

Licensing Work at Yucca Mountain Coming to an End?

All work on licensing the U.S. Department of Energy's high-level waste/spent nuclear fuel repository at Yucca Mountain, Nev., was to come to an end in December, according to an internal DOE memo. The memo, which outlines an agreement between the DOE and the White House Office of Management and Budget, also stated that target funding for the program in fiscal 2011 (which begins October 1, 2010) will be some \$46 million, less than a quarter of the fiscal 2010 budget of \$197 million. In addition, the memo states that no funds at all will be sought for the program in fiscal 2012 through 2015. The fiscal 2011 funding will be used to support the archiving of program data, site remediation, and worker transition.

International Isotopes Inc. Reaches Agreement with N.M. Environment Dept.

In late October, International Isotopes Inc., the Idaho-based company that wants to build a uranium de-conversion and fluorine extraction processing facility near Hobbs, N.M., reached an agreement with the state of New Mexico Environment Department that establishes mutually agreed upon license limits for the facility. The agreement stipulates that no uranium waste from the facility will be disposed within the state of New Mexico. The license application for the facility was expected to be filed with the U.S. Nuclear Regulatory Commission before the end of 2009.

The planned facility, to be located about 15 miles west of Hobbs, will consist of both depleted uranium de-conversion and fluorine gas extraction processes. According to a company press release, International Isotopes "holds patents that give it exclusive rights to the Fluorine Extraction Process, which produces high-value, high-purity gases in conjunction with uranium de-conversion and thus provides a key commercial advantage to the de-conversion plant." Once the fluorine gases are extracted from the depleted uranium hexafluoride tails, the remaining uranium would be converted to a more stable uranium oxide form for disposal as low-level waste. Construction of the facility is planned for the third quarter of 2011, after the NRC licensing process is complete, and operations are expected to begin in 2012.

The Louisiana Energy Services uranium enrichment plant, currently under construction, is located nearby in Eunice, N.M.

EPRI Releases Report on Low-Level Radiation Effects

The Electric Power Research Institute has released a new report, "Evaluation of Updated Research on the Health Effects and Risks Associated with Low-Dose Ionizing Radiation" (EPRI Technical Report No. 1019227).

The EPRI research team reviewed more than 200 peer-reviewed publications as part of its effort. The report summarizes background information related to the nature of radiation, sources of human radiation exposure and radiation standards, and occupational exposures in the nuclear industry. The report briefly summarizes the health effects of exposures to low levels of radiation based on the current scientific understanding of the mechanisms of risk, describes typical epidemiological approaches to assessing health effects, and discusses risk modeling applied to radiation epidemiological data.

Among the key conclusions of the report are the following:

- Recent radiobiological studies in the low-dose region demonstrate that the mechanisms of action for many biological impacts are different than those seen in the high-dose region. When radiation is delivered at a low dose-rate (i.e., over a longer time period), it is much less effective in producing biological changes than when the same dose is delivered in a short time period. Therefore, the risks due to low dose-rate effects may be overestimated.
- From an epidemiological perspective, individual radiation doses of less than 10 rem in a single exposure are too small to allow detection of any statistically significant excess cancers in the presence of naturally occurring cancers. The doses received by nuclear power plant workers fall into this category because exposure is accumulated over many years, with an average annual dose about 100 times less than 10 rem.
- Research into the health effects of low-dose radiation should continue and should use holistic, systems-based approaches to develop models that define the shape of the dose-response relationships in the low-dose regions. Risk models should fuse the latest radiobiology and epidemiology results to produce a comprehensive understanding of radiation risk that addresses both damage (likely with a linear effect) and response (possibly with non-linear consequences).

According to EPRI, while recent scientific advances have provided much new information in the low-dose region, they have also raised additional research questions. New research in areas such as systems biology can provide mechanistic understandings of low-dose and

low dose-rate effects needed to estimate human cancer risks. Therefore, it is essential that research into low-dose radiation biology, dose reconstruction, and epidemiology continue in order to provide opportunities for continuous improvement in the scientific support of future regulatory and policy actions. Specific research needs in the areas of radiobiology, radiation epidemiology, and communication issues are described in the report.

