I. INTRODUCTION AND SUMMARY

Pursuant to 10 C.F.R. § 2.309 and Section 189a of the Atomic Energy Act, San Luis Obispo Mothers for Peace ("SLOMFP") and Friends of the Earth ("FoE") (hereinafter "Petitioners") request the Commissioners of the U.S. Nuclear Regulatory Commission ("NRC" or "Commission") to convene a hearing on a license amendment effectively issued by the NRC staff to Pacific Gas and Electric Co. ("PG&E") by letter of July 20, 2003, extending the schedule for conducting surveillance of the Diablo Canyon Unit 1 pressure vessel until 2025.[1]

As demonstrated in the attached supporting expert declaration of Dr. Digby Macdonald, the extension is unjustified and poses an unreasonable risk to public health and safety in light of data from 2003 tests of surveillance capsules installed in the Unit 1 pressure vessel indicating that Unit 1 would approach embrittlement criteria in 10 C.F.R. § 50.61(b) by the end of the initial

[1] Letter from Jennifer L Dixon-Herrity, NRC to Paula Gerfen, PG&E re: Diablo Canyon Nuclear Power Plant, Unit 1 – Revision to the Reactor Vessel Material Surveillance Capsule Withdrawal Schedule (EPID L-2023-LLL-0012) ("NRC 7/20/23 Extension Decision") (ADAMS Accession No. ML120330497).

The 7/20/23 Extension Decision approves a schedule under which PG&E would withdraw "Capsule B" from the Unit 1 pressure vessel either during the upcoming 24th refueling outage ("1R24") in October 2023 or the 25th refueling outage in the spring of 2025 (1R25). *Id.,* enclosed Safety Evaluation at 4-5. *See also* PG&E Letter DCL-23-038 from Paula Gerfen to NRC re: Docket No. 50-275, OL-DPR-80, Diablo Canyon Unit 1, Revision to the Unit 1 Reactor Vessel Material Surveillance Program Withdrawal Schedule at 2 and Table 5.2-22 (May 15, 2023) ("PG&E Letter DCL-23-038") (ADAMS Accession No. ML23135A217).

operating license term.[2] PG&E incorrectly discarded these data as "not credible."[3] In addition, Dr. Macdonald's own separate and independent analysis of a different set of 2003 surveillance data, deemed credible by PG&E, shows that the Unit 1 pressure vessel could reach an unacceptable level of embrittlement relatively early in the license renewal term (43.8 effective full power years ("EFPY") with an estimated uncertainty of ± 10 EFPY).[4] Taking into account the level of uncertainty of ± 10 EFPY, an unacceptable degree of embrittlement could be reached as early as 33.8 EFPY, or late 2023.[5]

These indications of embrittlement should have caused PG&E to seek additional data for an adequate understanding of the condition of the pressure vessel. Instead, over the past twenty years, PG&E has repeatedly postponed additional surveillance and testing of the pressure vessel such that withdrawal and testing of "Capsule B" coupons is now delayed from 2009 to potentially 2025 and ultrasound inspection of reactor beltline welds is now delayed from 2015 to 2025.[6] As stated by Dr. Macdonald, PG&E's decades of neglect, coupled with serious

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[2] Attachment 1, Declaration of Digby Macdonald, Ph.D in Support of Hearing Request and Request for Emergency Action, § V.A.1 ¶ 1 (September 14, 2023) ("Macdonald Declaration") (quoting PG&E Letter DCL-03-052 from David H. Oatley to NRC re: Diablo Canyon Reactor Vessel Material Surveillance Program Capsule V Technical Report (May 13, 2003) ("PG&E Letter DCL-03-052") (ADAMS Accession No. ML14230A618)).

Dr. Macdonald is Professor in Residence at the University of California at Berkeley in the Departments of Nuclear Engineering and Materials Science and Engineering and an expert in electrochemistry, thermodynamics and corrosion science, including corrosion cracking and fatigue in nuclear reactor materials. He has been nominated for a Nobel Prize for his work on the phenomenon of passivity in metals and was recently nominated for the prestigious Enrico Fermi Award for introducing electrochemistry into describing corrosion phenomena in the primary coolant system of light water reactors.

[3] *Id.,* § V.A.1.

[4] *Id.,* § V.A.2.

[5] *See* PG&E Letter DCL-23-038, Table 4, which states that IR24 (October 2024) will occur at 33.58 EFPY and IR25 (spring 2025) will occur at 34.97 EFPY.

[6] Macdonald Declaration, § V.D.

indications of embrittlement, render Unit 1 unsafe to operate.[7] Petitioners seek a hearing on the serious safety and regulatory issues raised by PG&E's and the Staff's decades of neglect.[8]

The safety concerns raised by Dr. Macdonald and by this Petition are extremely grave, given the status of the reactor vessel as "perhaps the most important single component in the reactor coolant system."[9] As the receptacle that maintains cooling water on the highly radioactive core without any redundant backup, the pressure vessel must be protected against the risk of fracture and failure, which could lead to core melt and catastrophic consequences. The risk is all the greater because Diablo Canyon is located in a high-seismicity zone.[10] And the safety and regulatory issues raised by Dr. Macdonald go to a comprehensive failure by PG&E and the Staff, on multiple fronts, to monitor and respond to the development of embrittlement in the Unit 1 vessel.

Accordingly, in addition to demanding the hearing to which they are entitled, Petitioners request the Commissioners to exercise their discretionary supervisory jurisdiction to order the immediate closure of Diablo Canyon pending the completion of a series of remedial actions.[11]

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[7] Macdonald Declaration, § III, ¶ 11; § VI.

[8] Pursuant to 10 C.F.R. 2.309(b)(4)(ii), a hearing request must be submitted "not later than the latest of . . . [s]ixty (60) days after the requestor receives actual notice of a pending application, but not more than sixty (60) days after agency action on the application." This hearing request is timely because it is being submitted within 60 days of receiving notice of the NRC's 7/20/23 Extension Order.

[9] Final Rule, Fracture Toughness Requirements for Light Water Reactor Pressure Vessels, 60 Fed. Reg. 65,456, 65,457 (Dec. 19, 1995) ("RPV Rule"). *See also* Macdonald Declaration, § IV.A.

[10] Macdonald Declaration, § IV.

[11] As discussed in Section VII.A below, these circumstances pose the safety and regulatory significance previously recognized by the Commissioners as warranting their supervisory involvement. *See Yankee Atomic Electric Co.* (Yankee Rowe Nuclear Power Station), CLI-91-11, 34 N.R.C. 3, 12 (1991) ("*Yankee Rowe*") (exercising supervisory review over safety and regulatory issues relating to the condition of the Yankee Rowe pressure vessel).

