



SEAKNOT

Newsletter #2

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to discover our latest project outputs:**

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A word from the Coordinator

SEAKNOT just turned 2 years “young”. This means that, such as planned in the project description, major milestones have been already hit. Instrumental events have been held as part of the activities articulated to strengthen knowledge and knowhow transfer (K2T) in the severe accident community: the eleventh edition of the Severe Accident Phenomenology (SAP) course, held in the premises of the Technical University of Madrid (UPM) in June 2023; and the eleventh edition of the European Review Meeting on Severe Accident Research (ERMSAR 2024), held in the premises of KTH in May 2024. Both were highly successful. As for the research roadmap related work, SEAKNOT has adapted methodologies, developed in other nuclear fields, to the entire scope of severe accidents to identify and rank issues worth investigating (Phenomena Identification and Ranking Table, or PIRT) in future and to assess the representativeness and completeness of the existing database. To complete the picture, the European experimental facilities available for severe accidents research have been mapped and their status analyzed. This newsletter gives a flavor of all of it.

Nonetheless, it is not time for complacency. Much has been achieved, but there is a lot ahead of us. The application of those methodologies to consolidate a full-scope PIRT has just started and there is much still to be done. Likewise, more ambitious initiatives enhancing K2T are coming, like the severe accident textbook update or the severe accident summer camp (SASCAMP). It is the time to focus our expertise and determination to make them true. We are ready, let us do it!

Project results

In the SEAKNOT project, we have made significant progress in various areas. Let's break down these results:

Understanding Severe Accidents

It took more than a year to adapt the Phenomena Identification and Ranking Table (PIRT) methodology, derived in the Design Basis Accident (DBA), to be used within the field of Severe Accident (SA). Targeted to Source Term and having selected a few variables of key radionuclides, the PIRT exercise is proceeding in three major steps: phenomena identification, in which all phenomena present in SA scenarios have been listed; "domain ranking", in which each phenomena is being ranked according to the existing knowledge and its safety significance; and, finally, what has been termed "phase ranking", in which the ranking will be brought into the source term perspective.

At present, the domain ranking is ongoing based on fundamental literature, like status of the art reports, partial-scope PIRTs in SAs, and the previous full-scope PIRT (EURSAFE project) issued in 2005. In addition, all the outcomes from research projects in the last 20 years are being accounted for. Project partners are submitting their independent rankings to the domain leader, who, after collecting all the contributions, will synthesize them in a single table, highlighting both agreements and discrepancies. The outcomes will be shared and discussed among partners. However, the purpose of the discussions is to share viewpoints, not to reach consensus. In case of ranking variability, the PIRT outcomes will reflect so. The status is different in each domain, being the in-vessel one ahead of the rest.

A work plan has been put in place to make sure that the domain rankings synthesis will be available by the end of the year and the phase rankings ready to be discussed by March 2025.

Creating a Validation Database

WP2 work involves creating a database directory to identify data useful for validating existing safety analysis codes for large water-cooled reactors and light water small modular reactors (LWSMRs). Partners worked to finalize a detailed list of database covering the entire severe accident domain. In parallel, they put together a methodology including an "adequacy check" that is now being applied to classify the collected database as per the proposed methodology.

The collected database is also being assessed to provide input to WP1 to support in identification and ranking of relevant phenomena. Another scheduled task is now in the process to be launched for creating an online website tool that would allow looking into the database directory through a user-friendly interface. This will allow sharing database findings with a broader nuclear safety research community in the near future.

Severe Accident Infrastructure Network

A first memo has been drafted to present some options for a future network that shall regroup the severe accident experiment facility operators in EU. This proposal is now under discussion within the different experimentalist teams and a dedicated webmeeting is planned at the end of October 2024. In the coming months, it is expected to have reach a first draft of the desired objectives and organisation that would be desired for such a network. This will serve as a basis for a second stage in which legal aspects shall be taken into account.

Knowledge Sharing

At present time, given the current risk of losing valuable knowledge acquired in the Severe Accident (SA) field due to retirement of many specialists and the exploration of new approaches for the SA assessment like Uncertainties and Sensitivity Analysis UaSA, it is crucial to find effective ways to engage the younger generation in addressing new research challenges. This effort is essential not only to preserve a high level of European expertise but also to ensure the continuity and advancement of the field. Therefore,

it is of utmost relevance to transfer the current State-of-the-Art on SA, including insights from the technical WP1-WP3, to the upcoming generations who will inherit this legacy.

