

Second Target Station Project: Interface Sheet Target Assembly & Conventional Facilities



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Second Target Station Project

INTERFACE SHEET TARGET ASSEMBLY & CONVENTIONAL FACILITIES

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1. INTRODUCTION

This covers the interface between Target Assembly [S.03.02] and Conventional Facilities [S.05.01].

2. LIFTING

2.1 CRANE CAPACITY

High-bay crane capacity shall exceed the combined mass of the Target Assembly Shaft and Target Assembly of 16530.81 kg (18.22 Tons).

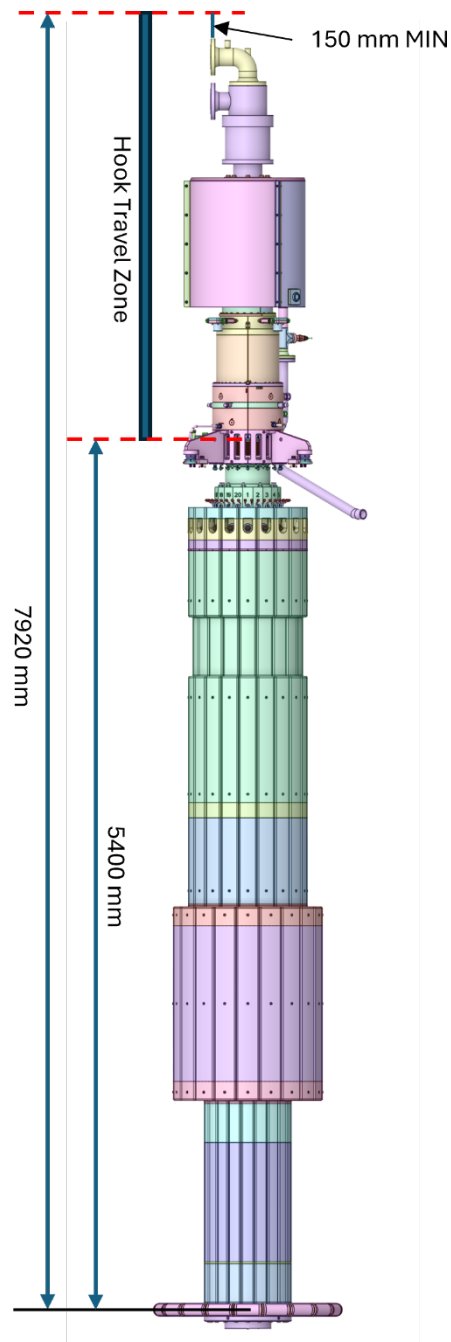
- This applies to the bearing maintenance case where the shaft in combination with segments must be lifted to remove weight from the bearing assembly, allowing it to be loosened.
- Furthermore, a more complicated case exists where the target is trapped within the MRA and the Target Assembly, MRA, and surrounding shielding must be lifted at once. In this scenario, the crane would be required to lift more than just the Target Assembly. This scenario is a “dooms day” situation and outside of the scope of this project.

Target Drive Room jib crane load capacity shall exceed the component or assembly weights listed in Table 1.

See Figure 1 for "Required TDR Jib Crane Hook Travel Zone".

Hook Geometry: Information on hook geometry will be provided by the CM/GC as a delegated design submittal in CY2027.

Figure 1. Target Assembly Lifting Hook Travel Zone



2.2 ITEMS TO BE HOISTED IN THE TARGET DRIVE ROOM (WITH ROOF BEAMS ON)

Table 1. Hoist Item List - Target Drive Room

Component	Dimensions (mm)	Mass (kg)	Pick Point Height Above Beamline (mm)	Vertical Travel Required (mm)	Estimated Frequency
Upper Pipe Spool (Return)	L: 2527.3 W: 927.1 H: 228.6	62.56	7774	NA	< 1/yr
Lower Pipe Spool (Supply)	L: 2527.3 W: 622.3 H: 228.6	57.63	7499	NA	< 1/yr
Rotary Water Coupling^a	L: 386.41 W: 318 H: 895.25	190.42	7888.25	100	< 1/yr
Motor (with stator housing)^a	L: 400 W: 400 H: 341.36	240.75	6071	565	every 6 yr
Drive Bearing Unit^a	L: 570 W: 570 H: 485	241.03	5735	1043	every 6 yr
Valve Assembly^a	L: 685 W: 685 H: 793	363.97	7001	45	every 6 yr

^a Must fit through TDR Drive Access Port, Figure 3.

