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Application of the Safety Assessment Methodologies for Near-Surface Disposal Facilities (ASAM)

*Mining and Mineral Processing Waste
Working Group Report*

*1st Research Coordinating Meeting,
11 to 15 November 2002, Vienna, Austria*

December 2002

MMP-1RCM

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1 Introduction

The International Atomic Energy Agency (IAEA) has commenced a new Coordinated Research Project (CRP) on “Application of Safety Assessment Methodologies for Near-Surface Radioactive Waste Disposal Facilities” (ASAM). The project will build on the experience of the IAEA CRP on “Improving Safety Assessment Methodologies for Near Surface Radioactive Waste Disposal Facilities” (ISAM), which was launched in 1997 and completed in 2000 [IAEA, 2002c, d, e], with emphasis on the application of the ISAM methodology to address practical problems of interest.

The overall objective of the ASAM project is to explore practical application of the ISAM methodology to a range of near surface disposal facilities for a number of purposes, with the aim of producing credible safety assessments that can be used in practical decision-making. The Mining and Minerals Processing Waste Working Group focuses on assessment of long-term safety of mining and minerals processing waste and other waste with enhanced content of naturally occurring radionuclides in near-surface disposal facilities.

The scope, objective, content and work programme of the ASAM project are described in [IAEA, 2002b], while a more detailed description of proposed activities of the working group proposed for discussion at the RCM is provided in [IAEA, 2002a].

The purpose of this document is to summarise the activities of the Mining and Mineral Processing Waste Working Group, which took place during the 1st RCM 11 – 15 November, 2002 in Vienna. It also presents the main general conclusions reached and work plan agreed upon for the future. The meeting of the working group followed the agenda presented in Appendix.

2 Background-Plenary Session (Monday 11 November 2002)

The working group leader, Japie van Blerk from South Africa, presented the activities proposed for the Mining and Mineral Processing Waste Working Group in a plenary session to all ASAM participants present at the meeting. The presentation covered the following aspects, based on [IAEA, 2002b, a]:

- Scope of the Working Group Activities;
- Objectives of the Working Group Activities;
- Proposed Working Group Activities;
- Expected Outcomes;
- Proposed Programme for the duration of the RCM; and
- A Closing Statement.



Following the plenary presentation, working groups were formed. The thirteen participants listed in Table 1 took part in the Mining and Mineral Processing Waste Working Group (MMPW), of which seven indicated this as their principle working group. The other five were distributed between the Common Application Aspect Working Group (CAA) (3) and the Review and Regulatory Aspect Working Group (RRA) (2).

Table 1 List of participants and their principle working group for the ASAM project

Country	Participant	MMPW Working Group	CAA Working Group	RRA Working Group
Belgium	Ms. Ann Dierckx			
Brazil	Mr. Jesus Perez Guerrero			
Canada	Mr. Ben Belfadhel ⁽²⁾			
	Mr. Don Lush ⁽³⁾			
Czech Republic	Mr. Jan Horyna			
Germany	Mr. Frank Pelz			
Pakistan	Mr. Bashir Chaudhary			
Russian Federation	Mr. Alexander Smetnik			
Republic of Slovenia	Mr. Borut Petkovsek			
South Africa	Mr Japie vanBlerk ⁽¹⁾			
	Mr. Bransby Nangu			
Sweden	Mr. Benny Sundström			
USA	Mr. Daniel Schultheisz			
Total:		8	3	2

⁽¹⁾ Chairman ⁽²⁾ Deputy chairman ⁽³⁾ Technical advisor

3 Working Session 1 (Tuesday 12 November 2002)

The first working session discussed the scope, objectives, expected outcome and specific activities of the working group. The session started with a detailed presentation on these aspects of the project and the associated tasks. This was followed by a presentation on the general approach to be followed by the working group in its activities, which included:

- the presentation of a volunteered reference site, approaches and results of assessment of its safety and comparison with the basic elements of the ISAM safety assessment methodology;
- the presentation of other cases and experience in the context of applying ISAM methodology;
- the identification of issues related to these elements of the methodology that are of concern, both in terms of the reference case and the national cases; and
- the definition of the structure of the working group test case, which is based on the volunteered reference case but which will address the issues of concern for the participants.



