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## I. INTRODUCTION.

Pursuant to Rule 13.11 of the California Public Utilities Commission (“Commission” or “CPUC”) Rules of Practice and Procedure and the schedule specified by ALJ Dudley’s June 4, 2013 ruling, the Alliance for Nuclear Responsibility (“A4NR”) respectfully submits its reply brief in Phase 1 of the Commission’s investigation into the extended outages at the San Onofre Nuclear Generating Station (“SONGS”), owned by the Southern California Edison Company (“Edison” or “SCE”) and the San Diego Gas and Electric Company (“SDG&E”).

The sheer force of events has caught Edison unprepared. With no attempt to harmonize its rationale for ratepayer liability for 2012 SONGS expenditures with that used in the June 7, 2013 plant closure announcement by Edison International CEO Ted Craver, Edison’s opening brief robotically repeats the mantra that 100% of the incurred costs were reasonable and should be reimbursed.<sup>1</sup> Indeed, Mr. Craver’s explanation for why he pulled the plug on an asset which Edison’s primary witness had insisted -- just three weeks previously -- remained undamaged (i.e., Unit 2)<sup>2</sup> is never even acknowledged, let alone reconciled with the evidentiary case Edison presented. Instead, Edison’s brief soldiers on with unsupportable assertions that had recently exhausted even Mr. Craver’s patience and credulity.

Unsurprisingly, Edison’s brief forgets that it has the burden of proving that the 2012 decisions and SONGS-related expenditures were reasonable at the time they were made. It puffs itself up with the meaningless bluster, “*no party has presented credible evidence*

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<sup>1</sup> Edison brief., pp. iv and 58.

<sup>2</sup> Thomas Palmisano (SCE), Transcript, p. 970. Regarding Unit 3, Mr. Palmisano testified, “*We also believe we could restart Unit 3 at this similar power level. It will take more time and more work, however.*” *Id.*, p. 853.

*demonstrating that any of these decisions were unreasonable*<sup>3</sup>; *“(t)here was no evidence or testimony introduced in Phase 1 which suggests that SCE’s decision ... was unreasonable”*<sup>4</sup>; *“(t)here has been no evidence or testimony introduced in Phase 1 to suggest otherwise”*<sup>5</sup>; and *“(n)o party has challenged the reasonableness of these expenses.”*<sup>6</sup> Even if still reeling from Mr. Craver’s concussion grenade, and the stark contradictions it exposed in Edison’s testimony, a properly regulated utility cannot escape its burden of proof by simply ignoring it.

Nor should conclusory assertions be mistaken for probative evidence. The mental disarray that engulfed SONGS-related managerial decisions in 2012 had not dissipated by the time of Edison’s Phase 1 showing. How else to explain the disproportionate reliance on the off-the-cuff, rambling narrative of a walk-on witness with no prepared testimony?<sup>7</sup> Having successfully moved to strike, or defer from Phase 1, the vast majority of testimony offered by other parties, Edison had the prepared exhibits turf virtually to itself. Even under such favorable circumstances, Edison has not affirmatively proven the conformity of its 2012 decisions to prior Commission standards of reasonableness. Combined with Mr. Craver’s rebuke, could there be any stronger indicator of what a tall tale Edison is attempting to tell?

## **II. EDISON HAS FAILED TO AFFIRMATIVELY PROVE THAT ITS RESPONSE TO DAMAGE DISCOVERED IN UNIT 2’s RFO INSPECTIONS WAS REASONABLE.**

The premise of Edison’s entire 2012 response to the Unit 2 and Unit 3 outages was that the unusual tube-to-tube wear (“TTW”) found to have caused the Unit 3 leak was what

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<sup>3</sup> Edison brief, p. 5.

<sup>4</sup> *Id.*, p. 14.

<sup>5</sup> *Id.*, p. 18.

<sup>6</sup> *Id.*, p. 47.

<sup>7</sup> Edison’s brief references Mr. Palmisano 73 times, compared to 62 mentions of Mr. Perez and 15 of Mr. Worden.

mattered most, and that the other types of wear – while “*important and not acceptable for the longer term*”<sup>8</sup> – were “*(m)anageable in the long term*” and “*nothing that would prevent the plant from operating.*”<sup>9</sup> Edison never offered any opinion as to what should be done about this non-TTW in the long term beyond waiting for MHI to come up with a plan. Subordinating concern about the non-TTW to the “*longer term*” provided a cunning focus<sup>10</sup> for Edison’s Unit 2 restart strategy with the U.S. Nuclear Regulatory Commission (“NRC”) because only two tubes had shown a “*slight indication*”<sup>11</sup> of TTW. What the CPUC needs to ask is: has Edison affirmatively proven that its response to discovery of the non-TTW during the initial Unit 2 inspections was reasonable?

Mr. Perez testified that Unit 2’s pre-inspection “*degradation assessment*” to establish wear expectations was consistent with Electric Power Research Institute (“EPRI”) guidelines,<sup>12</sup> and identified the units used as benchmarks for what to expect in a first refueling outage (“RFO”) inspection.<sup>13</sup> Edison did not offer any testimony which quantified these pre-inspection

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<sup>8</sup> Thomas Palmisano (SCE), Transcript, p. 838.

