



EUROPEAN
COMMISSION

European
Research Area

IRSN
INSTITUT
DE RADIOPROTECTION
ET DE SÛRETÉ NUCLÉAIRE

ASAMPSA2 WORKSHOP PRELIMINAR AGENDA

**Review of the ASAMPSA2 guideline
on L2PSA development and applications.**

For Gen II, III and IV Nuclear Power Plants

Hosted by 

In

**ESPOO,
FINLAND
7-9 March 2011**



MONDAY - 7th of March 2011

PART I – INTRODUCTION

9h30 – 10h00 Introduction / welcome of participants (FORTUM)

10h – 10h30 Summary of the ASAMPSA2 project / Perspectives / Objectives and organization of the End-Users workshop (E. Raimond – IRSN)

PART II a – REVIEW OF THE ASAMPSA2 QUESTIONNAIRE ANSWERS

Main objective of this part will be to precise some « End-Users » views on the status of the existing ASAMPSA2 guideline in a perspective of harmonization of the best-practices for L2 PSA (including development and applications).

The conclusions of the external review (answers received on the ASAMPSA2 questionnaire) will be presented by S. Güntay (PSI) and discussed step by step with the workshop participants. Some moderators will help for the discussions.

At each step, some precise recommendations will be defined to improve the ASAMPSA2 guideline (before the end of the project, planned 30th of September 2011) or to define the interest of ASAMPSA2 follow up possible activities.

The following topics (from the questionnaire) will be debated (obviously, each topic does not have the same importance).

The idea is to discuss firstly general points related to PSA applications and PSA methodology and to discuss all issues that may be associated to research activities the second day.

10h30-12h30 / Lunch / 14h00-15h00

GENERAL CONSIDERATIONS

- Regulators needs
- Top Level Objectives, Scope and uses of Level 2 PSA
- Content of guidelines
- Definition of Risk
- Safety goals and their influence on performance of Level 2 PSA
- Sharing of tools and resources
- Codes and their use
- Uncertainty and sensitivity analyses

15h00-15h15

PLANT FAMILIARIZATION

15h15-16h15

INTERFACE WITH LEVEL 1 PSA

- Interface with Level 1 PSA
- Pitfalls
- Mission times
- Definition of Core Damage



Selection of representative sequences
Shutdown reactor states
Interface for integrated Level 1 - Level 2 PSAs

16h15 – 18h00

ACCIDENT PROGRESSION (BEGINNING)

Uncertainties in accident progression specific to analyses
Phenomena
Use of uncertainty results
Development of event trees
Definition of generic probabilistic split fractions
Containment leak and failure modes
Other specific issues regarding Containment Vulnerabilities



TUESDAY 8th of March 2011

PART II b – REVIEW OF THE ASAMPSA2 QUESTIONNAIRE ANSWERS

At each step, some precise recommendations will be defined to improve the ASAMPSA2 guideline (before the end of the project, planned 30th of September 2011) or to define the interest of ASAMPSA2 follow up possible activities.

8h30 – 9h15

ACCIDENT PROGRESSION (END)

Specific issues

- Molten Corium Concrete Interactions (MCCI)
- In-vessel and ex-vessel Fuel Coolant Interactions (FCI)
- Vessel failure after melt relocation to the lower vessel head
- Vessel uplift and Direct Containment Heating (DCH)
- Induced SGTR and Passive RCS Rupture
- Pressure Suppression Pool (BWR) phenomenology
- Hydrogen combustion (deflagration, DDT, detonation)

Expert judgment

9h15-10h00

SOURCE TERM AND RISK INTEGRATION

- Fission Product Groups
- Source terms and safety goals, Iodine
- Source terms and safety goals, Ruthenium
- Risk relevance of sequences with containment isolation failure
- Source terms uncertainties
- Interface with Level 3 analyses or emergency preparedness

PART III – INTERACTION BETWEEN L2 PSA AND RESEARCH COMMUNITY ON SEVERE ACCIDENTS ANALYSIS

10h00 – 12h30

PART III a – Relevance of the ASAMPSA2 guideline regarding recent R&D results

The objective of this part will be to examine the relevance of the ASAMPSA2 guideline regarding some recent R&D results that may not have been mentioned. The comments obtained from SARNET members on the guideline will be used for this part and extended to other sources.

Nota : the structure of the SARNET work-packages may be used to organize the discussion :

- WP5 - Corium and Debris Coolability
- WP6 - Molten Corium Concrete Interaction
- WP7 - Containment
- WP8 - Source term

A list of recommendations for the ASAMPSA2 guideline improvement will be defined as a result of the discussions.



12h30-14h00 Lunch

14h00-16h00

PART III b – Expectation from L2 PSA developer on R&D additional activities

The discussion will be here oriented on specific R&D additional needs identification (or also argumentation showing that some topics are “closed” regarding L2 PSA expectation).

