

1 DOCKET NO.: A.22-02-015
2 EXHIBIT NO.: A4NR-1-PUBLIC
3 DATE:
4 WITNESS: John Geesman
5

6 **BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA**

7
8 **PREPARED TESTIMONY OF JOHN GEESMAN**
9 **ON BEHALF OF THE ALLIANCE FOR NUCLEAR RESPONSIBILITY**
10 **(“A4NR”)**

11 **PROTECTED MATERIALS SUBJECT TO NONDISCLOSURE AGREEMENT**

12
13 **TABLE OF CONTENTS**

14

15	I.	<u>INTRODUCTION: PG&E’S IMPRUDENT MANAGEMENT OF UOG.</u>	page	1
16		Q07: What is the purpose of your testimony?	page	2
17		Q08: How did you determine that PG&E was imprudent in its		
18		administration and management during the record period of its		
19		utility-owned generation facilities at DCNPP Unit 2?	page	4
20	II.	<u>DCNPP UNIT 2 FORCED OUTAGE EVENTS 1, 2, 3, AND 4.</u>	page	7
21		Q09: What sources of problematic vibrations were identified		
22		in PG&E’s root cause evaluation of the 2Y22, 2Z22, 2G22, and		
23		2H22 forced outages?	page	7
24		Q10: How did PG&E’s root cause evaluation of outages 2Y22,		
25		2Z22, 2G22, and 2H22 describe resonant frequency and magnetic		

1	forcing frequency?	page 9
2	Q11: Did the PG&E root cause evaluation of these four	
3	outages identify any pre-R21 (i.e., pre-rebuild) concerns	
4	with excessive vibrations in the Unit 2 main generator?	page 10
5	Q12: What review did the root cause evaluation conduct	
6	of the applicable contract specifications?	page 11
7	Q13: What non-conformance or deviation issues did this	
8	review of contract specifications identify?	page 12
9	Q14: What conclusions did the root cause evaluation	
10	draw from its review of applicable contract specifications?	page 16
11	Q15: How did the root cause evaluation assess PG&E's	
12	owner acceptance process for the rebuild project?	page 16
13	Q16: What explanation did the root cause evaluation	
14	provide for the three SCCW manifold vibration generated	
15	failures?	page 18
16	Q17: How did the root cause evaluation describe PG&E's	
17	and Siemens' understanding of design aspects of the Unit 2	
18	Main Generator frame vibrations prior to 2R22?	page 20
19	Q18: What conclusions did the root cause evaluation draw	
20	from its review of past Unit 2 outage reports?	page 21
21	Q19: How did the root cause evaluation describe Siemens'	
22	testing deficiencies related to the high end-winding vibrations?	page 22
23	Q20: How did the root cause evaluation apply PG&E's	

1	Organizational Learning Tool in assessing causation of these	
2	four outages (i.e., 2Y22, 2Z22, 2G22, and 2H22)?	page 22
3	Q21: What opportunities for improvement did the	
4	application of PG&E's Organizational Learning Tool identify?	page 24
5	Q22: What guidance has been issued by INPO (i.e., the	
6	Institute of Nuclear Power Operations) that the root cause	
7	evaluation identified as applicable to the Unit 2 Main Generator	
8	rebuild?	page 25
9	Q23: What explanation did PG&E provide for its management	
10	of the Unit 2 rebuild project?	page 30
11	III. <u>DCNPP UNIT 2 FORCED OUTAGE EVENT 5.</u>	page 33
12	Q24: How did PG&E's investigation, [REDACTED]	
13	[REDACTED]	
14	[REDACTED] describe the	
15	circumstances which caused Unit 2 to be taken offline on	
16	April 19, 2021?	page 33
17	Q25: How did PG&E's cause evaluation characterize the hose	
18	installation error?	page 35
19	Q26: How did PG&E's cause evaluation summarize its findings?	page 35
20	Q27: Did PG&E's cause evaluation distinguish between those	
21	causes that could have prevented the error and those that could	
22	have detected it?	page 37

1	Q28: In analyzing the various things that went wrong, what	
2	did PG&E’s cause evaluation identify as things that should have	
3	happened?	page 38
4	Q29: Did the cause evaluation’s application of the	
5	Organizational Learning Tool identify deficiencies in the	
6	processes followed by Siemens and PG&E?	page 41
7	IV. <u>DCNPP UNIT 2 FORCED OUTAGE EVENT 6.</u>	page 46
8	Q30: How did PG&E’s root cause evaluation of forced outage	
9	2Y23 describe the causes of the severe heat exchanger tube	
10	failure in Unit 2 Feedwater Heater (“FWH”) 2-5B?	page 46
11	Q31: Did PG&E’s root case evaluation identify any other	
12	causes of forced outage 2Y23?	page 46
13	Q32: How did PG&E’s root cause evaluation of forced outage	
14	2Y23 describe the inspection and testing history of FWH 2-5B?	page 47
15	Q33: How many FWH 2-5B tubes were preventatively	
16	plugged in 2013 during 2R17?	page 49
17	Q34: How many FWH 2-5B tubes were identified in 2016	
18	during 2R19 as exhibiting baffle wastage?	page 49
19	Q35: How many FWH 2-5B tubes did PG&E determine in 2Y23	
20	had been sufficiently damaged to require plugging?	page 49
21	Q36: How did PG&E’s root cause evaluation characterize the	

1	change in baffle plate wastage between 2R19 and 2Y23?	page 50
2	Q37: How does PG&E describe the purpose of its	
3	Organizational Learning Tool?	page 50
4	Q38: How did the PG&E root cause evaluation's application of	
5	the Organizational Learning Tool assess causation of the 2Y23	
6	forced outage?	page 50
7	Q39: Did PG&E's root cause evaluation of 2Y23 identify any	
8	safety culture issues as causal?	page 51
9	Q40: Beside the PG&E [REDACTED], did	
10	the 2Y23 root cause evaluation's barrier analysis identify any	
11	other deficient barriers?	page 52
12	Q41: Notwithstanding the root cause evaluation's	
13	characterization of [REDACTED]	
14	prior to Forced Outage Event 6 had PG&E received external	
15	subject matter expert advice on the relationship between	
16	damage to drain cooler shrouds and the risks of accelerated	
17	tube vibration and failure?	page 52
18	Q42: What corrective actions did PG&E's root cause	
19	evaluation of 2Y23 recommend?	page 53
20	Q43: To what extent were costs of FWH repair or replacement	
21	identified in PG&E's 2Y23 root cause evaluation as a constraint	
22	to future actions?	page 53

