

To: Jim Mehl, ERU Supervisor
From: Zack Clayton, Rad Coord
Subject: September Monthly Report
Date: October 8, 2010

Beans:

Training: 1
Drills 1
Meetings: 1
Technical Assistance: 1
Public Assistance: 4

Web Page Hits: There were 33 page views for September

Coming Attractions:

10/6 WG
10/12 URSB
10/18 IZRRAG Training
10/19-21 Perry fundamentals
10/26 Sampling training
10/28 NEPAC
11/10 IZRRAG Table Top

Facility Updates:

Davis-Besse Nuclear Power Station

Davis-Besse operated at full power for the month of September.

On September 3 Davis-Besse reported the August results of groundwater sampling for tritium and provided comparison with July results. Three of 4 monitoring wells still showed results above 2000 picoCuries/liter at that time. On the 30th the September test results were received. The following are the groundwater results:

Well	July	August	September
105 A	3242	2239 pCi/l	2065 pCi/l
MW30S		1689 pCi/l	1828 pCi/l
MW31S		1557 pCi/l	2043 pCi/l
MW32S		1516 pCi/l	1690 pCi/l

MW37S	2914	2141 pCi/l	2061 pCi/l
MW34S	3236	2260 pCi/l	2311 pCi/l

Monthly tests will continue until all test results are below 2000 picoCi/liter, and at least thru the end of the calendar year.

Perry Nuclear Power Plant

Perry operated at full power for the month of September.

At 11:24 AM September 1 a truck driver attempted to enter the protected area of Perry Nuclear Power Plant to make a delivery. A search of the truck revealed a Colt Defender .45 caliber handgun in a storage compartment in the berthing section of the vehicle. The handgun contained a fully loaded magazine and had a round in the chamber. A second loaded magazine was found along with the weapon.

Plant security detained the driver and contacted the Lake County Sheriff's office which subsequently contacted the Painesville, Ohio FBI Office. The North Perry Police Department responded to the site. The driver did not have a permit to carry a concealed weapon. However, since the weapon was not accessible from the driver's seat it was determined that no laws had been broken. The driver was released.

The utility made notifications to the NRC and State within the required time frames.

Beaver Valley Power Station

The latest tritium sampling results have been received for Beaver Valley on September 7. Four of the seven new wells had elevated results above the 2,000 pCi/L notification limit but below the 30,000 pCi/L environmental monitoring limit imposed by the NRC. Wells downstream from the site show decreased levels that are below the EPA limits. BVPS voluntarily notified the NRC of these results.

Beaver Valley Unit I

Beaver Valley Unit I operated at full power for September.

Starting September 7, the Unit 1 computer, including ERDS and some of the fields in E-data, will be out of service for the next four weeks. The computer is being replaced. Should an event classified as an Alert or higher occur the plant has developed a contingency plan to transmit information to the NRC. This plan consists of sending additional staff to the Unit 1 control room to relay the required information to the NRC via telephone. The TSC and EOF will still relay information to offsite response

organizations should an event classified as an Alert or higher occur. This will not affect the Unit 2 plant computer or meteorological information as it is provided from other sources. The NRC has been notified as required. See Event Number: 46232

Beaver Valley Unit II

Beaver Valley Unit II operated at full power for September

Fermi II

Fermi operated at full power for September.

Portsmouth Gaseous Diffusion Plant

There were no reports for Portsmouth in September.

Activity:

- 9/8 The Working Group met at Ohio EMA to share agency updates. One of the Agenda items was a discussion of disposal of contaminated debris from an accident. Sharon Gbur from DSIWM graciously came to the meeting and answered questions about how ODH and OEPA might interact to handle debris from an accident. The IZRRAG group has a better understanding of how this will be handled but it will still probably be done on an ad hoc basis as current law prohibits disposal of radioactive waste in Ohio. There was also discussion of the Perry dry run exercise.
- 9/28 The Perry evaluated exercise started at about 8:30 with our notification of the Alert. This exercise ran very smoothly for the dose assessment agencies and the interaction of the Columbus and Lake County Dose assessment modelers. There was time to view the procedures critically and several items were identified for correction prior to the next exercise.
- 9/29 The RAT met for training at the Groveport Field Office. This included instrument familiarization, a radiological subject quiz, and a vegetation sampling drill.

Office Issues:

None at this time.

NRC Reports and Statistics:

September operating power levels

Date	BV1	BV2	DB	Fermi2	Perry
1	100	100	100	100	100
6	100	100	100	100	100
13	100	100	100	100	100
20	100	100	100	100	100
27	100	100	100	100	100
30	100	100	100	100	100

Information Notices

The ADAMS Accession documents are publicly available and will be accessible via the public web site Electronic Reading Room in the Agency Document Access and Management System (ADAMS), <http://www.nrc.gov/reading-rm/adams.html> or to access generic communications files on the NRC Homepage: <http://www.nrc.gov/reading-rm/doc-collections/gen-comm/reg-issues/2010/>.

To access these documents use the ADAMS Accession number listed with the title.

This is in the format of : ML #####

Fermi Inspection Report 2010 403 - Cover Letter Only

ADAMS Accession No. ML102440361

Fermi: NRC Inspection Report 050-00016/10-09(DNMS)- ENRICO FERMI UNIT 1

ADAMS Accession No. ML102450371

Beaver Valley Units 1 and 2: Mid-Cycle Performance Review and Inspection Plan

ADAMS Accession No: ML102440639

Mid-Cycle Performance Review and Inspection Plan - Perry Nuclear Power Plant

ADAMS Accession No. ML102440084

Mid-Cycle Performance Review and Inspection Plan - Davis-Besse Nuclear Power

Station. ADAMS Accession No. ML102440198

Mid-Cycle Performance Review and Inspection Plan - Fermi Power Plant, Unit 2

ADAMS Accession No. ML102440097

PERRY: PERRY NUCLEAR POWER PLANT - NRC ISFSI SECURITY INSPECTION
REPORT 05000440/2010405(DNMS)

