



Transition from GDA to Operational Safety Case

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Scope of presentation

- **Reminder – What is a nuclear safety case**
- **Safety cases at different stages of a plant's life cycle**
- **GDA end point**
- **What happens between GDA and Operation**
- **Content of presentation based largely on TAG 051**
(http://www.hse.gov.uk/foi/internalops/nsd/tech_asst_guides/tast051.pdf)

What is a nuclear safety case?

- totality of documented information which substantiates the safety of the plant, activity, operation or modification in question.
- written demonstration that relevant standards have been met and that risks have been reduced as low as reasonably practicable (ALARP)

Purpose of a Nuclear Safety Case is to establish that the plant and processes:

- 1) are soundly assessed and meet required safety principles;
- 2) conform to good nuclear engineering practice and to appropriate criteria, standards and codes of practice;
- 3) are adequately safe during both normal operation and fault conditions;
- 4) are, and will remain, fit for purpose;
- 5) give rise to a level of nuclear risk to both public and workers which is ALARP; and
- 6) have a defined and acceptable operating envelope, with defined limits and conditions, and the means to keep within it.



Safety cases at different stages of a plant's life cycle (from T/AST/051 Licensee responsibility shown in blue)

Report	Input to
Preliminary Safety Report	Fundamental safety overview in Phase One Step 2
Generic Pre-Construction Safety Report (PCSR)	Assessment in Phase One - Steps 3 and 4
Site-specific Pre -Construction Safety Report	Phase Two Licensing assessment
Pre-Commissioning Safety Report	Prior to (inactive and active) commissioning
Pre-Operational Safety Report	Prior to reactor operation

GDA end point

- Will in effect be a “generic” Pre-Construction SR
- The “frozen” GDA submission will, if all goes to plan receive a GDA confirmation
- The Confirmation will be accompanied by “exclusions” and “conditions”.
- These exclusions and conditions will need to be addressed by the prospective licensee.
- In addition the licensee will need to develop the Pre- Construction SR into a Pre-Commissioning SR and subsequently a POSR and OSR

Site Specific Pre Construction Safety Report

- demonstrate the detailed design proposal will meet the safety objectives prior to commencement of construction or installation
- To demonstrate that the plant is capable of being operated within safe limits
- demonstrate that construction and installation activities will result in a plant of appropriate quality.
- demonstrate that sufficient analysis has been performed to prove that the plant will be safe
- identify outstanding confirmatory work (for GDA this will also include exclusions and conditions attached to the GDA confirmation)
- demonstrate that risk will be ALARP
- demonstrate the feasibility of decommissioning

Pre Commissioning safety Report (inactive)

- To demonstrate that the plant as-built meets relevant safety criteria and is capable of safe operation
- To enable the production of a programme of safety commissioning activities that will:-
 - demonstrate as far as practicable the safe functioning of all systems and equipment
 - prove as far as practicable all safety claims
 - confirm as far as practicable all safety assumptions
 - confirm as far as practicable the effectiveness of all safety related procedures
- To list aspects of safety that cannot be demonstrated inactively

Pre Commissioning Safety Report (Active)

- To sentence any shortfalls revealed during inactive commissioning
- To demonstrate that the inactive commissioned plant continues to meet relevant safety criteria and is capable of safe operation
- To demonstrate that the active commissioning activities can and will be carried out safely

Pre Commissioning Safety Report (Active)

- To enable the production of a programme of safety commissioning activities that will:-
 - demonstrate the safe functioning of all systems and equipment where not already demonstrated
 - prove all safety claims where not already proved
 - confirm all safety assumptions where not already confirmed
 - confirm the effectiveness of all safety related procedures where not already confirmed as effective
- To demonstrate that there are no aspects of safety that remain to be demonstrated after active commissioning
- To identify limits and conditions necessary in the interest of safety

Pre Operational Safety Report

- To demonstrate that the plant (as built and commissioned) meets the safety standards and criteria set down in the pre commencement safety case
- To demonstrate that detailed analysis has been undertaken to prove that the plant will be safe
- To demonstrate that all necessary pre-operational actions have been completed, validated and implemented
- To identify limits and conditions necessary in the interest of safety

Operational Safety Report

- Not the end of the story
- Operation – generation, outages, pre-decommissioning and decommissioning.
- Needs to address the concerns of the plant personnel as well as headquarters staff. The recent work of British Energy in conjunction with NII in developing living safety cases for its AGRs is a good pointer to an acceptable OSR framework.
- OSR builds on and references all previous safety cases but does so in a highly readable, scalable (enhanced and modified without increasing complexity) form.

Conclusions

- Identified what the GDA end point will be
- Explained the high level differences between safety cases at different stages of a plant's life cycle
- Highlighted those areas that a prospective licensee in possession of a GDA confirmation will have to address
- Identified the relevant technical guidance