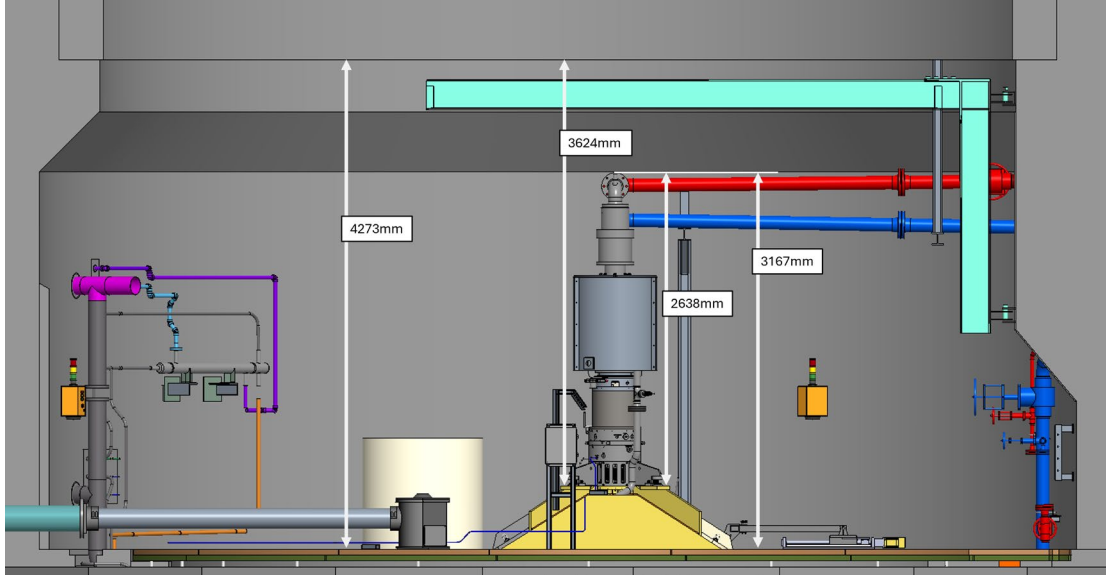
All items described in Table 1 must be enabled to be hoisted into the Target Drive Room without removing the primary roof beams. They must pass through the round port shown in Figure 3.

3. TARGET DRIVE ROOM

3.1 TARGET DRIVE ROOM CEILING HEIGHT

The top of the Target Assembly is 2.6m above the Target Assembly mounting face on the Core Vessel lid, as shown in Figure 2. The dimensions are reference only and do not include tolerances. Assume a ± 20 mm tolerance. The reference floor shown in Figure 2 is 4671mm above the Global Coordinate System.

