

White Paper: San Onofre Nuclear Plant Replacement Steam Generators

November 4, 2013

Paper on SCE-Mitsubishi Communications Related to Mitsubishi's Failed Efforts to Repair or Replace the Defective Replacement Steam Generators

Mitsubishi Heavy Industries (Mitsubishi) has made inaccurate charges about its ability and willingness to repair or replace its defective replacement steam generators (RSGs) at Southern California Edison's (SCE) San Onofre Nuclear Generating Station. Mitsubishi's position finds no basis in the parties' contract or in the factual record. As set forth in detail below, for over 16 months, Mitsubishi failed to offer any viable, implementable and licensable plan that would safely and reliably restore the RSGs to 100-percent power for their promised 40-year operational life. Many documents exist that support these facts and that demonstrate their accuracy. SCE has published documents on which it relies in setting forth the real facts. Unfortunately, Mitsubishi claims that many other relevant documents, including hundreds of pages of supporting material, are proprietary and restricted from disclosure. SCE urges Mitsubishi to allow SCE to publish these crucial documents, a partial list of which is at the end of this white paper (Appendix).

I. BACKGROUND

San Onofre has been out of service since January 2012, when one of the RSGs designed and fabricated by Mitsubishi experienced a radioactive coolant leak after only 11 months of operation. SCE rapidly shut down Unit 3 to prevent any threat to public health or safety and inspected all of the RSGs. The inspections revealed that both Units 2 and 3 suffered excessive tube wear caused by a combination of flow-induced vibration and inadequate support structures in Mitsubishi's RSGs. Under the contract between Mitsubishi and SCE, Mitsubishi was obligated to repair or replace any defective aspect in the RSGs at Mitsubishi's sole expense with due diligence and dispatch.¹

Over the course of the next 16 months, from January 2012 until June 2013 (the Recovery Phase), SCE cooperated in good faith with Mitsubishi on the repair efforts but ultimately looked to Mitsubishi, the designer of the RSGs, to repair the defective RSGs so that they could safely return to 100-percent power for their 40-year life. SCE spent hundreds of millions of dollars to investigate, repair and keep San Onofre in a state of readiness for potential restart. Despite SCE's efforts, Mitsubishi failed to provide SCE the technical information it needed to assess the RSGs failures and potential repairs, repeatedly delayed in providing a final repair recommendation and failed to substantiate that the repair proposal and the replacement proposal eventually offered would resolve the underlying problems with Mitsubishi's design. Though Mitsubishi sent multiple letters, reports and other submissions to SCE, Mitsubishi never provided SCE with a repair plan that met its warranty obligations. In fact, Mitsubishi's "final" repair proposal did not address, much less solve, the serious problems in the RSGs, could not presently be implemented, was not validated and did not show it was licensable.

¹ Contract § 1.17.1.3.

The purpose of this memorandum is to provide a summary of the repair and replacement efforts that occurred during the Recovery Phase and should be read in conjunction with the source documents included in this database. However, Mitsubishi (along with other vendors) claims that many of the underlying documents (or portions thereof) are proprietary. Therefore, SCE is only able to post non-proprietary materials and has redacted information Mitsubishi and others claim to be confidential.

A. Mitsubishi Repeatedly Failed to Deliver a Final Repair Recommendation

Soon after the failures, SCE informed the Nuclear Regulatory Commission (NRC) that its “top priority is to protect the health and safety of the public by understanding the causes of these issues and taking corrective actions to address those causes.”² In response, the NRC issued its Confirmatory Action Letter outlining requirements for the restart of San Onofre, including “reasonable assurance . . . that the unit will operate safely.”³ On Aug. 10, 2012, Mitsubishi provided SCE a draft of its proprietary root cause analysis of the failures at San Onofre. On March 13, 2013, Mitsubishi provided its Supplemental Technical Evaluation Report (Technical Report).⁴ In the Technical Report, Mitsubishi admitted that a combination of high thermal-hydraulic (T/H) conditions and inadequate supports caused flow induced vibration, including fluid elastic instability and random vibration, which in turn led to excessive wear phenomena.⁵ While some tube wear is to be expected over the life of an operating steam generator, 1,597 tubes in Unit 2 and 1,816 tubes in Unit 3 experienced excessive wear after only months of operation.⁶

