

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

ENERGY DIVISION

**Agenda ID #21627**  
**RESOLUTION E-5272**  
**June 29, 2023**

**R E S O L U T I O N**

Resolution E-5272. Confirmation of candidates for appointment to the Diablo Canyon Independent Safety Committee (DCISC) for a three-year term beginning July 1, 2023.

**PROPOSED OUTCOME:**

- The California Public Utilities Commission (CPUC) ratifies the President's selection of candidates for consideration by the California Governor for appointment to the DCISC.

**SAFETY CONSIDERATIONS:**

- The DCISC reviews operations at Pacific Gas and Electric Company's (PG&E) Diablo Canyon Power Plant (DCPP) for the purpose of assessing the safety of current operations and suggesting recommendations for continued safe operations. The appointed candidate will serve a three-year term on the DCISC.

**ESTIMATED COST:**

- All ongoing DCISC costs were funded previously. Ratification of the CPUC President's selection of candidates for appointment to the DCISC will not result in any additional costs.

As required by D.21-09-003, dated September 10, 2021.

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**SUMMARY**

The Diablo Canyon Independent Safety Committee (DCISC) consists of three members, each appointed in turn by the California Governor, the California Attorney General, and the Chair of the California Energy Commission (CEC), serving staggered three-year

terms. Section 1.B of the Second Restated Charter for the DCISC describes the process for appointment of DCISC members: it requires the CPUC to select and forward to the appointing authority no more than three new candidates plus the incumbent for DCISC membership. The appointing authority for the current cycle is the Governor. This Resolution ratifies the California Public Utilities Commission (CPUC or Commission) President's selection of Dr. Per Peterson as a candidate for reappointment, and Dr. Najmedin Meshkati and Dr. Michael D. Quinn as candidates for appointment to the DCISC, for a three-year term commencing on July 1, 2023.

## **BACKGROUND**

### **Establishment of the DCISC and Member Selection Process:**

The CPUC created the DCISC in Decision (D.) 88-12-083 as part of the overall settlement of ratemaking issues for the DCP, which is owned and operated by Pacific Gas and Electric Company (PG&E). SB 846, signed into law by Governor Newsom on September 2, 2022, requires the CPUC to consider the potential extension of operations at the DCP, that the DCISC continue operations through such time as all spent nuclear fuel has been moved to dry storage at the DCP Independent Spent Fuel Storage Installation, and that the DCISC continue to make findings and recommendations appropriate to enhance the safety of the operation of the DCP.<sup>1</sup> The DCISC is an independent, three-member committee responsible for monitoring the safety of PG&E's operation of DCP. The DCISC conducts site visits at the DCP, holds public meetings, and issues an annual report summarizing its activities and reviews of DCP operations and provides findings and recommendations regarding DCP operational safety. The DCISC's budget for 2023-2024 is paid out of PG&E's revenues and charged to PG&E's ratepayers.<sup>2</sup> D.88-12-083 established the qualifications and procedures for appointment

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<sup>1</sup> Pub. Util. Code Section 712.1.

<sup>2</sup> D.88-12-083, Appendix C, Paragraph 16; Pub. Util. Code Section 712.1 requires the CPUC to ensure the funding of the DCISC to attract qualified experts during the period of extended operations at the DCP. As such, DCISC member compensation, budgetary needs beyond amounts already being paid by PG&E ratepayers, and the budget for extended operations are currently being considered in R. 23-01-007.

of members to the DCISC and defined the scope of the Committee's operations and responsibilities.<sup>3</sup> Membership on the DCISC is a compensated position.<sup>4</sup>

On October 24, 2006, the DCISC submitted Application (A.) 06-10-024 proposing a restated charter. The CPUC adopted the Restated Charter in D.07-01-028 on January 25, 2007.