1	V.	<u>RECOMMENDATIONS.</u>	page	55
2		Q44: What is your recommendation with respect to DCNPP		
3		Unit 2 Forced Outage Events 1, 2, 3, and 4?	page	55
4		Q45: What is your recommendation with respect to DCNPP		
5		Unit 2 Forced Outage Event 5?	page	55
6		Q46: What is your recommendation with respect to DCNPP		
7		Unit 2 Forced Outage Event 6?	page	56
8		Q47: What is the cumulative total of your recommended		
9		disallowances?	page	56
10	VI.	<u>APPENDIX: PROFESSIONAL QUALIFICATIONS.</u>	page	57
11	VII.	<u>ATTACHMENT A: PROTECTED MATERIALS SUBJECT TO</u>		
12		<u>NONDISCLOSURE AGREEMENT.</u>	page	A-1
13	VII.	<u>ATTACHMENT B: PROTECTED MATERIALS SUBJECT TO</u>		
14		<u>NONDISCLOSURE AGREEMENT.</u>	page	B-1
15				
16	VIII.	<u>ATTACHMENT C: PROTECTED MATERIALS SUBJECT TO</u>		
17		<u>NONDISCLOSURE AGREEMENT.</u>	page	C-1

1 **I. INTRODUCTION: PG&E’S IMPRUDENT MANAGEMENT OF UOG.**

2 Q01: Please state your name and business address for the record.

3 A01: My name is John Geesman, and my business address is: Dickson Geesman LLP, P.O. Box
4 177, Bodega, CA 94922.

5 Q02: Are your professional qualifications included in your testimony?

6 A02: Yes, my professional qualifications are contained in the Appendix to my testimony.

7 Q03: Was your testimony prepared by you or under your direction?

8 A03: Yes, it was.

9 Q04: Insofar as your testimony contains material that is factual in nature, do you believe it to
10 be correct?

11 A04: Yes, I do.

12 Q05: Insofar as your testimony contains matters of opinion or judgment, does it represent
13 your best judgment?

14 A05: Yes, it does.

15 Q06: Does this written submittal complete your prepared testimony and professional
16 qualifications?

17 A06: Yes, it does.

1 Q07: What is the purpose of your testimony?

2 A07: The purpose of my testimony is to provide evidence of PG&E's imprudent
3 administration and management during the record period of its utility-owned generation
4 facilities at Unit 2 of the Diablo Canyon Nuclear Power Plant ("DCNPP"). Between July 17, 2020
5 and November 3, 2021, DCNPP Unit 2 suffered 149.2 days of forced outages. At PG&E's
6 request, consideration of three DCNPP Unit 2 main generator forced outages in 2020 was
7 deferred from A.21-03-008 to this proceeding in order to enable the completion of root cause
8 evaluations. There were an additional two forced outages of the Unit 2 main generator in 2021,
9 as well as one forced outage of Unit 2 attributed to severe tube failure in Unit 2 Feedwater
10 Heater 2-5B.

11 In response to a data request from A4NR, PG&E calculated the costs of these six forced
12 outages to sum to \$178.6 million, as detailed below:¹

13

Event	Date-Time Offline	Date-Time Online	Replacement Power Cost Estimate
1	7/17/2020 13:46	8/2/2020 12:25	\$12,276,673
2	10/15/2020 3:44	11/26/2020 13:31	\$49,326,713
3	12/2/2020 13:17	1/12/2021 17:44	\$41,932,354
4	2/3/2021 20:07	3/1/2021 10:14	\$43,208,116
5	4/19/2021 15:09	4/25/2021 5:23	\$3,754,147
6	10/15/2021 17:49	11/3/2021 5:01	\$28,070,513

14

¹ ERRA-2021-PGE-Compliance_DR_A4NR_002-Q003, p. 1. According to PG&E's data response, "The calculation methodology is consistent with the 2013 ERRA Stipulation Regarding Replacement Cost of Energy between the Public Advocates Office and PG&E. The calculations estimate net foregone CAISO market revenues and CAISO settlement impacts that are attributable to the Diablo Canyon Unit 2 outages. For example, applicable Resource Adequacy Availability Incentive Mechanism (RAAIM) penalties are the capacity costs attributable to the outage. Calculation methodology details are provided in PG&E's responses to the Public Advocates Office Master Data Request Questions 14-18."

1 Based upon PG&E’s diminished market share for generation within its service territory, a
2 substantial majority of the costs of the DCNPP Unit 2 outages will likely be passed through to
3 Community Choice Aggregation and Direct Access customers under the Power Charge
4 Indifference Adjustment.

5 PG&E acknowledges that it has the burden to prove by a preponderance of evidence
6 that its administration of utility-owned resources like DCNPP Unit 2 satisfy a “reasonable
7 manager” standard. As stated in PG&E’s 2021 ERRR Compliance Application, this means
8 utilities are held to a standard of reasonableness based upon the facts that are known or should
9 have been known at the time. The act of the utility should comport with what a reasonable
10 manager of sufficient education, training, experience, and skills using the tools and knowledge
11 at his or her disposal would do when faced with a need to make a decision and act.²

12 In its pending 2023 General Rate Case, PG&E has identified the recorded capital costs of
13 its controversial Unit 2 Main Generator Stator Project as \$79.7 million. The trouble-plagued
14 new stator, the source of five of the six Unit 2 outages and \$150.5 million of the PG&E-
15 calculated outage costs, was placed in service December 18, 2019. PG&E’s earlier haphazard
16 managerial decisions on whether to complete the capital investment featured prominently in
17 the 2017 and 2020 general rate cases.³

18 Regarding the new stator, PG&E’s testimony asserts that the utility “actively managed
19 Siemens in its performance of its contractual and warranty obligations”⁴ but repeatedly points

² PG&E Application, p. 6, citing D.11-10-002, p. 11, fn. 2 (quoting D.90-09-088, 37 CPUC 2d 488, 499 (1990)) and D.16-04-006, p. 12.

³ See A.21-03-008, A4NR Response to PG&E’s 2020 ERRR Compliance Application, pp. 2 – 6.

⁴ PG&E Testimony, p. 4-13, lines 2 – 4.

