BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

Order Instituting Investigation on the Commission's Own Motion into the Rates, Operations, Practices, Services and Facilities of Southern California Edison Company and San Diego Gas and Electric Company Associated with the San Onofre Nuclear Generating Station Units 2 and 3.	Investigation 12-10-013 (Filed October 25, 2012)
And Related Matters.	Application 13-01-016 Application 13-03-005 Application 13-03-013 Application 13-03-014

MOTION OF SOUTHERN CALIFORNIA EDISON COMPANY (U 338-E) TO SEAL PORTIONS OF THE AWARD OF THE ARBITRAL TRIBUNAL IN THE ARBITRATION AMONG SOUTHERN CALIFORNIA EDISON COMPANY, EDISON MATERIAL SUPPLY, SAN DIEGO GAS & ELECTRIC COMPANY, THE CITY OF RIVERSIDE, MITSUBISHI NUCLEAR ENERGY SYSTEMS, INC. AND MITSUBISHI HEAVY INDUSTRIES, LTD.

[FILED CONCURRENTLY WITH PUBLIC VERSIONS OF THE PROPOSED CONFIDENTIAL DOCUMENTS. BECAUSE THESE DOCUMENTS EXCEED SIZE AND PAGE LIMITS, THEY ARE BEING FILED ON AN ARCHIVAL-GRADE DVD PURSUANT TO RULE 1.13]

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Dated: June 7, 2017

Pursuant to Rule 11.4 of the Commission's Rules of Practice and Procedure, Southern California Edison Company (SCE) respectfully moves for leave to file the Final Award of the Arbitral Tribunal in the above-referenced arbitration under seal, once the Final Award is received. Concurrently with this Motion, SCE is filing and serving a redacted copy of the March 13, 2017 Award[1] and Concurring and Dissenting Opinion, as well as a redacted version of the Addendum to the Award (reflecting corrections, as described below). Also concurrently, SCE is filing an unredacted copies of the March 13 Award, Concurring and Dissenting Opinion, and the Addendum to the Award as proposed confidential documents in accordance with ALJ Houck's May 31, 2017 Ruling.

Mitsubishi Nuclear Energy Systems, Inc. and Mitsubishi Heavy Industries, Ltd. (collectively, Mitsubishi) contend that certain passages in the March 13 Award and Concurring and Dissenting Opinion reflect confidential information that should not be publicly released. AREVA Inc. (Areva), and Westinghouse Electric Company LLC (Westinghouse) have made similar contentions with respect to certain passages in the Award that discuss their documents. Under the Confidentiality Order entered in the arbitration proceeding, when a party to the arbitration (such as SCE and San Diego Gas & Electric Company (SDG&E)) receives a written request from the California Public Utilities Commission requiring the disclosure of Confidential Information, the recipient of the request is required to give prompt written notice to the Producing Party (here, Mitsubishi, Areva, and Westinghouse) and reasonably cooperate with the Producing Party in its efforts to seek an appropriate remedy to maintain confidentiality or limit disclosure. SCE has provided such notice to Mitsubishi, Areva and Westinghouse, and those parties have requested that SCE file a motion for leave to file the unredacted arbitration award documents under seal. Accordingly, SCE presents this motion on behalf of Mitsubishi, Areva,

[1] As noted below, the Arbitral Tribunal is in the process of issuing corrections to its initial award. Thus, to distinguish between the Final Award which will eventually be issued and the version issued on March 13, the version currently in the arbitration parties' possession will be referred to as the "March 13 Award."

and Westinghouse, as required by the Confidentiality Order. SCE takes no position on the relief requested herein beyond presenting the views of those parties; specifically, SCE takes no position on whether the information that Mitsubishi, Areva and Westinghouse wish to file under seal is confidential. The remainder of this motion was drafted by Mitsubishi.

1. INTRODUCTION

As explained below, although the award of the Arbitral Tribunal was received on March 13, 2017, the Parties to the arbitration proceeding thereafter filed two Requests for Corrections to that award, seeking the correction of typographical and computational errors. Although the Parties to the arbitration proceeding recently received notice that the Tribunal has prepared an Addendum to the Award in order to make the requested corrections, and that the ICC Court has approved the Addendum, the Tribunal has not yet finalized and executed the Addendum.[2] Thus, the version of the award currently in the possession of the Parties to the arbitration proceeding (the March 13 Award) is incorrect and contains misstatements; until the signed Addendum or Final Award is received, it is not yet possible to provide the Commission with a true and complete copy of the Final Award.

Nonetheless, by this Motion, SCE moves the Commission for an Order granting confidential treatment to certain information included in the version of the arbitration award currently in the parties' possession as well as the Final Award. Specifically, SCE seeks confidential treatment of what Mitsubishi, Areva, and Westinghouse assert is proprietary, non-

[2] The form of the final, corrected Award which will be issued by the Tribunal is unknown to the Parties to the arbitration. It is likely that the Tribunal will either issue a corrected version of the March 13 Award or an Addendum containing only the corrected paragraphs in final form ("Addendum"). The documents submitted by the Tribunal to the ICC Secretariat include both. In connection with this Motion, a redacted copy of the unsigned Addendum will be filed and served. If both documents are received from the Tribunal as a Final Award, a redacted copy of the corrected version of the March 13 Award ("Final Award") will be filed and served and an unredacted copy of the Final Award will be filed as a potential confidential document (barring an Order to the contrary by the Commission). If only a signed Addendum is received from the Tribunal, a redacted copy of it will be filed and served, and an unredacted copy will be filed as a potential confidential document.

public information as well as the names of individual current or former employees of the parties to the arbitration. Concurrently herewith, SCE is (a) publicly filing and serving a copy of the March 13 Award and Concurring and Dissenting Opinion, as well as the unsigned Addendum, with redactions as filed with the Tribunal for consideration in accordance with the terms of the Confidentiality Order entered in the arbitration proceeding, and (b) filing as a confidential document, but not serving, a copy of the unredacted March 13 Award and Concurring and Dissenting Opinion now in its possession, as well as an unredacted copy of the unsigned Addendum. SCE also seeks the ALJ's permission to publicly file and serve a redacted version of the Final Award within two business days of receiving both the final, signed Award and the Tribunal's ruling on the proposed redactions (expected to occur by June 13).

2. BACKGROUND

On January 5, 2017, ALJ Houck issued a ruling in this proceeding, directing SCE and SDG&E to "file and serve in this proceeding any decision issued in the arbitration between SONGS co-owners and Mitsubishi Heavy Industries Ltd. within 48 hours of such decision being issued." On January 11, 2017, SCE and SDG&E filed a joint response to the January 5 ruling, in which they noted that a Confidentiality Order had been entered in the arbitration proceeding, under which non-public information included in the orders and opinions of the Tribunal are deemed Confidential Information, such that SCE and SDG&E have not been at liberty to publicly disclose Confidential Information in the initial arbitral decision. Specifically, the January 11 filing advised that:

> Section 6.7 of the Confidentiality Order [in the Arbitration] establishes a process whereby Arbitration Parties may request a redaction of portions of the Tribunal's Final Award, limited to information which (a) is kept confidential under the Purchase Order, (b) constitutes trade secret or business proprietary information protected from disclosure under contractual obligations or applicable law or (c) any references to individual current or former employees of the Arbitration Parties by name. Under section 6.7, each party shall have 14 days to suggest redactions, and the Arbitration Parties have 14 days thereafter to meet and confer to resolve any disagreements regarding proposed redactions. If they are unable to resolve the disagreement, the Arbitration

> Parties will have 7 days in which to make a joint submission to the Tribunal, and the tribunal will determine whether the information merits redaction.

In light of this process, SCE and SDG&E's January 11 filing proposed to file and serve a notice within 2 business days of receiving the Final Award stating the dollar amounts awarded by the Tribunal, and to file a redacted version of the Final Award within 2 business days of receiving same. SCE and SDG&E provided the promised notice, and still plan to file the final redacted version of the Award as promised once the Tribunal rules on the redactions, which the parties expect to occur by June 13.

The parties to the arbitration received the initial award from the Tribunal on March 13, 2017. The award consists of two documents: an award signed by the three members of the Arbitral Tribunal that is 1115 pages in length, and a Concurring and Dissenting Opinion signed by one of the arbitrators of 49 pages. Although the parties to the arbitration proceeding exchanged proposed redactions within the 14 day schedule mentioned above, and began to meet and confer regarding those redactions, SCE also met with certain OII Parties to attempt to obtain their input on redactions made by Mitsubishi. Unfortunately, the process of meeting with OII Parties extended the schedule, and ultimately, representatives of the Alliance for Nuclear Responsibility (A4NR) refused to consent to virtually any of Mitsubishi's technical redactions.[3] On or about May 21, SCE and Mitsubishi agreed that they would submit a table summarizing the disputed redactions and the explanations therefore to the Tribunal on May 31.

While the redaction process was underway, in early April 2017, the Parties to the Arbitration filed two separate requests with the Tribunal, seeking correction of computational and typographic errors in the March 13 Award. Although both requests were submitted with the concurrence of the non-requesting parties, the corrected Award has not yet been issued by the

[3] The arbitration Parties' redactions fall into two categories: (1) trade secret or proprietary commercial or technical information related to the design of the steam generators or the design of the repair of the steam generators, and (2) names of current or former employees of the Parties. There is no disagreement between the Parties to the arbitration as to the need to redact the latter category of information, and A4NR does not object to those redactions.

ICC. By email dated May 25, 2017, the ICC Secretariat advised the Parties that a draft Addendum to the Final Award containing the Parties' requested corrections had been approved by the ICC Court, but that it had not yet been finalized and signed by the Arbitral Tribunal. Thus, as of now, the Parties to the arbitration do not have a complete, correct, signed Final Award from the Tribunal.

On May 26, 2017, ALJ Houck issued a ruling in this proceeding, directing SCE and SDG&E to "file and serve the written award issued by the International Chamber of Commerce no later than 2 days from the date of this Ruling." On May 30, 2017, SCE, acting at the request of Mitsubishi, objected to the filing and service of an unredacted copy of the award, and requested an extension of the deadline for filing and serving the award in order to permit it to file a Motion to Seal the unredacted award. Areva and Westinghouse requested the same of SCE. On May 31, 2017, ALJ Houck granted SCE an extension to June 7, 2017 to file and serve a Motion to Seal, and, ordered it to file the unredacted March 13 Award as a proposed confidential document with the Motion, and to file and serve the redacted version of that award on the service list in the proceeding. This Motion complies with the May 31 Ruling.[4]

3. INFORMATION CONTAINED IN THE AWARD IS PROPRIETARY TO THIRD PARTIES AND SHOULD BE FILED UNDER SEAL

In accordance with the May 31 Ruling, SCE is filing unredacted copies of the March 13 Award, Concurring and Dissenting Opinion, and unsigned Addendum as proposed confidential documents, and requests that the ALJ order that they be afforded that status. These unredacted versions include both portions identified as confidential and proprietary by Mitsubishi, Areva, and Westinghouse as well as the names of current and former employees of Mitsubishi and SDG&E. Both the March 13 Award and the Concurring and Dissenting Opinion quote from technical documents authored by Mitsubishi, Areva and Westinghouse, and, they assert, contain confidential and proprietary information of those companies. The General Manager of

[4] As noted above, SCE and SDG&E do not currently possess a complete, correct signed copy of the Final Award from the Tribunal.

Mitsubishi's Nuclear Energy Systems Division, the Director of NSSS Engineering for Areva, and the Director of Component Replacements & Engineering in the Systems and Component Engineering Department of Westinghouse have provided declarations attesting to the confidential and proprietary nature of the redacted portions that are in dispute, stating that the information would provide competitors with competitively advantageous proprietary information (*see* Kaguchi (Mitsubishi) Declaration at ¶ 7, Fleck (Areva) Declaration at ¶ 6(d), and Andersen (Westinghouse) Declaration at ¶ 3). Each of the declarants noted that the information included design, manufacture, and/or technical information proprietary to their respective companies (*see* Kaguchi Decl. at ¶ 5, Fleck Decl. at ¶ 6, and Andersen Decl. at ¶ 3). (Copies of these declarations are attached hereto.) Notably, the declaration supplied by Mitsubishi includes a 55 page table explaining why Mitsubishi believes that each and every technical redaction challenged by A4NR is properly redacted, proprietary, trade secret information. Further, a review of the redacted version of both the March 13 Award and Concurring and Dissenting Opinion shows that, in Mitsubishi's view, in light of the limited scope of the redacted data as compared with the breadth of the Award, the redacted information is of nominal additional value to the Commission and the public given the otherwise expansive explanation of the rationale of the Arbitrators in reaching the conclusions set forth in the March 13 Award and Concurring and Dissenting Opinion.

As noted above, a Procedural Order governing the arbitration requires the Parties to redact Confidential Information from the Award before disclosing it to entities other than regulators. Specifically, the Procedural Order states:

> The redacted version of the Final Award is not Confidential Information or Items and may be disclosed without limitation. The unredacted Final Award may be disclosed to [regulatory agencies] provided that the Party disclosing the Final Award seeks confidential treatment ….

Further, California courts routinely redact or seal documents that would otherwise be available to the public when "compelling reasons" exist, and the protection of proprietary information and trade secrets is well-established as a "compelling reason" to redact or seal records. *See, e.g., Velasco v. Chrysler Grp. LLC*, No. CV1308080DDPVBK, 2017 WL 388797,

at *3 (C.D. Cal. Jan. 26, 2017) ("These documents are the product of Chrysler's economic efforts and public disclosure could allow competitors to build parts with similar specifications and manufacturing processes without investing the same effort into research and development"); *Polly v. Intuitive Surgical, Inc*., No. 15-CV-04113-MEJ, 2017 WL 878019, at *3 (N.D. Cal. Mar. 6, 2017) ("The proposed redactions of Exhibits 11 and 12 pertain to specific data about the MCS instrument that qualifies as trade secrets that could be used to harm ISI's competitive advantage. ISI's interest in maintaining the confidentiality of their trade secrets outweighs the public's interest in accessing this information…. Further, the proposed redactions are narrowly tailored in accordance with Civil Local Rule 79-5(b)."); *Benedict v. Hewlett-Packard Co.*, No. 13-CV-00119-BLF, 2016 WL 3568922, at *4 (N.D. Cal. July 1, 2016) ("The Court finds that the redactions proposed in HP's Motion for Summary Judgment [and supporting documents] are sealable because they contain confidential and private information about HP's business strategy and trade secrets.").

The unredacted March 13 Award also contains the names of current and former employees of the Parties to the arbitration. None of the OII Parties who reviewed the redactions has objected to the redaction of this information; the publication of an unredacted award will, of course, make this information public.

Finally, the CPUC has previously allowed documents containing similar information to be sealed in connection with this proceeding. In January 2013, SCE filed a motion to seal a portion of the evidentiary record on the grounds that certain documents contained proprietary, non-public information. SCE filed "Public Versions" and "Proprietary Versions" of the documents at issue. The motion was granted by ALJ Darling on April 19, 2013; in reaching her decision she concluded that:

> Based on *in camera* review of the redacted charts, graphs, and numbers, I find they are primarily reflections of the proprietary underlying process used to develop the complete reports. The data is generally discussed in the public version text of each report. … The redacted information appears to be of nominal additional value to the Commission and the public given the otherwise broad disclosure of the reports.

In Mitsubishi's, Westinghouse, and Areva's view, ALJ Darling's April 2013 conclusions are fully applicable to the redactions at issue here.

4. Conclusion

For the reasons stated above, SCE respectfully requests the Commission to deem as Confidential the unredacted version of the March 13 Award, the Concurring and Dissenting Opinion, and the unsigned Addendum filed as potential confidential documents. SCE also respectfully requests leave to publicly file a redacted version of the Final Award within two business days of receiving the Final Award once the Arbitral Tribunal has executed it and ruled on the proposed redactions. Finally, SCE respectfully requests the Commission to rule that SCE may file an unredacted copy of the Final (corrected) Award under seal, once that document is received.

Date: June 7, 2017

Respectfully Submitted,

J. ERIC ISKEN
WALKER A. MATTHEWS
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Attorneys for
SOUTHERN CALIFORNIA EDISON COMPANY

Appendix 1

MITSUBISHI HEAVY INDUSTRIES, LTD.

DECLARATION

I, Hitoshi Kaguchi, declare as follows:

1. I am General Manager, Nuclear Energy System Division, of Mitsubishi Heavy Industries, Ltd. ("MHI"), and have been delegated the responsibility of reviewing the Award of the Final Award and the Concurring and Dissenting Opinion of one arbitrator (the "Award Documents") in the International Chamber of Commerce ("ICC") Arbitration, ICC Arbitration Case No. 19784/AGF/RD (Southern California Edison Company, Edison Material Supply, San Diego Gas & Electric Company and the City of Riverside vs. Mitsubishi Nuclear Energy Systems, Inc. and Mitsubishi Heavy Industries, Ltd.). In part, my review of the Award Documents has been to determine whether those documents contain trade secrets and proprietary information that are subject to confidential treatment and privileged from public disclosure under the California Public Records Act and the ICC Procedural Order governing the handling of such information in connection with the Award Documents.

2. In accordance with my responsibilities, I have reviewed the Award Documents, totaling over 1,150 pages in length and have determined that both documents contain MHI trade secrets that should be withheld from public disclosure under the California Public Records Act and the ICC Procedural Order.

3. Attached as Appendix A to this Declaration is a table which I understand was partially prepared by SCE after consultation with the Alliance for Nuclear Responsibility (A4NR). The left and center columns identify the redactions in the Award Documents that I understand SCE is challenging on behalf of A4NR. The right column explains why MHI, Areva and/or Westinghouse believes that each of the challenged redactions is considered to be a trade secret and/or proprietary information that should be withheld from public disclosure under the California Public Records Act and the ICC Procedural Order.

4. The unredacted Award Documents have been, and will continue to be, held in confidence by MHI. Limited disclosures of redacted information outside MHI to regulatory bodies may be required, but MHI will not disclose, to customers or potential customers, or their agents, licensees, etc., any of the MHI confidential information that has been redacted unless such disclosure is required and made pursuant to an agreement providing for non-disclosure and limiting the use of the information.

5. The basis for MHI's redaction of its technical information in the Award Documents is that the information is comprised of trade secrets which include unique design, manufacturing, experimental, and investigative information developed by MHI and not used in the exact form by any of MHI's competitors. These trade secrets were developed at significant cost to MHI in terms of time, expense and intensive MHI effort.

6. The referenced trade secrets are not available in public sources and could not be gathered readily from other publicly available information. Other than through the provisions in paragraph 4, above, MHI knows of no way the trade secrets it redacted could be lawfully acquired by the organizations and individuals outside of MHI.

7. Public disclosure of the referenced trade secrets would assist competitors of MHI in their design and manufacture of nuclear plant components and design of the repair of same, without incurring the costs or risks associated with the design and the manufacture of the subject components. Therefore, disclosure of the trade secrets contained in the Award Documents would deprive MHI of its economic value and have the following negative impacts on the competitive position of MHI in the U.S. and world nuclear markets:

    a. Loss of competitive advantage due to the costs associated with development of technologies relating to the component design, manufacture and examination. Providing public access to such trade secrets permits competitors to duplicate or mimic the methodology without incurring the associated costs.

    b. Loss of competitive advantage of MHI's ability to supply new or replacement components such as steam generators.

    c. Loss of competitive advantage of MHI's ability to repair existing steam generators and to develop additional repair technology for steam generators and their components.

