

Case No: 2016-0306

Date Rec'd 2/19/16

Ennis, Tina

Specialist

Related Case

From: Argent, Nina  
 Sent: Friday, February 19, 2016 9:05 AM  
 To: FOIA Resource  
 Subject: FW: Fwd: Notice of Draft of Upcoming FOIA Request for San Onofre Analysis Records by NRC AIT Team - An effort to help NRC and Nuclear Industry to determine the cause of in-plane FEI in San Onofre Unit 3 RSGs

Attachments: SCE Response Letter 5-13-15 (11).pdf

FYI

From: Vinod Arora (b) (6)  
 Sent: Friday, February 19, 2016 5:29 AM  
 To: Dean, Bill <Bill.Dean@nrc.gov>; Kulesa, Gloria <Gloria.Kulesa@nrc.gov>; Organizing for Action <info@barackobama.com>; Weiss, Michael (Boxer) <Michael\_Weiss@boxer.senate.gov>  
 Cc: R4ALLEGATION Resource <R4ALLEGATION.Resource@nrc.gov>; Argent, Nina <Nina.Argent@nrc.gov>  
 Subject: [External\_Sender] Fwd: Notice of Draft of Upcoming FOIA Request for San Onofre Analysis Records by NRC AIT Team - An effort to help NRC and Nuclear Industry to determine the cause of in-plane FEI in San Onofre Unit 3 RSGs

NRC has to comply with President Obama & Justice Louis Brandeis ..... as shown below. NRC statement, "Federal regulators have closed a case that questioned whether Southern California Edison violated government rules when it installed faulty equipment at the now-closed San Onofre nuclear power plant. The Nuclear Regulatory Commission ruling concluded the issue is no longer relevant since the coastal reactors, located between Los Angeles and San Diego, are retired." is totally unacceptable. The issue is completely relevant as discussed in "NRC SONGS Lessons Learned Memo" and associated Nuclear Industry Response. So, the NRC is pursuing this investigation through a hidden and backdoor avenue to save SCE/MHI is completely ridiculous and contrary to President Obama & Justice Louis Brandeis.

----- Forwarded message -----

From: Vinod Arora (b) (6)  
 Date: Thu, Feb 18, 2016 at 2:02 PM  
 Subject: Notice of Draft of Upcoming FOIA Request for San Onofre Analysis Records by NRC AIT Team - An effort to help NRC and Nuclear Industry to determine the cause of in-plane FEI in San Onofre Unit 3 RSGs  
 To: "Argent, Nina" <nina.argent@nrc.gov>, R4ALLEGATION Resource <R4ALLEGATION.Resource@nrc.gov>

# FOIA Request Submittal Form

Top of Form

On January 21, 2009, President Obama issued a memorandum on the Freedom of Information Act (FOIA) reaffirming the government's "commitment to accountability and transparency." On March 19, 2009, the Attorney General issued new FOIA guidelines implementing the President's policy. The NRC is processing all FOIA requests in accordance with these new guidelines. NRC states in its website, "A democracy

requires accountability, and accountability requires transparency. As Justice Louis Brandeis wrote, "sunlight is said to be the best of disinfectants." The Government should not keep information confidential merely because public officials might be embarrassed by disclosure, because errors and failures might be revealed, or because of speculative or abstract fears. Nondisclosure should never be based on an effort to protect the personal interests of Government officials at the expense of those they are supposed to serve.

Freedom of Information Act & Privacy Act Requests

**Failure to enter complete information may result in the inability to process your FOIA request.**

Name: (**\*Required for an electronic response**)

Vinod Arora

Company/Affiliation

AVP Arora International ([www.avparorainternational.org](http://www.avparorainternational.org))

Address 1: (**\*Required for an electronic response**)

8840 East Wiley way

Address 2:

[       ]

City: (**\*Required for an electronic response**)

Anaheim Hills

State: (**\*Required for an electronic response**)

[CA V]

Zip Code: (**\*Required for an electronic response**)

92808

Country:

(X) United States

( ) Other - Specify: [       ]

E-mail:

[avparorainternational@gmail.com](mailto:avparorainternational@gmail.com)

Phone:

714-305-1903

Description of Records:

Based on an in-depth review of SCE Design Specifications, 3 papers by published by SCE Engineers, 10 CFR 50.59 Evaluation & Screen, SCE/MHI Design Meeting Note, SCE/MHI Root Cause Evaluations and NRC AIT Report, the San Onofre Units 2 & 3 Replacement Steam Generators (RSGs) are nearly identical in design specified by SCE (out-of-plane FEI). SCE/MHI and NRC AIT tried desperately to show that the Unit 2 RSGs designed for out-of-plane FEI could have miraculously functioned to prevent in-plane FEI based on insignificant contact forces assuming that operating conditions in units 2 & 3 were the same or similar. MHI Repair Plan rejects the first conclusion and AVP backed by their technical experts\* reject the second conclusion. AVP concludes, "San Onofre Unit 2 RSGs AVBs were neither designed nor capable of preventing in-plane FEI under conditions of dry steam and peak steam velocities produced in Unit 2 RSGs. Only manufacturers like Westinghouse (CE), Babcock & Wilcox, Inc. Canada and Doosan (South Korea) are capable of designing the high steam flow steam generators for preventing in-plane FEI. SCE & MHI (based on a review of design of Palo Verde/ANO-2 RSGs, San Onofre OSGs, Mitsubishi Repair Plan and SCE/MHI Meeting Notes) were NOT capable (between 2005-2013) of designing the San Onofre high steam flow steam generators for preventing in-plane FEI in a dry steam environment. MHI states, 'Each SG on unit 3 had about 160 tubes with TTW. Only 2 tubes in one unit 2 SG had TTW. This difference was caused by manufacturing and fabrication improvements implemented for unit 3. These improvements resulted in lower tube to AVB contact force in unit 3 SGs compared to unit 2 SGs. MHI SONGS RSG design did not consider the phenomenon of in-plane FEI because contemporary knowledge and industry U-bend SG operation experience did not indicate a need to consider in-plane FEI.' SCE/MHI hypothetical and unverified analytical assumptions that the difference in small contact forces with thinner AVBs, length of operation and dings/dents explains the large difference in tube-to-tube wear between the San Onofre Units 2 & 3 with identical hydraulic conditions is completely nonsense and a smoke screen to hide their errors in the design/operation of RSGs. The NRC AIT contention that result of the "Independent NRC thermal-hydraulic analysis did not identify any changes in steam velocities or void fractions that could attribute to the differences in tube wear between the units or steam generators" is once again utterly nonsense to hide NRC's limitations and errors in the approval of design/operation of RSGs. Therefore, it is a matter of utmost urgency (public and nuclear safety) to determine the Exact Root Cause of what caused in-plane FEI in San Onofre Unit 3 RSGs."

\*Supported by academic research/San Onofre papers from Dr. Pettigrew, Dr. V. Dhir, Dr. Joram Hopenfeld, John Large, Beckman & Associates, South Korean Engineers, design of Palo Verde/South Korean RSGs and NRC ASLB San Onofre Ruling

Repeated requests to NRC AIT Leader, NRC SONGS Special Panel, NRC Region IV Allegation Coordinator, NRC Steam Generator Chief, NRC ACRS, SCE Management and MNES Chairman to examine carefully the operational differences between Units 2 & 3 and determine its impact on the tube-to-tube interactions that resulted in steam generator tube wear in Unit 3 replacement steam generator tubes have been ignored and not addressed to date. NRC NRR has not asked SCE to address the impact of operational differences between Units 2 and 3 on Unit 2 and Unit 3 tube-to-tube wear."

