TBL Instrument Overview

PRESENTED BY JASON MORIN

Agenda

1 TBL Overview

2 Safety Overview

3 Operations and Maintenance Document Status

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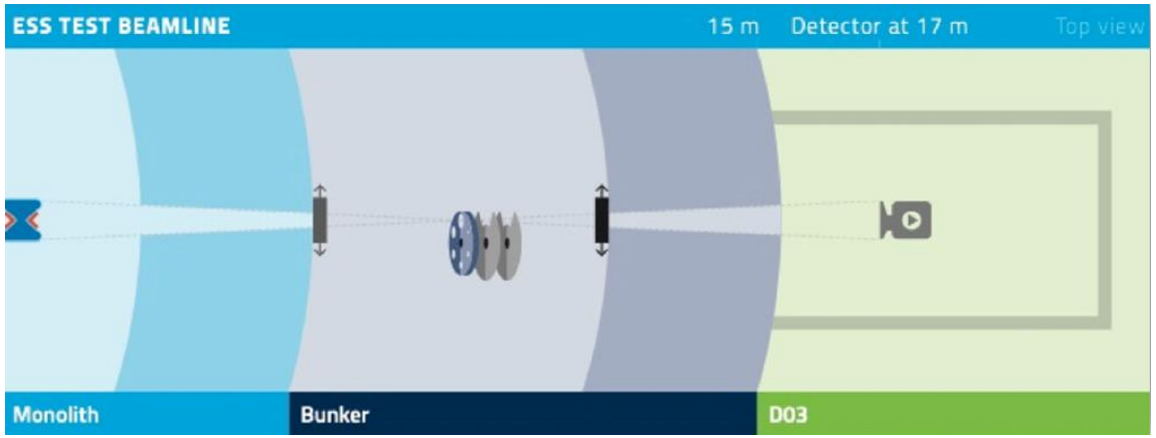
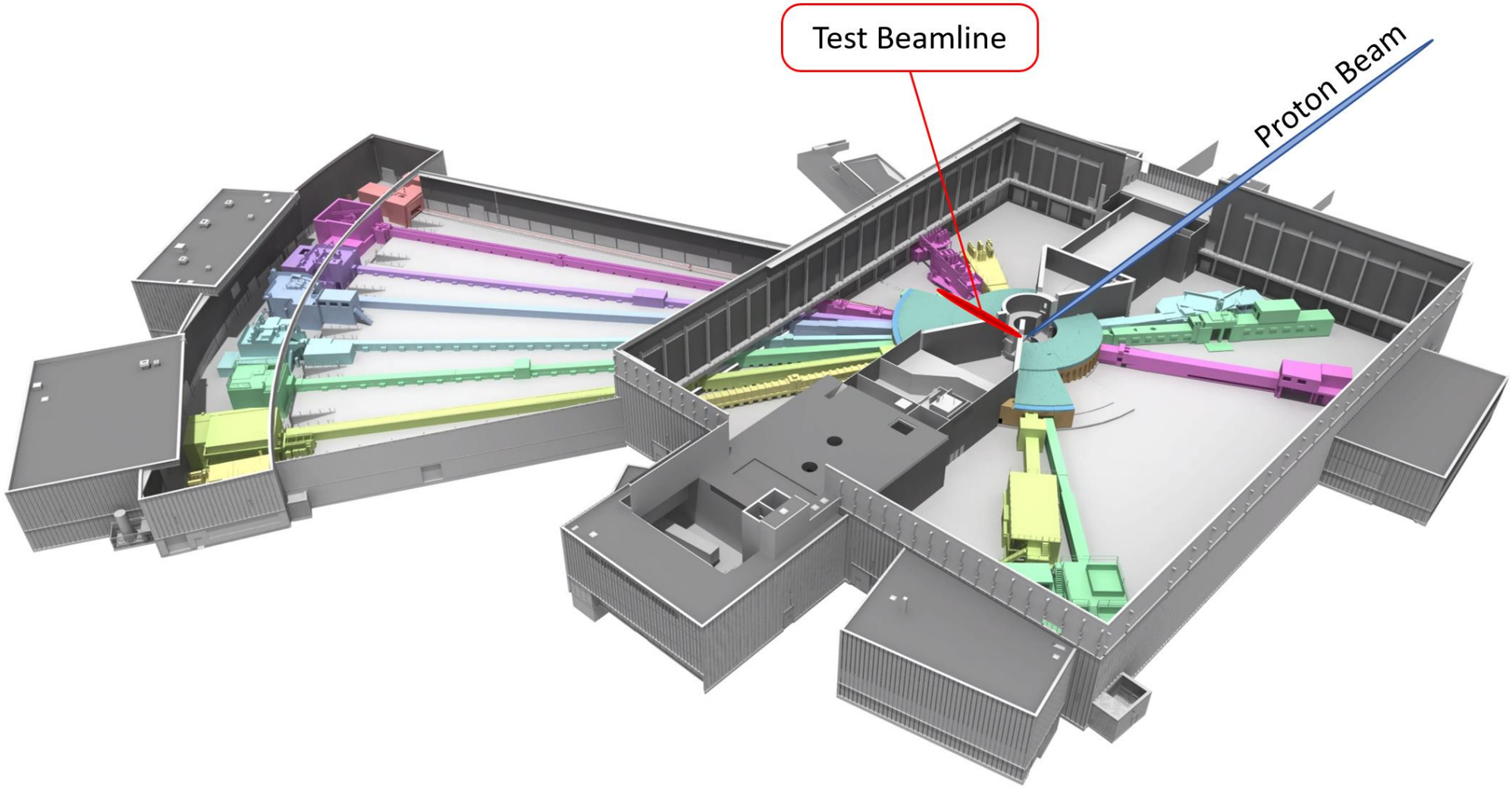
TBL Overview

