

NPSAG/NKS LEVEL 3 PSA SEMINAR – JANUARY 20TH, 2015

MINUTES OF MEETING

Location: ÅF, Frösundaleden 2, 169 99 Solna, Sweden
 Hosts: Andrew Wallin Caldwell, Lloyd's Register Consulting
 Gunnar Johansson & Anna Georgiadis, ÅF
 Jakob Christensen, Risk Pilot
 Tero Tyrväinen, VTT

OBJECTIVE:

The objective of this seminar is to present and discuss the progress of the NPSAG/NKS Level 3 Probabilistic Safety Assessment Project and to receive feedback from participants for ongoing and future tasks.

AGENDA:

09:00	Coffee/Tea Registration
09:30	Introduction / Project organization <ul style="list-style-type: none"> • Project organization • First year activities • Ongoing international work • Finnish Pilot project • Swedish Pilot project organization • Guidance document plan
10:30	Coffee break
11:00	Finnish Pilot Study
12:15	Lunch
13:00	Swedish Pilot Study <ul style="list-style-type: none"> • Swedish Pilot Study • Input specification • Scope of Analysis • Methodology Specification
14:30	Coffee Break
15:00	Workshop
16:00	Workshop Review & Closing
16:30	Adjourn

PARTICIPANTS LIST

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PRESENTATIONS

The presentations are provided as attachments to this meeting of minutes:

Presentation	File name
1 Introduction	1 -Opening and Introduction_v2.pdf
2 Finnish Level 3 Pilot	2 - Finnish level 3 Pilot study.pdf
3 Swedish Level 3 Pilot – Input and Methods	3 - Swedish pilot project - Input & Methods.pdf
4 Swedish Level 3 Pilot – Scope of Analysis	4 - L3PSA_Seminar_20.01.2015_Analysis_Scope_Rev1.pdf

Introduction

- Some discussion that was not provided in the presentation slides surrounded the recent Canadian conference on multi-unit accidents. During the conference it was mentioned that surrogate measures may not be as applicable for multi-unit or site-wide applications. This is because the off-site effects of an accident are not necessarily the sum of the separate accidents. The off-site consequences of multi-unit accidents may often be not as severe as the sum of the accidents but there is also the possibility that the effects of a multi-unit accident could be significantly more severe than the summation of the effects from each unit. In such cases Level 3 PSA type metrics may be more relevant.
- A specific discussion of the guidance document is planned for June. An appropriate date for when as many stakeholders and working group members can meet in person to discuss the development of the guidance document is a high priority.

Finnish Level 3 PSA

- The Finnish project has decided to use a linear Gaussian model due to resources and tools available to the project
 - Possibility of expanding study to use puff model
- The resulting deaths and cancers are extremely low based on the study
- Evacuation had a significant effects, while shielding had a relative minor impact
- Contamination and Economic impact were not studied

Swedish Level 3 PSA Input and & Methods

- There was significant discussion on the LENA dose models used. These should be completely described in the methodology report. It should also be noted that the 30-day dose which has been used by SSM for many years may be changing in the near-term future. This working group should take note of this when they are developing the scope of the project.

Swedish Level 3 PSA Pilot Scope of Analysis

- There was significant discussion on evacuation, applicability of EPR to Swedish reactors. These discussion were further articulated during the workshop.
- It was questioned how similar the selected source terms were. for the study.
 - Source terms for the study were selected based on their proximity to Swedish release limits, but are not necessarily related based on release location.
- Rough economic impact and contamination studies are planned for the pilot.

WORKSHOP OBJECTIVES:

- Evaluate the proposed pilot studies scope, input and methods
- Make recommendations for continuation of work on guidance document

WORKSHOP ORGANIZATION

The workshop should be open. The questions provided on the attached sheet can be used to guide discussion, but are not intended to bind the discussion to just these topics. Please do not feel limited to the spaces provided on the page (questions 5 and 6 are broad questions with no space available). Each working group may focus on a particular topic or provide answers to all questions

WORKSHOP QUESTIONS:

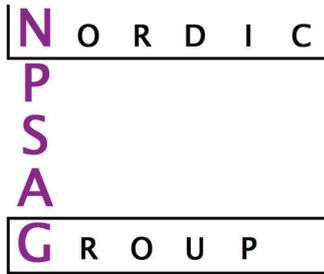
1. Is the presented selection of input data for Probabilistic Consequence Analysis sensible/adequately complete for the pilot study?
 - In general it was thought that the data was adequate to satisfy the goals presented in the scope of analysis.
 - How are noble gases handled in the LENA program? If these are averaged over the entire release this will be very unrealistic for the early effects of a release.
 - Extreme weather
 - There was a significant amount of discussion on the point of extreme weather. Some sort of discussion should be placed in the guidance document (e.g. what is extreme weather, how should it be treated)
 - Dependencies between Level 3 factors and plant accident initiators... should be discussed at some point in the project.
2. Are any key analysis attributes missing, or are there any suggested improvements/alterations to improve coverage?
 - Should be discussed if people evacuate themselves (shadow evacuation). This certainly must be described in the guidance document.
 - Current Swedish regulations integrate dose over 30 days... what does LENA do? These may be changing to 1 year quite soon. The working group should look into this.
 - One group thought that 5km evacuation seemed optimistic, but ok in the pilot study.
3. Does the selection of analysis attributes, as expressed in the scope of analysis, make sense?
 - a. Is anything vital missing?

- There were no comments on the selection of analysis attributes besides that it was felt that health effects are important, but contamination and economics are valuable and interesting outputs and should be investigated (even if coarsely)
4. Are there any additional suggestions/ideas to improve the pilot project (with limited resources)? Will the pilot reach the expected level to satisfy project goals?
 - a. Individual and Health effects calculations
 - b. Countermeasures
 - c. Limited economics study
 - d. Other?
 - The larger group was tentative to suggest additions to the work because of the limited resources and time available.
 5. Is schedule for the guidance document reasonable?
 - a. How should
 - In general the stakeholder participants agreed that it was reasonable. It was suggested that the Guidance document meeting could be coupled with other NPSAG / PSA-wide meetings that occur previous to the summer holidays.
 6. Any further reflections on the project as a whole?
 - a. Should anything specific be further investigated for future guidance (perhaps not included in pilot)?
 - b. In your opinion, what would be required of the guidance document in order to make it both relevant and useful?
 - Guidance input
 - What requirements should be done in Level 2 for a meaningful Level 3 PSA.
 - What Definition of release categories should be used
 - Filter, non filtered etc. etc.??
 - Guidance should give some description of software available, capabilities, and availability.
 - Important assumptions should be highlighted
 - If the reader aims to make a tool for Level 3 Purposes, the guidance document should be useful

REVIEW AND NEXT STEPS

In general the same sentiment was shared as with many of the previous discussion on Level 3 PSA. Some participants felt that Level 3 PSA could give a tool to assess nuclear power plant risk and state liability to insurance companies. Yet, there was a significant amount of skepticism among the participants primarily based on the high uncertainty of Level 3 PSA calculations.

Next Steps



- In the short term an annual Level 3 PSA report will be produced, which summarizes the work completed during the second year of the project. This report will be based on the seminar findings.
- The Swedish pilot project and the associated reports will be completed during the next 5 months of the project.
- In June the Level 3 PSA guidance document will begin. It is the intention of the group to start this work with a face-to-face meeting including as many stake-holders and working group members as possible.