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Second Target Station Project Interface Sheet (IS) Target Assembly MRA

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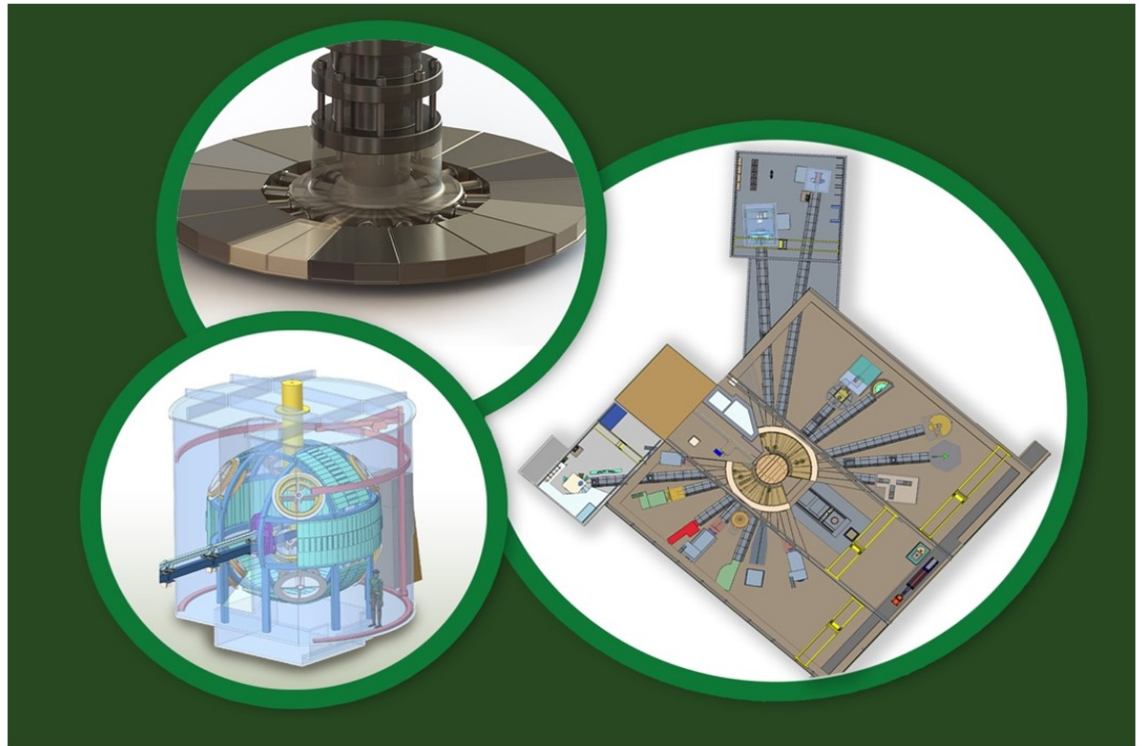
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Second Target Station Interface Sheet Target Assembly & MRA



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June 23, 2026

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Second Target Station

**SECOND TARGET STATION
INTERFACE SHEET
TARGET ASSEMBLY & MRA**

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June 23, 2026

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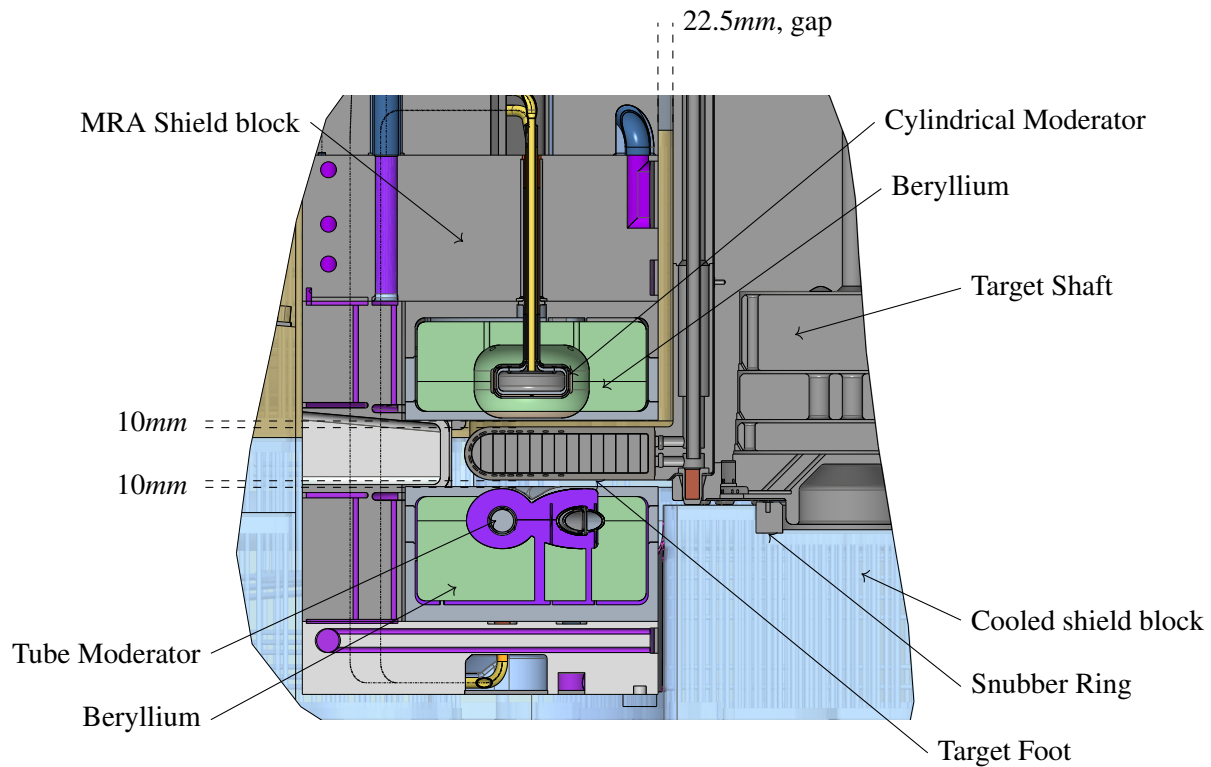
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1. CLEARANCE ALLOTMENT