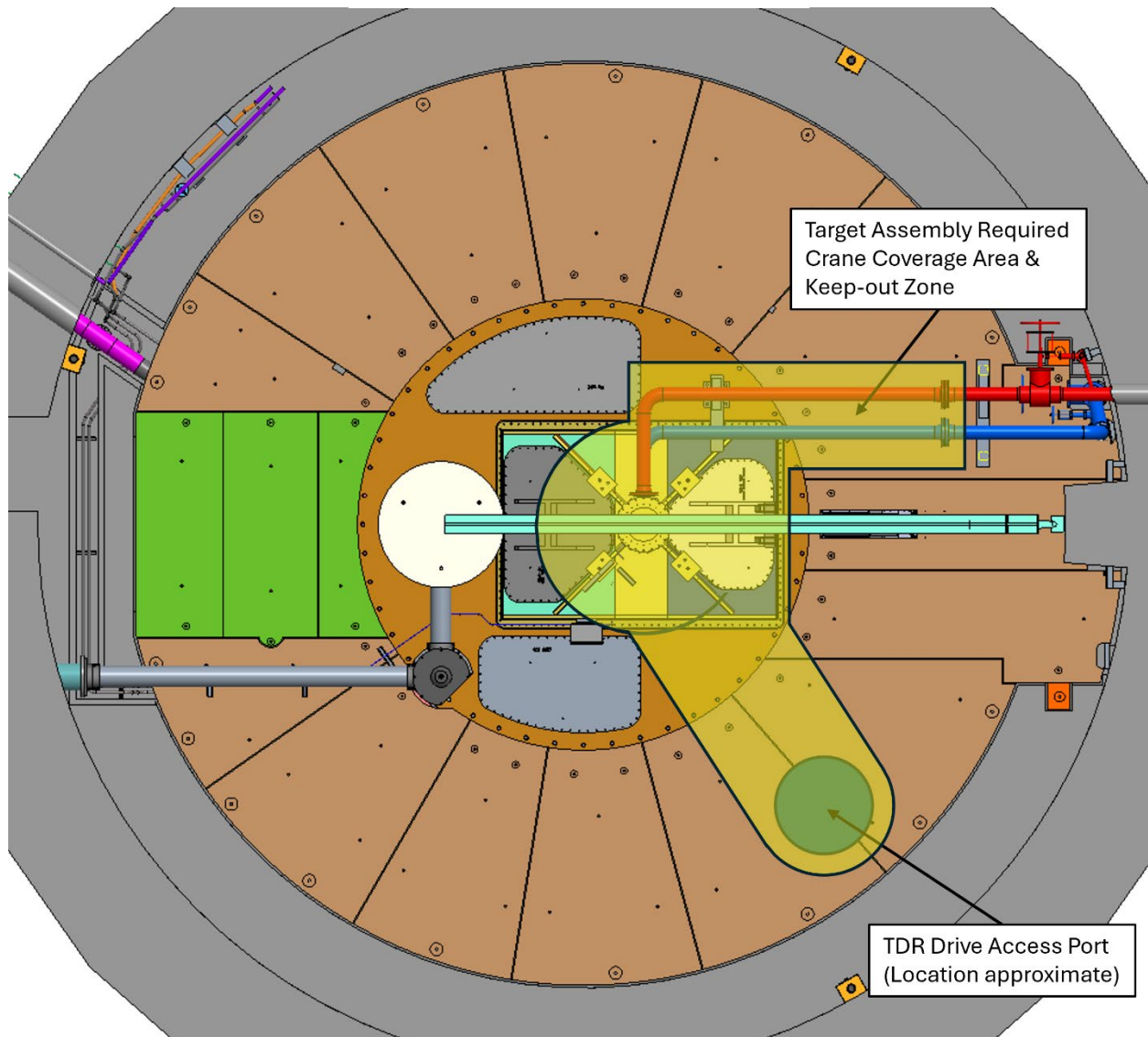
Figure 2. Target Drive Room, Target Assembly Elevations



3.2 TDR CRANE COVERAGE

The jib crane shall provide access over the Target Drive and to essential servicing locations. Note: The crane should provide the ability to bring a component in and move it to the Drive Assembly such that there is no need for personnel to lift or roll items on a cart. The zones highlighted yellow in Figure 3 must be accessible by the jib crane. There must not be any obstructions below the top elevation of the crane that prevent this coverage. Furthermore, the Target Assembly must be accessible under this zone for servicing activities.

