

**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 TO REOPEN THE RECORD
BY RUTH HENRICKS
AND THE COALITION TO DECOMMISSION SAN ONOFRE**

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INTRODUCTION

Ruth Henricks and the Coalition to Decommission San Onofre
(CDSO)

request the Commission reopen the record and permit the introduction of
new evidence under Rule 13.14 of the Commission's Rules of Practice and
Procedure. Rule 13.14(b) requires that a motion to reopen the record for taking of
additional evidence shall specify the facts claimed to constitute grounds in
justification thereof, including material changes of fact alleged to have occurred

since the conclusion of the hearing. It shall contain a brief statement of proposed additional evidence, and explain why such evidence was not previously adduced.

The facts claimed to constitute grounds in justification to reopen the record and to permit the introduction of new evidence arise out of movants' discovery on 31 July 2014 that the nuclear safety expert the Commission hired to determine the causes and perforce the persons responsible for the failure of the replacement steam generators at the San Onofre Nuclear Power Plant, Dr. Robert Budnitz, had not completed his work, and although he was paid for his first report deliverable under the contract, it was not incorporated into the record.

PROCEDURAL CONTEXT

On 1 November 2012, the Commission opened an investigation (OII) to consolidate and consider issues raised by the extended outages of Units 2 and 3 at the San Onofre Nuclear Generating Station (SONGS). These units are located adjacent to Camp Pendleton near San Clemente, California. They are jointly owned by Southern California Edison Company (SCE), San Diego Gas & Electric Company (SDG&E), and the City of Riverside (with shares of 78%, 20% and 2% respectively). In opening this investigation, the Commission represented that "It shall investigate the causes, each utility's responses, the future of the SONGS

units, and the resulting effect on the provision of safe and reliable electric service at just and reasonable rates.”¹

On 28 January 2013 a ruling was issued pushing off the issue of the causes of damages to the replacement steam generators to a Phase 3, during which the “causes of the SG damage and allocation of responsibility, whether claimed SGRP expenses are reasonable, including review of utility-proposed repair and/or replacement cost proposals using cost-effectiveness analysis and other factors.”²

On 28 May 2013 a Proposed Decision³ was issued authorizing the Director of the Energy Division to retain one or more technical consultants to advise the Commission, its staff, and the assigned Administrative Law Judges in connection with the OII.

On 3 July 2013 the Commission issued a final decision⁴ authorizing the Director of the Energy Division to retain one or more technical consultants to

1 I.12-10-013 “Order Instituting Investigation Regarding San Onofre Nuclear Generating Station Units 2 And 3” page 27 --
<http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M032/K192/32192692.pdf>

2 “Scoping Memo And Ruling Of Assigned Commissioner And Administrative Law Judge Determining The Scope, Schedule, And Need For Hearing In Phase 1 Of This Proceeding” Page 4 -- <http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M042/K157/42157052.PDF>

3 “Decision Authorizing Energy Division To Retain Technical Consultants” --
<http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M065/K397/65397134.PDF>

4 Decision 13-06-013, June 27, 2013 (Issued July 3, 2013) “Decision Authorizing Energy Division To Retain Technical Consultants”

advise the Commission, its staff, and the assigned Administrative Law Judges in connection with the OII.

COMMISSION RETAINED DR. BUDNITZ

In August 2013 the Commission retained nuclear safety expert Dr. Robert Budnitz under the July 2013 decision authorizing the Commission to hire a technical adviser. Dr. Budnitz was retained to do the following:

1. Within approximately 90 days of the commencement of the contract (the contract is expected to commence by the middle of September 2013) provide a report to the Energy Division with an analysis focusing on why the steam generators at DCPD and their design has been successful while the SGs design by Mitsubishi for SONGS resulted in excessive tube wear and tube failure;
2. Within approximately 60 days after opening briefs are filed in Phase 3 of the OII (OBs are expected to be filed in the 2nd quarter of 2014) provide a report to the Energy Division on the results of analyses on issues raised in Phase 3 of the OII.

