
NEWS ANALYSIS

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Page A-1

NRC employee fighting restart of Cook Unit 2

**Expert in structural engineering finds
weakness in containment**

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Bridgman – Unit 2 at Donald C. Cook Nuclear Plant was restarted over the objection of a longtime engineer in the Nuclear Regulatory Commission, NRC records show.

Ross Landsman, a 20-year employee of the NRC, argued that structural weaknesses in the unit's containment – found by Cook workers in a 1998 walkdown – could dangerously lessen its ability to contain a worst-case accident such as a main steam line break.

Landsman registered that view in a agency document called a Differing Professional View. He filed the DPV shortly before Unit 2 was restarted in June after a lengthy safety-related shutdown.

Copies of the DPV and related documents were obtained by The Tribune through a Freedom of Information Act request.

Though overruled, Landsman said in a telephone interview last week that Unit 1 has similar structural defects and he will continue to argue within the NRC against its planned return to service.

Plant officials are moving toward a mid-December restart of the idled other reactor.



"The NRC is allowing the two units to start up without adequate containment," Landsman said.

American Electric Power, the plant owner, says extensive structural tests were performed that showed containment wall strength in both units to be greater than a worst-case pressure load.

"We presented that to the NRC prior to restart (of unit 2) and they approved restart of the plant," said Bill Schalk, plant spokesman.

The NRC -- both before the restart of Unit 2 and while reviewing Landsman's objection afterward -- concluded that the unit was "degraded but operable," with a sufficient margin of safety.

"The plant is safe to operate 'as-is built' and 'as was modified,'" Jim Dyer, regional administrator of NRC Region 3 said before a meeting of the restart oversight panel earlier this month at Cook.

Yet complicating what otherwise might be chalked up to a professional disagreement over strength-vs.- load calculations and policy directives regarding restart is the NRC's own assessment of the DPV program.

An audit done by the Office of Inspector General, the agency's investigative arm, found "long-standing weaknesses" in the program that "reduce its effectiveness" in resolving differences.

Among the weaknesses, according to a draft report dated Sept. 20, are inconsistent methods of administration, delays in handling cases and a perception by filers that differing with a prevailing staff view will harm their careers.

Punched holes in argument

The containment buildings at Cook have 3 1/2-foot outer shells made of reinforced concrete. The buildings are the biggest barriers to the release of radiation. Housed inside are the reactor core, steam generators and reactor coolant systems.



D.C. Cook (continued)

Discovery of "severely degraded" concrete coating and grout, with loose pieces, inside Unit 2 was noted in a plant action request Feb. 11, 1998. At the time, it was thought that only cosmetic repairs were necessary to fix the problem.

The status remained unchanged until late 1999. Then, a crew assigned to inspect and repair the degraded concrete reported that excavation of the wall had found no solid concrete at the 14-inch depth, according to a corrective action report dated Nov. 22, 1999.

The repair work was reclassified as "structural." That required further analysis, including break-strength tests, to determine what corrective actions to take.

Other troubling discoveries were made later, including missing and cut steel reinforcement beams called rebar and open pockets where grout was supposed to be.

Plant officials claimed the Unit 2 containment had a safety margin of 1.21, meaning it would hold "over and beyond" a worst-case pressure load by 21 percent.

Landsman entered the picture as plant officials were pressing what the NRC called a "use-as-is" position in early 2000.

A project engineer with expertise in structural engineering, he was sent to the plant in March 2000. He didn't like what he saw because the wall separates the upper and lower containment areas.

"If something breaks there (in lower containment), you want to direct all that steam into the ice condenser," he explained. "If that wall breaks out, the steam could bypass the ice condenser, go up, overpressurize the upper containment and could crack it."

At the time, restart of Unit 2 was close at hand. A trade publication called "Inside NRC" reported that the operability of the containment structure was the 36th and last item on the restart list.

Ironically, degraded ice condenser systems had been a primary reason for the extended shutdown of both Cook reactors and a \$500,000 fine against AEP. The plant had been down since September 1997.



D. C. Cook (Continued)

On June 1, a meeting between Landsman, other NRC staff and Cook officials failed to eliminate Landsman's concerns.

Although the safety margin was reduced to 1.05 (5 percent), the NRC staff concluded that AEP's calculations for the Unit 2 walls were "reasonable and acceptable."

On June 6, Landsman filed his DPV with Dyer.

On June 13, the NRC approved the restart of Unit 2.

How much safety is needed?

In his DPV, Landsman claimed that the 5 percent safety margin is too small and that NRC guidelines for determining operability and allowing a license to resume operation were not followed.

While nuclear plant accidents are rare and the risk of occurrence is measured in ten-thousandths, Landsman was troubled by there being no backup or redundant system to containment.

A compensatory measure for an overpressurized upper containment, he pointed out, would be a release of radioactivity.

Those are among the factors to be considered for determining operability under NRC guidelines, he says, but the ad hoc review panel ruled they were unnecessary.

The DPV program was created to allow employees to make known their professional judgments, although they may differ from a prevailing staff view or management decision, the NRC says.

Ad hoc panels are created to review the submissions. If not satisfied with the outcome, the filer can go on to higher-level Differing Professional Opinion (DPO).

The panel, chaired by Geoffrey Grant concluded that AEP's decision to "defer a permanent repair" and "address the operability of the current condition" was "reasonable."



D. C. Cook (Continued)

The panel agreed that AEP should develop a more definitive time frame for final corrective actions on the degraded walls.

Grant also chairs the restart oversight panel, which will address this issue with AEP.

Landsman was notified of the ruling Aug. 17. By then, Cook Unit 2 was at full power.

Schalk, the Cook spokesman, said post-restart corrective actions probably will take the form of refined analysis to further quantify the strength of the walls.

“By all of our standards,” he added, “acceptable and safe to restart.”

Landsman declined to say whether he would take his DPV to the higher-level Differing Professional Opinion, but said he will continue to fight the agency’s decision.

“I have to sleep at night,” he said, adding even if he is unsuccessful, that the written filing of an objection “puts me on record.”



ANALYSIS OF NRC PRESS SAMPLES

Following are several print media stories that have recently been published about the NRC.

These samples range from good, balanced reporting to unbalanced, inaccurate reporting (the good, the bad, and the ugly!).

Working in teams, analyze the articles assigned to you.

- Describe the news treatment.

Forum

- What makes the story balanced or unbalanced?
- Are there any inaccuracies?
- What is the "story behind the story"? How do you think it came to be written the way it was?
- What can you as an NRC professional do to promote balanced, accurate reporting of topics and events?



Newspaper Clippings



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Cook containment problems

During a 1998 walkdown, severely degraded concrete and grout were discovered in the containment wall of Unit 2 at Donald C. Cook Nuclear Plant in Bridgman. Further inspections found other structural problems in Unit 1's containment. When a determination was made that the Unit 2 containment was operable, thus clearing the way for a restart in June, an engineer with the Nuclear Regulatory Commission objected, saying safety would be compromised by inadequate containment.

Upper containment spray

Refueling water storage tank

Containment sump

Ice condenser

Axiatorator

Lower containment spray

Fresh coolant pump

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