1 to shortcomings in Siemens' performance.⁵ Even if these blame-the-vendor claims are
2 accurate, PG&E cannot evade responsibility for the performance of its selected contractor. A
3 reasonable manager of utility-owned generation assets knows that it is not indemnified by its
4 customers (or departed load) from its acceptance of defective or improperly installed
5 equipment, or unsatisfactory performance by its vendors. PG&E's remedy for such deficiencies
6 must be anchored in the "contractual and warranty obligations" of its vendors, not a
7 presumptive reimbursement from its ratepayers for any lapse in its own diligence. PG&E's
8 testimony is silent on the reasonableness of its acceptance of the Unit 2 Main Generator
9 rebuild as satisfactorily completed, and silent on what redress it has sought or will seek from
10 those responsible for any inadequate performance. PG&E's customers (and departed load)
11 deserve better protection.

12 Q08: How did you determine that PG&E was imprudent in its administration and
13 management during the record period of its utility-owned generation facilities at DCNPP Unit
14 2?

15 A08: By carefully reviewing the root cause evaluations prepared by PG&E for each forced
16 outage (which are included in this testimony as Attachments A, B, and C) and focusing on the
17 performance deficiencies identified by PG&E, including admissions of nonconformity with
18 PG&E's own management standards. As explained in Attachment A – which examined the
19 forced outages initiated on July 17, 2020 (2Y22); October 15, 2020 (2Z22); December 2, 2020
20 (2G22); and February 3, 2021 (2H22) – each of these four outages involved [REDACTED]

⁵ *Id.*, p. 4-12, line 33 – p. 4-17, line 33.

1 [REDACTED]⁶ As explained in Attachment B – which examined the forced
2 outage initiated on April 19, 2021 – [REDACTED]

3 [REDACTED] As explained in Attachment C – which
4 examined the forced outage initiated on October 15, 2021 (2Y23) – [REDACTED]

5 [REDACTED]

6 [REDACTED]⁷

7 Q08: Does the \$178.6 million estimate of replacement power costs for the six forced outages
8 include the Unit 2 Auxiliary Feedwater (“AFW”) system 8-day forced outage that commenced
9 July 23, 2020?

10 A08: No, because the Unit 2 AFW system outage occurred on day 6 of Outage Event 1 and
11 was over on day 14 of the 16-day Outage Event 1. Consequently, it did not independently
12 trigger a need for the replacement power identified above for Outage Event 1 and its costs
13 were a subset of those for Outage Event 1. The Nuclear Regulatory Commission (“NRC”) issued
14 a notice of violation to PG&E for its failure to appropriately screen relevant operating
15 experience involving similar corrosion issues at two other nuclear plants:

16 On July 23, 2020, with Diablo Canyon Power Plant (DCPP), Unit 2 operating
17 with the reactor plant in Mode 3 [i.e., offline, in hot standby], an
18 approximately 3.9 gallon per minute through-wall leak was observed coming
19 out of a carbon steel piping elbow under insulation in the auxiliary
20 feedwater system. The auxiliary feedwater system is used at DCPP to
21 automatically supply feedwater to the steam generators to remove decay
22 heat from the reactor coolant system upon the loss of normal feedwater
23 supply. The identified leak reduced the feedwater supply to one of four
24 steam generators and rendered the auxiliary feedwater system for Unit 2
25 inoperable. Per the DCPP technical specifications, DCPP operators promptly

⁶ Attachment A, p. 97 of 177.

⁷ Attachment C, p. 3 of 103.

1 maneuvered the plant to Mode 4 to satisfy the technical specification
2 requirements. Further investigation by PG&E personnel determined that the
3 cause of the leak was due to corrosion under insulation of the carbon steel
4 piping, which is partially located in an outside environment susceptible to
5 the general conditions of the maritime location of DCP.

6 As part of the corrective actions taken in response to the event, PG&E
7 personnel conducted a search of relevant operating experience received by
8 the site. It was noted that on May 19, 2009, PG&E received INPO Operating
9 Experience report No. 288818 describing corrosion of carbon steel piping
10 under insulation of a cooling system located in an outside environment at
11 Waterford Steam Electric Station, Unit 3. The report noted three locations of
12 external corrosion (pitting) that exceed over 50 percent of the pipe wall
13 thickness. On April 15, 2010, PG&E received INPO Operating Experience
14 report No. 30955 describing corrosion of carbon steel piping under
15 insulation of a cooling system at the South Texas Project Electric Generating
16 Station, also located outside. The report noted a through-wall leak in a
17 section of system piping. Both reports noted the possibility that uncoated
18 carbon steel piping operating at mild temperatures and subject to outside
19 weather are susceptible to corrosion under insulation. The applicable PG&E
20 operating experience procedure in place at the time, OM4.ID3, "Assessment
21 of Industry Operating Experience," Revision 16, requires that operating
22 experience reports received by the site be screened per applicability per
23 Section 5.3, "Screening and Disseminating OPEX Documents." Section 5.3
24 requires that relevant operating experience is screened by subject matter
25 experts and appropriate corrective actions assigned as appropriate to
26 eliminate vulnerabilities and prevent a similar event from occurring at DCP.
27 Contrary to the requirements of OM4.ID3, upon receipt of the two relevant
28 operating experience reports, PG&E personnel dispositioned the reports
29 without conducting any review of the auxiliary feedwater system or
30 assigning any corrective actions related to the auxiliary feedwater system.⁸

31
32 The NRC's Office of Inspector General conducted an inquiry into the Unit 2 AFW outage,
33 noting that "In the last few years, we reviewed multiple allegations reported to us regarding the
34 NRC's oversight at Diablo Canyon Nuclear Power Plant."⁹ The Inspector General's report

⁸ DIABLO CANYON POWER PLANT, UNITS 1 AND 2 – INTEGRATED INSPECTION REPORT 05000275/2020003 AND 05000323/2020003, October 29, 2020, accessible at <https://www.nrc.gov/docs/ML1923/ML19234A059.pdf>

⁹ Event Inquiry into the Nuclear Regulatory Commission's Oversight of the Auxiliary Feedwater System at Diablo Canyon Nuclear Power Plant, OIG CASE No. 20-025, March 25, 2022, accessible at

1 observed, “According to the NRC’s and licensee’s [i.e., PG&E’s] risk information, the AFW
2 system at DCNPP—one of dozens of systems at DCNPP—is ranked among the top 10 most risk
3 important systems by achievement worth. Achievement worth is the increase in risk if the
4 system were assumed not to be there or failed.”¹⁰ The report stated that PG&E “identified that
5 the AFW piping had long-standing damage to the insulation and its aluminum covering, which
6 allowed moisture and contaminants to be absorbed by the insulation and caused corrosion on
7 the outside of the pipe.”¹¹ The Inspector General concluded,

8 Through this event inquiry, we learned that the NRC did not identify long-
9 degraded insulation that compromised the integrity of the AFW system
10 piping at DCNPP. We also learned that during an April 2020 inspection, the
11 NRC failed to inspect the Unit 2 AFW pipe rack area, where a leak occurred,
12 and that the NRC’s direct-inspection hours during the April 2020 inspection
13 were far fewer than provided for in the applicable inspection procedure.
14 Senior NRC officials acknowledged that the inspections of the AFW system
15 did not meet their expectations, and that the objectives of the NRC’s
16 inspection procedures were not met. Additionally, through this event inquiry
17 we identified other areas of concern that potentially give the appearance of
18 less than optimal regulatory oversight.¹²

19

20 **II. DCNPP UNIT 2 FORCED OUTAGE EVENTS 1, 2, 3, AND 4.**

21 Q09: What sources of problematic vibrations were identified in PG&E’s root cause evaluation
22 of the 2Y22, 2Z22, 2G22, and 2H22 forced outages?