I declare under penalty of perjury that the foregoing declaration and the matters stated therein are true and correct to the best of my knowledge, information and belief.

Executed on this 5 day of June, 2017.

H. Kaguchi

Hitoshi Kaguchi
General Manager, Nuclear Energy Systems Division
Mitsubishi Heavy Industries, Ltd.

Yasuhiro Shimono
Kobe District Legal Affairs Bureau
NOTARY
44 Akashimachi, Chuo-ku,
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88 JUN. - 5. 2017

登簿平成２９年第８８号

認　　証

嘱託人　三菱重工業株式会社　パワードメイン原子力事業部　事業部長代理　加口　仁　は本職の面前で添付書面に　署名　した。

Yasuhiro Shimono
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よって認証する。

平成２９年６月５日

本職役場に於て

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神戸地方法務局所属

公証人　下野恭裕

公　証　人　役　場

Registered Number 88 Date JUN. - 5. 2017

NOTARIAL CERTIFICATE

This is to certify that **HITOSHI KAGUCHI , General Manager, Nuclear Energy Systems Division , MITSUBISHI HEAVY INDUSTRIES, LTD** has affixed his signature in my very presence to the attached document.

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Appendix A

Appendix A to Declaration of Dr. Hitoshi Kaguchi - Responses to Redactions Challenged by A4NR[1]

¶	Redacted Document	Content	Mitsubishi's Position[2]
149	Final Award[3]	In total, some **[Redacted]** AVBs are employed to prevent the tubes from hitting tubes in other columns.	The number of AVBs represents detailed MHI proprietary design information for the SONGS RSGs, and as such constitutes trade secrets and proprietary and confidential information.
266	Final Award	MHI's response of 9 May 2003 to SCE's Request for Information proposed a CR [circulation ratio] of approximately **[Redacted]** as part of the design criteria for the RSGs	Circulation ratios calculated by MHI for the SONGS RSGs constitute trade secrets and proprietary and confidential information. The redaction of circulation ratios was previously endorsed by the CPUC ALJ in its April 19, 2013 Ruling on Various Motions and Consolidating Proceedings attached hereto (hereinafter "ALJ 4/19/13 Ruling.")
267	Final Award	On 23 May 2003, MHI answered a SCE question regarding the selection of CR by stating that "based on [its] experience, a CR between **[Redacted]** and **[Redacted]** is optimal for water level stability and FIV."	The redacted information shows the range of circulation ratio values that MHI judges acceptable for its proprietary steam generator design, and as such constitutes trade secrets and proprietary and confidential information. This is comparable to circulation ratios redacted by MHI for the SONGS RSGs; the redaction of circulation ratios was previously endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."
268	Final Award	Table 3A-1 ("Steam Generator Data") of MHI's technical proposal provided a proposal for a CR of **[Redacted]** in the column "Replacement Design Data" as opposed to a ratio of 3.2 in the column "Original Design Data."	Circulation ratios - see response to ¶ 266.
270	Final Award	The RSG Contract of 28-30 September 2004 included a Revision 2 of the RSG Design Specifications, dated 29 September 2004,	Circulation ratios - see response to ¶ 266.

[1] In addition to the redactions discussed in this table, names of current or former employees to the arbitration have been redacted throughout the Award pursuant to the arbitration's Procedural Order paragraph 6.7(c). None of these redactions were challenged.

[2] In the interest of brevity, throughout the remainder of this chart, Mitsubishi is referred to as "MHI."

[3] "Final Award" refers to the award issued by the Arbitration Tribunal on March 13, 2017, which is currently being modified by the Tribunal to correct certain typographical and computational errors.

		which also stated that the CR specified in Table 3A-1 of the RSG specifications, had a CR of **[Redacted]**.	
272	Final Award	On 23 March 2005, MHI submitted a so-called "SDR" (supplier deviation request), to officially modify the contractual requirement of a CR of **[Redacted]** to a value of **[Redacted]**.	Circulation ratios - see response to ¶ 266. Further, the redacted values show what circulation ratios MHI considers acceptable for its proprietary steam generator design.
274	Final Award	In a 31 August 2005 video conference between SCE and MHI, MHI stated that further calculations led it to change the expected CR from **[Redacted]** to **[Redacted]**. SCE expressed its dissatisfaction with this design change and MHI observed that it would explore a reduction from seven TSPs (tube support plates) to six TSPs which would increase CR upward to **[Redacted]**.	Circulation ratios - see response to ¶ 266. Further, in the context of the paragraph, the redacted information shows how changing the number of tube support plates affects the circulation ratio in MHI's proprietary steam generator design.
275	Final Award	A change from seven TSPs to six TSPs would increase the CR from **[Redacted]** to **[Redacted]**, which would decreases void fraction from **[Redacted]** to **[Redacted]**.	Circulation ratios and void fractions calculated by MHI for the SONGS RSGs constitute trade secrets and proprietary and confidential information. Their redaction was previously endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling." Further, in the context of the paragraph the redacted material shows how changing the number of tube support plates affects the void fraction and circulation ratio in MHI's proprietary steam generator design.
277	Final Award	On 4 November 2005, another SDR was issued by MHI to SCE, officially requesting to change the CR from the contractual value of **[Redacted]** to 3.3.	Circulation ratios - see response to ¶ 266.
281	Final Award	Table 3.3-2 shows that various design alternatives "for optimizing circulation ratio" would all have a negative effect on the stability ratio, generally decrease the damping factor, but could marginally improve void fraction by **[Redacted]**, although one option would decrease void fraction by **[Redacted]**.	Void fractions calculated by MHI for the SONGS RSGs constitute trade secrets and proprietary and confidential information. Their redaction was previously endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling." Further, in the context of the paragraph, the redacted material shows how changing the circulation ratio affects the void fraction in MHI's proprietary steam generator design.
286	Final Award	However, during the design MHI specified that a maximum VF of **[Redacted]**% was the highest value calculated for the RSGs and this figure was incorporated into MHI's PAR of 28 October 2008.	Void fractions - see response to ¶ 281.
294	Final Award	The **[Redacted]** RSG and the **[Redacted]** RSG both have ¾', tubes. The **[Redacted]** tube pitch is 6% greater than that of **[Redacted]**. Both of these tube bundles are approximately the	Void fractions - see response to ¶ 281. Further, the names of the plants are redacted to protect proprietary information related to the MHI design for

		same size and have similar circulation ratios. The **[Redacted]** average-to-maximum void fraction difference is 7.5% while the **[Redacted]** difference is 11%. This demonstrates that tighter tube packing causes the void fraction to be elevated. The larger SONGS RSG tube bundle has nearly twice as many tubes with the same tube spacing, yet the FIT-III average-to-maximum void fraction difference is almost the same (i.e **[Redacted]**). This suggests that the number of tubes or size of the U bend does not significantly influence the maximum void fraction (according to FIT-III results). Therefore, for tube bundles with the SONGS tube spacing (1.0" triangular pitch with 3A" tubes) the average-to-maximum FIT-III void fraction difference is **[Redacted]** (. . .).	those plants.
295	Final Award	A chart that is included in the presentation from meeting displays that at a CR of **[Redacted]**, SONGS was predicted to have a void fraction in the **[Redacted]** to **[Redacted]** range, similar to other plants.	Circulation ratios and void fractions - see response to ¶ 275.
296	Final Award	That meeting also identified the need to identify that the maximum expected void fraction was **[Redacted]**.	Void fractions - see response to ¶ 281.
300	Final Award	The PAR identified that a CR of 3.3 results in maximum VF in the U-bend of **[Redacted]**, calculated by using FIT-III.	Void fractions - see response to ¶ 281.
306	Final Award	On October 18, 2005, attendees at the #6 Design Review Meeting reviewed a slide that showed that the work rate from the domestic SG was **[Redacted]** that of the SONGS RSGs potentially because the SONGS fluid velocity appeared much lower than the fluid velocity of the domestic plant.	The redacted value is based on MHI design calculations for its proprietary steam generator designs and as such constitutes trade secrets and proprietary and confidential information.
312	Final Award	MHI further provided that "usually [it] design[ed] AVBs with the margin against flow induced vibration as double (SR is less than **[Redacted]**)"	Stability ratios calculated by MHI for MHI's proprietary steam generator designs constitute trade secrets and proprietary and confidential information. The redaction of stability ratios was previously endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling." Also, the redacted information reflects MHI's design judgement regarding acceptable stability ratios for the design of its steam generators, and this constitutes proprietary information of MHI.
316	Final Award	In a March 2005 design presentation to SCE, MHI stated that a "design criteria" for preventing tube failure from FEI is to	MHI stability ratio acceptance criteria for its proprietary steam generator

		assume "one inactive support at all locations and still have a tube SR of less than **[Redacted]**." According to this presentation, the "design basis" for SONGS was that with "conservative assumptions," "less than **[Redacted]** tubes" should be "plugged in 40 years for wear."	designs constitute trade secrets and proprietary and confidential information. The number of tubes estimated to be plugged represents a calculated value for the SONGS RSGs and, analogous to other calculated values, constitutes a trade secret and proprietary and confidential information.
319	Final Award	An 8 June 2005 Evaluation of Tube Vibration report of MHI stated that "the calculated maximum stability ratio is **[Redacted]**" for Row 142. It is to be noted that Row 142 tubes include those with the highest expected SR.	Stability ratios calculated by MHI for the SONGS RSGs constitute trade secrets and proprietary and confidential information. The redaction of stability ratios was previously endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."
320	Final Award	He further commented that MHI's 8 June 2015 draft Evaluation of Tube Vibration report "appears to utilize a **[Redacted]** standard for stability with one support location not participating" and recommended that this be discussed "in light of the uncertainty in calculation methods and adverse wear in U-bends with large steam generators."	The redacted value is an MHI stability ratio acceptance value for its proprietary steam generator designs and as such it constitutes MHI trade secrets and proprietary and confidential information.
321	Final Award	Accordingly, Row 142 Column 88 would have a SR of **[Redacted]** when all supports are active and a SR of **[Redacted]** if one support is inactive.	Stability ratios - see response to ¶ 319.
322	Final Award	The "Extreme Conservative Case," assuming a total damping ratio of **[Redacted]** and with one ineffective support mentions a predicted SR of **[Redacted]** for Row 142 Column 88.	Stability ratios - see response to ¶ 319.
322 fn. 235	Final Award	Being 0.20 from structural damping and **[Redacted]** from two-phase damping.	The redacted value for two phase damping constitutes trade secrets and proprietary and confidential information. The redaction of two-phase damping values was previously endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."
323	Final Award	The 28 October 2008 PAR (Performance Analysis Report) by MHI records that the maximum expected SR in the RSG straight leg is of **[Redacted]**	Stability ratios - see response to ¶ 319.
329	Final Award	One alternative evaluation scenario adopted a K of **[Redacted]**	The choice of a Connors' constant other than the ASME standard lower

		based upon experimental data.	bound value of 2.4 reflects MHI design judgment as to an appropriate Connors' constant for stability ratio calculations for its proprietary steam generator design. Such design choices are MHI trade secrets and proprietary and confidential information.
329 fn. 246	Final Award	The Tribunal understands that a K of **[Redacted]** is less conservative than a K of 2.4.	The choice of Connors' constant - see response to ¶ 329.
331	Final Award	The three alternative cases also generally calculated SRs of below one, including with one inactive support, with the exception of Tube R142C88, which had a SR of **[Redacted]** in an "extreme conservative case," with a structural damping ratio of 0.2%, T/H damping according to void fraction, and one inactive support. MHI discounted the risk of FEI in tube R142C88, as "this case is too conservative and not realistic."	Stability ratios - see response to ¶ 319.
333	Final Award	In the design of SONGS, MHI used a K of 2.4, while it used a K of **[Redacted]** for one of its alternative SR case analysis. The use of a K of **[Redacted]** was calculated based upon MHI's experimental data for the appropriate K in the U-bend region. According to MHI's Evaluation of Tube Vibration Report, a K of **[Redacted]** was an appropriate critical factor for the U-bend portion of a tube in a triangular pitch array with SONGS' pitch to diameter ratio.	The choice of Connors' constant - see response to ¶ 329.
335	Final Award	During the Hearing, Dr. Au-Yang (the Respondents' expert) stated that he recalled that Babcock & Wilcox ("B&W") may have used a K of **[Redacted]**. Mr. Boyd (the Respondents' expert) similarly mentioned that B&W used a K of between **[Redacted]** and **[Redacted]** for designs in the 90s.	The Connors' constant values reflect B&W's design judgment as to an appropriate Connors' constant for stability ratio calculations and are redacted to protect third party trade secrets and proprietary and confidential information.

<table>
<tr>
<td>340</td>
<td>Final Award</td>
<td>
<table>
<tr><th></th><th>Damping ratio, h</th><th>Critical Factor, K</th></tr>
<tr><td>Base Case
(Code Calculation)</td><td>1.5%
According to ASME</td><td>2.4
According to ASME</td></tr>
<tr><td>Actual Case-1</td><td>Calculated based on void fraction when structural damping is 1.0%</td><td>2.4
According to ASME</td></tr>
<tr><td>Actual Case-2</td><td>Calculated based on void fraction when structural damping is 0.2%</td><td>[redacted]
According to experimental data</td></tr>
<tr><td>Extreme Conservative Case</td><td>Calculated based on void fraction when structural damping is 0.2%</td><td>2.4
According to ASME</td></tr>
</table>
</td>
<td>The choice of Connors' constant in the right column - see response to ¶ 329.</td>
</tr>
<tr>
<td>344</td>
<td>Final Award</td>
<td>MHI emphasized SR calculations for the tube at Row 142 Column 88 (R1452C88), as one that is considered to be at the greatest risk of instability. Using a more conservative assumption of structural damping of 0.2%, a Critical Constant (K) of 2.4, and one inactive support, R142C88 would be unstable, with a SR of [Redacted]. Having calculated a SR above 1.0, MHI "confirmed that work rate is less than 40% wall loss for 40 operating years by tube wear analysis", i.e., that despite instability under these conditions, tube R142C88 would not require plugging. This case study also illustrated that for MHI's "base case" two-phase damping and other non-structural damping T/H damping is of only [Redacted] for R142C88 with one inactive support. Similarly, based upon revision 2 to the Evaluation of Tube Vibration Report, two-phase and other non-structural damping appears to be [Redacted] for R142C88.</td>
<td>Stability ratios - see response to ¶ 319.

The redacted values for two phase and other damping constitute trade secrets and proprietary and confidential information. The redaction of two-phase damping values was previously endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."</td>
</tr>
<tr>
<td>346</td>
<td>Final Award</td>
<td>The design of the AVB bars progressed from a [Redacted] support point design in MHI's 27 February 2004 technical proposal to a 12 support point AVB design in version 5 of the Design of Anti-Vibration Bar Report dated 3 July 2008, as referenced in the PAR.</td>
<td>Information on different AVB designs that MHI considered in designing the SONGS RSGs constitutes MHI trade secrets and proprietary and confidential information on the different alternatives and options that underlie the final SONGS RSG design.</td>
</tr>
<tr>
<td>347</td>
<td>Final Award</td>
<td>MHI's 27 February 2004 technical bid stated that MHI's design would have an "advanced [Redacted] point AVB design with short support." The report mentioned that:

Tube vibration problems are most sensitive at the tube</td>
<td>Information on MHI's different AVB designs - see response to ¶ 346.</td>
</tr>
</table>

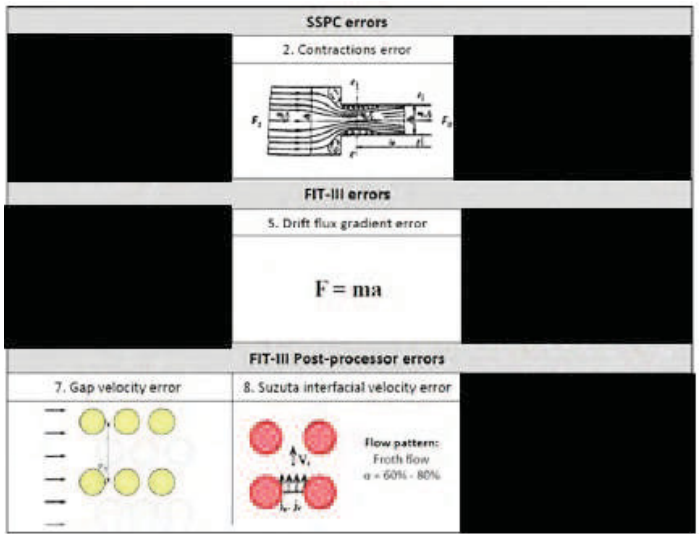
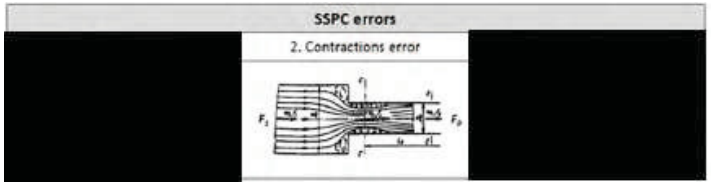
		bundle U-bend region due to reduced cross-section flow area and higher velocities. MHI compensates for this by adopting the MHI standard AVB design which utilizes U-bend supports with **[Redacted]** points of support. This design provides a high margin against flow-induced vibration.	
348	Final Award	MHI's design was for a five AVB design in a **[Redacted]** configuration: 	Information on MHI's different AVB designs - see response to ¶ 346. The redaction of a cross section of the tube bundle is necessary to protect MHI trade secrets and proprietary and confidential information concerning MHI's RSG design.
348 fn. 281	Final Award	**[Redacted]**	Information on MHI's different AVB designs - see response to ¶ 346.
350	Final Award	In a 28 March 2005 design presentation, MHI calculated SR for sample rows, indicating a highest SR of **[Redacted]** for Row 142 using a **[Redacted]** AVB configuration. This design is as follows:	Information on MHI's different AVB designs - see response to ¶ 346. Stability ratios - see response to ¶ 319. Redaction of image – previously endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."