The objective set for the Mining and Mineral Processing Waste Working Group [IAEA, 2002a] were accepted in principle, namely:

- to investigate the application of the ISAM methodology to near-surface disposal facilities used for the disposal of mining and minerals processing waste, waste with an enhanced content of naturally occurring radionuclides, and large volume waste produced by industries containing low concentrations of long-lived radionuclides, with the purpose of evaluating their long-term safety;
- to identify features, events and processes (FEPs) specific to facilities for disposal of mining and minerals processing waste and other waste with an enhanced content of naturally occurring radionuclides; and
- to assess the applicability/suitability of the regulatory review procedure, developed by the Review and Regulatory Aspects Working Group to the assessment of a disposal facility for mining and minerals processing waste.

It was proposed to broaden the scope of the working group to consider both radiological and non-radiological risks from a mining and minerals processing waste disposal system.

The different waste streams associated with mining and mineral processing facilities and facilities with an enhanced concentration of natural occurring radionuclides were also discussed. They include waste types with a wide spectrum of characteristics, while different waste disposal practices are followed. It was concluded that due to the limited (three-year) duration of the project all these waste streams could not be included in the scope of the test case and therefore:

- a document will be produced that summarises the different waste streams and associated disposal practices;
- representative radioactive waste and disposal facility characteristics will be used in the test case; and
- a comparative assessment will be carried out to evaluate to applicability of the safety assessment approach in the test case to waste streams and disposal practices not included.

A discussion followed on what the objective of the working group should be. It was argued that it should be to evaluate if the ISAM methodology can be used in assessment of the long-term safety of mining and mineral waste disposal facilities and also to address specific issues. The specific issues suggested by the working groups participants were the following:

- **Application of different criteria:** Different criteria are used to assess the performance of different components and the overall performance of the disposal system. Which criteria should be used at different stages of the disposal facility development are associated with an uncertainty and the cost implications to reduce the uncertainty. The question to ask is if the ISAM methodology can consider these criteria in an assessment?
- **Time frames:** Different timeframes are associated with the safety assessment of these types



of disposal facilities. Can the ISAM methodology be used to address the requirements and implication of these timeframes in the assessment?

- **Impact from non-radiological components of the system:** Can the ISAM methodology be used to calculate the impact from both the radiological and non-radiological components of the system?
- **Societal issues:** Does the assessment address stakeholder concern? Do the stakeholders have confidence in the assessment? Do they trust assessors? Does the methodology allow stakeholders involvement from the beginning?

The next point under discussion was the approach to follow for the three year project given the available resources. Three options that could be followed were identified:

- application of the ISAM methodology to a test case based on a volunteered site, which will provide the basis for detailed analysis;
- application of the ISAM methodology to a number of cases, which would provide the opportunity for discussion of issues on a broader basis, but without detailed analysis; and
- application of the ISAM methodology to a test case based on a volunteered site, and parallel application of the ISAM methodology to other (national) cases that will allow comparison of approaches and discussion on specific issues related to the step-by-step application of the methodology for assessing the safety of disposal facilities for mining and minerals processing waste and waste with enhanced concentrations of naturally occurring radionuclides.

The latter was accepted as the approach to proceed with the working group activities. The final issue under discussion in this session was the interaction of the Mining and Mineral Processing Waste Working Group with the cross-cutting working groups. Three issues were mentioned: human intrusion, institutional control and a regulatory framework. It was felt that human intrusion and institutional control in particular are fundamental issues with these types of disposal facilities. Consequently, it would be worthwhile to first discuss and work with these issues in the Mining and Mineral Processing Waste Working Group, and then provide input and guidance to the cross-cutting working groups for inclusion in their position papers.

4 Working Session 2 (Wednesday 13 November 2002)

The purpose of working session 2 was to identify issues related to the reference site and other experience in assessing the impact to human health and the environment from mining and mineral processing activities, associated waste characteristics and waste disposal facilities in the context of applying the ISAM methodology.

The first session was devoted to a presentation on the reference site (presented by Bransby Nangu from the National Nuclear Regulator in South Africa), which is the Palabaora Mining Company mine



situated in the Limpopo Province in South Africa (hereafter referred to as Palabora). The primary product from the mine is copper, but a number of by-products minerals are produced including uranium. The presentation included background information, operational activities at the mine, a description of the disposal system (e.g. site, waste and facility characteristics), the approach followed and results obtained in a radiological public impact assessment, problems encountered, and information available for the definition of the test case. Concerns were expressed over the lack of a post-closure assessment for the site and the resources it would require to perform a full assessment. It was proposed to take a top-down approach, starting with a high-level assessment with little detail (high uncertainties) and increase the level of detail in subsequent iterations to reduce the uncertainties. This approach implied that the assessment could be performed based on the resources available.

