



INTERNATIONAL ATOMIC ENERGY AGENCY

CHAIRMAN'S REPORT

*Evaluation and Demonstration of Safety during Decommissioning of Nuclear
Facilities (DeSa Project)*

*Forth Joint Meeting, 29 October – 2 November 2007,
IAEA Headquarters, Vienna, Austria*

K. Percival, United Kingdom

(November 2007)



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1. Introduction

The international project on the *Evaluation and Demonstration of Safety of Decommissioning of Nuclear Facilities (DeSa)* was launched in November 2004 with the aim of developing a harmonized and robust methodology for the safety assessment of decommissioning activities that includes the identification of the necessary safety control measures and the demonstration of compliance with regulatory requirements and safety criteria. The project also provides an effective international forum for the exchange of experience and good practices in the field of safety assessment, application of the graded approach and the regulatory review of safety assessments.

The IAEA plans to publish all the DeSa reports as one overall Safety Report (DD741), but with four volumes. The central report (volume 1) will describe the safety assessment methodology for decommissioning, its application to three different test cases will be presented in volume 2, the application of a graded approach to all aspects of decommissioning safety assessment in volume 3, and the regulatory review process in volume 4. The demonstration of the practical application of the DeSa methodology is provided through three test cases covering a Nuclear Power Plant, a Research Reactor and a Nuclear Laboratory.

With the substantial completion of the assessment methodology report in 2007 the emphasis in the 4th Joint DeSa meeting was on the review and further development of the three draft reports of the Test Cases, Regulatory Review and the Graded Approach Working Groups (WGs).

There has been considerable interest expressed by a number of Member States in a follow on project, with the aim of providing further guidance on other types of decommissioning projects and facilities. Accordingly there were detailed discussions on the types of facilities and development of the application of the DeSa methodology that participants felt would be of most value.

1.1. Progress since the 3rd Joint DeSa Meeting (2006)

This has been a very active year for all of the DeSa Working Groups in order that their respective reports were developed close to completion so that final discussions could be held at the 4th Joint DeSa meeting. The current Working Groups of the DeSa project are:

- Regulatory Review – chaired by R. Ferch (Canada);
- Graded Approach – chaired by S. Thierfeldt (Germany);
- NPP Test Case – chaired by P. Manson (UK);
- Research Reactor Test Case – chaired by J. Kaulard (Germany);
- Nuclear Laboratory Test Case – chaired by A. Joubert (South Africa).

The main activities over the year are summarized below.



a. Regulatory Review Working Group

Two meetings were held during 2007. The first meeting at IAEA headquarters in Vienna from 10 to 13 April 2007 and the second one, in parallel with the Graded Approach Working Group, in Malmö, Sweden from 11 to 15 June 2007. In addition to developing the working group's report a key activity was the provision of regulatory style comments on the three draft Test Case reports and further development of the regulatory review procedure.

b. Graded Approach Working Group

A meeting was held of the Working Group in Malmö, Sweden in parallel with the Regulatory Review Working Group (from 11 to 15 June 2007). In addition to the development of the Graded Approach report for discussion and presentation at the 4th Joint DeSa meeting, the Working Group also provided comments on the three draft Test Case reports, with emphasis on the use and application of a graded approach within these reports. Two papers on the topic of graded approach to decommissioning safety assessment were presented at the Athens conference (Greece, 2006) and the ICEM'07 (Belgium, 2007).

c. Nuclear Power Plant Test Case Working Group

Three meetings were held during the year. The first in Cologne (Germany) in parallel with the Research Reactor Test Case WG from 26 February to 2 March 2007, the second a short familiarization visit to Barsebäck NPP (Sweden) on 24 April 2007 and a final meeting in Cockermouth near Sellafield (UK) from 6 to 10 August 2007. At the final meeting comments from the Regulatory Review WG and Graded Approach WGs were addressed and the report completed as a final draft for consideration at the 4th Joint DeSa meeting.

d. Research Reactor Test Case Working Group

As noted above a Working Group meeting was held in Cologne (Germany) from 26 February to 2 March 2007 in parallel with the NPP Test Case WG meeting. The WG developed their report into a final draft and addressed comments received from the Regulatory Review and Graded Approach Working Groups. The Group also presented a paper and a poster at the International conference on research reactors lifetime in Sydney (Australia) in November 2007.

e. Nuclear Laboratory Working Group

A meeting was held in Pretoria, South Africa between 16 and 20 July 2007 following receipt of comments from the Regulatory Review and Graded Approach Working Groups. The report was developed to include an engineering assessment and the application of a risk classification system. In addition the SAFRAN tool being developed as part of the SADRWMS project has been tested on the draft Laboratory Test Case in order to develop its application to decommissioning.



