iSRR TBL
Radiation Protection

PRESENTED BY ANA CINTAS

Agenda

1 Radiation monitoring

2 Operational RP

3 Shielding

4 Radiation Protection Readiness – Summary

1

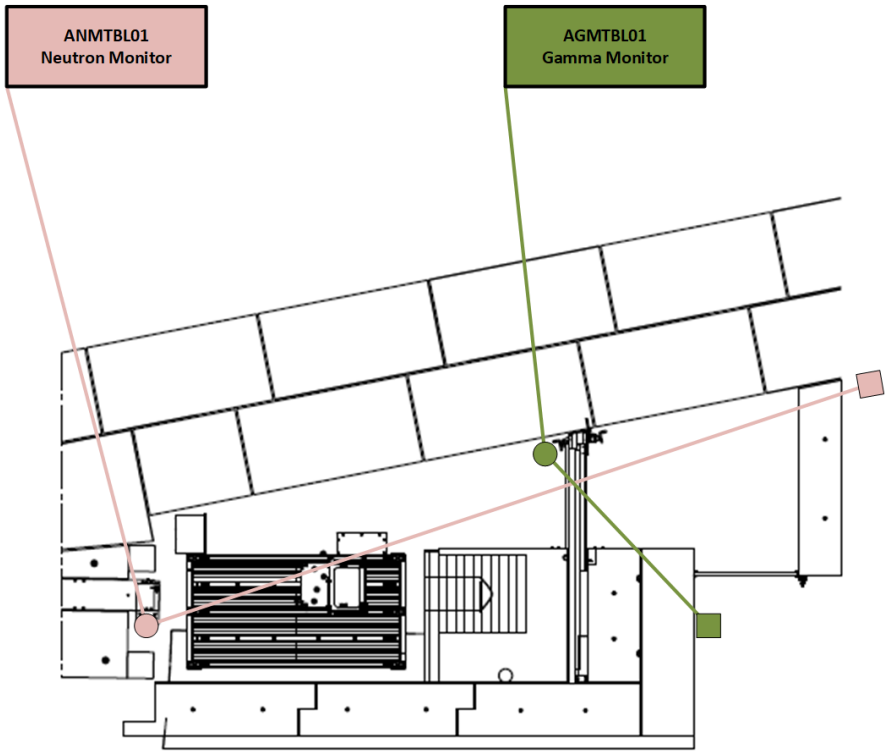
Radiation Monitoring

Radiation monitoring

TBL

- Area Neutron Monitor (ANMTBL01) installed downstream of the instrument shutter inside the instrument cave close to the beamline to measure the neutron flux level. This monitor is linked to PSS[1,2,3].
- Access doors to the cave are linked to PSS[2].
- Area Gamma Monitor (AGMTBL01) in the cave verifies dose rate levels before entering.

Test Beam Line experimental station



[1] *General specification of radiation monitors for instrument shutters* (ESS-5312605)