DR. BUDNITZ DECEMBER 2013 REPORT

On 1 December 2013 Dr. Budnitz issued a draft of his first report⁵ focusing on why the steam generators at Diablo Canyon worked and those at San Onofre did not. Dr. Budnitz' December Report provided in pertinent part:

⁵ Budnitz, "An evaluation that explains why the performance of the replacement steam generators at Diablo Canyon Power Plant has been different than the performance of the replacement steam generators at SONGS" – <http://www.copswiki.org/Common/M1469>

WHAT I DID

First I reviewed the DCISC's [(Diablo Canyon Independent Safety Committee)] 2012 and 2013 Annual Reports to find what I could on this subject. (Of course, I am one of the 3 members of the DCISC, so this was easy for me to do.) Then, I reviewed the information that I had already learned from my study of several different documents that I had been reviewing anyway, so as to gain a full understanding of the technical issues related to the events at SONGS. These included documents from So. California Edison, from Mitsubishi, and from the US Nuclear Regulatory Commission, along with general information on steam generator performance that I had available to me. Then I thought about the issue a bit, sat down, and I am writing this report.

MY ANALYSIS

The explanation of why the performance of the RSGs (replacement steam generators) at Diablo Canyon has been different than that of the RSGs at SONGS is on one level rather easy. A major part of the explanation is that the specifications for the DCPD and SONGS designs, while superficially similar, are quite different. The SONGS RSGs are much larger --- the SONGS reactor design uses two SGs per unit, while the DCPD design has four SGs per unit, so the amount of energy, power, water, etc. that the SGs at SONGS need to process and cope with at full power is about twice as large. (This is approximate- the DCPD reactors produce about 6-7% more power than did those at SONGS, a modest difference.)

This size difference by itself places very different constraints on the RSG design in terms of flows, stresses, material properties, and the like. The design solutions always need to embed "margin" in various attributes to assure that performance is adequate, but the way these margins are determined, the places where they are embedded, the amounts of the different margins, and the figures-of-merit used by the different designers are all different, sometimes markedly so. For example, there are margins in the heat-transfers, in the material strengths, in the configuration tolerances and clearances, in the allowances for manufacturing errors, and so on. Taken all together, these margins should produce a final design that will operate without

the problems that were experienced at SONGS. And the fact that the SONGS and Diablo Canyon RSGs are so different in size means that these design solutions are surely very different in detail.

Second, the designs were executed and the SGs were built by different manufacturers, Mitsubishi (a Japanese firm) in the case of SONGS, and in the case of DCPN Equipos Nucleares SA (a Spanish firm, but with major parts made by subcontractors in Japan and Sweden.) As is true of many other pairs of similar products made by different manufacturers (think of similar passenger cars by Ford and Toyota, or similar commercial aircraft by Boeing and Airbus, or even similar household refrigerators or furnaces), the design solutions arrived at by the various manufacturers are different enough that they are simply not comparable at the level of detailed engineering. Hence, only a minutely detailed comparison at the level of numerous specific design decisions (involving the numerous "tradeoffs" that are the real nitty-gritty of any complex design problem) could reveal genuine differences that would affect performance.

Third, and most importantly, it is clear that somewhere along the line as the SONGS RSGs went from conceptual design to detailed design to fabrication to testing to installation to operation, one or more errors was made. That this is so almost a tautology --- Mitsubishi itself has produced RSGs at other nuclear plants around the world that have performed satisfactorily, as have the RSGs made by several other SG manufacturers. On the part of everyone involved, there was every expectation that this successful performance record would be true at SONGS also. It wasn't, and that implies one or more errors somewhere --- I am not sure where, but somewhere.

My insight from observing that different design solutions were found for a "similar design problem" for SONGS vs. DCPN is that, because of the differences (size, for one, but other differences too), the opportunity for a similar error was very small - not zero, but very small.