The second session was devoted to presentations on other experiences in performing assessments for these types of facilities. Three presentations were presented within the time available (although additional three to four presentations were available):

- Regulatory aspect of the uranium mining waste in Canada (M. Ben Belfadhel: the Canadian Nuclear Safety Commission);
- Safety assessment of uranium mining waste in Canada (Don Lush: Stantec Consulting in Canada); and
- Remediation aspect of the Wismut mine in Germany (Frank Pelz: Wismut, Germany).

During these presentations the complexity and diversity of the problems associated with safety assessment for these types of facilities were highlighted. This again emphasised the need for an iterative approach to evaluate the safety of these facilities, while the diversity of these problems also calls for a flexible approach. An additional concern was expressed regarding the social impact that these assessments might have in countries where complete safety assessments have not been performed to date, if significant radiological and non-radiological risks are identified.

5 Working Session 3 (Thursday 14 November 2002)

The purpose of the working session was to identify issues from the reference case and the other cases that should be addressed in the project. Priorities could then be set for these issues and a work plan compiled for the test case. In the identification of these issues, distinction was made between the different elements of the ISAM methodology:

- Assessment context (purpose, regulatory framework, assessment endpoints, assessment philosophy, time frame);
- Disposal system description (waste characteristics, facility characteristics, site characteristics, human habits and behaviour characteristics);
- Scenario development and justification (approach, FEPs);



- Model development (conceptual models, mathematical models);
- Analysis of results.

After going through this process, the following issues were identified to be included in the development of the test case for the working group:

- **Purpose of the safety assessment:** The purposes for which the methodology should be applicable are associated with various stages in the life cycle of the facility (e.g. design of new facilities, licensing, remediation and optimisation, land clearance for various land use purpose). According to the scope of the working group the test case will consider an existing facility with the purpose to assess the long-term safety of these facilities.
- **Clear question to define the purpose of the assessment:** A clear definition of the aim of the assessment is required. It was suggested that for this purpose a question must be defined that reflects the objective of the assessment and thus the level of detail required in the assessment. Examples of such questions are: “Are these facilities safe compared to conventional disposal facilities?” or “What are the factors influencing the safety of these facilities?”.
- **Regulatory framework:** According to the scope of the working group, the impact to human health must be evaluated from both the radiological and the non-radiological components of the system. This implies that a regulatory framework addressing both types of impact (i.e. including mixed waste) is needed for the test case to be considered.
- **Multiple assessment criteria:** Various assessment criteria are used in assessing the safety of these facilities, both from the radiological and non-radiological components of the system. The question that needs to be answered, is if the methodology can be applied for different criteria in the assessment?
- **Institutional control and human intrusion:** What period of institutional control should be considered in the long-term safety assessment of these facilities and what is the effect of these controls on the safety of the facility? Closely associated with institutional control is human intrusion and how it should be considered in the assessment to evaluate the influence of these actions on the safety of the facilities and in light of the ICRP 81 recommendations.
- **Diversity of waste streams and disposal facilities:** The extrapolation of the test case results associated with one waste stream and a specific set of waste disposal facilities to other waste streams (e.g. waste rock, effluents, concentrates) and disposal facilities associated with the broader spectrum of waste and facilities was also considered important
- **Scenario Development and Justification:** A structured approach for scenario development and justification that will provide a reasonable level of assurance that all significant natural evolution and disruptive events for these types of facilities are considered includes a comprehensive list of features, events and processes (FEPs). The ISAM FEPs list can be used as a starting point for this purpose.
- **Model development and consequence analysis:** The need to build a conceptual



understanding of the system (e.g. groundwater flow and contaminant migration) before evaluating the consequence of the defined set of scenarios is another issue to be considered in the test case.