Mitsubishi undisputedly never repaired the RSGs. Immediately after Mitsubishi’s RSG design failed in January 2012, SCE looked to Mitsubishi to fulfill its contractual obligation to “repair[] or replac[e] (as appropriate) any defective part” of the RSGs “at its sole expense with due diligence and dispatch.”⁷ Desiring to get the RSGs back on line in order to deliver power to California residents, SCE met repeatedly with Mitsubishi over the next 16 months regarding the need to repair or replace the RSGs. Despite these constant meetings and other communications, Mitsubishi failed to offer a repair plan that (1) solved the cause of the RSG failures, (2) was feasible and implementable, (3) was validated and (4) was licensable.

On May 7, 2012, Mitsubishi outlined its progress on developing a repair plan, did not recommend a solution for the RSGs and promised to provide SCE more detailed information in late May 2012. On May 31, 2012, Mitsubishi provided additional proprietary information on repair options and on inserting thicker AVBs into the U-bend of the RSGs. Yet, Mitsubishi did not propose a final recommendation; on the contrary, Mitsubishi presented three theoretical possibilities for new AVBs which required additional evaluation and testing. On July 2, 2012, five months after the forced outage at San Onofre, SCE again made a proprietary presentation to

² March 23, 2012 P. Dietrich Ltr. to E. Collins

³ March 27, 2012 E. Collins Ltr. to P. Dietrich at 2, 3.

⁴ March 13, 2013 Mitsubishi “Supplemental Technical Evaluation Report.”

⁵ *Id.* at 4-5, 6-7, 12, 28, 29, 38, 41-42, 50.

⁶ *Id.* at 5.

⁷ Contract § 1.17.1.3

MHI on potential repair plans, listing multiple, possible short-, intermediate- and long-term repair ideas.

Throughout this process, SCE told Mitsubishi that any repair proposal must be validated and substantiated sufficient to show that it would return the RSGs to 100-percent power for their 40-year operation life, address the T/H conditions, restore the tube plugging margin, be capable of being implemented, be licensable and, most importantly, be safe.⁸ On July 27, 2012, SCE launched the steam generator repair (SGR) team to support Mitsubishi's efforts to repair the RSGs. The SGR team met weekly with Mitsubishi and worked with Mitsubishi to develop decision maps to efficiently organize the recovery efforts and reach a workable permanent repair.⁹ On Aug. 3, 2012, rather than propose one final repair recommendation, Mitsubishi outlined a large number of possible short-, intermediate- and long-term repair ideas, none of which would solve one of the root causes of the RSG failures — the thermal-hydraulic conditions in the RSGs.

In response to SCE's obvious concerns about the focus and viability of Mitsubishi's numerous proposals, Mitsubishi assured SCE that it had the "project management and technical expertise necessary to complete this very important repair with the efficiency and quality that SCE expects."¹⁰ Furthermore, on Aug. 17, 2012, Mitsubishi stated that it was currently focused on using AVBs inserted at a 30-degree angle to repair the RSGs and that it would present its position on a repair plan on Aug. 31, 2012. On Sept. 7, 2012, Mitsubishi presented a schedule for performing mock-up testing.¹¹ However, on Sept. 21, 2012, almost eight months after the outages began, Mitsubishi informed SCE that it would not have a single recommended repair option until the end of November and that it would not reduce the number of possible repairs being considered until at least October.¹² In response to this schedule and the delay in getting the RSGs back in operation, SCE reiterated that because it was not a steam generator designer, it was relying on Mitsubishi to provide a repair recommendation.¹³ On Nov. 1, 2012, SCE again requested that Mitsubishi propose one repair plan by Nov. 30, 2012 and began meeting daily with Mitsubishi to respond to Mitsubishi's multiple questions regarding a design specification for the repair.¹⁴ By Nov. 6, 2012, Mitsubishi reported that there were complications with inserting 30-degree AVBs,¹⁵ and by mid-November 2012, Mitsubishi had informed SCE that 30-degree AVBs and comb-shaped AVBs were not feasible repair options.¹⁶ On Nov. 19, 2012, SCE wrote Mitsubishi to express its concern over "[Mitsubishi]'s level of research conducted"

