NEA joint projects

NEA joint projects and information exchange programmes enable interested countries, on a cost-sharing basis, to pursue research or the sharing of data with respect to particular areas or problems. The projects are carried out under the auspices,

Cabri Water Loop Project Contact: carlo.vitanza@oecd.org Current mandate: 2000-2010	Czech Republic, Finland, France, Germany, Hungary, Korea, Slovak Republic, Spain, Sweden, Switzerland, United Kingdom, United States	≈US$ 7.75 million/year
COMPSIS Project Contact: pekka.pyy@oecd.org Current mandate: January 2005-December 2007	Chinese Taipei, Finland, Germany, Hungary, Japan, Korea, Slovak Republic, Sweden, Switzerland, United States	€ 100 000 /year
Co-operative Programme on Decommissioning (CPD) Contact: torsten.eng@oecd.org Current mandate: January 2004-January 2009	Belgium, Canada, Chinese Taipei, France, Germany, Italy, Japan, Korea, Slovak Republic, Spain, Sweden, United Kingdom	≈US$ 45 000 /year
Fire Incidents Records Exchange (FIRE) Project Contact: jean.gauvain@oecd.org Current mandate: January 2003-December 2005, renewed for the 2006-2008 period	Canada, Czech Republic, Finland, France, Germany, Japan, Netherlands, Spain, Sweden, Switzerland, United States	≈€ 74 700 /year
Halden Reactor Project Contacts: pekka.pyy@oecd.org carlo.vitanza@oecd.org Halden contact: Fridtjov.owre@hrp.no Current mandate: January 2003-December 2005, renewed for the 2006-2008 period	Belgium, Bulgaria, Czech Republic, Denmark, Finland, France, Germany, Hungary, Japan, Korea, Norway, Russia, Slovak Republic, Spain, Sweden, Switzerland, United Kingdom, United States	≈US$ 17 million/year
Information System on Occupational Exposure (ISOE Programme) Contact: brian.ahier@oecd.org Current mandate: 2002-2007	Armenia, Belgium, Brazil, Bulgaria, Canada, China, Czech Republic, Finland, France, Germany, Hungary, Italy, Japan, Korea, Lithuania, Mexico, Netherlands, Pakistan, Romania, Russia, Slovak Republic, Slovenia, South Africa, Spain, Sweden, Switzerland, Ukraine, United Kingdom, United States	≈US$ 445 000 /year
International Common-cause Data Exchange (ICDE) Project Contact: pekka.pyy@oecd.org Current mandate: April 2005-March 2008	Canada, Finland, France, Germany, Japan, Korea, Spain, Sweden, Switzerland, United Kingdom, United States	≈US$ 150 000 /year

and with the support, of the NEA. Such projects, primarily in the areas of nuclear safety and radioactive waste management, are one of the NEA's major strengths. All NEA joint projects currently under way are listed below.

• Extend the database for high burn-up fuel performance in reactivity-induced accident (RIA) conditions. • Perform relevant tests under coolant conditions representative of pressurised water reactors (PWRs).
• Define a format and collect software and hardware fault experience in computer-based, safety-critical NPP systems in a structured, quality-assured and consistent database. • Collect and analyse COMPSIS events over a long period so as to better understand such events, their causes and their prevention. • Generate insights into the root causes of and contributors to COMPSIS events, which can then be used to derive approaches or mechanisms for their prevention or for mitigating their consequences. • Establish a mechanism for efficient feedback of experience gained in connection with COMPSIS events, including the development of defences against their occurrence, such as diagnostics, tests and inspections. • Record event attributes and dominant contributors so that a basis for national risk analysis of computerised systems is established.
• Exchange scientific and technical information amongst decommissioning projects on nuclear facilities.
• Collect fire event experience (by international exchange) in the appropriate format and in a quality-assured and consistent database. • Collect and analyse fire events data over the long term with the aim to better understand such events, their causes and their prevention. • Generate qualitative insights into the root causes of fire events which can then be used to derive approaches or mechanisms for their prevention or for mitigating their consequences. • Establish a mechanism for the efficient feedback of experience gained in connection with fire including the development of defences against their occurrence, such as indicators for risk-based inspections. • Record characteristics of fire events in order to facilitate fire risk analysis, including quantification of fire frequencies.
Generate key information for safety and licensing assessments and aim at providing: • extended fuel utilisation: basic data on how the fuel performs, both at normal operation and transient conditions, with emphasis on extended fuel utilisation in commercial reactors; • degradation of core materials: knowledge of plant materials behaviour under the combined deteriorating effects of water chemistry and nuclear environment, also relevant for plant lifetime assessments; • man-machine systems: advances in computerised surveillance systems, virtual reality, digital information, human factors and man-machine interaction in support of upgraded control rooms. These activities are collectively known as "The Joint Programme".
• Collect and analyse occupational exposure data and experience from all participants to form the ISOE databases. • Provide broad and regularly updated information on methods to improve the protection of workers and on occupational exposure in nuclear power plants. • Provide a mechanism for dissemination of information on these issues, including evaluation and analysis of the data assembled, as a contribution to the optimisation of radiation protection.
• Provide a framework for multinational co-operation. • Collect and analyse common-cause failure (CCF) events over the long term so as to better understand such events, their causes and their prevention. • Generate qualitative insights into the root causes of CCF events which can then be used to derive approaches or mechanisms for their prevention or for mitigating their consequences. • Establish a mechanism for the efficient feedback of experience gained in connection with CCF phenomena, including the development of defences against their occurrence, such as indicators for risk-based inspections. • Record event attributes for quantification of CCF frequency.

