



Michele G. Evans, Director  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
One White Flint North  
11555 Rockville Pike  
Rockville, MD 20852-2738  
**Docket Nos. 50-361 and 50-362**

Re: Proposed Director's Decision

March 27, 2015

Director Evans,

The following is Friends of the Earth of the Earth's response to the Proposed Director's Decision of NRR Director William M. Dean, in response to the Commissioner's November 8, 2012, memorandum and order on this matter (CLI- 12-20) (ADAMS Accession No. ML 12313A118). In that order, the U.S. Nuclear Regulatory Commission (NRC, the Commission) referred to the NRC's Office of the Executive Director for Operations (EDO) for consideration as a petition under 10 CFR 2.206 a portion of Friends of the Earth of the Earth's June 18, 2012 petition concerning the 10 CFR 50.59 violation involving replacement steam generators at the San Onofre nuclear reactors.

Despite the very important issues involved in this case: involving serious errors on the part of both Southern California Edison (Edison) as the utility operator, and the NRC as the failed regulator, the Agency proposes to 'sweep this matter under the carpet' by concluding that the case is moot because the reactors have subsequently been closed. Based on the most astounding circular reasoning, the agency charged with assessing how defective steam generators could have been designed and operated without adequate oversight by the agency, has decided that the very failures that forced the reactors to be closed, actually justify the agency in deciding that the matter is now moot.

We disagree entirely: the NRC permitted Edison to design, construct, install and operate defective steam generators and NRC only came to recognize that there was a problem after there had been an accident involving the release of radiation. Such willful ignorance of serious safety risks is an indictment of both the agency and the utility. Neither the NRC nor Edison is absolved by the closure of the reactors.

The basic questions posed by the 2.206 petition are (1) how was such abdication of responsibility allowed to occur and (2) what will be done in response? The answer given in the draft Director's Decision is basically: the plant is shut down so there is no need to take action. This is a disgrace. We do not agree that the question is moot nor do we agree with the proposed conclusion that the agency will take no action to address serious problems that plague the agency's use of the 50.59 and 2.206 processes.



## The Facts

On January 31, 2012, San Onofre Nuclear Generating Station (San Onofre) experienced a steam generator tube leak in Unit 3 that resulted in the release of radioactive material into the environment. Prior to the leak in Unit 3 at San Onofre, Edison had discovered excessive wear in Unit 2, which was offline for a refueling outage. Subsequently, untimely degradation of the walls of many tubes was discovered in the replacement steam generators (RSG) for Units 2 and 3 after, respectively, less than two years and approximately eleven months.

These events were the result of design choices made by Edison during the specification, design, and construction of the four RSGs for San Onofre Units 2 and 3. In the early 2000s, Edison made a decision that it was time to replace the original steam generators (OSG) at San Onofre, which had given twenty-eight years of relatively trouble-free service.

Edison filed an application for authority to go forward with the RSGs with the California Public Utility Commission (PUC) on February 27, 2004. When Edison sought bidders for the job of building the RSGs, it specified that the RSGs should be designed and constructed such that no license amendment would be required under 10 C.F.R. 50.59 (Arnie Gundersen, "2.206 Presentation San Onofre Units 2 and 3 Replacement Steam Generators [before the NRC 2.206 Petition Review Board, January 16, 2013], slide 6). Edison asked that the supplier "guarantee in writing that the RSG design is licensable and provide all support necessary to achieve that end." (Id at slide 8) A Design Specification for RSG #2 required the supplier to provide "an engineering evaluation . . . justifying that the RSGs can be replaced under the provision of 10 CFR 50.59 (without prior NRC approval)." (Id at slide 9)

In June 2006, after the contract was let and Mitsubishi Heavy Industries (MHI) had begun initial work, Edison met with the NRC. In this meeting, Edison asserted that the RSGs would be built without a license amendment, but provided no 10 CFR 50.59 analysis to support this assertion to the regulators. (Id at slide 11)

As detailed in the Petition, the design process proceeded, Edison required the RSGs to be significantly changed by comparison to the OSGs. Edison required 377 more tubes in the RSG, which were to be placed in the center of the tube bundle. This decision required elimination of the stay cylinder that was in the center of the bundle on the OSG. A new "broached plate" design was used for the tube supports, replacing the egg crate design of the OSG. Together these and other changes increased the steam quality, reducing the liquid water in the U-bend portions of the RSG as compared to the OSG. Edison did not seek a license amendment with regard to these design changes in the RSG.