⁸ SCE July 23, 2012 presentation; Steam Generator Repair Team 9/21/12 Meeting Summary at 1; Nov. 8, 2012 E. Avella Ltr. to H. Kaguchi.

⁹ H. Kaguchi Aug. 29, 2012 Ltr. to E. Avella; Steam Generator Repair Team 8/31/12 Meeting Summary at 3-4; Steam Generator Repair Team 9/4/12 Meeting Summary at 4-10.

¹⁰ Mitsubishi's Aug. 6, 2012 Ltr. to E. Avella.

¹¹ Steam Generator Repair Team 9/7/12 Meeting Summary at 1.

¹² Steam Generator Repair Team 9/21/12 Meeting Summary at 1.

¹³ *Id.*

¹⁴ Steam Generator Repair Team 11/1/12 Meeting Summary at 1.

¹⁵ Steam Generator Repair Team 11/6/12 Meeting Summary at 1.

¹⁶ Steam Generator Repair Team 11/16/12 Meeting Summary at 1; Attachment to Dec. 27, 2012 Ltr. to P. Dietrich at 2.

related to its repair ideas but committed to “continue to work with MHI on the development of an acceptable interim and permanent remedy.”¹⁷

Given the wide range of repair options still being considered by Mitsubishi almost 10 months into the outages and the extent of damages that SCE was suffering while San Onofre was non-operational, SCE reiterated to Mitsubishi that an acceptable repair would have to be permanent and complete, *i.e.*, that it would address the T/H conditions, return the RSGs to full power for 40 years and restore the tube plugging margin to less than 8 percent.¹⁸ Additionally, SCE provided Mitsubishi with a detailed chart of criteria that SCE would use to evaluate MHI’s proposal such that the repair met Mitsubishi’s warranty obligations, was validated, could be implemented and did not have negative operational impacts on the plant.¹⁹ The SGR team would then review the plan in advance of Mitsubishi presenting the proposal to SCE management.

On Nov. 28, 2012, SCE informed Mitsubishi that given that Unit 3 had been offline for 10 months, California regulators were required to initiate an investigation. Under these circumstances, SCE reminded Mitsubishi that “[t]ime of course has been and remains of the essence” in finalizing a repair plan and that the “current absence of repairs is inconsistent with the contractual requirement to repair with dispatch.”²⁰ Despite these delays, SCE’s management stated it “would be open to considering a specific repair and/or replacement plan and schedule for both the Unit 2 and 3 steam generators, were [Mitsubishi] to present one by Dec. 28, 2012.”²¹

Mitsubishi missed the Nov. 30, 2012 deadline to propose a final repair plan to the SGR team, putting the Dec. 28, 2012 deadline for presenting a repair plan to SCE management in jeopardy and risking further delay of a repair of the RSGs.²² Mitsubishi then missed a Dec. 4, 2012 deadline to present the technical details of its repair plan.²³ Instead, Mitsubishi continued to discuss each of its repair and replacement options theoretically. In response, SCE again informed Mitsubishi that it “is depending on [Mitsubishi], as the designer of record, to provide a technically sound and defensible recommendation” and that “[s]ince the San Onofre units have been offline for nearly 11 months, and time being of the essence, SCE is anxiously awaiting a final recommendation.”²⁴

B. Mitsubishi Recommends a ‘Conceptual Design’ to Replace the Tube Bundles

On Dec. 20, 2012, Mitsubishi wrote to SCE, largely repeating prior ideas and stating that the proposal to insert thicker AVBs “is first of a kind” and “would require more time for detailed discussions between the parties.”²⁵ As a result, Mitsubishi recommended only “the replacement option as the mutually agreed remedy subject to negotiation and agreement of mutually

¹⁷ Nov. 19, 2012 E. Avella Ltr. to H. Kaguchi.; *see also* Nov. 28, 2012 H. Kaguchi Response Ltr. to E. Avella.