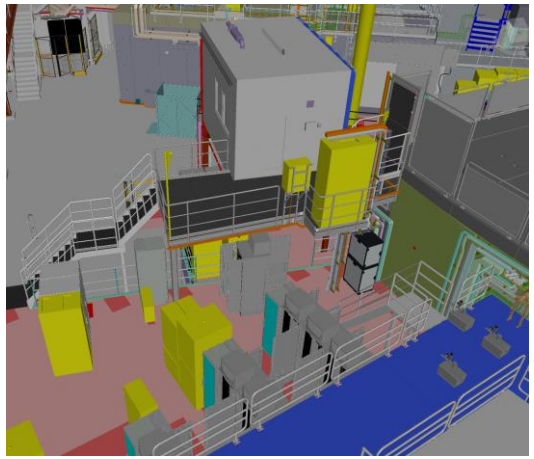


Overview

Location in Facility: W11 (North Sector)



Layout TBL overview



Filter Station

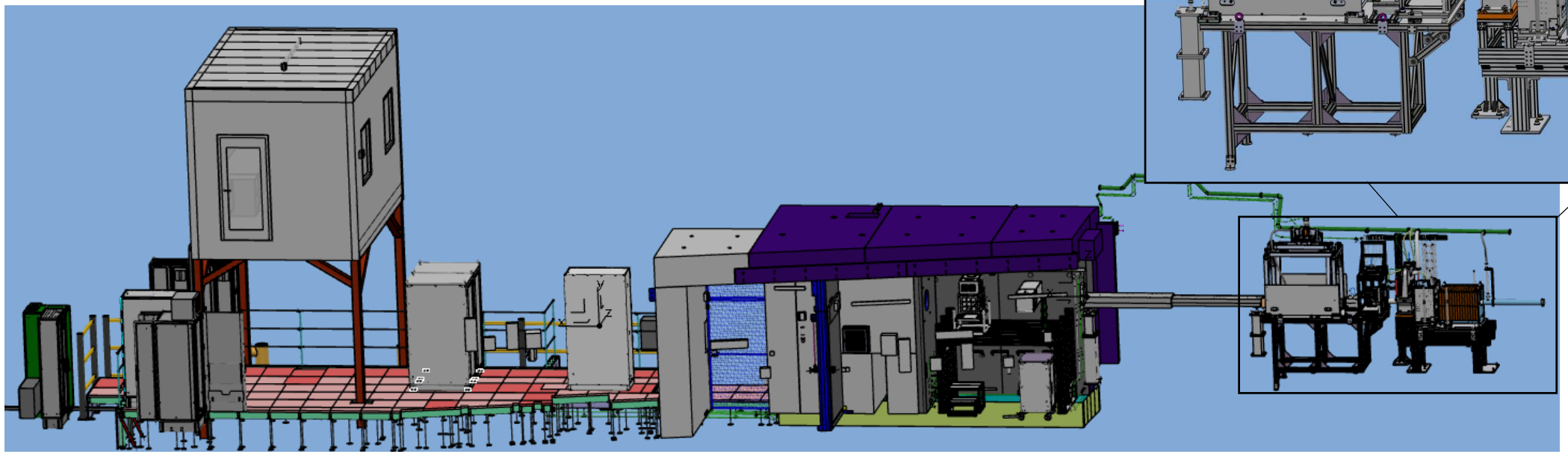
Chopper

Adjustable Collimator

Final Collimator

Heavy Collimator

Shutter



Beam direction

Hutch, false floor, cabinets

Cave, Detectors

Wall Feedthrough

Beam Transport & Conditioning

Test Beam Line

Neutron Instrument States (ESS-0005817)

Maintenance	Instrument not operational, in an unconfirmed state, or otherwise unsafe to receive neutrons.
Access	The instrument is radiologically safe, and access is granted into the controlled space within the shielding.
Halt	The instrument is radiologically safe, and that the neutron beam has been intentionally stopped upstream of the sample position.
Run	This state indicates that the instrument is radiologically safe, and that the neutron beam is delivered to the sample position.

Test Beam Line

TBL Run States

Adjustable Collimator	Cd Pinhole	Chopper	Filter Station (8 modes)	Heavy Shutter
3mm pinhole	Blank	Disk 1	Bismuth	Open
10mm pinhole	1mm	Disk 2	Cadmium	Closed
30mm x 25mm channel	3mm		Sapphire	
	5mm		Beryllium	
	10mm		Silicon	
			Beam Monitor	

Test Beam Line

Safe State

1. Shutter closed
2. Motion stopped
3. Gas off
4. Main key removed (after cool down timer)

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Safety Overview

Industrial and Occupational Safety

Summary of Risks

Slips, Trips, Falls 

Electrical Safety 

Fire Safety 

Pressurized Systems 

ODH 