These actions include comprehensive testing and inspection of the Unit 1 reactor vessel, including removal and testing of all coupons in Capsule B and other capsules that PG&E has removed since 2003; a comprehensive ultrasound inspection of the reactor beltline welds; and nano-indentation tests as advised by Dr. Macdonald in Section V.E of his declaration. In addition, all test results should be provided to the NRC, the Advisory Committee on Reactor Safeguards, and the public; and finally, a public hearing should be held before Unit 1 is allowed to resume operation.

Due to the gravity of the safety and environmental risks presented by PG&E's and the Staff's failure to provide adequate care or oversight of the Unit 1 pressure vessel, Petitioners seek expedited consideration of their claims on an emergency basis. Petitioners also note that prompt consideration is warranted by the fact that PG&E is scheduled to begin a maintenance outage next month in October. Using a scheduled shutdown to address significant safety issues regarding the pressure vessel, and maintaining the shutdown until the issues are resolved, is consistent with the approach taken by the Commissioners in the *Yankee Rowe* proceeding, *see* 34 N.R.C. at 17-19.

II. DESCRIPTION OF PETITIONERS

Petitioners are non-profit organizations with a longstanding record of concern about the safety and economic viability of the Diablo Canyon reactors. They seek a hearing in order to ensure that the safety of operating Unit 1 is not jeopardized by a delay in PG&E's schedule for removing and testing samples from the Unit 1 pressure vessel.

Located in San Luis Obispo, California, SLOMFP is a non-profit membership organization concerned with the dangers posed by Diablo Canyon and other nuclear reactors, nuclear weapons, and radioactive waste. SLOMFP also works to promote peace, environmental

and social justice, and renewable energy. SLOMFP has participated in NRC licensing cases involving the Diablo Canyon reactors since 1973.

FoE is a tax exempt, nonprofit environmental advocacy organization dedicated to improving the environment and creating a more healthy and just world.[12] The organization was founded in 1969 by David Brower in part to protest safety- and environmental issues at the newly emerging Diablo Canyon. FoE has more than 244,600 members in all 50 states and the District of Columbia, approximately 35,500 of whom are in California. In addition to formal members, FoE has more than 6.6 million online activist supporters across the country. FoE also has office space in Berkeley, California.

Together, SLOMFP and FoE have many members who live, work, and own property within 50 miles of the Diablo Canyon reactors. Their health and safety, and the health of their environment, could be catastrophically damaged by an accident at the Diablo Canyon reactors. They are concerned that the extension of PG&E's schedule for removing and testing the "Capsule B" samples from the Unit 1 reactor vessel will deprive PG&E and the NRC of information that is necessary to determine whether Unit 1 can be operated safely. They are also concerned that PG&E has failed to collect any data on the condition of the Unit 1 pressure vessel for the past twenty years. Therefore, as stated in the attached declarations of SLOMFP and FoE members Kaoru Hisasue, Lucy Jane Swanson, and Jill ZamEk, they have authorized SLOMFP to request a hearing on the 7/20/23 Extension Decision, an order by the Commissioners to close Unit 1, and a range of remedial actions to ensure that Unit 1 will be not be allowed to re-open

[12] Friends of the Earth is a part of Friends of the Earth International, a federation of grassroots groups working in 74 countries on today's most urgent environmental and social issues. Friends of the Earth International is the world's largest grassroots environmental federation.

without a comprehensive set of tests and inspections of its condition that is subject to full transparency and a public hearing.[13]

III. BACKGROUND

A. Role and Importance of the Reactor Vessel

At Diablo Canyon and other pressurized water reactors, the reactor fuel core is contained within the pressure vessel, a massive steel structure approximately 30 feet tall and ten feet in diameter, with a wall thickness of approximately 10 inches. The pressure vessel is normally completely filled with water to keep the core covered, and is kept under pressure to prevent the cooling water from boiling at the high temperatures under which the reactor is operated. During normal operation, the pressure vessel is heated to approximately 500 ^{o}F by the water entering the vessel.[14]

The reactor pressure vessel, together with the reactor coolant piping connected to it, form the reactor coolant pressure boundary which holds the reactor cooling water. Reactor cooling water must be kept on the core at all times to prevent the core from overheating and possibly melting down even during shutdown because of the decay heat from the spontaneous decay of unstable isotopes. The melting of the core, should it occur, could release a large quantity of radioactivity into the reactor's containment. Should the containment building also fail, this would probably result in the release of lethal levels radiation outside the plant, as occurred at Chernobyl, for example.[15]

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[13] *See* Attachment 2A, Declaration of Kaoru Hisasue (Sept. 7, 2023); Attachment 2B, Declaration of Lucy Jane Swanson (Sept. 9, 2023); and Attachment 2C, Declaration of Jill ZamEk (Sept. 8, 2023).

[14] Macdonald Declaration*.,* § IV.A.

[15] *Id.*

Unlike most other reactor safety components, the pressure vessel has no redundant and independent backup system that can be called upon if it should crack or fracture and lose essential cooling water. In the event of water loss from the pressure vessel that uncovered the reactor core, a nuclear meltdown may occur.[16]

B. Pressurized thermal shock

Pressurized thermal shock ("PTS") is a reactor pressure vessel condition that can occur during an accident when high pressure combines with sudden decrease in temperature. If core cooling water is lost during a break in the pressure boundary, a loss of coolant accident ("LOCA") may occur. In response to such an event, cooling water is pumped into the vessel. The rapid decrease in the temperature at the vessel wall compared with that further into the wall generates thermal stresses, which together with the stresses induced by the operating pressure of the reactor such that the stress intensity factor (K_I) exceeds the fracture toughness, K_{Ic}. This may result in the rapid propagation of a through wall crack in the embrittled vessel and in the failure of the vessel.[17]

Over the course of a pressurized water reactor's operating life, the steel plates and welding materials used in fabricating the pressure vessel become increasingly "embrittled" or weakened by intense neutron radiation from the core. As the Commission has described the phenomenon:

> The fracture resistance of reactor vessel material is initially very high, and thus PTS events are generally not expected to cause vessel failure. However, the fracture resistance of the vessel decreases over the life of the vessel as it is exposed to fast neutron radiation from the core of the reactor. The rate of decrease is dependent on the chemical composition of the vessel wall and weld materials. If the fracture resistance of the vessel is reduced sufficiently by neutron radiation, severe PTs events could cause small flaws that might exist near the inner surface of the vessel to propagate through the wall, thereby

[16] *Id.*

[17] Macdonald Declaration*.,* § IV.A.

threatening the integrity of the vessel, and ultimately the capability of the core cooling systems to cool the fuel in the vessel.[18]

The range of temperatures at which the steel changes from brittle to ductile is called the "reference temperature for nil ductility transition" or RT_{NDT}. In a new vessel, the RT_{NDT} is in the range of 0 to $40^{O}F$. However, as the vessel materials are bombarded by high energy (>1 Mev) neutrons during the life of the plant, the RT_{NDT} gradually increases. Thus, the safety margin between the temperature at which the vessel exhibits brittle characteristics, and the temperature to which the vessel will be cooled in the event of an accident, decreases.