ADAMS Accession No ML102510294

PDF version Information Notice 2010-18, Generic Issue 199, "Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States on Existing Plants, dated September 2, 2010. ADAMS Accession No (ML101970221)

PERRY: PERRY NUCLEAR POWER PLANT - NRC ISFSI SECURITY INSPECTION
REPORT 05000440/2010405(DNMS)

ADAMS Accession No ML102510294

Davis-Besse: Receipt and Availability of the License Renewal Application for the Davis-
Besse Nuclear Power Station Unit 1. ADAMS Accession No. ML102300325

Fermi 2 – Correction Letter – Withdrawal of License Amendment Request Regarding
Cyber Security Plan. ADAMS Accession Number: ML102380507

INFORMATION REQUEST TO SUPPORT UPCOMING PROBLEM IDENTIFICATION
AND RESOLUTION (PI&R) INSPECTION AT THE PERRY NUCLEAR POWER PLANT

ADAMS Accession Number ML102560385

NOTICE OF FORTHCOMING MEETING WITH FIRSTENERGY NUCLEAR
OPERATING COMPANY, BEAVER VALLEY POWER STATION, UNIT NO. 2
(ME1079). ADAMS Accession: ML102510780

Fermi 2 – Request for Additional Information for License Amendment Request to Revise
the Core Spray Flow Requirements.

ADAMS Accession Number: ML102430171

Davis-Besse: Maintenance of Reference Materials at the IDA Rupp Public Library in
Regards to the Review of the Davis-Besse Nuclear Power Station, Unit 1, License
Renewal Application. ADAMS Accession No. ML102450342

Davis-Besse: Maintenance of Reference Materials at the Toledo-Lucas County Public
Library in Regards to the Review of the Davis-Besse Nuclear Power Station, Unit 1,
License Renewal Application. ADAMS Accession No. ML102450707

PDF version Information Notice 2010-17, Common Cause Failure of Boiling-Water
Reactor Recirculation Pumps with Variable Speed Drives, dated September 10, 2010

ADAMS Accession No (ML101330321)

RECEIPT AND AVAILABILITY OF THE LICENSE RENEWAL APPLICATION FOR THE
DAVIS-BESSE NUCLEAR POWER STATION, UNIT 1.

ADAMS Accession No. ML102300325

Davis-Besse Nuclear Power Station, Unit 1 - Relief Request RR-A34, 10 CFR 50.55A
request for alternate repair methods for reactor pressure vessel head control rod drive
mechanism penetration nozzles – ADAMS Accession no. ML102571569

PDF version, RIS 2010-09, Radiation Safety Officers for Medical-Use Licenses Under
10 CFR Part 35, dated September 9, 2010. ADAMS Accession No. (ML082680010)

Perry Nuclear Power Plant - NRC Material Control and Accounting Program Inspection Report 05000440/2010406(DRP) - Cover Letter Only –
ADAMS Accession no. ML102660581

Beaver Valley Power Station Unit 2: NRC Examination Report 05000412/2010301
ADAMS ACCESSION NO. ML102670470

Fermi 2 – Evaluation of In-Service Testing Program Relief Requests VRR-011, VRR-012, and VRR-013. ADAMS Accession Number: ML102360570

PDF version, of RIS 2008-05, Rev. 1, Lessons Learned to Improve Inspections, Tests, Analyses, and Acceptance Criteria Submittal, dated September 23, 2010
ADAMS Accession no. (ML102500244)

PDF version Information Notice 2010-19, Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States, dated September 16, 2010
ADAMS Accession no. (ML102160735)

PDF version Information Notice 2010-20, Turbine-Driven Auxiliary Feedwater Pump Repetitive Failures, dated September 24, 2010 ADAMS Accession no. (ML101670005)

NUCLEAR POWER: Plant with cracked lid can operate for another year -- NRC (09/13/2010)

The Davis-Besse nuclear power plant near Toledo, Ohio, can operate for a year with a cracked lid while it awaits a replacement, the Nuclear Regulatory Commission said last week.

NRC is still learning the cause of the cracks but said that its schedule of inspections makes the plant safe to operate. The NRC inspection team reported its findings Thursday and will issue a final report in 45 days.

The plant has been shut down for three months this year and was shut down for two years earlier in the decade for the same problem.

The agency said it is confident that FirstEnergy Corp., which owns Davis-Besse, is committed to safety. NRC said the rigorous inspection showed that repairing had fixed all cracks and eliminated even future cracks.

"We saw several flaws ... that we probably could have evaluated as acceptable and could have just buffed out," said Barry Allen, Davis-Besse's site vice president. "But our strategy was to modify them. We had to satisfy ourselves that Davis-Besse was safe to operate."

The same reactor was shut down eight years ago after careless maintenance led to corrosion of the reactor lid. A replacement lid was put in place, which also started cracking unexpectedly after six years.

FirstEnergy plans to replace this lid in October 2011 (John Funk, [Cleveland Plain Dealer](#), Sept. 10). -- **GV**

FirstEnergy acted appropriately over Davis-Besse event, NRC says

By TOM HENRY

BLADE STAFF WRITER

OAK HARBOR, Ohio - FirstEnergy Corp. acted responsibly after learning that Davis-Besse's latest nuclear reactor head was breaking down faster than anyone expected.

But the utility probably should have inspected the device more closely when buying it in 2002 from a mothballed plant in Midland, Mich., owned by Consumers Power, the forerunner to Consumers Energy, according to a Nuclear Regulatory Commission document that served as the basis for a public meeting at Oak Harbor High School Thursday.

The meeting was called to discuss the results of a special NRC inspection team's investigation into the unexpected cracks found in Davis-Besse's latest reactor head, a case which had similarities to the historic near-rupture of the plant's head in 2002.

The difference was that there was no evidence of a cover-up in the latest episode, according to the NRC, which also has made it clear that the amount of acid leaking out of the reactor paled in comparison to what happened eight years ago. The 2002 saga led to a record \$34 million in fines against FirstEnergy for withholding information from the government, as well as the conviction of two former employees. Both convictions were upheld by an appeals court in July.

