

CHAIRMAN Resource

From: Ace Hoffman <rhoffman@animatedsoftware.com>
Sent: Wednesday, October 08, 2014 6:11 PM
Subject: Comments on the NRC Inspector General Report on San Onofre's Steam Generator failure

October 8th, 2014

Dear Readers,

The Office of Inspector General's (OIG's) report on San Onofre is out (URL below, provided by Ray Lutz).

It's pretty damning of the Nuclear Regulatory Commission (NRC).

NRC missed opportunities to see that the new steam generator designs were extensively different from the original. They could have seen that the designs were unworkable, or at least prone to vibration. Their procedures rely on random inspections, a method which invariably can miss big problems. They accept unsubstantiated claims by the licensee. They don't have the right experts doing the inspections. And they don't keep good enough documentation to reconstruct the basis for their decisions.

These are the guys in charge of the most dangerous technology in the history of the human race.

And the Augmented Inspection Team (AIT) that NRC set up after the failure? They never answered the question they were tasked with researching! (Namely: Should there have been a "50.59" license amendment procedure? (The answer was: "Yes."))

Perhaps worst of all, the NRC inspectors themselves -- despite many of them individually identifying serious problems -- still believe in the system. But truly, the system is broken because the goal is unreachable.

And what went wrong with San Onofre's steam generators is going wrong with the nuclear industry's dry cask long-term storage solution for spent nuclear fuel (called a "short-term," "temporary," "interim" or "indefinite" storage solution by the nuclear industry). The entire nuclear industry is ignoring "Beyond Design Basis Events (DBEs)" such as airplane strikes, terrorism, larger earthquakes than originally anticipated, larger tsunamis, and numerous other natural and manmade phenomena and combinations of phenomena.

Instead, regarding dry cask storage, the nuclear industry and the NRC are looking almost exclusively at the problem of hydride-induced stress corrosion cracking (SCC), such as occurs in a marine environment like at San Onofre and Diablo Canyon. Even for that, they plan on sampling less than 1% of dry casks in the country, and that's just for visible signs of damage. They might even get away with inspecting less than 1% of 1%, if the industry gets to do inspections of only ONE dry cask at ONE reactor site, as they have asked permission to do.

While SCC is certainly a serious issue, the NRC doesn't even look at the ramifications of that in the real world. For example, through-wall cracks as deep as 75% of the way through the dry cask container wall (which is only 5/8ths of an inch thick to begin with) will be allowed -- even though no seismic studies on how well a degraded cask can withstand even a design basis earthquake have been done!

Regarding the steam generator failure that doomed San Onofre, NRC had plenty of red flags on this project, and plenty of opportunities to step up their regulatory efforts, but made sure they looked the other way. San Onofre, like nearly every other reactor in America, is old and was prone to equipment failures. These "unexpected" occurrences were completely ignored in Southern California Edison's (SCE's) analysis of the cost/benefit of the steam generator replacement project. It was assumed there would never be a significant

leakage problem, or vibration problem, just as it was assumed (and still is, at Diablo Canyon and other still-operating reactors) that a Fukushima-size accident simply can't happen. (There are currently 23 reactors in America with the exact same design flaws that doomed Fukushima, and all 87 other operating commercial reactors also have potential pathways to becoming the first American Fukushima -- or worse.)

The projected one billion dollar savings for ratepayers (over a 20 year period) from the replacement steam generator project assumed nothing would go wrong -- including a drop in the price of natural gas (which happened). And let alone, a drop in the price of renewable energy solutions (which also happened). And let alone, a bone-headed engineering SNAFU that could have been avoided if only SCE hadn't tried so hard to avoid regulatory (and public) oversight entirely.

NRC has some very strange ways of doing things. For example, they will accept two changes in opposite directions as being the exact equivalent of no change at all. This can make it very easy for a utility to squeeze by without any deep regulatory review.

In other words, let's say for example that a replacement pipe is made of thinner or weaker metal than the part it is replacing. That would, of course, increase the risk of that pipe bursting. But the utility can call it a wash if a different pipe that's also being replaced at the same time can be made stronger or thicker, which would reduce the risk of that pipe bursting! Such types of calculations MIGHT be okay from a total "risk analysis" point of view. But from the point of view of whether or not something is a change, it's completely ridiculous voodoo math. And perfectly legal at the NRC.

While this OIG report is pretty damning of the NRC, it by no means exonerates SCE.

The nuclear industry in America is dying a far-too-slow death. Lack of proper regulatory oversight has kept it alive far too long.

