



INTERNATIONAL ATOMIC ENERGY AGENCY

MEETING REPORT

FUEL FABRICATION FACILITY TEST CASE

*“Use of safety Assessment in Planning and Implementation of decommissioning
of Facilities using radioactive material” (FaSa Project)*

*Second Joint FaSa Meeting, 7-11th December 2009,
Federal Ministry for the Environment,
Nature Conservation and Nuclear Safety,
Bonn (Germany)*

A C HALLE (UK), Chairman, FFF Test Case

(December 2009)



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1. Introduction

This meeting of the Fuel Fabrication Facility Test Case working group (FFFTC) was part of the second joint meeting of FaSa project. The meeting took place on the fourth day (Thursday).

2. Meeting objectives

The meeting objectives were to:

- Discuss the draft FFF test case which will support the FaSa report, and in particular agree key components of the test case to be included in the draft report;
- Plan the further development of the draft test case, including assignment of tasks during 2010, which will lead to a suitable version being available for detailed review during FaSa meeting in Q4 2010.

Mr Mark Pennington has stepped down from the post of Chair to concentrate on his role as Chair of the Implementation Working Group. Mark will continue as Vice-Chair of the Fuel Fabrication Facility Test Case, thereby ensuring continuity of facility specific knowledge within the group. Mrs Audrey Halle (UK) had been nominated as a replacement Chair and accepted the post. The meeting continued with Mrs Halle as Chair.

A list of the Test Case Working Group participants is provided in Appendix A.

A tentative agenda was issued to all participants and agreed during the meeting. The final version of the agenda is presented as Appendix B.

The objectives of the Fuel Fabrication Facility Test Case are detailed in Appendix C.

3. Work performed

This meeting was used as an opportunity to further develop the Working Group's (WG's) understanding of the test case, following on from the site visit undertaken in September 2009.

The WG further developed the document by focussing on review of the following sections:

- Section 4 – Hazard Identification
 - Discussion of formal Hazard identification techniques
 - Group is aware of the IAEA DeSa methodology
 - Discussion of graded approach in relation to potential consequences
 - Agreed that examples of the Hazard Identification process undertaken for this test case will be provided as an Appendix



- Section 5 – Hazard Evaluation
 - Confirmation of scope
 - Discussion of *normal* decommissioning activities
Repetitive tasks that will occur throughout the whole phase
E.g. Consignment of waste, Filter changes
 - Agreement of the criteria for selection of specific detailed safety assessments for inclusion in the test case
 - Recognisable to many member states
 - Applicable to many decommissioning applications
 - Scenario which results in a significant consequence
 - Scenario which impacts the limits and conditions
 - Generates SSCs
 - External and internal events
 - Selection of 5 specific safety assessments to be included in the test case
 - 2 relating to criticality,
 - 2 relating to radiological effects and
 - 1 related to an external event.

Although there was extensive discussion of these two sections it was not possible to finalise these sections during the meeting. However a great deal of common understanding was achieved. Further drafting of the supporting text remains to be completed.

No significant issues were identified at this stage of the production process (e.g. no issues were identified that need to be addressed by other Working Groups). However the following topics for future discussion were identified by the group:

- Margins of safety
(Various member state experience to be discussed)
- Boundaries of safety assessment
- Flexible and proportionate approach
- The terminology and member state experience relating to “worst case scenario”
- External events
 - E.g. Seismic
- Conventional hazards
 - E.g. Chemo-toxic
- Waste management issues, particularly interfaces
- How is “feedback” from Mock-ups and factory trials captured by the safety assessment process?

It was agreed that Section 6 “Engineering Analysis” will be the next area to be examined by the group. It was also agreed to “park” and do no further work at this time on Section 8 “Graded Approach” and Section 9 “Confidence Building”. Advice has been received from the FaSa Chairman that these topics will be addressed at the overall FaSa report level.



4. Work plan

The WG agreed that there was a need for potentially two future meetings to meaningfully progress the draft Test Case report before the next (November 2010) Joint FaSa Meeting. It is anticipated that the location and dates of these future meetings will be co-ordinated to coincide with the other working groups which the members are also involved with (e.g. Decommissioning Conduct or Decommissioning Implementation). The aim is to maximise the member state participation whilst minimising travelling time.