The main expected outcomes from the actions performed within this WP4 KNOS are:

- Enhancing the background and skills of young generations, through various communication and dissemination (C&D) activities. An internal mobility programme will act as the backbone for efficient Knowledge and Knowhow transfer (K2T) from senior experts, supplemented by new editions of the **Severe Accident Phenomenology (SAP) Course**.
- C&D activities for the entire project, with particular focus on the transfer of the project's technical outcomes beyond the partners to the international scientific community through the **ERMSAR Conferences**.

Project Coordination

The project is advancing as foreseen, and its progress has been monitored regularly through the accomplishments of milestones and deliverables. At present, right at the mid of the project, the progress in both indicators are over 45%, which shows that SEAKNOT is quite “on time”. In this mid-term achievement a major role has been played by the Executive Board, which members meet regularly and set action plans to address issues appearing on the SEAKNOT pathway to its objectives. In addition, the Advisory Board and the End User Group members are helping SEAKNOT through their guidance, recommendations and constructive criticism. Part of which has translated in bridges with other research agencies with a take in severe accidents research, like OECD/NEA and IAEA, which will strengthen further the outcomes of SEAKNOT.

The Consortium partners met on October 4-6, 2023, at CEA IRESNE Cadarache (France) for the 1st Annual Meeting of the project, to discuss the first year's results, assess outcomes, and plan 2024 activities. Members of the Advisory Board and End-Users' Group provided feedback on the SEAKNOT roadmap for SA research.



Partners and Advisory Board/End User Group met at PSI in Villigen (CH) on April 10-11, 2024, for the **2nd Interim Meeting** and had the opportunity to visit PANDA, a large-scale test facility for investigating containment system behaviour and related phenomena for different advanced light-water reactor (ALWR) designs.





The **2nd SEAKNOT Annual Meeting** has been hosted by University of Pisa (Italy) from October 2-4, 2024, together with the WP1 and WP2 Technical Meetings and the Advisory Board plus End-Users' Group meeting.

SEAKNOT at events



The [SEAKNOT Project](#) was presented by Coordinator Prof. L.E. Herranz at the **2024 SNETP Forum** in Rome, held from April 17th to 19th, 2024.

With over 275 experts from 26 countries, the Forum served as a vibrant hub for discussions on Europe's nuclear energy future aimed at achieving net-zero emissions by 2050.

The **11th edition of the ERMSAR Conference**, was held from May 13-16, 2024, in Stockholm, hosted by KTH. For the first time it was organized within the SEAKNOT project and Technical Area 2 of the Nuclear GENERation II and III pillar (NUGENIA TA2) of the SNETP Association, along with IAEA and OECD/NEA.

ERMSAR 2024 gathered 157 participants from 77 organisations across 21 countries, highlighting it as the reference international conference on SA. A total of 73 papers were presented orally, and 33 were exhibited as posters. The conference focused on the latest progress of international knowledge on SA and was mainly an opportunity for researchers to discuss about future R&D priorities.

11TH CONFERENCE ON SEVERE ACCIDENTS RESEARCH May 13-16, 2024 – Stockholm, Sweden ERMSAR 2024

ERMSAR 2024 Proceedings are published in the [KIT library](#) and are available also on the [Zenodo](#) online repository.

Training

The latest edition of the Severe Accident Phenomenology Short Course – SAP 2023 took place in Madrid from June 19-23, 2023. For the first time, it was held within the SEAKNOT framework, jointly co-organized by Universidad Politécnica de Madrid (UPM), CEA - IRESNE, CIEMAT Madrid, University of Pisa, and Jožef Stefan Institute.

These SAP short courses focus on the transfer of knowledge gained on SA over the last two decades to MSc/PhD students, young engineers, and researchers new to this field.

The next **SAP 2025 edition**, will also be organized within the SEAKNOT framework, and will take place in June 2025 at Forschungszentrum Jülich (Germany). It will be followed by the first edition of the **Severe Accident Summer Camp SASCAMP 2025**, a residential camp where small groups of participants will work with expert trainers on various SA related issues.