In both the 2002 and latest events, nozzles in the nuclear reactor head had cracks.

The latest event appeared to be simple premature aging of the massive steel lid, exacerbated by the Davis-Besse reactor's unusual heat, the agency has said.

Records show Davis-Besse long has had one of the nation's hottest-operating reactors. According to the document, Mel Holmberg, a senior NRC metallurgical engineer and the special inspection team's leader,

said poor carbide distribution was a "significant contributing cause" which kept the latest reactor head from being as tough as FirstEnergy and the NRC believed it was.

The Akron-based utility and the government agency said in the past they thought it could last 15 years. It began breaking down after only six, being put into service when Davis-Besse emerged from its record two-year outage in 2004. The metal lid had been in storage for 25 years before that.

The latest reactor head, like its predecessor, had nozzles made of an inferior metal alloy called Alloy 600. The nuclear industry is in the process of phasing out that alloy in favor of the more robust Alloy 690.

Among those representing the NRC at Thursday's meeting was the agency's Midwest regional administrator, Mark Satorius. He said plant safety was not compromised, that FirstEnergy identified hairline cracks and leakage in its early stages "well before structural integrity was challenged."

The problem was found after FirstEnergy shut down Davis-Besse on Feb. 28 for normal refueling and maintenance. Twenty-four of the existing head's 69 nozzles were found to have flaws on them, some so small they could only be detected with ultrasonic equipment.

Repairs have been made.

Contact Tom Henry at:
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or 419-724-6079.

AREVA CEO: Nuclear Facility Plan Moving Slowly Forward

by Frank Lewis

09.10.10 - 11:39 pm

PIKETON — It has been 15 months since a consortium announced plans to build a nuclear power plant at Piketon.

On June 18, 2009, dignitaries from the federal, state, regional, and local entities gathered at the Piketon reservation to announce a group made up of Duke Energy, AREVA, UniStar Nuclear Energy, USEC Inc., and Southern Ohio Diversification Initiative, would work with the Department of Energy to gain the permit to build the plant.

The Portsmouth Daily Times caught up with AREVA Chief Executive Officer Jacques Besnainou on Thursday in Piketon, and in an exclusive interview, the executive talked about the status of that facility.

“We are still in the early phase of development,” Besnainou said during the opening of the DUF6 project. “We are looking at the early site permit and have applied for it. ... This is an example of AREVA here, for a six-year effort. It’s very difficult. It’s the first of its kind in the U.S. We are turning a liability into an asset.”

Besnainou said AREVA is selling hexafluoride product and will be doing the same with nuclear power with the new plant to be built, hopefully in the next several years.

“Our plan is to build an energy block, which will be a new nuclear plant and renewable energy as well,” Besnainou said.

At the time of the original announcement, Jim Rogers, chairman of the board, president and chief executive officer of Duke Energy, explained the need for the facility.

“We face the indisputable fact that our nation and our world are transitioning to a low-carbon future,” Rogers said. “Today, with the creation of this clean energy park demonstration project — the partners in this alliance, the state of Ohio and our country, are edging a little further across the bridge to that future.”

Gov. Ted Strickland was on board with the project in its early stages. “I think it means a lot to the country. It means a lot to the State of Ohio, but it especially means a lot to southern Ohio,” Strickland told the Portsmouth Daily Times. “Because this facility, when it is built, will create jobs, good-paying jobs. It will produce lots of energy that is clean energy. And it will, I think, help revitalize the economy in this part of the state that has suffered so grievously for so many years with job loss.”

If the plant is built it is expected to mean some 4,000 to 5,000 new jobs on the site and residual jobs as well.

U.S. Deputy Secretary of Energy Daniel B. Poneman was in Piketon on Thursday at the opening of the Depleted Uranium Hexafluoride Conversion Plant (DUF6), which will create some 160 advanced energy jobs in Piketon as well.

Frank Lewis may be reached at (740) 353-3101 Ext. 232 or

Public comment sought on nuclear power plant

by G. Sam Piatt

09.12.10 - 11:00 pm

The public will have an opportunity to comment on various matters at a meeting of the Public Utilities Commission of Ohio scheduled for Monday at PUCO offices in Columbus.

But electric consumers and some environmental advocates are urging the commission to schedule another hearing, in Cincinnati, where Duke Energy provides electric service, to comment specifically on a proposed nuclear power plant to be built at Piketon.

A group of advocates, in late August, filed a request with the commission saying Monday's hearing in Columbus shouldn't be a substitute for a local public hearing in Duke's service territory.

Wording in the filing included the statement: "It is reasonable to allow those customers, who would both pay for and reside near Duke's nuclear plant, to provide comment on whether the need for the plant is real, and to provide comments at a session convenient to their homes and businesses."

Duke operates two nuclear electric-producing plants, one in North Carolina and one in South Carolina. The one proposed for Piketon, where, from 1954 to 2001, the Portsmouth Gaseous Diffusion Plant enriched uranium for atomic bombs and later for nuclear reactors in power plants, would be the company's first in Ohio.

The company does, however, provide electricity to 685,000 residential and commercial customers in southwest Ohio, according to the firm's Web site on the Internet.

In June of 2009, at Piketon, Duke joined with USEC Inc., Areva Inc. and UniStar Nuclear Energy Inc. in the Southern Ohio Clean Energy Park Alliance.

The alliance is evaluating the U.S. Department of Energy Portsmouth site in Piketon as a potential location for a new nuclear power plant. Right now the alliance is involved in preparing a plant siting study and licensing documents for the U.S. Nuclear Regulatory Commission.

Duke Energy is the third largest electric power holding company in the United States based on kilowatt-hour sales. It serves approximately four million customers in five states, including Ohio, Kentucky and Indiana in addition to the Carolinas.

Duke officials have said it is doing studies to determine if Piketon is a suitable site for a nuclear power plant, and has made no decision on whether one will be built there.