The following key tasks to enable future work to commence were identified:

- Population of the report with detailed information as discussed in Bonn
- Identification of appropriate engineering system reports
- Provision of the revised draft report to the Working Group for review prior to the first meeting scheduled in 2010.

The following provisional dates were identified for the Test Case Working Group members to reconvene to discuss the draft report.

- Meeting to be held in conjunction with the Implementation WG, mid June 2010,
Location: To be confirmed.
- Meeting to be held with Implementation WG, early October 2010
Location: To be confirmed
- Main FaSa meeting , end November 2010,
Location: IAEA, Vienna, Austria.

The following actions were agreed:

1.	Meeting report to be drafted	A Halle	End of January 2010
2.	Agree dates for interim meetings	M Pennington & A Halle	End of January 2010
3.	Chapter 3 - remove facility specifics	M Pennington	End of March 2010.
4.	Revise the report sections as agreed in Bonn	AC Halle & M Pennington	End of April 2010
5.	Identify & despatch Engineering System reports to working group members.	M Pennington	Mid May 2010
6.	Despatch revised draft of Test Case Report to Working Group	A Halle	Mid May 2010, 1 month prior to first group meeting.



5. Distribution

- Fuel Fabrication Facility Test Case WG participants and volunteers
- J Kaulard, Chairman, FaSa Project
- A Bassanelli, NPP Test Case Working Group
- K Lauridsen, Research Reactor Test Case Working Group Chair
- A Cadden, Mining and Milling Test Case Working Group Chair
- A Hart, Decommissioning Termination Working Group Chair
- O. Lareynie, Decommissioning Termination Working Group Chair
- P Francois, Decommissioning Conduct Working Group Chair
- P Manson Decommissioning Planning Working Group Chair
- M Pennington, Safety Assessment Implementation Working Group Chair
- D Orlando, Review Working Group Chair
- V Ljubenov, IAEA Scientific Secretary
- J Rowatt, Unit Head, IAEA Decommissioning and Radiation Unit
- FaSa website

Audrey Halle
Thursday, December 17, 2009



Appendix A

LIST OF PARTICIPANTS

Patrice Francois	France
Audrey Halle	UK, Chairman
V Ljubenov	IAEA Scientific Secretary
Susan Miller	Canada
Mark Pennington	UK, Vice-chair
Erik Strube	Germany



APPENDIX B

International Atomic Energy Agency

Second Meeting of the International Project

“Use of Safety Assessment Results in Planning and Implementation of Decommissioning of Facilities Using Radioactive Material (FaSa)”

07 – 11 December 2009

**Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
D-53175 Bonn, Robert-Schuman-Platz 3, Germany**

Working Group on Fuel Fabrication Test Case

Finalised Agenda Thursday 10th December 2009

9.00-10.30	1. FUEL FABRICATION WG SESSION NO. 1 – INTRODUCTION	
	1.1 Introductions	M. Pennington (UK)
	1.2 Approval & amendment of agenda	M. Pennington (UK)
	1.3 Facility overview presentation	M. Pennington (UK)
	1.4 Review of the existing chapters 1 to 3	M. Pennington (UK) A. Halle (UK)
10.30-11.00	COFFEE BREAK	
11.00-12.45	2 FUEL FABRICATION WG SESSION NO. 2 - WORK ON TEST CASE REPORT	
	2.1 Agree scope of chapters 4, 5, 6 and 7	All
	2.1 Detailed work on chapter 4	All
12.45-13.45	LUNCH BREAK	
13.45-15.15	3. FUEL FABRICATION WG SESSION NO. 3 - WORK ON TEST CASE REPORT	
	3.1 Detailed work on chapter 5 “Hazard Analysis”	All
	3.2 Detailed work on chapter 5 - continued	All
15.15-15.30	COFFEE BREAK	
15.30-17.00	4. FUEL FABRICATION WG SESSION NO. 4 - WORK ON TEST CASE REPORT	
	4.1 Agree scope of Section 6	All
	4.2 Draft a detailed work plan for the working group, including a potential visit to the facility, meeting dates, actions and their respective owners.	A Halle