¹⁸ Nov. 8, 2012 E. Avella Ltr. to H. Kaguchi; *see also* Nov. 28, 2012 H. Kaguchi Response Ltr. to E. Avella.

¹⁹ Nov. 13, 2012 E. Avella Ltr. to H. Kaguchi.

²⁰ Nov. 28, 2012 P. Dietrich Ltr. to K. Yamauchi at 2.

²¹ *Id.*

²² Steam Generator Repair Team 12/4/12 Meeting Summary at 1.

²³ *Id.*

²⁴ Dec. 19, 2012 E. Avella Ltr. to H. Kaguchi; *see also* Dec. 19, 2012 P. Dietrich Ltr. to K. Yamauchi.

acceptable terms and conditions.”²⁶ However, Mitsubishi had only “commenced” its study of the replacement option and its plan to replace the RSGs was still a “conceptual design” — despite almost one year having passed since the outage began.²⁷ While Mitsubishi noted that it could modify the AVB design “to provide additional in-plane support to avoid in-plane fluid elastic instability and to minimize tube wear due to random vibration . . . , [t]he modification of the AVB design may result in its becoming a ‘first of a kind’ which will require thorough design verification.”²⁸ Mitsubishi’s replacement “proposal” would “take five-and-a-half years for the first Unit,” not including the time that had already elapsed since the outages, the time required for manufacturing the other Unit, or the time needed for installation and licensing.²⁹

Despite these challenges and the theoretical nature of its current proposal, Mitsubishi confirmed that its final recommendation was replacement of the entire tube bundle (a Type 3 repair).³⁰ Although 11 months had passed since the RSG failures and Mitsubishi had still not presented a detailed repair or replacement plan, Mitsubishi agreed with SCE that “time is of the essence.”³¹ Within days and while continuing to hold significant concerns about Mitsubishi’s proposal, SCE provided Mitsubishi a draft schedule that would allow the parties to develop a specification for the replacement of the tube bundles by July 1, 2013.³² Nonetheless, while continuing to support Mitsubishi’s efforts to repair or replace its defective RSGs, SCE expressed its concern that an “outage spanning at least seven years does not constitute a repair or replacement with ‘dispatch’ and far exceeds any reasonable repair period that was contemplated in the contract.”³³ As such, SCE “believe[d] it clear that any contractual limitations on liability are no longer applicable.”³⁴ Mitsubishi responded on Jan. 22, 2013, asserting that it had been working with diligence and dispatch and that the limitations on liability continued to apply; however, Mitsubishi failed to provide any further detail on its concept to replace the tube bundles.³⁵

On March 11, 2013, Mitsubishi provided SCE with a draft report regarding its proposal for a tube bundle replacement.³⁶ After closely reviewing Mitsubishi’s Type 3 proposal, on March 13, 2013, SCE provided specific, detailed questions and concerns to Mitsubishi throughout the spring of 2013. On May 13, 2013, SCE informed Mitsubishi that “to date, we have not received technical documentation, including engineering reports and calculations,

²⁵ Dec. 20, 2012 H. Kaguchi Ltr. to E. Avella at 2.

²⁶ *Id.* at 3.

²⁷ *Id.* at 2.

²⁸ *Id.* at 3.

