

Summary Briefing to Holtec's Stakeholders on the January 9, 2019 NRC PEC meeting

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The NRC report dated November 29, 2018 on the latest scheduled triennial inspection of Holtec's QA program in May 2018 held a surprise for us. Instead of getting a generally approbatory report on the status of our QA implementation following inspections in the past, this time we have received two preliminary programmatic violations on design change process that, if unresolved, may lead to enforcement action. We believe the harsh regulatory conclusions in the November 2018 report are due to sharing of technically incomplete information with the NRC which has fostered grievous misconceptions. In the forthcoming January 9th PEC meeting, we will provide factual information to the authorities to help realign their position with the materiality of the events and of our actions.

The issue at the root of the violations is the so-called Shim Stand-Offs (SSOs). The SSOs are 4-inch long stainless *rods* that stand underneath the aluminum shim columns located on the periphery of the Fuel Basket to keep the shim columns slightly elevated. There are numerous Shims and even more numerous SSOs (MPC-37 has 88 of them). They were introduced in certain MPC designs towards the end of 2017 to improve fabricability and boost heat transfer. Incorporating them was not a necessary "change." Rather, it was a voluntary change that was envisaged to improve fabricability and add a bit more heat rejection capacity to the system. Shortly after delivery of the SSO-bearing MPCs began, our site services team at SONGS discovered one SSO (out of 88 in the canister) had failed. A massive inspection of all MPCs containing the SSOs at all locations ensued which showed failure rate to be about 0.12% of the population of the SSOs. The RCE traced the main source of failure to the extensive rolling operations and handling during manufacturing that bent and failed some rods. The failures went undetected in the shop because the SSOs are small and reside at the farthest point from the top of the MPC from where inspection could be performed. The failures were principally in the SONGS MPCs which had received extensive peening as an extra operation (other plants had not requested peening). Because, there is 33% redundancy (one out of three) built into the number of SSOs installed in each MPC, 0.12% failure is well within the engineered design of the product. However, NRC correctly contended that the failure of even a tiny fraction of the SSOs during manufacturing evolutions represents a failure in Holtec' design control process. Mistakenly considering the SSOs to be safety significant (they emphatically are not) because of inadequate information sharing with the NRC inspection team during the inspection, the visitors considered the SSO failure to be a safety event and cited us for weakness in design control (Violation A). Also believing the SSOs to be safety significant, they faulted Holtec for not executing a full 72.48 evaluation when the damaged SSO was discovered (Violation B).

We concede that our design development team failed to consider the physical risk of damage to the SSOs during manufacturing evolutions. Thus, even though in this instance the consequence has been

minor (because of failure occurred in a *non-safety item*), the weakness in our design control exposed by this episode warranted a serious corrective action effort which we have carried out to completion.

The NRC has invited us to present any clarification or additional information we have that counters their preliminary conclusion. We have plenty. For example, we will provide definitive evidence that *every loaded SSO-bearing MPC meets its CoC unconditionally - no exceptions*.

Second, although our quality processes led to the early detection of a broken SSO in the field, there would have been no need to request an exemption even if the SSO failure had gone undetected. In other words, we will provide irrefutable evidence that every MPC that had been delivered to our system users would have been in rigorous compliance with its FSAR.

For plants that were loading MPCs concurrently with SONGS, the loading continued after the MPCs were re-inspected and ensured to be SSO failure-free, SONGS being the sole exception. For them, although not required by safety analysis, we removed all SSOs and replaced them with monolithic shims before resuming loading. This action did not improve the safety margin of the SONGS MPCs one iota, but it helped SONGS weather the irrational attacks from their local activist groups.

The above said, the SSO episode has exposed a weakness in our design development process which should call an inadequate emphasis on manufacturing and commissioning (site work) aspects of our designs. In 2018, we have attacked this weakness through our CAR process aggressively and believe that such a setback will not visit our program again.

We are hopeful that the NRC will modify their position when complete and clear information is presented to them on January 9th. NRC Enforcement Manual provides for some essential conditions under which NRC will most likely not consider escalated enforcement actions. They are: 1) safety significance of the issue being minor; 2) issue is self identified by the licensee and promptly placed in the licensee's Corrective Action Program; 3) licensee promptly completes Root Cause Analysis Report; 4) promptly completes all required corrective actions; and 5) issue was not caused by any willful actions. As this memo indicates, we fully meet every one of the above predicates in the NRC's Enforcement Manual and therefore believe, after being presented with the full set of facts, the NRC will relent on punitive enforcement.

Subsequent to the NRC Inspection in mid-May 2018, we decided that the corrective actions to address the RCEs related to the SSO matter must be extended in scope to cover a "stem to stern" re-appraisal of our entire body of procedures that apply to the life cycle of design, licensing, material procurement, manufacturing, and site implementation of our SSCs. This comprehensive campaign of critical re-assessment and systemic upgrades has now been completed with many new barriers against human performance errors imbedded in the Company's substantially enhanced quality infrastructure.

Going forward, we are as ready as is humanly possible to prevent errors in every evolution of our concept-to-commissioning nuclear program.