23 A09: As identified in PG&E’s root cause evaluation [REDACTED]

<https://www.oversight.gov/report/NRC/Event-Inquiry-Nuclear-Regulatory-Commission%E2%80%99s-Oversight-Auxiliary-Feedwater-System- Diablo>

¹⁰ *Id.*, p. 3.

¹¹ *Id.*, p. 2.

¹² *Id.*, p. 11.

1 [REDACTED]

2 [REDACTED]

3 [REDACTED]
4 [REDACTED]
5 [REDACTED]
6 [REDACTED]
7 [REDACTED]
8 [REDACTED]
9 [REDACTED]
10 [REDACTED]
11 [REDACTED]
12 [REDACTED]
13 [REDACTED]
14 [REDACTED]
15 [REDACTED]
16 [REDACTED]
17 [REDACTED]
18 [REDACTED]

19 [REDACTED]
20 [REDACTED]
21 [REDACTED]
22 [REDACTED]
23 [REDACTED]
24 [REDACTED]
25 [REDACTED]

26 [REDACTED]
27 [REDACTED]
28 [REDACTED]
29 [REDACTED]
30 [REDACTED]
31 [REDACTED]
32 [REDACTED]
33 [REDACTED]
34 [REDACTED] 13

35

¹³ *Id.*, p. 13 of 177.

1 Q10: How did PG&E's root cause evaluation of outages 2Y22, 2Z22, 2G22, and 2H22 describe
2 resonant frequency and magnetic forcing frequency?

3 A10: The PG&E root cause evaluation [redacted]
4 [redacted] as follows:

5 [redacted]
6 [redacted]
7 [redacted]
8 [redacted]

9 [redacted]
10 [redacted]
11 [redacted]
12 [redacted]

13 [redacted]
14 [redacted]
15 [redacted]
16 [redacted]
17 [redacted]
18 [redacted]
19 [redacted]
20 [redacted]
21 [redacted]
22 [redacted]
23 [redacted]
24 [redacted]

25 [redacted]
26 [redacted]
27 [redacted]
28 [redacted]

29 [redacted]
30 [redacted]
31 [redacted]
32 [redacted]
33 [redacted]

¹⁴

¹⁴ *Id.*, p. 21 of 177.

1 Q11: Did the PG&E root cause evaluation of these four outages identify any pre-R21 (i.e., pre-
2 rebuild) concerns with excessive vibrations in the Unit 2 main generator?

3 A11: [REDACTED]

4 [REDACTED]

5 [REDACTED]¹⁵ [REDACTED]

6 [REDACTED]¹⁶ Among the issues PG&E had earlier identified in assessing
7 the need to rebuild the Unit 2 generator: [REDACTED]

8 [REDACTED]

9 [REDACTED] [REDACTED]

10 [REDACTED]

11 [REDACTED]

12 [REDACTED]¹⁸

13 According to the root cause evaluation,

14 [REDACTED]
15 [REDACTED]
16 [REDACTED]
17 [REDACTED]
18 [REDACTED]
19 [REDACTED]
20 [REDACTED]¹⁹

21

¹⁵ *Id.*, p. 19 of 177.

¹⁶ *Id.*, p. 6 of 177.

¹⁷ *Id.*, p. 20 of 177.

¹⁸ *Id.*, p. 137 of 177.

¹⁹ *Id.*, p. 51 of 177.

1 The root cause evaluation cited the [REDACTED]

2 [REDACTED]

3 [REDACTED]
4 [REDACTED]
5 [REDACTED]
6 [REDACTED]

7 [REDACTED]
8 [REDACTED]
9 [REDACTED]
10 [REDACTED]
11 [REDACTED]
12 [REDACTED]
13 [REDACTED]

14 [REDACTED]
15 [REDACTED]

16 [REDACTED]
17 [REDACTED]

²⁰

18
19 However, the root cause evaluation indicated, [REDACTED]

20 [REDACTED]

21 [REDACTED]²¹

22 Q12: What review did the root cause evaluation conduct of the applicable contract
23 specifications?

24 A12: According to the root cause evaluation,

25 [REDACTED]
26 [REDACTED]
27 [REDACTED]
28 [REDACTED]

²⁰ *Id.*, p. 138 of 177.

²¹ *Id.*, p. 27 of 177.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33

[Redacted]

[Redacted]

[Redacted]

²²

Q13: What non-conformance or deviation issues did this review of contract specifications identify?

A13: According to the root cause evaluation,

[Redacted]

²² *Id.*, p. 28 of 177.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40

[Redacted text block]

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41

[Redacted text block 1]

[Redacted text block 2]

[Redacted text block 3]

[Redacted text block 4]

[Redacted text block 5]

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39

[Redacted text block 1]

[Redacted text block 2]

[Redacted text block 3]

[Redacted text block 4]

²³

²³ *Id.*, pp. 28 of 177 – 30 of 177. Italics and underlines in original.

1 Q14: What conclusions did the root cause evaluation draw from its review of applicable
2 contract specifications?

3 A14: According to the root cause evaluation,

4 [REDACTED]
5 [REDACTED]
6 [REDACTED]
7 [REDACTED]
8 [REDACTED]
9 [REDACTED]
10 [REDACTED]
11 [REDACTED]
12 [REDACTED]
13 [REDACTED]
14 [REDACTED]
15 [REDACTED]
16 [REDACTED]
17 [REDACTED]
18 [REDACTED]
19 [REDACTED]

²⁴

20 Q15: How did the root cause evaluation assess PG&E's owner acceptance process for the
21 rebuild project?

22 A15: According to the root cause evaluation,

23 [REDACTED]
24 [REDACTED]
25 [REDACTED]
26 [REDACTED]
27 [REDACTED]
28 [REDACTED]
29 [REDACTED]
30 [REDACTED]
31 [REDACTED]
32 [REDACTED]
33 [REDACTED]
34 [REDACTED]
35 [REDACTED]

²⁴ *Id.*, p. 30 of 177. Italics in original.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43

[Redacted text block 1]

[Redacted text block 2]

[Redacted text block 3]

[Redacted text block 4]

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38

[Redacted text block]

²⁵

39 Q16: What explanation did the root cause evaluation provide for the three SCCW manifold
40 vibration generated failures?