Submission of a Second Restated Charter was authorized in Ordering Paragraph 3 of D.21-09-003 on September 9, 2021, and approved in Advice Letter 6361-E on December 9, 2021.<sup>5</sup>

Section 1.B of the Second Restated Charter describes the process for appointment of DCISC members. It requires the CPUC to select no more than three candidates for DCISC membership from among those applicants responding to an open request by the CPUC for applications. The incumbent member whose term is about to expire is to be deemed an additional candidate if they consent. The CPUC is charged with the responsibility to provide for public comment on the applicants' qualifications and potential conflicts of interest. The President of the CPUC is to review the applicants' qualifications, experience, and background, including any conflicts of interest,<sup>6</sup> together with any public comments, and propose as candidates to the appointing authority only persons with knowledge, background, and experience in the field of nuclear power plants and nuclear safety issues. The Energy Division prepares a draft resolution ratifying the President's selection of candidates for the Commission.

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<sup>3</sup> D.88-12-083, Appendix C, Attachment A; *See also* Pub. Util. Code Sections 712.1(c) and (e).

<sup>4</sup> In Resolution E-3152, the Commission established that DCISC member compensation be set at levels commensurate with fees paid by PG&E for comparable services.

The compensation levels set in E-3152 have since been revised, most recently on May 8, 2020, in PG&E Advice Letter (AL) 5797-E-A. The current compensation levels are as follows: annual retainer of \$10,400; \$260/hour fee for attendance at DCISC meetings; \$260/hour fee for DCISC work performed outside of committee meetings in excess of 40 hours/year; and reimbursement of expenses incurred in performance of DCISC work. PG&E AL 6926-E requesting the same DCISC compensation levels was approved in May 2023.

<sup>5</sup> The Non-Standard Disposition Letter approving Advice Letter 6361-E and the text of the Second Restatement of the Charter for the Diablo Canyon Independent Safety Committee (in Attachment 2) are available at: [https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC\\_6361-E.pdf](https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC_6361-E.pdf).

<sup>6</sup> As conflicts of interest are a legal question, their review was conducted by the CPUC's legal department which the President then approved.

**Current Applicants:**

On January 6, 2023, an open request for applications to fill the July 1, 2023, vacancy on the DCISC was posted on the CPUC's website.<sup>7</sup>

Applications were timely received from Dr. Najmedin Meshkati and Dr. Michael Quinn. In addition, Dr. Per Peterson, the incumbent member of the DCISC whose term is set to expire, sent a letter to the Energy Division confirming his willingness to continue serving as a member of the DCISC.

Dr. Peterson provided a synopsis of his technical experience and professional activities relating to nuclear reactor design and safety, including his experience as a professor at UC Berkeley, researcher, and advisor for the federal government, national laboratories, and national academies. Dr. Peterson was originally appointed to the DCISC in 2004 by California Attorney General Bill Lockyer and served that term through 2007; he was appointed again in 2008 by Governor Schwarzenegger and reappointed in 2011, 2014, 2017, and 2020. Dr. Peterson's sixth term is set to expire on June 30, 2023.<sup>8</sup>

Dr. Meshkati's application details his experience teaching and conducting research on the safety, risk reduction, and reliability enhancement of nuclear power plants while a Professor at the University of Southern California, in addition to serving on professional boards and as an adviser to the U.S. State Department. Dr. Meshkati was previously selected by the Commission as one of the qualified candidates considered for appointment in 2022.<sup>9</sup>

In Dr. Quinn's application, he describes his experience working in the nuclear power industry, and consulting on nuclear operations and safety for industry clients as well as the U.S. and Canadian governments. Dr. Quinn was previously selected by the

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<sup>7</sup> A link to the announcement posted on the CPUC's website was sent to the service list of A.21-12-007 to ensure that parties interested in issues relating to the DCPD were aware of the announcement. A.21-12-007 is PG&E's 2021 Nuclear Decommissioning Cost Triennial Proceeding.

<sup>8</sup> See CPUC Resolution E-4141 (January 10, 2008), CPUC Resolution E-4386 (March 24, 2011), CPUC Resolution E-4657 (June 12, 2014), CPUC Resolution E-4849 (June 15, 2017), and CPUC Resolution E-5081 (June 11, 2020).