Under Freedom of Information Act (FOIA), AVP Arora International, a US Government Public Charity & Nuclear Safety Educational/Research Organization bounded by its Charter seeks access to, "All files and analysis in possession of NRC AIT Team regarding San Onofre Units 2 & 3 Operation/Thermal-Hydraulic and ATHOS Analysis\*\* to challenge (in public and nuclear safety interest) the following evasive, confusing and inconclusive conclusions in NRC AIT Report: (a) Although the steam generator tube degradation from this phenomenon observed in Unit 2 steam generators was not as severe, the NRC team concluded that both units' steam generators were of similar design with similar thermal hydraulic conditions and configurations, (b) The result of the independent NRC thermal-hydraulic analysis indicated that differences in the actual operation between units and/or individual steam generators had an insignificant impact on the results and in fact, the team did not identify any changes in steam velocities or void fractions that could attribute to the differences in tube wear between the units or steam generators. The NRC AIT contradicts its own analysis by concluding: "(a) The above analyses apply equally to Units 2 and 3, so it does not explain why the accelerated fluid-elastic instability wear damage was significantly greater in Unit 3 steam generators, (b) The ATHOS thermal-hydraulic model predicts bulk fluid behavior based on first principals and empirical correlations and as a result it is not able to evaluate mechanical, fabrication, or structural material differences or other phenomena that may be unique to each steam generator. Therefore, this analysis cannot account for these mechanical factors and differences which could very likely also be contributing to the tube degradation, (c) Since generator physical dimensions and design are identical, the operational parameters are basically the same between the Unit 2 and 3 steam generators; therefore, the hydraulic forcing function that caused tube-to-tube wear and accelerated anti-vibration bar and tube support plate wear should also be same, (d) Modeling two-phase flows is very complex since it exhibits various flow regimes, or flow patterns, depending on the void fraction of the two-phase fluid and the flow rate. Additionally, flow patterns can be irregular or chaotic. However, averaged behavior based on conservation equations can be used to model one-dimensional steady-state and transient two-phase flow in reactors and steam generators. Some simple transients are relatively easy to model and can be validated with data while others are more difficult and data to validate the results are scarce. Three-dimensional analysis with axial, radial, and tangential control volumes adds additional complexities of momentum equations for the added direction, and (e) Dry saturated steam at about 850 psia has a density of about 2.0 lbm/ft<sup>3</sup>, and the NRC, Mitsubishi, and Westinghouse results predict that there are significant areas in the U-bend, in the affected region, where velocities are high and steam is nearly dry. Peak velocities and void fraction support the tube-to-tube wear patterns found in the Unit 3 steam generators."

\*\* San Onofre NRC AIT Report issued July 18, 2012, 3.0, "Operational Differences in Configuration and Operation between Unit 2 and 3 (NRC AIT Charter ML12075A258, item 3) a. "Inspection Scope", Page 21, (2) "Operational Differences", Page 22 and c. "Conclusions", Page 23.

SCE and NRC lost both to the San Onofre Ruling signed by the NRC Atomic Safety Licensing Board. The Judges stated in a unanimous ruling that SCE changed the design of San Onofre OSGs from in-plane FEI to out-of-plane FEI by removal of stay cylinder, egg-crate lattice grids and added more tubes without a license amendment. Compared with OSGs, these changes in RSGs by SCE to maximize the thermal power/profits reduced the circulation ratios, increased the pressure losses, added more tube bundles in the hot-leg side with the highest heat flux adding another heat source and susceptibility to in-plane FEI by increasing the void fractions, velocities, hydro-dynamic pressures and reducing the damping in area of tube-to tube-wear.