<sup>9</sup> *Id.*, p. 850. Mr. Palmisano’s remarks were directed to Unit 2. The Unit 3 Root Cause Evaluation’s discussion of non-TTW in both Unit 2 and Unit 3 draws no distinction between the significance of such wear in any of the four steam generators. “*Root Cause Evaluation: Unit 3 Steam Generator Tube Leak and Tube-to-tube Wear,*” Condition Report: 201836127, Revision 0, May 7, 2012, p. 14.

<sup>10</sup> This may ultimately have proven too cunning to preserve credibility with the NRC.

<sup>11</sup> Thomas Palmisano (SCE), Transcript, p. 898. Three weeks before Mr. Craver closed the plant, Mr. Palmisano’s testimony downplayed the significance of TTW in Unit 2, suggesting

- he wasn’t persuaded tube-to-tube wear was actually present in Unit 2. “*Tube-to-tube wear occurred in Unit 3. Did not occur in Unit 2.*” (*Id.*)
- well, maybe a little bit. “*Tube-to-tube wear occurred in Unit 3. Slight indication in Unit 2.*” (*Id.*)
- or certainly the potential for it. “*We identified two tubes in Unit 2 that had signs of tube-to-tube wear much less extensive but certainly told us the potential existed for Unit 2.*” (*Id.*, p. 769.)
- but it’s pretty hard to detect. “*We found two tubes with the early signs potentially of tube-to-tube wear. And I say ‘potentially’ because this was right at the limit of the ability to detect it.*” (*Id.*, p. 852.)
- and maybe it’s not real. “*It was sized around 14 percent through wall. There was some thinking it maybe only 7 percent. The equipment is good at about 15 percent limits. So we’re right at the limit of the ability to say it’s real or not real.*” (*Id.*, pp. 852 – 853.)

<sup>12</sup> SCE-04, pp. 79, 81.

<sup>13</sup> Jose Luis Perez (SCE), Transcript, pp. 687 – 688.

expectations. While Mr. Perez was unable to identify what level of wear the EPRI guidelines projected for A690 TT tubes like those in the SONGS steam generators,<sup>14</sup> he said that “we expected we’re similar to other new steam generators in the industry” at their first refueling outage.<sup>15</sup> Edison offered no comparison of what it found in the Unit 2 RFO inspection to these specified benchmarks, and the so-called “Hirsch Report”<sup>16</sup> (cited favorably by the NRC’s Atomic Safety and Licensing Board’s decision<sup>17</sup> labeling the Unit 2 restart plan a “test or experiment”<sup>18</sup>) suggests why:

- *The median number of steam generator tubes nationally showing wear after one cycle of operation is – FOUR. San Onofre Unit 2 had 1595 damaged tubes, approximately 400 times the median...*
- *The median number of indications of wear on steam generator tubes nationally after one cycle of operation is – FOUR. San Onofre Unit 2 had 4271, greater than a thousand times more...*
- *The median number of steam generator tubes that were plugged after one cycle of operation is – ZERO. San Onofre Unit 2 had 510...<sup>19</sup>*

Moreover, the EPRI guidelines to which Edison claimed to be adhering specify a particularly rigorous expectation: five tube failures per steam generator at end of life, which

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<sup>14</sup> *Id.*, p. 303.

<sup>15</sup> *Id.*, p. 304. The assertion in the Edison brief at p. 7 that “tube wear at support structures (such as anti-vibration bars and tube support plates) is a common problem in steam generators of this type” is inconsistent with Mr. Perez’s testimony and the EPRI guidelines.

<sup>16</sup> Daniel Hirsch and Dorah Shuey, “*FAR OUTSIDE THE NORM: The San Onofre Nuclear Plant’s Steam Generator Problems in the Context of the National Experience with Replacement Steam Generators*,” September 12, 2012, commissioned by U.S. Senator Barbara Boxer, Chair of the Senate Environment and Public Works Committee, and admitted into the Senate record in a joint hearing on September 12, 2012, and placed into the record of the NRC briefing on steam generator problems held on February 7, 2013.

<sup>17</sup> NRC Atomic Safety and Licensing Board, Decision LBP-13-07, May 13, 2013, p. 4, footnote 9, pointedly notes that Edison “does not identify particular factual errors” in the Hirsch Report.

<sup>18</sup> LBP-13-07, pp. 33 – 37. The ASLB found this to be one of three independent reasons for determining that the Unit 2 70% power restart plan required a license amendment.

<sup>19</sup> Hirsch Report, p. i.

