

August 4, 2026

Mr. Aaron Jacques
Target Systems
Second Target Station Project

Dear Aaron:

Target Segment(s) and Drive Components Path to Disposal

The purpose of this letter is to inform you that the proposed Second Target Station Target Segment(s) and Drive components have a path to disposal. As we have discussed, it is imperative that the Project systematically plan, document, evaluate, and subsequently execute proper management of DOE waste.

Specifically, the target segment consists of a top connection interface, stave, and foot. Each segment foot includes a pin on the heel that fits into a replaceable hardened alignment hole in the shaft.

There are 3 distinct zones in the segment:

- Upper stave that connects the top connection interface to the rest of the target segment. The lower portion of the upper stave has a hollowed-out zone to create a sheer location for shortening the target segment for disposal. It also contains concentric cooling passages.
- Middle stave consists of a "doughnut" segment that provides shielding and balances material content in the target segment.
- Lower stave that is dramatically thinner than the middle stave to clear the shielding and connect to the foot. The upper portion includes a bend in the concentric cooling channel and directly interfaces to the middle stave.

The lowest portion of the target segment, and most crucial to STS operation, is the target foot. The foot is constructed of 4 metals (Tungsten, Tantalum, Inconel, and Stainless Steel). This is the reference point for the moderators and the rest of the STS systems. Tungsten is the spallation material, while tantalum is the interface between the tungsten plates. Inconel resides on the outside surface as a robust covering to contain the tungsten in the extreme conditions caused by the proton pulses. Furthermore, tantalum acts as a thermal transfer layer between the tungsten and Inconel, allowing the heat produced by spallation to be transferred to the Inconel, where it is then transferred to the water in the cooling channels to be taken away to a heat exchanger. Finally, the "heel" portion of the foot is made from an Inconel shell with a stainless-steel core to bond the foot to the stave. The heel is bonded to both the foot and the stave via Electron Beam welding (EB-welding). The respective evaluation for disposition assumed the radionuclide inventory for 12 shipments two units (feet/staves) per shipment.

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The target segment(s) and drive components shall be managed as radioactive low-level and in accordance with all applicable Federal or State requirements. One uncertainty involves use of Inconel 718. As discussed, Inconel 718 contains chromium and a Toxicity Characteristic Leaching Procedure test needs to be done to ensure the respective waste is a low-level waste and is not a mixed (hazardous and radioactive) waste. Regardless of the outcome of the testing, the respective waste does have a path to disposal.

In conclusion, appreciation is extended to you for working through the evaluation of this waste stream. Should you require additional information, please contact me at your convenience.
Thank you.

Steven M. Trotter

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Second Target Station Project