

To: Jim Mehl, ERU Supervisor
From: Zack Clayton, Rad Coord
Subject: April Monthly Report
Date: May 25, 2011

Beans:

Training: 0
Drills 1
Meetings: 3
Technical Assistance: 3
Public Assistance: 13

Web Page Hits: There were 33 page views for April

Coming Attractions:

5/4 Working Group
5/10 Davis-Besse Evaluated Exercise
5/16-19 Shaken Horizon Exercise
5/20 NEPAC
6/1 Working Group

Facility Updates:

Davis Besse Nuclear Power Station

Davis Besse operated at full power in April.

On April 14 Davis-Besse notified the State regarding their latest round of ground water sampling results for tritium. The plant sampled a total of 21 wells. Sixteen of these wells are part of their normal semi-annual sampling program, while the other 5 were those that were affected by the past tritium leak. All of the sampling results were below the 2,000 picoCurie per liter notification limit that requires Davis-Besse to notify Ohio. Well 105A, which was most affected by the past leak, continues to show a downward trend in tritium levels. While technically below notification levels, the plant provided this information as a courtesy in light of past tritium leakage problems.

Perry Nuclear Power Plant

Perry entered April in coast down for its refueling outage and operated until late on April 17 when it shut down.

During a planned maintenance activity being conducted as part of the Perry Nuclear Power Plant's refueling outage a work crew encountered unexpected high radiation levels. The work crew immediately left the area and reported the problem. The exact exposure rate is not known at this time, but was sufficient to trigger a Special Inspection by the NRC. An NRC inspector is expected to be on-site by noon today (4/25/11) to begin investigating this situation. The NRC will be issuing a press release later today. We will pass along further information as it is received.

We have received further information regarding the incident which triggered the NRC Special Inspection at PNPP.

The incident occurred on Thursday April 21, 2011 when five workers (3 maintenance, 2 Radiation Protection) attempted to remove a detection instrument which had been stuck in the reactor since the last outage in 2010. It appears that the workers pulled the instrument (which had become radioactive) too far out of the reactor. This caused their electronic dosimetry to alarm and the workers immediately left the area. Monitoring equipment in the area indicated the a dose rate of 1000R/hr. The highest amount of radiation exposure recorded from this group was 99 mRem.

On Friday April 22, 2011 a team returned to the work area and re-inserted the instrument into the core to lower exposure rates in the area. The highest exposure for an individual on this team was 132 mRem. A root cause analysis is being conducted by FENOC.

Beaver Valley Power Station

Beaver Valley Unit I

Beaver Valley Unit I operated at full power for April.

Unit 1 was manually shut down on Wednesday, April 13 for maintenance due to an emergent problem regarding an incore detector. To replace the detector, it must be accessed from under the reactor vessel--necessitating shut down. There were no problems on this work. Beaver Valley hopes to return the Unit to full power prior to Perry's planned outage of April 18.

Beaver Valley Unit II

Beaver Valley Unit II synchronized to the grid on April 11 at 25% power and operated at full power for the rest of the month.

Beaver Valley Unit II had started up on April 9 and was at 15% power when a leak was discovered at a valve weld. The plant shut down to repair this leak. This leak was not in the reactor pressure system and was not radioactive. See Event Number 46744.

Fermi II

Fermi II operated at full power for the month of April.

Portsmouth Gaseous Diffusion Plant

There were no reports for Portsmouth in April.

Activity:

- 4/5 DB Dry Run This went well and showed the players what tweaks were needed in the new room layout for a successful exercise in May.
- 4/6 Working Group at Ohio EMA. In addition to the normal plant reports and agency updates, the Working Group updated the initiatives and ironed out agenda details for the Board meeting. This meeting was briefly utilized as an informal hotwash for the dry run for just the working group agencies.
- 4/11 URSB meeting at Ohio EMA. This combined the January and April meetings into one session. January was delayed due to the inauguration details.
- 4/29 NAS-T Exercise Planning

Office Issues:

None at this time.

NRC Reports and Statistics:

Operating power levels

Date	BV1	BV2	DB	Fermi2	Perry	
1	100	0	100	100	89	BV2 in refueling outage 3/6
4	100	0	100	100	89	Perry in coast down to refueling outage
11	100	25	91	100	86	DB high circulating water temperature
14	0	98	100	100	86	BV1 shut down for in core maintenance
18	82	100	100	100	0	BV1 water box cleaning, Perry RFO 4/17
25	100	100	100	100	0	
30	100	100	100	100	0	

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 #####

Forthcoming Meeting with Industry and Licensee Representatives Re: Transition of Non-Pilot Licensees to National Fire Protection Association Standard 805
ADAMS Accession No.: ML110871214

Information Notice 2011-06, Erroneous Criticality Alarm Monitoring Signal Caused By Incorrect Data Acquisition Module Configuration, dated March 22, 2011
ADAMS Accession No. ML110340026

Davis-Besse: Request for Additional Information for the Review of the Davis-Besse Nuclear Power Station - Batch 1 (TAC No. ME4640)
ADAMS Accession No. ML110820490