When the NRC was first formed in 1975, this author, naively, thought that, now that the regulatory and promotional parts of the Atomic Energy Commission have at last been separated (the Department of Energy being the other half, of course), the dangers of nuclear power will be recognized by the regulators, who will surely shut down this dangerous and useless technology.

So if I were to tell you that perhaps this report will start to change things at the NRC, you should take it with a grain of salt. And don't hold your breath.

However, after reading NRC regional chief at the time Elmo Collins' comments (see SD-U-T article, below, top), I'm not about to say that. NRC continues to stubbornly cling to the idea that its real duty is to serve the nuclear industry, not the public.

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From: San Diego Union-Tribune:
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SAN ONOFRE REPORT FAULTS OVERSIGHT BY REGULATORS

2009 inspection cited as "missed opportunity" to identify weaknesses in generator project

By Morgan Lee 5:05 A.M.OCT. 8, 2014

U.S. nuclear safety regulators missed red flags in 2009 when they agreed to pre-approve steam generators at the San Onofre nuclear plant without a thorough review, leading to the installation of faulty equipment, according to a federal inquiry released Tuesday.

San Onofre was permanently shut down last year by plant operator Southern California Edison because of the rapid degradation of newly replaced steam generators.

In a 55-page report, the Office of the Inspector General at the Nuclear Regulatory Commission said a 2009 inspection by the agency failed to recognize "shortcomings" in the way the replacement of the huge steam generators was evaluated. It also raised questions about why Edison was allowed to install new generators without seeking a change in its federal operating license.

The inspection team from the Nuclear Regulatory Commission reviewed a decision by Edison to replace San Onofre's steam generators without prior approval from the agency, the report said. No objections were raised by the nuclear commission at the time, and installation of the new generators began in September 2009.

Edison installed the generators under a frequently used rule that allows plant operators to replace equipment without prior approval, provided they can show the switch does not cause significant changes to plant operation or safety.

A subsequent review, after the plant broke down, turned up questions about shortcomings in Edison's evaluation of changes to the original generator design and whether there was sufficient evidence to sidestep a license amendment, which can take months or years to complete.

The inspector general's report characterized the 2009 inspection as a "missed opportunity" to identify weaknesses in Edison's screening of the project, and said there was "no assurance the NRC reached the correct conclusion" when it agreed that a license amendment wasn't needed to replace the generators.

Edison is reviewing the report and had no immediate comment.

Elmo Collins, the former regional administrator overseeing San Onofre until March 2013, told investigators that if a lengthier license amendment review had been conducted, it is unlikely the steam generators would have been approved.

"The steam generators as designed were basically unlicensable," he said. "We wouldn't approve them."

He said a more thorough review may have prompted probing questions about predictions on steam velocities. Rapid wear among generator tubes at San Onofre was linked to dry, fast-moving steam.

"Some reviewer would have said this is an outlier and we need to understand that," the inquiry report said, paraphrasing Collins.

Sen. Barbara Boxer, D-Calif., faulted both Edison and the nuclear commission and said a hearing is planned before the Senate Environment and Public Works Committee. Boxer heads the committee, which oversees safety regulations for U.S. nuclear plants.

"When Southern California Edison decided to completely replace their steam generators in order to increase their profit margin, they failed to apply for an amended license as they are required to do, and the NRC stood by and did nothing," Boxer said in a statement.

The inquiry report shows that some inspectors on the 2009 team were in the midst of training on how to evaluate whether a major reactor component replacement, such as a steam generator, can go forward without a re-evaluation of the plant's safety systems. Many experts within the agency said better training and guidance is needed.

Steam generators are routinely replaced at nuclear reactors because of corrosion and wear and tear. Since 1989, 53 of the 65 plants that utilize steam generators have replaced their generators without prior approval by the commission.

Six replacements have been made following the license amendment process.

NRC spokeswoman Lara Uselding said the agency was reviewing the report.

Federal authorities traced the generator problems at San Onofre to botched computer codes used to design the generators.

Previously, the commission cited Mitsubishi Heavy Industries for flawed computer codes used in the design of the steam generators. Edison was cited for failing to properly check the design.

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At 12:26 PM 10/8/2014 -0700, Ray Lutz wrote:
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>UT news item:
><http://www.utsandiego.com/news/2014/oct/08/tp-san-onofre-report-faults-oversight-by/>
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>Actual report (55 pages):
<http://pbadupws.nrc.gov/docs/ML1427/ML14276A478.pdf>

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