			
353	Final Award	Minutes of a 28 June 2005 AVB design team meeting mention that an alternative AVB design with **[Redacted]** points of support was rejected as the calculated SR for Row 142 with one support point inactive was above 1.0. As previously specified, tube R142C88 was one of the tubes that MHI's evaluations calculated to have the highest SR.	Information on MHI's different AVB designs - see response to ¶ 346.
355	Final Award	A 28 July 2005 email from MHI's consultant Mr. Wilson to **[Redacted]** at SCE states that in his review of wear at comparable plants, he concluded that the tube-to-AVB gaps at comparable plants was not as small as "advertised" and that "it will be difficult to get the SONGS wear below that of ANO-2 because the U-bend is larger and the tube spacing is tighter." To recall, ANO-2 refers to Unit 2 of Arkansas Nuclear One. (**[Redacted]**). Mr. Wilson recommended that MHI would have to control the AVB gaps precisely and move to a **[Redacted]** or 2Vx3 AVB configuration.	References to comparisons between ANO-2 and SONGS are redacted because such comparisons include MHI trade secrets and proprietary and confidential information. While the reference to ANO-2 in ¶ 355 does not refer to such comparisons (and therefore is not redacted), the redaction references a discussion that does refer to such comparisons. Therefore, reference to that discussion in this ¶ 355 is redacted. Information on MHI's different AVB designs - see response to ¶ 346.
357	Final Award	The 30 September 2005 revision 0 to MHI's Design of AVBs report states that by having average unsupported spans "of less than **[Redacted]**" results in there being sufficient "margin to	The unsupported span length is the result of MHI's design judgment as to the appropriate steam generator AVB span for MHI's proprietary steam generator designs and therefore constitutes MHI trade secrets and proprietary and

		prevent fluid elastic vibration."	confidential information.
366	Final Award	For the straight leg, the maximum SR was calculated as being **[Redacted]**, while the worst tube in the U-bend was calculated as being **[Redacted]**, with one inactive support point.	Stability ratios - see response to ¶ 319.
369	Final Award	The tubing wall loss is calculated to be less than **[Redacted]** which is enough smaller than the plugging limit.	MHI wear calculation results for the SONGS RSGs constitute trade secrets and proprietary and confidential information. Redaction of wear calculation results was previously endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."
375	Final Award	On 8 June 2004, MHI provided a response to SCE's questions on its proposal stating that "the worst wear depth at the AVB" is of **[Redacted]**, being **[Redacted]**% of tube wall thickness.	MHI wear calculation results for the SONGS RSGs - see response to ¶ 369.
378	Final Award	The alternate approach would improve gap sizes as it would reduce tube-to-AVB gaps by **[Redacted]**.	Information on different tube-to-AVB design gap sizes that MHI considered in designing the SONGS RSGs on the different alternatives and options that underlie the final SONGS RSG design constitutes MHI trade secrets and proprietary and confidential information.
381	Final Award	In a 28 July 2005 email from Mr. Wilson to MHI, Mr. Wilson wrote that gaps in the B&W plants are "not as small as advertised" and therefore recommended that "MHI's best craftsmen will be needed to control gaps precisely, and more support points are needed (i.e., **[Redacted]** or 3 x 2Vs)."	Information on different AVB designs - see response to ¶ 346.
382	Final Award	Minutes of technical meetings between SCE and MHI held from 14-16 September 2005 report that Mr. Langford recommended having gaps of less than **[Redacted]** in high VF zones	Information on different tube-to-AVB design gap sizes - see response to ¶ 378.
389	Final Award	In a 6 February 2006 response, **[Redacted]**, of MHI, proposed tube bundle rotations to assist in gap measurements and also expressed concern with the arbitrariness of the need to ensure gaps that are less than **[Redacted]** while also indicating his commitment to meeting the SONGS specifications though good workmanship.	Information on different tube-to-AVB design gap sizes - see response to ¶ 378.
393	Final Award	A presentation by MHI from that meeting shows that all outermost gaps were measured at **[Redacted]**, while over	Information on tube-to-AVB gap sizes for the SONGS RSGs on the different alternatives and options that underlie the final SONGS RSG design

		[Redacted] of side region gaps exceeded the design specifications of **[Redacted]**, but that this includes measurement deviation and that no gap exceeded **[Redacted]**.	constitutes MHI trade secrets and proprietary and confidential information.
412	Final Award	The criterion was for gaps to be below **[Redacted]**.	Information on tube-to-AVB gap sizes - see response to ¶ 393.
416	Final Award	It also records that while outer tubes are controlled to have gaps less than **[Redacted]**, these requirements do not necessarily apply to inner tubes. The report specifies that for the purposes of wear evaluation, tube-to-AVB gaps for inactive support points are "conservatively" estimated to be **[Redacted]** or **[Redacted]**.	Information on tube-to-AVB gap sizes - see response to ¶ 393. Inputs for MHI wear calculations performed for the SONGS RSGs constitute trade secrets and proprietary and confidential information.
467	Final Award	A 29 March 2012 comparison by MHI between SR calculated using ATHOS (EPRI's code) and FIT-III (MHI's code) showed that SR using ATHOS were **[Redacted]** times higher, i.e., closer to indicating tube instability.	Stability ratios - see response to ¶ 319.
476	Final Award	The report also states that a "contact force of **[Redacted]** at each AVB location prevents tube in-plane vibration (and significant wear)."	The contact force value represents the result of MHI analysis of what constitutes sufficient support to avoid in-plane vibration and wear in its proprietary steam generator designs. This is a valuable trade secret and proprietary and confidential information for the designing of new steam generators in the future. In addition, MHI analytical calculation results for the SONGS RSGs constitute trade secrets and proprietary and confidential information.
480	Final Award	The presentation also concluded that the effect of contact force on in-plane FEI was large and that a **[Redacted]** contact force would prevent in-plane FEI.	The contact force value - see response to ¶ 476.
483	Final Award	. . . thermal expansion increased some gaps in the middle of the tube bundle by **[Redacted]**	MHI analytical calculation results for the SONGS RSGs related to gaps caused by thermal expansion constitute trade secrets and proprietary and confidential information.
488	Final Award	MHI concluded that gap sizes are of minimal effect on in-plane FEI but that contact force is crucial in avoiding in-plane FEI, with a **[Redacted]** contact force on the tubes required.	The contact force value - see response to ¶ 476.
496	Final Award	Dr. Begley reported that had three tubes in Unit 3 suffered an additional **[Redacted]** of loss to their walls, they would have	The calculation used to obtain the amount of wear was based on MHI trade secrets and proprietary information; therefore, this result also constitutes trade

		"burst at normal operating conditions."	secrets and proprietary information.
512	Final Award	A 24 May 2012 MHI presentation to SCE on in-plane FEI evaluation demonstrates that even if the RSGs operated at 50% power, if **[Redacted]** AVB support points are inactive in the in-plane direction, then there would be in-plane instability. According to MHI's presentation, operating at 70% and **[Redacted]** active supports would also lead to in-plane instability. The presentation concludes that at 100% power, SONGS required at least **[Redacted]** to **[Redacted]** active AVBs in the in-plane direction.	The number of active or inactive AVBs is an input for MHI stability ratio calculations performed for the SONGS RSGs and as such constitute trade secrets and proprietary and confidential information.
528	Final Award	Regarding the thicker AVB repair, SCE (i) requested that MHI consider whether thicker AVBs could be applied to all high VF areas; (ii) inquired whether the repair would be performed in water or in air (**[Redacted]**); and (iii) asked whether the repair would last for 40 years. MHI was unable to immediately provide this latter confirmation and agreed to revert.	The consideration of performing the repair in air or in water reflects MHI's design process for developing the repair, and MHI's ultimate choice reflects MHI's proprietary design judgment for performance of such type of steam generator repairs. As such, it constitutes MHI trade secrets and proprietary and confidential information.
547	Final Award	Dr. Begley presented that there was an acceptably low risk that the two tubes in Unit 2 that suffered tube-to-tube wear did not have **[Redacted]** inactive supports in the in-plane direction (the condition under which FEI would occur even at a reduced power level).	Dr. Begley's presentation was based on MHI contact force calculations which constitute MHI trade secrets and proprietary and confidential information.
574	Final Award	MHI concluded that a combination of T/H conditions could improve VF from 0.996 to **[Redacted]** but that any single approach to improving T/H conditions had a minimal effect.	Void fractions - see response to ¶ 281. MHI did not redact the 0.996 calculated void fraction because that void fraction number had been previously made public.
594	Final Award	MHI reported that tube-to-tube wear developed at VFs greater than 0.992 and that tube-to-AVB wear occurred at VFs greater than **[Redacted]**.	MHI analytical calculation results for the SONGS RSGs constitute trade secrets and proprietary and confidential information as previously endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling." MHI did not redact the 0.992 calculated void fraction because that void fraction number had been previously made public.

907	Final Award		The portion of Claimants' demonstrative exhibit that MHI redacted shows MHI's approach to designing recirculating steam generators, and thus that information constitutes trade secrets and proprietary and confidential information. It discloses the methodology that MHI employs relevant to past, current and future steam generator designs. Redaction of image – previously endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."
913	Final Award		Approach to designing recirculating steam generators - see response to ¶ 907.
923	Final Award	Specifically, according to the Claimants' expert Exponent, MHI . . . applied the **[Redacted]** In Exponent's view, while the results provided by the use of a Moody Chart and the **[Redacted]** are at first proximate, the results diverge at higher Reynolds numbers.	The fact that MHI uses a certain analytical tool in its design computations constitutes a trade secret and proprietary and confidential information relevant to past, current and future designs. The least intrusive way to protect this information is to redact the words that identify that tool.
923 fn. 1104	Final Award	The **[Redacted]** was proposed in 1913 by Professor **[Redacted]**, a fluid dynamics specialist, to evaluate friction.	Use of a specific analytical tool – see response to ¶ 923.

924	Final Award	In the Claimants' expert's view, MHI used an overly smooth value for wall friction, which was physically impossible for a wall made of steel and as such underestimated the "friction factor in the downcomer by more than a factor of **[Redacted]**."	The amount that the alleged overly smooth value underestimated the friction factor in the downcomer reveals MHI's design process and engineering judgment, and thus constitutes trade secrets and proprietary and confidential information.
925	Final Award		The plot of Mitsubishi's calculation, and the reference to a specific analytical tool, similarly reveal MHI's design process and engineering judgment, and thus constitute trade secrets and proprietary and confidential information. Redaction of image – previously endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."
926	Final Award	Further, according to the Claimants' expert Exponent, the **[Redacted]** (in blue in the graphic above) used by MHI generally corresponds with the actual friction of steel (in red in the graphic above) up to a particular Reynolds number (on the X-axis in the graphic above). The **[Redacted]** and the actual friction eventually diverge and are in fact diverged for the Reynolds number in use at SONGS, which is representative of the actual smoothness of the steel in the downcomer.	Use of a specific analytical tool – see response to ¶ 923.
929	Final Award	Thus, the Respondents' expert Dr. Hibiki agrees with Exponent that MHI does indeed make use of the **[Redacted]**, and not the Moody Chart, as, in Dr. Hibiki's opinion, it is easier to use the **[Redacted]** in a computer code calculation than the Moody Chart.	Use of a specific analytical tool – see response to ¶ 923.

930	Final Award	In this connection, the Respondents refer to their expert, Dr. Hibiki, who opines that "the downcomer surface is much smoother than what Exponent claims and the circulation ratio calculation in the Exponent Report is based on the incorrect downcomer surface roughness **[Redacted]** times larger than the actual downcomer surface roughness." According to Dr. Hibiki, the downcomer surface is **[Redacted]** to render it smooth.	The information redacted reveals MHI's design approach. Therefore, the redacted information constitutes trade secrets and proprietary and confidential information.
931	Final Award	The Respondents also refer to Dr. Hibiki's agreement with the Claimants' expert Exponent that the **[Redacted]** becomes less accurate than the Moody Chart and places the inaccuracy at "about **[Redacted]** of the Reynolds number associated with downcomer water."	Use of a specific analytical tool – see response to ¶ 923. In addition, disclosing the inaccuracy figure necessarily reveals the approach that Mitsubishi undertook.
932	Final Award	Also, the Respondents' expert Dr. Hibiki opines that had the Moody Chart been used, a circulation ratio of **[Redacted]** would have been calculated, rather than **[Redacted]**, as calculated by SSPC.	Circulation ratios – see response to ¶ 266.
937	Final Award	Furthermore, the Respondents refer to their expert, Dr. Hibiki, who opines that the uses of the **[Redacted]** is an acceptable engineering judgment, that results in a discrepancy, with the Moody Chart, of only **[Redacted]** for the downcomer.	Use of a specific analytical tool – see response to ¶ 923. Moreover, the quantification of the discrepancy with the Moody Chart would lead readers to understand that Mitsubishi used this tool, thus disclosing its confidential design approach to the SONGS RSGs.
938	Final Award	Addressing the actual surface smoothness of the downcomer, Dr. Hibiki notes that the "actual surface roughness in the downcomers of the RSGs is **[Redacted]**, which is smaller than the 70 μm used in Exponent's version of SSPC."	The actual surface roughness in the downcomer of the RSGs designed by MHI constitutes trade secrets and proprietary and confidential information.
939	Final Award	Dr. Hibiki, in providing the Respondents' main evidence on this question, agrees with the Claimants' expert, Exponent, that the use of the **[Redacted]** by MHI does create a discrepancy from the use of a Moody Chart. Dr. Hibiki opines that SSPC could have calculated a circulation ratio of **[Redacted]** rather than **[Redacted]** had a Moody Chart been used by MHI, as recommended by Exponent.	Use of a specific analytical tool – see response to ¶ 923. Circulation ratios – see response to ¶ 266.

943	Final Award	This is evidenced by the Respondents' expert Dr. Hibiki's calculation that by using the Moody Chart, the circulation ratio would be the lower value of **[Redacted]** rather than the higher of **[Redacted]** specified in the RSG Contract.	Circulation ratios – see response to ¶ 266.
954	Final Award	[redacted]	The equation set forth in ¶ 954 discloses the methodology by which MHI determines the k value for its pressure drop calculations. This shows MHI's design approach and constitutes trade secrets and proprietary and confidential information.
955	Final Award	According to the Claimants, in MHI's combined method, the **[Redacted]**	The redacted information once again discloses MHI's design methodology, and thus constitutes trade secrets and proprietary and confidential information.
955 fn 1125	Final Award	**[Redacted]**	Footnote 1125 in ¶ 955 likewise discloses MHI's design methodology, and therefore constitutes trade secrets and proprietary and confidential information.
956	Final Award	[redacted]	The redacted equation shows how Mitsubishi calculated the pressure drop in the downcomer transition area, thus disclosing design methodology that constitutes trade secrets and proprietary and confidential information.
958	Final Award	In sum, the Claimants position is that **[Redacted]**	The statement of the Claimants' position necessarily discloses what MHI did, thus revealing its design approach, which constitutes trade secrets and proprietary and confidential information.

<table>
<tr>
<td>962</td>
<td>Final Award</td>
<td>
<table>
<tr><th>Location</th><th>Mitsubishi's Incorrect Method</th><th>Idelchik Method 2</th><th>Difference</th></tr>
<tr><td>Downcomer Transition</td><td>[redacted]</td><td>0.3498</td><td>[redacted]</td></tr>
<tr><td>Downcomer Obstruction 1</td><td>[redacted]</td><td>0.0855</td><td>[redacted]</td></tr>
<tr><td>Downcomer Obstruction 2</td><td>[redacted]</td><td>0.0479</td><td>[redacted]</td></tr>
<tr><td>Downcomer Obstruction 3</td><td>[redacted]</td><td>0.0469</td><td>[redacted]</td></tr>
<tr><td>Downcomer Obstruction 4</td><td>[redacted]</td><td>0.0456</td><td>[redacted]</td></tr>
<tr><td>Downcomer Obstruction 5</td><td>[redacted]</td><td>0.0469</td><td>[redacted]</td></tr>
<tr><td>Downcomer Obstruction 6</td><td>[redacted]</td><td>0.0163</td><td>[redacted]</td></tr>
<tr><td>Downcomer Obstruction 7</td><td>[redacted]</td><td>0.0817</td><td>[redacted]</td></tr>
</table>
</td>
<td>The Mitsubishi values and the Difference values can be used to determine how MHI performed its design calculations. This information is properly redacted as it discloses design analyis that constitutes trade secrets and proprietary and confidential information.

Redaction of table –previously endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."</td>
</tr>
<tr>
<td>964</td>
<td>Final Award</td>
<td>In particular, the Respondents support their position by Dr. Hibiki's opinion that it is incorrect to use MHI's contraction pressure loss correction coefficient values [Redacted]</td>
<td>The redacted information discloses MHI's design calculation and engineering judgment, and therefore constitutes trade secrets and proprietary and confidential information.</td>
</tr>
<tr>
<td>967</td>
<td>Final Award</td>
<td>The Respondents have convincingly shown that where the Claimants' fault MHI, is in [Redacted]

[redacted]</td>
<td>Once again, the formula and other redacted information would show a reader exactly the design process that MHI undertook, and such information constitutes trade secrets and proprietary and confidential information.</td>
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</table>

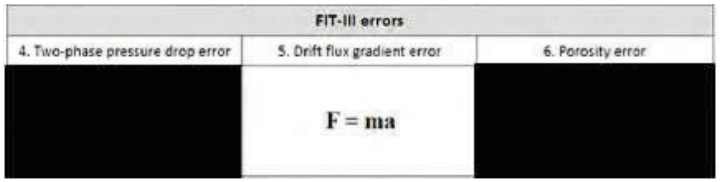
969	Final Award	MHI's 2008 T/H Parametric Report lists a **[Redacted]** and **[Redacted]** for the downcomer transition and the downcomer TSP obstructions, respectively, adopted from Idelchik's handbook, when using a **[Redacted]** graduation.	The redacted information reveals MHI's engineering judgment in calculating the pressure losses in the downcomer due to the tube support plate obstructions and the transition into the tube bundle. This information constitutes trade secrets and proprietary and confidential information.
970	Final Award	The record shows that the Parties agree that MHI **[Redacted]** According to the Respondents, however, this was proper engineering judgment.	Alleged SSPC Errors - see response to ¶ 967.
970 fn 1139	Final Award	Exh. JX-822, p. 263 (See **[Redacted]**	Alleged SSPC Errors - see response to ¶ 967.
971	Final Award	In addition, the Respondents disagree with the Claimants' calculation of Idelchik method 2 using MHI's **[Redacted]** from the MHI 2008 T/H Parametric Report. In particular, the Respondents' expert appears to suggest that the Claimants' expert should have used a different **[Redacted]**	Alleged SSPC Errors - see response to ¶ 969.
972	Final Award	The Claimants' expert Exponent's methodology is not entirely clear, as they have not specified what **[Redacted]** they used in Idelchik method 2. Neither is the Respondents' expert's criticism of Exponent's methodology, who have also not identified what **[Redacted]** should be used. As became evident during the cross-examination of Dr. Morse, further discussed below in ¶ 977 below, Exponent did not have access to the geometric information required for determining **[Redacted]**	Alleged SSPC Errors - see response to ¶ 969.
973	Final Award	This verification confirms the Respondents' assertion that Claimants' calculations use the **[Redacted]** of **[Redacted]** and **[Redacted]** and Idelchik method 2. The Claimants, however, through their expert Exponent do not use different **[Redacted]** that would be obtained from reviewing the downcomer geometry.	Alleged SSPC Errors - see response to ¶ 969.
974	Final Award	As suggested by the Respondents' expert Dr. Hibiki, the Claimants' expert Exponent calculated the Idelchik method 2 results by using the **[Redacted]** from MHI's 2008 T/H Parametric Report in order to calculate the **[Redacted]** provided in the table at ¶ 962 above.	Alleged SSPC Errors - see response to ¶ 969.