The final activity of the day was to agree an approach that will be followed to achieve the main objective of the working group. This enabled the identification of specific activities to be performed by the working group in the short to medium term. Generally a top down iterative approach is proposed to develop a conceptual understanding of the behaviour of the disposal system (based on the Palabora site in South Africa), whereby the level of detail included in subsequent iterations (including the complexity of mathematical models) will increase with a view to reducing uncertainty. Approaches to sensitivity analysis will be addressed. In order to evaluate the applicability/suitability of the ISAM methodology, the following steps will be applied to each element of the ISAM methodology (i.e. assessment context, system description, scenario development, model development, consequence analysis, etc.) in the Test Case:

- Define the purpose, scope and the content of the element in the context of the ISAM methodology with a view to establishing the basis for its application in the evaluation of safety of mining and mineral processing waste type disposal facility.
- Review/analysis of how the element is applied in existing long-term safety assessment of mining and mineral processing waste disposal facilities. This can be done on a country basis or on an assessment specific basis.
- Based on this analysis identify shortcomings in or scope content of the element as applied in the ISAM methodology and if justified, expand and improve the content and scope of the element.
- Develop or apply the redefined element to the test case.

The process of building confidence in assessments of the long-term safety of these types of facilities will be carried out throughout the assessment process. Where applicable, input from the Common Application Working Group will be used in the assessment process. General conclusions and lessons learned from assessment of the long-term safety of mining and mineral processing type disposal facilities will be drawn from the application of the ISAM methodology to the Test Case. In collaboration of the Regulatory Aspects and Review Working Group, the regulatory review procedure will be applied to the assessment performed for the test case.

6 Working Session 4 (Friday 15 November 2002)

An additional working session was scheduled for the final day to summarise the activities for the working group and to develop an associated work plan. Broadly speaking, the following activities were proposed for the working group:

- **Activity 1:** Finalisation of a detailed project plan for the activities of the working group.
- **Activity 2:** Compilation and distribution of all information available on the reference site.



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- **Activity 3:** Definition of the test case assessment context.
 - **Activity 4:** Definition of the test case system description.
 - **Activity 5:** Scenario development and justification for the test case.
 - **Activity 6:** Model development for the test case.
 - **Activity 7:** Analysis and interpretation of results.
 - **Activity 8:** Application of the regulatory review procedure.
 - **Activity 9:** General conclusions and lessons learned from the application of the ISAM methodology to the test case.

It is important to highlight that the group will not only focus on structuring a test case and carrying out an assessment but will be more focussed on looking at what issues arise in applying the ISAM methodology in real cases and coming up with guidance on difficulties that arise.

Activity 1: Finalisation of a project plan for carrying out the activities of the working group

Description: The purpose of the project plan is to describe how and when the activities of the working group will be performed. It will consist of an executive summary of the volunteered reference site (Palabora) considered for inclusion in the Test Case, the issues to be addressed in the Test Case, the defined activities for the working group, as well as the approach that will be followed to perform these activities and to ensure the objectives set for the working group will be achieved. The finalised project plan will be sent to the working group participants for comments and approval.

Delivery Date:

December 2002

Responsible Person:

Japie van Blerk (South Africa)

Activity 2: Compilation and distribution of the information available on the Reference Site (Palabora)

Description: The purpose of this activity is to compile and distribute the information available on the description and safety assessment of the disposal site (e.g. public impact assessment report, EMPR, geotechnical information, maps, photos, etc.) to all working group members in order to structure and develop the working group Test Case. This information should include all information related to the radiological and non-radiological components of the system, as well as all information that could be the basis for the definition of features, events and processes that could have an influence on the performance of the system.

The National Nuclear Regulator in South Africa will compile the information, and will be distributed to all working group participants.

Delivery Date

December 2002



Responsible Person

NNR (South Africa)

Activity 3: Defining the assessment context for test case

Description: The assessment context forms a very important element in the activities of the working group. It is within the assessment context that working group will indicate the broad set of assessment endpoints and associated criteria that can be used in the assessment (both radiological and non-radiological), who is the target audience, what assessment philosophy can and will be applied (e.g. iterative, top down), what is the broad base waste stream, waste form and associated disposal facilities, what regulatory guidance (e.g. criteria and requirements) is available for these assessments (both radiological and non-radiological), what time frames are applicable, how is it applied and what is the implications and what stages in the life cycle of these facilities can be included in these assessment (e.g. facility design, remediation, land clearance and use, safety assessment of existing facilities, licensing).

With due consideration of these issues, the purpose and scope for the Test Case will be defined. It is important that the working group limit the scope of the Test Case so that it is manageable within the constraints of the programme, without reducing it to an extent that it is not applicable to the member states. Four individual tasks are associated with the development of an assessment context for the Test Case as listed below:

Task 1: Waste streams and associated disposal options description

Description: The purpose of this activity is to compile a detailed description of the physical, radiological and chemical properties of the different waste streams associated with mining and mineral processing waste, and waste with an enhanced concentration of natural occurring radionuclides (e.g. uranium mining and milling, mineral sand processing, oil and petroleum abstraction, mineral processing), as well as the disposal practices applied to these waste.