²⁹ *Id.*; see also Dec. 21, 2012 H. Kaguchi Ltr. to E. Avella, MKT-NSL-120064;

³⁰ Dec. 21, 2012 H. Kaguchi Ltr. to E. Avella, MKT-NSL-120064; Dec. 27, 2012 E. Kadokami Ltr. to P. Dietrich at 1; see also Jan. 18, 2013 H. Kaguchi Ltr. to E. Avella; Jan. 21, 2012 E. Avella Ltr. to H. Kaguchi.

³¹ Dec. 27, 2012 E. Kadokami Ltr. to P. Dietrich at 1.

³² Steam Generator Repair Team 1/3/13 Meeting Summary at 1.

³³ Jan. 8, 2013 P. Dietrich Ltr. to K. Yamauchi and E. Kadokami at 1.

³⁴ *Id.*

³⁵ Jan. 22, 2013 K. Yamauchi Ltr. to P. Dietrich.

³⁶ March 11, 2013 H. Kaguchi Ltr. to E. Avella.

demonstrating that . . . Type 3 can, in fact, safely restore San Onofre to service in accordance with the screening criteria and NRC requirements.”³⁷ Mitsubishi delivered another draft of its Type 3 proposal on May 16, 2013 which also failed to show a viable and implementable plan to safely and reliably restore the RSGs to full power.

C. Mitsubishi Delivered a Conceptual, Unvalidated Repair Plan that Failed to Meet Mitsubishi’s Warranty Obligations

On Feb. 11, 2013, SCE informed Mitsubishi that, contrary to Mitsubishi’s belief, SCE had not rejected Mitsubishi’s idea of inserting additional AVBs into the U-bend of the RSGs (a Type 1 repair).³⁸ Rather, SCE’s concern was that Mitsubishi’s Type 1 proposal “did not make any effort to demonstrate that [the repair] would meet the repair criteria that Mitsubishi and SCE have jointly developed over the past several months,” much less meet the contract standards.³⁹ After SCE had insisted that a Type 1 repair meet the repair criteria discussed, Mitsubishi “ceased to recommend” installing thicker AVBs.⁴⁰ SCE assured Mitsubishi that it would “carefully consider any repair plan that Mitsubishi presented.”⁴¹ In response, Mitsubishi rejected that the repair criteria were jointly developed but stated that it still believed a Type 1 repair to be “technically viable.”⁴²

On April 5, 2013, Mitsubishi delivered its proprietary proposal to insert thicker AVBs into the RSGs. Mitsubishi called its repair plan “a detailed description of the development and evaluation results of [Mitsubishi’s] proposed thicker-AVB repair method” and asserted that its plan was a “viable potential permanent repair method.”⁴³ SCE closely reviewed Mitsubishi’s proposal and on April 26, 2013, provided Mitsubishi with detailed questions and concerns. For example, SCE expressed concern that Mitsubishi’s proposal was not supported by sufficient testing and that the thicker AVBs could lead to deformation of the existing AVBs. Given that the thicker AVBs would increase contact forces throughout the U-bend, SCE was concerned that Mitsubishi’s plan would introduce new wear points, ding points and rub points. Perhaps most importantly, regarding the underlying root causes for the problems with the existing RSG design, SCE observed that inserting thicker AVBs into the U-bend regions of the RSGs would not address the T/H conditions within the steam generators. Mitsubishi failed to show that its plan could be implemented and that it was licensable. Mitsubishi’s plan thus failed to meet its warranty obligations or any of the repair criteria jointly developed by the parties.

On May 13, 2013, almost 16 months after the outages began, SCE wrote to Mitsubishi to reiterate that “SCE cannot agree to implement a repair without evidence that the repair will solve the serious problems with the [RSGs] and ensure that severe wear conditions do not occur again. To date, Mitsubishi has not provided sufficient documentation to SCE to establish that any of its

³⁷ May 13, 2013 P. Dietrich Ltr. to K. Yamauchi at 2.

³⁸ Feb. 11, 2013 P. Dietrich Ltr. to K. Yamauchi at 1.

³⁹ *Id.*

⁴⁰ *Id.*

⁴¹ *Id.* at 2.

