Nuclear Engineer Warns Unresolved Safety Issues Threaten San Onofre Reactors

New Report Reveals Reactor Operator SoCal Edison Misled Federal Regulators

A new analysis released today by one of the nation’s leading independent nuclear engineers has revealed that serious unresolved safety problems at Southern California Edison’s San Onofre nuclear reactors could lead to significant radiation releases if the plant is allowed to restart. The paper also documents that Edison misled the federal Nuclear Regulatory Commission about changes made to the plant, which have led to unforeseen and undiscovered safety problems. To date, Edison has failed to provide substantive information to the public about the safety problems and testing at San Onofre.

The analysis is available online at http://www.foe.org/news/blog/2012-03-nuclear-engineer-warns-san-onofre.

The study by Arnie Gundersen and Fairewinds Associates, and commissioned by nuclear watchdog Friends of the Earth, is the first public technical analysis since problems were discovered at the two now-closed reactors at San Onofre:

Reactor Unit 2 was undergoing a regularly scheduled shutdown in January when severe damage was found in tubes in the steam generator system.

Reactor Unit 3 was shut down by Edison on January 31 after radioactive water leaked from a damaged pipe in the steam generators.

The steam generators at both reactors are only months old and were installed at a cost to ratepayers of some $671 million.

In his analysis of available public information, Gundersen has concluded that “both units 2 and 3 have experienced extraordinarily rapid degradation of their steam generator tubes.” He has concluded that the “severe short-term steam generator degradation” could lead to a “large risk of tube failure” and result in “an uncontrolled release of radiation into the environment.”

While the NRC has said that the “root cause of the tube leak has not yet been determined”, Gundersen concludes that four significant changes were made to the design of the new steam generators, all of which may be contributing to their dramatic degradation: the tube alloy used is
different, the reactor flow rate was changed, more steam generator tubes were added, and key modifications were made to the “egg crate” architecture that holds the tubing in the steam generator. Yet when Edison notified the NRC that it would be replacing the steam generators, it argued that it was making a “like for like” replacement. By misleading the NRC on the true nature of the replacement, Edison fooled the NRC into giving a rubber stamp and not conducting a thorough NRC review and approval process.

“If the NRC allows either San Onofre reactor to restart without a thorough root cause analysis and another tube or tubes were to fail, radioactive releases might be significantly larger.... The reactors both have severe problems and Edison made changes that the NRC appears not to have understood or were not told about. Fairewinds Associates recommends that both [San Onofre] Unit 2 and Unit 3 remain shut down until the root cause of each nuclear reactor rapid steam generator tube failures are understood and repaired, reliability is assured, and radioactive releases are prevented,” Gundersen concludes in the report.

A team from the Nuclear Regulator Commission was at the site in the last few weeks.

“Californians deserve the truth about what’s happening at San Onofre,” said Damon Moglen, Director of the Climate and Energy Project at Friends of the Earth, who commissioned the study. “Southern California Edison’s culture of secrecy is putting millions of local residents at risk. Edison’s problems at the site are fundamental, must be fully investigated, publicly disclosed and fully rectified before the utility can be allowed to consider restarting these dangerous, old reactors. Given that Edison has clearly mislead the NRC about these steam generators, we believe that the agency needs to step in and take charge.”

Gundersen is an energy advisor with 40-years of nuclear power engineering experience. A former nuclear industry senior vice president, he earned his Bachelor and Master Degrees in nuclear engineering, holds a nuclear safety patent, and was a licensed reactor operator. During his nuclear industry career, Gundersen managed and coordinated projects at 70-nuclear power plants around the country.

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KEY FINDINGS OF THE NEW ANALYSIS OF THE SAN ONOFRE NUCLEAR GENERATION STATION

Edison Kept Steam Generator Replacement Details Secret from NRC

The San Onofre reactors near San Diego have significant problems because their four steam generators have extensive degradation.

Although the reactors are almost 30 years old, these steam generators are new – they were replaced in 2009/2010. The original steam generators lasted for over 25 years, but the new ones have shown “astronomical wear rates” in only two years.

Southern California Edison had told the Nuclear Regulatory Commission (NRC) that the new steam generators would be an exact replacement – a “like for like” swap – which meant that NRC approval was not required.

Yet clearly something is different about the new generators, though Southern California Edison has not said what and is not taking the necessary steps to find out.

Fairewind Associates identified four changes that could account for the rapid deterioration:

- the tube alloy was changed;
- reactor flow rate was changed;
- more steam generator tubes were added; and/or
- modifications were made to the “egg crate” that holds the tubes separate and apart.

Push to Restart Reactors Even Though Cause of Deterioration Not Known

Steam tube failures in reactors designed like San Onofre cause a significant nuclear safety issue by substantially increasing the risk of an accident that releases radioactivity into the environment.

Simple inspections conducted by using Eddy Current tests indicate that more than 100 tubes show astronomical wear rates, need further evaluation, and must be plugged prior to resuming plant operation.
Southern California Edison has pressure tested only the tubes in San Onofre unit 3 and failed to perform similar tests on unit 2. In addition, the NRC has sent an inspection team only to unit 3. Without pressure testing unit 2, Southern California Edison cannot know the full extent of this critical safety and reliability issue.

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