Overhead Lifting (area cranes) 

Manual Lifting/Positioning 

Motion Safety (primarily in-bunker) 

Toxic Substances (Pb, Cd, Be) 

ESS-4751819 - Area Risk Assessment D01+D03 bunker

ESS-5855414 - TBL Area Risk Assessment

ESS-5855068 - TBL Operations and Maintenance Task Risk Assessment

ESS-3078238 - TBL Instrument Hazard Analysis (IHA)

ESS-5667501 - TBL inventory for Bunker components -Fire safety

ESS-4390582- TBL ODH Analysis

ESS-5762024 - TBL Risk Assessment for pressurized systems

Industrial and Occupational Safety

Non-Applicable Operational Risks

Working at Heights- Only applicable to cave roof, not a part of regular operations

Chemical- Not applicable, *may change in the future*

Noise- Not applicable

Heat/Cold- Not applicable

Confined Space- Not applicable

Biological Safety- Not applicable

Magnetic Safety- Not applicable

Vibrations- Not applicable

ATEX- Not applicable

Operational Safety

Summary of Mitigation

Fire monitoring and suppression system

2 motion emergency stops in cave

1 motion emergency stop in bunker

2 beam emergency stops in cave

PSS interlock system

ODH monitoring system

Roles and Responsibilities

Training and Certification

Emergency Procedures (in progress)

ESS-5797327 - Operations Manual for TBL Personnel Safety System

ESS-0265775 - TBL - Systems Operations & Maintenance Manual

Radiation Safety 

Summary of Mitigation Measures

Shielding analysis

Materials inventory

Gamma monitor -> Stand alone

Area neutron monitor -> PSS

PSS (permits, interlocks, cool down, Estops)