²⁵*Id.*, pp. 42 of 177 – 43 of 177. Italics in original.

1 A16: According to the root cause evaluation,

2 [Redacted]

3 [Redacted]

4 [Redacted]

5 [Redacted]

6 [Redacted]

f

²⁶

²⁶ *Id.*, pp. 85 of 177 – 86 of 177. Underline in original.

1 Q17: How did the root cause evaluation describe PG&E's and Siemens' understanding of
2 design aspects of the Unit 2 Main Generator frame vibrations prior to 2R22?

3 A17: According to the root cause evaluation,

4 [Redacted]
5 [Redacted]
6 [Redacted]
7 [Redacted]
8 [Redacted]
9 [Redacted]
10 [Redacted] ²⁷

11 [Redacted]
12 [Redacted]
13 [Redacted]
14 [Redacted]
15 [Redacted]
16 [Redacted]

17 [Redacted]
18 [Redacted]
19 [Redacted]
20 [Redacted]
21 [Redacted]
22 [Redacted]

23 [Redacted]
24 [Redacted]
25 [Redacted]
26 [Redacted]
27 [Redacted]
28 [Redacted] ²⁸

29 [Redacted]
30 [Redacted]
31 [Redacted]
32 [Redacted]
33 [Redacted]
34 [Redacted]
35 [Redacted]
36 [Redacted]
37 [Redacted]
38 [Redacted]

²⁷ *Id.*, p. 89 of 177.

²⁸ *Id.*, p. 90 of 177. Italics and boldface type in original.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37

[Redacted text block]

²⁹

[Redacted text block]

³⁰

Q18: What conclusions did the root cause evaluation draw from its review of past Unit 2 outage reports?

A18: According to the root cause evaluation,

[Redacted text block]

³¹

²⁹ *Id.*, p. 91 of 177.
³⁰ *Id.*, p. 92 of 177.
³¹ *Id.*, pp. 147 of 177 – 148 of 177. Italics in original.


1
2 Q19: How did the root cause evaluation describe Siemens' testing deficiencies related to the
3 high end-winding vibrations?

4 A19: According to the root cause evaluation,

5
6
7
8
9
10
11
12
13
14
15
16

A large rectangular area of the document is redacted with a solid black fill, covering approximately 10 lines of text.

17
18
19
20
21
22
23
24
25
26
27
28
29

A second large rectangular area of the document is redacted with a solid black fill, covering approximately 10 lines of text.

30 ³²

31
32
33 Q20: How did the root cause evaluation apply PG&E's Organizational Learning Tool in
34 assessing causation of these four outages (i.e., 2Y22, 2Z22, 2G22, and 2H22)?

35 A20: According to the root cause evaluation,

³² *Id.*, pp. 100 of 177 – 101 of 177.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44

[Redacted text block 1]

[Redacted text block 2]

[Redacted text block 3]

[Redacted text block 4]

rallel

[Redacted text block 5]

[Redacted text block 6]

[Redacted text block 7]

[Redacted text block 8]

[Redacted text block 9]

1
2
3
4
5
6
7

[Redacted]

³³

8 Q21: What opportunities for improvement did the application of PG&E's Organizational
9 Learning Tool identify?

10 A21: According to the root cause evaluation,

11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38

[Redacted]

³³ *Id.*, pp. 40 of 177 – 41 of 177.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37

[Redacted]

³⁴

Q22: What guidance has been issued by INPO (i.e., the Institute of Nuclear Power Operations) that the root cause evaluation identified as applicable to the Unit 2 Main Generator rebuild?

A22: The root cause evaluation identified [Redacted], and summarized the [Redacted] as follows:

[Redacted]

³⁴ *Id.*, pp. 120 of 177 – 121 of 177. Italics and boldface type in original.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40

[REDACTED]

³⁵

With respect to the [REDACTED] deemed applicable, the root cause evaluation summarized [REDACTED] as follows:

[REDACTED]

³⁵ *Id.*, pp. 156 of 177 – 157 of 177. Italics and underline in original.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44

[Redacted text block 1]

[Redacted text block 2]

[Redacted text block 3]

[Redacted text block 4]

[Redacted text block 5]

[Redacted text block 6]

[Redacted text block 7]

[Redacted text block 8]

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43

[Redacted text block 1]

[Redacted text block 2]

[Redacted text block 3]

[Redacted text block 4]

[Redacted text block 5]

[Redacted text block 6]

[Redacted text block 7]

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44

[Redacted text block 1]

[Redacted text block 2]

[Redacted text block 3]

[Redacted text block 4]

[Redacted text block 5]

[Redacted text block 6]

[Redacted text block 7]

he
are

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40

[Redacted text block]

³⁶

Q23: What explanation did PG&E provide for its management of the Unit 2 rebuild project?

A23: According to the root cause evaluation,

[Redacted text block]

[Redacted text block]

[Redacted text block]

[Redacted text block]

³⁶ *Id.*, pp. 157 of 177 – 159 of 177. Italics and underline in original.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44

[Redacted text block 1]

[Redacted text block 2]

[Redacted text block 3]

[Redacted text block 4]

[Redacted text block 5]

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44

[Redacted text block 1]

[Redacted text block 2]

[Redacted text block 3]

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35

[Redacted]

[Redacted]

[Redacted]

[Redacted]

³⁷

III. DCNPP UNIT 2 FORCED OUTAGE EVENT 5.

Q24: How did PG&E’s investigation, labeled a [Redacted]

[Redacted] describe the

circumstances which caused Unit 2 to be taken offline on April 19, 2021?

A24: According to the cause evaluation,

[Redacted]

[Redacted]

³⁷ *Id.*, pp. 154 of 177 – 156 of 177. Italics in original.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41

[Redacted text block 1]

[Redacted text block 2]

[Redacted text block 3]

[Redacted text block 4]

[Redacted text block 5]

[Redacted text block 6]

[Redacted text block 7]

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30

[Redacted text block]

³⁸

Q25: How did PG&E’s cause evaluation characterize the hose installation error?