⁴² Feb. 21, 2013 K. Yamauchi Ltr. to P. Dietrich at 1.

⁴³ Apr. 5, 2013 H. Kaguchi Ltr. to E. Avella.

proposed repair options is safe, effective and would be approved by the [NRC] in a reasonable time.”⁴⁴ SCE noted that it “repeatedly has asked Mitsubishi to provide technical documentation demonstrating that any of the repairs it is proposing would restore the RSGs to compliance with all warranty requirements.”⁴⁵ SCE expressed its concern that the thicker AVB proposal “does not definitively address the repair acceptance criteria previously established,” “does not alter the thermal hydraulic conditions that caused the serious wear conditions in the first place” and is “based on mock-ups and testing that Mitsubishi . . . has not provided to SCE.”⁴⁶

Despite the myriad concerns listed above and without providing any additional details to validate its plan, on June 4, 2013, Mitsubishi wrote SCE to assert that its report on thicker AVBs “contains a comprehensive description of a repair that Mitsubishi recommends be implemented.”⁴⁷ Mitsubishi claimed that its plan “amply demonstrates that the proposed repair is viable and appropriate” and that it is a “practical and effective long-term repair.”⁴⁸ Mitsubishi also claimed that its repair would solve all of the failures in the RSGs “without needing to modify the existing RSG thermal hydraulic conditions,” even though the T/H conditions in the RSGs were an underlying cause of the failures.⁴⁹ Mitsubishi again refuted that it had ever agreed to jointly develop “repair criteria for the RSGs.”⁵⁰ Despite Mitsubishi’s contentions, Mitsubishi had failed for over 16 months to deliver a repair plan that would (1) solve the failures in the RSGs, (2) was feasible and could be implemented, (3) was validated and (4) was licensable.

On June 18, 2013, SCE again explained to Mitsubishi why its Type 1 repair plan for thicker AVBs was unacceptable. Specifically, Mitsubishi’s plan “offered nothing more than an undeveloped engineering theory lacking adequate validation.”⁵¹ Given SCE’s need to ensure the safety of the people of California and the reliability of the local power supply, SCE “cannot embark on an experimental, first-of-a-kind repair that does not address the root cause of the tube leak and excessive wear in Mitsubishi’s defective RSGs, or provide necessary assurances that these serious problems would not occur.”⁵²

SCE noted that “Mitsubishi management has chosen to repudiate the [repair] criteria that Mitsubishi engineers agreed were necessary and appropriate” for evaluating proposed repairs.⁵³ SCE outlined the specific deficiencies in Mitsubishi’s Type 1 proposal: “Mitsubishi’s proposal represents ‘first-of-a-kind’ engineering which risks introducing new and additional problems,” such as “new modes of tube bundle damage, increased vibration of the existing AVBs,

⁴⁴ May 13, 2013 P. Dietrich Ltr. to K. Yamauchi at 1.

⁴⁵ *Id.*

⁴⁶ *Id.* at 1-2.

⁴⁷ June 4, 2013 K. Yamauchi Ltr. to P. Dietrich at 1.

⁴⁸ *Id.*

⁴⁹ *Id.* at 2.

⁵⁰ *Id.*

⁵¹ June 18, 2013 P. Dietrich Ltr. to K. Yamauchi at 1.

⁵² *Id.*

⁵³ *Id.* at 3.

deformation of tubes, ballooning of tubes and additional tube-to-tube wear.”⁵⁴ While Mitsubishi had “previously identified the thermal hydraulic conditions, which Mitsubishi grossly under-predicted, as a root cause of each of the four wear phenomena in the RSGs,” “Mitsubishi’s repair proposal risks exacerbating such conditions and accelerating rather than diminishing wear.”⁵⁵ Mitsubishi failed to show its plan could be implemented, given that the “specialty tooling . . . is still in the developmental stage and does not yet exist” and given that “Mitsubishi did not provide details of how workers could effectively operate within the confined space in the U-bend region.”⁵⁶ SCE “could not and would not permit Mitsubishi to engage in a science experiment which would have risked the safety of the workers . . . and the access to reliable power for the people of Southern California.”⁵⁷ Mitsubishi also failed to “provide testing and analysis sufficient to assure the NRC that the repair is feasible and will address all wear phenomena seen at San Onofre.”⁵⁸