1.2. Scope and Objectives of the 4th Joint DeSa Meeting

The prime purpose of the 4th DeSa meeting was to consider the final draft reports of the above five Working Groups and also that for Volume 1, the DeSa Methodology report, to obtain endorsement of the reports now that they are nearing completion, and to identify any final changes.

The second key purpose was to discuss in some detail Member States views on the value of a follow up project and the potential scope of this project.

2. Work Performed

The meeting was opened by Mr. D. Louvat, Head of Waste and Environmental Safety Section in IAEA, highlighted the importance of international projects like DeSa that aimed to develop standardized approaches to important areas like the control of safety during decommissioning. It was followed by opening remarks of the chairman of the DeSa project, Mr. K. Percival of the UK. The meeting followed the agenda presented in Appendix A and was attended by about sixty experts representing twenty-seven Member States and IAEA (see Appendix B).

2.1. Plenary Sessions

The first presentation of the opening plenary session was from Ms. B. Batandjieva, IAEA Scientific Secretary for DeSa Project. It gave participants an overview of recent IAEA activities related to decommissioning safety and waste management. This showed the relationship of the DeSa project with the Agency's overall activities in technical support to Member States, e.g. review of decommissioning plans, training. This was followed by an overview of DeSa activities since the 3rd Joint Meeting, presented by Mr. K. Percival. This covered WG activities, developments in methodology, alignment with the draft Safety Guide DS376, interface with SAFRAN and presentations and papers at international events.

A presentation was also made by Ms. B Batandjieva on the development of DS376, its main outcomes and the interactions with DeSa reports.

The second plenary session was largely dedicated to a presentation on the DeSa Safety Assessment Methodology (Volume 1). Presentation of the recent developments of the draft report was made by the Chairman, with emphasis on developments such as engineering assessment included to provide better alignment with DS376. This was followed by an extensive and positive discussion that indicated a few aspects of the report that could usefully be clarified. For example the interface with the industrial safety assessment. This was concluded with a very well represented poster session (see Appendix C).

The third plenary session was a joint meeting with the newly formed International Decommissioning Network (IDN). Two presentations were made by Mr. P. Dinner (WTS, IAEA) and Mr. R. Coates (WES, IAEA) on behalf of the IDN, followed by a discussion with DeSa participants. DeSa itself clearly represents a successful networking initiative, and interestingly a survey conducted by the IDN showed safety assessment to be one of the main areas of interest of IDN participants.



The fourth plenary session was based on a presentation of Mr. S. Theis (Switzerland) on behalf of WENRA Waste and Decommissioning Group on the status of the reference levels developed for decommissioning safety. This was followed by discussion on the means by which national regulators with differing legal systems will use the reference levels as part of their regulatory activities.

The fifth and sixth plenary sessions were mainly dedicated to presentations by the Regulatory Review and Graded Approach Working Groups Chairmen of their weeks activities and any remaining work or actions identified in order to bring the reports to a final draft status ahead of the IAEA's internal process leading to publication. Two presentations were made on the SAFRAN tool, the first by Ms. P. McEahern (USA) on the SAFRAN tool potential application to the safety assessment process and Mr. W. Goldammer (Germany) on its status and future plans.

A summary of the analysis of the posters, performed by Mr. O. Slavik (Slovak Rep.) and Mr. B. Hansson (Sweden) was presented by Mr. Beril Hanson.

The final plenary session on Friday, 2 November 2007 consisted of presentations by the three Test Case WG chairmen of the weeks work and identification of remaining actions to bring the reports to completion.

