operations were being performed in accordance with site standards and expectations.
10/13/2013	49432	387-2013-004	Susquehanna	BWR	No	Yes	ML070080301	Equipment	minutes - 5	Low vacuum due to an unexplained decrease in Reactor Building exhaust flow.	Monitoring equipment has been installed on the systems' pressure transmitter, pressure controller and solenoid valve. Should a repeat event occur, data needed to determine the cause of the event will be captured for evaluation and determination of the cause.
10/23/2013	49465	387-2013-005	Susquehanna	BWR	No	Yes	ML070080301	Equipment	minutes - 15	Low vacuum due to the ventilation controllers not being periodically checked to ensure that they are operating the ventilation exhaust within the controlling range.	Observing controllers have been added to the Operator Rounds. The rounds will ensure the output of each controller is within range. Also, evaluate the feasibility of increasing the exhaust fan speed and permanently close the top row of manual supply dampers.
10/31/2013	49489	387-2013-006	Susquehanna	BWR	No	Yes	ML070080301	Equipment	minutes - 4	Low vacuum due to fan trip during power supply transfer. The direct cause was the exhaust damper did not open enough to provide the required minimum flow prior to the time delay tripping the fan. A causal factor was determined to be the procedure for performing the power supply transfer was lacking a method to bypass the low flow condition which resulted in the exhaust fan trip.	Corrective actions include procedure changes.
11/01/2013	49492	387-2013-006	Susquehanna	BWR	No	Yes	ML070080301	Equipment	minutes - 6	See 10/31/2013 Event.	See 10/31/2013 Event.
11/20/2013	49465	387-2013-007	Susquehanna	BWR	No	Yes	ML070080301	Equipment	hours - 4	Unable to draw down vacuum with Standby Gas Treatment System due to excessive inleakage. The direct cause of the failed tests was excessive in-leakage through the railroad bay hatch cover, doors, seals, and removable walls.	Corrective actions include repairing known air leaks, revising component criticality classifications, and the institution of preventative maintenance activities for affected components.
11/27/2013	49588	387-2013-008	Susquehanna	BWR	No	Yes	ML070080301	Equipment	hours - 1.5	Low vacuum due to failure of the exhaust fan discharge damper solenoid valve which was due to in-service degradation of the lubricant used during the valve manufacturing process. The valve manufacturer used a silicon-based lubricant which would migrate to the top of the plunger and become sticky during long periods of being energized. This caused the solenoid plunger to get stuck in the energized position, resulting in the valve porting air.	Plan developed for replacing similar solenoids.
12/07/2013	49614	387-2013-007	Susquehanna	BWR	No	Yes	ML070080301	Equipment	hours - 4	See 11/01/2013 Event.	See 11/01/2013 Event.

Secondary Containment Event Reports due to Open Doors or Lowering Vacuum

Event Date	Event Notification Number	Licensee Event Report Number	Facility	Vendor	Secondary Containment Door Issue?	Secondary Containment Vacuum Issue?	Alternate Source Term NRC Safety Evaluation	Apparent Cause	Duration	Event Description	Proposed Corrective Action
02/12/2014	49821	387-2014-002	Susquehanna	BWR	Yes	No	ML070080301	Personnel	hours - 6.5	Door found open with sign stuck in door jam. The most probable causes were that the door was not sufficiently challenged and that the latching device is not sufficient to ensure proper closure of the door.	Corrective actions include issuing a site communication to define expectations to site personnel on requirements and replacing doors to include a three-point latching device.
03/04/2014	49867	387-2014-003	Susquehanna	BWR	No	Yes	ML070080301	Equipment	hours - 1.5	Unable to draw down vacuum with Standby Gas Treatment System. The direct cause of this event was due to air in-leakage past a door and an access hatch cover.	Corrective actions include installing shielding on piping adjacent to the Control Structure, revised TS to increase Standby Gas Treatment System exhaust flow rate, repair/replace the bottom seal plate and the top and bottom seals on the door, caulk joints for the hatch, and re-perform Secondary Containment drawdown tests.
03/08/2014	49884	387-2014-004	Susquehanna	BWR	No	Yes	ML070080301	Equipment	minutes - 29	Low vacuum due to instrument air valve that was determined to have not been fully closed and therefore resulted in a Reactor Building exhaust fan trip on low flow. Causes included mechanical binding of valve and lack of preventive maintenance activities.	Corrective actions include replacing valves on a frequency determined in accordance with the station preventive maintenance program.
04/17/2014	50040	387-2014-005	Susquehanna	BWR	No	Yes	ML070080301	Equipment	minutes - 45	Low vacuum due to misalignment between the upper and lower set of damper blades on a manual outside air damper causing an excessive opening in the upper set of blades. This prevented sufficient restriction of supply air flow into secondary containment during the change in the ventilation line up. The apparent cause of the damper misalignment was an inadequate preventative maintenance frequency.	Corrective actions include cleaning, adjusting, and lubricating the affected damper and increasing the frequency of its preventative maintenance activity.
04/24/2014	50055	387-2014-007	Susquehanna	BWR	No	Yes	ML070080301	Design / Personnel	minutes - 29	Low vacuum due to fan trip during power supply transfer. The apparent cause was a deficiency with procedure steps that did not account for actual/designed system response.	Corrective actions include revising applicable procedures to enhance restoration of ventilation during RPS transfers.