The process takes years. Duke would welcome public comment on the matter, but doesn't believe additional public comment is necessary now, Duke spokeswoman Sally Thelen told the Dayton Daily News on Thursday.

The utilities commission is not required to grant a Cincinnati hearing. It issued a statement through commission spokeswoman Shana Eiselstein saying it will rule later on the filing of the request by Cincinnati-area consumer advocates.

G. SAM PIATT can be reached at (740) 353-3101, ext. 236.

NUCLEAR POWER: NRC must confirm license review power, timelines -- Inhofe (09/15/2010)

Katherine Ling, E&E reporter

The five members of the Nuclear Regulatory Commission must quickly resolve their differences on their ability to affect the timeline of new nuclear reactor license reviews, the ranking member of the Senate Environment and Public Works Committee wrote in a letter yesterday.

At issue is a mandatory public hearing on new reactor license applications that is required by law. It is deemed necessary for public involvement and transparency by nuclear watchdog groups but redundant and time wasting by the industry. The public hearing is separate from the contested hearings on technical issues of the license reviewed by the Atomic Safety and Licensing Board.

When the mandatory hearing must take place and how much influence it has over the licensing process appear to be in dispute among the five NRC commissioners, much to the dismay of Environment and Public Works Committee ranking member James Inhofe (R-Okla.).

NRC Chairman Gregory Jaczko told Inhofe in a follow-up **letter** to an oversight hearing in the committee last March that NRC is "currently reviewing what actions the commission will take in a mandatory hearing and how that action will relate to the [construction and operating] license decisions."

But the other four NRC commissioners sent a **supplemental answer** to Inhofe stating that the five-member commission must have a "favorable decision" about any issues brought up in a mandatory hearing before a reactor license is issued, and therefore they do have influence over combined operating and construction license reviews (COL).

"We agree that the commission has a role in the issuance of a COL," Commissioners Kristine Svinicki, George Apostolakis, William Magwood and William Ostendorff wrote in the supplemental letter.

"The commission fully understands the interest various stakeholders have in assuring that the agency conducts mandatory hearings in a predictable manner" and will consider timelines or milestones as the procedures for the mandatory hearings are decided, the four commissioners said.

Inhofe has repeatedly voiced his "dismay" that while the NRC new reactor review process is about three years old, the commission has not provided any sort of timeline for when the first review may be finished. Inhofe has pushed NRC for an efficient and relatively certain timeline for the license review process.

Several iterations of climate change legislation have included the elimination of the mandatory hearing as part of their nuclear titles, something the industry and Inhofe supports but nuclear watchdog groups warn is dangerous for safety (*E&E Daily*, May 13).

The commission's apparent indecision does not send the right signals to the investment community, Inhofe said in the **letter** he sent to Jaczko yesterday.

"The mandatory hearing is potentially the last regulatory hurdle prior to the issuance of a license and may delay the issuance of new plant licenses," Inhofe said.

"The seriousness with which the commission manages the critical path nature of this process will signal to stakeholders whether it is committed to providing the 'the best possible management and administration' or whether 'regulatory risk' will continue to be cited as a business risk to would-be nuclear investors," he said.

An NRC spokesman said Jaczko gave a general response to Congress on behalf of the commission, and a week later, other commissioners offered a more detailed answer regarding how they thought that process could work.

"The issue is before the five commissioners for a formal vote and commission decision," spokesman Eliot Brenner said.

Jaczko also believes a legislative-style approach to conducting the mandatory hearing -- supported by Inhofe and the Bipartisan Policy Center -- "has merit," Brenner said.

[Click here](#) to read Jaczko's letter.

[Click here](#) to read the supplemental letter.

[Click here](#) to read Inhofe's letter.

NUCLEAR ENERGY: U.S. spent-fuel recycling a bad bet in the near term -- MIT (09/16/2010)

Katherine Ling, E&E reporter

The United States should focus on a "once through" nuclear fuel cycle for several decades, since reprocessing and recycling technology offer minimal benefits, Massachusetts Institute of Technology researchers say in a report released today. Current technology -- which uses a light water reactor to burn enriched uranium fuel through a single cycle before spent fuel is stored -- is the "preferred economic option," the report says. This is the best near-term option because there is no constraint on uranium, it says.

But the United States must start spending at least \$1 billion a year on researching a broader range of fuel cycle technology and waste management options, the report says. "A key message from our work is that we can and should preserve our options for fuel cycle choices by continuing with the open fuel cycle, implementing a system for managed [light water reactor] spent fuel storage, developing a geological repository, and researching technology alternatives appropriate to a range of nuclear energy futures," it says.

The report was sponsored by some of the nuclear industry's most powerful players -- Areva, GE-Hitachi, Westinghouse, EnergySolutions and the Nuclear Energy Institute -- but its conclusions are at odds with some of their goals, including starting a near-term U.S. reprocessing industry.

The report does back the acceleration of incentives for the first seven to 10 new U.S. nuclear plants and industry's preference to create a quasi-government corporation to manage the waste. The corporation should have the authority to select a repository site, control billions of dollars in the Nuclear Waste Fund, negotiate waste removal with private companies and maintain continuous long-term management, the report says. The corporation, it adds, should also link decisions on fuel cycle technology and risk-informed waste management.

"The U.S. classifies many radioactive wastes by source rather than by hazard," the report says. "This has already created gaps in disposal pathways for wastes and this

problem will be exacerbated with alternative fuel cycles."

The report also recommends more research on hard-spectrum light water reactors and fast reactors that use low-enriched uranium, as well as more study of the safety of long-term waste storage.

Edwin Lyman, a senior scientist at the Union of Concerned Scientists, said while he is not certain about the promotion of fast reactors or hard-spectrum light water reactors -- which have "challenging safety issues" -- the report gets the most immediate concerns right.

"The findings with regard to the marginal benefits to reprocessing and recycling for light water reactors, the availability of uranium to support the 'nuclear renaissance' and the inability of fast reactor fuel cycle to reduce transuranic inventories for at least 90 years -- we think these are all good," Lyman said.