BEAVER VALLEY POWER STATION: MARCH 9, 2011, NRC GENERIC FUNDAMENTALS EXAMINATION RESULTS (COVER LETTER PUBLICLY AVAILABLE, ENCLOSURES WITHHELD FROM PUBLIC)
ADAMS Accession No. ML110960061

Information Notice 2011-08, Tohoku-Taiheiyou-Oki Earthquake Effects On Japanese Nuclear Power Plants – For Fuel Cycle Facilities, dated March 31, 2011,
ADAMS Accession No. ML110830824

Fermi 2 – Closure of Generic Letter 2008-01 “Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems”
ADAMS Accession Number: ML110840205

Notice of Public Meeting - Beaver Valley Power Station, Units 1 and 2
ADAMS Accession No. ML110980391

Information Notice 2011-07, Specific License Required When Exporting To Embargoed Destinations Listed In 10 CFR 110.28, dated April 14, 2011,
ADAMS Accession No. ML110180287

Perry Nuclear Power Plant, Unit No. 1 - Withdrawal of requested licensing action RE: 10 CFR 50.55A Relief Requests in support of the Third 10-year in-service inspection

interval, IR-001 and IR-013 –
ADAMS Accession no. ML111050105

Davis-Besse Nuclear Power Station - NRC Problem Identification and Resolution
Inspection 05000346/2011008 –
ADAMS Accession No. ML111091027

PERRY NUCLEAR POWER PLANT, UNIT NO.1 -ISSUANCE OF AMENDMENT RE:
LICENSE AMENDMENT TO MODIFY TECHNICAL SPECIFICATION 2.1.1, "REACTOR
CORE SLS," TO INCORPORATE REVISED SAFETY LIMIT MINIMUM CRITICAL
POWER RATIO VALUES (TAC NO. ME4925)
ADAMS Accession No.: ML110770315

Forthcoming meeting with FENCO re: proposed pre-application license amendment
request to discuss a proposed LAR to delete TS 5.5.8g, "Steam Generator (SG)
Program" auxiliary feedwater header inspections –
ADAMS Accession no. ML111080690

Davis-Besse Nuclear Power Station, Unit No. 1 - Request for additional information
related to the Davis-Besse Technical Specification (TS) 5.6.6 Steam Generator Tube
Inspection Report –
ADAMS Accession no. ML111050380

Davis-Besse: Scoping and Screening Audit Report Regarding the Davis-Besse Nuclear
Power Station License Renewal Application (TAC No. ME4640)
ADAMS Accession No. ML111050091

Request for Additional Information for the Review of the Davis-Bessie Nuclear Power
Station - Batch 2 (TAC No. ME4640)
ADAMS Accession No. ML110980718

Davis-Besse Nuclear Power Station Integrated Inspection Report 05000346/2011002 –
ADAMS Accession No. ML111101706

Davis-Besse: Request for Additional Information for the Review of the Davis-Besse
Nuclear Power Station, Unit 1, License Renewal Application
ADAMS Accession No. ML110910566

FERMI: FERMI 1 INSPECTION REPORT 2011-10
ADAMS Accession Number: ML11112A056

RIS 2005-02, Revision 1, Clarifying The Process For Making Emergency Plan Changes,
dated April 19, 2011,
ADAMS Accession No. ML100340545

Davis-Besse: Requests for Additional Information for the Review of the Davis-Besse Nuclear Power Station, Unit 1, License Renewal Application
ADAMS Accession No. ML11094A099

Beaver Valley Power Station, Unit Nos. 1 and 2 – Relief Request VRR2 Regarding the 10-Year Inservice Testing Program Interval (TAC Nos. ME4643 and ME4644)
ADAMS Accession No.: ML110770551

Fermi Licensee Letter Regarding Open House to Discuss NRC Activities, Nuclear Power Issues, and 2010 End-of-Cycle Performance Assessment –
ADAMS Accession No. ML111170407.

Perry Nuclear Power Plant NRC Integrated Inspection Report 05000440/2011002 –
ADAMS Accession No. ML111180447

Forthcoming Meeting with Industry and Licensee Representatives Re: Transition of Non-Pilot Licensees to National Fire Protection Association Standard 805
ADAMS Accession No.: ML111160115

Beaver Valley Power Station, Unit No. 2 – Issuance of Amendment Regarding the Spent Fuel Pool Rerack (TAC No. ME1079)
ADAMS Accession No.: ML110890844

NRC Begins Special Inspection at Perry Nuclear Plant April 26, 2011

The U.S. Nuclear Regulatory Commission has started a Special Inspection to review the circumstances around work activities that led to higher than expected radiation levels in a work area at the Perry Nuclear Power Plant.

The plant is operated by FENOC Nuclear Operating Co. and is located in Perry, Ohio about 35 miles northeast of Cleveland.

The issue involved the removal of a source range monitor from the reactor core on April 22, as the plant was shut down for a refueling outage. A source range monitor measures nuclear reactions during start up, low power operations and shutdown conditions. While performing the activities to remove the monitor, workers at the plant identified an increase in radiation levels in their work area. The workers stopped and immediately left the area when the higher than expected levels were identified. The licensee does not believe the workers received radiation in excess of NRC limits.