If the ductile to brittle transition temperature of the embrittled steel, as characterized by the nil ductility transition temperature or "RT_{NDT}", is sufficiently high compared with the unirradiated, non-embrittled steel, the vessel may fail by brittle fracture because of the sudden reduction in the fracture toughness as the temperature moves below RT_{NDT}.[19]

C. Regulations Governing the Safety of the Reactor Vessel

As the NRC has recognized, given the singular importance of a nuclear reactor's pressure vessel, "[m]aintaining the structural integrity of the reactor pressure vessel . . . is a critical concern related to the safe operation of nuclear power plants."[20] The concern is critical not only for the key role played by the reactor vessel in cooling the core, but also for the fact that there is no way to back up the reactor vessel. Unlike many nuclear power plant safety systems, which are designed according to the principle of "defense-in-depth" to have a redundant, robust and independent double that will function in the event the first system fails, there is only one pressure vessel. Because there is no backup safety system to protect the public in the event of pressure

[18] *Yankee Rowe,* 34 N.R.C. at 8.

[19] Macdonald Declaration*.,* § IV.A.

[20] RVP Rule*,* 60 Fed. Reg. at 65,456.

vessel failure, the Commission's regulations establish design and performance standards that are intended to assure for each plant that the probability of pressure vessel rupture is extremely low.[21]

NRC regulations in 10 C.F.R. Part 50, Appendix G, § IV.A.1 require all reactor vessel beltline materials to have a Charpy upper-shelf energy ("USE") of no less than 75 ft-lb initially and 50 ft-lb throughout the life of the plant. And 10 C.F.R. § 50.61(b)(2) establishes a PTS screening criterion of 270ºF for all plates, forgings, and axial weld materials and 300ºF for circumferential weld materials. Requirements for PTS surveillance programs are found in 10 C.F.R. Part 50, Appendix H and 10 C.F.R. § 50.61. Pursuant to 10 C.F.R. § 50.61(c)(2), evaluations of compliance with 10 C.F.R. § 50.61(b)(2) must include consideration of "plant-specific information." The surveillance program must include designation of appropriate locations for surveillance specimen capsules (Appendix H*,* Section III.B.2) and an NRC-approved withdrawal and testing schedule (*id.,* Section III.B.3). Surveillance capsules must also contain coupons to measure tensile stress/strain, which are indicative of embrittlement.[22] In order to obtain plant-specific information, the regulations require licensees to conduct reactor-specific surveillance in conformance with the relevant industry guidance of the American Society for Testing of Materials, ASTM E 182.[23]

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[21] Final Rule, Analysis of Potential Pressurized Thermal Shock Events, 50 Fed. Reg. 29,937, 29,941 (July 23, 1985).

[22] Macdonald Declaration*.,* § IV.B.

[23] Licensees must use the version of ASTME E 182 that was in effect at the time the surveillance program was adopted, but may be changed to a later standard.10 C.F.R. § 50.61(b). ASTM E 182 provides licensees with the criterial for determining both the minimum number of surveillance capsules that need to be installed within the reactor vessel at the start of the plant's life, and when in the plant's life – measured in effective full-power years – a capsule should be withdrawn for evaluation." Appendix H, Section III.B.1.

While ART_{NDT} and USE are appropriate monitors of the state of embrittlement, the probability of crack nucleation is a question that must be addressed by probabilistic fracture mechanics that requires the assessment of the population, size, and orientation of flaws close to the cladding/steel interface. Therefore, industry codes incorporated in 10 C.F.R. § 50.55a require that every ten years, licensees must conduct ultrasound testing ("UT") inspections of the most vulnerable parts of the reactor vessel, the welds around the beltline, to examine for flaws and cracks.[24]

D. History of Diablo Canyon Unit 1 Reactor Vessel

1. Licensing of Unit 1

The NRC originally licensed the Diablo Canyon reactors to operate for forty years beyond the issuance dates of their construction permits.[25] Unit 1, which received a construction permit in 1968, was licensed to operate until April 23, 2008; and Unit 2, which received a construction permit in 1970, was licensed to operate until December 9, 2010.[26]

a. Reactor vessel surveillance program

In the 1970s, while construction was underway, PG&E established separate reactor vessel surveillance programs for the operating license terms Units 1 and 2. The Unit 1 surveillance program consisted of three "Type II" capsules – Capsules S, Y, and V -- which contained "the limiting beltline weld metal, limiting shell plate, and weld heat affected zone (HAZ) from an

[24] Macdonald Declaration., § IV.B.

[25] *See* Letter from Gregory M. Rueger, PG&E to NRC re: License Amendment Request 92-04 40-Year Operating License Application (July 9, 1992) (ADAMS Accession No. ML17083C429) ("Rueger Letter").

[26] *Id. See also Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), LBP-92-27, 36 N.R.C. 196, 197 (1992).

intermediate shell plate."[27] PG&E subsequently noted that three Type II capsules had not been enough to satisfy the then-applicable industry standard, ASTM E 182-70, which required five capsules; but nevertheless, the NRC Staff had approved the program.[28]

b. Supplemental surveillance program

In 1992, PG&E applied to supplement the Unit 1 surveillance program by adding Capsules A, B, C, and D.[29] While they did not include the Type II constituents, the new capsules contained "the intermediate shell plate 4107-1, which is the limiting base metal at 48 EFPY."[30]

The purpose of the supplemental surveillance program was to "provide sufficient embrittlement data on the limiting materials to permit effective management of vessel embrittlement during the entire operating life of the vessel."[31] The supplemental surveillance program also had three "goals" of providing embrittlement data for 48 EFPY or 60 years of operation (*i.e.,* supporting a single license renewal term), providing a "standby" capsule that could be held in reserve for future use, and providing the necessary data to demonstrate the effects of annealing, "should it be needed in the future."[32] To carry out the purpose and goals, PG&E stated that the four capsules would be inserted "at EOC [end of cycle] 5" and tested according to the following schedule:

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[27] This description was provided by PG&E in 1992, when it sought to supplement the program. PG&E Letter DCL-92-072, Enclosure at 1 and Table 4. While the surveillance program also included other capsules, they were not Type II, *i.e.,* they did not contain the limiting weld metal, base metal, and HAZ specimens that were required by the applicable ASTM standard, ASTME 185-73. *Id.*

[28] *Id,* Enclosure at 1 and Table 4.

[29] PG&E Letter DCL-92-072.

[30] *Id,* Enclosure at 3.

[31] *Id,* Enclosure at 2.

