



SARNET NEWS N°5

January 2006

MANAGEMENT and TRANSVERSE ACTIVITIES

Administrative matters:

At the very end of 2005 IRSN has received from the European Commission a second advance payment. These funds have allowed IRSN to distribute to the partners 50% of refundable costs incurred or to be incurred during the April 2005-March 2006 period.

SARNET follow up (reminder):

In order to prepare the discussion to be held during the forthcoming Governing Board meeting (Zürich, PSI, March 24th, 2006) on SARNET follow-up (beyond the 6th FWP) a questionnaire has been prepared and distributed in October 2005. **The answers are to be sent urgently to the Coordinator.**

Advisory Committee:

EDF has hosted the first meeting of SARNET Advisory Committee (Chatou, December 16th, 2005). Gérard LABADIE (EDF) has been elected as Chairman of the Committee. Recommendations will be finalized in the coming days and transmitted to the Governing Board and the Coordinator. As far as possible the Management Team will take these recommendations into account when proposing the so-called JPA3 (Joint Programme of Activities for the April 2006-September 2007 period). These recommendations mainly concern links between end-users and the definition of SARNET priorities, PSA and ASTEC activities.

ERMSAR 2005:

The 1st European Review Meeting on Several Accidents was held in Aix-en-Provence, 14-16 November 2005. This meeting enabled a review of the SARNET activities carried out during the first 18 months of the project. Main topics of the network were covered such as corium, containment, source term, ASTEC, PSA2 methodologies and knowledge management. ERMSAR gave the opportunity to exchange information not only between SARNET partners but also with end-users and organisms not involved in the network. The objective was also to review R&D priorities and identify possible re-orientations of the R&D effort. The meeting was a success regarding the participation, the quality of presentations, the discussions and the dissemination of knowledge. About 120 specialists on power plant severe accidents from 50 organisations attended the meeting, with 12 invited organisations (4 utilities, 4 safety organisations and 4 research organisations not involved in the activities of the network). The final discussion enabled to identify needs and suggestions to be taken into account in the definition of the future work plan of the network.

ASTEC

IRSN-GRS delivered an update version ASTEC V1.2 p1 end of December 05 through the ACT. This version takes in account the feedback of 5 months of code maintenance (particularly on core degradation and on Molten-Corium-Concrete-Interaction). The code users will have to update their current or next calculations with this version that gives more reliable results.

Two major deliverables (D30&31) were released in November 05:

- The validation report of ASTEC V1.1,
- The synthesis of the ASTEC V1.1 benchmarking activity (code to code comparison for Westinghouse 1000, Konvoi 1300, PWR 900, VVER-1000, VVER-440/213 severe accident transients).

Two other deliverables (D34&35) are currently under finalization, respectively on partners' needs of code evolution (models, documentation, inputs/outputs, users' tools) in the perspective of ASTEC V2 future series and on preliminary general specifications of model adaptation/extension to cover other reactor types than PWR. They will be released end of January 06.

Partners were asked to answer to 4 surveys on ACT on different ASTEC aspects: ASTEC V2 perspectives (as a complement to D34), reference computers types, mobility, and publications .

PSA2 (level 2 Probabilistic Safety Assessment) ACTIVITIES

The three deliverables due for September 2005 have been provided on time. First one mainly concerns a synthesis of the general comparison of partners methods for level 2 PSA development, second one a synthesis of the comparison of partners methods for uncertainties assessment and sensitivity studies, third one the status of the work performed on dynamic reliability methods.

The comparison of the main probabilistic software is still on going. A detailed comparison of the methods for the assessment of the hydrogen distribution and combustion in the containment and the associated uncertainties in the containment event tree have be initiated. Some partners contributions have already been prepared. It is expected to establish then an harmonized method for this issue. Similar work has been undertaken for the assessment of the immediate consequences of the vessel failure. A draft of a specification of a simplified benchmark exercise for the comparison of dynamic reliability methods have been prepared on the base of a first discussion during a dedicated meeting which takes place in Cadarache in November. All these subjects and the definition of future work will be discussed during next general partners meeting (January 16th and 17th in EDF Clamart).

