

HI-STAR 180 TYPE B(U) TRANSPORTATION PACKAGE

CLARIFICATIONS TO LICENSE APPLICATION

Presentation to the USNRC

By

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Agenda

- Introduction
- Metamic-HT (Test Qualification)
- Thermal Items (Analysis Pattern v. Loading Pattern)
- Nuclear Items (Burnup Verification)
- CoC – Miscellaneous Items

Metamic-HT (Welding)

- The basket connections / welds in Detail B (see basket drawings) are structural welds and shall have weld strength greater than 60% of the minimum tensile strength of the Metamic panel material as defined in SAR Table 1.2.12.
- Certain peripheral junctions in the fuel basket grid work are welded to provide additional dimensional fixity to the basket. Strictly speaking, these welds are not required for the basket to render its structural function. Nevertheless, they are incorporated in the basket's design and included in the structural finite element evaluations. The minimum strength of the fillet welds is assumed to be equal to 60% of the MGV value in Table 1.2.12. Thus, for example, the ambient condition tensile strength of the weld assumed in the strength analysis of the basket is assumed to be $(0.6) (31.3[1]) = 18.8$ ksi.
- Tests on a limited number of coupons in the Metamic-HT Sourcebook, Revision 0 [1.2.27, Table 4.22][2] shows the minimum measured values of the weld strength to be 23.2 ksi. This margin between the minimum guaranteed value of the weld and the measured data set provides the assurance that the in-process testing and qualification of the weld specifications and weld operators will yield continued confirmation of the veracity of the MGV of the Metamic-HT-to-Metamic-HT joint strengths in the manufactured baskets. (The assurance that the as-manufactured welds are found (by coupon testing) to have a greater strength than the MGVs assumed in this SAR is critical to prevent rework and repair on the shop floor.)

[1] From SAR Table 1.2.12

[2] The population of test coupons is slated to continue to increase as Holtec International plans to conduct additional confirmatory tests, particularly on irradiated coupons (that require significant cool-off time) to bolster the database on Metamic-HT.

Ongoing Metamic-HT Testing and CoC

- To increase the population of tested samples, additional billets are being extruded to make 500 coupons for aged & irradiated coupon testing. Results are expected to be produced in time for the SER.
- For the time being, the CoC will contain a reminder to the USNRC Staff concerning Metamic-HT qualification as follows: “The package authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR 71.17 for the standard 5 year license life after which the initial certificate renewal request will require an updated evaluation (e.g. test data) of Metamic-HT basket material sufficient to ensure the package continues to meet the applicable safety standards.”