Most importantly, the RSGs at Diablo Canyon have performed very well so far, since 2008 (Unit 2) and 2009 (Unit 1), meaning into what is now Unit 2's third refueling cycle and Unit 2's fourth cycle. Based on this experience, it is clear that no similar error(s) occurred at

DCPP. Thus my answer to the question in the "Scope of Work" (*"why the steam generators at DCP and their design has been successful while the SGs design by Mitsubishi for SONGS resulted in excessive tube wear and tube failure"*) is that at DCP no comparable errors were committed.

That, in a nutshell, is my evaluation of the difference. If it sounds obvious - well, it is. This was also the evaluation of the DCISC when the committee asked (and tried to answer) the same question. The DCISC's remit is evaluating the operational safety at Diablo Canyon, and to discharge that remit the DCISC reviewed the performance of the RSGs at DCP after the adverse news from SONGS made it pressing to do so. Based on that review, the DCISC members convinced themselves that problems similar to those at SONGS had not occurred at DCP. The DCISC then wrote that down and moved on - with the caveat that the DCISC has committed to reviewing the performance of the Diablo Canyon RSGs on an ongoing basis, after each outage for example, or whenever other information may arise. And to date, the information supports a continuing conclusion at DCP of "so far so good."

The DCISC documented its conclusion on this technical topic in its May 2012 Fact Finding report, which conclusion was repeated verbatim in its 2011-2012 Annual Report (released in autumn 2012), to wit: *Because of the San Onofre Generating Station (SONGS) Steam Generator (SG) tube failures of relatively new SGs, the DCISC reviewed the health of DCP P's relatively new SGs. DCP P's SG tubes had shown excellent inspection and test results in Outages 2RI 5 and 1RI6 and are considered to be in excellent health. DCP's plant and SGs were designed and fabricated by a different manufacturer than SONGS. Although in excellent health, the DCISC will monitor SG inspection results during future outages.*

This simple conclusion is all that can be found in the DCISC's 2011-2012 annual report on this subject. Nothing that has arisen from inspections or other performance data at DCP in the intervening year-plus has provided any information that would challenge this conclusion, and the subject is not discussed explicitly in the DCISC Annual Report for 2012-2013.

CASE NEEDS TO BE REOPENED SO NEW EVIDENCE CAN BE PRESENTED

Dr. Budnitz identified the work needed to be completed before any settlement is reached. Dr. Budnitz should be allowed to complete his work so he can provide answers to the key questions he raised: (1) What error(s) led to the San Onofre SGs tube failure(s)?; (2) At what stage were those errors made?; (3) Who made those errors? (4) What might have been done, and by whom, and at what stage, to have averted those errors? and(5) What arrangements in place elsewhere, technical or administrative or both, that were successful in averting these errors somehow didn't work adequately for the SONGS RSGs?

Dr. Budnitz was hired to provide the answers to these questions. Those answers are likely to have a substantial and material impact on the proposed settlement. Moreover, Dr. Budnitz should be allowed to complete his work separate from the settlement. There is a substantial public interest in finding out who was responsible for the failed steam generators. The Commission should allow Dr. Budnitz to complete his work so the Commission can have a proper basis for deciding whether to initiate enforcement proceedings against SCE or any other responsible parties including those employed at the Commission.

The results of the work of Dr. Budnitz may determine significant changes which are necessary to avert the repeat of the errors made in the technical or

administrative processing (or both) of the SGRP, since those errors resulted in the total loss of the plant. Without these conclusions, no lessons are learned from this monumental and unprecedented failure of an operating power plant after a like-for-like replacement of steam generators was attempted.

CONCLUSION

Upon these premises Ruth Henricks and the Coalition to Decommission San Onofre (CDSO) request the Commission reopen the record and permit the introduction of new evidence under Rule 13.14 of the Commission's Rules of Practice and Procedure. Rule 13.14(b).

Respectfully Submitted,

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