A25: According to the cause evaluation,

[Redacted text block]

³⁹

Q26: How did PG&E’s cause evaluation summarize its findings?

A26: According to the cause evaluation,

³⁸ Attachment B, pp. 8 – 9.
³⁹ *Id.*, p. 4. Boldface type in original.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44

[Redacted text block]

DCPP corrective actions (CA):

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37

[REDACTED]

⁴⁰

Q27: Did PG&E's cause evaluation distinguish between those causes that could have prevented the error and those that could have detected it?

A27: [REDACTED] according to the cause evaluation,

[REDACTED]

uses

⁴⁰ *Id.*, pp. 3 – 4.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38

[Redacted text block]

Q28: In analyzing the various things that went wrong, what did PG&E's cause evaluation identify as things that should have happened?

A28: According to the entries in the [Redacted] comprising the last three pages of PG&E's cause evaluation:

[Redacted text block]

⁴¹ *Id.*, p. 20.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43

[Redacted text block]

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44

[Redacted text block]

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38

[REDACTED]

Q29: Did the cause evaluation's application of the Organizational Learning Tool identify deficiencies in the processes followed by Siemens and PG&E?

A29: [REDACTED] the cause evaluation answered the following questions about such deficiencies in the [REDACTED]

⁴² *Id.*, pp. 54 – 56 of pdf. Underlining added to denote column headings.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

⁴³

[Redacted]

[Redacted]

⁴⁴

[Redacted]

⁴³ *Id.*, p. 40. Boldface type and italics in original.

⁴⁴ *Id.*, p. 41. Boldface type and italics in original.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41

[Redacted text block]

⁴⁵

[Redacted text block]

[Redacted text block]

[Redacted text block]

[Redacted text block]

[Redacted text block]

⁴⁶

[Redacted text block]

[Redacted text block]

[Redacted text block]

⁴⁵ *Id.*, pp. 41 – 42. Boldface type and italics in original.
⁴⁶ *Id.*, p. 43. Boldface type and italics in original.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41

[Redacted text block 1]

[Redacted text block 2]

⁴⁷

[Redacted text block 3]

[Redacted text block 4]

[Redacted text block 5]

⁴⁸

[Redacted text block 6]

[Redacted text block 7]

[Redacted text block 8]

ave

[Redacted text block 9]

[Redacted text block 10]

⁴⁷ *Id.*, p. 44. Boldface type and italics in original.
⁴⁸ *Id.*

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35

[Redacted text block]

⁴⁹

[Redacted text block]

[Redacted text block]

[Redacted text block]

[Redacted text block]

⁵⁰

[Redacted text block]

[Redacted text block]

[Redacted text block]

⁵¹

[Redacted text block]

[Redacted text block]

[Redacted text block]

⁴⁹ *Id.*, p. 46. Boldface type and italics in original.

⁵⁰ *Id.*

⁵¹ *Id.*, p. 46. Boldface type and italics in original. The question posed in

[Redacted text block] was, [Redacted text block]
[Redacted text block] PG&E's answer was in the [Redacted text block], with the elaboration,
[Redacted text block]

Id., p. 47.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29

[Redacted]

⁵²

IV. DCNPP UNIT 2 FORCED OUTAGE EVENT 6.

Q30: How did PG&E’s root cause evaluation of forced outage 2Y23 describe the causes of the severe heat exchanger tube failure in Unit 2 Feedwater Heater (“FWH”) 2-5B?

A30: According to the root cause evaluation, [Redacted]

[Redacted]

[Redacted] ⁵³ Instead,

the [Redacted] was identified as

[Redacted]

⁵⁴

Q31: Did PG&E’s root cause evaluation identify any other causes of forced outage 2Y23?

⁵² *Id.*, p. 50. Boldface type and italics in original.
⁵³ Attachment C, p. 5 of 103.
⁵⁴ *Id.*, pp. 5 of 103 – 6 of 103.

1 A31: Yes, according to the root cause evaluation, there were [REDACTED]:

2 [REDACTED]
3 [REDACTED]
4 [REDACTED]
5 [REDACTED]
6 [REDACTED]
7 [REDACTED]
8 [REDACTED]
9 [REDACTED]
10 [REDACTED]
11 [REDACTED]
12 [REDACTED]
13 [REDACTED]
14 [REDACTED]
15 [REDACTED]
16 [REDACTED]⁵⁵

17
18 Q32: How did PG&E's root cause evaluation of forced outage 2Y23 describe the inspection
19 and testing history of FWH 2-5B?