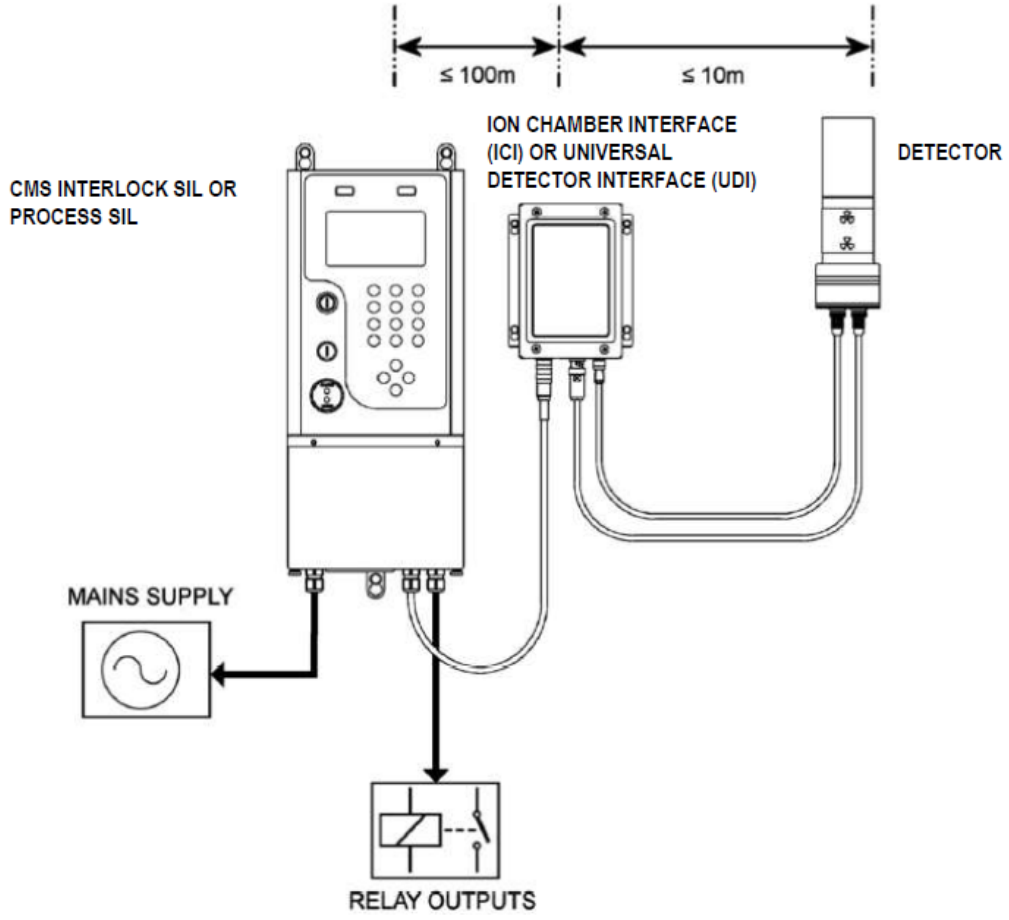
[2] *Concepts of Operations for TBL Personnel Safety System* (ESS-3532917)

[3] *Radiation monitoring for ESS experimental halls and laboratories (ESS-5118446)*

Radiation monitoring

TBL

Schematics of the monitoring system connections



Radiation monitoring

TBL

- ANM detector: Proportional counter tube (^{3}He). Range: 100 to 1E+07 n/cm2 s
- AGM detector: GM tube. Range: 0.1 µSv/h - 40 mSv/h

Radiation monitoring

TBL

Hand-held dose rate instrument provided by RP for general survey measurements when entering and working in the cave.

Electric Personal Dosimeters (EPD) available for workers and users entering the Controlled Area (cave).

2

Operational RP

Operational Radiation Protection

Some considerations

RP surveys shall be performed to validate area classification and potential contamination. *ESS Handbook for Radiation Protection. Chapter 4 – Work with ioninsing radiation (*ESS-0239720)

This is described in section 6.1 of *TBL - System Verification and Validation Plan* (ESS-0265776)

Handling and transport of samples and activated material shall follow *ESS sample handling procedure* (ESS-0024112) and *ESS Handbook for Radiation Protection Chapter 5 Radioactive material* (ESS-0239721)

Storage of radioactive material – location shall be defined by NSS, reviewed by RP.

RP availability as on call – define tasks considering also Hall Coordinators responsibilities and the total scope of RP on call.

3

Shielding

Shielding

Barriers as defined in cSAR section 16.4.6 for prompt and residual

Permanent shielding – Bunker walls, caves, beam stop

Movable shielding – cave roof and entrance, PSS contribute to configuration control

Removable Shielding Blocks
The TBL PSS[1] interfaces with the cave roof keystone shielding block in order to contribute to the shielding configuration management process.

Temporary shielding – for samples, sample transport (containers), and other radioactive materials (detectors, tools etc.) **TBC**

Bunker shielding -> iSRR for shielding

[1] *Concepts of Operations for TBL Personnel Safety System* (ESS-3532917)

4

Radiation Protection Readiness Summary

Radiation Protection Readiness - Summary

TBL

- Shielding verification done, report is still missing.
- Radiation monitors installed and commissioned.
- Conclude on RP vs Hall coordinator tasks 24/7.

From SRR perspective:

- RP has gained operational experience from Accelerator SCL commissioning.
- RP documentation in place for operational RP (and rad waste),
- Emergency procedures have been tested by drills.

Scope of RP is large and missing resources, means of transport and rad laboratory

Handling and storing radioactive materials (not waste) may become an issue.

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