Discover the SEAKNOT's Internal Mobility Exchange Programme



Rolling applications are open

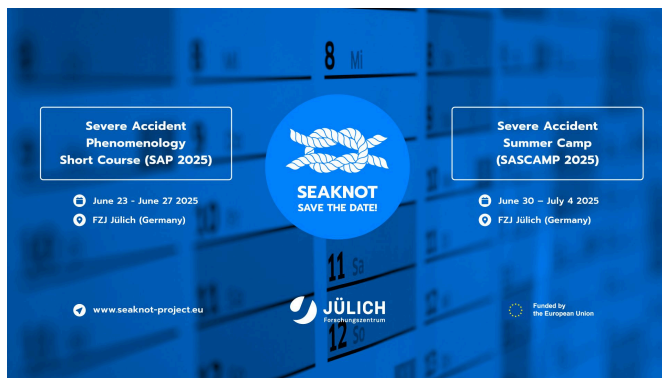
Education & Training activities focus on MSc and PhD students but are also open to young researchers in the Source Term field. One of the main action has been establishing an internal [mobility exchange programme](#) aimed at training through delegations in SEAKNOT partners' laboratories. The guidelines for this mobility are available on the SEAKNOT website.

[More information](#)

Are you a young researcher working on SEAKNOT project matters and looking forward to a **long term stay in a partner laboratory** or at **ERMSAR 2026**? [Apply](#) to the SEAKNOT's mobility programme! The programme can offer financial support to help young researchers in mobility or to present their research results in international events.

Don't forget to also, check out [SAP2025](#) from June 23-29 2025 and [SASCAMP2025](#) from June 30-July 4 2025 for valuable learning opportunities!

Upcoming events



[SAP 2025 Severe Accident Phenomenology Short Course and Severe Accident Summer Camp \(SASCAMP\) 2025](#)

June 23 - 27, 2025, FZJ, Jülich, Germany
June 30 - July 4 2025, FZJ Jülich, Germany



21st International Topical Meeting on Nuclear Reactor Thermal Hydraulics

31 Aug 2025 - 5 Sep 2025, Busan, South Korea

ICAPP 2025

International Congress on Advances in Nuclear Power Plants

ICAPP 2025 International Congress on Advances in Nuclear Power Plants

September 17 to 19, 2025, Antibes, France



FISA-EURADWASTE 2025

12-16 May 2026, Warsaw, Poland

12TH CONFERENCE ON SEVERE ACCIDENTS RESEARCH May 18-23, 2026 – Madrid, Spain ERMSAR 2026

ERMSAR 2026 European Review Meeting on Severe Accident Research

SEAKNOT will organize the next edition **ERMSAR 2026** in Madrid, Spain from May 18-23, 2026. This 12th edition will be jointly co-organized by CIEMAT Madrid, KIT Karlsruhe, and the University of Pisa.

Check them out

Resources

In the first year of SEAKNOT, we've initiated a range of communication activities. Discover the various tools and channels at your disposal to stay updated on the project's developments! [Share SEAKNOT updates within your network!](#)



SEAKNOT

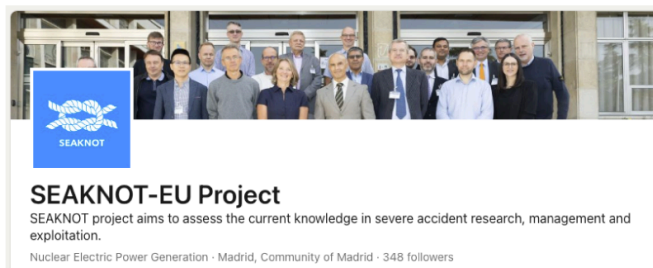


A project brand (logo and visual identity), including [documents or presentation templates and posters](#) to ensure the project's visibility among all relevant stakeholders.

Communication support materials, such as a [general SEAKNOT presentation](#), a [leaflet](#) and a [factsheet](#) presenting the project, to communicate at conferences, workshops and online.



The [public website](#) which serves as the primary communication channel to reach the project's stakeholders and audiences.



A [LinkedIn account](#) in order to communicate on SEAKNOT, promote its results and advertise about future initiatives.

[See more resources](#)

SEAKNOT is on social media, [follow us on LinkedIn](#) to share our news with your network.

Get in touch: contact@seaknot-project.eu

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