

## ***Strengthening capabilities in the application of nuclear safety assessment techniques in Europe***

### ***The challenge...***

Important improvements in nuclear safety in the European region have already been achieved with IAEA assistance, but changes and modifications are still needed and planned at individual nuclear power plants (NPPs). Deterministic and probabilistic safety assessments (PSAs) play a key role in these activities. One area of particular attention has been the development of plant specific PSA models. With these models in mind, the IAEA was able to provide assistance to help increase Member State knowledge, and to disseminate experience in the use of state of the art plant specific PSA models for enhancing the safety of water cooled, water moderated power reactor (WWER) NPPs.

### ***The project...***

A wide array of activities to reinforce the safety assessment capabilities of Member States were carried out under this regional project. These included workshops, training courses, technical meetings and the provision of a friendly cooperation framework for participating Member States to exchange ideas, experience and achievements. Expertise was provided to assist with drafting safety guidelines, while between 2009 and 2010, over 20 workshops and meetings covered topics such as safety analyses, safety assessment tools and methods, and the harmonization of PSAs, thus enhancing Member States' capabilities, skills and knowledge transfer. In 2011, over 300 specialists from 18 countries are participating in events bringing advanced safety assessment methodologies and best practices to their national utilities, regulatory bodies, and design and technical support organizations.



### ***The impact...***

The project's workshops, training courses and technical meetings have contributed to the development of new IAEA safety guides related to NPP safety assessment. These guides create an advanced platform for comprehensive safety assessments of existing and new NPPs. The information exchanged during the course of the project has proven to be of high quality, particularly with regard to the assessment of low power and shutdown conditions and internal and external hazards. With the active participation of countries operating NPPs, knowledge and dissemination of experience in the development of state of the art plant specific PSA models for WWER design NPPs has increased, and high levels of nuclear safety in Member States has been enhanced and maintained.

A strong partnership between the IAEA and the United States Department of Energy's Argonne National Laboratory (ANL) and the European Commission's Joint Research Centre, Institute of Energy (JRC-IE) has emerged. ANL has offered a training course annually to train relevant Member State representatives on how to apply deterministic safety assessment and PSA assessment tools. JRC-IE hosted a workshop aimed at exchanging experiences and raising relevant Member State staff's skills in the use of probabilistic precursor event analyses, deterministic transient analyses and root cause analysis.