The plant is in a safe condition and there has been no impact to workers at the plant or members of the public from this issue.

The special inspection team began work on Monday and will review the circumstances surrounding the higher than expected radiation levels in the work area. The team will gather data to establish a sequence of events, review the utility's work planning and

engineering actions, determine if there were human performance factors that may have contributed to the event and evaluate the actual radiological consequences including exposures to the workers. The team will also evaluate the utility's root cause report.

The NRC's special inspection report will be available within 45 days of the inspection's completion of through the NRC RIII Office of Public Affairs and the NRC web site:

<http://www.nrc.gov/reading-rm/adams/web-based.html>

NUCLEAR CRISIS: Lawmakers release flurry of bills in response to emergency (04/05/2011)

Hannah Northey, E&E reporter

Saying the nuclear crisis unfolding in Japan has exposed holes in the United States' nuclear safety foreign policy, lawmakers have offered a flurry of new bills intended to plug those leaks.

House lawmakers on Friday introduced three separate bills aimed at clamping down on nuclear safety, increasing international cooperation and abolishing nuclear weapons -- many of them targeting existing laws that now seem lax given the heightened anxiety surrounding nuclear security.

Concern stems from the ongoing crisis in Japan, where workers are still scrambling to stabilize the Fukushima Daiichi nuclear reactor complex, crippled by an earthquake and tsunami last month. The Japanese government is allowing Tokyo Electric Power Co. to discharge more than 11,000 tons of contaminated water from the radioactive waste treatment facility and units 5 and 6 into the Pacific Ocean, according to the International Atomic Energy Agency.

Rep. Howard Berman (D-Calif.), the ranking Democrat on the House Foreign Affairs Committee, said the crisis shows that the United States must be cautious in securing nuclear material around the globe. To that end, Berman introduced the "Nuclear Nonproliferation and Cooperation Act of 2011" on Friday to update an aged statute covering international civil nuclear cooperation accords.

"The nonproliferation conditions governing civil nuclear cooperation agreements with other countries have not been updated since 1978, and the world has changed immensely since then," Berman said in a statement.

Updating the statute will help balance the need for nuclear power with the goal of stopping terrorists from obtaining material for nuclear weapons, the congressman said. Berman also co-sponsored legislation that Foreign Affairs Chairwoman Ileana Ros-Lehtinen (R-Fla.) introduced Thursday to increase congressional oversight of nuclear cooperation agreements.

Congress has little oversight of such agreements because they automatically go into effect unless the opposition can secure veto-proof majorities in the Senate and House, Ros-Lehtinen said at a hearing last month (*Greenwire*, March 17).

While both Berman and Ros-Lehtinen's bills require all future nuclear cooperation agreements to include certain commitments from the partnering country not to conduct enrichment and reprocessing activities, only Ros-Lehtinen's legislation would require congressional approval for "noncontroversial renewals of existing agreements," Berman said.

Rep. Jeff Fortenberry (R-Neb.) introduced a separate bill Friday to strengthen an existing international nuclear safety treaty. Fortenberry's measure is a companion to a bill Democratic Sens. Daniel Akaka of Hawaii and Tom Carper of Delaware floated on March 18.

"As Japan's post-earthquake emergency shows, nuclear facilities remain vulnerable to natural and man-made disasters," Fortenberry said in a statement when the Senate bill was offered.

The companion bills call on the U.S. representative to the Convention on Nuclear Safety -- a multilateral treaty negotiated in the aftermath of the 1986 Chernobyl disaster to improve civilian nuclear power reactor safety -- to encourage member countries to evaluate their nuclear safety, to increase public information about safety efforts and to urge all countries with a nuclear power program to join the convention. The legislation also would require the federal government to draft a strategic plan for international cooperation on nuclear power safety.

Meanwhile, Del. Eleanor Holmes Norton (D-D.C.) said the United States should not have nuclear weapons and reintroduced a bill Friday that would require the United States to negotiate agreements to disable and dismantle the country's nuclear weapons by 2020. Funds for weapons would then be redirected to housing, health care, Social Security and environmental needs, Norton said in a statement. Norton has introduced the measure each session since 1994.

Norton applauded the Obama administration for reversing "years of dangerous increases in U.S. nuclear capacity during the George W. Bush administration" but added that the events in Japan reflect the need to "rid the world of nuclear weapons."

NUCLEAR CRISIS: TEPCO announces 9-month plan to shut down plant (04/18/2011)

The Tokyo utility behind the Fukushima Daiichi nuclear power plant laid out a plan to bring the crippled plant back to a stable state, including a cold shutdown within nine months.

Over the next three months, Tokyo Electric Power Co. will install new cooling systems in an attempt to prevent the release of more radioactive materials. Then, workers will cover three damaged reactors and install filters to reduce contamination being released in the air. The new system will be a closed loop that would eliminate runoff into the ocean and nearby bodies of water.

The plan represents a tacit admission that, like outside experts had warned, the company's existing cooling system is too badly damaged to work. It also means the TEPCO plant will likely be releasing radioactive emissions into the air for months, although the plant seems to be more under control. However, company officials said the fact that they were releasing the roadmap meant that conditions had improved enough to allow them to look to the future.

