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Reliability of Target Ion Source System on SPIRAL1 - GANIL

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The SPIRAL1 facility at GANIL produces radioactive ions beams (RIB) since 2001. Target Ion Source Systems (TISS) employed are exposed to severe dose rates, requiring both simple and radiation hard technologies. Moreover, the production is performed in a Nuclear Installation Plant, where all the processes must cope with constraining safety rules. Once the TISS is irradiated by primary beams of heavy ions, the dose rate, the activation level and the potential contamination in the surrounding of the TISS make the access and the maintenance prohibited. All parts of the production system must thus be highly reliable. An important process for the preparation, operation and recycling of the TISS has been developed to minimize the failure probability and optimize the availability of the beam for the users.

Up to now, 45 target ion source systems have produced 70 RIBs delivered to physic experiments. Only 3 TISS have failed.

The organization and methods to achieve these results will be discussed.

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