The main part of the final session was devoted to reviewing proposals for a follow on project. This led to a very constructive and active discussion on a wide range of proposals and ideas. Some had been submitted ahead of the 4th Joint DeSa meeting but many had arisen during the weeks discussions. A specialist meeting is being arranged by IAEA from 3 to 7 December 2007 to take the proposals forward and come up with a proposed scope for a new project. The session was also enhanced by two presentations on potential follow on projects - one on a SILOE Research Reactor in France (Mr. A. Bochetti) and one on a fuel cycle facility in UK (Mr. P. Manson). Mr. K. Percival also summarized the remaining actions for finalization and publication of the DeSa reports and preparation of the follow-up project to commence 17-21 November 2008.

Following this discussion a presentation was made on behalf of all the participants to Ms. B. Batandjieva to thank her for her hard and effective work throughout the DeSa project. The meeting was formally closed by Ms. R. Czarwinski (Acting Director, NSRW) who made individual presentations of certificates and a proceedings CD to all participants.

2.2. Working Group Sessions

The five Working Groups identified in Section 1.1 met as per the agenda (Appendix A) through from Tuesday and Wednesday. The main purpose was to discuss the final draft reports with a view to endorsing them and identifying any work needed to achieve completion. The outcomes of the weeks activities are summarized below.



3. Outcomes

3.1. Regulatory Review Working Group

The Working Group report was substantially completed during the week. There were some issues on terminology and definitions that needed some tidying up. It was also agreed that the regulatory review process figure in the draft report requires some improvement. A section on lessons learned resulting from the Test Case reviews will be included in the report before 4 January 2008.

All outstanding work needs to be completed by mid December 2007 and a final draft posted out by 4 January 2008. The DeSa Coordinating Group will then meet 21 to 25 January to prepare all DeSa reports for publication.

3.2. Graded Approach Working Group

The Working Group report was reviewed during the week and is now substantially complete. Issues addressed included radiological characterization of facilities, terminology, definitions and consistency with graded approach taken in the Regulatory Review WG report.

All remaining actions are to be completed by mid December 2007 so that a final draft is available by 4 January 2008. In common with all the DeSa volumes the Graded Approach WG report will be reviewed and finalized by the coordinating group at their meeting 21 to 25 January 2008.

3.3. NPP Test Case

The WG report was reviewed during the week and a number of issues raised and dealt with, including some issues for Volume 1. A schedule was also produced showing how the comments from the Regulatory Review WG and the Graded Approach WG had been addressed.

Some of the issues raised included the distinction between characterization and inventory, clarification on end state of the NPP Test Case and overall decommissioning project and clarification on the status of computer coded used with regard to their verification.

In common with all working groups, views were sought and discussed on the scope of the follow on project, and in this case a ballot was held to give some indication of the more popular proposals.

The deadline for implementation of agreed actions and providing comments on the draft report is 21 December 2007 in order that a final draft can be available by 4 January 2008.

3.4. Research Reactor Test Case

A general review of the Working Groups draft report was carried out. Matters such as consistency with the other test cases, clarification of safety assessment end point and integration of recommendations from the Regulatory Review and Graded Approach Working Groups were addressed by the Working Group. The WG participants supported the final draft



report, but it was noted that there were a few issues that the DeSa Coordinating Group should address.

Discussion was also held on follow up topics which resulted in a desire for more realistic test cases, the way in which periodic safety assessments should be performed and more advice on how to deal with uncertainties in a safety assessment.

The participants were asked to respond to actions by the end of 2007 to enable the final draft to be issued for the coordinating group meeting in January 2008.

3.5. Laboratory Test Case

The draft report was reviewed and actions placed at the July 2007 meeting in Pretoria (S. Africa) were confirmed as complete. A schedule was produced showing how the comments from the Regulatory Review WG and Graded Approach WG had been taken into account. The section on lessons learned was also expanded and the engineering assessment developed slightly.

Once the final draft has been emailed to WG participants, any responses were requested to be made by 23 November 2007, to allow good time for the draft to be issued in January 2008 for the coordinating group meeting.

Suggestions for follow on topics included a mining and milling facility, a fuel cycle facility, isotope production facilities and application of the SAFRAN tool to a test case.