[32] *Id.*

- Capsule B "will" be "tested at approximately 19.2 EFPY[33] after it has accumulated the fluence equivalent to the vessel inside surface at 48 EFPY;"
- Capsule A "will remain in the vessel throughout the vessel lifetime" as a "standby capsule."
- Capsule C "will" be "tested at approximately 14.8 EFPY after it has accumulated the fluence equivalent to the vessel inside surface at 32 EFPY;" and
- Capsule D "will" be "removed from the vessel at approximately 14.8 EFPY after it has accumulated the fluence equivalent to the vessel inside surface at 32 EPFY" and "will be annealed and reinserted into the vessel and removed at approximately 19.2 EFPY after it has accumulated the fluence equivalent to the vessel inside surface at 32 EPFY."[34]

In a 1992 Safety Evaluation, the NRC Staff approved the supplemental surveillance program, including the schedule for withdrawal of Capsules B, C, and D and the standby status of Capsule A.[35] The Safety Evaluation's conclusions included a finding that the changes proposed by PG&E "will provide additional data on the limiting reactor vessel materials."[36]

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[33] Based on subsequent correspondence, Petitioners estimate that 19.2 EFPY occurred around 2007 in the 14th RFO. *See* Attachment 3 for a table showing the estimated timing of this and other actual or planned capsule withdrawals.

[34] PG&E Letter DCL-92-072*,* Enclosure at 4. PG&E also proposed to move some of the capsules in the existing program upon insertion of the new capsules.

[35] Safety Evaluation by the Office of Nuclear Reactor Regulation Related to Supplemental Reactor Vessel Radiation Surveillance Program, Pacific Gas and Electric Company, Diablo Canyon Power Plant, Unit 1, Docket No. 50-275 at 3 (Sept. 4, 1992) (ADAMS Accession No. ML16341G685) ("NRC Safety Evaluation for Supplemental Surveillance Program").

[36] *Id.*

2. License amendment to recover thirteen-year construction period

In July 1992, before the NRC had approved PG&E's supplemental surveillance program, PG&E cited the supplemental surveillance program in support of a license amendment application to "recapture" the thirteen-year construction period for Unit 1 by changing the expiration dates of the Unit 1operating license from April 23, 2008 to September 22, 2021.[37] In the application, PG&E stated that its existing surveillance program "will effectively monitor vessel embrittlement throughout the requested license period."[38] *And* PG&E asserted that:

> In addition to those required surveillance programs, a supplemental surveillance program will be implemented for Unit 1 beginning with Cycle 6 in 1992. The supplemental program consists of *four new surveillance capsules that will provide additional data to better manage vessel embrittlement issues during the plant operating life*.[39]

These "four new capsules" included Capsule B. Further, PG&E asserted that for both reactors:

> The *overall program* to monitor reactor vessel beltline materials is thorough and comprehensive. It meets all applicable regulatory requirements and will yield continuous information relevant to determining the degree of embrittlement of beltline materials *over the proposed 40-year operating license terms*.[40]

Nowhere in the license amendment application did PG&E state that the supplemental surveillance program was related to license renewal. Instead, PG&E took credit for the supplemental surveillance program in seeking to extend the original operating license for Unit by thirteen years.

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[37] PG&E Letter DCL-92-154 from Gregory M. Rueger, PG&E to NRC re: License Amendment Request 92-04, 40-Year Operating License Application (July 9, 1992) ("PG&E Letter 92-04") (ADAMS Accession No. ML16341G621). PG&E also applied to extend the Unit 2 operating license expiration date from December 9, 2010 to April 26, 2025.

[38] *Id.,* Attachment A (License Amendment Application) at 14.

[39] *Id.,* Attachment A at 15.

[40] *Id.,* Attachment A at 15. As discussed in the Macdonald Declaration, § V.A.1, this conclusion was erroneous.

The NRC Staff approved the license amendment, citing, *inter alia,* PG&E's "comprehensive vessel material surveillance program [that] is maintained in accordance with 10 CFR Part 50, Appendix H that ensures the fracture toughness requirements of Appendix G are met."[41] The Staff did not mention license renewal. The license amendment was noticed in the Federal Register.[42]

3. Withdrawal and testing of Capsule V

In 2002, PG&E withdrew Capsule V from the Unit 1 pressure vessel and conducted Charpy tests for PTS reference temperature and USE.[43] PG&E subsequently reported that it had calculated a limiting RT_{PTS} value of 250.9 ^{o}F for the limiting weld 3-442C.[44] Thus, PG&E predicted that in 2021 (the expected retirement date for Unit 1 at that time), the reference temperature for Unit 1 would be slightly more than 10 ^{o}F below the screening limit of 270 ^{o}F. Taking into consideration a reasonable margin of error of about ± 10 ^{o}F (as estimated by inspection of the Charpy curves), PG&E's test showed that Unit 1 would be approaching the limit at the end of its operating life.[45] Nevertheless, PG&E discounted the data as "not . . . credible."[46] Instead of crediting the data it had gathered from Unit 1, PG&E substituted generic

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[41] Letter from Melanie A. Miller, NRC, to Gregory M. Rueger, PG&E, re: Issuance of Amendments for Diablo Canyon Nuclear Power Plant, Unit No. 1 (TAC No. M84006) and Unit No. 2 (TAC No. M84007), enclosed Safety Evaluation at 2 (March 1, 1995) ("1995 License Amendment") (ADAMS Accession No. ML022340183).

[42] *See, e.g.,* 57 Fed. Reg. 32,575 (July 22, 1992) (proposed No Significant Hazards Consideration Determination).

[43] PG&E Letter DCL-038.

[44] *Id.*

[45] Macdonald Declaration, § III.

[46] PG&E Letter DCL-038 at 1.

data and data from other reactors.[47] But PG&E gave no indication of intending to rely on generic data and data from other reactors for a significant length of time. Instead, PG&E asserted that "Capsule V is not the last planned capsule to be evaluated in the [Diablo Canyon Unit 1] surveillance program."[48]

4. License amendment to recover three-year low-power testing period

In 2005, citing a new NRC policy to allow the recovery of time spent on low-power testing of nuclear reactors, PG&E again applied to extend the Unit 1 operating license term, this time by three years.[49] PG&E clarified that the proposed license amendment "does not constitute license renewal."[50] Like PG&E's 1992 license amendment application for recovery of construction time, its 2005 license amendment application for recovery of low-power testing time asserted that the "original" surveillance program for Unit 1 "complies with ASTME E-185-70, the standard in effect when the vessel was designed" and "will ensure vessel embrittlement is effectively monitored throughout the requested license period."[51] And like PG&E's 1992 license amendment application, the 2005 license amendment application took credit for the supplemental surveillance program for the three-year recovery period, asserting that it "will provide additional data to better assess and manage vessel embrittlement issues *during the plant operating life.*"[52]

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[47] Macdonald Declaration, § III.

