

first phase of the planned annual refueling and maintenance work, having been given permission by the supervisory authority to divide the program into two parts. In addition to the normal inspection and maintenance work, as well as refueling, the first part of the program, completed in just nine days, included an inspection of the three-phase generator, which will undergo comprehensive maintenance during the second phase of the work, to be undertaken in the fall.

“The duration of the maintenance work on the generator would have been very difficult to fit into the maintenance timetable of EnBW Kraftwerke [EnBW Kernkraft’s parent company] in spring,” said Helmut Scherla, director of Neckar-1. “This is why, in consultation with regulatory authorities, we opted for the two-part annual maintenance. In this manner, we can conduct the necessary inspection and maintenance work and the fuel element replacement in good time and according to schedule and thus abide by our safety-oriented procedure for operating and maintaining our plant.”

#### AUSTRALIA

### OPAL reactor gets go-ahead to restart

John Loy, the head of the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA), has given the green light to the Australian Nuclear Science and Technology Organization (ANSTO) to begin the fueling of the OPAL reactor, following his approval of a modified fuel design. The research reactor has been out of operation since July 2007, when ANSTO discovered a partial displacement of some fuel plates during a routine fuel change.

Prior to the shutdown, the 20-MW reactor had operated for a year since beginning its commissioning procedure. After the shutdown, investigations carried out by ANSTO indicated that the problem was caused by a combination of factors, including inadequate fuel design and manufacture. These flaws allowed the drag force from the coolant flow, along with the normal vibrations present in the core, to displace some of the plates. Consequently, changes to the design were developed in order to avoid future plate movements, and in December 2007, a new design was submitted to ARPANSA. ANSTO’s submission included a root cause analysis and also outlined a procedure for taking the reactor back to power.

ARPANSA undertook a detailed review of the submission, for which it engaged external experts on fuel design and manufacture, as well as vibration. During the review, the regulator asked ANSTO to clarify a number of concerns and to undertake additional tests.

Loy said that he was satisfied with the



ARPANSA head John Loy (left) and Tony Irwin, manager of the OPAL reactor, inspect the proposed design change on a fuel assembly. (Photo: ANSTO)

modified fuel design and that the reactor could be operated without undue risk to the health and safety of people and to the environment. He did, however, propose additional conditions to the facility license that will require ANSTO to continue a regimen of fuel testing and to reexamine the design in its entirety within two years.

#### IAEA

### INIS backs up nuclear literature archive

A backup of the International Atomic Energy Agency’s unique collection of literature on nuclear science and technology, dating back to the 1940s, is being provided to the Central Physics Library of the University of Vienna, ensuring another important

level of protection for this information. The collection, which now totals more than 850 000 full-text documents, includes scientific and technical reports, conference proceedings, patents, theses, and preprints. Most of the documents, which until a decade ago would have been put into microfiche form, were provided by member governments, which continue to contribute fresh material.

The archive is managed by the secretariat of the International Nuclear Information System (INIS), which was set up by the IAEA in 1970. What is being backed up is nonconventional literature (NCL), also known as “grey” literature, that is not obtainable from commercial outlets and is no longer easily available from other sources. INIS also runs an electronic online database of bibliographic data. The two together are regarded as the most comprehensive nu-

clear knowledge repository in the world.

The transfer of the backup copy of NCL will be staggered. Early this year, an external hard disc containing 232 372 documents digitized in portable document format (PDF) was handed over to the library. It amounted to 256 gigabytes of data, constituting 40 percent of the total microfiche collection, digitized and converted into searchable PDFs. A second batch is due to be turned over in late June, with more to follow.

"The NCL collection consists of invaluable scientific and technical nuclear-related literature representing the intellectual knowledge and information of INIS member states," said Seyda Rieder, leader of the INIS database production and imaging group. "So in the event, however unlikely, that the INIS collection is destroyed or damaged, a copy can be recovered from this safe storage place in the IAEA's host country." The physics library is situated in Vienna's 9th District, less than 10 kilometers from IAEA headquarters.

Asked to explain the reason for the staggered transfer, Rieder said that INIS had initially converted all of its full-text documents from paper into microfiche for safer long-term storage. This conversion process ceased in 1997. Later that year, following an agreement between the IAEA and the then Austrian Ministry of Science and Transport, a copy of the NCL microfiche collection was given to the Austrian government, not as a backup but as a gift.

"What is being backed up, batch by batch," Rieder explained, "is the microfiche collection in digitized PDF form. Digitizing the collection is a major and time-consuming project, so the handover will probably take the next two to three years to complete."

INIS information officer Elisabeth Dyck added that all materials received since 1997 are digitized as they come in. They are then accessible as PDFs via the INIS online database and also on CD-ROMs. "The CDs are very popular," Dyck said. "Subscribers to

the grey literature—that is, the NCL—who do not have [an] adequate Internet connection have always preferred to use the CD-ROM version." She said that as of the end of April 2008, a total of 402 CD-ROMs have been produced.