975	Final Award	According to the Idelchik handbook, the **[Redacted]** used by MHI appears to correspond to a gradual contraction of **[Redacted]**. The Respondents have not specified what gradual contraction value MHI should have used while employing Idelchik method 2. They have merely indicated that the Claimants' expert Exponent could not use MHI's values (apparently for **[Redacted]**).	Alleged SSPC Errors - see response to ¶¶ 967, 969.
978	Final Award		The information in the redacted diagrams most clearly shows MHI's design methodology, and therefore constitutes trade secrets and proprietary and confidential information. Redaction of image – previously endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."
979	Final Award	Taking the above into consideration, as framed by the Parties' respective experts, a first question appears to be whether the Respondents exercised proper engineering judgment in using a **[Redacted]** in combination with Idelchik method 1.	MHI's design judgment here shows its approach to designing recirculating steam generators. This information should be redacted as it constitutes trade secrets and proprietary and confidential information.
981	Final Award	While it is open to MHI to develop its own methods of calculation based upon experimentation, the use of a **[Redacted]** in combination with Idelchik method 1 appears inappropriate when considering the **[Redacted]** of the Idelchik Handbook, as referenced by MHI's 2008 T/H Parametric Report. That table provides that for a contraction of **[Redacted]**, i.e., a sudden contraction, a value of **[Redacted]** is to be used (as per Idelchik method 1). MHI appears to have combined this **[Redacted]** value as used in method 1 with the **[Redacted]** values for a **[Redacted]** gradual contraction as used in method 2.	Alleged SSPC Errors - see response to ¶ 979.
984	Final Award	With respect to the second question of whether MHI's decision to use a **[Redacted]** resulted in an under-prediction of the pressure loss at the downcomer obstructions, the Claimants have convincingly shown that in using a **[Redacted]** in combination with Idelchik method 1, results in a decrease in calculated	Alleged SSPC Errors - see response to ¶ 979.

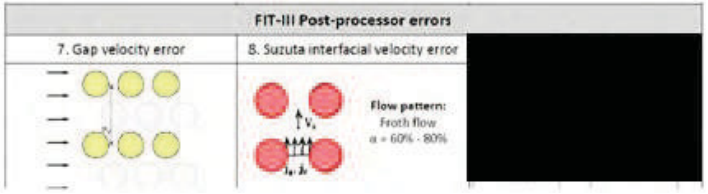
		pressure loss. This is a mere matter of arithmetic.	
987	Final Award	For example, the Claimants' expert Exponent calculated the pressure loss coefficient at downcomer obstruction 6 as being 0.0163 compared **[Redacted]** for MHI's calculation. While 0.0163 is **[Redacted]** larger than **[Redacted]**, the magnitude of this effect appears minimal when considering that the calculated pressure drop at contraction 6 is **[Redacted]**.	Disclosure of the redacted information would reveal the specific approach that MHI used to determine the pressure drop at a specific point in the RSG downcomer. This reveals the engineering judgment and design approach used by MHI and constitutes trade secrets and proprietary and confidential information.
996	Final Award	Exponent suggests that it has identified that the Idelchik handbook only has empirical data for a width ratio of 2.0 while the RSG had a width ratio of **[Redacted]**. The Claimants' expert states that given this lack of empirical data, MHI had to extrapolate a pressure loss coefficient, which it did, adopting a value of **[Redacted]**.	See response to ¶ 987.
998	Final Award	Further, the Claimants' expert Exponent modeled its own correlation in this regard, validated it against Idelchik's reference data, and extrapolated the curve to find a pressure loss coefficient of 0.67, greater than MHI's coefficient of **[Redacted]**.	The disclosure of MHI's pressure loss coefficient would reveal the specific design approach that MHI used for determining pressure loss in the RSGs, which constitutes a trade secret and proprietary and confidential information.
999	Final Award		The information redacted from the image clearly shows the design approach and engineering judgment MHI applied to the RSG design. As such, it constitutes trade secrets and proprietary and confidential information. The redaction of such an image was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."

1003	Final Award	The Claimants endorse their expert Exponent's model as a good fit to Idelchik's data and given that larger width ratios eventually lead to a pressure loss coefficient of 1, and not **[Redacted]** as in MHI's extrapolation, its model is preferable to MHI's (incorrect) assumptions.	If the value that MHI's extrapolation tends toward is disclosed, this will reveal the precise approach that MHI used in its design. This would reveal MHI's engineering judgment, and constitutes trade secrets and proprietary and confidential information.
1006	Final Award	Therefore, a trend line towards 1 (i.e., corresponding to a discharge into an open space) appears more reasonable than towards **[Redacted]** (i.e., corresponding to a dischange [sic] into a confined space).	Alleged SSPC Errors - see response to ¶ 1003.
1010	Final Award	In particular, the Claimants take on their expert Exponent's calculation that after adjusting for these three errors, the circulation ratio would be 2.9 rather than MHI's calculated **[Redacted]**. Exponent also calculates that void fraction using FIT-III would be 96.1% rather than MHI's calculated **[Redacted]**	The values for void fraction and circulation ratio are MHI analytical calculation results for the SONGS RSGs and therefore constitute trade secrets and proprietary and confidential information. The redaction of void fractions and circulation ratio calculations was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling." The 2.9 circulation ratio and 96.1% void fraction were not redacted by MHI as they were calculated by SCE and SDG&E's consultants and do not constitute MHI proprietary information.
1015	Final Award	Dr. Hibiki disagreed, testifying that "actually, the downcomer pressure drop is about **[Redacted]**, so majority of the resistance comes from the wrapper region."	The percentage of the pressure drop that occurs in the downcomer of the MHI-designed RSGs specifically reveals the engineering approach MHI took in this instance, and therefore constitutes trade secrets and proprietary and confidential information.
1016	Final Award	During the Respondents' closing statement, they returned to this and referenced MHI's 2008 T/H Parametric Report, indicating that the total pressure drop in the downcomer amounted to only **[Redacted]** of the pressure drop in the steam generator loop, the remaining pressure drop occurring in the wrapper, i.e., the tube bundle area. ***	Downcomer pressure drop - see response to ¶ 1015.

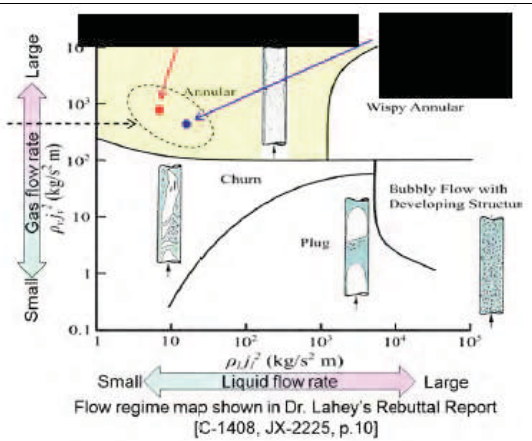
		<table><tr><th>Pressure drop</th><th>Kg/cm²</th><th>%</th><th>Issue (Exponent)</th></tr><tr><td>Pressure drop of downcomer (SUM)</td><td>[redacted]</td><td>[redacted]</td><td>Includes SSPC Errors</td></tr><tr><td>Pressure drop in wrapper (SUM)</td><td>[redacted]</td><td>[redacted]</td><td>Not at Issue</td></tr><tr><td>Total Pressure drop in loop (SUM) [redacted]</td><td>[redacted]</td><td>100%</td><td></td></tr></table>	
1017	Final Award	The pressure drop in the downcomer area (amounting to **[Redacted]** of the pressure drop that occurs in the RSGs) is comprised of the sum of the pressure drop from the downcomer obstructions and transition, the friction in the downcomer, the downcomer turn and wrapper opening and other aspects: <table><tr><th>Pressure drop</th><th>Kg/cm²</th><th>%</th><th>Issue (Exponent)</th></tr><tr><td>Downcomer obstructions (SUM)</td><td>[redacted]</td><td>[redacted]</td><td>Contractions</td></tr><tr><td>Turn + wrapper opening</td><td>[redacted]</td><td>[redacted]</td><td>Downcomer turn error</td></tr><tr><td>Frictional drop of downcomer</td><td>[redacted]</td><td>[redacted]</td><td>Friction</td></tr><tr><td>[Other Aspects]</td><td>[…]</td><td>[redacted]</td><td>-</td></tr><tr><td>Total Pressure drop of downcomer (SUM)</td><td>[redacted]</td><td>[redacted]</td><td></td></tr></table>	Downcomer pressure drop - see response to ¶ 1015.
1019	Final Award	It should be reminded that MHI calculated a CR of **[Redacted]**.	Circulation ratios - see response to ¶ 266.
1023	Final Award	While Exponent calculates an increased void fraction (**[Redacted]** to 96.1% on account of SSPC errors alone), assuming one ineffective support, Exponent calculates a marginally improved maximum SR of 0.56 as compared to **[Redacted]**.	The void fraction and stability ratio values are MHI analytical calculation results for the SONGS RSGs and therefore constitute trade secrets and proprietary and confidential information. The redaction of void fractions and stability ratio calculations were endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling." The 96.1% void fraction and the 0.56 stability ratio were not redacted by MHI as they are Exponent-calculated results and do not constitute MHI proprietary information.

1028	Final Award		Alleged FIT-III Errors: As set forth in various paragraphs above, the information redacted from the left hand block and the right hand block reveals MHI's design approach to these RSGs, which constitutes trade secrets and proprietary and confidential information.
1035	Final Award	The Claimants rely on the explanations provided by their experts Exponent and Dr. Lahey. According to them, these equations contain an extra two-phase multiplier, the effect of which, according to Dr. Lahey, would be an under-prediction of gap velocities by "a factor of 3.39 for a void fraction of" **[Redacted]** and "a factor of 4.84 for a void fraction of" 99.6%.	The void fraction value is a MHI analytical calculation result for the SONGS RSGs and therefore constitutes trade secrets and proprietary and confidential information as endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling." MHI did not redact the 99.6% calculated void fraction because that void fraction number had been previously made public. The other numbers were calculated by Dr. Lahey and Exponent and do not constitute MHI proprietary information.
1037	Final Award		The images redacted show the specific equations that MHI uses and sets forth in the FIT-III manual for its analyses. These equations, which are part of a pressure drop analysis, constitute MHI's proprietary methodology for analyzing steam generator designs. As such, they constitute trade secrets and proprietary and confidential information.
1038	Final Award		FIT-III manual equations - see response to ¶ 1037.

1052	Final Award	The FIT-III calculated pressure loss was calculated at **[Redacted]**.	The fact that FIT-III determines pressure losses is not a trade secret, but the actual value determined for the design of the SONGS RSGs discloses MHI's methodology. The redacted value therefore constitutes trade secrets and proprietary and confidential information.
1053	Final Award	As submitted in the Respondents' closing statement, pressure loss using SSPC was calculated at **[Redacted]**.	Again, the fact that MHI's SSPC software analyzes pressure losses is not confidential. But the actual value that was determined for the SONGS RSGs reveals MHI's analytical approach, and therefore this constitutes trade secrets and proprietary and confidential information.
1054	Final Award	As part of the FIT-III challenge board process, the FIT-III results were compared to hand calculations of **[Redacted]**.	The precise value of hand calculations undertaken as part of the FIT-III challenge board process constitutes trade secrets and proprietary and confidential information.
1055	Final Award	During cross-examination, these results were put to the Claimants' expert Dr. Lahey, who agreed that the difference of **[Redacted]** between FIT-III (**[Redacted]**) and hand calculations (**[Redacted]**) represented a close fit.	Alleged FIT-III Errors - see responses to ¶¶ 1052, 1053, 1054.
1080	Final Award	In contrast, the Respondents contend that they took an intentional engineering choice to account for something called **[Redacted]** that the FIT-III code could not otherwise calculate.	The technique that MHI used in designing the tubes in its steam generator designs and specifically for the SONGS RSGs design is MHI's proprietary design information. The redacted description therefore must be redacted as revealing trade secrets and proprietary and confidential information. Further, the technique must be redacted because if it is not redacted proprietary information about FIT-III's methodology would be revealed.
1080 fn. 1231	Final Award	**[Redacted]**	This is the same redaction as in ¶ 1080.
1082	Final Award	**[Redacted]** further explained that a **[Redacted]**	The methodology used by MHI in its steam generator designs, and specifically for the SONGS RSGs design, is MHI's proprietary design information. The FIT-III code does not and cannot account for this method, so MHI made an assumption that reflects MHI's engineering choices and design judgment, and therefore constitutes trade secrets and proprietary and confidential information.
1083	Final Award	The Claimants have convincingly shown that FIT-III used a porosity **[Redacted]**, as admitted by the Respondents' expert **[Redacted]**.	See response to ¶ 1082.

1084	Final Award	The Tribunal also considers **[Redacted]** explanation that the Respondents had a valid reason to make this adjustment to FIT-III to account for **[Redacted]** to be persuasive.	This is the same redaction as in ¶ 1080. See response to ¶ 1082.
1089	Final Award	Other plants by MHI, such as **[Redacted]** also apparently contain this Gap Velocity Error.	The identity of the specific MHI-designed steam generators that contain the gap velocity error (which MHI self-reported to the NRC) constitutes trade secrets and proprietary and confidential information of both MHI and the owners of the named plants.
1090	Final Award		As explained above, Claimants' demonstrative exhibit showing their arguments about alleged post processing errors discloses MHI's proprietary design methodology and therefore constitutes trade secrets and proprietary and confidential information. The redaction of such an image was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."
1091	Final Award	As such, in designing a steam generator with a void fraction of **[Redacted]** MHI used the correlation outside of its validated range.	Void fractions - see response to ¶ 281.
1105	Final Award	They also opine that this is improper as the Suzuta correlation is only valid for void fractions of 60-80%, while the SONGS RSGs were calculated to have a maximum void fraction of **[Redacted]**	Void fractions - see response to ¶ 281.
1108	Final Award		The graph showing the mixture velocity across the range of tube in the u-bend section of the tube bundle discloses MHI's design methodology for the SONGS RSGs, and therefore constitutes trade secrets and proprietary and confidential information. The redaction of such an image was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."

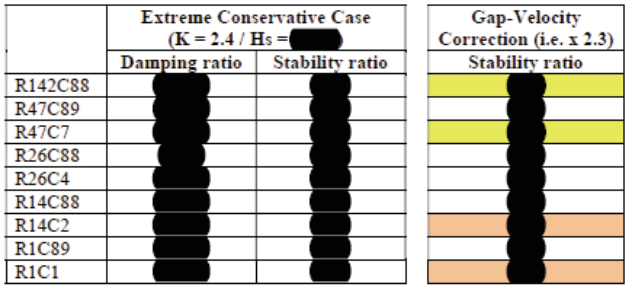
			
1151	Final Award	The Respondents claim that "FIT-III actually is valid for estimating void fractions up to and above the **[Redacted]** void fraction that it estimated for SONGS." The Respondents' expert, **[Redacted]**, opines that FIT-III is validated using experimental data up to **[Redacted]** void fraction. **[Redacted]** further opines that as the flow patterns of steam are the same between **[Redacted]**, the calculations by FIT-III in this range are also valid.	Void fractions - see response to ¶ 281. MHI's experimental void fraction test data for FIT-III and the range in which MHI determined that the use of FIT-III was valid based on that test data for its proprietary steam generator designs constitutes MHI trade secrets and proprietary and confidential information.
1152	Final Award	With respect to the alleged use of FIT-III outside its validated rage in the design of the SONGS RSGs, the Tribunal notes that following the Incident, the FIT-III manual was updated to incorporate that FIT-III is valid for estimating void fraction up to and above **[Redacted]**.	The void fraction value for which MHI has determined that the use of FIT-III is valid for its proprietary steam generator designs constitutes an MHI trade secret and proprietary and confidential information. The redaction of void fraction values was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."
1154	Final Award		Only the title boxes with void fraction values are redacted. Those numbers represent MHI's experimental void fraction test data for FIT-III and the range in which MHI determined that the use of FIT-III was valid based on that test data for its proprietary steam generator designs. As such they constitute MHI trade secrets and proprietary and confidential information. The redaction of such an image was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."

		 Flow regime map shown in Dr. Lahey's Rebuttal Report [C-1408, JX-2225, p.10] Pictures of flow regimes with color are shown in Dr. Blandford's Report. [R-471, JX-2205, p.9]	
1155	Final Award	As explained by the Respondents' expert **[Redacted]**, the demonstrative plots the velocities of both the liquid and gas in steam. Also provided are the characteristics of the steam for different velocity combinations (churn, plug, bubbly, and annular flow). **[Redacted]** testified that as a **[Redacted]** and **[Redacted]** void fraction have the same annular flows, the so-called **[Redacted]** which is validated at a void fraction of **[Redacted]**, can also be used at **[Redacted]** The **[Redacted]** is one of a number of equations used to calculate void fraction in FIT-III.	The void fraction values represent MHI's experimental void fraction test data for FIT-III and the range in which MHI determined that the use of FIT-III was valid based on that test data for its proprietary steam generator designs. As such they constitute MHI trade secrets and proprietary and confidential information. The redaction of void fraction values was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling." The fact that MHI uses a specific analytical tool when using FIT-III to calculate void fraction for its proprietary steam generator designs is similarly a MHI trade secret and proprietary and confidential information.
1157	Final Award	In particular, it appears that it was only in 2011 that a paper by researchers at Oklahoma State University demonstrated, based upon a survey of prior research conducted during the 1970s-1980s, that the **[Redacted]** was found applicable for void fractions up to 98.6%. However, **[Redacted]** testified that even prior to the publication of the Oklahoma State University paper, it was his opinion that given the similarity in flow patterns, he had confidence in using the **[Redacted]** for void fractions up to **[Redacted]**	The fact that MHI uses a specific analytical tool when using FIT-III to calculate void fraction for its proprietary steam generator designs is an MHI trade secret and proprietary and confidential information. The redacted void fraction value represents the upper void fraction value for which MHI had determined that the use of FIT-III is valid for its proprietary steam generator designs, and as such, it constitutes MHI trade secrets and proprietary and confidential information. The redaction of void fraction values was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."