"The company has been doing its utmost to prevent a worsening of the situation," said TEPCO Chairman Tsunehisa Katsumata. "We will put our full efforts into achieving these goals."

Meanwhile, the government said that residents who were forced to evacuate their homes near the plant would be able to start returning in as little as six to nine months.

Officials were not able to provide specifics about how contaminated the land around the plant was or how long it would take to clean up.

A nuclear power expert and a government official both said TEPCO's plan could work, although one said the shutdown could happen even sooner. The cold shutdown requires water in the reactor to go below the boiling point, which would stop the plant's action. However, fuel rods must be kept under water to avoid a meltdown, which requires that all boiling stop (Belson/Myers, *New York Times*, April 17). – JP
<http://www.eenews.net/Greenwire/2011/04/18/12/>

NUCLEAR: Industry experts say 'never again' to Japan reactor disaster (04/12/2011)

Peter Behr, E&E reporter

Senior nuclear engineers and scientists from the United States and 10 other nations urge that safety standards governing the ability of nuclear reactors to survive severe accidents be strengthened in light of Japan's Fukushima disaster.

The group, assembled by Roger Mattson, former director of the Nuclear Regulatory Commission's reactor systems safety division, and Nikolai Steinberg, former chairman of the Ukrainian nuclear regulatory authority, sent their statement April 6 to the head of the International Atomic Energy Agency.

"We express here our deep concern about the future of nuclear power in view of the consequences of the earthquake and tsunami at the Fukushima-Daiichi NPP [nuclear power plant] in Japan," says the group's statement to IAEA Director-General Yukiya Amano. "We are confident that only nuclear power that avoids being a threat to the health and safety of the population and to the environment is acceptable to society," says the statement, headed "Never Again: An Essential Goal for Nuclear Safety."

The statement says that a complete analysis of the Japanese nuclear crisis is not possible until more information is available. But it faults the safety preparations put in place by Tokyo Electric Power Co. (TEPCO), owner of the stricken complex.

"It appears that, in the siting and design of the Fukushima-Daiichi nuclear plants, an unlikely combination of low-probability events (historic earthquake plus historic tsunami leading to loss of all electrical power) was not taken sufficiently into account. ...

[H]indsight shows that relatively inexpensive improvements, detectable by more extensive analysis beforehand, may have avoided these accidents altogether."

The letter to Amano was signed on behalf of the group by Jukka Laaksonen, director-general of the Finnish Radiation and Nuclear Safety Authority and chairman of the Western European Nuclear Regulatory Association.

"I am acquainted with Japan's system well enough not to be surprised now," he said in an interview last month. "Their management system is complex and schematic, and it might not give as much weight to engineering reasoning and the best know-how as to formal rules and formal position." He did not repeat this criticism in the group's message to the IAEA.

Second aftershock rocks Japan

Current assumptions about the ability of nuclear plants to withstand the most severe disasters and emergencies must be reconsidered, the group said.

"This horror of four units going out, with multiple core damage, it has to open our eyes to being willing to talk more about that," said Mattson, who led the NRC's "Lessons Learned Task Force" following the Three Mile Island nuclear accident in 1979. "Some people say the reactors are safe enough and we don't have to spend the money" to do more. "I don't think they will hold the day," he said.

A month after the March 11 earthquake and tsunami, TEPCO is still battling to overcome damage to the reactor cores and put the three crippled reactors on a path toward a cold shutdown, while facing the threat of further quakes.

At 5:16 p.m. local time yesterday, northeast Japan was hit with another strong aftershock measuring 7.0 magnitude, but no increase in radiation at the Fukushima Daiichi site was reported.

Another quake measured at under 6.0 magnitude hit near the plant at 2 p.m. local time today, temporarily disrupting the moving of contaminated water away from the Unit 2 area. Workers continued to inject inert nitrogen gas into Unit 1, to lessen the risk of a hydrogen explosion, but pressure readings indicated the gas may be leaking, NHK reported.

Japan's science ministry said yesterday that the amount of radiation accumulated over about half a month in parts of Fukushima prefecture now exceeds permissible levels for a whole year, the NHK news service reported. The radiation readings at one place 30 kilometers northwest of the plant exceeds by more than 14 times the recommended long-term exposure, NHK said.

The latest condition report by Japan Atomic Industrial Forum Inc. continues the bleak assessment of conditions at the plant. It estimates that the fuel rods in Units 1, 2 and 3 are exposed partially or fully and that 70 percent of the reactor fuel in Unit 1, 30 percent in Unit 2 and 25 percent in Unit 3 has been damaged. The integrity of the reactor pressure vessels containing the fuel is not known, and core cooling systems are not working, forcing a continued reliance on emergency freshwater pumps to try to cool down the fuel units. The operability of the damaged reactors' control rooms is listed as "poor" because of the loss of normal electric power supply.

