

Radiation Protection for ELENA



HSE
Occupational Health & Safety
and Environmental Protection Unit

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What do we do ?

- ▶ **Design and installation phase**
 - ▶ Perform radiological risk analysis
 - ▶ Support project for integration of RP requirements in design and installation phase
- ▶ **Commissioning and Operation phase**
 - ▶ Risk assessment at work places and radiological classification
 - ▶ Monitor radiation levels with permanent monitoring system (RAMSES/ARCON)
 - ▶ Ensure compliance with RP requirements
- ▶ **End of project**
 - ▶ Supervise decommissioning and dismantling
 - ▶ Radioactive Waste characterization and elimination

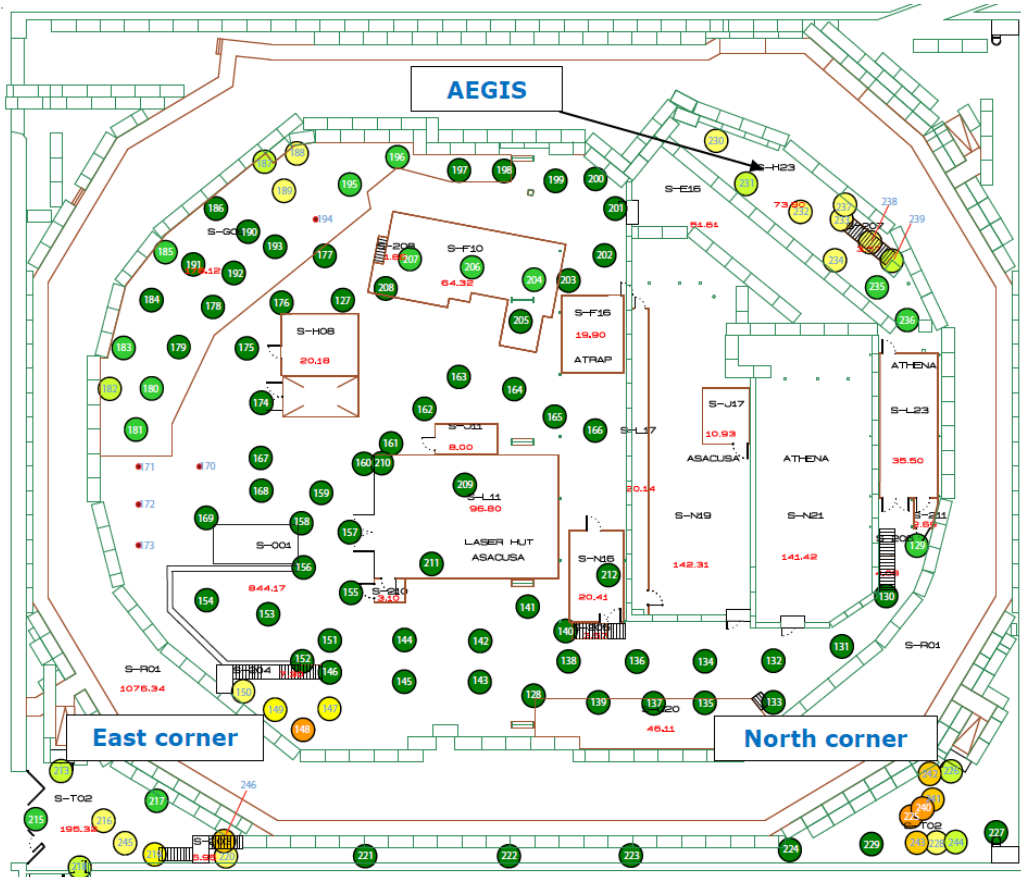
RP studies during design

- ▶ **Identification ionizing radiation sources (input from BE)**
 - ▶ Beam parameters
 - ▶ Conservative estimate of beam losses
 - ▶ Assessment for normal operation and accidental beam losses
 - ▶ Other sources of radiation (X-ray from cavities, e⁻ cooler...)
- ▶ **Definition of mitigation measures**
 - ▶ Shielding design (use of state of the art Monte-Code for complex situations)
 - ▶ Implementation of active monitoring system

Current situation in the AD Hall

- ▶ AD Hall is a Simple Controlled Area (except the visitor platform which is a Supervised Radiation Area)
- ▶ Detailed radiation measurement campaign in 2010
 - ▶ Shielding improvement was recommended at some specific locations to allow the possible classification of the AD Hall as a Supervised Radiation Area
 - ▶ Relocation of counting rooms for ASACUSA and ALPHA outside the AD Hall planned
 - ▶ Design objectives for ELENA should be compatible with classification of the hall as a Supervised Radiation Area
- ▶ Radiation limits (permanent - non-permanent workplace)
 - ▶ Supervised Radiation Area (3 $\mu\text{Sv/h}$ – 15 $\mu\text{Sv/h}$)
 - ▶ Simple Controlled Radiation Area (10 $\mu\text{Sv/h}$ – 50 $\mu\text{Sv/h}$)