After successful functional testing of the Unit 3 RSGs, but not being sure of the as-built design, SCE changed the Unit 3 RSGs operational parameters in an attempt to reduce the void fractions. In the process, SCE exceeded the Unit 3 RSGs steam pressure design/testing limits (900 psi) to reduce tube wear/minimize dings/dents and probably to boost the efficiency of turbine generators to deliver more power to the grid (Based on discussions with the San Onofre Shift managers). To make up for the thermal power (lower steam enthalpy value due to increase the steam pressure), SCE increased feedwater flows and pumped higher primary energy (By increasing RCS Flow/Temperature – 79-79.8 Mlb/hr, 5,703 - 5770 MBtu/hr) into Unit 3 RSGs (compared to Unit 2 RSGs – 77.5 Mlb/hr, 5,604 MBtu/hr). This adverse change resulted in extremely high steam velocities (31 feet/second) and production of dry steam (Void fractions > 99.6%) lowering the frequency of tubes in Unit 3, which caused some tubes to exceed their critical velocity and move in the in-plane direction with large amplitudes and high kinetic forces without being restrained by the out-of-plane AVBs. The moving tubes in the Unit 3 RSGs contacted other tubes causing a tube leak, which caused forced shut down of Unit 3. Eight other tubes failed subsequent pressure testing, and there was “unprecedented” damage to hundreds of additional tubes. As shown above, SCE pumped lower energy in Unit 2 RSGs and did not exceed the seam pressure design/testing limit of Unit 2 RSGs. This prevented in-plane FEI in Unit 2 (steam velocities, 25-28 feet/second; wet steam, void fractions < 99.0%, in-plane susceptibility > 99.3%), but still caused some tubes in the Unit 2 RSGs to move in the out-of-plane direction with large amplitudes, hitting the AVBs resulting in tube-to-AVB wear due to low tube-to-AVB contact forces. Based on the MHI Repair Plan, the design of the Palo Verde/South Korean RSGs and the San Onofre OSGs, the difference in the double the contact forces between Units 3 and 2 RSGs to explain in-plane FEI in Unit 3 RSGs is a smoke screen, invented by SCE/MHI and simply does not explain this large difference in in damages between Unit 3 and 2 RSGs (As-built Units 2/3 RSGs contact force with thinner AVBs < 3 Newton’s, Mitsubishi Repair Plan - Contact force with thicker expandable AVBs required to prevent in-plane FEI > 30 Newton’s). The OSGs had a void fraction of 96%, velocities of 23 feet/second, stability ratios of 0.675 and the upper tube bundle support system, which supported the horizontal tube spans against high velocity, two-phase cross flow and prevented formation of low-flow dry-out regions from causing in-plane FEI. The secondary side pressure loss specified by SCE in RSGs was 19 psi (Actual Unit 3 RSGs - 42 psi, Unit 2 RSGs - 42 psi & Units 2/3 OSGs - 36 psi). Now, SCE is hiding Units 2 & 3 operational data using flimsy excuses and is focused on collecting money from ratepayers by blaming NRC, MHI, CPUC, Senator Boxer and others in order to hide its own mistakes.

SCE is falsely accusing NRC by making misleading material representations and evasive statements to hide its design and operational errors) by stating that NRC AIT used analytical assumptions and results, not operational data (please read attached letter for details). NRC is a US Government Agency, which can arrive at inconclusive and incorrect technical conclusion of a very complex problem due to time, budget and manpower restraints, but does not publish fake data. Nuclear Industry expressed serious doubts about NRC SONGS Lessons Learned Memo issued in March 2015. While discussing their response to the degradation observed at San Onofre, the industry indicated that it could not do a formal lessons learned evaluation since much of the information is not publicly available (i.e., it is proprietary); however, they did indicate that testing regarding the major cause of degradation (i.e., in-plane fluid-elastic instability) was warranted and was being pursued. The industry will be working with various vendors to determine an appropriate test matrix with a

targeted completion date for this matrix in March 2015. The testing will be done in Canada at facilities where the Canadians are doing some of their own testing on this phenomenon. The series of tests proposed by Canadian Nuclear Labs is a phased project and will be finished in approximately 3 years. Prediction of the final solution is difficult (new Connor's constant, more effective supports, etc.). Goal is to understand what leads to the onset of in-plane fluid elastic instability. Utilities may be able to use results to avoid operating in these regimes. SG designers may be able to understand their margins in operating SGs and avoid it with new designs (Reference: NRC ADAMS ML15043A610 & ML1506400). Based on the available data, AVP and independent experts have already determined what caused in-plane FEI in Unit 3 RSGs. NRC AIT Team is welcome and encouraged to request the above mentioned papers and send to Dr. Pettigrew, Dr. V. Dhir and NRC NRR Engineers for confirming or rejecting the AVP findings. The conditions which caused in-plane FEI in Unit 3 RSGs cannot be duplicated in laboratory studies, calculated by ATHOS Analysis, traditional thermal-hydraulic and justified by sensitivity/uncertainty analysis. The adverse conditions which caused in-plane FEI in Unit 3 RSGs can only be determined by analyzing the Unit 2 and 3 Cycle 16 operational data records found in operator logs and the plant computer system.

SCE & MHI did not analyze the impact of differences in tube wear between San Onofre Units 2 & 3 due to differences in: (a) San Onofre Units 2 & 3 operational conditions, and (b) design between RSGs and OSGs. NRC AIT Team did not analyze the impact of differences in tube wear between San Onofre Units 2 & 3 due to differences in design between RSGs and OSGs. NRC analysis regarding the impact of differences in tube wear between San Onofre Units 2 & 3 due to differences in San Onofre Units 2 & 3 operational conditions is inconclusive. This problem was identified & communicated in the following order:

1. San Onofre Root Cause Training Consultant in June 2012 to Vinod Arora.
2. San Onofre Employee Vinod Arora in June 2012 to SCE & MHI Management.
3. Beckman & Associates in July 2012 to NRC.
4. Union of Concerned Scientists in October 2012 & April 2014 to NRC.
5. NRC in numerous communications between December 2012 to 2015.
6. SCE & MHI in communication by Channel 10 ABCS San Diego in April 2013.
7. SCE in communications by AVP Attorney in April 2014.
8. AVP CEO Vinod Arora in numerous communications to MNES President in 2015.



