

From: A. Randolph Blough
To: (The Rev.) Michael W. Beynon
Date: 12/2/02 10:12AM
Subject: Re: PD Article Attached

Rev. Beynon:

Nice to hear from you; hope you are well. We will reply to your note within several weeks. The article you have forwarded deals with important issues. Our evaluations of plant aging issues indicate that they can be dealt with safely in programs that include proper evaluation, monitoring and management. The challenge is to make sure that effective programs are developed and implemented.

The NRC's Davis-Besse Lessons Learned Task Force report was announced by NRC press release Oct. 9, is available on our website (www.nrc.gov) and is under senior management review. Our website also includes much info on the Davis Besse problems, on plant aging, and license renewal.

Have a safe and happy holiday season.

Regards,
Randy Blough

>>> "(The Rev.) Michael W. Beynon" <seconducc@paonline.com> 12/02/02 09:30AM >>>
Dear Mr. Blough and Mr. Rogge:

Attached please find the PD Article, Nuclear Plant Aging Fiascos 11/29/02 by Stephen Koff, PD Bureau Chief. I've sent this to Bret Liberman at the Patriot News as well.

I wonder whether NRC and the Federal Agencies see this reality and anticipate adequate responses?

Mike Beynon

(The Rev.) Michael W. Beynon <seconducc@paonline.com>

Nuclear plant fiascoes likely with age, secret study suggests

The combination of the two trends - fewer inspections and aging components - sets the stage for compounding problems.

"The utilities are trying to squeeze down their operation and maintenance costs," says Harold Ornstein, who until 2000 was a senior engineer and technical adviser for the NRC, where his investigations included Three Mile Island. He says utilities are pushing their staffs to keep the plants running - at the expense of finding equipment problems that might require a shutdown.

"The idea is to pass the [inspection] test. The idea is not to go out and tell you what the problem is," Ornstein said.

The Institute of Nuclear Power Operations, the industry's own research group, acknowledges the profit pressures. If a plant shuts down its reactor to inspect a potential problem, it has to purchase replacement power. The costs often run into hundreds of thousands of dollars a day.

Pressure on staffs to keep a plant operating was a factor in all but one significant reactor problem since 1993, according to the confidential institute report.

"Therefore, given today's competitive environment, pressure to continue operating may be a notable contributor to future significant events," the report said. The institute's analyses are considered among the most credible in the industry, and insurers use them to set rates.

Move on to cut costs

"There's a big move on to reduce costs, to take tests that were once done monthly and now make them quarterly, and things that used to be done quarterly are now done yearly, and so on," says David Lochbaum, a nuclear safety engineer with the Union of Concerned Scientists.

"Aging equipment, coupled with fewer safety checks and inspections, makes it more likely that something will break or fail or be degraded below the prescribed safety margins, and not be detected before it is challenged."

That means that when it's needed, a safety system could fail.

Though the Davis-Besse incident was considered extreme, nuclear power plants in South Carolina, Virginia, Arkansas, Florida and Michigan have seen signs of similar stress cracks or leaks in nozzles or welds, according to incident reports filed with the NRC.

In other recent signs of aging:

Last December, a backup pump that's designed to send water to steam generators at the Callaway Nuclear Plant in Missouri failed to do its job. A piece of foam from a storage tank seal had weakened with age and broken loose, lodging in the pump's intake valve during a routine test, NRC reports show. Had the other backup pumps been turned on, they too could have ingested loose foam and become clogged, presenting a potential cooling problem if the main systems failed.

As had happened at Davis-Besse, the plant had ignored industry warnings and deferred inspections, according to an NRC review.

The previous year, inspectors found cracks, one of them 4 inches long, in the weld of a giant coolant pipe at the V.C. Summer Nuclear Station in South Carolina, where boric acid had been leaking for an undetermined time. Workers failed to find the cracks during a previous inspection, discovering them only when the plant shut down for refueling. Had the cracks burst, a massive amount of radioactive coolant could have escaped.

And last January, a jet pump inside the reactor vessel broke at the Quad Cities Nuclear Power Station in Illinois, requiring a shutdown. Jet pumps increase the flow of water through the reactor core. Although the manufacturer had recommended replacing the jet pumps in the 1980s, Quad Cities never did. Nor had the plant inspected the part that broke - because a manufacturer's guide did not identify it as among the components that could weaken with age.

"In other words, the plant's owner was inspecting the jet pumps in what it thought were the most vulnerable areas, but they were wrong," UCS' Lochbaum said.