The heavy damage to the reactor cores was estimated up in an internal report March 26 prepared by an NRC reactor safety team, first described by *The New York Times*. It says damaged fuel in Unit 1 "may have slumped to the bottom of the core and fuel in the lower region of the core is likely encased in salt and core flow is severely restricted and likely blocked. ... Injecting fresh water through the feedwater system is cooling the vessel but limited if any flow past the fuel. ... It is difficult to determine how much cooling is getting to the fuel." Conditions in Units 2 and 3 were assumed to be somewhat less severe. The team's recommendations included injection of nitrogen into the reactor containment structures if possible, to limit hydrogen explosions within the containment.

Avoiding the 'natural tendency' of complacency

David Lochbaum, director of the reactor safety program for the Union of Concerned Scientists, said last week that the attempts to cool down the reactor cores are being gravely challenged on several fronts.

"Their instrumentation, their ability to monitor what's going on, they don't have many options," he said, noting that workers at the reactor have no margin for error as they handle two spent fuel pools and three reactor cores. "It's hard to say that things are

going to get better or things are going to get worse, because they have so many challenges to face on so many places that it's going to be difficult to be 100 percent right all five times."

Many in the group that signed the statement are members or former members of the International Nuclear Safety Group, affiliated with the IAEA. In addition to the United States and Ukraine, the statement's signers come from Finland, France, Germany, India, Lithuania, Russia, South Korea, Spain and Sweden. They asked Amano to put their statement on the agenda of the IAEA meeting scheduled for June to review the Fukushima accident. The other signers from the United States were Harold Denton, former director of the NRC's nuclear reactor regulation, and Salomon Levy, former design and manufacturing manager for General Electric's nuclear division. The 16 signers did not include anyone from China.

The group said that the safety requirements for existing plants, built to earlier safety standards, should be rigorously reviewed, as many plants are being relicensed to operate for up to 60 years. Training of top reactor professionals must be upgraded to better equip them for dealing with reactor accidents and emergencies.

Nuclear regulators should improve reactor inspections "and guarantee openness and honesty in reporting the findings of such inspections to the public. Routine inspections are important; however, even more important is the capability to recognize early indications of low probability incidents or circumstances," the group said.

The group also addressed the safety standards for some 60 new reactors under construction or planned in 15 countries, led by China. Safety rules for new reactors should be strengthened to assure that backup power can maintain reactor and spent fuel cooling in an accident until normal power is restored. "New reactors should ensure safety even if operating personnel are not able to provide immediate response in an emergency," the statement says.

The statement does not directly address the question of how the safety of older plants could be made to match that of the new reactor designs.

The nuclear experts stressed the need for a strong safety culture shared by plant owners, operators and workers.

"We know that due to a natural tendency of human beings for complacency, the nuclear safety regime can erode; i.e., if we do not continuously pursue safety, we can [lose] safety," they said. "There are occasional signs that national and international safety assessments and peer review missions are becoming more focused on demonstrating that safety is satisfactory and in compliance with national and international standards than on finding and correcting deficiencies, be they in design, operation, or the standards themselves."

NUCLEAR ENERGY: Advocacy group questions U.S. evacuation plans (04/26/2011)

Hannah Northey, E&E reporter

The Nuclear Regulatory Commission's current evacuation system would not safeguard more than a third of the U.S. population living within 50 miles of a nuclear reactor, a panel of health and anti-nuclear advocates said today.

NRC mandates evacuations within a 10-mile radius of U.S. reactors, but the agency recommended a 50-mile evacuation zone for Americans in Japan after a magnitude-9 earthquake and tsunami crippled a nuclear complex last month.

The placement of reactors near large population hubs and the uncertainty over the travel of radioactive material after a nuclear accident raise doubts about NRC's U.S. plan, members of the group Physicians for Social Responsibility said at a press conference at the National Press Club in Washington, D.C.

Radioactive plumes tend to go beyond 50 miles and spread like fingers in multiple directions depending on wind speed and other meteorological conditions, said former Energy Department official Robert Alvarez.

"The infeasibility of evacuation is not considered important enough in the hierarchy of priorities relative to the continued operation of these reactors, and that's something we have to look at very seriously," he said.

Anxiety over the safety of nuclear power has been piqued in recent months as information has trickled out of Japan's Fukushima Daiichi nuclear plant, where officials are struggling to cool and stabilize damaged reactors.

Nuclear opponents are also pointing to the 25th anniversary today of the 1986 accident at Unit 4 of the nuclear power station at Chernobyl, Ukraine, which destroyed the reactor and released massive amounts of radioactivity into the environment. After the accident, an 18-mile area around the plant was closed and 135,000 people were evacuated, according to NRC.

Alvarez and the panel of health advocates and doctors said scientists are still learning about health impacts from the Chernobyl accident. Doctors are still finding new types of cancer and are studying the relationship between radiation and illnesses such as heart disease, said Jeff Paterson, a professor at the University of Wisconsin and member of Physicians for Social Responsibility.

In Japan, it's still unclear where radioactive material is traveling and settling, and officials there are not sure when and where to resettle evacuees, Alvarez said.

Grass-roots organizations in Japan are now finding "hot spots" of high radioactive levels northeast of the evacuation zone surrounding the damaged Fukushima Daiichi plant, Alvarez said. Exacerbating the situation, the Japanese government is now allowing children to be exposed to 20 millisieverts annually, a level usually allowed only for workers at nuclear power plants, Alvarez said.

