

Preliminary questions for discussion at Hope Creek flooding walkdown audit 6/25-6/27/2013

#	Background/issue description	Question(s)
1	<p>Page 38 of the Hope Creek walkdown report states the following: “Penetrations in exterior walls and slabs of the SSWS intake structure are protected against water inflow up to Elevation 121 feet PSD for the north and east exterior walls and up to Elevation 128.5 feet PSD for other exterior walls and slabs.”</p> <p>Page 17 of the Hope Creek walkdown report indicates that the maximum stillwater elevation at the intake structure is 113.8 ft PSD and maximum wave runup is to elevations of 134.4 ft PSD (south and west SWIS walls) and 119.08 ft PSD (north and east SWIS).</p> <p>Notes:</p> <ul style="list-style-type: none"> ▪ SSWS = station service water system ▪ SWIS = service water intake structure 	<ul style="list-style-type: none"> - Given that the design-basis flood elevation, including wave runup, at the south and west walls of the intake structure is 134.4 ft PSD and the penetrations protect against water intrusion to elevation 128.5 ft PSD, were the penetration seals identified as having negative margin? - How were these issues dispositioned (and using what criteria) as part of the CAP? - Do these features represent deficiencies (per definition in NEI 12-07) or instances of “small margin and significant consequences” (per question 27 of the walkdown record form in NEI 12-07)? - How was available physical margin (APM) measured for these features?
2	<p>Page 38 of the Hope Creek walkdown report states: “As described in HCGS UFSAR Section 2.4.2 [Ref. 13], the SSWS intake structure may be subjected to hurricane produced waves which could overtop the roof of the western portion of the structure at Elevation 128 feet. However, worst case water levels will not exceed the top of the wall at the air intake screens at Elevation 128.5 feet PSD. The SSWS intake structure air intake screens are located on an indented section of the intake structure exterior east wall. Waves overtopping the intake structure from the west will not have sufficient standing height to enter the air intakes at elevation 128.5 feet PSD. Therefore, flood water will not enter into the dry area of the SSWS intake structure.”</p> <p>Page 17 of the Hope Creek walkdown report indicates that the maximum stillwater elevation at the intake structure is 113.8 ft PSD and maximum wave runup is to elevations of 134.4 ft PSD (south and west SWIS walls) and 119.08 ft PSD (north and east SWIS).</p>	<ul style="list-style-type: none"> - What is the basis for the conclusion that the water levels will not exceed the top of the wall at the intake screen at elev. 128.5 ft PSD in light of the wave-runup on the south and west walls to elev. 134.4 ft PSD?
3	<p>Footnote 12 on pg. 48 of the Hope Creek walkdown report indicates the total</p>	<ul style="list-style-type: none"> - Does the site have seals that are unable to

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	<p>number of deficiencies and potential deficiencies includes “features with documentation insufficient for determining hydrostatic rating.”</p> <p>Attachment A, p. 14 states the following: “There are several penetration seals throughout the plant that do not have sufficient documentation to determine their hydrostatic rating. Further investigation is required to ensure the hydrostatic rating is sufficient to provide protection from an external flood.” The same page of the attachment also states the following: “Existing plant documentation for three penetration seals is insufficient to determine the seals hydrostatic rating for external flood protection. These seals require further investigation.”</p>	<p>withstand the required hydrostatic loads?</p> <ul style="list-style-type: none"> - How were these issues dispositioned (and using what criteria) as part of the CAP? - Do these features represent deficiencies (per definition in NEI 12-07) or instances of “small margin and significant consequences” (per question 27 of the walkdown record form in NEI 12-07)?
4	<p>Appendix D of NEI 12-07 states that the walkdown report should include the following: “Description of all deficiencies as determined by the CAP. Observations that are entered into the CAP and not dispositioned as deficiencies do not need to be reported.” In addition, NEI 12-07 states: “All flooding walkdown observations identified as deficiencies by the Corrective Action Program (CAP) and other items identified during the walkdowns, but awaiting final disposition by the CAP, must be reported to the NRC in the walkdown report.”</p> <p>The Hope Creek walkdown report states “Attachment A of this Report identifies and provides a summary of the issues identified during the HCGS Flood Protection Walkdowns that have been dispositioned as a deficiency and corrected as well as those potential deficiencies that have not yet been dispositioned.” However, based on the information in Attachment A, it is not clear which conditions have been dispositioned as deficiencies and which are awaiting disposition.</p>	<ul style="list-style-type: none"> - What conditions listed in Attachment A represent deficiencies and what conditions are awaiting disposition? - How were these issues dispositioned (and using what criteria) as part of the CAP? - Do these features represent deficiencies (per definition in NEI 12-07) or instances of “small margin and significant consequences” (per question 27 of the walkdown record form in NEI 12-07)?
5	<p>NEI 12-07 states that available physical margin (APM) should be evaluated for flood protection features. For barriers and penetrations, NEI 12-07 provides specific examples to demonstrate the calculation of APM:</p> <ul style="list-style-type: none"> ▪ The top of the lowest flood barrier is a flood gate in the auxiliary building (a Category 1 structure). The top of the flood gate is at an elevation of 1014 ft. If the river rises above this elevation, water will enter the building. The current licensing basis states that the maximum predicted flood level is elevation 1014 ft. Therefore the APM = 0 ft. ▪ Cables from the switchyard enter the structure at site grade where the site grade is at elevation 400 ft. These cable penetrations are protected with 	<ul style="list-style-type: none"> - Was APM computed for all barriers and penetration seals? - How was APM evaluated/measured for barriers and penetration seals?

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	<p>seals guaranteed for a 40- foot static head. Therefore this structure is protected to elevation 440 ft (400 ft + 40 ft). Other flood protection features on the structure, such as door seals and sandbags, provide flood protection to elevation 445 ft. The current licensing basis states that the maximum predicted flood level at the site is elevation 430 ft. Therefore, the APM = 10 ft.</p>	
<p>6</p>	<p>Question 27 of the walkdown record form in NEI 12-07 provides a format for documenting available physical margin (APM) and identification of small margin with potentially significant safety consequences (including observations related to APM, affected equipment, and entry into the CAP).</p>	<ul style="list-style-type: none"> - Were instances of small or negative margin observed for flood protection features? - What features were identified as having small or negative margin? - How were these issues dispositioned (and using what criteria) as part of the CAP? - Were safety consequences of small margin evaluated and (if appropriate) entered into the CAP? - Do these features represent deficiencies (per definition in NEI 12-07) or instances of “small margin and significant consequences” (per question 27 of the walkdown record form in NEI 12-07)?
<p>7</p>	<p>NEI 12-07, Attachment A provides examples of inspection considerations. For penetration seals, the following consideration is included for wall, ceiling, and floor seals (e.g., penetration seals): Penetration sleeves, link seals, piping, and conduit should have an absence of corrosion on the exposed steel surface. Conduit seal material should have an absence of water stains below the penetrations.</p> <p>Attachment A to the Hope Creek walkdown report describes conditions in which cracking, missing seals, leakage (or signs of historical leakage), rust, calcification, or seal degradation was observed. The report does not identify features types, but rather indicates a feature ID.</p>	<ul style="list-style-type: none"> - What features (e.g., seals) were associated with these observations? - How were these issues dispositioned (and using what criteria) as part of the CAP? - Do these features represent deficiencies (per definition in NEI 12-07) or instances of “small margin and significant consequences” (per question 27 of the walkdown record form in NEI 12-07)? - Was in-leakage (i.e., amount of water leaking through barriers) measured?