		(. . .) if the flow regime is the same, then it will exhibit essentially the same characteristics.	
1162	Final Award	Furthermore, the Respondents' witness Mr. Wilson testified that it did not make sense to him that FIT-III was only validated for a void fraction of **[Redacted]** given that void fractions go up to 100%.	The void fraction value represents MHI's experimental void fraction test data for FIT-III and as such constitutes MHI trade secrets and proprietary and confidential information. The redaction of void fraction values was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."
1165	Final Award	Further, there is some evidence that MHI already assumed **[Redacted]** at void fractions at **[Redacted]**.	The redacted information represents MHI's design judgment for the value of two phase damping to use for void fractions when calculating stability ratios for its proprietary steam generator design. As such, this information constitutes MHI trade secrets and proprietary and confidential information. The redaction of two-phase damping values was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."
1171	Final Award	Further, the use of the **[Redacted]** during the design era appears reasonable to the Tribunal.	The fact that MHI uses a specific analytical tool when using FIT-III to calculate void fraction for its proprietary steam generator designs is an MHI trade secret and proprietary and confidential information.
1178	Final Award	During the Hearing, Mr. Wilson testified that MHI did assume **[Redacted]**.	The redacted information represents MHI's design judgment for the value of two phase damping to use for void fractions when calculating stability ratios for its proprietary steam generator design. As such, this information constitutes MHI trade secrets and proprietary and confidential information.
1184	Final Award	The PAR provided exactly this, demonstrating that a 20% margin in flow velocities was accounted for: As required by CDS Section 3.8.2, when the steam flow rate is up to 120% of design flow rate, the stability ratios do not exceed 1.0 because the flow rate is proportional to flow velocity and stability ratio as shown in equation (9) of in Section 7.1(2) and the maximum stability ratio will be **[Redacted]** For conservative evaluation, case studies also have been performed in Ref. 10 to confirm there is negligible possibility of fluid elastic vibration.	Stability ratios - see response to ¶ 319.
1187	Final Award		The redacted graph discloses velocities across the full spectrum of a tube in the u-bend section of the bundle. It also discloses differences due to a range of mixture densities, and thus shows precisely what MHI did in designing the SONGS RSGs. As such, this is proprietary design methodology and

			constitutes MHI trade secrets and proprietary and confidential information. The redaction of such an image was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."
1200	Final Award	Dr. Hibiki further explained that when the void fractions are very large, such as a difference between **[Redacted]** using FIT-III and 99.6% using ATHOS, the effect is "over magnified in velocity."	The void fraction value is an MHI analytical calculation result for the SONGS RSGs and therefore constitutes trade secrets and proprietary and confidential information. The redaction of void fractions was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling." MHI did not redact the 99.6% calculated void fraction because that void fraction number had been previously made public. The other numbers were calculated by Dr. Lahey and Exponent and do not constitute MHI proprietary information.
1214	Final Award	To recall, MHI used a K of **[Redacted]** rather than 2.4, the ASME recommended value, in their alternative case calculation, despite allegedly not having empirical data to justify this choice in a triangular pitch steam generator. MHI does not appear to dispute Exponent's conclusion that they lacked empirical data from a triangular array (rather than a square array) in using a K of **[Redacted]**. Rather, the K of **[Redacted]** is "derived by proportional calculation based upon experimental data." MHI calculated a K of **[Redacted]** through a proportional calculation of a K of **[Redacted]**, as found in the U-bend region of a square pitch array:	The choice of Connors' constant - see response to ¶ 329. The redaction of images like those in this table was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."

		<table><tr><td>Tube condition</td><td>Straight tube</td><td>U-bend tube</td></tr><tr><td>Squared array [redacted]</td><td>[redacted] (Ref 31)</td><td>[redacted] (Ref 32)</td></tr><tr><td>Triangular array [redacted]</td><td>[redacted] According to MHI internal experimental data</td><td>[redacted] Derived from experimental data: [redacted]</td></tr></table>	
1219	Final Award	For example, during a design review meeting in October 2005, MHI presented calculations using damping based upon void fraction with two-phase damping as low as **[Redacted]** for Tube R142C88 in addition to its calculations using the ASME recommended value of 1.5%.	The two phase damping value is an input used by MHI for its stability ratio calculations for the SONGS RSGs. As such, it constitutes MHI trade secrets and proprietary and confidential information. The redaction of two-phase damping values was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."
1232	Final Award	With Mitsubishi's errors corrected, the maximum stability ratio is 3.72. Of the 9727 tubes, 3,347 have a stability ratio greater than 1.0 and 4,410 (45%) have a stability ratio greater than **[Redacted]**. In other words, Mitsubishi should have predicted that 34% of tubes could become unstable, resulting in out-of-plane FEI, and that 45% of the tubes did not meet Mitsubishi's own acceptance criteria for FEI calculations stability ratio below **[Redacted]**).	The stability ratio value is an MHI acceptance value for its proprietary steam generator designs. MHI stability ratio acceptance criteria for its proprietary steam generator designs constitutes trade secrets and proprietary and confidential information.
1240	Final Award	<table><tr><td></td><td colspan="2">Extreme Conservative Case (K = 2.4 / Hs = [redacted])</td><td>Gap-Velocity Correction (i.e. x 2.3)</td></tr><tr><td></td><td>Damping ratio</td><td>Stability ratio</td><td>Stability ratio</td></tr><tr><td>R142C88</td><td>[redacted]</td><td>[redacted]</td><td>[redacted]</td></tr><tr><td>R47C89</td><td>[redacted]</td><td>[redacted]</td><td>[redacted]</td></tr><tr><td>R47C7</td><td>[redacted]</td><td>[redacted]</td><td>[redacted]</td></tr><tr><td>R26C88</td><td>[redacted]</td><td>[redacted]</td><td>[redacted]</td></tr><tr><td>R26C4</td><td>[redacted]</td><td>[redacted]</td><td>[redacted]</td></tr><tr><td>R14C88</td><td>[redacted]</td><td>[redacted]</td><td>[redacted]</td></tr><tr><td>R14C2</td><td>[redacted]</td><td>[redacted]</td><td>[redacted]</td></tr><tr><td>R1C89</td><td>[redacted]</td><td>[redacted]</td><td>[redacted]</td></tr><tr><td>R1C1</td><td>[redacted]</td><td>[redacted]</td><td>[redacted]</td></tr></table>	Stability ratios - see response to ¶ 319. The damping values are inputs used by MHI for its stability ratio calculations for the SONGS RSGs. As such, they constitute MHI trade secrets and proprietary and confidential information. The redaction of two-phase damping values was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."
1241	Final Award	Further, the tube with the highest SR, R14C2 is stable even if its values are multiplied by a further 20% **[Redacted]**, as appears to	Stability ratios - see response to ¶ 319.

		be required under the RSG Contract to provide additional safety margin.	
1242	Final Award		Stability ratios and damping values - see response to ¶ 1240.
1245	Final Award	At the design stage, Mitsubishi used FIT-III and calculated a maximum void fraction of **[Redacted]**. After the failure, Mitsubishi used ATHOS and calculated a maximum void fraction of 99.6%. The difference between **[Redacted]** and 99.6% is significant. At **[Redacted]** of the flow is liquid that can dissipate tube vibration. At 99.6%, only 0.4% of the flow is liquid. In other words, the liquid fraction that can serve to damp vibration is lower by a factor of **[Redacted]**.	The void fraction value is an MHI calculated void fraction value for the SONGS RSGs, and as such it constitutes trade secrets and proprietary and confidential information. The redaction of void fractions was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling." MHI did not redact the 99.6% calculated void fraction because that void fraction number had been previously made public.
1255	Final Award	For the Respondents, Dr. Begley submits evidence, opining that (i) FIVATS calculated stability ratios are within **[Redacted]** of measured test values, "within the uncertainty typically associated with this type of comparison;"	The redacted value represents MHI's experimental test data for the validation of its proprietary FIVATS code used to calculate stability ratios, and as such constitutes MHI trade secrets and proprietary and confidential information.
1257	Final Award	The validation of FIVATS demonstrated a match to within **[Redacted]** of measured data.	The redacted value represents MHI's experimental test data for the validation of its proprietary FIVATS code used to calculate stability ratios, and as such constitutes MHI trade secrets and proprietary and confidential information.
1260	Final Award	Claimants also put forward evidence that IVHET over-predicted the wear in that single tube by some **[Redacted]**.	The redacted value represents MHI's experimental test data for the validation of its proprietary IVHET code, and as such constitutes MHI trade secrets and proprietary and confidential information.

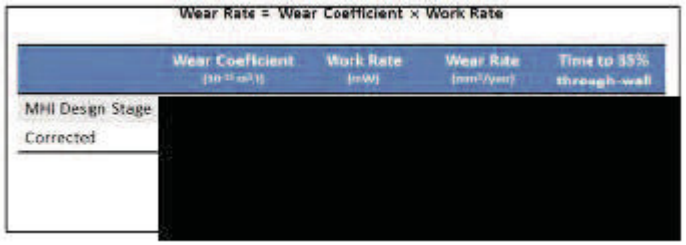
	Extreme Conservative Case (K = 2.4 / Hs = [redacted])		Gap-Velocity Correction (i.e. x 2.3)
	Damping ratio	Stability ratio	Stability ratio
R142C88	[redacted]	[redacted]	[redacted]
R47C89	[redacted]	[redacted]	[redacted]
R47C7	[redacted]	[redacted]	[redacted]
R26C88	[redacted]	[redacted]	[redacted]
R26C4	[redacted]	[redacted]	[redacted]
R14C88	[redacted]	[redacted]	[redacted]
R14C2	[redacted]	[redacted]	[redacted]
R1C89	[redacted]	[redacted]	[redacted]
R1C1	[redacted]	[redacted]	[redacted]

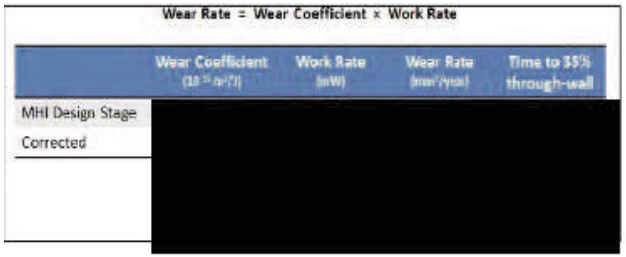
1262	Final Award	According to the Respondents, MHI's acceptance criteria for the validation of IVHET was for the deviation of the wear rate calculation to be within **[Redacted]** of the measurement of wear.	The redacted value represents MHI's acceptance value for the validation of its proprietary IVHET code and as such constitutes MHI trade secrets and proprietary and confidential information.
1263	Final Award	The Claimants submit a **[Redacted]** deviation is notable while the Respondents submit this is within the acceptance criteria for a wear calculation code.	The redacted value represents MHI's experimental test data for the validation of its proprietary IVHET code, and as such constitutes MHI trade secrets and proprietary and confidential information.
1297	Final Award	In the Claimants' submission, the PAR is a contractual document pursuant to Section 1.2.40 of the RSG Contract such that, for example, a void fraction of **[Redacted]** identified in the PAR constitutes a contractual design criteria and MHI's failure to deliver RSGs with such a void fraction amounts to a breach of contract.	Void fractions - see response to ¶ 281.
1298	Final Award	In the Respondents' submission, the PAR is not a contractual document such that, for example, the calculated void fraction of **[Redacted]** is not a contractual design specification.	Void fractions - see response to ¶ 281.
1341	Final Award	For example, the record shows that Mitsubishi's predicted void fraction levels changed from **[Redacted]** in July 2005 to **[Redacted]** in October 2005 to **[Redacted]** in March 2008.	Void fractions - see response to ¶ 281.
1400	Final Award	On October 18, 2005, attendees at the #6 Design Review Meeting reviewed a slide that showed that the work rate from the domestic SG was **[Redacted]** that of the SONGS RSGs potentially because the SONGS fluid velocity appeared much lower than the fluid velocity of the domestic plant.	The redacted value is based on MHI design calculations for its proprietary steam generator designs and as such constitutes trade secrets and proprietary and confidential information.
1403	Final Award	The **[Redacted]** RSG and the **[Redacted]** RSG both have ¾', tubes. The **[Redacted]** tube pitch is 6% greater than that of **[Redacted]**. Both of these tube bundles are approximately the same size and have similar circulation ratios. The **[Redacted]** average-to-maximum void fraction difference is 7.5% while the **[Redacted]** difference is 11%. This demonstrates that tighter tube packing causes the void fraction to be elevated. The larger SONGS RSG tube bundle has nearly twice as many tubes with the same tube spacing, yet the FIT-III average-to-maximum void fraction difference is almost the same (i.e **[Redacted]** Vs.	Void fractions - see response to ¶ 281. Further, the names of the plants are redacted to protect proprietary information related to the MHI design for those plants. The fact that MHI uses the a specific analytical tool when using FIT-III to calculate void fraction for its proprietary steam generator designs constitutes MHI trade secrets and proprietary and confidential information.

		[Redacted]). This suggests that the number of tubes or size of the U bend does not significantly influence the maximum void fraction (according to FIT-III results). Therefore, for tube bundles with the SONGS tube spacing (1.0" triangular pitch with 3A" tubes) the average-to-maximum FIT-III void fraction difference is **[Redacted]**. The average exit void fraction can be calculated using the **[Redacted]** model based on the average exit quality.	
1418	Final Award	During design, Respondents relied on their proprietary code FIT-III to predict the void fractions and velocities within the RSGs. FIT-III predicted that the maximum void fraction would be **[Redacted]** and that the maximum velocity, which varies by tube, would be approximately **[Redacted]**. After the failures of the RSGs, Respondents switched to the much more widely used ATHOS code. Comparing the results of Respondents' post-failure ATHOS analysis to their design era FIT-III analysis shows that Respondents greatly under-predicted the maximum void fraction (ATHOS yielded 99.6%) and under-predicted velocities by **[Redacted]** As Claimants demonstrated, the disparity between the FIT-III and ATHOS results stems from the many errors embedded in FIT-III, its preprocessor (SSPC), and its postprocessor. In Respondents' SSPC, Claimants' experts identified three main errors: • Friction Error. Respondents' use of the **[Redacted]** while "good for relatively low velocities, . . . can[not] be us[ed] . . . in the range" in which Respondents used it. It is "physically impossible." *** Respondents do dispute four of the FIT-III errors identified by Claimants. • Drift Flux Gradient Error. Respondents admit they "did not include a drift flux gradient term in FIT-III." This caused FIT-III to violate Newton's Second Law of Motion. Respondents reply that **[Redacted]** commits this same error.	Void fractions and velocities calculated by MHI for the SONGS RSGs constitute trade secrets and proprietary and confidential information. The redaction of void fractions and velocities was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling." MHI did not redact the 99.6% calculated void fraction because that void fraction number had been previously made public. Use of a specific analytical tool – see response to ¶ 923. The name of a comparable computer code is redacted to protect third party trade secrets and proprietary and confidential information.

		*** Finally, Respondents' defense that all thermal-hydraulic codes operate with significant "uncertainties" fails to hold up to scrutiny. First, uncertainty cannot explain Respondents' gross under-prediction of velocities. **[Redacted]** testified that FIT-III has a "margin of uncertainty . . . of **[Redacted]**." Even granting **[Redacted]** such "uncertainty," if Respondents predicted a maximum flow velocity of **[Redacted]** uncertainty provides a band of error between **[Redacted]** and **[Redacted]** for that tube. Maximum flow velocities at SONGS, however, were often closer to **[Redacted]**, more than **[Redacted]** than Respondents predicted. Such massive under-prediction of flow velocities cannot be chalked up to uncertainty.	The redacted value represents MHI's experimental test data used for the validation of its proprietary FIT-III code and as such constitutes MHI trade secrets and proprietary and confidential information. The velocities calculated by MHI for the SONGS RSGs constitute trade secrets and proprietary and confidential information. The redaction of velocities was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."
1419	Final Award	But in order to do so, Claimants also ignore the fact that none of these codes are established to be accurate. In fact, as Dr. Hibiki testified, the accuracy of the original SSPC, before Exponent's modifications, was approximately **[Redacted]** *** While Claimants have ignored the accuracy of the code upon which they base their allegations, Respondents offered undisputed evidence showing that the accuracy of both ATHOS and FIT-III is comparable (**[Redacted]** of the actual void fraction value). *** A Westinghouse analysis of the **[Redacted]** RSGs assuming one ineffective support resulted in a peak SR of **[Redacted]**, while a post-leak Westinghouse analysis of the SONGS RSGs, also assuming one ineffective support, produced a maximum SR of 1.0. Comparing the two Westinghouse analyses indicates that the SONGS RSGs had approximately 67% of the relative instability potential of the **[Redacted]** RSGs.	The redacted value in the first paragraph represents MHI's experimental test data and analytical calculations used for the validation of its proprietary SSPC and FIT-III codes and as such constitute MHI trade secrets and proprietary and confidential information. The redactions in the second paragraph were requested by Westinghouse as its proprietary and confidential information.
1425	Final Award	In rebuttal, the Respondents' expert Dr. Hibiki opines that Dr. Lahey's opinion dates to his 1981 paper on the issue, but that the bi-optical probe developed by **[Redacted]** around 1996 is indeed reliable for annular flow regimes. During the Hearing, MHI's	The void fraction values represent MHI's experimental void fraction test data for FIT-III and the range in which MHI determined that the use of FIT-III was valid based on that test data for its proprietary steam generator designs. As such they constitute MHI trade secrets and proprietary and confidential

		expert **[Redacted]** testified that he has demonstrated and used his bi-optical probe to validate void fractions of up to 87% in annular flows, and that therefore calculations of void fraction up to **[Redacted]** using FIT-III can be accurate. **[Redacted]** has opined that as void fractions between **[Redacted]** have the same "laminar flow" patterns, they have the same characteristics, thereby justifying this extrapolation.	information.
1452	Final Award	he SONGS SR margin was calculated as **[Redacted]** with one ineffective support, which itself included a 20% additional margin per Section 3.8.2 of the RSG Contract.	Stability ratios - see response to ¶ 319.
1452 fn. 1533	Final Award	The SR margin is 1 minus **[Redacted]**.	Stability ratios - see response to ¶ 319.
1465	Final Award	As **[Redacted]** testified: FIVATS has a limitation to **[Redacted]**, and if it is set so that in-plane and out-of-plane directions are to be calculated, then I don't think that it would be able to do so sufficient numbers of calculation for the out-of-plane **[Redacted]**. So in order to make sure that there would be enough **[Redacted]** calculated in the out-of-plane direction, the in-plane direction was set purposely so that there would not be in-plane direct vibration.	The redacted information describes MHI's methods of calculating stability ratios using its proprietary FIVATS code and as such constitutes MHI trade secrets and proprietary and confidential information.
1479	Final Award	In their Responses to Joint List of Issues, the Claimants submit that "Mitsubishi's analysis of random vibration was deeply flawed. While Mitsubishi predicted at the design stage that the tube would last over **[Redacted]**, when Mitsubishi "corrected" its random vibration wear analysis, IVHET predicted the tube would hit its 35% through-wall in **[Redacted]** from just random vibration alone. This was unrebutted by Mitsubishi during the Hearing and falls far short of the 40-year RSG life promised by Mitsubishi."	The redacted information are the results of wear calculations using MHI's proprietary IVHET code for the SONGS RSGs and, as such, constitutes trade secrets and proprietary and confidential information. The redaction of wear calculations was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."
1480	Final Award	While Respondents predicted at the design stage that the tube would last over **[Redacted]**, when their random vibration wear analysis is corrected using their own values, their analysis predicts that the tube would reach its 35% through-wall limit in **[Redacted]** from just random vibration alone.	The redacted information consists of MHI inputs for its wear calculations using its proprietary IVHET code for the SONGS RSGs and the resulting calculated work rates, wear rates, and wear depths. As such, the redacted information constitutes trade secrets and proprietary and confidential information. The redaction of wear calculations was endorsed by the CPUC

		*** However, these were not small changes—the comparison between the two analyses shows "[a]n enormous difference between design stage and the post leak stage." Respondents' "corrected" wear rate was **[Redacted]** higher than their design era wear rate—that is not a "development," it is an admission of error:  ***  	ALJ in the "ALJ 4/19/13 Ruling." The redaction of images such as the tables was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."
1481	Final Award	The design-era wear model included both large gaps (up to **[Redacted]** to model gap-limited out-of-plane FEI) as well as zero gaps (to model the design conditions). *** The design-era calculation showed that fretting wear (due to pure sliding) would be most-limiting; therefore, a **[Redacted]**	The redacted information are inputs for MHI's wear calculations using its proprietary IVHET code for the SONGS RSGs, and as such constitutes trade secrets and proprietary and confidential information. The redaction of wear calculations was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."

		coefficient was (appropriately) used in the design-era calculation. Other vendors similarly used a **[Redacted]** coefficient during design. However, the observed tube wear due to operation showed that use of an **[Redacted]** coefficient was more appropriate; Mitsubishi therefore used the **[Redacted]** coefficient for all of its post-operation wear calculations.	
1482	Final Award	The Claimants' case that the Respondents failed to properly analyze for wear due to random vibration is based on the allegation that the Respondents' wear calculations was significantly erroneous such that the design life of the Units was **[Redacted]**, rather than over **[Redacted]**.	The redacted information are the results of wear calculations using MHI's proprietary IVHET code for the SONGS RSGs and, as such, constitute trade secrets and proprietary and confidential information. The redaction of wear calculations was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."
1483	Final Award		The redacted information consists of MHI inputs for its wear calculations using its proprietary IVHET code for the SONGS RSGs and the resulting calculated work rates, wear rates and wear depths. As such, the redacted information constitutes trade secrets and proprietary and confidential information. The redaction of wear calculations was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling." The redaction of images like the tables was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."
1521	Final Award	Claimants and their experts have alleged that Mitsubishi should have known that the void fraction in the steam generators would be over 98%, based on the void fraction of the OSGs. But Claimants have failed to establish that Mitsubishi was aware of the void fraction of the OSGs at the time of the design, and indeed that was not the case. Claimants' experts merely assumed that Mitsubishi would be aware of the OSG void fraction. On the contrary, as the recipient of an ATHOS analysis performed by its prior vendor, Edison was aware of the maximum calculated OSG void fraction at the time of the design, which was 96.1%. The OSG void fraction of 98%, referred to by Claimants' experts, was first calculated by Mitsubishi after the incident. Edison was also well aware of the projected RSG void fraction of **[Redacted]** at the time of the design.	The void fraction value calculated by MHI for the SONGS RSGs constitutes trade secrets and proprietary and confidential information. The redaction of void fraction values was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."

