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Safeguards by Design as Implemented by Sellafield Limited - Application to a New Nuclear Material Storage Facility

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Safeguards-by-design is defined as the consideration of safeguards throughout the lifetime of a facility, from conceptual design to decommissioning. A new nuclear material storage facility has been designed and is in the process of being constructed on Sellafield site as part of the UK strategy for consolidating nuclear material from other UK facilities to allow for their declassification. The design work started in 2012, construction is ongoing, and the first receipt of nuclear material is due to arrive in late 2014. The store has been designed for long term storage of a variety of plutonium and highly enriched uranium bearing materials, as well as Prototype Fast Reactor mixed-oxide fuel assemblies.

Although safeguards-by-design has not introduced any new safeguards requirements to the project, it has presented an opportunity for Sellafield Limited to engage voluntarily with DG ENER earlier than legally required in order to reduce project risk. It has been in the interests of both Sellafield Limited and DG ENER to cooperate in order to facilitate the implementation of safeguards in terms of enhancing understanding of the facility capability, its suitability for safeguards implementation, as well as keeping costs low and the project to schedule.

This paper describes the Sellafield Limited process for application of safeguards-by-design commencing at the conceptual design stage. In order to meet the safeguards requirements, a close dialogue was established between key stakeholders and early contact initiated prior to and during the design stages has facilitated the inclusion of safeguards instrumentation into the overall design and facility construction. Detailed discussions at the early stages of design have raised the profile of nuclear material accountancy and safeguards within the wider Sellafield community.

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