**Fee categorization**

Select the category that best describes you or your organization: (**\*Required for an electronic response**)

- Affiliated with a private corporation and seeking information for use in the company's business.
- Affiliated with an educational or noncommercial scientific institution, and this request is made for a scholarly or scientific purpose and not for commercial use.
- An individual seeking information for personal use and not for a commercial use.
- A representative of the news media and this request is made as part of news gathering and not for a commercial use.

Enter media company name: [            ]

Select type of media:

- Newspaper
- Magazine
- TV/Radio Station
- Other – Enter description and purpose: [            ]

**Expedited Processing**

**Do Not fill out the following unless you are requesting expedited processing.**

**To request expedited processing check the appropriate box and provide an explanation:**

- Failure to obtain requested records could reasonably be expected to pose an imminent threat to the life or physical safety of an individual.
  
- Request made by a person primarily engaged in disseminating information, urgency to inform the public concerning actual or alleged Federal Government activity.

**Fee Waiver**

**Do Not fill out the following unless you are requesting a fee waiver.**

**The NRC will not consider your request for a fee waiver unless all eight criteria are addressed:**

1. Describe the purpose for which you intend to use the requested information.
2. Explain the extent to which you will extract & analyze the substantive content of the records.
3. Describe the nature of the specific activity or research in which the records will be used & the specific qualifications you possess to utilize information for the intended use in such a way that it will contribute to public understanding.
4. Describe the likely impact on the public's understanding of the subject as compared to the level of understanding of the subject existing prior to disclosure.
5. Describe the size & nature of the public to whose understanding a contribution will be made.
6. Describe the intended means of dissemination to the general public.
7. Indicate if public access to information will be provided free of charge or provided for an access fee or publication fee.
8. Describe any commercial or private interest you or any other party has in the agency records sought.



May 13, 2015

Thomas M. McIntosh  
Attorney At Law  
1502 N. Broadway  
Santa Ana, CA 92706

Re: Data Request San Onofre Nuclear Plant

Dear Mr. McIntosh:

This letter responds to your April 22, 2015 letter requesting Southern California Edison Company (SCE) to produce certain operational information regarding the San Onofre Nuclear Generating Station (SONGS) replacement steam generators (RSGs) to AVP Arora International, Inc. (AVP). The letter indicates that your firm represents AVP, which you describe as a non-profit organization dedicated to the promotion of safe nuclear facilities around the United States.

The letter indicates that AVP is concerned about "significant and alarming inconsistencies in the findings of SONGS Units 2 & 3 operational data" for the RSGs, as identified in the Westinghouse Unit 2 Operational Assessment (Westinghouse OA); SCE Conformed Specification SO23-617-01 (Specification); and Nuclear Regulatory Commission (NRC) Augmented Inspection Team Report (AIT Report). Specifically, AVP identifies various alleged differences in technical information (e.g., steam generator flow rates, pressures, and circulation ratios) contained in the three documents. Please note, however, that contrary to AVP's understanding, the technical information identified by AVP does not pertain to RSG operational data. Rather, the information cited from the Westinghouse OA and AIT Report are analytical assumptions and results, not operational data, and the information cited from the Specification are design criteria, not operational data. When these facts are taken into account, the technical information in the three documents is consistent.

In addition, SCE has permanently retired SONGS, and is beginning to implement plans to decommission the facility. The NRC has also completed its inspections, investigations, and reviews regarding the RSGs. For these reasons, among others, there is no basis for your April 22 request. SCE is appropriately focused on ensuring that SONGS decommissioning proceeds safely and efficiently in a cost-effective manner. For information regarding SONGS decommissioning, please visit [www.songscommunity.com](http://www.songscommunity.com).

Very truly yours,



Walker A. Matthews III