Such a combination of changes was not made when other generating plants installed RSGs. At Palo Verde, for example, 10% more tubes were incorporated into the RSG but placed at the periphery, not center, of the tube bundle. Though the additional tubes produced 2.9% more heat, Palo Verde has experienced no fluid elastic instability (FEI) problems and virtually no tube damage. Thus, the problem at San Onofre was a foreseeable consequence of certain design decisions made by Edison.

Since beginning operation in 2010/11, the foreseeable and foreseen high void fraction in the four new RSGs created a fluid elastic instability causing thousands of steam generator tubes to vibrate excessively and hit each other and the restraining structures around them. This vibration induced damage created a radiation leak in one RSG tube, and the weakening of seven other tubes that jeopardized the primary radiation containment barrier.



In January 2012, Unit 3 experienced a tube leak that lead to the discovery of extensive tube wear in both Units 2 and 3 after just a short period of operation. The tube degradation in each unit was unlike tube wear in any other replacement steam generators in U.S. plants at the same stage of their useful lives. San Onofre Unit 2 has 1595 degraded tubes; Unit 3 has 1806. Unit 2 has 4721 tubal wear indications; Unit 3 has 10,284. Unit 2 has 510 tubes plugged after one cycle of operation of the replacement steam generators; Unit 3 has 807. Edison and the Nuclear Regulatory Commission (NRC) reported that 9% of the tubes in Unit 3's steam generators had greater than 10% through-wall wear indications. In Unit 2, 5% of the tubes showed such wear. Only one other RSG has suffered a similar amount of tube degradation, but the Advisory Committee on Reactor Safety concluded that the tube wear at that plant is "different than the form of degradation" at San Onofre. Advisory Committee for Reactor Safeguards, NRC, July 23, 2012, letter to R.W. Borchardt, Executive Director for Operations, NRC, "SUBJECT: Final Safety Evaluation Report Associated with the Florida Power and Light St. Lucie, Unit 2, License Amendment Request for an Extended Power Uprate" at 4.

In March of 2012, an Augmented Inspection Team (AIT) was dispatched to San Onofre to investigate independently the tube degradation at San Onofre Units 2 and 3. Both Edison's and AIT's investigations identified FEI as the immediate mechanical cause of the excessive tube wear. But neither determined the root cause of the premature and extensive tube degradation in the RSGs.

Edison did not perform 10 CFR 50.59 evaluations prior to predetermining that its changes in the steam generator design for San Onofre Units 2 and 3 would not require a license amendment process and NRC evaluation.

#### Procedural History

Friends of the Earth of the Earth filed a Petition to Intervene with the Nuclear Regulatory Commission on June 18, 2012. The Commission did not act on the Petition until November 8, 2012, when it referred one issue raised by Friends of the Earth of the Earth's Petition to the Executive Director for Operations: whether Edison needed a license amendment to replace the steam generators at San Onofre Units 2 and 3. On December 10, 2012, NRC staff contacted counsel for Friends of the Earth to begin the 2.206 process. On January 9, 2013 Edison filed a response to the Petition in the 2.206 proceeding in which it argued that Edison could not have foreseen, and did not know, that the design of the RSG had increased the risk that FEI would cause premature tube wear on an unprecedented scale, as well as failure of some tubes.