CORIUM, CONTAINMENT and SOURCE TERM

Work has continued in the three areas following the lines set out in JPA2. Several technical seminars have been organized and several joint papers have been presented during the ERMSAR conference.

The SARP¹ group has defined a methodology to elaborate and revise the ranking of research priorities. This methodology involves SARNET partners and end-users beyond SARNET perimeter. The methodology is under application for revision of research priorities as defined by the conclusions of the EURSAFE² project.

In the **Corium domain**, one may mention:

- During ERMSAR meeting, several joint technical presentations have been performed to give an overview of corium topic activities. Due to the wide scope of this domain, the necessity to focus our efforts on the main issues have been underlined. According to the knowledge evolution related to recent new experimental results, the revision of the definition of the bounding case for in vessel retention strategy including more realistic scenarios and the improvement of our understanding of the corium–concrete interaction mechanisms will be two main issues for the next months.
- A technical meeting within thermo-mechanical thematic circle have been organised the 15th of November to exchange on vessel failure and cracks propagation modelling activities and discuss about the next joint program of activity.

In the **Containment domain**, one may mention:

End of June, phase 1 of the OECD Research Programme SERENA on fuel-coolant interaction was concluded after three years of operation. IRSN/CEA and KAERI had prepared a proposal for a possible phase 2 that has been supported by all SARNET partners within SERENA. This proposal includes experiments with KROTOS/Cadarache and TROI (KAERI). The proposal was accepted by all SERENA partners. The agreed formulation will become available in July.

In the **Source Term domain**, one may mention:

- Detailed arrangements are being made for the Source Term review meeting at PSI on 2-3 February, where progress in JPA2 will be reviewed and plans for JPA3 discussed ST members have been invited to send summaries in advance, and some have been received already.
- A seminar was held at Newcastle University, UK, 15 December 2005 “SARNET: Integrating Severe Accident Safety Research in Europe”. This was followed by discussions with

¹ Severe Accident Research Priorities

² Project carried out in the frame of the 5th FWP of the European Commission

university staff on Newcastle joining SARNET for JPA3 and beyond; possible technical areas and effort levels were identified;

- An abstract "SARNET: Integrating Severe Accident Safety Research in Europe: Safety Issues in the Source Term area", has been accepted for the ICAPP-06 meeting, Reno, 4-8 June 2006, with a draft paper prepared;
- An INR researcher is now working at IRSN Cadarache under the Mobility Programme, using ICARE/CATHARE in support of air ingress studies (plant calculations and analysis of experiments); this work is performed under WP14-1 and WP9.3;
- An iodine test in CAIMAN facility has been performed following discussion of the conditions amongst ST partners;
- Technical reports are in preparation regarding air ingress scenarios (EDF), and RADSOL experiments (UCL) amongst others;
- The EVAN proposal from the ISTC programme has been sent to the ST area for review, and arrangements are being made for this to be done. This experimental and theoretical proposal includes fission product retention, remobilisation and iodine chemistry matters. The project is expected to start in March 2006.

DATANET (Network of experimental databases)

The feeding of databases is going on, a training course has been organized in December at ISPRA for CIEMAT persons in charge of the development of the CIEMAT database.

EXCELLENCE SPREADING

During the last months, the education and training activities were mainly focussed on the preparation of a short course on Severe Accident Phenomenology (SAP) tailored for active researchers and students in Europe and other countries. The course was hosted by CEA and given at Cadarache from January 9 to 13, 2006. More than 80 researchers and students from 25 countries attended the course. Some participants came from countries far beyond SARNET perimeter (USA, Canada, Turkey, Russia, Pakistan and China).

FUTURE EVENTS:

- Annual review meeting of the Containment, Corium and Source Term areas, 30th January to 3rd February 2006, in Villigen (PSI).
- PSA2 group meeting on February 16-17, 2006 in Clamart (EDF).
- SARP Group meeting on February 21st, 2006, in Chatou (EDF).
- Management Team meeting N°5 : March 2nd, 2006 in Ispra (JRC).
- Governing Board meeting N°3: March 24th, 2006, in Villigen (PSI).
- Advisory Committee meeting N°2: October 13th, 2006 in Chatou (EDF)