20 A32: According to the root cause evaluation,

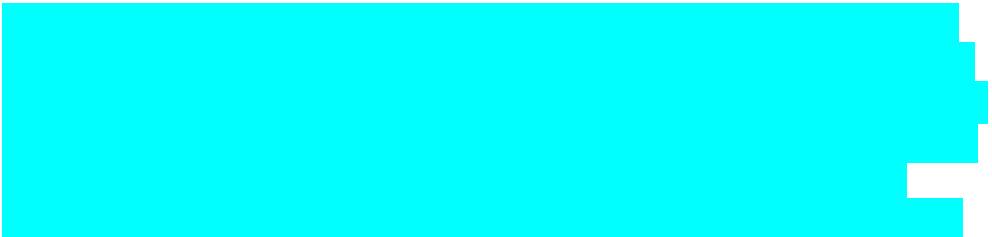
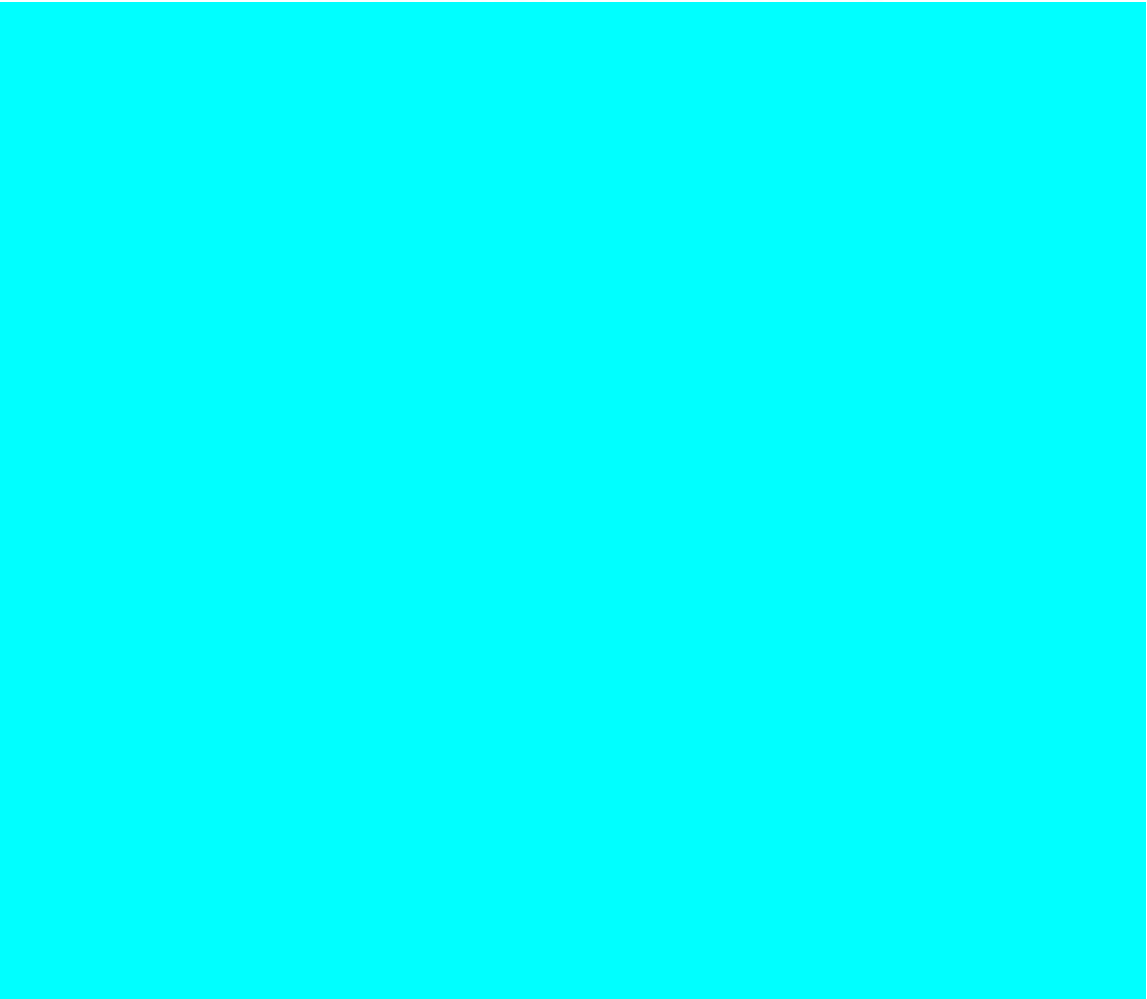
21 [REDACTED]
22 [REDACTED]
23 [REDACTED]
24 [REDACTED]
25 [REDACTED]
26 [REDACTED]
27 [REDACTED]
28 [REDACTED]
29 [REDACTED]
30 [REDACTED]

⁵⁵ *Id.*, p. 6 of 103. Boldface type in original.

1
2
3
4
5
6
7
8
9



10
11
12
13
14
15
16
17
18
19



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

[Redacted]

⁵⁶

Q33: How many FWH 2-5B tubes were preventatively plugged in 2013 during 2R17?

A33: Based upon [Redacted] in PG&E's root cause evaluation, which is reproduced in A32 above,

[Redacted]

[Redacted]

[Redacted] ⁵⁷

Q34: How many FWH 2-5B tubes were identified in 2016 during 2R19 as exhibiting baffle wastage?

A34: Based upon [Redacted] in PG&E's root cause evaluation, which is reproduced in A32 above,

[Redacted]

Q35: How many FWH 2-5B tubes did PG&E determine in 2Y23 had been sufficiently damaged to require plugging?

A35: According to PG&E's root cause evaluation of 2Y23, [Redacted]

[Redacted]

⁵⁶ *Id.*, pp. 15 of 103 – 16 of 103.
⁵⁷ *Id.*, p. 50 of pdf.

1 [REDACTED]

2 [REDACTED] 58

3 Q36: How did PG&E's root cause evaluation characterize the change in baffle plate wastage
4 between 2R19 and 2Y23?

5 A36: According to PG&E's root cause evaluation of 2Y23, [REDACTED]

6 [REDACTED] 59

7 Q37: How does PG&E describe the purpose of its Organizational Learning Tool?

8 A37: According to PG&E's root cause evaluation of 2Y23, [REDACTED]

9 [REDACTED] ker

10 [REDACTED] 60

11 Q38: How did the PG&E root cause evaluation's application of the Organizational Learning
12 Tool assess causation of the 2Y23 forced outage?

13 A38: Application of the Organizational Learning Tool produced the following assessment of
14 2Y23 causation:

15 [REDACTED]

16 [REDACTED]
17 [REDACTED]
18 [REDACTED]
19 [REDACTED]
20 [REDACTED]
21 [REDACTED]

⁵⁸ *Id.*, p. 24 of 103.

⁵⁹ *Id.*, p. 17 of 103.

⁶⁰ *Id.*, p. 65 of 103.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36

[Redacted text block]

[Redacted text block]

[Redacted text block]

[Redacted text block]

61

37 Q39: Did PG&E's root cause evaluation of 2Y23 identify any safety culture issues as causal?

⁶¹ *Id.*, p. 78 of 103.

1 A39: [REDACTED]

2 [REDACTED]

3 [REDACTED] in PG&E's root cause evaluation.⁶² As explained in the root cause

4 evaluation's barrier analysis,

5 [REDACTED]

6 [REDACTED]

7 [REDACTED]

8 [REDACTED]

9 [REDACTED]

10 [REDACTED]

11 [REDACTED]

12 [REDACTED]

13 [REDACTED]⁶³

14

15 Q40: Beside the PG&E [REDACTED], did the 2Y23 root cause evaluation's

16 barrier analysis identify any other deficient barriers?

17 A40: [REDACTED] according to PG&E's root cause evaluation of 2Y23,

18 [REDACTED]

19 [REDACTED]

20 [REDACTED]

21 [REDACTED]

22 [REDACTED]

23 [REDACTED]

24 [REDACTED]⁶⁴

25

26 Q41: Notwithstanding the root cause evaluation's characterization of [REDACTED]

27 [REDACTED] prior to Forced Outage Event 6 had PG&E received external subject matter

⁶² *Id.*, p. 90 of 103.
⁶³ *Id.*, p. 60 of 103.
⁶⁴ *Id.*, p. 24 of 103.

