iSRR ESTIA – Radiological and Environmental Monitoring Systems (REMS)

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Agenda

1 Brief scope description

2 Brief status of the systems

3 Status of documentation (CIDL)

4 Known issues deemed OK to proceed

5 Are there any NCRs related to the system(s)?

6 Does the system have any SSCI2S (rad safety) function?

7 Applicable codes and compliance

8 Describe briefly any tests needed with beam

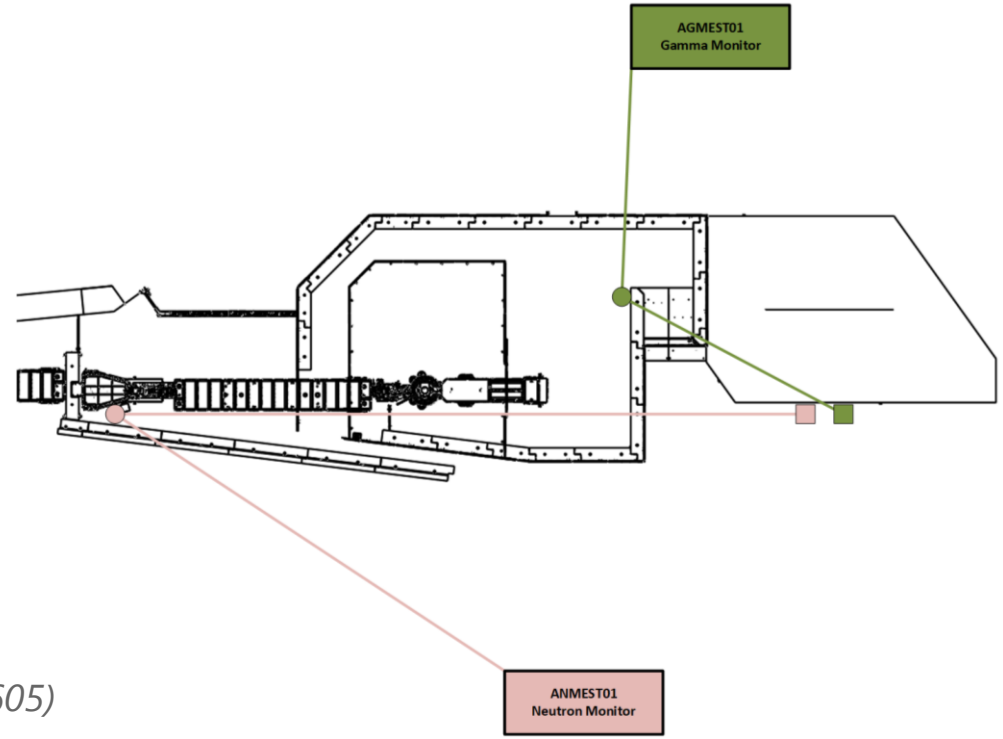
9 Have start up checklist been performed? Any issues found?

10 Have all recommendations from previous reviews been addressed?

1. Brief scope description

- Area Neutron Monitor (ANMEST01) 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 is linked to PSS[2].
- Area Gamma Monitor (AGMEST01) in the cave verifies dose rate levels before entering.