The NRC held a public meeting on January 16, 2013 in which Friends of the Earth made a presentation to the staff and answered questions about the Petition. On February 6, 2013, Friends of the Earth filed a response to the Edison submission of January 9, 2013, as was agreed during the January 16, 2013 public meeting at the NRC.

Since that time, the 2.206 petition has languished before the agency despite (1) the issuance of a May 2013 Atomic Safety and Licensing Board ruling in Friends of the Earth' favor, which held that Edison must undergo a license amendment review before being allowed to restart the reactors and damaged steam generators, (2) Edison's announcement of the closure of San Onofre in June 2013, and (3) the completion of a NRC Investigator General's investigation into "NRC Oversight of Licensee's Use of 10 CFR 50.59 Process to Replace SONGS' Steam Generators, Case No. 13-006) on October 2, 2014.



### A Failed Process

When Friends of the Earth filed its original Petition to Intervene before the Commission on June 18, 2012, we specifically asked that our petition not be construed as a request for enforcement relief under 10 C.F.R. 2.206 as we held that it was (and is) not a “viable alternative” for obtaining relief. Now, nearly three years later, we have been proven entirely correct.

In the public interest community, the 2.206 process is considered the “bone yard” of the agency—nothing living goes in that is not reduced to bones after agency inaction and prevarication. The record of the agency is abysmal when it comes to letting 2.206 cases languish and ultimately to turning down those cases brought by members of the public or public interest organizations. In our case, we have been subjected to a Board Chair (Mr. Bahadur) who fell asleep during our presentation before the NRC on January 9, 2013. And since then, as part of the agencies unwillingness to rule in this case, we have seen numerous petition managers rotated in and out. And now, we have a draft decision apparently issued by Director, Mr. William M. Dean, but signed by NRR Deputy Director Jennifer L Uhle, and actually provided to us by Michele G. Evan, Director, Division of Operating Reactor Licensing in NRR who is taking responses to the draft (yet more prevarication on who is actually owning this decision?).

The failure of the 50.59 process in the case of the San Onofre steam generators has lead to the failure of hundred million dollar equipment, and, in turn, the demise of billion dollar reactors. In response, the agency has decided that the closure of the reactors, rather than proving a need to investigate and reform the 50.59 process, points in favor of continued willful ignorance.

### Conclusions of the IG Investigation Question Process at NRC

It is striking that while the NRC ignored Friends of the Earth’ 2.206 petition, the Investigator General of the NRC, under pressure from Congress, investigated and issued its own report regarding NRC oversight of the Licensee’s use of the 50.59 process to replace the SONGS’ steam generators (Case No. 13-006) (IG Report). Its conclusions document a series of shortcomings on the part of the agency—all of which this draft ruling also seeks to sweep under the carpet:

**1. Missed Opportunities.** The report states that NRC, “[m]issed opportunities during NRC Region IV 2009 Inspection of SONGS’ implementation of the 10 CFR 50.59 process to identify weaknesses in the SONGS steam generator 50.59 screening and evaluation package...The questions raised by the subject matter experts pertain to (1) insufficient support for 10 CFR 50.59 evaluation conclusions that contributed to the decision that a license amendment was not needed and (2) methodology changes that should have been considered for screening but were not listed in the screening documentation. OIG found that (1) without knowing whether everything that should have been screened was screened, and the outcomes of these screenings, and (2) without reviewing additional information concerning the evaluation conclusions, there is no assurance that NRC reached the correct conclusion in its 2009 inspection that SONGS did not need a license amendment for its steam generator replacement.”(IG Report at v and vi)



**2. Flawed Process Failed to Address Flawed Equipment.** The report further states that, "OIG found that although an NRC Region IV Augmented Inspection Team (AIT)...included a review of the SONGS 50.59 steam generator package to determine whether SONGS needed a license amendment prior to installing the new steam generators, the AIT did not document an answer to this question." (IG Report at vi). But, the report continues,