1 expert advice on the relationship between damage to drain cooler shrouds and the risks of
2 accelerated tube vibration and failure?

3 A41: [REDACTED]
4 [REDACTED]⁶⁵ contained an
5 [REDACTED] and recommended a [REDACTED]
6 [REDACTED]

7 [REDACTED]
8 [REDACTED]
9 [REDACTED]
10 [REDACTED]
11 [REDACTED]
12 [REDACTED]
13 [REDACTED]
14 [REDACTED]
15 [REDACTED]
16 [REDACTED]⁶⁶

17
18 Q42: What corrective actions did PG&E's root cause evaluation of 2Y23 recommend?

19 A42: [REDACTED]
20 [REDACTED]
21 [REDACTED]
22 [REDACTED]
23 [REDACTED]⁶⁷
24 [REDACTED]
25 [REDACTED]
26 [REDACTED]⁶⁸
27 [REDACTED]
28 [REDACTED]
29 [REDACTED]

⁶⁵ ERRA-2021-PGE-Compliance_DR_A4NR_003-Q001Atch01b-CONF.

⁶⁶ *Id.*, p. 50 of 146.

⁶⁷ Attachment C, p. 148 of pdf.

⁶⁸ *Id.*, p. 150 of pdf.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

[Redacted]
[Redacted]
[Redacted]
[Redacted] 69

[Redacted]
[Redacted]
[Redacted]
[Redacted] 70

[Redacted]
[Redacted]
[Redacted]
[Redacted] 71

[Redacted]
[Redacted]
[Redacted] 72

[Redacted]
[Redacted]
[Redacted]
[Redacted] 73

Q43: To what extent were costs of FWH repair or replacement identified in PG&E's 2Y23 root cause evaluation as a constraint to future actions?

A43: [Redacted]

[Redacted]

⁶⁹ *Id.*, p. 151 of pdf.
⁷⁰ *Id.*, p. 153 of pdf.
⁷¹ *Id.*, p. 155 of pdf.
⁷² *Id.*, p. 157 of pdf.
⁷³ *Id.*, p. 158 of pdf.

1 [REDACTED]

2 [REDACTED] ⁷⁴

3 **V. RECOMMENDATIONS.**

4 Q44: What is your recommendation with respect to DCNPP Unit 2 Forced Outage Events 1, 2,
5 3, and 4?

6 A44: Based upon PG&E's calculation of replacement power costs,⁷⁵ I recommend a
7 disallowance of \$146,743,856 (with \$12,276,673 attributable to Forced Outage Event 1;
8 \$49,326,713 attributable to Forced Outage Event 2; \$41,932,354 attributable to Forced Outage
9 Event 3; and \$43,208,116 attributable to Forced Outage Event 4). PG&E's root cause evaluation
10 of these four outages found that [REDACTED]

11 [REDACTED]

12 [REDACTED]

13 [REDACTED]

14 [REDACTED]

15 [REDACTED]

16 [REDACTED]

17 [REDACTED]

18 Q45: What is your recommendation with respect to DCNPP Unit 2 Forced Outage Event 5?

⁷⁴*Id.*, p. 100 of 103.

⁷⁵ ERRR-2021-PGE-Compliance_DR_A4NR_002-Q003, p. 1.

1 A45: Based upon PG&E's calculation of replacement power costs,⁷⁶ I recommend a
2 disallowance of \$3,754,147. PG&E's cause evaluation of this outage found that [REDACTED]

3 [REDACTED]
4 [REDACTED]
5 [REDACTED]
6 [REDACTED]
7 [REDACTED]
8 [REDACTED]
9 [REDACTED]
10 [REDACTED]
11 [REDACTED]

12 Q46: What is your recommendation with respect to DCNPP Unit 2 Forced Outage Event 6?

13 A46: Based upon PG&E's calculation of replacement power costs,⁷⁷ I recommend a
14 disallowance of \$28,070,513. PG&E's root cause evaluation of this outage found that [REDACTED]

15 [REDACTED]
16 [REDACTED]
17 [REDACTED]
18 [REDACTED]

19 Q47: What is the cumulative total of your recommended disallowances?

20 A47: \$178,568,516.

⁷⁶ *Id.*

⁷⁷ *Id.*

APPENDIX: QUALIFICATIONS OF JOHN GEESMAN

John L. Geesman is an attorney with the law firm, Dickson Geesman LLP, and a member in good standing of the California State Bar.

Mr. Geesman served as a member of the California Energy Commission from 2002 to 2008, and was the agency's Executive Director from 1979 to 1983. While a Commissioner, he chaired the Commission's Facilities Siting Committee during a period when nearly two dozen new power plants were approved for construction. Between his two tours at the Energy Commission, Mr. Geesman spent nineteen years as an investment banker focused on the U.S. bond markets and served as a financial advisor to municipal electric utilities throughout the western states.

Mr. Geesman has a long history of engagement with issues related to regulatory compliance, resource planning, environmental policy, financial management, and risk practices. This is demonstrated by his service in numerous leadership capacities, including stints as:

- Co-Chair of the American Council on Renewable Energy;
- Chairman of the California Power Exchange;
- President of the Board of Directors of The Utility Reform Network (nee Toward Utility Rate Normalization);
- Member of the Governing Board of the California Independent System Operator; and,
- Chairman of the California Managed Risk Medical Insurance Board.

Mr. Geesman has testified as an expert witness before the California Public Utilities Commission on many occasions. He is a graduate of Yale College and the University of California Berkeley School of Law.

Attachment A



This Attachment is comprised entirely of protected materials subject to a nondisclosure agreement between PG&E and A4NR. In accordance with the Notice of Availability served by A4NR on October 31, 2022 to the official service list for A.22-02-015, A4NR will provide an electronic copy of Attachment A to any individual on the service list eligible under the nondisclosure agreement to receive confidential materials in this proceeding.

Attachment B



This Attachment is comprised entirely of protected materials subject to a nondisclosure agreement between PG&E and A4NR. In accordance with the Notice of Availability served by A4NR on October 31, 2022 to the official service list for A.22-02-015, A4NR will provide an electronic copy of Attachment B to any individual on the service list eligible under the nondisclosure agreement to receive confidential materials in this proceeding.

Attachment C



This Attachment is comprised entirely of protected materials subject to a nondisclosure agreement between PG&E and A4NR. In accordance with the Notice of Availability served by A4NR on October 31, 2022 to the official service list for A.22-02-015, A4NR will provide an electronic copy of Attachment C to any individual on the service list eligible under the nondisclosure agreement to receive confidential materials in this proceeding.