<table>
<tr>
<td>1532</td>
<td>Final Award</td>
<td>SONGS had a maximum void fraction, as calculated by Respondents after the failures, of 99.6% and maximum velocities, as calculated by Respondents, of [Redacted].

***

Respondents proffered a chart of “ATHOS Maximum void fraction[s]” for [Redacted], [Redacted], and SONGS. SONGS’ void fraction is the highest of these four “CE-type steam generators.” Respondents argue that this comparison shows that “SONGS and other large CE-type steam generators . . . are within 1% of each other,” but that comparison obscures the relevant metric—water content. It is the liquid water, not the percentage of steam, that provides vibration damping. Comparing [Redacted], which had the highest void fraction between it, [Redacted], and [Redacted], to SONGS shows that [Redacted] (even at such high void fractions) had three times more liquid water than SONGS.</td>
<td>Velocities calculated by MHI for the SONGS RSGs constitute trade secrets and proprietary and confidential information. The redaction of velocities was endorsed by the CPUC ALJ in the “ALJ 4/19/13 Ruling.” MHI did not redact the 99.6% calculated void fraction because that void fraction number had been previously made public.

The plant names are redacted to protect third party trade secrets and proprietary and confidential information.</td>
</tr>
<tr>
<td>1533</td>
<td>Final Award</td>
<td><table>
<tr><th>Facility</th><th>ATHOS Maximum void fraction</th></tr>
<tr><td>[redacted]</td><td>98.5%</td></tr>
</table>
<table>
<tr><td>[redacted]</td><td>98.7%</td></tr>
<tr><td>[redacted]</td><td>98.5%</td></tr>
<tr><td>SONGS (MHI Analysis)</td><td>99.6%</td></tr>
</table>
***

And Claimants allegation that the damping changes drastically between a void fraction of [Redacted] and 99.6% has no impact on Mitsubishi’s stability ration calculation: in both cases Mitsubishi assumes essentially no two-phase damping. As a result, using a void fraction of 99.6% instead of [Redacted] would have little impact on the stability ratio analysis and the prediction of FEI.</td>
<td>The plant names are redacted to protect third party trade secrets and proprietary and confidential information.

The void fraction values calculated by MHI for the SONGS RSGs constitute trade secrets and proprietary and confidential information. The redaction of void fraction values was endorsed by the CPUC ALJ in the “ALJ 4/19/13 Ruling.” MHI did not redact the 99.6% calculated void fraction because that void fraction number had been previously made public.</td>
</tr>
</table>

1538	Final Award	Using FIT-III, the as designed RSGs were calculated to have a maximum void fraction of **[Redacted]**; Using ATHOS, the maximum void fraction in the RSGs was calculated at 99.6%; Using ATHOS, the maximum void fraction in the original SONGS steam generators was calculated at 98%; Other large steam generators are calculated, using ATHOS, to have maximum void fractions of 98.5% (**[Redacted]**), 98.7% (**[Redacted]**), and 98.5%, (**[Redacted]**).	The void fraction values calculated by MHI for the SONGS RSGs constitute trade secrets and proprietary and confidential information. The redaction of void fraction values was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling." MHI did not redact the 99.6% calculated void fraction because that void fraction number had been previously made public. The plant names are redacted to protect third party trade secrets and proprietary and confidential information.
1542	Final Award	The Tribunal does not consider the void fraction at SONGS to be one that departs drastically from prior operating experience of the OSGs or of other comparable steam generators such as **[Redacted]**, **[Redacted]**, or **[Redacted]**.	The plant names are redacted to protect third party trade secrets and proprietary and confidential information.
1566	Final Award	Consistent with Claimants' experts' reaction to the FIT-III thermal-hydraulic predictions compared to the design features of the SONGS RSGs, Mr. Langford questioned FIT-III's void fraction results. He "expected the SONGS void fraction to be … somewhere in the **[Redacted]** plus percent range" and "communicate[d] that view to Mitsubishi at the time." *** [T]he overall gap velocity distributions appear to be consistently lower than my expectations. . . . Does MHI have any way of demonstrating the changes in design that reduce peak velocities from more than **[Redacted]** for domestic designs to about **[Redacted]** for SONGS?	Information on the void fraction range discussed during the design of the SONGS RSGs constitutes a MHI trade secret and proprietary and confidential information on the different alternatives and options that underlie the final SONGS RSG design. The redacted values in the latter paragraph are MHI design calculations for its proprietary steam generator designs and as such constitute trade secrets and proprietary and confidential information. The redaction of velocities was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling." MHI did not redact the 99.6% calculated void fraction because that void fraction number had been previously made public.
1567	Final Award	Therefore, Section 6 contains the data for predicting the bounding stability ratios for the **[Redacted]** steam generators while Section 7 reflects an "[e]xcessive[ly] conservativ[e]" analysis "used only for comparison to the **[Redacted]** steam generators." *** Looking at the correct section of Westinghouse's flow-induced	There are several different categories of redactions. The reference to Mitsubishi's choice of a particular steam generator as an appropriate comparison for the RSGs is redacted as part of Mitsubishi's proprietary design analysis, and therefore constitutes MHI trade secrets and proprietary and confidential information. The remaining redactions, excluding the redactions related to void fraction, were made to protect Westinghouse's proprietary information.

vibration analysis of **[Redacted]**—Section 6—Table 6-4 provides stability ratios for "postulated bounding conditions for U-bend region." The highest stability ratio is **[Redacted]** for the tube located at row 149, column C90:

TABLE 6-4

SUMMARY VIBRATION ANALYSIS RESULTS FOR POSTULATED BOUNDING CONDITIONS FOR U-BEND REGION

		Fluidelastic			Turbulence	
		Maximum FSR	Frequency @ Max FSR (Hz)	Stress (psi)	Amplitude (RMS) Peak (10⁻³ in)	Stress (RMS) Peak (psi)
Tubes with 8-10 Double-Sided Supports (Rows 96-150)	R149C90	[redacted]	44.4	1678	(3.96) 13.7	(217) 1100
Tubes with 7-8 Double-Sided Supports (Rows 84-95)	R85C80	0.670	40.0	0	(2.44) 8.4	(170) 700
Tubes with 5-6 Double-Sided Supports (Rows 41-83)	R83C80	0.690	36.9	0	(2.16) 7.5	(169) 809
Tubes with 3-4 Double-Sided Supports (Rows 24-40)	R40C73	0.584	38.3	0	(1.32) 4.8	(111) 482
Tubes with 1-2 Double-Sided Supports (Rows 9-23)	R23C4	0.985	35.3	0	(3.01) 24.9	(395) 1311
Tubes with No Double-Sided Supports (Rows 1-8)	R8C3	0.454	28.1	0	(3.10) 10.7	(120) 538

***

A review of Appendix B makes it clear (albeit in fine print) that the data points for row 149, column C90 include results with up to two supports inactive:

ANO	Cylindical With a Down Comer Model, R149C90 AVB 2 and AVB 3 Inactive
ANO	Cylindical With a Down Comer Model, R149C90 AVB 3 and AVB 4 Inactive
ANO	Cylindical With a Down Comer Model, R149C90 AVB 4 and AVB 5 Inactive

***

Therefore, the stability ratio of **[Redacted]** found in Table 6-5 is the stability ratio at **[Redacted]** assuming two ineffective supports. Assuming two ineffective supports at SONGS resulted in a stability ratio of **[Redacted]**. This shows that SONGS had less vibration margin than **[Redacted]**—the direct opposite

Void fraction - <u>see</u> response to ¶ 281.

Figures – similar redactions were endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."

		conclusion than the one Respondents espouse. *** Finally, while Mr. Langford told Respondents that he believed that the void fraction would be "in the **[Redacted]** plus percent range," Edison was told that the maximum void fraction would be in the **[Redacted]** range.	
1872	Final Award	The repair implementation video shows workers entering the RSG, **[Redacted]** grinding open the weld of the entry hatchway into the U-bend area while using **[Redacted]** workers entering the U-bend area, **[Redacted]**installation of a thicker AVB, and final torquing and crimping of the installed thicker AVBs. The video concludes with the removal of **[Redacted]**, welding shut of the bottom deck access manplate, and removal of all equipment.	The redacted information describes specific repair methods developed by MHI for repairing the SONGS RSGs (as well as for accomplishing other AVB repairs in the future) and reflects MHI's proprietary design judgment for performing such repairs. As such, the redactions constitute MHI trade secrets and proprietary and confidential information.
1872 fn. 1861	Final Award	**[Redacted]**	MHI's repair methodology - see response to ¶ 1872.
1872 fn. 1862	Final Award	**[Redacted]**	MHI's repair methodology - see response to ¶ 1872.
1872 fn. 1863	Final Award	**[Redacted]**	MHI's repair methodology - see response to ¶ 1872.
1873	Final Award	The insertion of a single thicker AVB requires **[Redacted]**. An additional period of approximately **[Redacted]** is required for the set-up of the expansion bladders and positioning guide.	The redacted information reflects the time necessary to perform specific repair activities using the specific repair methods and thicker AVB design developed by MHI for repairing the SONGS RSGs. As such, it constitutes MHI trade secrets and proprietary and confidential information.
1879	Final Award	The Claimants raised concerns over whether the repair was being performed in **[Redacted]**, whether a **[Redacted]** was used, and the use of **[Redacted]**.	MHI's repair methodology - see response to ¶ 1872.
1879 fn. 1873	Final Award	**[Redacted]**	MHI's repair methodology - see response to ¶ 1872.
1880	Final Award	The original repair proposal called for the repair being performed **[Redacted]**. The repair implementation in the video was **[Redacted]**.	The redacted information identifies the specific repair method developed by MHI for repairing the SONGS RSGs. The redacted information describes the method by which MHI evaluated the efficacy of implementing the repair. As such, the redacted information reflects MHI's proprietary design judgment for performing and evaluating such type of steam generator repairs and constitutes MHI trade secrets and proprietary and confidential information.

1880 fn. 1875	Final Award	Whether a repair is performed **[Redacted]**	The redacted information reflects different alternative repair methods that MHI evaluated for repairing the SONGS RSGs. As such, it constitutes MHI trade secrets and proprietary and confidential information on the different alternatives and options that underlie the final repair design and method of repair.
1881	Final Award	The original repair proposal called for the use of a **[Redacted]** AVB. MHI changed this, using a **[Redacted]**.	MHI's repair methodology - see response to ¶ 1872.
1882	Final Award	The original repair called for using a **[Redacted]**. As displayed at the Hearing, an **[Redacted]**	MHI's repair methodology - see response to ¶ 1872.
1885	Final Award	The Claimants' primary criticism is in relation to the use of **[Redacted]**.	MHI's repair methodology - see response to ¶ 1872.
1886	Final Award	Exponent has opined that the use of the **[Redacted]** that were not specifically studied by MHI. The Tribunal does not find this criticism convincing. While MHI does not appear to have studied the effect of the **[Redacted]**, MHI did study the 40-year effect of the insertion of the thicker AVBs.	MHI's repair methodology - see response to ¶ 1872.
1890	Final Award	This reduction would be accomplished by increasing the circulation ratio from 3.3 to **[Redacted]** through increasing the water level in the steam generator, reducing the feedwater temperature, and increasing the temperature of the primary water. The combined effect of these changes was a reduction in void fraction (VF) to **[Redacted]**	The redacted information consists of MHI's calculated circulation ratio value and calculated void fraction value for the SONGS RSGs that would result from potential plant operating changes. As such, it constitutes MHI trade secrets and proprietary and confidential information. The redaction of circulation ratios and void fractions was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."
1941	Final Award	The increased double-sided gap on the existing AVBs would exist over rows where the new bar is thick **[Redacted]**	The redacted information refers to design characteristics of MHI's proprietary thicker AVB design and as such it constitutes MHI trade secrets and proprietary and confidential information. Also, the redacted information is inaccurate, and therefore could mislead the public.
2038	Final Award	When that error is corrected, Respondents' own input values show that one of the tubes they analyzed would have experienced through-wall wear post-repair in only **[Redacted]**. *** During the design of the RSGs, Respondents considered two	The first redacted value is based on the results of wear calculations using MHI's proprietary IVHET code for the SONGS RSGs assuming a repair and, as such, constitutes trade secrets and proprietary and confidential information. The redaction of wear calculations was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."

		AVB configurations, denominated the "2Vx3" and the "**[Redacted]** staggered." Although the 2Vx3 was expected to yield a higher maximum void fraction and was considered "unstable in fabrication," Respondents determined that it was "[b]etter than **[Redacted]** staggered" for the RSGs. *** Further, Mr. Wilson testified that the U-Bend Repair Report's discussion of reducing void fraction to **[Redacted]** with certain plant operating changes was flawed, "plac[ing] an emphasis on maximum void fraction that would go beyond the accuracy of those calculations." *** "The report does not have a text matrix or other information to demonstrate that mockup testing bounds potential installation conditions. For example, the 'tight' bundle insertion test was performed with a **[Redacted]** maximum thickness AVB (pg 45), with some additional testing at **[Redacted]** At **[Redacted]** the AVBs were still insertable, meaning the **[Redacted]** to allow insertion of the wide AVB. However figure 5.3.3-2 (pg 62) and onward text indicates the targeted thickness AVB is **[Redacted]**." *** Despite knowing as of November 2012 that AVBs thicker than **[Redacted]** would require **[Redacted]**, Respondents presented a **[Redacted]** thicker AVB in their U-Bend Repair Report that would be installed with **[Redacted]** alone. Further, while Respondents told Edison that the thicker AVBs would be installed with the U-bend region **[Redacted]**, Mr. Bohn testified that Respondents' plan as "presented to Edison was not fully developed." **[Redacted]** testified that, as of the fall of 2012, Respondents knew that the repair would be installed **[Redacted]**, a switch Edison did not learn until this arbitration. *** "Each Thicker AVB would have been approximately **[Redacted]** the thickness of an existing AVB," and the repair would impose a first-of-a-kind support structure that represented a vast departure from prior U-bend steam generator designs, in at least two	Information on MHI's different AVB designs - see response to ¶ 346. The value in the third paragraph is a MHI calculated void fraction value for the SONGS RSGs that would result from potential plant operating changes. As such, it constitutes MHI trade secrets and proprietary and confidential information. The value for targeted thickness is the design thickness of the thicker AVBs that MHI developed for repairing the SONGS RSGs and reflects MHI's proprietary design judgment as to the appropriate AVB design thickness for performing the repair. The other redacted information in this excerpt describes proprietary testing that MHI undertook to evaluate the effectiveness of a thicker AVB repair. As such, the information constitutes MHI trade secrets and proprietary and confidential information. MHI's repair methodology - see response to ¶ 1872. The redaction after the word "approximately" describes design thickness of the thicker AVBs that MHI developed for repairing the SONGS RSGs in relation to the existing AVBs and reflects MHI's proprietary design judgment as to the appropriate AVB design thickness for performing the repair. The

		respects. First, the gaps at tube-to-existing AVB intersections would increase, resulting in large gaps. Second, the thicker AVBs would impose extreme contact forces (exceeding **[Redacted]** in some places), forcibly locking the tubes in place. *** In the Performance Analysis Report (prepared, checked, and/or approved by Messrs. **[Redacted]** and **[Redacted]**), Respondents stated that the maximum void fraction in the RSGs would be **[Redacted]** Respondents further confirmed that "[f]or the U-bend region, it has been confirmed that stability ratios are less than 1.0 even if 1 support is inactive" and documented that the highest calculated out-of-plane stability ratio would be **[Redacted]**. *** Notwithstanding these promises, Respondents' repair would have left the maximum void fraction at almost 100% and the maximum velocities at **[Redacted]** times greater than predicted in design.	second redaction indicates the upper range of contact forces calculated by MHI for its proprietary thicker AVB repair. As such, the redacted information constitutes MHI trade secrets and proprietary and confidential information. Void fractions and stability ratios - see responses to ¶¶ 282 and 312. The final redaction reflects velocities calculated by MHI for the SONGS RSGs and as such constitutes trade secrets and proprietary and confidential information. The redaction of velocities was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."
2039	Final Award	The Thicker-AVB Repair would have involved inserting **[Redacted]** Thicker AVBs into Zone 1 between alternating columns of tubes at approximately the 45-degree and 135-degree points, thus targeting the exact area that had experienced the problematic tube wear. *** Each Thicker AVB would have been approximately **[Redacted]** the thickness of an existing AVB. ***	The first redacted value represents MHI's proprietary design judgment as to the number of thicker AVBs necessary for effectuating a repair. As such, it constitutes MHI trade secrets and proprietary and confidential information. The second redacted value describes design thickness of the thicker AVBs that MHI developed for repairing the SONGS RSGs in relation to the existing AVBs and reflects MHI's proprietary design judgment as to the appropriate AVB design thickness for performing the repair. As such, the redacted information constitutes MHI trade secrets and proprietary and confidential information.