A list of topics where additional R&D efforts would be helpful for L2 PSA developers will be established as a result of the discussions.

The discussion should include both Gen II, Gen III and IV reactors.

16h00-18h00

PART III c – Expectation from L2 PSA developers on severe accident codes and probabilistic tools

Severe accident integral codes (ASTEC, MAAP, MELCOR ...) and dedicated codes for some specific phenomena may be crucial to support L2 PSA development. The discussion will be oriented on the possibilities and limitations of these codes and further expectation from L2 PSA developers.

A list of expected functionalities / improvements for severe accident codes will be established as a conclusion of the discussion.

The probabilistic tools possibilities may influence the approach defined for L2 PSA development.

The discussion should include both Gen II, Gen III and IV reactors.



WEDNESDAY 9th of March 2011

PART IV – CONSOLIDATION OF THE WORKSHOP CONCLUSION

8h00 – 9h30 –

Additional discussions of specific Gen IV issues for L2 PSA

The discussion should consolidate the specific recommendations to be done in terms of :

- Guideline improvement
- Further R&D needs to L2 PSA development,
- Specific codes needs for accident analysis.

9h30 – 11h00 –

Additional discussions on L2 PSA applications and methodology

It is recognized that methodology (including event tree development and accident analysis, uncertainties assessment, result presentation) for the development of a L2 PSA has to be defined in function the L2 PSA applications (for example SAMG definition or validation).

The discussion should consolidate some specific recommendations to be done in terms of :

- Guideline improvement regarding the link between L2 PSA applications and methodology,
- Further effort to be done after ASAMPSA2 project.

11h00 – 12h30 –

Workshop summary and conclusions

The recommendations defined during the workshop are summarized and validated.

END OF THE WORKSHOP

During the afternoon, a small group of volunteers will try to define a preliminary content of a proposal for a project that may be proposed after ASAMPSA2 (to be started in 2012).

Participants of the ESPOO workshop and ASAMPSA2 Partners will be informed of the result.



SAFIR2010 Final Seminar

ASAMPSA2 workshop participants are cordially invited to the Final Seminar of the Finnish National Research Programme on Reactor Safety 2007-2010, SAFIR2010, presenting the results of the entire programme with emphasis on the results obtained during the years 2009-2010. Presentations, panel and proceedings in English.

The Program of the seminar is presented at the SAFIR2010 net site:

<http://virtual.vtt.fi/virtual/safir2010/>

Event information:

Name SAFIR2010 Final Seminar

Start date 10.03.2011 Thursday

Time 09:00

End date 11.03.2011 Friday

Time 17:00

Venue Hanasaari

Address Hanasaarenranta 5, Espoo ([On the map](#))



PROJECT PRESENTATION (PP)

Advanced Safety Assessment Methodologies: Level 2 PSA

ASAMPSA2

Contract (grant agreement) number: FP7-211594



 <p>ASAMPSA2 SEVENTH FRAMEWORK PROGRAMME</p>	<p>Advanced Safety Assessment Methodologies: Level 2 PSA</p>
<p>France: IRSN, CEA, Areva NP sas • Germany: GRS, VGB, Areva NP GMBH • Belgium: Tractebel • Spain: Iberinco • Finland: VTT, Fortum, Stuk • Hungary: Nubiki • Italy: ERSE, ENEA • Netherlands: NRG • Czech Republic : UJV • United Kingdom: AMEC NNC Ltd • Sweden: FKA, Scandpower • Switzerland: PSI, CCA</p>	

The objective of the ASAMPSA2 coordination action is to develop best practice guidelines for NPP Level-2 PSA methodologies, with a view to harmonization at EU level and allowing the development of meaningful and practical uncertainty evaluation in Level-2 PSA.

1. Nature and scope of the project

The main characteristic of this coordination action is to bring together the different stakeholders of nuclear industry (plant operators, plant designers, TSO, Safety Authorities, PSA developers), irrespective of their role in the safety demonstration, analysis and regulation: this will promote a common definition of the different types of L2 PSA and will help to develop common views.

The Partners of the ASAMPSA 2 consortium have been chosen on the basis of their high experience in the development and application of PSAs.

Beyond ASAMPSA2 Partners, specific relationships with community in charge of nuclear reactor safety (utilities, safety authorities, vendors, and research or services companies) will be established in order to define the current needs in terms of guidelines for level 2 PSA development and applications.

A technical group of level 2 PSA experts from project partners has proposed some best-practices guidelines for a limited or full-scope L2 PSA from their experience and international cooperation (especially SARNET).

This best-practices guideline must now be discussed with End-Users community and their opinion will be taken into account in the final version.