EPRI projects to be after 51.00 effective full power years.<sup>20</sup> Mr. Perez acknowledged that Edison had not expected to plug any tubes during the Unit 2 RFO, but that it had directed the vendor performing the RFO inspection to be prepared to plug 10 tubes.<sup>21</sup>

While Edison has been exceptionally opaque about quantifying what tube wear the initial eddy current testing in Unit 2 revealed,<sup>22</sup> the initial response to the January 31, 2012 burst tube in Unit 3 attributed to the NRC staff – as reported by the Orange County Register -- suggested something was seriously amiss in Unit 2 as well:

*‘They have inspected 80 percent of the tubes in one of the steam generators at unit 2,’ said Victor Dricks, spokesman for the Nuclear Regulatory Commission. ‘Two of the tubes have thinning so extensive that they need to be plugged and taken out of service. Sixty nine other tubes have thinning greater than 20 percent of the wall thickness, and a larger number have thinning greater than 10 percent of wall thickness.’ The tubes with 10 percent thinning number more than 800, he said.*<sup>23</sup>

As Edison’s Chief Nuclear Officer, Senior Vice President Peter Dietrich, would later explain to the NRC in a public briefing on Edison’s Unit 2 restart proposal, avoidance of tube wear had been a critical objective of the design specifications for its Replacement Steam Generators:

***One thing that’s important, very important to note and understand is that at San Onofre we were also seeing on the original steam generators a significant amount of wear;***

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<sup>20</sup> A4NR-3. The Unit 2 steam generators had achieved 1.7 effective full power years at the time of the RFO inspections, according to the NRC Augmented Inspection Team (“AIT”) Report appended to the CPUC Order instituting this proceeding, p. 10.

<sup>21</sup> Jose Luis Perez (SCE), Transcript, pp. 688 – 689.

<sup>22</sup> The only mention in its prepared testimony is SCE-4, p. 77, which misleadingly understates, “Planned RFO inspections of Unit 2 steam generator (SG) tubes found unexpected wear in certain tubes that contacted retainer bars in both Unit 2 RSGs.” It appears, however, that the decision to plug all 188 tubes intersecting the retainer bars was not made until after a second bobbin probe eddy current test, initiated after the January 31, 2012 Unit 3 tube failure. AIT Report, p. 11.

<sup>23</sup> Orange County Register, February 2, 2012.



not just the cracking but we were seeing **a significant amount of wear**. And on one of the units, I recall it being Unit 2, the steam generators were actually approaching the end of their useful life because of the **tube plugging that we were having to do due to wear on the tubes** not just the cracking. So in our replacement steam generator design specification **our intention was to minimize wear** because that was in fact what had driven us to the replacement requirement ... we were seeking to resolve the issues that were requiring us to replace the steam generator. **So our desire was to minimize wear...So a little bit differently maybe than other steam generator replacements at the industry which were primarily driven by the corrosion cracking, the San Onofre replacements were driven by wear as well. So that's why this wear focus in our specification to the steam generator design was so important to us.**<sup>24</sup> (emphases added by A4NR)

The timeline in SCE-10 identifies February 5, 2012 as the point at which the “U2 steam generator retainer bar problem identified.”<sup>25</sup> By February 8, 2012, Edison regarded the degradation in the Unit 2 steam generators to be of enough concern to initiate a formal Root Cause Evaluation.<sup>26</sup> As emphasized in Edison’s brief, “At this point in time, SCE had **no reason to believe** that Unit 2 would not restart at the end of the RFO on March 4, 2012.”<sup>27</sup> (emphasis added by A4NR)

What the CPUC needs to ask is: has Edison affirmatively proven that its lack of any doubt was reasonable? After 3.33% of the expected full power lives of the two Unit 2 steam generators, Edison had discovered wear that would cause it to plug 51 times the number of tubes that EPRI guidelines projected for the **end** of the Unit 2 steam generator lives. Edison has offered no documentation to justify deriving comfort from its pre-selected benchmarks, and anecdotal reference to industry operating experience cannot erase a result more than

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<sup>24</sup> NRC Transcript of November 30, 2012 public meeting in Laguna Hills, California, accessible at <http://pbadupws.nrc.gov/docs/ML1314/ML13141A520.pdf>, unnumbered p. 24 of 62.

<sup>25</sup> SCE-10, p. 64. At the November 30, 2012 public meeting convened by the NRC, Mr. Palmisano would characterize the retainer bar wear as “clearly a design flaw which is unacceptable and had to be mitigated prior to restart.” NRC Transcript, unnumbered p. 15 of 62.

<sup>26</sup> Jose Luis Perez (SCE), Transcript, pp. 455, 457 – 458.

<sup>27</sup> Edison brief, p. 6.

1,500 times greater than EPRI guidelines projected.<sup>28</sup>

### III. EDISON HAS FAILED TO AFFIRMATIVELY PROVE THAT ITS RESPONSE TO UNIT 2 DAMAGE WAS REASONABLE AFTER DISCOVERING EVEN GREATER WEAR IN UNIT 3.