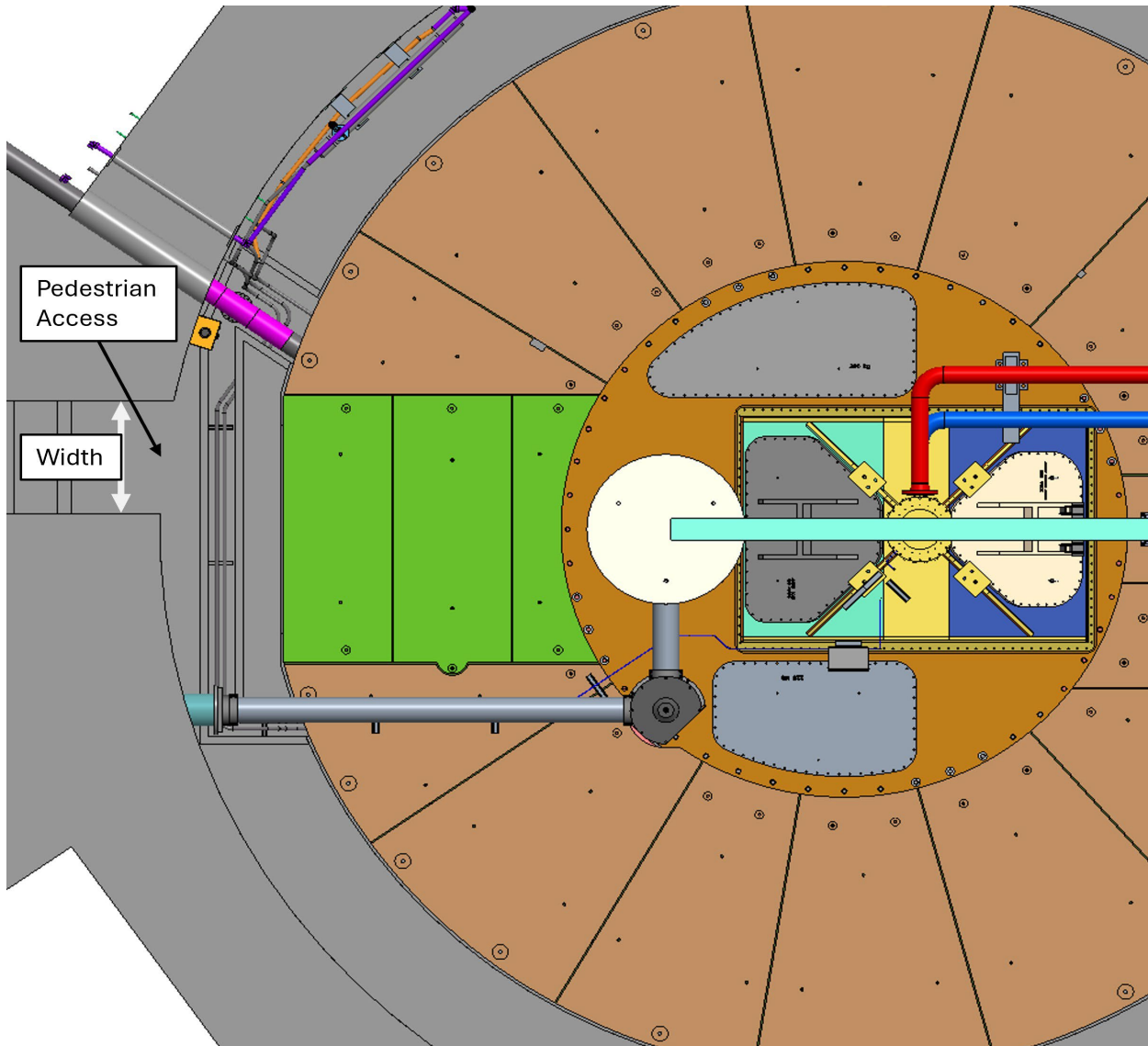
Figure 3. Target Drive Room Jib Crane Coverage



3.3 ACCESS REQUIREMENTS

There shall be a pedestrian accessible opening of at least 22" wide x 80" tall, providing a means to transport parts and tools into and out of drive room without removing roof hatches (plugs).