MASCA-2 (Material Scaling) Project Contact: jean.gauvain@oecd.org Current mandate: June 2003-June 2006	Belgium, Canada, Czech Republic, Finland, France, Germany, Hungary, Japan, Korea, Russia, Slovak Republic, Spain, Sweden, Switzerland, United States	≈US$ 1 million/year
Melt Coolability and Concrete Interaction (MCCI) Project Contact: carlo.vitanza@oecd.org Current mandate: January 2002-December 2005	Belgium, Czech Republic, Finland, France, Germany, Hungary, Japan, Korea, Norway, Spain, Sweden, Switzerland, United States	≈US$ 1.2 million/year
Piping Failure Data Exchange (OPDE) Project Contact: jean.gauvain@oecd.org Current mandate: July 2005-July 2008	Belgium, Canada, Czech Republic, Finland, France, Germany, Japan, Korea, Spain, Sweden, Switzerland, United States	≈US$ 72 000 /year
PKL-2 Project Contact: miroslav.hrehor@oecd.org Current mandate: January 2004-December 2006	Belgium, Czech Republic, Finland, France, Germany, Hungary, Italy, Japan, Korea, Spain, Sweden, Switzerland, United Kingdom, United States	US$ 1.2 million/year
PSB-VVER Project Contact: miroslav.hrehor@oecd.org Current mandate: February 2003-December 2006	Czech Republic, Finland, France, Germany, Italy, Russia, United States	US$ 0.4 million/year
Rig of Safety Assessment (ROSA) Project Contact: miroslav.hrehor@oecd.org Current mandate: April 2005-December 2009	Belgium, Czech Republic, Finland, France, Germany, Hungary, Japan, Korea, Spain, Sweden, Switzerland, United Kingdom, United States	US$ 1 million/year
Studsvik Cladding Integrity Project (SCIP) Contact: carlo.vitanza@oecd.org Current mandate: July 2004-June 2009	Czech Republic, Finland, France, Germany, Japan, Korea, Spain, Sweden, Switzerland, United Kingdom, United States	≈US$ 1.6 million/year
SETH (SESAR Thermal-hydraulics) Project Contact: miroslav.hrehor@oecd.org Current mandate: April 2001-June 2006	Belgium, Czech Republic, Finland, France, Germany, Hungary, Italy, Japan, Korea, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States	US$ 0.9 million/year
Thermochemical Database (TDB) Project Contact: federico.mompean@oecd.org Current mandate: February 2003-February 2007	Belgium, Canada, Czech Republic, Finland, France, Germany, Japan, Spain, Sweden, Switzerland, United Kingdom, United States	≈€ 0.4 million/year

• Provide experimental information on the phase equilibrium for different corium mixture compositions that can occur in water reactors. • Generate data on relevant physical properties of mixtures and alloys that are important for the development of qualified mechanistic models.
• Provide experimental data on melt coolability and concrete interaction (MCCI) severe accident phenomena. • Resolve two important accident management issues: – the verification that molten debris that has spread on the base of the containment can be stabilised and cooled by water flooding from the top; – the two-dimensional, long-term interaction of the molten mass with the concrete structure of the containment, as the kinetics of such interaction is essential for assessing the consequences of a severe accident.
• Collect and analyse piping failure event data to promote a better understanding of underlying causes, impact on operations and safety, and prevention. • Generate qualitative insights into the root causes of piping failure events. • Establish a mechanism for efficient feedback of experience gained in connection with piping failure phenomena, including the development of defence against their occurrence. • Collect information on piping reliability attributes and influence factors to facilitate estimation of piping failure frequencies, when so decided by the Project Review Group.
• Investigate pressurised water reactor (PWR) safety issues by means of thermal-hydraulic experiments to be conducted at the *Primärkreislauf-Versuchsanlage* (primary coolant loop test facility) in Germany. • One category of tests focuses on boron-dilution issues. • A second type of test addresses potential accident conditions during shutdown (mid-loop operation).
• Provide the unique experimental data needed for the validation of thermal-hydraulic codes and to support refinements to safety assessment tools for VVER-1000 reactors.
• Provide an integral and separate-effect experimental database to validate code predictive capability and accuracy of models. In particular, phenomena coupled with multi-dimensional mixing, stratification, parallel flows, oscillatory flows and non-condensable gas flows are to be studied. • Clarify the predictability of codes currently used for thermal-hydraulic safety analyses as well as of advanced codes presently under development, thus creating a group among OECD member countries who share the need to maintain or improve technical competence in thermal-hydraulics for nuclear reactor safety evaluations.
• Assess material properties and determine conditions that can lead to fuel failures. • Improve the general understanding of cladding reliability at high burn-up through advanced studies of phenomena and processes that can impair fuel integrity during operation in power plants and during handling or storage. • Achieve results of general applicability (i.e. not restricted to a particular fuel design, fabrication specification or operating condition).
• Carry out thermal-hydraulic experiments in support of accident management at facilities identified by the NEA Committee on the Safety of Nuclear Installations (CSNI), such as those requiring international collaboration to sponsor their continued operation. • The first part of the programme addressing primary loop accidents has been completed. • The second part addressing data for computerised fluid dynamics (CFD) code validation for containment applications is under way.
Produce a database that: • contains data for all the elements of interest for radioactive waste disposal systems; • documents why and how the data were selected; • gives recommendations based on original experimental data, rather than on compilations and estimates; • documents the sources of experimental data used; • is internally consistent; • treats all solids and aqueous species of the elements of interest for nuclear waste storage performance assessment calculations.