3.6. Ideas for a DeSa follow-up project

Some proposals for a follow up project had been made before the 4th Joint DeSa meeting, notably a French research reactor (SILOE) and a UK fuel cycle facility (Sellafield), which were the subject of interesting presentations during the final plenary session. During the week each of the five WGs deliberations included discussion on the future projects that would be of most value and interest to member states.

The proposals fell into two basic categories:

- Suggestions for further test cases on other types of facility;
- Addition to the DeSa safety assessment methodology and its application.

A wide ranging discussion was held in the final plenary session as each of the proposals so far made were run through in a slide presentation. It was clear that there is considerable international interest in a follow on project. The wide range of suggestions will require considerable consideration and rationalization to ensure that the emerging project is clearly defined and practicable. To this end a specialist meeting has been arranged by the Agency to review the proposals (3-7 Dec. 2007 in Vienna).

Some of the suggestions for inclusion for a follow up project are indicated below:

- Structure and content of a safety case;



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- Implementation and maintenance of safety control measures;
 - Change control during decommissioning projects;
 - Periodic review of safety;
 - More advice on control of industrial hazards;
 - Multi facility sites;
 - Fuel reprocessing facility;
 - Mining and milling facility;
 - Larger research reactor;
 - Assessment for low hazard facilities;
 - NPP shutdown as a result of serious accident.

3. Presentation and Promotion of the DeSa Project

Since the 3rd Joint DeSa Meeting in October 2006 the project has been promoted at a number of significant international conferences and meetings, by the presentation of papers on the project as a whole or particular aspects of it. These included:

- International Conference on Lessons Learned from the Decommissioning of Nuclear Facilities and the Safe Termination of Nuclear Activities, Athens, Greece, December 2006. There were three contributed papers and a poster.
- IRPA Meeting in Africa, Egypt April 2007. A paper and a specific presentation of the DeSa project.
- ICEM Conference, September 2007, Belgium. A paper on the Regulator Review and Graded Approach.
- American Nuclear Society, Chattanooga, September 2007. Invited paper on DeSa project.
- IAEA Conference on Research Reactors - Safe Management and Effective Utilization. Sidney (Australia), November 2007. A paper and poster on the Research Reactor Test Case.
- A number on meetings on the SAFRAN tool including one in Chattanooga where the application to the Nuclear Laboratory Test Case was considered.

Two DeSa Newsletters have been published, and can be found on the DeSa Website - <http://www-ns.iaea.org/tech-areas/waste-safety/desa>.

The DeSa Website contains extensive current information on the project such as DeSa meeting reports, Working Group reports and work plans and other general information, links and reports relevant to decommissioning safety assessment.

4. Summary of DeSa Work Plan for 2007/2008

With the main DeSa project approaching conclusion there is a limited future work programme. As noted above each of the Working Group reports will be completed to final



draft stage for issue early in January 2008 for final coordinating group consideration at their meeting scheduled for 21 to 25 January 2008.

A meeting on the scope and content of a follow on project is scheduled for 3 to 7 December 2007, with a first International Meeting tentatively planned for the week commencing **17 to 21 November 2008 at the IAEA headquarters in Vienna**. Any further firm proposals test case facilities should be advised to the Agency by December 2007 and by April 2008 it is hoped to have agreed Terms of Reference, internal IAEA approval to proceed and letters sent to Member States advising on the above International Meeting.



International Atomic Energy Agency

Fourth Joint Meeting of the International Project

***“Evaluation and Demonstration of Safety during
Decommissioning of Nuclear Facilities (DeSa)”***

**29 October - 2 November 2007
IAEA Board Room (C04), Vienna, Austria**

AGENDA

Monday, 29 October 2007

	PLENARY SESSION 1	<i>C04 (C building, 4 floor)</i>
9.30-9.45	1. Opening Chairman remarks	<i>D. Louvat, WSS, IAEA</i> <i>K. Percival, UK,</i> <i>Chairman</i>
9.45-10.15	2. Recent IAEA Activities on Safety of Decommissioning of Facilities Using Radioactive Material	<i>B. Batandjieva, IAEA</i>
10.15-10.30	3. Overview of the DeSa Project Activities since 3rd DeSa Meeting (October 2006)	<i>K. Percival, United Kingdom</i>
10.30-10.45	<i>Coffee break</i>	
10.45-11.00	4. Main Outcomes from the Draft Safety Guide DS376	<i>B. Batandjieva, IAEA</i>
11.00-11.15	5. Nuclear Laboratory Test Case	<i>A. Joubert, S. Africa</i>
11.15-11.30	6. Research Reactor Test Case	<i>J. Kaulard, Germany</i>
11.30-	7. Nuclear Power Plant Test Case	<i>P. Manson, UK</i>