ESTIA experimental station

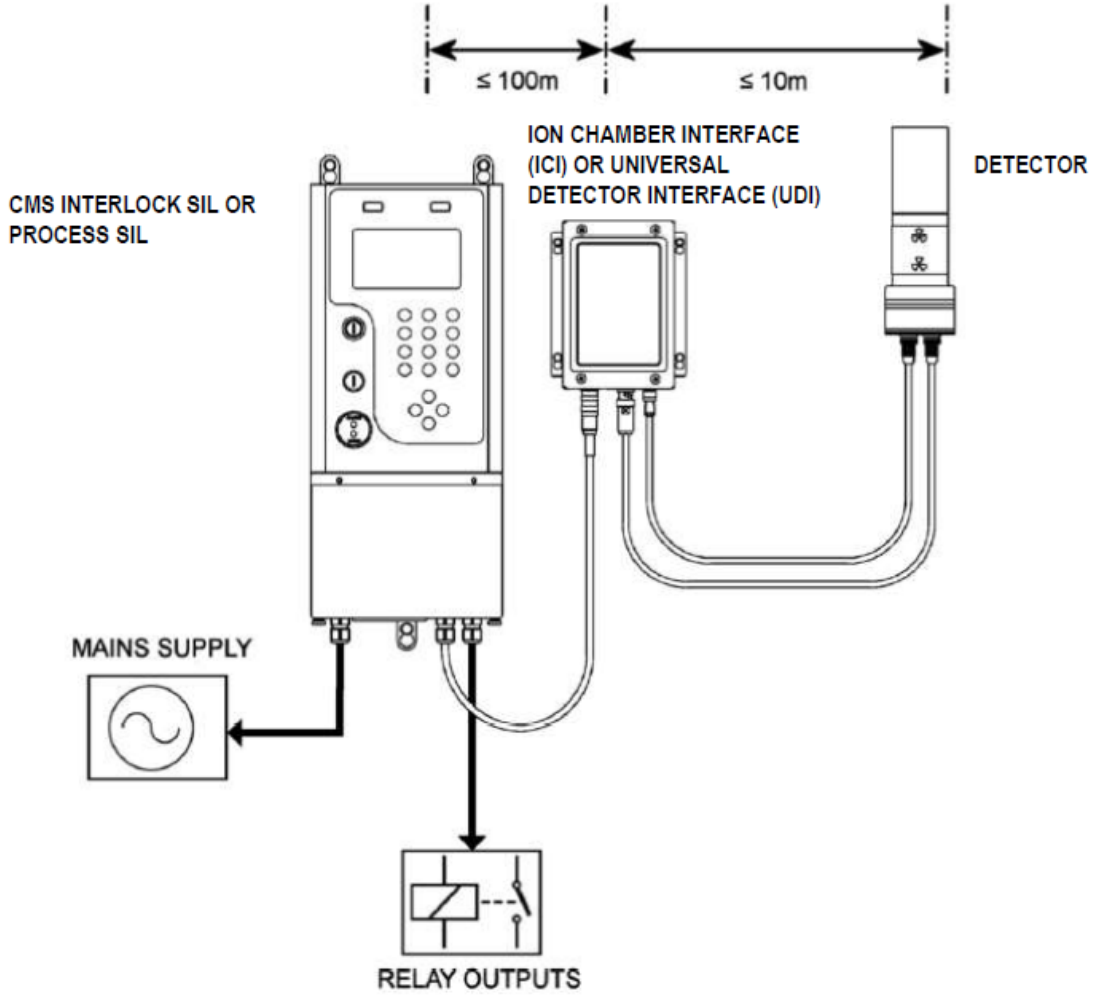


[1] *General specification of radiation monitors for instrument shutters (ESS-5312605)*

[2] *Concepts of Operations for ESTIA Personnel Safety System (ESS-4132453)*

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

Schematics of the monitoring system connections



2. Brief status of the systems

The ANM and AGM for ESTIA have been commissioned and are operational.

The final PSS validation with ANM is done.

Radiation monitoring for ESTIA

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

3. Status of documentation

REMS CIDL

- The released CIDL corresponds to"As-Operated" status for Accelerator, Target, NSS Tranche- 1, and INFRA (i.e. H09 and ESS site wide where applicable) scope.
- REMS CIDL OS-0000028 8 Released (25/05/2026)
- REMS - Area Monitoring Commissioning for NSS ESS-5840424

Documentation scope	Doc Nr	Doc Title
Scope and Requirements	ESS-0051197	Environmental Monitoring Plan
	ESS-0239723	ESS Handbook for Radiation Protection Chapter 7. Radiation Monitoring
	ESS-0517371	TS2 PSS and TS2 Radiation Monitors Interface Control Document
	ESS-1157543	REMS - Maintenance and Operations Concept
	ESS-1418699	ESS Procedure for Requesting Radiation Monitoring for Radiation Protection and Radiation Safety
	ESS-2501090	Framework Agreement - Lund University
	ESS-3723671	Radiation Monitoring Plan for the Radioactive Waste Treatment Facility H09
	ESS-4246185	Interface Control Document for PSS and REMS