The Obama administration is following a policy path for nuclear R&D programs as is recommended in the report, although it is providing significantly less funding.

The White House is also awaiting recommendations from a panel commissioned by President Obama to consider a range of options for managing nuclear waste, including reprocessing, storage, transportation and advanced reactors to burn radioactive particles at a higher rate.

NUCLEAR: MIT report endorses centralized interim storage for spent reactor fuel (09/17/2010)

Peter Behr, E&E reporter

A Massachusetts Institute of Technology task force report called yesterday for the United States to create a few centralized storage sites for spent nuclear reactor fuel in the next decades, while researching new reactor designs that could reduce the challenges of permanent geological burial of nuclear wastes.

The report, "The Future of the Nuclear Fuel Cycle," co-chaired by MIT professors Mujid Kazimi, Ernest Moniz and Charles Forsberg, also concludes that worldwide supplies of uranium will be sufficient to serve a tenfold increase in light water reactors, each operating for 60 years. "There is no shortage of uranium resources that might constrain future commitments to build new nuclear plants for at least much of this century," the report says.

That judgment leads to another: that the United States and other countries should continue to rely for decades on the "once through" open fuel cycle with light water reactors. That would allow time for more research on "fast" reactor designs whose operation generates new fuel and becomes self-sustaining.

Nuclear waste research and planning ought to look out to a 100-year horizon, the report says. But solutions that emerge could be adopted sooner.

"We're not saying, 'Just exhale and sit back,'" Moniz said. The MIT report calls for a \$1 billion annual research budget on fuel cycle issues.

Proposals for centralized waste facilities envision spent fuel storage in large concrete casks -- which could be above ground, or in covered pits -- as used fuel is commonly stored now at reactor plants around the country. The Nuclear Regulatory Commission this week upheld a staff conclusion that on-site storage is safe for at least 60 years.

A way to end an expensive lawsuit

Removing this fuel to one or more centralized facilities would take the wastes off the hands of nuclear plant operators, which are suing the federal government for reneging on a commitment to store the wastes, beginning in 1998, a service the utilities are paying for but not receiving. Thus far, payments for the program by utility customers, plus accumulated interest, total \$24 billion, the industry says.

The report sidesteps the controversy over the proposed Yucca Mountain nuclear waste repository in Nevada. Following a commitment to Senate Majority Leader Sen. Harry Reid (D-Nev.), the Obama administration has cut off funding for the underground burial site and wants to withdraw with prejudice the Energy Department's 8,600-word construction authorization application to the Nuclear Regulatory Commission, submitted two years ago.

An NRC Atomic Safety and Licensing Board denied DOE's motion, saying withdrawal would violate Congress' clear intent. The NRC commissioners are now reviewing the board's action.

The MIT report says that the United States can and should create a permanent geological repository for spent fuels eventually. "The issue isn't whether you can site geological repositories," Forsberg said. "Lots of people have been doing it," he said. The United States has gone about it in the wrong way by trying to force it on Nevada, the MIT panel said.

The United States should not advance work on closed-cycle, fast breeder reactors in which the combustion of uranium generates surplus supplies of plutonium fuel, a focus of weapons proliferation risks, the report recommends. Instead, it calls for research on fast light water reactors that would produce enough new uranium fuel to be self-sustaining but not create surplus fuel.

"Today we do not have sufficient knowledge to make informed choices for the best cycles and associated technologies," the MIT report says. "There is adequate time before any choice for deployment need to move away from the current open fuel cycle."

That proposal was challenged by Thomas Cochran, senior scientist with the Natural Resources Defense Council. He faulted the report for not making it plain that nuclear fuel reprocessing and fast reactors are non-starters economically. MIT should have said that "fast reactors are priced out of the market and you see no way that they will get back in. ... Otherwise, you're teaching fairy tales at MIT."

Moniz responded, "We don't feel quite so certain about the trajectory of the cost differential of light water reactors and fast reactors."

Concerns about some future supply deals

To deter proliferation, the task force recommended that the United States and other suppliers of nuclear reactor fuels should actively pursue fuel leasing agreements with the growing number of countries that are embarking on new nuclear power programs. The supply group countries would commit to provide reactor fuel and reclaim used fuel, and would offer financial incentives that deter the new programs from moving to fuel enrichment or reprocessing, because of the threat of fuel diversion to weapons development.

MIT's preference would be for commercial leases for fixed time periods, backed by solid government and international compacts covering security and supply, Moniz said.

Sharon Squassoni, a senior fellow with the Center for Strategic and International

Studies, has warned that the nonproliferation fuel regime managed informally by the Nuclear Suppliers Group of nations has been weakened dramatically by recent fuel supply deals, including the 2005 agreement between the United States and India, which has not signed the nuclear Nonproliferation Treaty. "Some countries are looking at that and saying, 'Why not us?'" she said in an interview.

Moniz said the United States is no longer in the position it held a generation ago, when it could say "Follow the leader" on energy and proliferation policies. "Right now, there is a big issue of [the United States] being technology leaders or technology takers." The U.S. position on nuclear fuel issues would be stronger if it followed a consistent policy, but that's not the case. "Let's face it, we're all over the map," he said.

Several members of the MIT task force and its advisory committee -- including Moniz; Richard Meserve, president of the Carnegie Institution for Science; and Philip Sharp, president of Resources for the Future -- are also on the Obama administration's Blue Ribbon Commission on America's Nuclear Future. The commission is charged with recommending policies for processing, storing and disposing of used fuel from civilian and military reactors and high-level radioactive waste -- the same agenda addressed by the MIT report.

A range of witnesses at the commission's public hearings have supported creation of one or more centralized storage facilities, leading some observers to believe that the commission will support that option when it makes its report, due next July.