The Acting NRR Director said he could not determine if an amendment was needed or not due to the gaps that may exist regarding items that may require screening and/or evaluation. The current Region IV Deputy Regional Administrator said additional inspection would be required to answer whether a license amendment was required, and questioned whether it would be a prudent use of resources to go back and accomplish that. The former Region IV Deputy Regional Administrator said that in hindsight, he believes that SONGS should have requested a license amendment from NRC prior to make the change. He also believes the steam generator design was fundamentally flawed and would not have been approved as designed. He said the AIT discussed a potential 50.59 criteria violation because of design issues; however the AIT ultimately identified a design control violation. (IG Report at vii)

OIG found that NRC's justification for closing out URI number 10 does not align with specific language in 10 CFR 50.59 concerning NRC approval for a change in methodology, but was based on Region IV's interpretation (in consultation with the NRR) of the rule. 10CFR 50.59 (a)(2)(ii) reflects that changes from a method described in the UFSAR to another method are permissible without NRC preapproval if that method has already been approved by the NRC for the "intended" application.... OIG notes that while the AIT characterized the issue as a change in methodology, it justified closing the matter on approval for a "similar" application rather than the "intended" application as state by the rule. (IG report at viI)

**3. Failed Oversight.** The IG also cited the NRC's inability to correctly execute its regulatory duties:

The OIG found problems with NRC oversight of SONGS FSAR:

OIG found that NRC does not consistently use one of its primary oversight methods to assess whether licensees are keeping their power plant licensing basis documentation up to date as required by 10 CFR 50.71 (e).... OIG found that while NRC expects a plant's UFSAR to accurately reflect the plant's licensing basis, the former Region IV Deputy Regional Administrator said that during the SONGS AIT, Region IV staff noted the licensee had made many changes to the steam generators over a 25-year period that were not reflected in the UFSAR or consistent with the original Safety Analysis Report (SAR). (IG report at vii, viii)

The IG report describes the former Deputy Regional Administrator's expectation that the Staff would address these issues in the very Petition that this office now proposes to dismiss as moot:

The former Deputy Regional Administrator added that the AIT follow-up report addressed the flow velocity and thermal-hydraulic conditions -are unresolved items, which were to be dispositioned through the escalated enforcement process. While the AIT report addresses these issues, the report did not reach a conclusion on the 50.59 violation even though he and some staff members concluded the licensee violated 50.59 (2)(c)(ii). He noted that this issue was not



pursued because of the 2.206 petition submitted to the NRC Petition Review Board by the Friends of the Earth of the Earth. The petition posed the very question regarding whether the licensee violated 50.59 and the Petition Review Board has the responsibility to make the recommendation to the NRR Director who can then reach a decision on the issue. (IG Report at 42) In addition, "the former Deputy Regional Administrator said in hindsight, he believes that SONGS should have requested a license amendment from the NRC prior to making the change. He also believes the steam generator design was fundamentally flawed and would not have been approved as designed." (IG Report at 42)

The NRC should be ashamed that while the IG report notes that key NRC staff themselves saw Friends of the Earth' 2.206 petition as the opportunity to address the serious 50.59 issues that had been identified, the NRR has instead taken it upon themselves to reject the Petition as moot in an attempt to bury and suppress these issues.

### Conclusion

Friends of the Earth does not accept the argument that this issue has been rendered moot by the closure of the reactors at San Onofre. To the contrary, the failure of the 50.59 process led to the design and installation of defective equipment. The NRC was complicit in that failed process and these failures have outlived the reactors themselves. At this point, we contend that the regulatory failures are as important and relevant and demanding of attention as they were nearly three years ago when these same problems had caused what was then believed to have been a temporary closure of the plant. In addition, like others, we are deeply concerned that these same 50.59 problems may have tarnished decisions made about other steam generators and, unless addressed, may yield equally, if not more dramatic failures.