The database now contains 2.9 million bibliographic citations and abstracts of journal articles, scientific and technical reports, conference papers, books, patents, theses, laws, regulations and standards, and Web documents. It includes publications in 63 languages, and most have an abstract in English. It is constantly updated, and new records are being included at a rate of around 100 000 a year, according to Rieder.

Like the NCL, the bibliographic information provides scientists, university students, nuclear researchers, and others in the 118 INIS member countries, as well as 23 international organizations (also INIS members), with research and technical data that facilitate their work. The resource is also seen as a vehicle for knowledge sharing, which is a priority concern for the IAEA.

Access to the INIS database is provided to 350 universities in INIS member states on a complimentary basis. These universities, in 64 countries, currently offer free access to their students and academics. Others can also obtain access, currently on a subscription basis. Potential institutional and individual users in INIS member states are advised to contact the INIS liaison officer at the national INIS center (<[www.iaea.org/inisnkm/membercontacts/mcontacts.html](http://www.iaea.org/inisnkm/membercontacts/mcontacts.html)>). South Korea maintains a "mirror site" that enables Korean users and those in neighboring countries faster access to the database.

Free access to the database may be in the offing. "At the end of last year, a technical committee agreed and recommended to make the INIS online database available publicly and cost-free," Anatoli Tolstenkov, head of the INIS unit, told *Nuclear News*. "We will start with a pilot project for select-

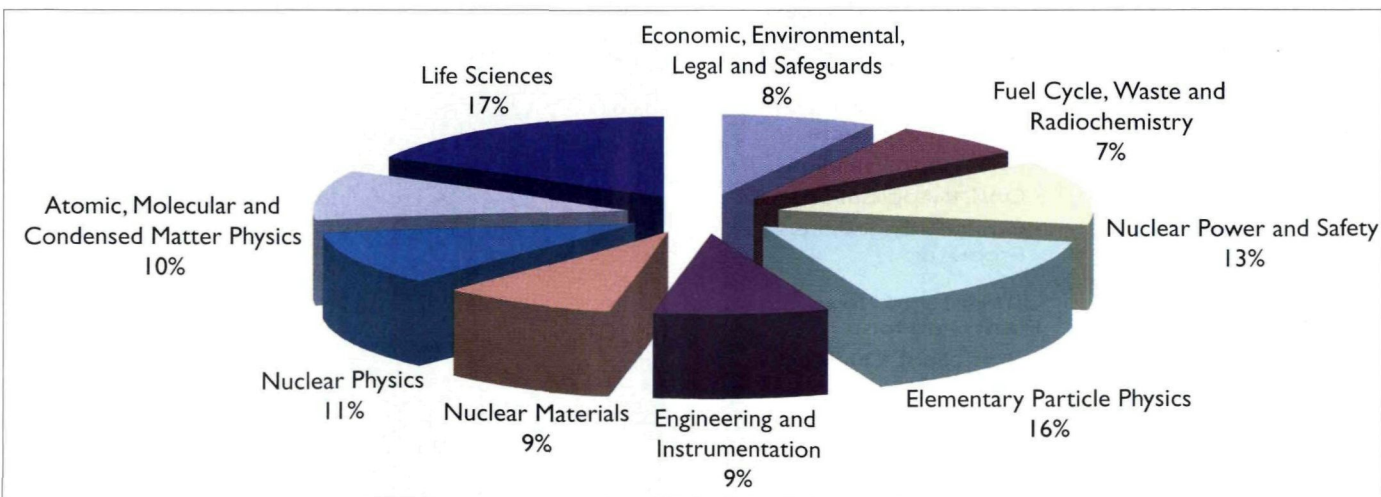
ed countries, and provided that this trial is successful, it is planned to offer free, open access to INIS bibliographic records and full-text documents in 2009."—*Gamini Seneviratne*

## Safety convention review finds gains, shortcomings

The fourth review meeting of the international Convention on Nuclear Safety (CNS), held April 14–25 in Vienna, identified the regulatory framework as an area that needs improving in many countries, and also agreed on a number of improvements to the review process itself, according to the summary report released at the close of the 14-day meeting. The CNS, which was adopted in 1994 and came into force two years later, has now been ratified by 60 countries, including all those with nuclear power programs, plus Euratom.

Review meetings, which take place every three years, are restricted to the contracting parties to the convention. The fourth review was attended by delegations from 54 countries: Argentina, Armenia, Australia, Austria, Belarus, Belgium, Brazil, Bulgaria, Canada, Chile, China, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, India, Indonesia, Ireland, Italy, Japan, Korea, Latvia, Lebanon, Lithuania, Luxembourg, Macedonia, Malta, Mexico, the Netherlands, Nigeria, Norway, Pakistan, Peru, Poland, Portugal, Romania, Russia, Singapore, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom, and the United States. The six absentees were Bangladesh, Kuwait, Mali, Moldova, Sri Lanka, and Uruguay.

The review process is based on discussions of national reports by the representatives of the parties. The reports cover the steps and measures taken by the countries to implement their obligations under the



INIS database subject areas and their percentage of total (Chart: IAEA)