Some communities offer to host site

State Delegate Sally Jameson (D), a Maryland legislator representing the National Conference of State Legislatures, told the commission at a May public hearing that her organization is in touch with several communities that would volunteer to host an interim used fuel storage facility. "Such communities exist and are ready to step forward," she said, without naming them.

Spent fuel from 10 decommissioned nuclear plants in Maine, Connecticut, Wisconsin, Oregon, Michigan, Colorado, Illinois, California and Massachusetts should be the first materials stored in interim facilities, so that the cleanup of these sites can be completed and the land redeveloped, she said.

NRDC's Cochran told the Blue Ribbon Commission that he supported centralized storage of used fuel in dry cask containers for reactors that have been shut down, but not for spent fuel at operating reactors. "That's an opportunity for the government to go ahead and demonstrate they can manage that process," he said.

Cochran suggested that the central storage facility could conceivably be located at Idaho National Laboratory in Idaho Falls, or on the site of the former Fort St. Vrain reactor in northern Colorado.

Another witness, Michigan utility commissioner Greg White, appearing on behalf of the National Association of Regulatory Utility Commissioners, threw his support to proposals to place control of a interim storage site in the hands of a new waste management corporation rather than the Energy Department.

Marvin Fertel, president of the Nuclear Energy Institute, representing nuclear plant owners, said the idea was worth considering. NEI has been asked by a small number of communities to describe the technical issues and business opportunities involved in creating an interim storage site, said Steven Kraft, NEI's senior director for used fuel management. He declined to name them. "Some of them said, 'Thank you; we'll get

back to you." Others continue to look at the idea.

Even if a community and a state were all in favor of such a project, it could take seven to 10 years to complete the research and analysis and get it opened, he said.

'First mover' plants will be key

Incentives could clinch a deal, Kraft said. Moniz said that a community accepting a storage site could receive federal research funding on spent fuel management and possibly put itself in line for a reprocessing site much further down the road.

Yesterday's MIT report follows a 2003 study from the university on nuclear power that urged federal support for a handful of new reactors that would test the future of new nuclear power plants in the United States.

The new report asks the government to accelerate incentives for the construction of seven to 10 "first mover" plants with approved new designs, to demonstrate whether the plants can be built on time and on budget. The Energy Department has given conditional approval to a loan guarantee for construction of two new reactors in Georgia and is reviewing proposals for three other plants. However, the \$10 billion remaining in the initial loan guarantee program authority will not stretch far enough for all three.

The MIT report says that federal incentives should be limited to the "first movers," arguing that "nuclear energy should be able to compete on the open market as should other energy options."

The cost of capital to construct a new nuclear power plant is significantly higher than for building a new coal- or natural gas-fired plant, because of the uncertainties about construction costs and timetables and the ability of new nuclear power plants to compete with other generation, the MIT report says.

The completion of the "first mover" plants will answer those questions one way or the other. If the plants are successfully built, that risk premium should disappear, dropping the "levelized" or total cost of power from the new nuclear plants down to 6.6 cents per kilowatt-hour, the MIT report concludes. Electricity from the new plants could then compete with coal and natural gas, even without an added carbon emission charge on fossil fuel plants, the report says.

"The first few U.S. plants will be a critical test for all parties involved," it says.

NUCLEAR: Experts weigh extending the lives of nuclear power plants to 80 years (09/20/2010)

Peter Behr, E&E reporter

Next year, when two nuclear reactors near Syracuse, N.Y., are shut down for normal refueling operations, technicians will enter their cavernous containment structures looking for signs of aging in the thick steel walls surrounding shrouds of concrete. Constellation Energy Nuclear Group, which runs the Ginna and Nine Mile Point 1 reactors, volunteered for the inspections at the Department of Energy's request. It is a new phase in a government and industry investigation into the possibilities of running the nation's 104 nuclear plants for as long as 80 years -- twice their expected lifespans when they were originally licensed.

The failure of Congress to reach agreement on climate and energy legislation has left the future of U.S. new nuclear projects up in the air, focusing more attention on the

possibility and the challenges of further extending the life expectancy of the current nuclear fleet, industry officials say.



Unit 1 of Nine Mile Point Nuclear Station, located at Scriba, N.Y., started up in 1970, making it one of the nation's oldest operating nuclear power plants. Photo courtesy of Constellation Energy.

Nuclear Regulatory Commission officials, Energy Department counterparts, utility executives and research leaders are scheduled to meet in February for a "tabletop" conference on the technical and regulatory issues that could confront a new wave of relicensing applications by reactor owners. Today's reactors, most of which were built in the 1960s and 1970s, were initially licensed for 40 years. Half of them have won NRC approval to operate for another 20 years, and the rest are expected to do the same. Now the question is, "Is there life after 60?" as James "Joe" Sheppard, former CEO of STP Nuclear Operating Co., told a DOE conference on the question two years ago. DOE is supporting research into extended reactor life, as are nuclear

plant operators through the Electric Power Research Institute (EPRI), an industry research and development organization. An industry-created international research program, the Materials Ageing Institute, based in France, is also stepping up investigations on the issue.

Well before the first 20-year relicensing period ends, power plant owners will have to know what new components and equipment upgrades will be required to extend the lives of current reactors to 80 years, and how high the costs and regulatory hurdles will be, before deciding whether to take that route or decommission the plants and shutter them, industry officials say.

The recession has dramatically slowed the growth in U.S. electricity demand, but beginning in 2014, utilities will again be facing pressures to bring on new generation and launch more electricity conservation and load shifting programs, according to Energy Department and industry forecasts.

Today, the future is muddled with policy uncertainties and unknowns. "Right now, there are no good options for utilities," said Charles Forsberg of the Massachusetts Institute of Technology's Department of Nuclear Science and Engineering, who is the executive director of MIT's nuclear fuel cycle study.

2 key questions

"I believe utilities will have an interest [in a second relicensing period] if the plants continue to be safe and economical to run," said former NRC Chairman Dale Klein.

Those two questions -- safety and economics -- lie at the heart of the research agenda now under way on plant aging.