Accordingly, we ask that this draft decision be rejected and that the NRC instead rule on the basis of the hundreds of pages of analysis and argument presented to it by the parties in this case, as well as by the IG Investigation itself. In addition, beyond the need to address the serious 50.59 related failures in this case specifically, it is clear that glaring deficits in the 50.59 and 2.206 processes regularly lead to utilities' 'gaming' the system and the NRC failing to hold the operators fully accountable for the regulations and safety requirements. It is essential that these broader problems be addressed immediately-the specters of Fukushima, Chernobyl, and Three Mile Island stand as grim reminders of what is truly at stake.

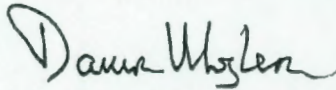
We believe that the Commissioners referred this matter to the NRR in November 2012 with faith that they would conduct a thorough and proper investigation and would seek to identify and solve problems. We are calling on the Chairman and Commissioners to intervene in this dreadful and mistaken draft decision. The Chairman has a responsibility to assure the many dedicated and concerned staff at the NRC who are committed to serving in the public interest that processes like these will not be twisted to deny and obscure faults on the part of the agency or licensees.

We are deeply concerned that the issues raised by the IG Investigation are at risk of being swept under the carpet by this draft decision and thus we are referring this matter to the IG and hope that they will intervene in this case.

Senator Boxer and Senator Feinstein showed great concern over what happened at San Onofre and about the role that the agency played in the plant's demise. We will continue to work with them to ensure that such a reckless abandonment of regulatory duties never happens again.

Finally, Friends of the Earth firmly believe that there are many diligent and concerned staff at the NRC who are dedicated to serving in the public interest. We are dismayed that this draft ruling is an embarrassment to them and to the work they do to protect the public.

Sincerely,

A handwritten signature in dark ink, appearing to read "Damon Moglen". The signature is fluid and cursive, with the first name "Damon" being more prominent than the last name "Moglen".

Damon Moglen

Senior Strategic Advisor, Climate and Energy Program

Friends of the Earth of the Earth

CC: NRC Chairman Stephen G. Burns  
NRC Commissioner Jeff Baran  
NRC Commissioner Kristine L. Svinicki  
NRC Commissioner William C. Ostendorf  
NRC Inspector General Hubert Bell  
NRC Assistant Inspector General for Investigations Joseph McMillan  
US Senator Barbara Boxer  
US Senator Dianne Feinstein



## CHAIRMAN Resource

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**From:** Moglen, Damon <DMoglen@foe.org>  
**Sent:** Tuesday, March 31, 2015 11:49 AM  
**To:** CHAIRMAN Resource  
**Subject:** Friends of the Earth Response to Draft Director's Decision Regarding San Onofre 2.206 proceeding  
**Attachments:** FOErespToNRCdraftdecision03282015hs.pdf  
**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

Hello Chairman Burns, I have copied you on the response that Friends of the Earth has made to the Draft Director's Decision regarding our 2.206 petition regarding the failure of the replacement steam generators at San Onofre. As the Commission instructed the staff to consider this petition, we are requesting that you intervene in the misguided decision to close down this 2.206 proceeding on the basis of San Onofre being shut. As we have written in our response to the Draft Decision:

"The NRC permitted Edison to design, construct, install and operate defective steam generators, and NRC only came to recognize that there was a problem after there had been an accident involving the release of radiation. Such willful ignorance of serious safety risks is an indictment of both the agency and the utility. Neither the NRC nor Edison is absolved by the closure of the reactors."

We are very concerned that this decision is part of an effort to sweep the failures exposed by San Onofre under the carpet. Please note as well that we have referred this matter to the Inspector General and to both of California's Senators. We would be happy to meet with you to discuss this matter further. Thank you in advance for your consideration. Sincerely, Damon Moglen

Damon Moglen  
Senior Strategic Advisor  
Climate and Energy Program  
Friends of the Earth  
1100 15th Street, NW  
11th Floor  
Washington, DC 20005  
office: 202-222-0708  
cel: 202-352-4223  
skype: damonmoglen