[48] PG&E Letter DCL-038 at 2.

[49] PG&E Letter 05-098 from David H. Oatley to NRC re: License Amendment Request 05-03, Request for Amendment to Recapture Low-Power Testing Time (Aug. 23, 2005) ("PG&E Letter DCL-05-03") (ADAMS Accession No. ML05240441).

[50] *Id.,* Enclosure 1 at 4.

[51] *Id.*

[52] *Id.,* Enclosure 1 at 5 (emphasis added).

In 2006, the NRC Staff approved the license amendment.[53] Among the "conclusions" listed by the Staff in support of the license amendment was the Staff's determination that:

> The RV [reactor vessel] surveillance schedules for DCPP-1/2 [Diablo Canyon Units 1 and 2] remain in compliance with the requirements of 10 CFR Part 50, Appendix H, and the ASTM E 185 version of record for the units."[54]

Providing additional detail regarding this conclusion, the Staff asserted:

> The licensee stated that the adjustments of the EOL neutron fluences for the RV beltline materials at the clad-to-base metal locations of the RVs do not require the RV material surveillance capsule withdrawal schedules for DCPP-1/2 to be altered. The NRC staff reviewed the limiting neutron fluence values reported in PG&E Serial Letter No. DCL-06-045 for the clad-to-base metal location of the RVs, in order to determine whether the revised fluence values would impact the RVMSP withdrawal schedules for DCPP-1/2.
>
> The ASTM E185 version of record for DCPP-1 is ASTM E185-70. The most recent RVMSP withdrawal schedule for DCPP-1 was requested in PG&E Serial Letter No. DCL-92-072, dated March 31, 1992. . . . This RVMSP [reactor vessel material surveillance program] withdrawal schedule was approved in an SE [Safety Evaluation] to PG&E dated September 4, 1992 . . . . In the SE, the NRC staff concluded the supplemental RVMSP withdrawal schedule met the criteria of ASTM E185-70 and constituted an acceptable withdrawal schedule for implementation under 10 CFR Part 50, Appendix H. *Under this supplemental program, four capsules, Capsule S, Y, V, and B, were designated for removal from the DCPP-1 RV.* Capsules S, Y, and V have been removed and tested in accordance with the licensee's program.
>
> The request to recover the testing time for DCPP-1 amends the projected withdrawal for Capsule B to approximately 20.7 EFPY, when the capsule is projected to achieve a neutron fluence of 2.9×10^{19} n/cm^2 (E > 1.0 MeV). Therefore, the capsule will achieve a neutron fluence approximately equal to twice the projected limiting inside RV fluence for DCPP-1 at the EOL (i.e., approximately $2 * 1.43 \times 10^{19}$ n/cm^2 [E > 1.0 MeV]). This complies with the criterion in ASTM E185-82 for withdrawal of the final capsule of a four capsule withdrawal program. This is acceptable because 10 CFR Part 50, Appendix H, permits the licensee's (sic) to meet the RVMSP withdrawal criteria of more recent versions of ASTM E185, inclusive of E185-82. Therefore, the NRC staff concludes that

[53] Letter from Alan Wang, NRC, to John S. Keenan, PG&E, re: Diablo Canyon Power Plant, Unit Nos. 1 and 2 – issuance of Amendments re: Request for Recovery of Low-Power Testing Time-Impact on the Reactor vessel Integrity Assessments (TAC Nos. MC8206 and MC 8207) (July 17, 2006) ("2006 License Amendment") (ADAMS Accession No. ML062260278).

[54] *Id.,* enclosed Safety Evaluation at 6.

the adjustments to the withdrawal time and projected neutron fluence for Capsule B will still be in compliance with 10 CFR Part 50, Appendix H.[55]

Thus, the Staff viewed Capsule B as part of a four-capsule program that also included Capsules S, Y, and V, which were included in PG&E's original surveillance program. And PG&E's proposed schedule for withdrawal of Capsule B at 20.7 EFPY was a condition for the Staff's approval of PG&E's license amendment application.[56] The license amendment was noticed in the Federal Register.[57]

Accordingly, the Staff relied on PG&E's supplemental surveillance schedule – including removal and testing of Capsule B between 2007 and 2009 -- in approving two separate license amendments that added a total of sixteen years to the term of PG&E's original full-power operating license. And in each case, the public was informed of the change to PG&E's operating license by publication of a notice in the Federal Register.

5. Capsule B withdrawal re-purposed to serve license renewal at PG&E's discretion

Starting in 2008, PG&E and the Staff exchanged no less than four sets of correspondence requesting and approving extensions to the schedule for removing and Capsule B, from 2009 to 2010, from 2010 to 2012, from 2012 to 2022, and then from 2022 to 2023 or 2025. This correspondence differed from PG&E Letter DCL-03-052 and the NRC's license amendment decisions in two fundamental respects:

- First, both PG&E and the Staff began to assert that the surveillance program for the original license term had been completed with the withdrawal of Capsule V in 2002 and

[55] *Id.,* enclosed Safety Evaluation at 5.

[56] As shown in Attachment 3, 20.7 EFPY is approximately calendar year 2009.

[57] 71 Fed. Reg. 46,945 (Aug. 15, 2006) (notice of license amendment issuance).

that the supplemental surveillance program – including removal of Capsule B -- related to license renewal. Thus, they reasoned that the surveillance program for the original license term was complete, and withdrawal of Capsule B could be scheduled with great and forward-looking flexibility for the sole purpose of meeting PG&E's requirements for license renewal. On these entirely new grounds, PG&E repeatedly sought and was granted extensions of the schedule for removing Capsule B, farther and farther into the future until it stretched beyond the original 2024 retirement date for Unit 1.

- Second, unlike the 1995 and 2006 license amendments, the Staff's subsequent approvals of extensions of the surveillance schedule were hidden from the public eye, with no notice published in the Federal Register.

The origin of this fundamental re-casting of the nature and purpose of the supplemental surveillance schedule can be found in a 2008 PG&E letter informing the Staff that PG&E was "currently performing a License Renewal Feasibility Study" to decide whether to apply for license renewal for the Diablo Canyon reactors.[58] According to PG&E, its current surveillance program did not satisfy the NRC's license renewal guidance because PG&E did not have a "vessel material coupon that has fluence exposure equivalent to 60 years of operation."[59] But the guidance would be satisfied by removing Capsule B at approximately 21.9 EFPY.[60]

The NRC Staff approved the requested extension, pivoting sharply away from the position underlying the 1995 and 2006 license amendments that withdrawal of Capsule B around

[58] Letter DCL-08-012 from James R. Becker to NRC, re: Revision to the Unit 1 Reactor Vessel Material Surveillance Withdrawal Schedule, Enclosure 1 at 1 (March 12, 2008) (ADAMS Accession No. ML080850564).