U.S. 'lessons learned'

NRC responded to the disasters at Chernobyl and Fukushima by launching a review of events abroad and applying "lessons learned" to American reactors.

Last month, NRC launched a short-term review of the United States' 104 reactors in the wake of the Japanese disaster and plans to launch a longer-term review once more information is known about the situation at the Fukushima plant.

In 1989, NRC released a report that found no immediate changes were needed in its regulations regarding the design or operation of U.S. commercial nuclear reactors as a result of the lessons learned from the Chernobyl disaster.

Specifically, the NRC report found that U.S. reactors have different plant designs, broader shutdown margins, robust containment structures and operational controls to protect them against the combination of lapses that led to the accident at Chernobyl.

The commission released a final report in 1992, summarizing follow-up research,

including looks at the decontamination, ingestion pathways and relocation of people. But Alvarez said the Chernobyl accident accelerated the shutdown of the U.S. nuclear weapons program by turning a spotlight on DOE's use of 1950s reactors without containment domes. Such focus sparked a series of investigations that revealed sites across the country were being contaminated, he said.

Fukushima will raise concerns about spent fuel pools and storage needs within the United States, he said, noting that more than 65,000 metric tons of spent nuclear waste was generated from nuclear plants by the end of last year.

Three-fourths of that waste is stored in pools that were not constructed to hold such large amounts of waste, and are holding four to five times the amount of material they were designed to hold.

Spent fuel pools do not face the same safety standards as nuclear reactors, and are only covered by buildings designed to protect the pools from the elements, he said. The material could remain on-site indefinitely without a national repository on the horizon, and should be stored as safely as possible until a final solution is found, Alvarez said.

<http://www.eenews.net/Greenwire/2011/04/26/9>

NUCLEAR: MIT experts say Fukushima disaster could mean tighter spent fuel rules for U.S. plants (04/27/2011)

Peter Behr, E&E reporter

Japan's nuclear plant crisis with the radioactivity contamination from spent fuel pools is likely to put an overdue spotlight on stalemated U.S. policies for managing reactor fuel, authors of a Massachusetts Institute of Technology report on the nuclear fuel cycle said yesterday.

The **report**, "The Future of the Nuclear Fuel Cycle," recommends a multi-decade program of moving spent fuel that now is stored in concrete and steel casks at reactors and decommissioned nuclear plants to a few centralized federal facilities. The authors see this as a stopgap step while an extensive research program investigates the potential for recycling spent fuel to produce new supplies. Spent reactor fuel may be either a waste or a resource, and it may take decades to find out which is true, the report authors conclude.

The 258-page report was nearly completed when the March 11 earthquake and tsunami struck Japan's northeast coast, crippling three reactors at the Fukushima Daiichi nuclear complex and damaging the fuel pool at a fourth reactor. The MIT authors did not attempt to analyze the damage to the Japanese facility.

But they predicted that the catastrophe could lead to new regulations requiring increased investment and operating costs in currently operating and future nuclear plants. "Requirements for on-site spent fuel management may increase and design basis threats may be elevated," the report says.

"The relicensing of forty-year old nuclear plants for another twenty years of operation will face additional scrutiny, with outcomes depending on the degree to which plants can meet new requirements. Indeed, some of the license extensions already granted for more than 60 of the 104 operating U.S. reactors could be revisited," it says.

"The entire spent fuel management system -- on-site storage, consolidated long-term

storage, geological disposal -- is likely to be reevaluated in a new light because of the Fukushima storage pool experience," the report says.

MIT physics professor Ernest Moniz, director of the MIT Energy Initiative and co-chairman of the spent fuel study, said that until now, U.S. policy on the disposition of spent reactor fuel has been an "afterthought." The Sept. 11, 2001, terrorist attacks led to new requirements to safeguard spent fuel pools at U.S. reactors, but the overall policy toward the nuclear fuel cycle has been bound up in the fight over the proposed fuel repository at Nevada's Yucca Mountain, which the Obama administration wants to terminate.

Moniz; Mujid Kazimi, director of the MIT Center for Advanced Nuclear Energy Systems; and Charles Forsberg, executive director of the MIT Nuclear Fuel Cycle Study, led a panel discussion of the report yesterday.

Transfer to interim fuel storage sites

The report agrees with the Nuclear Regulatory Commission's conclusion that spent fuel can be safely stored above ground for many decades, until an ultimate geological repository is built.

It takes no position on the question of whether the Nuclear Regulatory Commission should require reactor owners to accelerate transfers of spent fuel from pools into dry casks. Fuel units must be stored initially in pools at reactor sites for about five years, until the decay heat drops enough to permit movement into dry cask containers.

The Union of Concerned Scientists and other organizations have urged the NRC to order the transfer to occur once the five-year period has passed, since some fuel units remain in the pools long after that time. Industry officials say the federal government should determine what its fuel cycle policy will be before issuing such an order.

The MIT report says that transfers of spent fuel in casks could begin with the leftover fuel at decommissioned U.S. plants -- a first step that, if successful, could bolster public confidence in the process. Transfers of casks from operating reactors could follow, and the report authors said that would help resolve a long-running court dispute over payments nuclear plant operators are required to make to the federal government in return for federal storage of the spent fuel -- a bargain the federal government has not kept.