Based on the evidence offered by Edison, from February 8 until March 13, 2012 the specific timing and causes of its decisions regarding Unit 2 are extremely murky, obscuring the rationale for choices like the March 1, 2012 reloading of fuel into the Unit 2 core (e.g., when and why did the Unit 2 restart date shift from March 4, 2012 to March 20, 2012?). From the timeline in SCE-10, the following events appear most pertinent:

- *2/11/2012 U2 Initial Eddy Current Testing (ECT) completed*
- *2/12/2012 U3 ECT inspection locates leaking tube*
- *2/14/2012 U2 expanded ECT (based on U3 findings) completed*
- *3/13/2012 U2C17 RFO schedule slip from 3/20 to 4/15 due to additional ECT*
- *3/13/2012 U3 In-situ pressure test of 129 tubes. 8 tubes fail.<sup>29</sup>*
- *3/14/2012 U2C17 RFO schedule slip from 4/15 to 5/16<sup>30</sup>*

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<sup>28</sup>  $10 \div 51 \times 1.7 = 0.333$  and  $510 \div 0.333 = 1,531.5$ . Even this application of the EPRI guidelines makes the ultra-conservative assumption that the probability of a tube failure is equal in each of the projected 51 years of life, rather than increasing over time as the tubes age.

<sup>29</sup> The AIT Report states that, while testing commenced on March 13, 2012, the dates of the failures were March 14 thru March 16, 2012. AIT Report, p. A2 -4-.

<sup>30</sup> SCE-10, p. 64. Significantly, the March 14, 2012 delay put Unit 2 in **the same two-months-from-startup category** that Mr. Palmisano would later testify **was a virtue of Unit 3's eventual layup status**. Thomas Palmisano (SCE), Transcript, p. 948.

None of Edison's prepared exhibits or verbal testimony provides any more specific explanation for these Unit 2 restart slippages than Mr. Palmisano's vague narrative:

*... and we made a couple of date changes along the way because we didn't want to rush to restart Unit 2 until we had enough information out of Unit 3, because they are an identical design and, you know, it may be susceptible to what occurred in Unit 3. So we laid out a very systematic inspection plan and systematic decision-making plan which resulted in several date changes.*

*So early on we certainly were talking about restarting Unit 2 in the spring. We anticipated maybe 30 days delay.<sup>31</sup>*

Labeling your inspection and decision-making plans as "very systematic" doesn't make them so, especially in circumstances where they inexplicably are not made part of the evidentiary record. As with so much else of Mr. Palmisano's commentary, it is impossible to dispel the impression of an improvisational effort.

Edison provided no evidence during Phase 1 as to what discoveries in Unit 3 during this period triggered the alterations in the projected Unit 2 restart date and why. Applying the same EPRI guidelines to Unit 3 to gauge what level of degradation might have been reasonably expected after .9 effective full power years, Edison had to have been alarmed by results three times as bad as the staggering discoveries in Unit 2. After only 1.76% of the effective full power lives of the two Unit 3 steam generators, Edison discovered wear that would cause it to plug nearly 81 times the number of tubes that EPRI guidelines projected for the end of the Unit 3 steam generator lives. This represented a result nearly 4,600 times worse than the EPRI guidelines projected.<sup>32</sup>

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<sup>31</sup> Thomas Palmisano (SCE), Transcript, p. 851.

The question for the Commission is whether Edison has affirmatively proven that, after discovering the extent of damage to Unit 3's steam generators, it had any reasonable basis to assume "restarting Unit 2 in the spring" and anticipating "maybe 30 days delay".

#### **IV. EDISON HAS FAILED TO AFFIRMATIVELY PROVE THAT ITS RESPONSE TO DAMAGE IN EITHER STEAM GENERATOR WAS REASONABLE AFTER ITS MARCH 23, 2012 COMMITMENTS TO THE NRC.**

Of necessity, Edison's decisional framework became more formal with the March 19, 2012 arrival of the NRC's Augmented Inspection Team and the commencement of 10 days of on-site inspections. By March 23, 2012, Edison had submitted its Steam Generator Return-to-Service Action Plan, unimpeded by the fact that its Root Cause Evaluation for Unit 2 would not be completed for another month. Edison committed to the NRC that it "*would not restart Unit 2 until the source of the wear in Unit 3 was understood and the company had confidence that Unit 2 could be safely restarted without experiencing the same problems as Unit 3 (similar commitments were made for Unit 3).*"<sup>33</sup> Revealingly, Edison made this commitment to an evaluative linkage between tube wear in Unit 2 and tube wear in Unit 3 **nearly three weeks before discovering the "early signs" of potential TTW in Unit 2** on April 10, 2012. On March 27, 2012 the NRC issued its Confirmatory Action Letter and the Unit 2 restart slipped to June 1,

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<sup>32</sup>  $10 \div 51 \times .9 = 0.176$  and  $807 \div 0.176 = 4,585.2$ . As with Unit 2, this application of the EPRI guidelines makes the ultra-conservative assumption that the probability of a tube failure is equal in each of the projected 51 years of life, rather than increasing over time as the tubes age.

<sup>33</sup> Edison brief, p. 8, citing SCE-10, p. 64 and Thomas Palmisano (SCE), Transcript, pp. 851 – 852. Similarly, the Unit 3 Root Cause Evaluation would not be completed until May 7, 2012.

