HI-STORM 100 Amendment 18 RSI Clarification Meeting

RSI 4-1

- RSI asks for more description about the flow chart added in Figure 1.0.1 of the SAR and specifically about the limitations in the SE for the topical report
- Holtec understands that the topical report has SE limitations, but wanted to find a way to not supersede the 10CFR72.48 regulation which applies to the FSAR
- Holtec has a proposal to modify, such that the final qualification of any heat load pattern is performed using the invariant topical report model
- Previously the plan was to show that the “72.48 model” was bounded by the topical report model, and use the “72.48 model” for qualification of heat load patterns
- Revised proposed approach will show the “72.48 model” is bounded by the topical report model and use the topical report model to do the final qualification of the heat load patterns

RSI 4-1

- Step 1 – Site decides the existing CoC heat load patterns do not meet their needs, and develops a new pattern that would meet fuel loading needs
- Step 2 – Site / Holtec determine if the system being used matches the invariant model in the topical report
  - If yes, then proceed through the qualification process outlined in the topical report, ensure all Topical Report acceptance criteria are met, and rejoin at Step 3
  - If no, follow Steps 2a through 2d
  - NOTE – the system being used must still fall under one those listed in the Topical Report SE, just may have some variation within those models

RAI 4-1

- Step 2a – Ensure that the variations from the topical report invariant model (identified in Step 2) are acceptable without NRC approval under the existing CoC / FSAR
  - This process is identical to Holtec's existing 72.48 program and should be documented accordingly, which develops a "72.48 model" for that variation
  - If not acceptable, submit to NRC for approval
- Step 2b – Once the variations have been determined acceptable under 72.48, the site's candidate heat load pattern should be evaluated in the "72.48 model"
  - This calculation must show that all components have a lower temperature than the FSAR limits and pressures lower than the FSAR limits
  - The PCT from this analysis is then compared to Step 2c