[59] *Id.* (citing NUREG-1801, Generic Aging Lessons Learned (GALL) Report).

[60] *Id.* at 2. As shown in Attachment 3, a removal time of 21.9 EFPY is about 2010 in calendar years.

19-20 EFPY was essential to the extension of PG&E's operating license by sixteen years. For the first time, the Staff asserted that the removal of Capsule V in 2002 had "fulfilled the *third and final* recommendation of ASTM E 185-70 for the current [Diablo Canyon Unit 1] operating license."[61] By the same token, the Staff also asserted for the first time that removal of Capsule B was not required during the current operating license term, and thus "the proposed delayed removal of Capsule B does not deviate from the licensee's current RPV materials surveillance program requirements."[62] In other words, no deviation had occurred because the surveillance program for Unit 1 no longer existed. Because the removal and testing of Capsule B was not required by PG&E's current license, it could be re-scheduled as needed to be "useful" for PG&E's license renewal plans.[63]

After seeking and obtaining the extension sought in PG&E Letter DCL-08-012, PG&E subsequently sought and obtained three additional extensions. These letters repeat and amplify the themes of PG&E's Letter DCL-08-12 and the NRC's response, *i.e.,* that the withdrawal of Capsule B is not part of the pressure vessel surveillance program for the current operating license term, which has now concluded; and that Capsule B relates only to license renewal and its withdrawal can be scheduled to help PG&E satisfy license renewal requirements.[64]

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[61] Letter from Alan Wang, NRC, to John Conway, PG&E, re: Diablo Canyon Power Plant, Unit No. 1 – Approval of Proposed Reactor Vessel Material Surveillance Capsule Withdrawal Schedule (TAC No. MD8371), enclosed Safety Evaluation at 2 (Sept. 24, 2008) (ADAMS Accession No. ML082380306) (emphasis added).

[62] *Id.*

[63] *Id.,* enclosed Safety Evaluation at 2.

[64] *See* the following:

- PG&E Letter DCL-10-141 from James R. Becker to NRC re: Revision 1 to the Unit 1 Reactor Vessel Material Surveillance Withdrawal Schedule (Oct. 25, 2010) (ADAMS Accession No. ML102990079) and Letter from Carl F. Lyon, NRC to John T. Conway,

As a result of these delays, by the time Capsule B is removed more than twenty years will have passed since PG&E last withdrew and tested a surveillance capsule from the Unit 1 pressure vessel.[65] And while the NRC has issued to PG&E an exemption that allows it to operate Unit 1 indefinitely under the current license, the NRC Staff no longer considers that it has a surveillance program that could be enforced against PG&E in this operating license term. As a result of the Staff's change of position, it now considers withdrawal of Capsule B a discretionary task that PG&E may undertake on its own schedule.

IV. PETITIONERS ARE ENTITLED TO A HEARING BECAUSE THE 7/20/23 EXTENSION ORDER EFFECTIVELY AMENDED PG&E'S OPERATING LICENSE FOR UNIT 1

While the NRC Staff did not characterize the 7/20/23 Extension Order as a license amendment, the Order meets the judicial standard adopted by the Commission in *Cleveland Electric Illuminating Co.* (Perry Nuclear Power Plant, Unit 1), CLI-96-13, 44 N.R.C. 315 (1996) ("*Cleveland Electric*"):

> In evaluating whether challenged NRC authorizations effected license amendments within the meaning of section 189a, courts repeatedly have considered the same key factors: did the

PG&E (Oct. 29, 2010) (requesting and granting an extension from 2010 to 2012) (ADAMS Accession No. ML03010159);

- PG&E Letter DCL-11-122 from James R. Becker to NRC re: Revision to the Unit 1 Reactor Vessel Material Surveillance Program Withdrawal Schedule (Nov. 21, 2011) (ADAMS Accession No. ML113260072) and Letter from Joseph M. Sebrosky, NRC to John T. Conway, PG&E re: Diablo Canyon Power Plant, Unit No. 1: Safety Evaluation for Request to Revise the Reactor Vessel Material Surveillance Withdrawal Program TAC ME7615) (March 2, 2012) (ADAMS Accession No. ML120330497) (requesting and granting an extension from 2012 to 2022);
- PG&E Letter DCL-23-038 and NRC 7/20/23 Extension Order (requesting and granting an extension from 2022 to 2025).

[65] Capsule V probably was withdrawn in 2002 and was tested in 2003. *See* PG&E Letter DCL-03-052.

challenged approval grant the licensee any "greater operating authority," or otherwise "alter the original terms of a license"?[66]

These circumstances meet the *Cleveland Electric* test because the 1995 and 2006 license amendments for "recapture" of thirteen years of construction and three years of low-power operation were conditioned on PG&E's surveillance schedule, including the supplemental surveillance plan. PG&E got "greater operating authority," *i.e.,* authority to operate the Unit 1 reactor for a much longer period, as a result of its commitment to carry out the supplemental surveillance schedule as described. *Id.,* 44 N.R.C. at 326. In exchange for that greater operating authority, the Staff required that PG&E must provide a more robust surveillance program than before, by adding Capsule B to Capsules S, Y, and V. As stated in the 2006 Safety Evaluation, "[u]nder this supplemental program, four capsules, Capsule S, Y, V, and B, were designated for removal" from Diablo Canyon Unit 1.[67]

As a result of the Staff's reliance on the supplemental surveillance program to justify extended operation, the supplemental surveillance program became a part of PG&E's license that may not be changed without notice and the offer of an opportunity for a hearing, as required by Section 189a the Atomic Energy Act. *Cleveland Electric,* 44 N.R.C. at 327 (citing *Massachusetts v. NRC,* 878 F.2d 1516 (1st Cir. 1989)). The Staff's subsequent issuance of effective license amendments in 2010, 2012, and 2023 does not preclude Petitioners from challenging the most recent of these effective license amendments, because none was issued with public notice or an opportunity to participate.

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[66] *Id.,* 44 N.R.C. at 326 (quoting, respectively, *In re Three Mile Island Alert,* 771 F.2d 720, 729 (3d Cir. 1985); *San Luis Obispo Mothers for Peace v. NRC,* 751 F.2d 1287, 1314 (D.C. Cir. 1985). *See also id.,* 44 N.R.C. at 327 (quoting *Citizens Awareness Network v. NRC,* 59 F.3d 284, 295 1st Cir. 1995) holding that an NRC regulatory action that "'undeniably *supplement[ed]*' the original license" constituted licensing action) (emphasis in original)).

[67] 2006 License Amendment, Safety Evaluation at 6.