Figure 4. Target Drive Room Pedestrian Access



3.4 UTILITIES TO BE PROVIDED IN THE TARGET DRIVE ROOM

	Regulated Operating Pressure ^a	Target Assembly Relief Pressure ^b	Peak Flow	CF Connection & Location	Target Connection	Purity	Use
Nitrogen	100psi (690kPa)	110psi (862kPa)	5 SCFM	West Wall, 1/2" MPT quick-connect, manual valve	1/2" MPT Quick-connect		Leak Check
Dry Air Supply	75psi (690kPa)	110psi (862kPa)	5 SCFM	West Wall, 1/2" MPT quick-connect, manual valve	1/2" MPT Double-dry-break connection	Oil free, dry air	Purge & Blowdown

^a Conventional Facilities will regulate the pressure to this value within a reasonable tolerance.

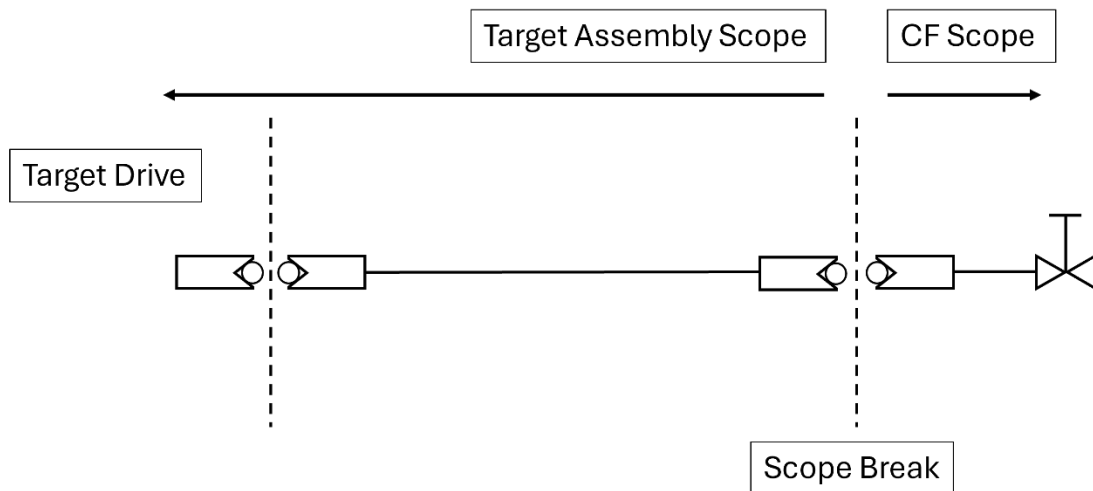
^b Target Assembly shall provide the relief internal to the Target Assembly design.

* Utilities shall be provided with a flow measuring device capable of recording the total mass delivered to the Target Assembly.

** Determining water purged from the Target Assembly is sufficient to permit transport of a Target Segment in the building.

See Figure 6 below for Nitrogen and Dry Air connections. The connection to the drive is via a double-dry break connection.

Figure 5. Gas Connection (Both Nitrogen and Dry Air) Scope Break



As described the interface between Target Assembly and Process Systems, S01020500-IST10211, Process Systems [S.03.09] shall provide regulator and relief valve (compressed air infrastructure) to blow down the segment or perform leak down testing. CF [S.05.01] shall cover the gas supply to the room with a specified connection.

4. SPARES STORAGE

The Target Assembly shall have on-site storage within the facility for the (un-irradiated) components listed below with a minimum quantity as listed:

Item	Storage Quantity
Segment	3
Motor	1
Rotary Union	1

There is currently no specified spares storage provided in the design, due to projects scope, but the building has been designed with sufficient space for spares store. This will be brought into the scope at a future date.