SCE “spent hundreds of millions of dollars investigating and repairing the RSGs and keeping the plant in a state of readiness in hopes that Mitsubishi would meet its obligation to repair or replace the RSGs.”⁵⁹ Despite SCE’s efforts, “Mitsubishi’s Type 1 repair proposal presents an unacceptable level of uncertainty with respect to the design, operation and licensability of the San Onofre RSGs.”⁶⁰ In part because Mitsubishi provided “no viable path to restoring San Onofre to service, SCE is forced to retire and decommission San Onofre as a result of Mitsubishi’s total and fundamental failure to meet its contractual obligations, including its obligation to repair or replace the defective RSGs with due diligence and dispatch.”⁶¹

D. Mitsubishi Failed to Provide SCE Information to Allow it to More Fully Assess the Failures and Potential Solutions

Under the contract between SCE and Mitsubishi, SCE had, and continues to have, the right to “examine and copy” Mitsubishi’s “books, accounts, relevant correspondence, specifications, time cards, drawings, designs and other documentation, to the extent that these are related and relevant to the Work under the Purchase Order.”⁶² In order to investigate the failures of the RSGs and to assess Mitsubishi’s proposed repair and replacement options (discussed in detail below), SCE invoked its contractual audit rights on Jan. 10, 2013. In particular, SCE requested access to specific categories and types of documents related to “the design, manufacture, delivery and installation and operation of these RSGs” so that it could assist the repair efforts by coming to understand the problems imbedded in Mitsubishi’s design.⁶³ On Jan.

⁵⁴ *Id.*

⁵⁵ *Id.* at 4.

⁵⁶ *Id.*

⁵⁷ *Id.*

⁵⁸ *Id.*

⁵⁹ *Id.* at 1.

⁶⁰ *Id.* at 5.

⁶¹ *Id.* at 1.

⁶² Contract § 1.9.6.

⁶³ Jan. 10, 2013 P. Coughlin Ltr. to H. Matsuda and Y. Shibata at 1-3.

25, 2013, Mitsubishi rejected SCE's audit request for its materials documenting the design, manufacture and installation of the RSGs. In withholding these documents and denying SCE this information, Mitsubishi asserted that the audit provision related to "financial" documents and offered only to consider an audit request if SCE limited the documents it sought.⁶⁴ On Feb. 11, 2013, SCE asked Mitsubishi to reconsider its position and to comply with its audit obligations under the contract.⁶⁵ Mitsubishi rejected that request and reiterated its position that SCE's contractual audit right related only to financial documents, thus blocking SCE's attempts to analyze the work that led to the RSGs failures.⁶⁶ On April 26, 2013, in connection with its attempts to review and analyze Mitsubishi's repair proposals, SCE again wrote Mitsubishi asking that Mitsubishi provide SCE access to a narrower list of requested documents.⁶⁷ On May 6, 2013, Mitsubishi denied SCE access to even that limited list of materials.⁶⁸ SCE renewed its request on Sept. 30, 2013.⁶⁹ To date, Mitsubishi still refuses to allow SCE – and the public – access to its documents.

E. Mitsubishi Should Release its 'Proprietary' Documents and Let the Public Judge its Truthfulness

Besides the many documents cited in this memorandum and posted to SCE's Digital Document Library, there are numerous other documents authored by Mitsubishi and others containing information which Mitsubishi claims to be proprietary and which supports the statements in this document. SCE is prevented from making these documents public due to Mitsubishi's restrictions on their release or use. A partial list of these documents is attached as Exhibit A. If permitted by Mitsubishi, SCE would make these documents public.