V. CONTENTION 1 (Safety)

A. Statement of Contention 1

PG&E's request to postpone the withdrawal and testing of Capsule B until 2025 should be denied, and the Staff's decision to approve it should be reversed, because it is inconsistent with NRC safety regulations 10 C.F.R. Part 50, Appendices G and H and 10 C.F.R. §§ 50.55a and 50.61 and poses an unacceptable risk to public health and safety in violation of NRC regulations and the Atomic Energy Act. Moreover, neither PG&E nor the Staff has any legal grounds for claiming that withdrawal of Capsule B relates only to license renewal and is unnecessary to maintain safety in the current license term.

B. Basis for contention.

Petitioners' first basis for this contention is the attached Macdonald Declaration, which sets forth a comprehensive set of legal and technical grounds for reaching three primary conclusions: (1) that PG&E is operating Unit 1 in violation of NRC regulations for reactor vessel safety; (2) it is posing a serious safety risk to the public and the environment; and (3) it should be required to immediately resume the pressure vessel surveillance measures that it has postponed since 2023, namely the removal and testing of Capsule B. Petitioners adopt and incorporate by reference his declaration. To briefly summarize his points, PG&E has ignored credible data showing that embrittlement may be approaching legal limits, thus warranting more testing, not less. In addition, Dr. Macdonald has performed an independent analysis that confirms this concern. Further, PG&E has relied for far too long on generic data and data from sister reactors to justify the safety of continued operation without additional testing. Finally, PG&E has also postponed another critically important test of pressure vessel integrity, UT inspection of reactor beltline welds. As a result, for a twenty-year period between 2005 and 2025, PG&E has no

updated data on the prevalence of voids and cracks in these welds; and even the data it has collected are suspect for their paucity of results.[68] Thus, by postponing *both* the withdrawal and testing of Capsule B *and* UT inspection of the beltline welds, PG&E has deprived itself and the NRC of *any* updated Unit 1-specific information regarding the condition of the pressure vessel. These lapses are particularly serious in light of Diablo Canyon's proximity to a web of significant earthquake faults and its defective chemical composition.[69]

Second, Petitioners rely on the language in the 1995 License Amendment and the 2006 License Amendment which establishes that withdrawal of Capsule B is required by those license amendments as a condition for operating Unit 1 during the current license term. Further, Capsule B may not be treated solely as a prospective matter that is relevant only to the proposed license renewal term. *See also* discussion above in Section III.D.5, which is incorporated by reference into this basis statement.

C. Demonstration That the Contention is Within the Scope of the Proceeding

This contention is within the scope of the proceeding for the change to PG&E's reactor vessel surveillance schedule because it raises concerns about whether the change will comply with NRC safety standards or pose an undue risk to public health and safety.

D. Demonstration That the Contention is Material to the Findings NRC must make to Approve the Proposed Schedule Change.

This Contention is material to the findings NRC must make regarding the proposed schedule change because the NRC may not issue a license amendment without first concluding that it complies with NRC regulations and poses no undue risk to public health and safety.

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[68] Macdonald Declaration, § V.B.

[69] Dr. Macdonald's concerns about the proposed extension of the deadline for removing and testing Capsule B are summarized in Sections III and V.C of his declaration.

E. Concise statement of the facts or expert opinion supporting the contention, along with appropriate citations to supporting scientific or factual materials

The facts supporting Petitioners' contention are set forth in the Basis Statement in Subsection B above, in official PG&E and government documents as cited in the Statement of the Contention and Basis Statement, and in the attached Macdonald Declaration.

VI. CONTENTION 2 (Environmental)

A. Statement of Contention 2

PG&E's request to postpone the withdrawal and testing of Capsule B until 2025 should be denied, and the Staff's decision to approve it should be reversed, because the extension is not supported by an analysis of its environmental impacts that complies with the National Environmental Policy Act ("NEPA") or NRC implementing regulations in 10 C.F.R. §§ 51.20 and 51.30. These regulations require the NRC to evaluate the environmental impacts of its proposed actions, including license amendments, before going forward.

B. Basis for contention.

Petitioners rely on the attached Macdonald Declaration, which sets forth a comprehensive set of technical grounds for concluding that the proposed extension of the schedule for withdrawing and testing Capsule B from Unit 1 poses an unacceptable risk to human health and the environment. As Dr. Macdonald asserts in Section IV.A of his declaration, the pressure vessel is a uniquely important part of a reactor coolant system, because it holds the highly radioactive core under water and because it has no backup if it should fail. The consequences of a core melt accident caused by reactor vessel failure could be catastrophic. The NRC should perform an environmental analysis that thoroughly considers the current state of knowledge about the condition of the Unit 1 pressure vessel, its potential to cause a significant radiological

accident, and alternatives for mitigating or avoiding those impacts. *See* 10 C.F.R. § 51.70 for the NRC's general requirements for an environmental impact statement and 10 C.F.R. § 51.30 for the NRC's requirements for an environmental assessment.

C. Demonstration That the Contention is Within the Scope of the Proceeding

This contention is within the scope of the proceeding for the change to PG&E's reactor vessel surveillance schedule because it raises concerns about the NRC Staff's lack of compliance with NEPA and NRC implementing regulations.

D. Demonstration That the Contention is Material to the Findings NRC must make to Approve the Proposed Schedule Change.

This Contention is material to the findings NRC must make regarding the proposed schedule change because the NRC may not issue a license amendment without evaluating its environmental impacts, as required by NEPA and the NRC's implementing regulations.

E. Concise statement of the facts or expert opinion supporting the contention, along with appropriate citations to supporting scientific or factual materials

The facts supporting Petitioners' contention are set forth in the Basis Statement in Subsection B above, in official PG&E and government documents as cited in the Statement of the Contention and Basis Statement, and in the attached Macdonald Declaration.

VII. REQUEST FOR SHUTDOWN ORDER AND REMEDIAL MEASURES

A. Exercise of Commission's Discretionary Supervisory Authority is Warranted.

This matter warrants Commission involvement for three important reasons. First, as recognized by the Commission in *Yankee Rowe,* the Commission has the "ultimate responsibility for the safe operation of the facilities that it licenses."[70] The safety concerns raised by decades of PG&E's evasion of its responsibilities for monitoring the condition of the pressure vessel are among the gravest that the Commission can encounter, given the vulnerability of the pressure vessel to embrittlement, and given the lack of any backup if it should fail. In the case of Diablo Canyon, both the reactor's proximity to a web of earthquake faults and its inherently defective composition exacerbate the risks caused by PG&E's avoidance and neglect of its responsibilities.

Here, Dr. Digby Macdonald, a highly experienced and respected expert in the field of materials in nuclear reactors, has closely investigated the Diablo Canyon situation and found that PG&E has disregarded credible evidence of embrittlement and systematically avoided testing that would shed light on the reactor vessel's condition. Dr. Mcdonald's own calculations, using data established as credible by PG&E, independently confirmed a serious risk of embrittlement. This situation would never have occurred if PG&E and the Staff had dealt with the problems instead of continually ignoring them and postponing necessary tests and inspections. Given these failures by both PG&E and the Staff, the Commission must step in to provide the reasonable assurance that has been so conspicuously lacking for decades.

