



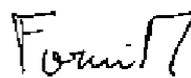
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## SILER

### Seismic-Initiated events risk mitigation in LEad-cooled Reactors

Grant Agreement N°: 295485

### Deliverable title: Minutes of the first RP management meetings: Minutes of the first general Governing Board and External Advisory Committee meetings

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<b>Description of the activities:</b>  The document summarizes the outcomes of the first RP general management meeting.				
<b>SIGNATURES</b>				
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# Minutes of the first RP management meetings: Minutes of the first general Governing Board and External Advisory Committee meetings

## 1. Introduction

The first RP general meeting has been held in Brussels on March 19-20th. The meeting has started with the technical meeting, where all the results obtained during the first 18 months of the project have been outlined.

The technical meeting has been followed by the Governing Board meeting and by the External Advisory Committee meeting.

## 2. Governing Board Meeting

The Governing Board Meeting agenda was as follows.

*14:30 Welcome, introduction of participants, aim of the meeting (Didier De Bruyn, SCK•CEN)*

*14:45 Verification of quorum*

*14:50 Status of project*

*15:00 Status of Consortium Agreement*

*15:15 Feedback of first EAC meeting*

*15:30 -- any point asked by GB members –*

*16:00 Any other business*

*16:30 Location and date of next meeting*

*17:00 Closure*

### 2.1 Presences

Partner	Name of GB member	remark
ENEA	A. Poggianti	Present
AREVA	J.M. Hamy	
SCK•CEN	D. De Bruyn	Present
FIP Industriale	S. Infanti	Proxi to M.G. Castellano
MAURER	Chr. Braun	Proxi to R. Gettert
EC-JRC	P. Pegon	Proxi to A. Anthoine
SINTEC	S. De Grandis	Present
KTH	P. Kudinov	Proxi to W. Villanueva
BOA-BTK	G. Lein	Proxi to H. Silbe
IDOM	A. Moreno Gonzalez	Present
ANSALDO	M. Grattarola	

IPUL	E. Platacis	
NUMERIA	A. Dusi	Proxy to A. Poggianti
VCE	H. Wenzel	
SRS	U. Pasquali	Proxy to G. Moretti
CEA	A. Porracchia	
EA	M.T. Dominguez	Proxy to J. Galleigo
NUVIA	S. Diaz	Present

The legal number of participants (13/18) was reached, so the meeting was declared valid.

## **2.2 Status of project**

The outcomes of the Project technical meeting have been summarized and the results were considered satisfying. The Project emerged to be generally on time.

## **2.3 Status Consortium Agreement**

The status of the Consortium Agreement has been presented by the Management Officer. All the partners have signed the CA and the relationships among the Partners are working in good cooperation.

## **2.4 Feedback first EAC meeting**

The preliminary comments of the EAC after the first committee meeting, held in Verona during the Training Course have been reported to the GB.

## **2.5 Any other business**

The general planning of the International Workshop under organization in the frame of WP7 has been presented and approved by GB members.

## **2.6 Location and date of next meeting**

The GB members agree to have the next meeting at the end of the project in the period July – September 2014.

## **2.7 Minutes of the kick-off GB meeting**

A first Governing Board Meeting was held at the kick off of the Project.

Massimo Forni (ENEA, coordinator of the SILER project) welcomed the participants to the meeting at 14:30.

We had 3 delegations by Proxy:

- Ioannis Politopoulos (JRC) to Pierre Pegon (also JRC)
- Gilles Perin (AREVA) to Nadim Moussallam (also AREVA)
- Christian Braun (Maurer-Soehne GmbH) to Renzo Medeot (also Maurer-Soehne GmbH).

The quorum is obtained.

He first distributed to each partner the relevant pages of the Consortium agreement signed by ENEA as coordinator. This page should be included in the file he sent some days ago with the final version of the CA.

He then called for candidates for the role of chairman of the Governing Board. Didier De Bruyn was the only candidate and has been unanimously chosen as chairman.

Didier De Bruyn then took over the leading of the meeting. He first thanks the audience for their confidence. Then he asked the Board about the necessity to elect a vice-chairman, whose job remains limited to replace the chairman in case of unavailability. Luigi Mansani (Ansaldo) approved this suggestion, also to be coherent with other FP6 and FP7 projects. After some "tour de table", Louis Chira (EA, WP2 leader) was unanimously elected as vice-chairman. This makes also some sense as EA is chairing the Governing Boards of both CDT and LEADER projects, which are strongly related to SILER.

The next point in the agenda regarded the nomination of two supplementary members of the External Advisory Committee:

- Dr Luciano Cinotti (in the past Ansaldo and Def Fungo, today Merivius) and
- Prof. Perotti, specialist in the seismic domain and lecturer at the Politecnico di Milano.

Massimo Formi briefly presented the resumes of those two persons. There was no remark from the audience and these two persons now are part of the EAC (provided they sign the necessary confidentiality agreement).

The only point discussed in the "any other business" topic was related to information exchange between FP7 projects and is raised by Luigi Mansani. There is indeed some difficulty in gaining information from one FP project to another FP project, especially for the reports that are quoted as "RE" for restricted or "CO" for confidential. Most of the SILER deliverables (as kindly suggested by the EC) will be of the "PU" for public type, but input for the SILER work that is coming from either CDT or LEADER is not of the PU type. The partners that are involved in all three projects will most probably agree for such information exchange, but this might not be the case for others. The outcome of the SILER project will also become available at a time where both CDT and LEADER projects are completed and some agreement should be obtained to whom the SILER results would be transmitted (the original CDT / LEADER consortia, the projects that have in the mean time started for the continuation of those ??).