2012.<sup>34</sup>

By Mr. Palmisano's account,

*So at the time we anticipated about a 60-day process to put together the technical information and restart Unit 2. So we were thinking probably of a June start-up for Unit 2 at that point in time; and Unit 3 to follow, needing more work, quite frankly, because it had obviously been damaged by the phenomena.*<sup>35</sup>

The Commission should ask whether Edison has affirmatively proven that, based on what it knew on March 23 or March 27, 2012, it had any reasonable basis for its assumptions about either Unit 2 or Unit 3.

On April 10, 2012, while *"looking very carefully with very sensitive equipment for the phenomena that occurred in Unit 3,"* the additional inspections of Unit 2 *"found two tubes with the early signs potentially of tube-to-tube wear."*<sup>36</sup> Some four weeks later, on May 7, 2012, the June 1 restart date for Unit 2 was slipped to July 1, 2012 -- almost as an afterthought.<sup>37</sup>

Also on May 7, 2012: Edison issued its Unit 3 Root Cause Evaluation,<sup>38</sup> peremptorily dismissing any type of wear other than that attributed to in-plane vibration from fluid elastic instability ("FEI") and confirming that its too-clever-by-half restart strategy would myopically focus on TTW. Despite an extraordinary number of wear indications at both SONGS units, the more common out-of-plane vibration attributed to *"turbulence induced vibration"* was not

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<sup>34</sup> The March 27, 2012 delay kept Unit 2 in **the same two-months-from-startup category** that Mr. Palmisano would later testify **was a virtue of Unit 3's eventual layup status**. Thomas Palmisano (SCE), Transcript, p. 948.

<sup>35</sup> *Id.*, p. 852.

<sup>36</sup> *Id.*

<sup>37</sup> SCE-10, p. 64.

<sup>38</sup> SCE's "Root Cause Evaluation: Unit 3 Steam Generator Tube Leak and Tube-to-tube Wear," Condition Report: 201836127, Revision 0, May 7, 2012.

considered worrisome. As Edison's discussion of tube wear at the anti-vibration bars in all four steam generators put it:

*... the wear is caused by turbulence induced vibration. The wear rate from this mechanism is lower than that associated with FEI and, based on industry OE [i.e., operating experience], decreases over time... **These tubes do not require additional causal analysis.***<sup>39</sup> (emphasis added by A4NR)

Similarly, with respect to tube-to-support-plate wear, Edison was equally cavalier:

because this wear was attributed to the mundane "*turbulence induced vibration*" which was postulated to decrease over time, "**(n)o additional causal analysis will be performed for tube-to-TSP wear...**"<sup>40</sup> (emphasis added by A4NR) The suggested substitute for this refusal to perform causal analysis: "*increased monitoring of tube wear during mid-cycle outages.*"<sup>41</sup>

The Commission need not dispute the priority afforded TTW in order to still ask: has Edison affirmatively proven that its downplaying of non-TTW was reasonable, and that it was reasonable for Edison to assume that its approach to non-TTW would be acceptable to the NRC? It would seem elementary to anticipate that such a casual approach to these wear types -- accounting for more than 90% of the wear indications in each of the four steam generators -- might prove problematic in the face of the regulatory commitments Edison had made to the NRC. Nor does one need the benefit of hindsight to have predicted the absence of a TTW fixation in the ASLB's eventual condemnation of the proposed Unit 2 restart:

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<sup>39</sup> *Id.*, p. 14. As indicated by this language, the suggestion in Edison's brief at pp. 5 – 6 that "*SCE initiated a Root Cause Evaluation to **investigate** the cause of the observed wear*" (emphasis added by A4NR) is overbroad.

<sup>40</sup> *Id.*

<sup>41</sup> *Id.*

*SCE's experience with SONGS Unit 3 forcefully demonstrates that the current analysis used to support the maintenance of steam generator tube integrity is inadequate for the replacement steam generators. More specifically, the current analysis underlying tube inspections to prevent maximum thinning is inadequate to assure tube integrity in light of the accelerated wear mechanism that might occur in this type of steam generator, and that did occur in the Unit 3 steam generators.<sup>42</sup>*

As the CPUC noted in D.05-08-037,

*The reasonable and prudent act is not limited to the optimum act, but includes a spectrum of possible acts consistent with the utility system need, the interest of the ratepayers, **and the requirements of governmental agencies of competent jurisdiction.**<sup>43</sup> (emphasis added by A4NR)*

## **V. EDISON HAS FAILED TO AFFIRMATIVELY PROVE THAT THE INTEGRATION OF ITS SHORT-TERM AND LONG-TERM EFFORTS WAS REASONABLE.**

Beyond Edison's insistence in the second half of 2012 that Mitsubishi Heavy Industries ("MHI") was the party contractually responsible for the restoration of the steam generators to their "*original condition*,"<sup>44</sup> the Phase 1 record is devoid of any coherent linkage between Edison's Unit 2 restart plan and the long-term. Mr. Palmisano was emphatic that the "*permanent*" plan which MHI was supposed to be working on, even if delivered in "*interim*" steps, was disconnected from Edison's efforts to restart Unit 2 at reduced power: "*It has*

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<sup>42</sup> LBP-13-07, p. 36.