It is generally unclear what the relationship of the wastes streams listed above is to commonly used terms such as NORM (naturally occurring radioactive material) or TE-NORM (technically enhanced naturally occurring radioactive material). This action will therefore include a definition and discussion on these terms, how they are generally applied, and their relationship with the different waste streams and waste disposal practices. This will provide the link between the waste and facility characteristics that will be considered in the Test Case and those not considered explicitly.

From the working group participants a short description of the waste streams and associated disposal practices of importance to their national programmes would be required as input into this task. This should be done by the beginning of February 2003 in order to complete the task by the end of February 2003. The finalised document will be send to the working group participants for comments and approval before the meeting from 2 to 6 June 2003.

Delivery Date:

February 2003

Responsible Person

Japie van Blerk (South Africa)



Task 2: Review of the content of assessment context

Description: This action consists of two main parts. The first is to describe the elements of an assessment context (e.g. purpose, scope, philosophy, regulatory framework, assessment endpoints, timeframe) according to the guidance provided by ISAM. This will provide the basis for enhancing the ISAM definition of an assessment context in terms of what should be considered in defining the framework for long-term safety assessment for mining and mineral processing waste disposal facilities.

The second part is to establish what has been considered in assessment context/scoping document in typical assessments of mining and mineral processing waste disposal facilities. This will indicate what additional elements typical should be included in an assessment context of these types of facilities, given a specific purpose of the assessment. The way to proceed is to develop a review table of the assessment context elements and send it to various installations/countries/companies/organisations/regulators concerned with the safety assessment of these types of disposal facilities. Based on the outcome of this review process, the high level definition of an assessment context (i.e. what typically should be included and what it should address) for this type of disposal facilities can be defined.

The working group participants will provide input on the assessment context used in their national cases based on their experience and will also review and comment the summary table that will be prepared and distributed later on. The responsible person will coordinate additional involvement of working group participants to complete this task.

Delivery Date:

April 2003

Responsible Person

M. Ben Belfadhel (Canada)

Task 3: Top-down iterative approach

Description: One of the elements often considered in the assessment context is the assessment philosophy that will be followed in the assessment. Apart from an iterative approach, a top-down approach was proposed to facilitate a robust assessment to start with followed by more detailed subsequent assessments. The purpose of this action is to describe the logic of this philosophy in more detail in a report that will be sent to the working group participants for comments.

Delivery Date:

April 2003

Responsible Person

Don Lush (Canada)

Task 4: Description of an assessment context for the Test Case

Description: Given the information compiled in Task 1 to Task 3, an assessment context for the Test Case will be proposed. It will contain the elements suggested in Task 2 with the purpose to define the purpose, scope and high level assumption and constraints imposed on the Test Case. A summary description of the system description will also be included in the assessment context.

A draft assessment context for the Test Case will be send to the working group participants for comments. During the working group meeting in June 2003 the revised document will be presented to the participants for approval.

Delivery Date:

April 2003

Responsible Person

Japie van Blerk (South Africa)



Activity 4: Definition of the system description for the Test Case

Description: The purpose of this activity is to compile a system description for the Test Case in terms of the site, waste, facility, as well as human habits and behaviour.

The development of a system description for the Test Case is associated with a number of actions combined as follows:

Task 1: System description

Description: The development of a system description for mining and mineral processing waste disposal facilities, or any other facility containing enhanced concentrations of natural occurring radionuclides can be divided into two steps. The first step is to define what is meant with a disposal system for these types of disposal facilities, and to define related terminology describing the system in broad terms. The second step is to establish the basis and content of adequate description for such facilities to be used in safety assessments performed for these facilities. For this purpose the guidance provided in ISAM for a disposal system will be evaluated, together with contents of system descriptions compiled for conventional near-surface disposal facilities.

The final step is to compile, compare and analyse the content of system descriptions included in post-closure safety assessments of mining and mineral processing waste disposal facilities, or any other facility containing enhanced concentrations of natural occurring radionuclides performed in different national cases. The table of contents generated in this manner could be enhanced for presented as an example content of the system description to be considered in the working group Test Case.