Clearance between the Target Assembly and MRA is essential to prevent contact between the Target Assembly and the MRA. The errors between the target and the Moderator and Reflector Assembly (MRA) are the result of a complex chain that involves the core vessel, target assembly, and the MRA and involve a variety of loadings and configurations. Various scenarios include helium operation, vacuum operation, seismic loads and various thermal states. The allotment of stiffness and deflection between the core vessel, MRA, shielding, and target assembly is captured as a target system deflection budget. The detailed budget is captured in [1]

The gaps between the MRA and Target Assembly are shown below in Figure 1.

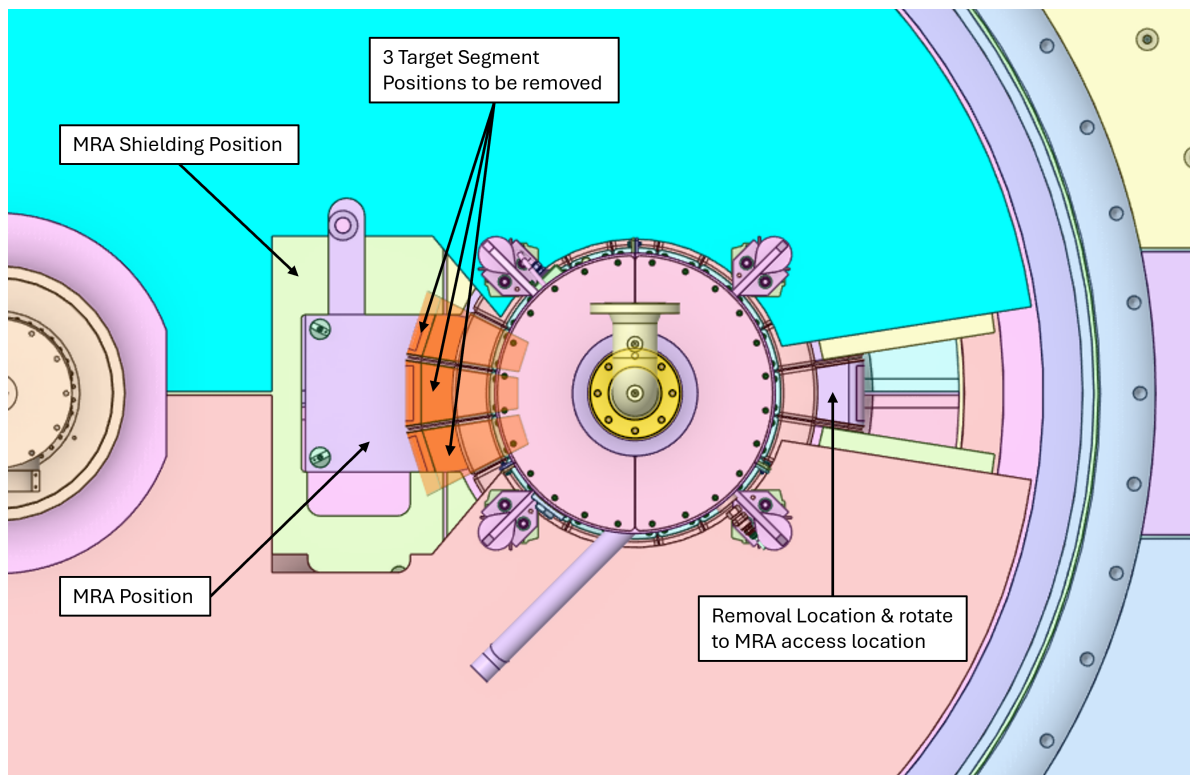
Figure 1. Interface Between Target Wheel and MRA



2. POSITIONING & REMOVAL

MRA removal requires the removal of 3 consecutive segments and rotating the shaft that the 3-segment gap is aligned with the MRA to prevent Target entrapment in the MRA.

Figure 2. Segments Removed for MRA Removal & Insertion



3. SURFACE TEMPERATURE

The MRA and target face view each other; that is they have faces that exchange heat via radiation. During normal operation, there is insufficient temperature difference for meaningful heat transfer. During a situation where the target has lost cooling, the target experience a large thermal excursion.

Description	Criteria
Maximum exposed surface temperature target	<500°C (Loss of cooling)

4. NEUTRON INTERFACE

Note: The interface of neutrons going from Target Assembly to MRA are not captured in detail on this sheet. Target Assembly & MRA manage this interface by ensuring consistency between the MCNP & CAD model with respect to materials, locations, etc.

5. REFERENCES

- [1] Oak Ridge National Laboratory. *Target Assembly Clearance Budget*. Tech. rep. 0000019003. ORNL, July 2026. URL: <https://windchill-prod.ornl.gov:8443/Windchill/app/#ptc1/tcomp/infoPage?ContainerOid=OR%3Awt.pdmlink.PDMLinkProduct%3A1228746141&oid=VR%3Awt.doc.WTDocument%3A1594216799&u8=1>.