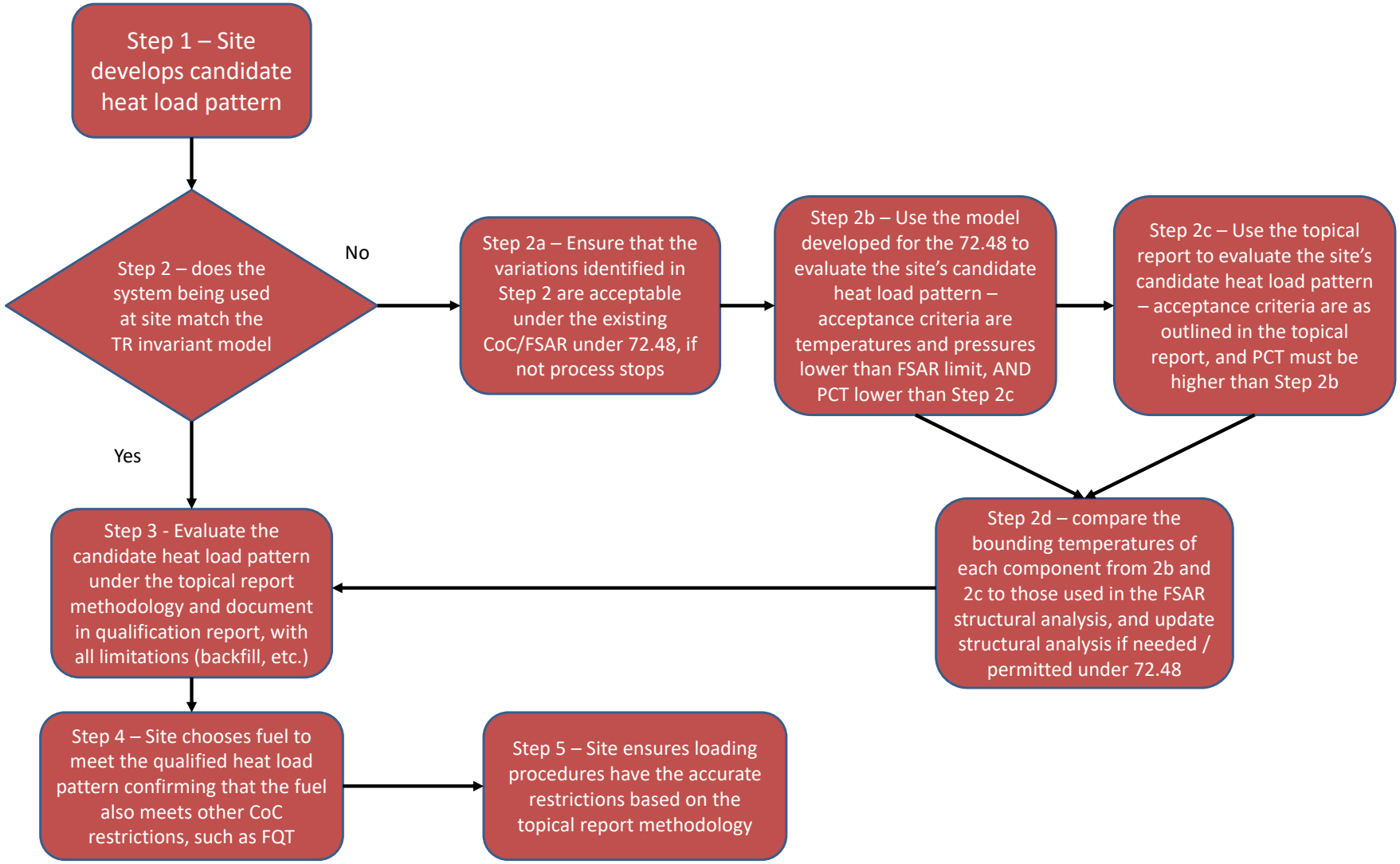
RSI 4-1

- Step 2c – The candidate heat load pattern is then fully qualified for use by evaluation in the Topical Report "invariant model"
  - This evaluation must show ALL Topical Report acceptance criteria are met
  - This evaluation must show a higher PCT than Step 2b
  - If either of these conditions is not met the candidate heat load pattern must be revised
- Step 2d – The temperature results from Steps 2b and 2c are compared to the structural evaluations in the FSAR
  - If FSAR structural evaluations use temperatures that bound the calculated temperatures, no further action
  - If FSAR structural evaluations use temperatures that do NOT bound the calculated temperatures, an additional 72.48 must be performed to demonstrate the new temperatures are acceptable without NRC approval

RSI 4-1

- Step 3 – Once all the items and acceptance criteria in Step 2a through 2d are satisfied – document the evaluation performed in Step 2c (candidate heat load pattern in invariant model) in site's qualification report
  - Note, other evaluations will be documented, but official qualification and comparison with topical report acceptance criteria are per the invariant model
  - This will be an individual report for each site and possibly more than one report for each site, so it seems more appropriate to be referenced in the 72.212 instead of the CoC
- Step 4 – Site chooses fuel to meet the qualified heat load pattern, confirming that the fuel also meets other CoC restrictions, such as (but not limited to) fuel types and FQTs
- Step 5 – Site ensures loading procedures have the accurate restrictions (such as helium backfill and vent temperature monitoring requirements) based on the topical report methodology

RSI 4-1


Step 1 – Site develops candidate heat load pattern
Step 2 – does the system being used at site match the TR invariant model
No
Yes
Step 2a – Ensure that the variations identified in Step 2 are acceptable under the existing CoC/FSAR under 72.48, if not process stops
Step 2b – Use the model developed for the 72.48 to evaluate the site's candidate heat load pattern – acceptance criteria are temperatures and pressures lower than FSAR limit, AND PCT lower than Step 2c
Step 2c – Use the topical report to evaluate the site's candidate heat load pattern – acceptance criteria are as outlined in the topical report, and PCT must be higher than Step 2b
Step 2d – compare the bounding temperatures of each component from 2b and 2c to those used in the FSAR structural analysis, and update structural analysis if needed / permitted under 72.48
Step 3 - Evaluate the candidate heat load pattern under the topical report methodology and document in qualification report, with all limitations (backfill, etc.)
Step 4 – Site chooses fuel to meet the qualified heat load pattern confirming that the fuel also meets other CoC restrictions, such as FQT
Step 5 – Site ensures loading procedures have the accurate restrictions based on the topical report methodology

Shielding RSIs

- 6-1
  - Do not intend to apply topical report to UVH, will update CoC for clarity
  - Asks about language on FSAR page 5-1 about “essentially identical”
    - That language was not modified in this amendment
    - The language remains unchanged since FSAR Rev 1 in 2003
  - Asks about BECTs, Section 1.0.3.1 of the proposed amendment explains that the existing BECTs apply even with new heat load patterns developed – this is echoed in the proposed CoC, App B, Section 2.4.3
  - Asks about the shielding analysis for the 100 UVH, which is under review as part of Amendment 16, the ML number is not publicly available, but appears to be for the Amendment 16 submittal
- 6-2
  - Asks about the shielding analysis for the 100 UVH, which is under review as part of Amendment 16
  - Amendment 18 did not include any patterns with different zones or modifications to Table 2.1.30 to which the RSI refers

Shielding RSIs/ Observations

- 6-3
  - Asks about comparison of dose rates between different MPCs in the 100S Version B
  - The referenced ML number is for the biennial FSAR submittal, not the Amendment 18 package
  - No changes were made to this section in Amd 18, it appears unchanged since FSAR Rev 7 in 2008, and related evaluations were discussed in the SER for Amd 5
- Obs Sh-1
  - Asks about CoC heat load patterns vs shielding analysis of HI-STORM 100 UVH
  - The referenced ML is not publicly available, but it appears to be the calc package submitted with Amd 16, where the UVH was introduced
  - No decay heat load patterns in the CoC have been modified in Amd 18
- Obs Sh-2
  - Asks about statements in FSAR Chapter 5 related to BPRAs
  - Referenced ML is the HI-STORM 100 biennial submittal, not a section impacted by Amd 18
  - Referenced statements are unchanged since FSAR Rev 13 in 2016, and evaluations are described as acceptable in the SER for Amd 8 Rev 1

Shielding Observations

- Obs Sh-3
  - Asks about demonstrating that shielding calculations are reliable
  - No shielding calculations were submitted with Amd 18. We would like some clarification on the intended scope of this observation
- Obs Sh-4
  - Asks about distance from ISFSI to controlled area boundary
  - Refers to the HI-STORM 100 UVH shielding analysis, which was submitted in Amd 16 and statements in the FSAR biennial submittal that are unchanged with this Amd 18

Path Forward

- Based on outcome of this meeting, Holtec will notify the NRC staff of a planned schedule for formal responses to the RSIs