<sup>43</sup> D.05-08-037, citing D.90-09-088 as "*based on language in D.87-06-021, and quoted with approval in D.98-09-040.*"

<sup>44</sup> Thomas Palmisano (SCE), Transcript, p. 724. Mr. Palmisano may have spoken imprecisely, to the extent that design problems may have rendered the steam generators defective even in their "*original condition*." Elsewhere, he said: "*We want to see the steam generators return to full capability,*"*Id.*, p. 737; "*With respect to both units, we expect a comprehensive repair proposal that would restore the steam generators to full power for the full 40-year life,*"*Id.*, p. 738.

*nothing to do with the 70 percent restart plan.”*<sup>45</sup>

While Mr. Palmisano did make one ambiguous reference to the role long-term thinking had played in Edison’s efforts (“*We were working on both short- and long-term options from a fairly early on, probably in the March time frame, as we understood the nature of the Unit 3 steam generator wear.*”<sup>46</sup>), he admitted that Edison had not staffed its long-term group until July 24, 2012<sup>47</sup> and had confined its role to responding to MHI proposals.<sup>48</sup> The Edison brief attempts to dance past the perils of failing to integrate short-term restart and long-term repair/replacement strategies with unsupported assertions about the timing of Edison’s purported forthrightness with MHI: “*From the beginning, SCE informed MHI that the tube wear was unacceptable ...*”<sup>49</sup>; “*At every step along the way, the company pressed MHI ...*”<sup>50</sup>; “*From the beginning, SCE made clear to MHI ...*”<sup>51</sup>; “*SCE unequivocally communicated ...*”<sup>52</sup>; “*... throughout the year ...*”<sup>53</sup>; “*SCE’s decision to press for a permanent repair throughout 2012 is unassailable.*”<sup>54</sup>

Conceptually, such a resolve would perhaps indeed be unassailable -- but there is absolutely no evidence in the Phase 1 record that it was present “*throughout 2012*” or even noticeable before the acrimonious exchanges of correspondence in November and December of 2012 introduced as SCE-15, SCE-16, SCE-17, SCE-20, SCE-21, SCE-22, SCE-23, and SCE-24.

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<sup>45</sup> *Id.*, pp. 914 – 915.

<sup>46</sup> *Id.*, p. 714.

<sup>47</sup> *Id.*, p. 758.

<sup>48</sup> *Id.*, pp. 762 – 763: “*MHI is the one working on identifying and preparing the options. Edison’s work has been to benchmark what others have done successfully so we can better judge MHI’s proposals.*”

<sup>49</sup> Edison brief, p. 4.

<sup>50</sup> *Id.*

<sup>51</sup> *Id.*, p. 17.

<sup>52</sup> *Id.*

<sup>53</sup> *Id.*, p. 18.

<sup>54</sup> *Id.*



What should be even more unassailable is the obvious potential for redundant, and perhaps even contradictory, expenditures stemming from a failure to integrate short- and long-term strategies.<sup>55</sup> While Edison's brief can revel in the table-pounding resonance of Peter Dietrich's November 28, 2012 missive ("*This situation is not and should not be acceptable to either of our companies.*"<sup>56</sup>), it skips over Mr. Dietrich's most relevant observation: "*10 months have elapsed since the Unit 3 steam generator tube leak, and no such repairs or replacements have occurred and no viable repair or replacement strategy has been proposed.*"<sup>57</sup>

By year-end 2012, with no such plan yet developed, Edison claims to have spent \$141.1 million in "*incremental*" steam generator expenses.<sup>58</sup> Mr. Palmisano testified on redirect that he did not expect Edison would spend \$130 million on inspection and repair in 2012.<sup>59</sup> But spent it was, with no apparent consideration of how any such expenditures would dovetail into the long-term repair/replacement plan Edison was relying on MHI to deliver. The most obvious example: it never seems to have occurred to Edison that an extraordinary portion (and perhaps all) of the "*incremental*" expenses might be of questionable value if replacement of the steam generators proved the only viable way to restore them to the "*original condition*" or "*full capability*" or "*full power for the full 40 year life*"<sup>60</sup> ostensibly required by the MHI contract.

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<sup>55</sup> For example, as Mr. Perez explained to ALJ Darling: "*At the time that we performed the plugging and stabilizing Unit 3, we were not sure of the outcome of that unit's future at that time, back in February-March. So that, we believe, was the appropriate step to take at that the point in time.*" Q "*What would be the consequence of not plugging them?*" A "*They would have had to have been plugged at a later time.*" Q "*And that later time would be when Edison decided if Edison decided it wanted to move forward with a restart plan?*" A "*That's correct.*" Jose Luis Perez (SCE) Transcript, pp. 648 – 649. Mr. Perez later identified the 2012 costs of plugging Unit 3 as \$35 million and Unit 2 as \$36 million. *Id.*, pp. 1247 – 1248.

<sup>56</sup> *Id.*, citing SCE-21.

<sup>57</sup> SCE-21.