Personal Dosimetry

Survey Meters (TDB)

Storage (TBD)

Waste (TBD)

ESS-4222214 - TBL Radiation Safety Report

ESS-3887847 - TBL Material inventory for activation analysis

ESS-3078238 - TBL Instrument Hazard Analysis (IHA)

ESS-5693466 - Comprehensive radiation safety assessment of TBL

ESS Radiation Protection Handbook

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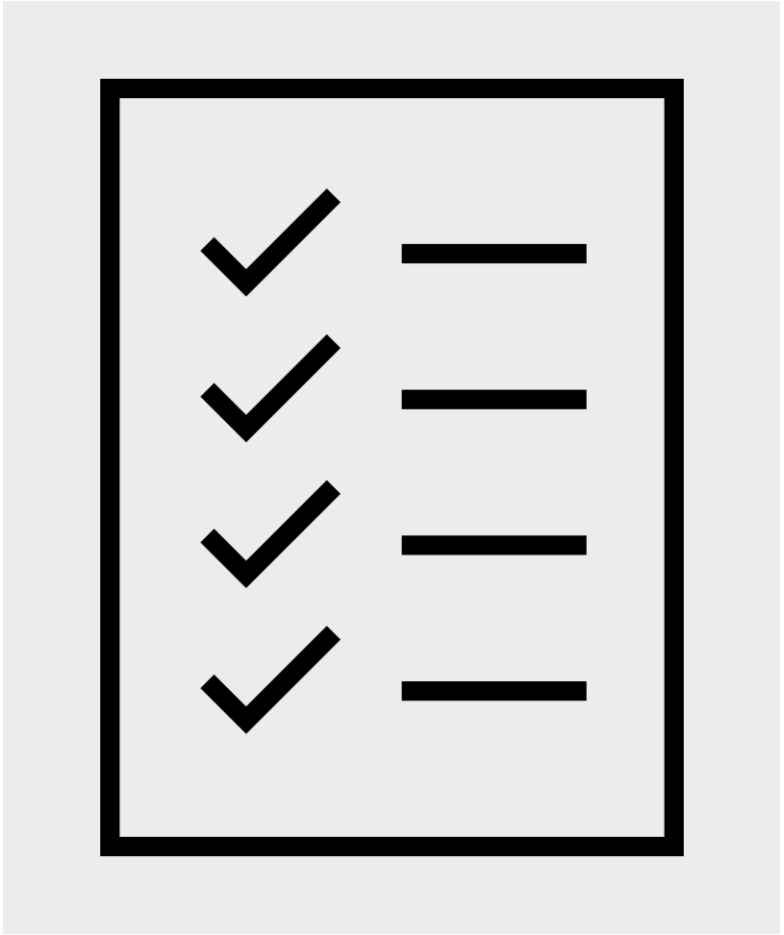
Operations and Maintenance Document Status



Instr. Operation and Maintenance (OM) manual (ESS-0265775)

Component	Location (to be used)	Manuals
Beam Geometry Conditioning System	In-bunker	ESS-5362507 (OM)
Chopper System	In-bunker	ESS-5669724 (OM)
Beam Filtering System	In-bunker	ESS-5428666 (OM)
Heavy Shutter (Motion)	In-bunker	ESS-5690106 (O), ESS-3049036 (M)
Beam monitor	In-bunker	ESS-0265775 (O), ESS-5354704 (M)
*Detectors	In/Out cave	ESS-0265775
Cave access (overview)	In/Out cave	ESS-5690106 (O), - (M)
Radiation Monitor	Outside the cave	- (O), N/A (M)
Vacuum	In/Out cave	ESS-0012895 (OM – Vacuum Group)
Electricity and Control racks	In/Out cave	ESS-0265775 (O), Technical groups scope (M) (FE?)
Utilities	In/Out cave	ESS-0265775 (O), ESS-5030639, ESS-5580474, ESS-5089856 (FE?)
Gas system	Outside the cave	ESS-0265775 (OM)
Other static and maintenance-free comp.	In-bunker	- (O), ESS-5647998 (M)
Hutch	Outside the cave	- (O), ESS-5667100 (M) FE scope

Questions?