EPRI says the research team will continue monitoring radiobiology and epidemiological evidence to assess potential impacts on human risk management in the nuclear power industry and to ensure adequate radiological protection for workers, the public, and the environment.

The full report can be downloaded from the EPRI web site at www.epri.com. In the search box, enter the following product number:1019227.

D&D Updates

- Decommissioning work at the Rancho Seco nuclear power plant has been completed, and the U.S. Nuclear Regulatory Commission released most of the site for unconditional use in early October. Six acres of the 80-acre site will remain under NRC license; that area contains a low-level waste storage facility and the independent spent fuel storage installation (ISFSI). The 913-MWe plant started commercial operation in 1975 and was shut down in 1989 by a voter referendum, after a spotty operating career. Originally intending to put the unit into SAFSTOR, the plant owner, the Sacramento Municipal Utility District, decided instead in the late 1990s to begin “incremental” decommissioning of the plant. Fuel was transferred to the ISFSI in 2002.
- Construction of the Hanford’s Waste Treatment Plant (WTP), the four-building facility designed to treat and vitrify the 53 million gallons of radioactive waste contained in the 177 underground storage tanks at the site, reached the half-way point in October. The plant’s “size and first-of-a-kind nature has created design, procurement, and construction challenges,” noted Shirley Olinger, manager of the U.S. Department of Energy’s Office of River Protection, which is overseeing the project. “We have worked closely with our regulators and stakeholders throughout the design and construction process to ensure the plant meets or exceeds all technical and quality standards. Through this collaboration, we’ve surpassed the midway point, and we will take it successfully to the end.” Construction of the facility began in 2001. The plant will be

operational in 2019 (some eight years beyond its original completion date of 2011).

International Briefs

- Removal of the core internals of Germany’s Stade nuclear power plant was completed at the end of August. Stade, a 630-MWe pressurized water reactor, was commissioned in 1972 and was shut down in November 2003. E.ON, the plant owner, hopes to have the decommissioning of the plant completed by 2015.
- In October, the French nuclear regulator, the Nuclear Safety Authority, stopped all decommissioning work involving the handling of fissile material at the ATPu plutonium fuel fabrication plant at Cadarache after learning that operator Areva had underestimated the amount of plutonium in the facility’s glove boxes by nearly a factor of five. The plant started operations in 1964, had shut down in 2003, and then had reopened briefly to fabricate mixed-oxide fuel test assemblies using former weapons plutonium from the United States. The original estimate of plutonium in the glove boxes was 8 kilograms; to date, however, some 22 kg has been located, and now the total is projected at 39 kg.
- The European Commission has proposed an additional €300 million (about \$450 million) to support decommissioning Bulgaria’s four Kozloduy units and to mitigate the economic consequences of that action during the 2010–2013 time frame. This money is in addition to the €550 million (about \$825 million) that the European Union will have provided through the end of 2009. In 1999, Bulgaria agreed to close the four units in return for admission into the European Union. Two units were shut down in 2002 and the other two, in 2006. The country joined the Union in January 2007.
- France has returned compacted metallic waste resulting from the reprocessing of spent fuel to the countries of origin, Switzerland and the Netherlands, for storage. The return of the metallic waste is dictated by French law. Metallic waste was shipped in June and October to the Central Organization for Radioactive Waste (COVRA) storage facility in the Netherlands, and in October to Switzerland’s interim waste storage facility near Wurenlingen.
- The U.K. Decommissioning Authority has decided that the Sellafield Mixed-Oxide (MOX) Plant should continue operating. The decision was based on improvements in plant performance since Nuclear Management Partners (a consortium of Washington International Holdings, Amec, and Areva) took over management of the plant. The consortium became Sellafield’s “parent body” in November 2008. ■