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## **Safety, Security, and Safeguards (3S) Interface Identification and Characterisation in Generation IV Advanced Modular Reactors: A Generation IV International Forum Case Study**

The Generation IV International Forum (GIF) is a co-operative international endeavour that was set up to facilitate the research and development (R&D) needed to establish the feasibility and performance of the next generation (Gen-IV) nuclear energy systems, establishing their performance goals and exploring technical feasibilities and designs, with the objective of making them available for industrial deployment by 2030s. Gen-IV reactor technologies will have to excel in four main areas: safety, economics, sustainability, proliferation resistance and physical protection. With the development of Gen-IV advanced modular reactor (AMR) designs, the GIF Proliferation Resistance and Physical Protection Working Group (PRPPWG), the GIF Risk and Safety Working Group (RSWG) and the GIF Very High Temperature Reactor System Steering Committee (VHTR SSC) are performing a bottom-up 3S (safety, security, and safeguards) exercise on a notional pebble-bed VHTR modular reactor. The objective of the exercise is to identify and characterize 2S and 3S interfaces on the reference system, and to abstract some technology neutral guidelines for 2S/3S interfaces identification and characterization. This paper will summarize the progress and experience emerging from this activity, together with some high-level findings and considerations.

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### **Confirm that the work is original and has not been published anywhere else**

YES

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