"What DOE and NRC are concerned about are the things we don't know about," Julie Keys, senior project manager for the Nuclear Energy Institute. "They are looking for that

smoking gun."

Some industry executives like Sheppard have compared reactors to the fictional "Six Million Dollar Man," whose left eye and three limbs were replaced with bionic substitutes, giving him vastly enhanced powers.

But the environment inside nuclear plants is like nothing else, subjecting reactor components to intense heat, stress, vibration and neutron bombardment that could potentially cause hidden weaknesses in reactors, pipes, joints, wiring and other components. Replacement of impaired components is a major industry activity now. "Utilities today see no problem in swapping out steam generators or reactor cooling pumps," said Brian Sheron, director of NRC's Office of Nuclear Regulatory Research. Reactor heads have been replaced. Analog control systems have been upgraded with digital ones.

"Conceptually, the reactor vessel could be replaced. It comes down to the economic decisions of the affected utilities," said Neil Wilmshurst, EPRI's director of nuclear programs.

"One of the questions we have is, are there any [aging] effects that would structurally affect the concrete?" Sheron said -- for example, the concrete supports for the reactor vessel that are subject to radiation exposure. "Not that we think it would crumble, but if one were to have a seismic event -- an earthquake -- would the structures withstand the forces?"

"This gets down to developing techniques to measure the condition of the plants," said Forsberg. "The R&D challenge is to figure out how to analyze a 4-foot thick chunk of concrete" -- without demolishing it.

There is miles and miles of electrical cabling that controls critical systems, Sheron added. Over time, the wire's insulation can become brittle and vulnerable. "It has to function under accident conditions," he said. The NRC is looking now at that issue to see if it is a problem, he added.

Another potential issue is leakage from buried pipes. "We obviously are worried about those," said Sheron. "It depends where they are buried and how difficult it would be to replace or repair them. It could be prohibitively expensive."

No 'showstoppers' yet

"We have not identified any technical issue which we would consider to be a showstopper," said Wilmshurst. "There may be some out there. Conceptually, it would be hard to envisage replacement of the reactor containment building. That is why there is a significant focus on the mechanism of concrete aging."

"I don't think I've heard any challenge to the concept of operating the nuclear plants beyond 60 years," Wilmshurst added. "Of course, the plants won't operate beyond 60 years if they aren't demonstrated to be safe."

If they are proved safe, the older plants have a major economic advantage over new ones, he added. Most are essentially paid for. There are no solid estimates of the cost of meeting a post-60-year renovation budget, but it stands to be far less than building a new reactor, he added.

John Butler, director of engineering and operations support for the Nuclear Energy Institute, said nuclear plant operators want a clearly defined regulatory process in place to govern relicensing out to 80 years before committing to major investments in refurbishing plants beyond the 60-year horizon.

"If they don't have regulatory certainty, that's a big negative in going in that direction," he said.

The accelerating research programs supported by the Energy Department and the industry are aimed at identifying the potential longer-range issues, such as impairment in a reactor's concrete structures. "It's too early to say there won't be problems with it. That's the reason we're getting into it as early as we are," said Butler.

But the furor that began last year over leakage of radioactive tritium from underground pipes into the groundwater around the Vermont Yankee nuclear reactor in Vernon, Vt., illustrated how concerns about reactor safety could suddenly swamp relicensing plans. Last February, the Vermont Senate voted overwhelmingly in opposition to a renewed 20-year license for the plant when the current NRC license expires in 2012.

Concerns about 'public perception issues'

Although the NRC has not concluded its relicensing review, misstatements by plant officials about potential leakage may have been the last straw for Vermonters after an embarrassing collapse of part of the plant's cooling tower in 2007.

Nuclear power opponents like Jim Warren, executive director of NC Warn in North Carolina, have challenged the NRC's approach to regulating fire risks to wiring that connects vital control systems in old plants.

Klein said that the NRC's initial approach to the danger to reactor wiring in a fire would have imposed impossible conditions on some reactor operators, which have no practical way, for example, of relocating built-in wire channels to create more separation between wiring networks and backups. The NRC is developing an alternative approach that assures safe operation at a bearable cost, he said.

Warren said that the wiring debate demonstrates how necessary safety issues on older plants may be compromised to keep the plants running. "I'm referring to years and years of the same pattern, where they kick problems down the road," he said. "That's a broken regulatory system."

"The NRC has a very high confidence in licensing reactors up to 60 years," Klein said.

"The NRC will not compromise safety by keeping the plants running [beyond 60 years] in an unreasonable manner."

The Vermont Yankee controversy "highlights the fact that nuclear power needs to be very cognizant of public perception and trust," said EPRI's Wilmshurst. "The industry has to raise its own accountability standards and seriously understand the potential public perception issues."

ENERGY POLICY: House Science panel to mark up rare earth, nuclear R&D measures (09/20/2010)

Katie Howell, E&E reporter

The House Science and Technology Committee this week will meet to mark up measures aimed at combatting a possible supply shortage of minerals critical to the clean energy sector and to expand the federal government's nuclear energy research and development programs.

Chairman Bart Gordon (D-Tenn.) listed the two bills as top priorities for the committee's remaining few weeks in session.

The rare earth bill, which has not been introduced yet, will address both the short- and long-term impacts of a domestic scarcity of rare earth minerals, as well as the longer-term issue of critical materials supply. A committee aide said the bill will be introduced this week.

Rare earths are a group of 17 elements used in wind turbines, energy-efficient light bulbs, catalytic converters for diesel engines and hybrid car components. Rare earths primarily come from China despite vast domestic reserves. China has locked up a near monopoly on processing and this year significantly cut back exports.

"We want to look into whether there is a problem, and if so, whether or not we might authorize some research into the areas of potential alternatives to rare earth minerals or ways that those minerals -- particularly here in our country -- can be both discovered as well as mined and processed more efficiently," Gordon said earlier this year (*E&E Daily*, March 15.)