Second, the Commission should take review of the regulatory shell game played by PG&E with Capsule B to avoid surveillance testing for two decades. When it was convenient for PG&E to credit the withdrawal of Capsule B to the surveillance program for the current

[70] 34 N.R.C. at 12.

operating license, PG&E did so and thereby won approval of license extensions in 1995 and 2006. Then when it was more convenient to credit the withdrawal of Capsule B to license renewal, PG&E shifted its stance and starting kicking the Capsule B can down the road towards the license renewal term and finally into it. There is only one Capsule B, it has yet to be removed for any purpose, and it is not clear when it will be removed, if ever. Given the Staff's key role as an enabler of this shell game (*see* Section III.D.5 above), only the Commission can end it.

Finally, PG&E's shell game has particularly egregious risk and regulatory implications with respect to the particular circumstances of Diablo Canyon. Now that the Commission has exempted PG&E from the timely renewal rule,[71] PG&E no longer has an end date to its current operating license. Operation could go on for years – potentially decades -- while the NRC reviews PG&E's license renewal application, leaving Petitioners and other members of the public in limbo between the current operating license – for which the NRC Staff has declared that the surveillance of the Unit 1 pressure vessel has ended – and the license renewal term, for which the requirements for a surveillance program have yet to be determined.

B. Unit 1 Must be Shut Down to Protect Public Health and Safety and Should not Be Reopened Until PG&E Has Conducted Adequate Tests and Inspections, Disclosed Their Data and Results, and Subjected Them to Expert Review and a Public Hearing.

As set forth in Section IV of the Macdonald Declaration, in order to fulfill its statutory responsibility to protect health and safety, the Commission must order the immediate shutdown of the Unit 1 reactor. It must also order the reactor to remain in a shutdown condition until the set of actions listed in Section IV of Dr. Macdonald's declaration have been satisfied. These actions include:

[71] Notice of Exemption Issuance, 88 Fed. Reg. 14,395 (March 8, 2023).

a) Withdrawal and analysis of the contents of Capsule B as well as other capsules previously withdrawn but not analyzed;
b) Evaluation and analysis of wedge opening loading ("WOL") specimens contained in Capsule B, C and D and archived capsules;
c) Performance of nano indentation studies on the fractured remnants of the Charpy specimens from Capsules S, Y, and V;
d) A comprehensive UT inspection of reactor vessel beltline welds;
e) publication of the data from the 2015 UT inspection of reactor vessel beltline welds;
f) A robust re-evaluation of the credibility of data from Capsules S, Y, and V that fully complies with NRC guidance and scientific principles:
g) Any follow-up steps that may be appropriate for a finding of credibility of the data from Capsules S, Y, and V, including compliance with 10 C.F.R. 50.61a;
h) Provision to the NRC, the ACRS, and the general public of all data and analyses that are obtained or performed, and a description of any remedial steps taken by PG&E to address the condition of the Unit 1 reactor pressure vessel; and
i) A decision by the NRC Commissioners regarding the safety of continued operation that is informed by the outcome of a proceeding for public participation in the decision-making process.

In addition to the technical demands above, Petitioners wish to emphasize their procedural demand for transparency and public participation in this process. Throughout their review of the record set forth here and in Dr. Macdonald's declaration, Petitioners and their expert consultant have found a disturbing lack of transparency, including the difficulty or impossibility of obtaining some documents that were key to understanding PG&E's and the Staff's actions. It also became clear to Petitioners that they could not rely on either PG&E or the government for robust implementation or enforcement of NRC regulations and regulatory standards. Thus, Petitioners engaged Dr. Macdonald and worked with him for weeks to understand what has happened – or not happened – at Diablo Canyon in the last twenty years. This pleading and Dr. Macdonald's declaration, the fruit of Petitioners' labors, reflect a substantial investment of time and resources to do what appears to be the work of the government.

We now hand this fully investigated matter back to the highest officials of the agency, with a demand for accountability for the government lapses and inaction that are documented here. Before Unit 1 may be permitted to resume operation, this accountability must be provided in a transparent and rigorous public hearing process.

VIII. CONCLUSION

For the foregoing reasons, Petitioners request the NRC Commissioners to grant their hearing request, as required by Section 189a of the Atomic Energy Act and NRC implementing regulations. Petitioners also request the Commission to exercise their supervisory authority to order the immediate shutdown of Unit 1, pending completion of the remedial measures, a thorough NEPA analysis, public disclosures and the hearing process set forth in Section VII above.

Respectfully submitted,

__/signed electronically by/___
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September 14, 2023

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE COMMISSION

In the matter of
Pacific Gas and Electric Company Docket No. 50-275
Diablo Canyon Nuclear Power Plant, Unit 1

CERTIFICATE OF SERVICE

I certify that on September 14, 2023, I posted on the NRC's Electronic Information Exchange the following documents:

- REQUEST TO THE NRC COMMISSIONERS BY SAN LUIS OBISPO MOTHERS FOR PEACE AND FRIENDS OF THE EARTH FOR A HEARING ON NRC STAFF DECISION EFFECTIVELY AMENDING DIABLO CANYON UNIT 1 OPERATING LICENSE TO EXTEND THE SCHEDULE FOR SURVEILLANCE OF THE UNIT 1 PRESSURE VESSEL (Sept. 14, 2014)

- AND REQUEST FOR EMERGENCY ORDER REQUIRING IMMEDIATE SHUTDOWN OF UNIT 1 PENDING COMPLETION OF TESTS AND INSPECTIONS OF PRESSURE VESSEL, PUBLIC DISCLOSURE OF RESULTS, PUBLIC HEARING, AND DETERMINATION BY THE COMMISSION THAT UNIT 1 CAN SAFELY RESUME OPERATION (Sept. 14, 2023);

- Attachment 1, DECLARATION OF DIGBY MACDONALD, Ph.D IN SUPPORT OF HEARING REQUEST AND REQUEST FOR EMERGENCY ORDER BY SAN LUIS OBISPO MOTHERS FOR PEACE AND FRIENDS OF THE EARTH (Sept. 14, 2023);

- Attachment 2A, Declaration of Kaoru Hisasue (Sept. 7, 2023); Attachment 2B, Declaration of Lucy Jane Swanson (Sept. 9, 2023); and Attachment 2C, Declaration of Jill ZamEk (Sept. 8, 2023); and
- Attachment 3, Table of Estimated Dates of Capsule Withdrawals
- ERRATA TO REQUEST TO THE NRC COMMISSIONERS (Sept. 14, 2023)

/signed electronically by/
Diane Curran