Status of documentation

Documentation scope	Doc Nr	Doc Title
Specifications and Design	ESS-0094654	Functional Specification of the Radiation Monitors for the ESS Personnel Safety System 1
	ESS-0115546	Gradual implementation of the environment monitors of radioactivity and radiation
	ESS-0460601	Interface Requirements Specification for Accelerator Power Distribution System and REMS
	ESS-0503474	Radiation Monitoring for Normal-Conducting Linac
	ESS-0513304	Concept Document for the Radiological and Environmental Monitoring System 1
	ESS-0674021	Radiation Monitoring for Test Stand 2
	ESS-4802350	Radiation monitoring for the ESS Accelerator
	ESS-5072338	Radiation monitoring for the target building (D02)
	ESS-5118446	Radiation monitoring for ESS experimental halls and laboratories
	ESS-5148169	Interface Requirements Specification for H09 Power Distribution System and REMS
	ESS-5310340	REMS System Design Description for ESS
	ESS-5312605	General specification of radiation monitors for instrument shutters
	ESS-5456994	Location of radiation monitors in the experimental stations
	ESS-5493071	Radiation monitoring of ventilation to the environment
	ESS-5494026	Interface Requirements Specification for Enviroment Power Distribution System and REMS
	ESS-5494034	Requirements Specification for Enviromental
	ESS-5541053	Interface Requirements Specification for F03, F04 Power Distribution System and REMS
	ESS-5529603	P&ID ESS.INFR.B01.P01.P11.P02

Status of documentation

Documentation scope	Doc Nr	Doc Title
Quality records, V and V	ESS-1210606	REMS - CROME Commissioning & Acceptance
	ESS-1271214	Site Acceptance Test TS2
	ESS-2989989	Test Report - Power Distribution and Heaters for Portal Monitoring by F03
	ESS-3143465	REMS - TS2 AGMG0203 Material Access Door Commissioning
	ESS-3214102	Inspection and Test plan Internal Electrical REMS Equipment in TS2
	ESS-3214102	Inspection and Test plan Internal Electrical REMS Equipment in TS2
	ESS-3242494	Final Installation Acceptence - REMS area gamma monitor in TS2
	ESS-3263703	REMS - NCL Commissioning and Handover to RP
	ESS-5295413	Test Report ACC REMS Equipment
	ESS-5310318	Electrical inspection of REMS electrical installation in ACC
	ESS-5312771	Test Report for REMS Cabinets
	ESS-5428620	Test Report REMS G02 N11N1
	ESS-5445350	Electrical inspection REMS Outdoor
	ESS-5494021	Inspection and Test plan for low voltage power and power distribution equipment within REMS
	ESS-5528231	Equipment test report H09
	ESS-5174419	Test Report EAS1-5 ESM1-4
	ESS-5310335	Test Report REMS Feeding Cables
	ESS-5314546	Test Report REMS H09 Sytem Cables
	ESS-5428621	Test Report Deadtest Feeding Cables REMS-Labs
	ESS-5527743	Low Voltage Power and Control cables - cable and circuit test report D02
	ESS-5528230	Low Voltage Power and Control cables - cable and circuit test report ENV
	ESS-5530802	Inspection and Test plan for low voltage power and power distribution equipment within REMS
	ESS-5535506	Dead Test REMS Equipment D04
	ESS-5535507	Dead Test REMS Equipment D08
	ESS-5535508	Dead Test REMS Equipment E03
	ESS-5584791	Factory Acceptance Test Documents Stack
	ESS-5601170	Test Reports D02 Test Report

4. Known issues deemed OK to proceed

- No issues.

5. Are there any NCRs related to the system(s)?

- None

6. Does the system have any SSCI2S function?

- The ANM is classified as SSCI2S, see SSC Classification Report for REMS, ESS-5313506.

7. Applicable codes and compliance

Required periodic inspections

- All systems are CE marked including supports fabricated by ESS.
- All systems are energized according to ESS electrical design and safety rules.
- All systems require periodic maintenance and calibration in accordance, but with time intervals recommended by the supplier, see REMS – Maintenance and Operations Concept, ESS-1157543.
- Maintenance procedures are not yet defined within EAM (ongoing work), however maintenance manuals exists and annual maintenance is carried out currently using JIRA with supporting information available on Confluence.

8. Tests needed with beam

- The signal from the ANM will be characterized across multiple beam power levels and adjusted accordingly.

9. Start-up checklist

Issues found?

- This is the Hand-over and the PSS validation.

10. Recommendations from previous reviews

- No recommendations from previous reviews.

Questions

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