The bill will set up and fund a rare earth research and development program aimed at improving the technology used to mine, process and recycle rare earth minerals, an aide said. It will also broaden an existing federal loan guarantee program so companies developing the technologies used to produce rare earths qualify.

Loan guarantees for rare earth companies have cropped up in many of the discussions on Capitol Hill about how to address the country's supply shortage.

In July, a bipartisan group of 20 senators wrote to Energy Secretary Steven Chu, urging him to consider loan guarantees for projects that would help boost domestic production of rare earth minerals.

Their letter followed the introduction of bills in both the House ([H.R. 4866](#)) and Senate ([S. 3521](#)) that would, among other things, authorize DOE to issue loan guarantees for rare earth projects.

And a coalition of business groups has also called on DOE to expedite loan guarantee applications to companies working to build up the domestic rare earth oxide, metal, alloy and permanent magnet manufacturing supply chain.

During a House Science Committee hearing on rare earths this spring, the top executive at Molycorp Minerals, the only domestic rare earth producer, lamented his company's inability to secure a DOE loan guarantee for its mining expansion.

Nuclear R&D measure also under consideration

The committee will also take up [H.R. 5866](#), a nuclear research and development measure aimed at revamping and expanding the Energy Department's nuclear R&D programs.

The bill, which easily passed out of the Energy and Environment Subcommittee in July, would provide up to \$439 million a year through 2013 to improve current reactors' efficiency and life cycles and commercialize small modular reactors through a 50 percent public-private cost-share program.

The measure would also accelerate new waste management techniques, such as "burn up" of uranium and other radioactive elements, creating more energy with the same amount of fuel, and recycling spent fuel into additional fuel.

Schedule: The markup is Wednesday, Sept. 22, at 10 a.m. in 2318 Rayburn.

General Information or Other	Event Number: 46214
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Rep Org: OHIO BUREAU OF RADIATION PROTECTION Licensee: BBC&M ENGINEERING, INC. Region: 3 City: LIMA State: OH County: License #: OH31210250006 Agreement: Y Docket: NRC Notified By: MICHAEL SNEE HQ OPS Officer: ERIC SIMPSON	Notification Date: 08/30/2010 Notification Time: 13:24 [ET] Event Date: 08/26/2010 Event Time: [EDT] Last Update Date: 08/30/2010
Emergency Class: NON EMERGENCY 10 CFR Section: AGREEMENT STATE	Person (Organization): TAMARA BLOOMER (R3DO) ANGELA MCINTOSH (FSME)

Event Text

OHIO AGREEMENT STATE REPORT - DAMAGED MOISTURE DENSITY GAUGE

The following was received from the State of Ohio via e-mail:

"Ohio Department of Health (ODH) was informed on 8/27/10 of an incident involving a portable moisture density gauge. The incident occurred on 8/26/10 at a work site in Lima, Ohio. The incident occurred due to operator error on behalf of a BBC&M Engineering, Inc. (BBCM) employee - the employee backed over the gauge with a BBCM truck. BBCM staff followed established company emergency procedures - the area was cordoned off, all other site personnel were kept more than 20 feet away from area, and a BBCM employee stayed in the area until further notice.

"BBCM obtained a Radiation Alert Monitor and a lead 'pig' from CTS, Inc. and used the monitor at the project site in the area of the damaged gauge, truck, and original testing location of the gauge. The reading near the gauge (at 1 meter) was 2.0 mrem/hr. All other readings taken at the site measured only background level readings. The gauge was damaged but the radiation sources were not comprised and/or leaking. As the source rod would not retract into the gauge, BBC&M installed a lead cap ('pig') over the rod tip/source end. The gauge was then transported to BBCM's Dublin, Ohio office to be stored until it can be transported to CTS, Inc. for further inspection."

The gauge contains 0.010 Ci Cs-137 and 0.050 Ci Am/Be sources.

Ohio incident #2010-051.

Power Reactor	Event Number: 46232
Facility: BEAVER VALLEY Region: 1 State: PA Unit: [1] [] [] RX Type: [1] W-3-LP,[2] W-3-LP NRC Notified By: KENT SLOAN HQ OPS Officer: CHARLES TEAL	Notification Date: 09/07/2010 Notification Time: 10:43 [ET] Event Date: 09/07/2010 Event Time: 10:43 [EDT] Last Update Date: 09/07/2010
Emergency Class: NON EMERGENCY 10 CFR Section: 50.72(b)(3)(xiii) - LOSS COMM/ASMT/RESPONSE	Person (Organization): WILLIAM COOK (R1DO)

Unit	SCRAM Code	RX CRIT	Initial PWR	Initial RX Mode	Current PWR	Current RX Mode
1	N	Y	100	Power Operation	100	Power Operation

Event Text

PLANT IN-PROCESS COMPUTER OOS FOR MAINTENANCE

"The Beaver Valley Power Station (BVPS) Unit 1 In-Plant Computer (IPC) will be taken out of service for approximately 4 weeks (9/7/10 - 9/30/10) to implement a planned modification. The current IPC is being replaced and a computer outage is required to allow for installation of a new IPC. During this time period the Emergency Response Data System (ERDS) data link to the NRC will not be available at BVPS Unit 1. Other computer based systems not directly associated with the IPC (e.g. Safety Parameter Display System (SPDS), meteorological data) will remain in operation. ERDS parameters will be available to be monitored by control board indications and temporary computer system set up prior to the IPC outage. Compensatory actions have been developed to direct one of the Technical Support Center (TSC) Operations communicators to respond to the control room during a BVPS Unit 1 emergency, should it occur, to facilitate data transfer to the NRC while the ERDS is out of service. Work on replacing the IPC and returning ERDS to service will be ongoing continuously until complete.

"This is an 8-hour reportable event per 10 CFR 50.72(b)(3)(xiii) Major Loss of Assessment Capability. The operation of BVPS Unit 1 and Unit 2 plant systems will not be adversely affected due to this planned action. BVPS Unit 2 ERDS will not be affected by these modifications.

"The NRC Resident Inspector has been notified."