11.45		
11.45-12.00	8. Graded Approach to Safety Assessment	<i>S. Thierfeldt, Germany</i>
12.00-12.15	9. Review of Safety Assessment	<i>R. Ferch, Canada</i>
12.15-12.30	Discussion	<i>(all)</i>
12.30-13.30	<i>Lunch break</i>	

PLENARY SESSION 2		<i>C04 (C building, 4 floor)</i>
13.30-14.00	10. Safety Assessment Methodology	<i>K. Percival, United Kingdom</i>
14.00-15.30	Discussion	<i>(all)</i>
15.30-15.45	<i>Coffee break</i>	
15.45-17.30	Discussion (cont.)	<i>(all)</i>
17.30-18.30	11. Poster Session	<i>C building, 4th floor</i>

Tuesday, 30 October 2007

9.00-12.30	12. Test Case Working Groups Sessions (parallel):	
	- Nuclear Power Plant Test Case	<i>P. Manson, Chair, UK</i>
	- Research Reactor Test Case	<i>J. Kaulard, Chair, Germany</i>
	- Laboratory Test Case	<i>A. Joubert, Chair, S. Africa</i>
12.30	<i>Lunch break</i>	
13.30-17.30	12. Test Case Working Groups Sessions (cont.):	
	- Nuclear Power Plant Test Case	<i>P. Manson, Chair, UK</i>
	- Research Reactor Test Case	<i>J. Kaulard, Chair, Germany</i>
	- Laboratory Test Case	<i>A. Joubert, Chair, S. Africa</i>



PLENARY SESSION 3		<i>C04 (C building, 4 floor)</i>
17.30-18.00	13. International Decommissioning Network	<i>P. Dinner and R. Coates, IAEA</i>

Wednesday, 31 October 2007

9.00-12.30	14. Working Groups Sessions (parallel):	
	- Graded Approach	<i>S. Thierfeld, Chair, Germany</i>
	- Regulatory Review	<i>R. Ferch, Chair, Canada</i>

12.30-13.30 *Lunch break*

PLENARY SESSION 4		<i>C04 (C building, 4 floor)</i>
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13.30-14.15	15. WENRA Reference Levels – Outcomes, Status and Future Plans	<i>S. Theis, Switzerland</i>
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14.15-18.00	14. Working Groups Sessions (cont.):	
	- Graded Approach	<i>S. Thierfeld, Chair, Germany</i>
	- Regulatory Review	<i>R. Ferch, Chair, Canada</i>

Thursday, 1 November 2007

PLENARY SESSION 5		<i>C04 (C building, 4 floor)</i>
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9.00-12.30	16. Presentation of Preliminary Conclusions and Recommendations	<i>S. Thierfeldt, Germany</i>
	Discussions	<i>All</i>

12.30-13.30 *Lunch break*

PLENARY SESSION 6		<i>C04 (C building, 4 floor)</i>
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13.30-16.00	17. Presentation of Preliminary Conclusions and Recommendations	<i>R. Ferch, Canada</i>
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	Discussions	<i>All</i>
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16.00-	18. Summary of the Poster Session	
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Appendix B

LIST OF PARTICIPANTS

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Appendix C

LIST OF PRESENTED POSTERS

K. Ghazaryan	Armenia
E. Atanasova	Bulgaria
K. Ivanova	Bulgaria
M. Shaat	Egypt
R. Chugha	India
M. Dragusin	Romania
M. Tomasich M. Drahos	Slovakia
V. Kuchynskyy /Y. Lebedyev	Ukraine
S. Thierfeld, F. Van Gemert, R, Ferch, B. Batandjieva	Germany, Netherlands, Canada, IAEA
O. Slavik	Slovakia