The SILER Governing Board gave a mandate to the SILER coordinator to contact the respective CDT and LEADER coordinators (Peter Baeten, SCK-CEN and Alessandro Alemberti, Ansaldo) in order to get an agreement. This is of particular urgency for the CDT project that finishes in March 2012.

As there is no other point to discuss, Didier De Bruyn thanked all participants and closed the meeting at 15:15.

### **3. External Advisory Committee Meeting**

The first official meeting of the SILER EAC took place on May 21, 2012 in Verona, Italy in conjunction with the SILER Training Course on Seismic Protection of Lead-cooled Reactors. The second meeting took place during the Mid-Term Meeting in Bruxelles. Present at the

meeting were EAC members Valentina de Cesare, Stefano Monti, Federico Perotti (partially) and Pierre Sollogoub.

At the meeting the following items were discussed and agreed.

First, the conclusions of the first EAC meeting related to the organisation of EAC were reviewed and the following agreed:

- ✓ The committee nominated and selected Pierre Sollogoub as the Chairman of the EAC. It was proposed and agreed to select Stefano Monti as Alternate Chairman of the EAC.
- ✓ The committee will report to the SILER project management who will coordinate communications between project team members and the EAC.
- ✓ The chairman and/or alternate will coordinate EAC discussions and committee advice to the project management.
- ✓ The EAC will advise the project on general and specific technical issues that arise during the term of the project but will remain external to the project and will not perform technical work that is under the scope of the project.
- ✓ Project management prepared and transmitted to EAC members individual non-disclosure agreements (NDAs) which were signed and returned.
- ✓ The project management should select the most relevant documents in the different WP on which EAC is requested to provide an advice. In addition, the schedule of availability of concerned reports and of requested advices should be mentioned to EAC.

Concerning the technical aspects of the SILER program presented at the Mid-Term meeting, EAC recognize that the work presented was relevant from qualitative and quantitative point of view. EAC didn't see any technical point which could be blocking for the project.

EAC members want to focus on some questions which seems important and/or which should be addressed or deepen by the program; They were mentioned during the WP presentations or during the EAC meeting. They are listed below:

### *Soft Soil*

Use of base isolation for soft soils may raise some very specific questions, related to the distribution of loads on the isolators and to the non uniform long term settlement of the lower raft induced by the inhomogeneity of soft soil, which influence the isolator layout. These two aspects must be addressed by the relevant WP, even if it is understood that the complete solving is outside the SILER scope of work.

More specifically, it is recommended that the consideration of soft soil case be based on real site conditions and not on "idealised" artificial site. In addition, It has been stated that the fragility analysis of the ELSY reactor building will be performed for a single ground condition; in that respect, it is recommend to use an intermediate-to-low stiffness soil. This is proposed in order to avoid stiff conditions, which are usually less demanding for the isolation system, though avoiding, at the same time, the adoption of ground conditions in which a NPP could be built only on deep foundations and/or adopting ground improvement measures.

#### Beyond design conditions

It is recalled that, for isolated structures and components, the seismic load is more "load-controlled" than "displacement-controlled" one implying a large ductility demand. The

amplitude of allowable post elastic behaviour (through f.i. “inelastic factors”) is significantly reduced in comparison with non isolated structures and components.

The reinforced concrete columns which support the seismic isolators should be designed with reference to Beyond Design Basis conditions, i.e. taking into account the eccentricity of vertical loads due to isolator lateral deformation at ultimate condition (i.e. 300% of shear strain).

### *Defence in Depth*

In the case of an ADS (e.g. MYRRHA) a Beam Transport Line connects the reactor - located inside the Containment - with the accelerator, normally placed in another building (i.e. the accelerator vault) outside the Containment.

Taking into account that:

- ✓ due to the highly radioactive spallation products, the spallation target represents a relevant radioactive source which has to be confined with respect to the environment;
- ✓ the beam transport line - which in most of the ADS concepts penetrates the Containment - represents a fundamental barrier between the spallation source and the environment (normally the secondary one, after the target window) within the Defence-in-Depth philosophy;

the seismic design and in particular the design option possibly adopted for the seismic isolators of the ADS plant should be sufficiently robust to prevent significant radioactive material releases to the environment in any operational and accident condition (ref. DiD levels vs. plant states considered in the design).

### *Other general suggestions*

Use of real (or natural) records selected from strong-motion databases instead of artificial time histories should be encouraged; they should reflect all the factors that influence the seismic motion (i.e. source, path and site effects) and, focusing on long period structures, they should be compatible with the displacement response spectrum. It is recalled that they correctly reflect the correlation between vertical and horizontal components of motion. The project should evaluate the advantage of using natural records instead of artificial records.

The planar and vertical tolerances of isolators during installation should be indicated in the deliverable of Work Package 6.

The problem of tension loads on isolators has been raised: at least in beyond design conditions, significant tension loads on some isolators are to be anticipated; care has to be taken, under these circumstances, that the global vertical load can be resisted by non-failing devices and that the upper structure has enough strength to allow for vertical load re-distribution.