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To:	Shams, Mohamed; Marshall, Michael
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Subject:	[External_Sender] Flooding MSA Template and Examples
Date:	Tuesday, February 09, 2016 1:24:33 PM
Attachments:	MSA Draft Scope and Template - rev 2.docx

Mo, Mike;

I have attached the latest version of our MSA template that addresses all the comments we have received to date. The changes since the last version we sent you are shown in "Track Changes" mode. Our January 27th webinar identified some continuing concerns with our responses to your comments 9, 10, 35, and 36. I believe that the attached document resolves these comments in a manner that meets your request.

I look forward to your acceptance of this document and your comments on our G.3.A (PLANT DB=FLEX DB < MSFHI), G.3.B (PLANT DB < FLEX DB < MSFHI), and G.4.3 (AMS) examples that were sent to you on February 2nd.

I will send you a revised version of our G.4.4 (THMS) example that addresses your comments from last December, and an initial version of the G.4.1 (FLEX OK) and G.4.2 (MOD FLEX) examples this Friday. At this point you will have received all the documents that we plan to prepare to support the MSA effort.

We should be scheduling a follow-up meeting or webinar to close out the comments on all these examples in the near future. Please contact me with proposed dates once you have determined when your comments will be completed.

Thank you,

Jim Riley

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2016 Mitigating Strategies Assessments for Flooding
Documentation Requirements
(DRAFT)

Acronyms:

- MSFHI – Mitigating Strategies Flood Hazard Information (from the FHRR and MSFHI letter)
- FHRR – Flood Hazard Reevaluation Report
- DB – Design Basis
- AMS – Alternative Hazard Mitigating Strategies
- THMS – Targeted Hazard Mitigating Strategies
- FLEX DB – FLEX Design Basis (flood hazard)

Definitions:

FLEX Design Basis Flood Hazard: the controlling flood parameters used to develop the FLEX flood strategies.

1. Summary
   Provide a brief introduction that states whether or not the FLEX design basis flood bounds the MSFHI and if not, summarizes what mitigation strategy (FLEX works, modify FLEX, AMS, or THMS) has been adopted and the key changes to equipment or deployment. No details are expected in this section, those will come later in the MSA.

2. Documentation

   2.1. NEI 12-06, Rev. 2, Section G.2 – Characterization of the MSFHI (all licensees need to complete)

   Document the characterization of the MSFHI. This can be done by summarizing and/or referencing the FHRR submittal and associated RAI/Audit responses.

   2.2. NEI 12-06, Rev. 2, Section G.3 – Comparison of the MSFHI and FLEX DB Flood (all licensees need to complete)

   Document any flood parameter not bounded for all applicable flood-causing mechanisms in the following table. The following table format ~~can~~ should be used for each applicable flood mechanism. ~~Identify if individual controlling flood-causing mechanisms or a bounding set of parameters are utilized.~~ The table can be used to define individual controlling flood mechanisms or bounding parameters. Identify if individual controlling flood mechanisms or a bounding set of parameters are utilized. If one set of bounding parameters are utilized, note the associated mechanism for each parameter. This information should have already been developed with the FHRR submittal, and associated RAI responses; for clarity, copy the relevant information into the table below.

   If the FLEX design basis flood bounds the MSFHI for all applicable flood causing mechanisms, no further evaluation is necessary. Submit a ~~closure~~ summary letter to the NRC documenting the result.

If the FLEX design basis flood differs from the plant design basis flood (additional conservatism may have been included in the FLEX DB flood in anticipation of MSFHI results), document the relationship of the FLEX DB flood to the plant design basis flood in Table 1 for each flood mechanism and explain the changes. If the NRC's review of the site's Flood Hazard Reevaluation Report (FHRR) concluded that the description of associated effects needs to be reviewed in a subsequent evaluation (i.e., in the Focused Assessment, Integrated Assessment, or Mitigating Strategies Assessment), describe how the associated effects listed in the table were determined. Use a level of detail for this explanation that is consistent with the detail in the FHRR.

Table 1 – Flood Causing Mechanism A or Bounding Set of Parameters

	Flood Scenario Parameter	Plant DB Flood	FLEX Design Basis Flood Hazard	MSFHI	MSFHI Bounded (B) or Not Bounded (NB) by FLEX DB
Flood Level and Associated Effects	1. Max Stillwater Elevation (ft. MSL)				
	2. Max Wave Run-up Elevation (ft. MSL)				
	3. Max Hydrodynamic/Debris Loading (psf)				
	4. Effects of Sediment Deposition/Erosion				
	5. Other associated effects (identify each effect)				
	6. Concurrent Site Conditions				
	7. Effects on Groundwater				
Flood Event Duration	8. Warning Time (hours)				
	9. Period of Site Preparation (hours)				
	10. Period of Inundation (hours)				
	11. Period of Recession (hours)				
Other	12. Plant Mode of Operations				
	13. Other Factors				
	Additional notes, 'N/A' justifications (why a particular parameter is judged not to affect the site), and explanations regarding the bounded/non-bounded determination. 1. [Use Mean Sea Level or other applicable datum]. 2. [Use Mean Sea Level or other applicable datum] 3. [Discuss the loads on flood barriers caused by flowing water and associated debris as identified in the FHRR.] 4. [Discuss velocity and scour results and provide comparisons with CDB, permissible velocities, presence of scour resistant material, soil deposition, etc.] 5. [Discuss any other significant detrimental effects associated with the flood hazard that are not otherwise listed in the table.] 6. [Discuss conditions that could exist concurrent with this flood-causing mechanism or combined-effect flood (e.g. high winds, ice formation, etc.)] 7. [Discuss if and how this flood-causing mechanism or combined-effect flood				