Even defenders agree

Nuclear plant fiascoes likely with age, secret study suggests

Even the staunchest defenders of nuclear power acknowledge that parts and systems are vulnerable to the ravages of time.

In fact, more than 30 percent of nuclear power plant equipment failures in recent years were at least partly a result of the equipment having aged, according to a presentation at a conference in 2000 by Steve Nichols, a senior evaluator in the Institute of Nuclear Power Operations' engineering department. Nichols said he could not comment, citing institute policy.

Researchers working in concert with the government have quietly voiced concerns for nearly a decade about the consequences of plant aging.

"Effects of aging degradations, if they are not mitigated, will eventually lead to failures that could adversely affect plant safety and performance," said a 1993 study by the Oak Ridge National Laboratory, one of the research institutions that works with the NRC.

Yet, so far, the safety and backup systems at nuclear power plants have prevented life-threatening catastrophes in the United States - a fact that the industry and regulators cite to dispel fear and criticism.

High-level NRC executives like to note that for all the expense and negative publicity generated by the 1979 Three Mile Island partial meltdown, the public was not harmed. And American officials say that plants in the United States have so many backup and safety systems that the massive radiation release and deaths from the 1986 Chernobyl disaster could never happen here.

"It's not the perfect system from the standpoint of 'nothing will ever fail.' You will have failures. You will have things that leak. You will have cracks," acknowledges Alex Marion, director of engineering for the Nuclear Energy Institute, the industry's lobbying and trade group.

"The challenge, of course, is to have inspection and maintenance programs in place where you can identify these kinds of situations prior to having a serious problem at a plant."

"I think what the public ought to feel good about," adds Stephen Floyd, the Nuclear Energy Institute's senior director of regulatory reform, "is the defense in depth that's built into the plants. Not everything breaks at the same time, fortunately."

Serious incidents decline

NRC officials agree, rejecting the contention that nuclear plants are risking safety under the agency's watch. In fact, the number of serious incidents at nuclear power plants has steadily fallen, agency officials say, which is one reason the NRC lets power plants operate longer without shutting down for inspections or repairs.

The agency periodically issues warnings for parts known to fail or crack - including the nozzles that guide nuclear fuel rods, which in the case of Davis-Besse had been leaking boric acid for years. Before it will give a plant permission to operate beyond its initial 40-year license, the NRC requires a thorough inspection that covers passive components such as buried pipes. Many of the nation's 103 operating plants are expected to go through a relicensing inspection in the next decade.

Yet it's still no guarantee. In the case of the Oconee Nuclear Station in South Carolina, a relicensing front-runner, the cracks were not noticed when it underwent - and passed - an extensive inspection to renew its license for an additional 20 years. After the NRC granted the renewal, the cracks appeared.

What is more, critics say that while the number of serious incidents is down, that trend is likely to reverse, turning higher simply as a function of age.

Still, industry defenders say, the problem at Davis-Besse was not so much a failure of aging equipment but, rather, simply of FirstEnergy Corp. to adequately investigate what it should have known was a potential problem.

"Safety culture includes a good questioning attitude on the part of the plant personnel," says George Apostolakis, a nuclear engineering professor at Massachusetts Institute of Technology and chairman of an NRC committee that advises regulators on reactor safeguards. "There were several indications [of problems] there that people didn't seem to interpret correctly."

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But the NRC is far from blameless. A "lessons learned" task force assembled by the agency to assess the Davis-Besse incident concluded among other things that the agency, beset with staffing and "resource allocation" issues, had too few inspectors at the plant and "missed several opportunities" to find the problem.

Davis-Besse has forced the industry and federal regulators to focus on how they can make sure the right prevention programs are, in fact, in place.

"Without a probing, questioning attitude," NRC Chairman Richard Meserve said at a nuclear-energy conference in Mexico last week, "problems are not going to be detected as quickly as they should be."

That doesn't mean aging parts won't fail or need replacing. But it's an acknowledgment that the industry and agency need to inspect more aggressively for susceptible parts before they break.

Asked what concerns him about aging nuclear plants, Marion, the engineering director of the Nuclear Energy Institute, said, "The only thing that concerns me is whether or not we can position ourselves to be a little more proactive. . . .

"It's a very challenging effort, as you can imagine, as far as, 'How do you predict there's going to be a crack or a flaw in a piece of metal? What do you do to identify it before it becomes a significant concern?'"

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