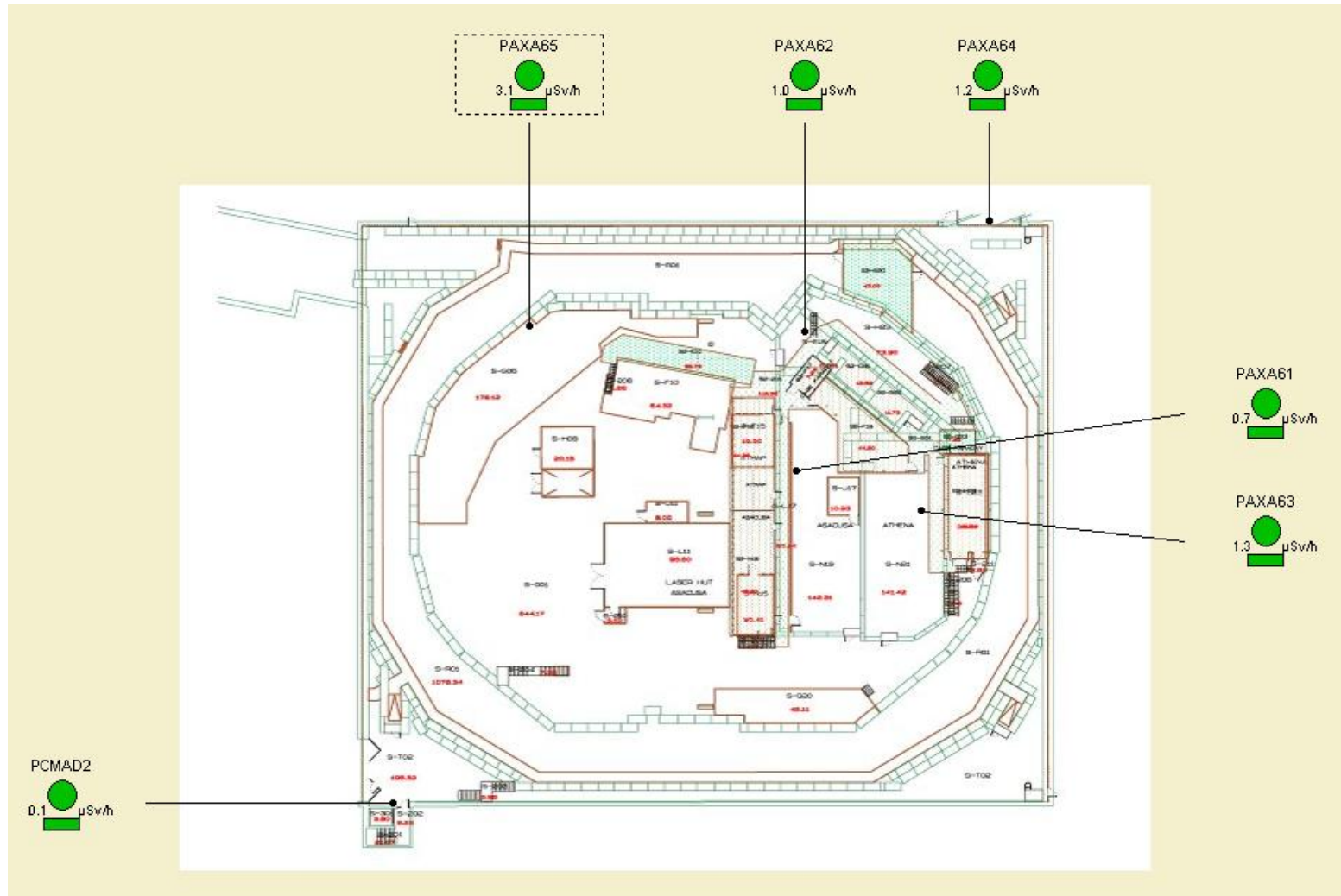
Example of results from the AD Hall survey



Results for low occupancy working places (edms 1110025)

| Non designated area | Supervised area | Simple Controlled area | Limited stay area |
|------------------------|----------------------------|---------------------------|-----------------------|
| < 2.5 $\mu\text{Sv/h}$ | 2.5 to 15 $\mu\text{Sv/h}$ | 15 to 50 $\mu\text{Sv/h}$ | > 50 $\mu\text{Sv/h}$ |
| | | | |

Permanent monitors in the AD Hall



THANK YOU FOR YOUR ATTENTION