The applicability of such a guideline for future reactor (Gen IV) has also been examined.

2. Activities

Within the European community responsible for fission reactor safety, a need to develop best practice guidelines for the level 2 PSA methodology has been repeatedly expressed, with the aim of both fulfilling the requirements of safety authorities in an efficient way, and also promoting harmonization of practices in European countries in order to use results from level 2 PSAs with a greater confidence.

Existing guidelines, like those developed by the IAEA, propose a general stepwise procedural methodology, mainly based on US NUREG 1150 and high level requirements (for example on assessment of uncertainties). Currently in Europe integration of probabilistic findings or insights into the overall safety assessment of Nuclear Power Plants (NPPs) is quite differently understood and implemented.

Within this general context, the project objectives are to highlight common best practices, develop the appropriate scope and criteria for different level 2 PSA applications, and promote optimal use of the available resources. Such a common assessment framework will support a harmonized view on nuclear safety, and help formalize the role of probabilistic safety assessment.



3. Expected results

In terms of dissemination and/or exploitation of the results, the main objective of the Project is to propose practical guidelines for L2 PSA that will be acceptable and useful to the European End-Users, whatever their position (Safety Authorities, TSO, Utilities, Vendors ...).

Another expected result of the ASAMPSA2 project could be the identification of some remaining specific issues where research activities are still needed to allow a meaningful quantification of risks. It could contribute to the preparation of future Community research activities in connection with SARNET.

4. Societal impact

The main impact of the project should be a better harmonization of practices for the quantification of severe accident risks on NPP within the European Community in charge of nuclear safety.

The project will contribute to improve the basis of risk-informed decision-making concerning NPP safety.

5. Information about important public events

During the preparation phase of the ASAMPSA2 project, it has been considered that the relationships with End-Users are a key issue for the success of the project and a specific work package has been defined for that.

At the beginning of the project, a questionnaire has been sent to more than 100 European organizations concerned by nuclear safety of NPPs to identify their needs in terms of best-practices guidelines on L2 PSAs.

30 organizations have answered and a synthesis has been discussed during an open workshop (Hamburg, on the 28&29th of Oct. 2008). This workshop will lead to specific recommendations for the ASAMPSA2 project.

A second open workshop is now organised in ESPOO, hosted by FORTUM, from 7 to 9th of March 2011, with the L2PSA End-Users community, to present and examine the main outcomes of the ASAMPSA2 project. This workshop will provide the opportunity to discuss the link between deterministic and probabilistic analyses for severe accident issues, to examine the forces and weaknesses of the existing ASAMPSA2 guideline and to discuss the L2PSA applications.

The ASAMPSA2 guideline will be sent before the workshop to more than 100 organizations, associated to a questionnaire. A synthesis of the answers to the questionnaire will be presented and discussed during the workshop.

The workshop is open to all organizations concerned by severe accident issues for NPP (plant operators, plant designers, TSO, Safety Authorities, PSA developers, SAMG developers ...) that are volunteers to share experience or promote specific views on these issues and able to fill the questionnaire or to propose some improvements for some specific parts of the guideline.

The ASAMPSA2 project Partners will integrate all outcomes obtained during the workshop in the final version of the guideline, which is planned for mid-2011.

The outcome of the workshop will be also used to identify the interest of any follow-up collaborative project.



Project information

Website address: <http://www.asampsa2.eu>

Project type Coordination action

Project start date: 01/01/2008

Duration: 36 months (extended to 42 months)

Total budget: EUR 2 141 215

EC contribution: EUR 1 499 998

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4	TRACTEBEL ENGINEERING S.A.	TRACTEBEL	BE
5	IBERDROLA Ingeniería y Construcción S.A.U	IBERINCO	ES
6	Nuclear Research Institute Rez pl	UJV	CZ
7	Technical Research Centre of Finland	VTT	FI
8	Ricerca sul Sistema Elettrico SpA	RSE SpA	IT
9	AREVA NP GmbH	AREVA NP GmbH	DE
10	AMEC NNC Limited	AMEC NNC	UK
11	Commissariat à l'Energie Atomique	CEA	FR
12	Forsmark Kraftgrupp AB	FKA	SE
13	Cazzoli consulting	CCA	CH
14	National Agency for New Technologies, Energy and the Environment	ENEA	IT
15	Nuclear Research and consultancy Group	NRG	NL
16	VGB PowerTech e.V.	VGB	DE
17	Paul Scherrer Institut	PSI	CH
18	Fortum Nuclear Services Ltd	FORTUM	FI
19	Radiation and Nuclear Safety Authority	STUK	FI
20	AREVA NP SAS France	AREVA NP SAS	FR
21	SCANDPOWER AB	SCANDPOWER	SE