It should be noted, however, that this list will reflect the context (purpose) of the assessment within which it was included and should not be seen as a fix list. It should be used in the context of the assessment to be performed and serve as a guideline.

More specific activities describing methods to accumulate/measure/obtain the information that should be included in the system description can be defined at the later stage. It is foreseen that the working group participants will have to provide the responsible person with typical information included in the development of system description for mining and mineral processing waste disposal facilities.

The results of this task will be summarised and documented in a report that will be sent to the working group participants for comments.

Delivery Date:

May 2003

Responsible Person

Don Lush (Canada)

Task 2: Develop a system description for the Test Case

Description: The development of a system description for the Test Case using the guidelines developed as part of Task 1, using the available information compiled as part of Activity 2. The finalised document will be send to the working group participants for comments and approval.

Delivery Date:

December 2003

Responsible Person

Jesus Perez Guerrero (Brazil)



Activity 5: Scenario development and justification

Description: More detail actions will be defined for scenario development and justification at the 2-6 June 2003 meeting. However, it is foreseen that the following questions will be answered:

- What are the approaches for development and justification of scenarios identified in the ISAM project?
- What are the approaches followed in other countries to develop scenarios for mining and mineral processing waste disposal facilities, or any other facility containing enhanced concentrations of natural occurring radionuclides?
- Are these approaches sufficient to identify a transparent set of natural and human induced scenarios for mining and mineral processing waste disposal facilities, or any other facility containing enhanced concentrations of natural occurring radionuclides?
- Is the ISAM FEPs list and draft International FEPs database comprehensive enough to identify all factors that can influence the behaviour of the system as a function of time
- Is it sufficient to use a reference set of scenarios or should one follow a more structured approach given the level of conceptual understanding and information available on the system?
- How should human intrusion scenarios result be interpreted in the context of mining and mineral processing waste disposal facilities, or any other facility containing enhanced concentrations of natural occurring radionuclides?

Delivery Date

December 2003

Responsible Person

Japie van Blerk (South Africa)

Activity 6: Model development

Description: More detail actions will be defined for model development at a later stage. However, it is foreseen that the following questions will be answered:

- What are the approaches for conceptual and mathematical model development identified in the ISAM project?
- What are the methods applied internationally for these type of disposal facilities?
- What are the different mathematical models used in safety assessment in various countries various levels of comprehensiveness –depending on the level of information available and the purpose of the assessment.
- Development of an overall conceptual understanding of the behaviour of the disposal system (conceptual site model) based on the current information of the system.

Delivery Date

June 2004

Activity 7: Analysis and interpretation of results

Description: More detail tasks will be defined at a later stage for the analysis and interpretation



of results. Emphasis will be placed on comparison of both radiological and non-radiological risks. It should be noted that this activity is not only limited to the consequence analysis that will be performed for the Test Case, but also the interpretation of the results in terms demonstration of compliance with requirements such as defence in depth.

Delivery Date

December 2004

Activity 8: Application of the Regulatory Review Procedure

Description: The purpose of this activity is to apply the regulatory review procedure to the safety assessment of the Test Case, in collaboration with the Regulatory Review Working Group.

Delivery Date

June 2005

Activity 9: Conclusions and Lessons Learnt

Description: The purpose of this activity is to draw, summarise and document general conclusions on the applicability of the ISAM methodology to safety assessment of disposal facilities for mining and mineral processing waste and other waste with enhanced concentrations of naturally occurring radionuclides and to state the lessons learnt in this process.

Delivery Date

December 2005

7 Work Plan

The next RCM will take place in February 2004, while a working group meeting will be held in Vienna during the first week in June. The purpose of this working group meeting is to make progress on activities for the working and to define further actions. It is therefore a working meeting, oppose to a plenary meeting.

From the delivery dates it is clear that it is proposed to have a comprehensive assessment context available by the June meeting while a comprehensive system description of the Test case are planned for the second RCM in February 2004, together with review of the ISAM FEPs list and the scenarios in use for evaluation of long-term safety of such facilities.

Between now and the June meeting a core group will meet in March as well to review the material compiled for Activity 1 and Activity 2 and to make progress with Activity 3. More detail on these meetings will be communicated to the participants in the near future.

8 References

IAEA. (2002a). ASAM - The International Project on Application of Safety Assessment Methodologies for Near Surface Waste Disposal Facilities: Proposed Working Group Activities. ASAM/G/1002 Version 0.1, International Atomic Energy Agency, Vienna.



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Appendix A