	could cause a surcharge to groundwater, considering flood duration and soil conditions.] 8. [Discuss warning time; may include information from relevant forecasting methods (e.g., products from local, regional, or national weather forecasting centers) and ascension time of the flood hydrograph to a point (e.g. intermediate water surface elevations) triggering entry into flood procedures and actions by plant personnel. Reference NEI 15-05 for LIP.] 9. [Discuss period of site preparation (after entry into flood procedures and before flood waters reach site grade).] 10. [Discuss period of inundation.] 11. [Discuss period of recession, when flood waters completely recede from site and plant continues to be in a safe and stable state that can be maintained indefinitely and include applicable references to the document where the information is contained if not contained in the description in section 1.1. Also discuss the timing of loss and restoration of site access if the site is not accessible due to flooding for some period during the ~~MSFHI~~flood event duration.] 12. [Additional notes regarding plant mode of operations and include applicable references to the document where the information is contained if not contained in the description in section 1.1.] 13. [Discuss other plant-specific factors (e.g. waterborne projectiles) and include applicable references to the document where the information is contained if not contained in the description in section 1.1.]

2.3. NEI 12-06, Rev. 2, Section G.4 – Evaluation of Mitigating Strategies for the MSFHI

2.3.1. NEI 12-06, Rev. 2, Section G.4.1 – Assessment of Current FLEX Strategies (all licensees need to complete)

Document the evaluation that demonstrates existing FLEX strategies are acceptable without modification for the MSFHI.

2.3.1.1. Document for each flooding hazard with an exceedance, whether FLEX is viable and if not, what strategy (modify FLEX, AMS or THMS) will be used to address the associated hazard. Reference Section G.4.1 in NEI 12-06 revision 2. Address each of the evaluation bullets in this section.

2.3.1.2. Conclusions

Document which of the following conclusions are drawn from the assessment and provide a basis for the conclusions:

- If the evaluation demonstrates that the existing FLEX strategies can be deployed as designed for all applicable-flood causing mechanisms then the MSA is then considered complete.

- If the evaluation demonstrates that the existing FLEX strategies cannot be implemented as designed, then document the basis for selecting "~~modified~~

Modified FLEX", "AMS", or "THMS" for each applicable hazard. Also, provide a brief explanation of why FLEX is not viable for each hazard (for example: deployment pathways were submerged and insufficient warning time was available to pre-deploy equipment).

2.3.2.NEI 12-06, Rev. 2, Section G.4.2 – Assessment for ~~Modifying~~ Modified FLEX Strategies

Document the items in Section G.4.2 in NEI 12-06 revision 2. Address each of the evaluation bullets in this section.

If the existing FLEX strategies cannot be implemented as designed and "Modified FLEX" is selected to address the deficiencies, expand upon the documentation in Section 2.3.1 and provide the following for each hazard that uses a "Modified FLEX" strategy, or for the bounding set of parameters if that approach is used:

- Summary of the changes to the FLEX strategies, including changes to deployment plans;
- Description and explanation of any revised sequence of events, if applicable, demonstrating the necessity of revised FLEX actions and the reason for any changes;
- Description and justification of any modifications (equipment, procedures, etc.), if applicable, to address the modified FLEX actions; ~~and~~
- A description and explanation of any changes to flood protection features; and
- Identify any validation items that will need to be re-preformed based on the changes. Validation documentation does not need to be submitted and should be performed following any modifications or procedure revisions.

2.3.3.NEI 12-06, Rev. 2, Section G.4.3 and G.4.4 – Assessment of Alternative and Targeted Hazard Mitigating Strategies

Document the items in Section G.4.3 or G.4.4 as applicable in NEI 12-06 revision 2. Address each of the evaluation bullets in this section for each hazard that uses a "THMS" or "AMS" strategy, or for the bounding set of parameters if that approach is used.

If the existing FLEX strategies cannot be implemented as designed and "AMS" or "THMS" is selected to address the deficiencies, expand upon the documentation in Section ~~1~~2.3.1 and document the evaluation that concludes that the selected strategy will mitigate the MSFHI. The following items should be included:

- A description of the sequence of events for the flood hazard(s) and explanation of any changes with respect to the original FLEX design;
- A detailed description of the mitigating strategies selected;

- A description of what elements of the strategy have changed as compared to the mitigating strategies design approved for compliance with EA-12-049, and the basis for the change.

- A list of changes to the FLEX equipment necessary for the mitigating strategies. The level of detail in the list should be consistent with the equipment list in the OIP or FIP;

- A description of how the provisions in Sections 3, 6, and 11 of NEI 12-06, Rev. 2 have been addressed;

- A description and explanation of any changes to flood protection features.

- A description and justification of any modifications (equipment, procedures, etc.) to address the mitigating strategies actions;

- ~~Describe~~ A description of any validation items that will need to be performed based on the changes. Validation documentation does not need to be submitted and should be performed following any modifications or procedure revisions.

- For a THMS, document the justification for not maintaining the containment capability.

2.3.4. Documentation

The MSA documentation retained at the site should be included in and be of the same level of detail as that included in the Diverse and Flexible Coping Strategies (FLEX) Program Document. The MSA submittal to the NRC should be at a level of detail consistent with the OIP or FIP.