Appendix C: Fuel Fabrication Facility Test Case Objectives **(Extracted from overall FaSa objectives)**

Rationale

A number of fuel cycle facilities are under decommissioning worldwide and safety assessment for these activities is needed to terminate the license and release the facility or site from regulatory control (e.g. unrestricted or restricted use). Such facilities were not addressed as test cases in the DeSa project and for this reason developing a test case in the FaSa project can complement the examples of application of the DeSa methodology to a broad range of facilities and will also illustrate the application of the safety assessment results in an ongoing decommissioning project. The proposed test case is intended to evaluate safety of decommissioning of a fuel fabrication facility that was operated from 1971 to 1992 at a multi-facility site. The facility was used for manufacturing Mixed-Oxide (MOX) fuel assemblies for Prototype Fast Reactors. Part of the facility is under decommissioning, and part of the facility is also used for plutonium waste receipt/dispatch operations, thus giving it a “dual” role.

Scope

The scope of the Fuel Fabrication Test Case is the facility undergoing decommissioning using a “phased” approach, with the project currently in Phase 3 implementation, which is the most technically challenging phase. Assessment work for the final phase is planned to start, and the scope of this phase will include the removal of the mobile filtration unit and the building ventilation extract ductwork.

Objectives

The Fuel Fabrication Facility Test Case has the following objectives:

- a. To demonstrate the role of a safety assessment during a “phased” decommissioning project, including how this approach aids both operators and regulators;
- b. To demonstrate how a safety assessment is used to carry out optioneering, hazard analysis (both radiological and conventional) and the identification of the appropriate controls (both managerial and engineering).
- c. To demonstrate how a “graded approach” is adopted throughout the safety assessment process and how “defence in depth” and optimization are achieved;
- d. To demonstrate how the safety assessment is implemented and incorporated into the working documentation, including the appropriate compliance activities (both managerial and engineering);
- e. To demonstrate how the safety assessment is amended following a change in the decommissioning strategy – addressing changes outside the license conditions and demonstrating compliance.



Activities

By using this facility as a test case it will allow the decommissioning safety assessment methodology defined during DeSa to be demonstrated on a fuel fabrication facility. Furthermore to this methodology, additional aspects will be demonstrated such as change control process, defence in depth and the identification and integration of the conventional safety hazards/controls.

The application of the Fuel Fabrication Facility as a test case will demonstrate the following:

- How the overarching safety assessment evolves through the decommissioning project phases;
- How the waste management strategy affects the decommissioning activities;
- The safety assessment and operational issues of having a “dual” purpose facility, a decommissioning project in implementation and carrying out plutonium waste receipt/dispatch operations within the same facility;
- Revaluation of safety in case of change of technology or end state.

Outcomes

The outcome of the working group on the Fuel Fabrication Facility will document:

- Recommendations on the role of the safety assessment during a “phased” decommissioning project and how this aids both operators and regulators;
- Recommendations on how to use a safety assessment to carry out optioneering, hazard analysis (both radiological and conventional) and the identification of the appropriate procedures (both managerial and engineering);
- Recommendations on how to adopt a “graded approach” throughout the safety assessment process and how to achieve “defence in depth” via the safety assessment and its results;
- Recommendations on how to implement a safety assessment and incorporate the findings into the working documentation;
- Recommendations on how to amend a safety assessment, following a change in the decommissioning strategy, controls including the information flow into the working documentation.

Interfaces with other working groups

The Test Case is envisaged to illustrate the recommendations developed in Step 1 of the project and therefore will coordinate its activities with the all Working Groups in Step 1. It will also provide feedback on the recommendations developed in Step 2 that will be reflected in the main project report. The draft report of the Fuel Fabrication Facility will be submitted to the two working groups (Review of Implementation, Modifications and Evolutions of Safety Assessment Results Working Group, and Implementation of Safety Assessment Results Working Group) for comments and recommendations at the end of Step 2.