The report recommends that a new quasi-government waste management organization be established to implement the nation's waste management program. To succeed, the organization would have to have secure, long-term funding and would have to commit to local acceptance of any proposed centralized storage facility, the report says. Initial sites could be found at national laboratory locations, military bases or decommissioned nuclear plants if local communities agreed, the report says.

A fundamental assumption of the report is that current supplies of uranium are more than adequate to meet the needs of an expanding nuclear power sector, and therefore the United States should not accelerate development of reactor fuel reprocessing until extensive additional research has been done to identify the best fuel cycle technologies and strategies.

U.S. policy should aim at development of self-sustaining "fast" reactors that generate enough fuel to maintain operations, rather than pursuing breeder reactors that create excess fuel, the report says. These reactors could be started with low-enriched uranium rather than highly enriched uranium or plutonium, lessening risks of theft of materials

that could be converted into weapons.

The report calls for commitments of \$1 billion a year for fuel cycle research.

"There is also the need to rebuild much of the supporting R&D infrastructure. To support R&D for new reactors and fuel cycles, facilities will ultimately be required with special test capabilities. Examples include fast neutron flux materials test facilities, fuel-cycle separations test facilities, and facilities for novel nuclear applications," and using the higher heat generated in fast reactors for industrial purposes as well as power generation, it says.

Projected \$3 billion 'structural investment'

Some of the new facilities the report proposes have billion-dollar price tags, which would come on top of the funds sought for nuclear research and development "A structural investment on the order of \$300 million per year will be required for a decade or so to make a significant difference," it says.

The MIT report says the research in future nuclear plant technologies is justified to determine whether nuclear power emerges as a major carbon-free source of electric power. "We feel that should go forward to confirm or not the cost projections ... and the ability to build new plants in the U.S.," Moniz said.

The study estimates that new nuclear plants carry a heavy risk premium because of uncertain construction costs. This risk factor pushes the "levelized" or all-in price of nuclear power from new units to 8.4 cents per kilowatt-hour, the MIT study concludes, versus 6.2 cents for coal-fired plants and 6.5 cents for natural gas generation (if gas is priced at \$7 per million British thermal units, or roughly 1,000 cubic feet of flowing gas). "For new base load power in the U.S., nuclear power plants are likely to have higher levelized electricity costs than new coal plants (without carbon dioxide capture and sequestration) or new natural gas plants. Eliminating this financial risk premium makes nuclear power levelized electricity cost competitive with that of coal, and it becomes lower than that of coal when a modest price on carbon dioxide emissions is imposed," the report says.

Federal loan guarantees and subsidies to support construction of a few new reactors should provide evidence on the costs of new plants, the study says. If new plants can be built on time and on budget, the risk premium could fall, bringing the price of power from new plants down to 6.6 cents per kilowatt-hour -- competitive with gas and coal -- the report says.

Adding a price on carbon emissions at even a "modest" level of \$25 per ton would make new nuclear energy competitive with coal and natural gas even if the risk premium remains, the MIT study concludes.

"I think it's pretty open to what the future of nuclear power is going to be," said Moniz, and a crucial issue is the question of pricing carbon.

<http://www.eenews.net/climatewire/2011/04/27/2>

Workers at Ohio plant exposed to high radiation (04/26/2011)

Workers at the Perry nuclear power plant in Ohio were briefly exposed to unexpectedly high radiation last week, prompting a safety inspection at the plant.

The Nuclear Regulatory Commission sent a team of safety inspectors to the FirstEnergy Corp.-owned plant Monday to determine what caused the spike.

The radiation was detected Friday when four contract workers pulled a radiation monitor from the reactor core. NRC spokeswoman Viktoria Mitlyng said the workers "immediately left the area when the higher-than-expected levels were identified." Company spokesman Todd Schneider said the workers "did not use the proper method to remove the monitor," adding that the company would improve its oversight. He said the most radiation any worker was exposed to was about the equivalent of three X-rays. In March, the Perry plant was informed by federal regulators that it had not improved its "human performance issues" because workers were still making too many simple mistakes (John Funk, *Cleveland Plain Dealer*, April 26). – JP

High levels of radiation detected at Ohio nuke plant

Wednesday, April 27, 2011 03:06 AM

Associated Press

CLEVELAND (AP) - High radiation levels recorded last week at a nuclear reactor in northeastern Ohio have prompted a special inspection by the U.S. Nuclear Regulatory Commission.

Workers at the Perry Nuclear Power Plant immediately evacuated on Friday when radiation levels rose while the plant was in the process of shutting down to refuel, the commission said yesterday.

Plant officials do not think workers were exposed to radiation levels "in excess of NRC limits," the commission said.

"The plant is in a safe condition and there has been no impact to workers at the plant or members of the public from this issue," the commission said in a statement.

The commission did not say how high the radiation levels were or how often such inspections occur.

The nuclear plant, owned by Akron-based FirstEnergy Corp., is about 35 miles northeast of Cleveland and began operating in 1987. A FirstEnergy spokesman did not return a request for comment after business hours yesterday.

