THE REVIEW OF SAFETY CASES WITHIN BNFL

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ABSTRACT

The British regulatory process requires BNFL to make safety submissions for all major activities, ie design/construction, commissioning, operation, modification and decommissioning. As part of the regulatory requirement, an independent review of the safety is necessary. This paper describes how the review takes place within BNFL.

INTRODUCTION

BNFL operate processes which cover the whole of the nuclear fuel cycle. Fuel manufacture takes place at Springfields near Preston, enrichment at Capenhurst near Chester, whilst the reprocessing operation is conducted at Sellafield in West Cumbria. Additionally, BNFL operate the original Magnox power reactors at Sellafield, and a similar installation at Chapelcross, Scotland.

The British regulatory process requires the licensee (BNFL) to make detailed safety submissions for all major activities, ie design/construction, commissioning, operation, modification, and decommissioning. The regulatory body issues consents as appropriate when it is satisfied with the safety submissions.

The preparation of safety submissions is the responsibility of the various operating divisions within BNFL. These submissions are extensive, and generally include probabilistic analyses as well as deterministic demonstrations.

As part of the regulatory requirement a second opinion, or Peer Review is required by the Regulator - for all Safety Cases. The review process is the responsibility of an independent group which is part of the Central Health and Safety Directorate, and which has no line management ties to Operating Divisions. It is the purpose of this paper to describe how this activity functions within BNFL.

METHODOLOGY

Safety cases are categorised according to their safety significance and the depth of their review depends on this categorisation. The categorisation is done in advance of the main safety case preparation. The first task of the reviewer is to agree or disagree with the categorisation which has been made. The first few steps in the flowchart in Figure 1 shows this process.

In a safety categorisation system which has categories 1, 2, 3 and 4 (with 1 having the highest safety significance), the review exercise is structured as indicated in the following table.

Category	Summary of Review Exercise
1 2 3 4	Categorisation of safety case check
1 2 3	Audit - procedures - methods
1 2	Completeness - plant/modification itself - other interacting plant
1 2	Inventory library check
1 2	Logic and methodology calculations - risk estimates - check (sample)
1	Logic and Methodology calculations - risk estimates - check (representative selection) - first principles (sample)
1	HAZOP - sample

* Only if the reviewer judges it to be warranted.

The degree of attention given to separate parts of the safety case should be commensurate with the reviewer's opinion of the risks involved. The review could range from simply a check of the safety case categorisation to a fundamental evaluation of the safety case depending on the safety significance and the reviewer's initial assessment of the safety case.

As can be seen from the table, the methodology involves an "inventory library". This makes use of a library of historical data compiled from safety analyses of a range of plant such that a given safety analysis may often be compared against a similar previous one to see whether or not the result is of the right order. The other steps in the table are self explanatory.

The reviewers only review completed safety cases, ie cases which are ready for submission to a safety committee. The result of the review will be one of three conclusions.

- case satisfactory
- case generally satisfactory but further work required
- case unsatisfactory

This result and its associated report are routed to the project sponsor who is usually a senior manager in the operating division. The interaction between the review, the safety committee and the regulator, is shown in Figure 1.

STAFFING

The review team consists of a small nucleus of BNFL staff with each principal reviewer being responsible for a BNFL division or divisions. The principal reviewer then calls on the assistance of experienced specialists to examine particular aspects of the safety case in more detail as appropriate. These specialists may or may not be BNFL employees, but they must be independent of the authors of the safety case under consideration.

CONCLUSION

The independent review of safety cases is established within BNFL and is seen as an important step in the process of self regulation.

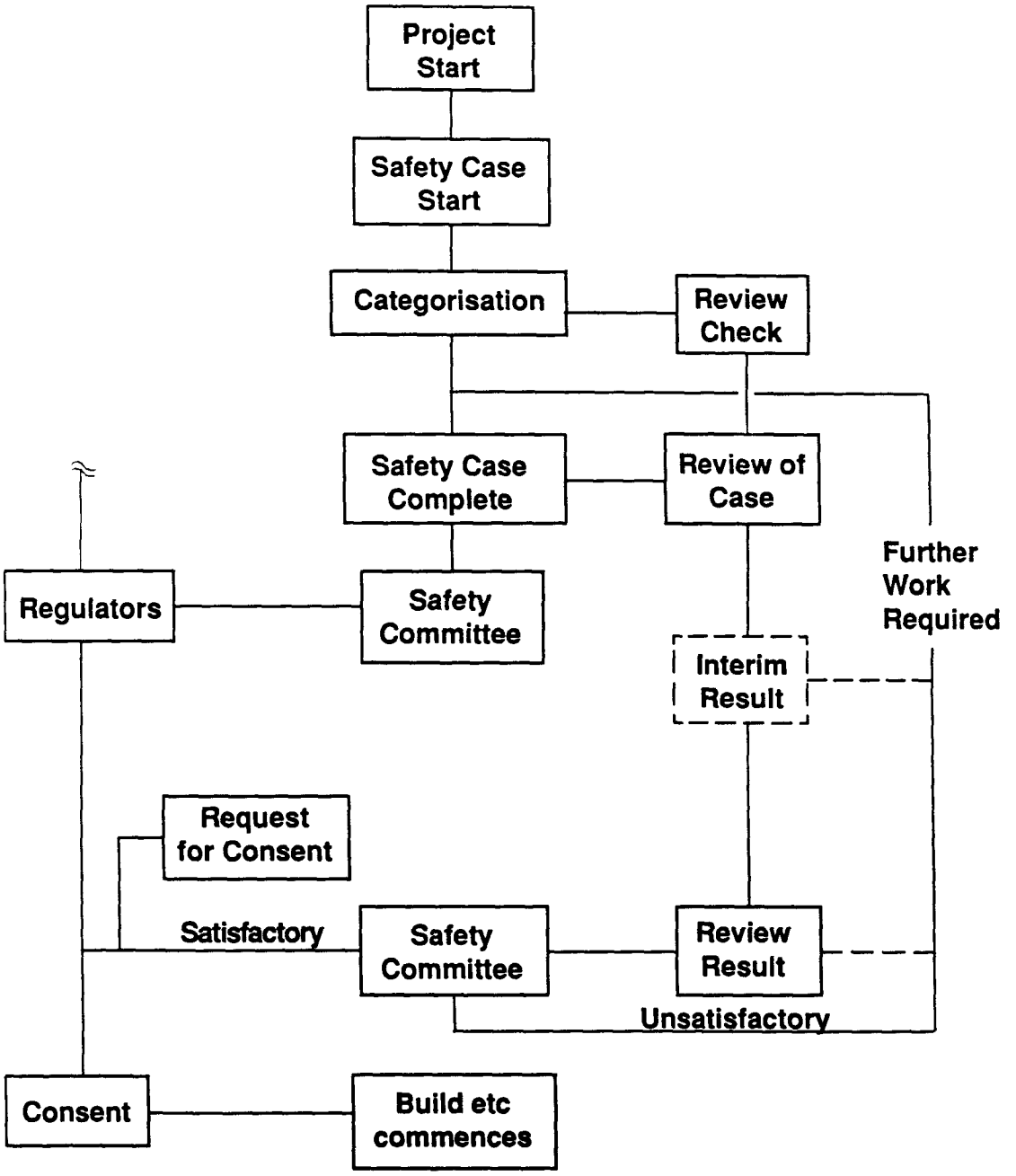

Figure 1 - Project Flowchart Showing Review Function

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