<sup>58</sup> Late-filed SCE-35 identified \$11 million of Base O&M that Edison determined should be attributable to incremental steam generator expenses and added to the \$130.1 million originally identified in SCE-4.

<sup>59</sup> Thomas Palmisano (SCE), Transcript, p. 977.

<sup>60</sup> See footnote 44 above.

Wear which was characterized as “*important and not acceptable for the longer term*”<sup>61</sup>

obviously was not going to be corrected by the short-term restart proposal. Even a long-term plan which centered on major repairs or partial replacements instead of total replacement of the steam generators could be anticipated to render a significant amount of the short-term repairs superfluous.

As suggested in A4NR’s opening brief,<sup>62</sup> the Commission should not allow itself to be drawn into a dispute best left to the Edison-MHI arbitration process, and the degree to which Edison is entitled to reimbursement by MHI for these “*incremental*” expenses will surely be a subject therein. In the meantime, however, in terms of assuring that electricity rates are just and reasonable under California law and restricted to used and useful assets, the Commission should reflect upon the I.12-10-013 evidentiary record and ask: has Edison affirmatively proven that separating its short-term and long-term efforts fell within the bounds of reasonableness and should have logically been expected, at the time its decisions were made, to accomplish the desired result at the lowest reasonable cost consistent with good utility practices?<sup>63</sup>

## **VI. EDISON HAS FAILED TO AFFIRMATIVELY PROVE THAT ITS CONSIDERATION OF COST-EFFECTIVENESS IN 2012 WAS REASONABLE.**

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<sup>61</sup> *Id.*, p. 838.

<sup>62</sup> A4NR brief, p. 22.

<sup>63</sup> In terms of Edison’s handling of its contract with MHI, the Commission should note that the conscious retreat from the “*clear and convincing evidence*” standard in the 2009 Edison General Rate Case, D.09-03-025, was not repeated in the Commission review of contract administration in Edison’s ERRR filing the next year: “*We expect utility contract administration to be active, and require an affirmative showing in ERRR filings that meets the utility’s burden of proof by presentation of clear and convincing evidence. This responsibility applies to all contract terms, as necessary for the utility to carry its burden of proof.*” D.10-06-004, p. 7.

No single subject better typifies the decision-making fog pervading Edison's 2012 response to the steam generator failures than the role of cost-effectiveness analyses. Burdened by an annual revenue requirement of nearly \$1 billion in a market environment dominated by cheap natural gas, even a properly functioning SONGS at full power might fail the rudimentary tests for new investment if that revenue requirement was apportioned to the plant's total output. Assumptions about reduced output, or major repairs not covered by insurance or warranty, only worsen this calculus. Notwithstanding Edison's contractual claims against MHI for steam generators with 40-year lives, a rational manager knows that the proper amortization period for any such repairs or impaired output is the license expiry date in 2022. These unforgiving circumstances transform any major unexpected outage into a life-threatening situation for an aging nuclear plant like SONGS.

Edison knew this, or certainly should have.

At the point when it knew, or should have known, the magnitude of damage to the steam generators, it had to drop the contrived bravado of a first responder excused from the constraints of cost-effectiveness. Edison managers are not paramedics or firefighters, they are expected to be prudent decision-makers operating within the confines of "*good utility practices.*"<sup>64</sup> As the Commission has established, "*Good utility practices are based upon cost effectiveness, reliability, safety, and expedition.*"<sup>65</sup>

Mr. Palmisano's testimony made clear that he wasn't the guy looking at costs in 2012 and that he didn't know of anyone who was:

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<sup>64</sup> D.05-08-037, pp. 4 – 5.

<sup>65</sup> *Id.*

- *My role was to lead the technical work related to both units, particularly the steam generators. I was not involved in any cost effective or cost analysis of options at that [April 23, 2012] point.*<sup>66</sup>
- *I am not aware of any analyses in that [April 23, 2012] time frame.*<sup>67</sup>
- *With respect to Unit 2 and start up and filing the confirmatory action letter, in 2012 cost was not factored into my knowledge in the discussion that is I was in.*<sup>68</sup>
- *That is correct. The cost was not a dominant factor.*<sup>69</sup>
- *I did not have discussions with him [Chief Nuclear Officer Peter Dietrich] about the cost of restarting Unit 2.*<sup>70</sup>
- *To my knowledge, we have not done a cost/benefit of a long-term repair or replacement plan...I would expect I would provide technical information to it...I'm not aware that analysis has been done but I would be, yeah.*<sup>71</sup>

Similarly, Mr. Perez attested to his own ignorance about 2012 cost analyses: he testified that he did not know whether any long-term cost effectiveness analysis had been performed to determine the repair path to take with respect to either Unit 2 or Unit 3,<sup>72</sup> or who would know.<sup>73</sup> Similarly, he said that Edison had not performed any “detailed study” of the decline in

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<sup>66</sup> Thomas Palmisano (SCE), Transcript, p. 771.

<sup>67</sup> *Id.*

<sup>68</sup> *Id.*, p. 951.