Radiation levels rose while workers were removing a monitor that measures nuclear reactions during start-up, low-power operations and shutdown, the commission said.

NRC investigators began inspecting the plant on Monday. The investigation will determine whether worker performance might have contributed to the incident and evaluate the level of radiation exposure to workers.

http://www.dispatch.com/live/content/local_news/stories/2011/04/27/high-levels-of-radiation-detected-at-nuke-plant.html

NUCLEAR CRISIS: Japan to begin decontaminating cooling water in June (04/28/2011)

A floating storage unit will arrive at Fukushima Daiichi nuclear plant by mid-May to hold radioactive water, and a decontamination unit will be ready by June, Tokyo Electric Power Co. officials announced this week.

Tokyo Electric pumped water into reactors and spent-fuel pools when the plant's backup power and cooling systems were knocked out by the March 11 earthquake and tsunami. The contaminated water must now be moved so that workers can fix damaged equipment.

The company, which operates the plant, expects to start decontaminating cooling water in June. The decontamination unit will use technology from Areva SA (CEI) and Kurion Inc.

Prime Minister Naoto Kan announced today that an independent commission may be set up by mid-May to investigate the nuclear disaster, the worst in the world since Chernobyl 25 years ago. This week, robots recorded the highest radiation readings since March 11 at the nuclear plant (Tsuyoshi Inajima, [Bloomberg](#), April 28).

<http://www.eenews.net/Greenwire/2011/04/28/29/>

Power Reactor	Event Number: 46744
Facility: BEAVER VALLEY Region: 1 State: PA Unit: [] [2] [] RX Type: [1] W-3-LP,[2] W-3-LP NRC Notified By: DAN SCHWER HQ OPS Officer: VINCE KLCO	Notification Date: 04/10/2011 Notification Time: 06:40 [ET] Event Date: 04/10/2011 Event Time: 03:45 [EDT] Last Update Date: 04/10/2011
Emergency Class: NON EMERGENCY 10 CFR Section: 50.72(b)(2)(i) - PLANT S/D REQD BY TS 50.72(b)(2)(iv)(B) - RPS ACTUATION - CRITICAL 50.72(b)(3)(ii)(A) - DEGRADED CONDITION 50.72(b)(3)(iv)(A) - VALID SPECIF SYS ACTUATION	Person (Organization): JOHN CARUSO (R1DO)

Unit	SCRAM Code	RX CRIT	Initial PWR	Initial RX Mode	Current PWR	Current RX Mode
2	M/R	Y	12	Power Operation	0	Hot Standby

Event Text

MANUAL REACTOR TRIP WHILE PERFORMING A TECHNICAL SPECIFICATION REQUIRED SHUTDOWN

"On April 09, 2011, at 2349 [EDT], Beaver Valley Power Station [BVPS] Unit No. 2 was operating at 15% power while preparing to synchronize the main unit generator to the grid. At that time, the 'A' Auxiliary Feedwater Injection Header was declared inoperable due to a water leak identified from a vent valve fillet weld between the inside and outside Containment Isolation Valves (outside of containment) for containment penetration X-79.

"In accordance with Technical Specification 3.7.5, Auxiliary Feedwater (AFW) System, Condition D, at 0345 [EDT], April 10, 2011, BVPS Unit 2 commenced a Reactor Shutdown to Mode 3. Required action is to be in Mode 3 within 6 hours. This event is being reported as a Technical Specification required shutdown pursuant to 10CFR50.72(b)(2)(i), 4 hour notification. Repairs are in progress. The following additional shutdown actions may be required from the time the Injection

Header/Containment Penetration was declared inoperable: Technical Specification 3.7.5, Condition D, Mode 4 in 18 hours and Technical Specification 3.6.1, Condition A, Mode 5 within 37 hours. This event is also being reported as a degraded condition for Containment pursuant to 10CFR50.72(b)(3)(ii)(A), 8 hour notification.

"Additionally, at 0357 [EDT], during the Reactor Shutdown, at 4.6% Reactor Power, the BVPS Unit 2 Reactor was manually tripped due to reaching a pre-established manual trip criteria of 25% Steam Generator Level for the 21A Steam Generator. This was conservative criteria set above automatic actuation setpoint of 20.5% level. This event is being reported as a RPS Actuation pursuant to 10CFR50.72(b)(2)(iv)(B), 4 hour notification.

"Control room personnel entered Emergency Operating Procedure E-0, 'Response to Reactor Trip and Safety Injection.' Safety systems and equipment functioned as designed following the manual reactor trip.

"Due to the cooldown and subsequent shrink of level in the 21A Steam Generator, an automatic start of the Steam Driven Auxiliary Feedwater Pump [2FWE-P22] occurred at 20.5%. This event is being reported as an Auxiliary Feedwater System Actuation pursuant to 10CFR50.72(b)(3)(iv)(A), 8 hour notification."

All control rods fully inserted into the core. The plant electrical system is aligned to normal offsite power sources. Decay heat from the reactor coolant pumps is being directed to atmospheric dump valve. There is no primary to secondary leakage. There was no impact on Unit 1. The licensee notified the NRC Resident Inspector.