		 ***  *** Mitsubishi conservatively calculated that a contact force of **[Redacted]** would have been sufficient to have pinned the most-limiting intersection of the most-limiting tube at 100% power. The thicker-AVB repair would have created contact forces far in excess of **[Redacted]**. Almost all of the contact forces in Zones 1 and 2 would have exceeded **[Redacted]**, more than **[Redacted]** times larger than the **[Redacted]** pinning force criterion	The redacted figures show and describe the effect of MHI's proprietary thicker AVB design and are a pictorial reflection of MHI's design judgment as to the effectiveness of the thicker AVB repair. As such, they constitute MHI trade secrets and proprietary and confidential information. Similar redactions were approved by the CPUC ALJ in the "ALJ 4/19/13 Ruling." The redacted contact force information reflects MHI 's proprietary design calculations for the contact force sufficient to pin the tube to the AVBs in order to prevent in-plane FEI and the contact forces generated by the thicker AVB repair. As such, the information constitutes MHI trade secrets and proprietary and confidential information.

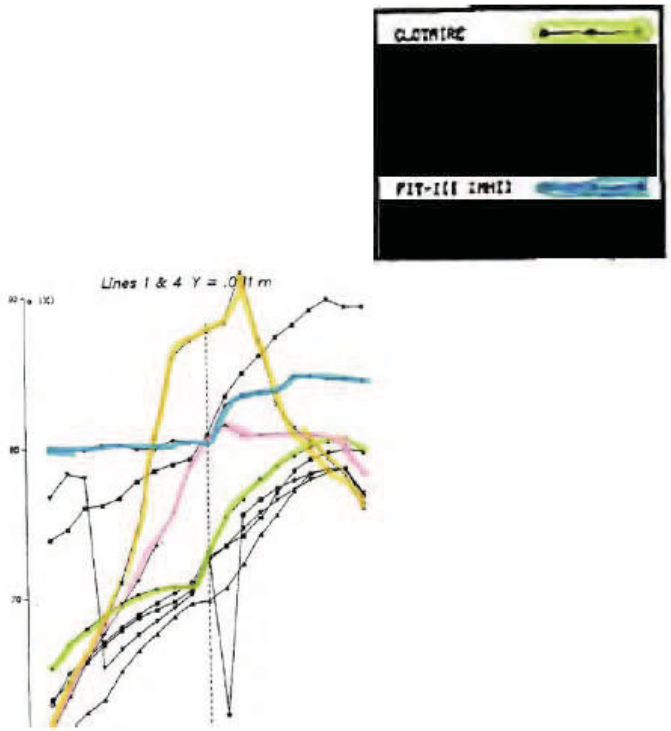
		established for the Repair. *** As explained by Dr. Begley, pinning the tubes at these key intersections would have materially shortened the tubes' vibrating spans, thereby increasing the tubes' natural frequencies by a factor of approximately **[Redacted]**. Because a tube's Critical Velocity (i.e., the fluid velocity required to make the tube become unstable) is directly proportional to the tube's natural frequency, the Critical Velocity at which the tube would become unstable would also increase by the same factor. Because the stability ratio would be decreased (i.e., improved) by the same factor, the Repair would have improved the stability of the tube by a factor of **[Redacted]** or more so as to prevent the recurrence of in-plane FEI. *** Additionally, the Repair would have greatly mitigated tube-to-AVB wear by a factor of **[Redacted]** or more, resulting in total tube plugging over 40 years of operation well below the 8% tube plugging margin established by Edison. *** And in December 2012, Mitsubishi showed Edison that its repair (when combined with the minor T/H improvements it had previously suggested) would reduce stability ratios in the area subject to in-plane FEI to under **[Redacted]**, well below the threshold for fluid elastic instability and providing sufficient margin against instability by any objective standard. *** Demonstrated the insertion method of the thicker-AVBs, confirming that the "**[Redacted]**;" *** Concluded that thicker AVBs inserted between AVBs **[Redacted]** and **[Redacted]** (and between **[Redacted]** and **[Redacted]**) would be effective in-plane and out-of-plane, could be installed, and would create tube-to-AVB contact force at the	The redactions in the paragraph beginning "As explained by Dr. Begley" reflect MHI proprietary design information as to the effectiveness of the thicker AVB repair to prevent in-plane FEI and as such constitutes MHI trade secrets and proprietary and confidential information. The redacted value in the paragraph beginning "Additionally" reflects MHI proprietary design information as to the effectiveness of the thicker AVB repair to mitigate tube-to-AVB wear and as such constitutes MHI trade secrets and proprietary and confidential information. The redacted stability ratio value reflects MHI proprietary design information as to the effectiveness of the thicker AVB repair to prevent in-plane FEI and as such constitutes MHI trade secrets and proprietary and confidential information. The statement redacted in the paragraph beginning "Demonstrated" describes a specific repair method developed and evaluated by MHI for repairing the SONGS RSGs and reflects MHI's proprietary design judgment for performing such type of steam generator repairs. As such, it constitutes MHI trade secrets and proprietary and confidential information. The redacted AVB identification numbers refer to design characteristics of MHI's proprietary thicker AVB repair design and as such constitutes MHI trade secrets and proprietary and confidential information. The redacted information in the paragraph beginning "Provided the detailed

		additional support points. *** Provided the detailed test procedure, including the insertion and fixing of the Thicker-AVBs **[Redacted]**, for the testing of the Thicker-AVBs in the full-scale mockup, and for measuring gap sizes with ECT probes; *** The AVB **[Redacted]** (through photographs of both **[Redacted]**condition). *** Explained that the thicker-AVBs would **[Redacted]**; *** Mitsubishi sent Edison a letter advising that, "Based on the results of technical analyses of critical factors and these mockup tests, Mitsubishi has determined that the insertion of 'thicker AVBs' is a practical and viable repair option" and that "This option introduces tube to AVB contact forces in excess of **[Redacted]** … which will prevent tube in-plane displacement and tube-to-tube contact.	test procedure" describes specific repair methods developed and evaluated by MHI for repairing the SONGS RSGs and reflects MHI's proprietary design judgment for performing such type of steam generator repairs. As such, it constitutes MHI trade secrets and proprietary and confidential information. The redacted information in the paragraphs beginning "The AVB" and "Explained" refers to design characteristics of MHI's proprietary thicker AVB design and as such constitute MHI trade secrets and proprietary and confidential information. The final redaction reflects MHI's proprietary design calculations for the contact forces sufficient to pin the tube to the AVBs in order to prevent in-plane FEI. As such, the information constitutes MHI trade secrets and proprietary and confidential information
2089	Final Award	Specifically, the Claimants submit that MHI adopted values of **[Redacted]** through **[Redacted]** for Connors' Constant, depending on the tube, based upon analytical evaluations of other experiments rather than conducting their own experimentation.	The choice of Connors' constant - see response to ¶ 329.
2095	Final Award	However, the Respondents set forth that the Claimants' concern regarding this matter is moot given that "almost all of the contact forces in Zones 1 and 2 would have exceeded **[Redacted]**," such that any aspects surrounding the alleged improper calculations of the required pinning force of **[Redacted]** (as MHI originally calculated) are inconsequential.	The redacted information reflects MHI's proprietary design calculations for the contact forces sufficient to pin the tube to the AVBs in order to prevent in-plane FEI and the contact forces generated by the thicker AVB repair. As such, the information constitutes MHI trade secrets and proprietary and confidential information.
2104	Final Award	For the Respondents, **[Redacted]** testified that AVB twist was analyzed in Appendix 9 of MHI's Technical Evaluation Report on tube wear in Unit 3. That Report provides:	The redacted information describes MHI's proprietary manufacturing technique for the manufacture of AVBs and as such constitutes MHI trade secrets and proprietary and confidential information.

		In the manufacturing dispersion analyses, much higher reaction forces are generated at AVB bending portion in Unit-2 than Unit-3, because AVB nose thickness and twist for Unit-2 is larger than those of Unit-3 due to difference of **[Redacted]**.	
2105	Final Award	Furthermore, **[Redacted]** stated that: In Unit-2, AVB which twist deviates from the tolerance is needed to be flattened and touched up by hand, so that AVB twist satisfies the tolerance. In Unit-3, it comes to be not necessary to touch up after the **[Redacted]** adopted.	The redacted information describes MHI's proprietary manufacturing techniques for the manufacture of AVBs and as such constitutes MHI trade secrets and proprietary and confidential information.
2107	Final Award	The Respondents rebut that this increase was of only **[Redacted]** and that MHI's and SCE's design era evaluation of the 2V x 3 AVB design was an overall better choice when considering all the relevant factors, and not just void fraction.	Void fractions - see response to ¶ 281. Further, in the context of the paragraph the redaction shows how changing different AVB designs may affect the void fraction in MHI's proprietary steam generator design.
2150	Final Award	The inactive AVB intersections are assumed to have from **[Redacted]** to **[Redacted]** gaps on each side with the tube centered between them.	The redacted information refers to gap sizes assumed in MHI's evaluation of its proprietary thicker AVB design. As such, it constitutes MHI trade secrets and proprietary and confidential information.
2161	Final Award	The Claimants submit that there will be large contact forces on the tubes, of up to **[Redacted]**, violating the design requirements of the RSG Contract. Mr. Lagally, for the Respondents, has testified that a force of **[Redacted]** "was applicable to only three tubes" and that prior industry testing had found that tubes could withstand forces of up to **[Redacted]** without suffering from plastic, i.e., permanent, deformation.	The first two redactions are identical and indicate the upper range of contact forces calculated by MHI for its proprietary thicker AVB repair and as such constitutes an MHI trade secret and proprietary and confidential information. The other redaction was made to protect third party trade secrets and proprietary and confidential information.
2164	Final Award	Under MHI's "extreme conservative case," a stability ratio of **[Redacted]** is calculated as the highest expected stability ratio.	Stability ratios - see response to ¶ 319.
2184	Final Award	Yet, according to Respondents' experts, plastic deformation refers to imposing a force such that "the tube would be deformed to the point that it cannot bounce back to the original shape," and the potential for plastic deformation exists at forces above **[Redacted]**. Respondents calculated that the repair would impose contact forces greater than **[Redacted]**.	The redacted values in the first two paragraphs are contact forces calculated by MHI for its proprietary thicker AVB repair and as such constitute MHI trade secrets and proprietary and confidential information.

		*** Yet, above a contact force of **[Redacted]**, the thicker AVBs would impose loads that would violate the ASME Code. Because most of the thicker AVBs would impose loads greater than **[Redacted]**, Respondents' repair violated the ASME Code. *** "[T]here is an AVB length of about **[Redacted]** where the pre-existing AVB itself is now not actively supported **[Redacted]**, being long, thin, and in cross-flow conditions. The report only assesses random turbulent buffeting."	The first redaction in the third paragraph seeks to protect detailed technical information concerning MHI's proprietary thicker AVB design and as such constitutes MHI trade secrets and proprietary and confidential information. The remaining redaction was requested by Areva and is not challenged by Claimants.
2185	Final Award	First, Dr. Elder notes that **[Redacted]** tubes might have experienced contact forces sufficient to cause tube dings and asserts that the presence of tube dings could require more frequent, and potentially more time consuming, ECT inspections. *** Nonetheless, Mitsubishi conducted eddy current testing (ECT) inspection of every tube-to-AVB intersection in the full-scale mockup with the thicker AVBs installed, and determined that **[Redacted]** of the key AVB intersections on the **[Redacted]** tubes had no detectable ECT signals, and only **[Redacted]** was greater than **[Redacted]** (and less than **[Redacted]**). As Mr. Wilson testified, "[t]o put this in context, each of the four RSGs had ECT signals in excess of **[Redacted]** that Edison accepted for long-term operation during the pre-startup acceptance tests."	Dr. Elder's reference to a specific number of tubes is based on contact forces calculated by MHI for its proprietary thicker AVB repair. He notes in his expert witness statement that "Mitsubishi calculated that [redacted value] tubes at locations **[Redacted]** … would have contact forces at or greater than **[Redacted]**." As such, this reference to the number of tubes relies on MHI information that constitutes MHI trade secrets and proprietary and confidential information. The other redacted information concerns the results of proprietary testing that MHI undertook in evaluating its thicker AVB repair. As such, it constitutes MHI trade secrets and proprietary and confidential information.
2192	Final Award	The Respondents reference the 2013 U-Bend Repair Report, which provides that they conducted a "Confirmation Test for Ding Load" and determined that no ding signals were detected below a force of **[Redacted]** to **[Redacted]** and that the upper force in the repair was **[Redacted]**.	The redacted information concerns the results of proprietary testing that MHI undertook in evaluating its thicker AVB repair. As such, it constitutes MHI trade secrets and proprietary and confidential information.
2198	Final Award	The Respondents' response specifies that the fatigue stress is calculated to be **[Redacted]** of the ASME allowed limit for tube	The redacted information concerns fatigue stress analysis performed by MHI to evaluate its proprietary thicker AVB repair. As such, it constitutes MHI

		stress.	trade secrets and proprietary and confidential information.
2199	Final Award	In contrast, the Respondents calculate **[Redacted]** from fatigue stress. While it is not evident that "bending" stress is the same as "fatigue" stress, even if Dr. Asadi's figure of 35 ksi is used rather than MHI's figure of **[Redacted]**, this remains below the ASME maximum limit of **[Redacted]** that the Respondents identify.	The redacted information concerns fatigue stress analysis performed by MHI to evaluate its proprietary thicker AVB repair. As such, it constitutes MHI trade secrets and proprietary and confidential information.
2268	Final Award	Respondents never resolved these concerns, failing to demonstrate that pinning tubes in place with as much as **[Redacted]** would give the NRC reasonable assurance of safety. *** Respondents' assertion that there is "no basis" to conclude that the NRC would not allow SONGS to restart when every other plant that has experienced a tube leak has been approved to operate ignores the fact that no other plant in the history of the U.S. nuclear power industry has experienced thermal-hydraulic conditions as extreme as those seen at SONGS, in-plane FEI, a tube leak in less than half of a cycle, eight failed in situ tests, RSGs that exhibited the "worst case degraded steam generator[s]," or a repair that proposed introducing **[Redacted]** of force to pin the tubes.	The redacted value indicates the upper range of contact forces calculated by MHI for its proprietary thicker AVB repair and as such constitutes MHI trade secrets and proprietary and confidential information.
2341	Final Award	By doing so, the thermal-hydraulic conditions of the replacement tube bundle would have had an increased calculated circulation ratio of **[Redacted]** and a reduced ATHOS-calculated void fraction of **[Redacted]**, into the range of FIT-III calculated void fractions found acceptable by Edison during design. The tube bundle replacement design also would have had sufficient active AVBs to ensure stability ratios below **[Redacted]** for both out-of-plane and in-plane FEI. The maximum out-of-plane stability ratio (with all supports active) would be **[Redacted]** and the maximum in-plane stability ratio with only one active support would be **[Redacted]**.	The first four of the redacted values include MHI's calculated circulation ratio, void fraction and stability ratio values for its proposed steam generator tube bundle replacement for the SONGS RSGs. As such, they constitute trade secrets and proprietary and confidential information. The redaction of circulation ratios, void fractions and stability ratios was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling." The remaining redacted value is an MHI stability ratio acceptance value for its proprietary steam generator designs and as such constitutes an MHI trade secret and proprietary and confidential information.
2414	Final Award	He also admitted that he was not aware that Mitsubishi's proposal included statements that FIT-III was accurate to **[Redacted]**, despite having testified on the accuracy of FIT-III in	The redacted values represent MHI's experimental test data used for the validation of its proprietary FIT-III code and as such constitute MHI trade secrets and proprietary and confidential information.

		his witness statement.	
2443	Final Award		The redacted legend is from a report that is not public and is available only to the entities that participated in the testing. The information was redacted to protect third party trade secrets and proprietary and confidential information as neither Mitsubishi, nor Claimants, have the authority to publish the results of the other vendors' programs.
2487	Final Award	Furthermore, Mitsubishi failed from the beginning to reveal to Edison a very significant qualification on its claim that FIT-III was accurate – namely, that FIT-III was only proven valid for void fractions up to **[Redacted]**. According to the Challenge Board, FIT-III had only been validated up to a void fractions of **[Redacted]**, though Mitsubishi predicted …[or sic] void fractions at SONGS of **[Redacted]**, which was itself an erroneous under-prediction. Moreover, while Mitsubishi has claimed that FIT-III was validated up to **[Redacted]**, Mitsubishi's expert **[Redacted]**	The void fraction value calculated by MHI for the SONGS RSGs constitutes trade secrets and proprietary and confidential information. The redaction of void fractions was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling." The other redacted numbers represent MHI's experimental void fraction test data for the validation of FIT-III and as such constitutes MHI trade secrets and proprietary and confidential information.

		candidly admitted that validation for "[e]verything above **[Redacted]** is extrapolation."	
2488	Final Award	Indeed, Respondents' Hearing testimony regarding the "margin of error" and "uncertainties" contained in FIT-III—for example, that maximum void fractions at SONGS could be anywhere from **[Redacted]** to 100% **[Redacted]**, and that maximum velocities could have been **[Redacted]** times higher than predicted—cannot be reconciled with the unambiguous statements made by Respondents during the bid and design phases regarding the "extreme accuracy" of their design codes. *** While Respondents now claim they always knew that void fractions could range from **[Redacted]** to 100%, given the margin of uncertainty in FIT-III's predictive accuracy, Respondents admitted at the Hearing that before shipping the RSGs to California, they did not tell Edison that the maximum void fraction would be or even could be 99.6%. Respondents also admitted in 2012 that they had used FIT-III beyond its validated range and had grossly underestimated the thermal-hydraulic conditions in the RSGs, as the maximum flow velocities at SONGS were more than **[Redacted]** times higher than Respondents predicted.	The redacted information concerns MHI's experimental test data used for the validation of its proprietary FIT-III code and as such constitutes MHI trade secrets and proprietary and confidential information. MHI did not redact the 99.6% calculated void fraction because that void fraction number had been previously made public.
6	Concurring and Dissenting Opinion	The thicker AVBs would have resulted in a positive contact force of at least **[Redacted]** being applied to the tubes-which had a diameter of only 3/4 of an inch and wall thickness of 43/1000 of an inch—in an attempt to pin them in place.	The redacted value quantifies contact forces calculated by MHI for its proprietary thicker AVB repair and as such constitutes MHI trade secrets and proprietary and confidential information
30	Concurring and Dissenting Opinion	Mitsubishi made this representation by, in turn, representing that the stability ratio in the RSGs, at all locations, would be less than **[Redacted]** with one ineffective support. As the Mitsubishi presentation explained, calculating stability ratios assuming one ineffective support is the "conservative industrial standard." Mitsubishi's presentation represented that, "[w]ith conservative assumptions, the design basis should be less than **[Redacted]** tubes plugged in 40 years for wear (or something similar)."	The first redacted value is a MHI stability ratio acceptance value for its proprietary steam generator designs and as such it constitutes MHI trade secrets and proprietary and confidential information. The second value represents a calculated value for the SONGS RSGs and, analogous to other calculated values, constitutes trade secrets and proprietary and confidential information.