⁶⁴ Jan. 25, 2013 I. Kikuoka Ltr. to P. Coughlin.

⁶⁵ Feb. 11, 2013 P. Dietrich Ltr. to K. Yamauchi at 2.

⁶⁶ Feb. 21, 2013 K. Yamauchi Ltr. to P. Dietrich at 1.

⁶⁷ Apr. 26, 2013 P. Dietrich Ltr. to K. Yamauchi.

⁶⁸ May 6, 2013 K. Yamauchi Ltr. to P. Dietrich.

⁶⁹ Sept. 30, 2013 R. Litzinger Ltr. to S. Masamori.

Crucial Documents that Mitsubishi Claims Are ‘Proprietary’

As shown in the foregoing paper, for over 16 months following the forced outages at San Onofre, Mitsubishi failed to offer a viable, implementable and licensable plan to repair or replace its defective RSGs. Along with this paper, SCE has published documents on which it relies in setting forth the indisputable facts. However, Mitsubishi claims that hundreds of pages of supporting material are proprietary and restricted from disclosure. A partial list of these materials includes:

1. Mitsubishi’s May 7, 2012 presentation, “Long Term Repair Plan (Progress of Additional AVB study).”
2. Mitsubishi’s May 31, 2012 presentation, “Study of Design Improvements Against Tube Flow Vibration Problem.”
3. Mitsubishi’s May 31, 2012 presentation, “Assessment of Countermeasures That Can Be Applied at Site.”
4. Mitsubishi’s May 31, 2012 presentation, “Countermeasures Not Feasible for Existing SGs.”
5. Mitsubishi’s May 31, 2012 presentation, “Detailed Study for Insertion of Additional Thicker AVBs.”
6. Mitsubishi’s July 2, 2012 presentation, “Repair Plan Evaluation and Discussion.”
7. Mitsubishi’s Aug. 10, 2012 “Root Cause Analysis Report for excessive wear identified in the Unit 2 and Unit 3 Steam Generators of San Onofre Nuclear Generating Station” and all other versions, revisions or drafts of root cause analyses and technical evaluation reports which Mitsubishi claims to be proprietary.
8. Mitsubishi’s Aug. 30, 2012 presentation, “San Onofre Nuclear Generating Station Unit-2 and Unit-3, Steam Generator Tube Wear Mechanism.”
9. Mitsubishi’s “ATHOS analysis result of SONGS-OSG” discussed at a Sept. 7, 2012 Steam Generator Repair Team Meeting.
10. Mitsubishi’s Sept. 13, 2012 “MHI Repair& Replace Option Matrix Figures.”
11. Mitsubishi’s Oct. 3, 2012 “MHI Document List for mock-up test.”
12. Mitsubishi’s “SONGS MHI Comb AVB Installation Photos” discussed at a Nov. 1, 2012 Steam Generator Repair Team Meeting.
13. Mitsubishi’s “SONGS MHI Target Contact Force” discussed at a Nov. 1, 2012 Steam Generator Repair Team Meeting.
14. Mitsubishi’s Nov. 16, 2012 presentation, “Verification of Repair Method for Tube Vibration Issue.”

Appendix A

15. Dec. 14, 2012 MNES Letter to E. Avella and Attachments, MKT-NSL-120060.
16. Dec. 21, 2012 H. Kaguchi Letter to E. Avella and Attachments, MKT-NSL-120066.
17. Mitsubishi's March 11, 2013 "Design Description Report of Tube Bundle Replacement for SONGS Unit-2&3 (DRAFT)," KAS-20130086 (DRAFT).
18. Mitsubishi's April 4, 2013 "U-Bend Repair Report," L5-04GA593 Rev. 0 (transmitted to SCE on April 5, 2013).
19. Mitsubishi's May 16, 2013 "Design Description Report of Tube Bundle Replacement for SONGS Unit-2&3," KAS-20130086 Rev. 0.