<sup>69</sup> Mr. Palmisano added that he was not familiar with any additional cost evaluations later in 2012 that led to or influenced expenditures in 2012 relative to the Unit 2 restart plan, nor was cost a factor in discussions with MHI his team held in 2012 regarding long-term options. *Id.*, pp. 955 – 956.

<sup>70</sup> *Id.*, p. 964.

<sup>71</sup> *Id.*, p. 944. Although unable to identify the names of any team members, Mr. Palmisano did testify that a team or teams had been formed within the company in 2012 “to evaluate SONGS’ long-term future and look at different options and the costs of different options. Part of this is preparation for general rate case materials.” *Id.*, p. 953. As the Commission should recall, Edison’s initial response to I.12-10-013 was to suggest that the Commission defer any change to the SONGS revenue requirement until Phase 3 of the company’s 2015 General Rate Case: “The Commission’s policy decision regarding future operations at SONGS will be inextricably intertwined with a determination of the SONGS revenue requirement for the 2015 GRC ...” Response of SCE to OII, December 3, 2012, p. 22. The Edison brief’s strained effort at p. 14 to make more of this “team” is disingenuous.

<sup>72</sup> Jose Luis Perez (SCE), Transcript, pp. 324, 326 – 327.

<sup>73</sup> *Id.*, p. 522.

costs if SONGS were permanently shut down;<sup>74</sup> that he had not “performed any study with respect to permanently shutting San Onofre in the last years worth of recorded cost for 2012;”<sup>75</sup> that there was no way for him to know if anyone else had because “(t)here is a lot of people there in the office of Edison;”<sup>76</sup> but that he was “unaware” of any such study or analysis done by anyone at Edison.<sup>77</sup>

Announcing the permanent shutdown less than three weeks after the Phase 1 evidentiary hearings ended, Edison International CEO Ted Craver tried to close the cost/benefit barn door opened up by his two witnesses. As indicated in his prepared statement, posted on the Edison web site,

*Once we understood the cause of the steam generator tube wear, and that we could mitigate it through operating Unit 2 at reduced power, **we had to determine if it was economical to do so.** As a regulated utility, we have an obligation to serve all customers in our service territory. Along with that requirement, is **an obligation to serve our customers in a cost effective manner.***

***We examined the costs of the alternatives to running SONGS,** including closing the plant and simply buying replacement power from the market, and shutting the plant and building replacement generation and transmission lines. The analysis showed that **even if Unit 3 never restarted,** and we were only able to run Unit 2 at 70% power for the remaining 9 years of the license period (that is, out to 2022), it was the least cost alternative. However, every day that SONGS is not running, is another day that we incur replacement power costs, and the costs of keeping the plant ready for restart. These readiness costs amount to about one million dollars a day, or approximately \$30 million a month. Every day of delay in restarting Unit 2 also means there is one less day of operating this lower cost source of generation. So, at some point, with enough delay, there is a cross over point where operating Unit 2 is no longer less costly than the alternatives*

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<sup>74</sup> *Id.*, p. 282.

<sup>75</sup> *Id.*, p. 283.

<sup>76</sup> *Id.*, p. 284.

<sup>77</sup> *Id.*, pp. 283 – 284.

... In this case, **we believe we must be able to represent to our customers; to the public; and to the regulators; that we are pursuing the least cost alternative.**<sup>78</sup> (emphases added by A4NR)

Mr. Craver knows the rules his company is expected to play by. The Commission should ask: has Edison affirmatively proven that its 2012 SONGS-related decision making process was sound, that its managers considered a range of possible options in light of the information that was or should have been available to them, and that its managers decided on a course of action that fell within the bounds of reasonableness and should have logically been expected, at the time the decisions were made, to accomplish the desired result at the lowest reasonable cost consistent with good utility practices?

## **VII. CONCLUSION.**

It is not A4NR's burden to prove that Edison unreasonably disregarded the magnitude of damage discovered in the initial Unit 2 RFO inspections; or that Edison compounded this misjudgment by its unreasonable response to the discovery of even greater damage in Unit 3; or that Edison's conduct after its March 23, 2012 commitments to the NRC descended into indefensible unreasonableness; or that Edison's failure to integrate its short-term and long-term efforts was an unreasonable invitation to wasteful expenditures; or that Edison's aversion to cost-effectiveness considerations defied reason. The burden of proving its own

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<sup>78</sup> <http://www.edison.com/files/EIX%20SONGS%20Update%20Call%20CEO%20Prepared%20Remarks%206-7-2013.pdf>

*“reasonableness”* rests with Edison alone.

In determining when in 2012 the two SONGS units ceased to be used and useful for generating electricity, and what 2012 SONGS-related expenses can comprise a just and reasonable revenue requirement, and whether any of the \$141.1 million in *“incremental”* costs deserve recovery from ratepayers if they are not fully paid by MHI, the Commission should keep Edison’s burden – and its abject failure in meeting it -- foremost in mind. Edison’s cocksure misadventure with a fact-defying restart strategy would not have persisted as long as it did without an expectation of extreme laxity in the Commission’s reasonableness review. Mr. Craver’s June 7, 2013 announcement suggests a first inkling of doubt.

Respectfully submitted,

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