31	Concurring and Dissenting Opinion	For example, at a September 16, 2005 design review meeting, Mitsubishi represented that the maximum flow velocity would be between **[Redacted]** and **[Redacted]**, while the maximum void fraction would be between **[Redacted]** and **[Redacted]**, depending on the AVB configuration used in the final design. Mitsubishi reiterated that stability ratios for all tubes would be below **[Redacted]** with one ineffective support.	Void fractions and velocities calculated by MHI for the SONGS RSGs constitute trade secrets and proprietary and confidential information. The redaction of void fractions and velocities was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling." The last redaction is a MHI stability ratio acceptance value for its proprietary steam generator designs and as such it constitutes MHI trade secrets and proprietary and confidential information.
32	Concurring and Dissenting Opinion	For example, in a July 11, 2005 technical discussion, Edison requested Mitsubishi to "[p]resent FIT-III tube bundle quality and void fraction distribution plots for other SG models for comparison with the SONGS plot" and "confirm that the FIT-III result of max void fraction (**[Redacted]**) is the maximum expected value considering the RSG operating temperature." In response, Mitsubishi represented to Edison that the maximum void fraction would be **[Redacted]** to **[Redacted]** and assured Edison that "[f]or all tubes, stability ratio is less than 1.0 and has no potential of fluid elastic vibration."	Void fractions - see response to ¶ 281.
33	Concurring and Dissenting Opinion	The Performance Analysis Report represented that the maximum stability ratio would be **[Redacted]** with one ineffective support (with the remaining eight tubes evaluated showing stability ratios between **[Redacted]** and **[Redacted]** with one ineffective support) and a maximum u-bend void fraction of **[Redacted]**	Void fractions and stability ratios - see responses to ¶¶ 281 and 319.
37	Concurring and Dissenting Opinion	Mr. Langford warned that peak velocities of more than **[Redacted]** were observed in other steam generators but Mitsubishi's code was predicting a peak velocity of only **[Redacted]**.	Velocities calculated by MHI for the SONGS RSGs constitute trade secrets and proprietary and confidential information. The redaction of velocities was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling."
41	Concurring and Dissenting Opinion	As an initial matter, as Mitsubishi has admitted, Mitsubishi underpredicted the cross flow velocity during the design of the RSGs by a factor of 2.3. The stability ratio is the ratio of the local velocity to the critical velocity and is proportional, on a 1-to-1 basis, to the local velocity value. Thus, Mitsubishi underpredicted the stability ratios used in the design by a factor of more than double (230%). Considering the Gap Velocity Error alone (which is not the appropriate analysis, as design errors must be cumulatively considered) **[Redacted]** of the out-of-plane	The first two redactions concern stability ratios calculated by MHI for the SONGS RSGs and as such constitute trade secrets and proprietary and confidential information. The redaction of stability ratios was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling." The third redaction is a MHI stability ratio acceptance value for its proprietary steam generator designs and as such it constitutes MHI trade secrets and proprietary and confidential information.

		stability ratios calculated by Mitsubishi in the Performance Analysis Report would have been greater than 1.0 with one ineffective support, and **[Redacted]** of the stability ratios would have been greater than **[Redacted]** with one ineffective support. In and of itself, the Gap Velocity Error puts the RSGs outside the margin of safety Edison accepted.	
42	Concurring and Dissenting Opinion	At this void fraction, there is over **[Redacted]** less liquid in the steam than the maximum u-bend void fraction used as the design basis for the RSGs in the Performance Analysis Report (**[Redacted]**). *** Applying the damping ratio that Paul Langford testified Westinghouse used at very high void fractions, **[Redacted]**, increases the maximum stability ratios by approximately **[Redacted]**. This increase would be in addition to the 230% increase to be applied as a result of the Gap Velocity Error.	The first redaction was made because the value could be used to back-calculate the void fraction calculated by MHI using FIT-III. The second redacted value is a void fraction value calculated by MHI for the SONGS RSGs, and constitutes a trade secret and proprietary and confidential information. The redaction of void fractions was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling." The remaining redactions were made to protect third party trade secrets and proprietary and confidential information.
44	Concurring and Dissenting Opinion	Mitsubishi also admitted that, even comparing void fractions calculated only using the ATHOS code (as opposed to comparing ATHOS calculations with FIT-III calculations) the void fraction calculated using ATHOS (99.6%) was "high compared to the **[Redacted]** void fraction (when steam quality is less than **[Redacted]**) for the other SGs designed by MHI based on ATHOS computer code."	Void fractions and steam quality calculated by MHI for its proprietary steam generator designs constitute trade secrets and proprietary and confidential information. The redaction of void fraction and steam quality was endorsed by the CPUC ALJ in the "ALJ 4/19/13 Ruling." MHI did not redact the 99.6% calculated void fraction because that void fraction number had been previously made public.
45	Concurring and Dissenting Opinion	There were 9,727 tubes in each RSG, yet Mitsubishi only presented stability ratio calculations in the Performance Analysis Report for **[Redacted]** of the tubes. *** However, an examination of the correlation between tube wear, velocity and void fraction in Mitsubishi's Root Cause Analysis reveals that **[Redacted]**.	The redacted information concerns the different analysis that MHI, in its design judgment, determined appropriate to perform for the design of the SONGS RSGs and as such constitutes MHI trade secrets and proprietary and confidential information.
74	Concurring and Dissenting	According to Mitsubishi, the thicker AVBs would have imposed a positive contact force, referred to as a "pinning" force, of	The redacted values are contact forces calculated by MHI for its proprietary thicker AVB repair and as such constitute MHI trade secrets and proprietary

	Opinion	approximately **[Redacted]** (approximately **[Redacted]** on the tubes in the RSGs.	and confidential information.
75	Concurring and Dissenting Opinion	Mitsubishi's Type 1 repair was based on the premise that the introduction of a new, **[Redacted]** positive contact force on the tubes would have prevented the harmful in-plane tube vibration that resulted in the leak.	The redactions are the same as in ¶ 74 – see response to ¶ 74.
76	Concurring and Dissenting Opinion	This **[Redacted]** positive contact force was not part of the RSGs' design basis.	Again, this is the same redaction as ¶ 74 – see response to ¶ 74.
85	Concurring and Dissenting Opinion	. . . the solution would be to apply a **[Redacted]** contact force on the tubes.	Again, this is the same redaction as ¶ 74 – see response to ¶ 74.
86	Concurring and Dissenting Opinion	In my view, the Tribunal's determination that the introduction of a **[Redacted]** positive contact force that was not part of the underlying basis of the original design, without correcting the underlying initiating cause of the harmful excitation and vibration, is sufficient to satisfy Mitsubishi's obligations under the Limited Warranty Remedy, is inconsistent with section 1.17.1.3's requirement that a repair correct the "root cause" of every Defect and deprives Edison of the type of repair that it bargained for under the RSG Contract.	Again, this is the same redaction as ¶ 74 – see response to ¶ 74.
90	Concurring and Dissenting Opinion	An email by Mitsubishi engineer **[Redacted]** to **[Redacted]** on September 7, 2012 is illuminating. **[Redacted]** stated: "On one hand, it is a question mark as to whether the current MHI proposed repair could also stand up to a long term repair. If the T/H and velocity are not **[Redacted]** improved, no matter how much fiddling is done to the AVBs, it would simply be treating the symptoms.	Information on the different alternatives considered for repairing the SONGS RSGs constitutes MHI trade secrets and proprietary and confidential information on the different alternatives and options that underlie the final repair.
101	Concurring and Dissenting Opinion	The Type 1 repair, by contrast, would have required a large **[Redacted]** (approximately **[Redacted]** of force) pinning force to be applied to the tube bundle by inserting thicker AVBs in between the tubes and, essentially, locking them together.	Again, this is the same redaction as ¶ 74 – see response to ¶ 74.

103	Concurring and Dissenting Opinion	AREVA similarly found that the Type 1 repair does not "**[Redacted]**." In other words, AREVA concluded that the Type 1 repair would have **[Redacted]**.	These redactions were requested by AREVA, and are not challenged by Claimants.

AFFIDAVIT

I, Jeff Fleck, declare as follows:

1. I am Director, NSSS Engineering for AREVA Inc. (AREVA) (formerly known as "AREVA NP Inc." and "Framatome") and as such I am authorized to execute this Affidavit.

2. I am familiar with the criteria applied by AREVA to determine whether certain AREVA information is proprietary. I am familiar with the policies established by AREVA to ensure the proper application of these criteria.

3. I am familiar with the redacted AREVA information contained in the Award of the Arbitral Tribunal in Investigation 12-10-013 (filed October 25, 2012) Before the Public Utilities Commission of the State of California and referred to herein as "Document." Certain Areva information has been redacted in this Document and has been classified by AREVA as proprietary in full in accordance with the policies established by AREVA Inc. for the control and protection of proprietary and confidential information.

4. The un-redacted Document contains information of a proprietary and confidential nature and is of the type customarily held in confidence by AREVA and not made available to the public. Based on my experience, I am aware that other companies regard information of the kind contained in this Document as proprietary and confidential.

5. This Document has been made available to the Arbitral Tribunal in confidence with the request that the proprietary, confidential, and trade secret information

contained in this Document be withheld from public disclosure under the California Public Records Act.

6. The following criteria are customarily applied by AREVA to determine whether information should be classified as proprietary:

(a) The information reveals details of AREVA's research and development plans and programs or their results.

(b) Use of the information by a competitor would permit the competitor to significantly reduce its expenditures, in time or resources, to design, produce, or market a similar product or service.

(c) The information includes test data or analytical techniques concerning a process, methodology, or component, the application of which results in a competitive advantage for AREVA.

(d) The information reveals certain distinguishing aspects of a process, methodology, or component, the exclusive use of which provides a competitive advantage for AREVA in product optimization or marketability.

(e) The information is vital to a competitive advantage held by AREVA, would be helpful to competitors to AREVA, and would likely cause substantial harm to the competitive position of AREVA.

The information in this Document is considered proprietary for the reasons set forth in paragraphs 6(c), 6(d) and 6(e) above.

7. In accordance with AREVA's policies governing the protection and control of information, proprietary information contained in this Document has been made available, on a limited basis, to others outside AREVA only as required and under suitable agreement providing for nondisclosure and limited use of the information.

8. AREVA policy requires that proprietary information be kept in a secured file or area and distributed on a need-to-know basis.

9. I declare under penalty of perjury that the foregoing statements are true and correct to the best of my knowledge, information, and belief.

5/31/17 (date)

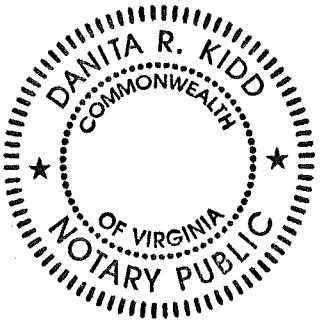
Director, NSSS Engineering AREVA Inc.

SUBSCRIBED before me this 31st day of May, 2017.

Danita Kidd
NOTARY PUBLIC, COMMONWEALTH OF VIRGINIA

Commission Expires 12/31/20

Registration # 205569



Declaration of Theodore C. Andersen
Westinghouse Electric Company LLC

I, Theodore C. Andersen, declare as follows:

1. I am the Director of Component Replacements & Engineering in the Systems and Component Engineering Department of Westinghouse Electric Company LLC ("Westinghouse"). I reviewed the Westinghouse documents that were used in the arbitration between Southern California Edison Company, Edison Material Supply, San Diego Gas & Electric Company and the City of Riverside vs. Mitsubishi Nuclear Energy Systems, Inc. and Mitsubishi Heavy Industries, Ltd. (collectively "MHI") to determine whether they contained information that was confidential and proprietary to Westinghouse "Proprietary Documents"). Westinghouse agreed to permit the use of the Proprietary Documents in the arbitration subject to an understanding that they would be treated confidentially and they were covered by the Confidentiality Order in the arbitration. I have personal knowledge of the matters set forth in this Declaration and, if called to testify, could competently and truthfully testify thereto.
2. On or about March 27, 2017 Westinghouse learned that a decision had been rendered in the arbitration and that an Award and Concurring and Dissenting Opinion ("Opinion") would be forthcoming which quoted from certain of the Proprietary Documents. Westinghouse was asked whether it would insist upon redaction of the portions of the Opinion that contained Westinghouse proprietary information. After a review of the information in the Opinion, Westinghouse determined that it would only insist upon the redaction of certain information related to stability ratios for the steam generators at the ANO 2 plant.
3. Stability ratios for replacement steam generators are a trade secret of Westinghouse. The ratios are established after significant analysis and experimentation. The calculation and application of stability ratios were developed at a significant cost to Westinghouse and are a key factor to mitigating tube wear. Currently, Westinghouse designed steam generator tube wear results greatly outperform competitor steam generators. Disclosure and release of this information in an unredacted version of the Opinion will provide insights as to Westinghouse's steam generator design strategy and provide important information to competitors that will result in Westinghouse being in a less favorable position. While these ratios were divulged to MHI's experts as part of the arbitration, MHI is only permitted to use the information for the purposes of the arbitration and not for improving the design or performance of their generators. Making the stability ratio information public would assist competitors and potential competitors of Westinghouse to avoid the costs and risks that Westinghouse incurred to develop the information thereby improving their position in the market place.

I declare under the laws of California and the United States and penalty of perjury that the foregoing declaration is true and correct to the best of my knowledge, information and belief.

Executed the 1 day of June, 2017.

Theodore C. Andersen,
Director, Component Replacements & Engineering
Westinghouse Electric Company LLC

Subscribed and
Swore Before Me 6 Mo 6 Day 12 Yr

Signature of Person Administering Oath

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Elaine M. DiGirolamo, Notary Public
Harrison Twp., Allegheny County
My Commission Expires Feb. 14, 2018
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

Appendix 2

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

Order Instituting Investigation on the Commission's Own Motion into the Rules, Operations, Practices, Services and Facilities of Southern California Edison Company in San Diego Gas and Electric Company Associated with the San Onofre Nuclear Generating Station Units 2 and 3	Investigation 12-10-013 (Filed October 25, 2012)
And Related Matters.	Application 13-01-016 Application 13-03-005 Application 13-03-013 Application 13-03-014

[PROPOSED] ALJ RULING GRANTING SOUTHERN CALIFORNIA EDISON COMPANY'S MOTION TO SEAL PORTIONS OF THE AWARD OF THE ARBITRAL TRIBUNAL IN THE ARBITRATION AMONG SOUTHERN CALIFORNIA EDISON COMPANY, EDISON MATERIAL SUPPLY, SAN DIEGO GAS & ELECTRIC COMPANY, THE CITY OF RIVERSIDE, MITSUBISHI NUCLEAR ENERGY SYSTEMS, INC. AND MITSUBISHI HEAVY INDUSTRIES, LTD.

1. INTRODUCTION

On June 7, 2017, Southern California Edison Company (SCE) filed a motion for leave to file certain confidential information under seal. This Ruling grants the relief requested.

2. RELIEF REQUESTED

On January 5, 2017, ALJ Houck issued a ruling in this proceeding, directing SCE and SDG&E to "file and serve in this proceeding any decision issued in the arbitration between SONGS co-owners and Mitsubishi Heavy Industries Ltd. within 48 hours of such decision being issued." On January 11, 2017, SCE and SDG&E filed a joint response to the January 5 ruling, in

which they noted that a Confidentiality Order had been entered in the arbitration proceeding, under which non-public information included in the orders and opinions of the Tribunal are deemed Confidential Information, such that SCE and SDG&E have not been at liberty to publicly disclose Confidential Information in the initial arbitral decision. The January 11 filing proposed to file and serve a notice within 2 business days of receiving the Final Award stating the dollar amounts awarded by the Tribunal, and to file a redacted version of the Final Award within 2 business days of receiving same. SCE and SDG&E provided the promised notice, and still plan to file the final redacted version of the Award as promised once the Tribunal rules on the redactions, which the parties expect to occur by June 13.

The parties to the arbitration received the initial award from the Tribunal on March 13, 2017 ("March 13 Award"). The award consists of two documents: an "award" signed by the three members of the Arbitral Tribunal and a Concurring and Dissenting Opinion signed by one of the arbitrators. In early April 2017, the Parties to the Arbitration filed two separate requests with the Tribunal, seeking correction of computational and typographic errors in the March 13 Award. Although both requests were submitted with the concurrence of the non-requesting parties, and although the parties to the arbitration have received an unsigned version of an Addendum to the March 13 Award containing the corrected paragraphs in final form ("Addendum"), the corrected Award has not yet been issued by the ICC, and as of now, the Parties to the arbitration do not have a complete, correct, signed Final Award from the Tribunal.

On May 26, 2017, ALJ Houck issued a ruling in this proceeding, directing SCE and SDG&E to "file and serve the written award issued by the International Chamber of Commerce no later than 2 days from the date of this Ruling."

On May 30, 2017, SCE, acting at the request of Mitsubishi, objected to the filing and service of an unredacted copy of the March 13 Award, and requested an extension of the deadline for filing and serving the award in order to permit it to file a Motion to Seal the unredacted March 13 Award. Areva and Westinghouse requested the same of SCE.

On May 31, 2017, ALJ Houck granted SCE an extension to June 7, 2017 to file and serve a Motion to Seal, and, ordered it to file the unredacted March 13 Award as a proposed confidential document with the Motion, and to file and serve the redacted version of that award on the service list in the proceeding.

On June 7, 2017, SCE filed the unredacted copies of the March 13 Award, the Concurring and Dissenting Opinion, and unsigned Addendum, as potential confidential documents due to the inclusion of confidential, proprietary and trade secret information of SCE's vendors Mitsubishi Heavy Industries, Ltd. and Mitsubishi Nuclear Energy Systems, Inc. (collectively, Mitsubishi), Areva Inc. (Areva), and Westinghouse Electric Company LLC (Westinghouse) as well as the names of individual current or former employees of the parties to the arbitration. The motion was accompanied by declarations of knowledgeable representatives of Mitsubishi, Westinghouse and Areva which stated that the unredacted documents included design, manufacture, and/or technical information proprietary to their respective companies, which was not publicly available and which, if released, would provide competitors with competitively advantageous proprietary information. Based on these assertions, SCE's motion requests the Commission to designate the unredacted copies of the March 13 Award, the Concurring and Dissenting Opinion, and the unsigned Addendum as confidential documents in this proceeding.

SCE's request that the referenced information be treated as confidential is reasonable and supported by the facts, and is therefore granted. The Commission deems as Confidential the unredacted version of the March 13 Award, the Concurring and Dissenting Opinion and the unsigned Addendum. The Commission also grants SCE's request for leave to publicly file a redacted version of the Final Award within two business day of receiving the Final Award once

the Arbitral Tribunal has executed it and ruled on the proposed redactions. Finally, the Commission grants SCE's request that SCE may file an unredacted copy of the Final (corrected) Award under seal, once that document is received.

Dated: _____ By: _____