<sup>9</sup> CPUC Resolution E-5213 (June 2, 2022).

Commission as one of the qualified candidates considered for appointment in 2014, 2015, 2017, 2018, 2019, 2020, 2021, and 2022.<sup>10</sup>

### **Public Comments on Applicants:**

On February 17, 2023, an announcement was posted on the CPUC's website inviting comments on the candidates.<sup>11</sup> Summaries of their qualifications were included with the announcement. The full text of the public comments is included in Appendix B of this Resolution.

Comments in support of Dr. Peterson's reappointment were submitted by Dr. Robert Budnitz, a current member of the DCISC writing in a personal capacity. Dr. Budnitz supports Dr. Peterson's nomination due to his professional qualifications, his international standing and honors in the fields of nuclear power and safety, his overall knowledge and temperament, and his years of service on the DCISC.

Comments in support of Dr. Meshkati's appointment were submitted by Earl Carnes, Bill Hoyle, Amber Mace, and Steven Kemp and Carolyn Sommerich. Mr. Carnes, a former Senior Advisor at the Department of Energy, recommends Dr. Meshkati for the DCISC based not only on his technical and professional qualifications, but on his expertise in the field of risk reduction in complex technological systems and his specific work on this topic for nuclear power systems. Mr. Hoyle, a former manager and investigator for the U.S. Chemical Safety Board, supports Dr. Meshkati's appointment based on twenty years of work together on safety investigations for the U.S. Chemical Board and his expertise in organizational and safety operations at nuclear power plants. Ms. Mace, CEO of the California Council on Science and Technology, supports Dr. Meshkati based on his scientific knowledge and expertise, integrity, and professionalism, as well as her organization's extensive work with him on risk and safety issues. Mr. Kemp and Ms. Sommerich, the Executive Director and CEO, respectively, of Human Factors and Ergonomics Society, support Dr. Meshkati's appointment based on his expertise in the safety, reliability, and efficiency of large-scale, complex systems, especially with respect to human factors and safety culture;

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<sup>10</sup> See CPUC Resolution E-4657 (June 12, 2014), CPUC Resolution E-4711 (February 26, 2015), CPUC Resolution E-4849 (June 16, 2017), CPUC Resolution E-4936 (May 31, 2018), CPUC Resolution E-5001 (June 13, 2019), CPUC Resolution E-5081 (June 11, 2020), CPUC Resolution E-5145 (May 20, 2021), and CPUC Resolution E-5213 (June 2, 2022).

<sup>11</sup> A link to the announcement was also sent to the service list in A.21-12-007. See footnote 6 above.

his 38-years of work on nuclear safety; and his multidisciplinary approach to nuclear safety.

Comments in support of Dr. Quinn's appointment were submitted by Rochelle Becker and Steven Crowe. Ms. Becker, Executive Director for the Alliance for Nuclear Responsibility, supports the nomination of Dr. Quinn based on his acknowledgment that the "human performance aspects of nuclear power operations" will be critical for the DCISC as the power plant as it faces many technical challenges in the next few years, the fresh eyes he will bring to DCPD oversight, his technical background, and his experience in nuclear plant operations. Captain Crowe, a nuclear engineer with 45 years of experience with the nuclear plants of the Tennessee Valley Authority, supports Dr. Quinn's nomination based on their collaboration on projects involving the recovery of troubled plants and organizations over the past three years, his ability to assess complex issues, and his leadership.

## **NOTICE**

Notice of this Resolution was made by publication in the CPUC's Daily Calendar. A copy of the Draft Resolution was sent to all of the applicants and to those submitting comments on their behalf. A copy of the Draft Resolution was also sent to the Governor and to the service list in PG&E's 2021 Nuclear Decommissioning Cost Triennial proceeding (A.21-12-007).

## **DISCUSSION**

**The second restated charter adopted in D.21-09-003 and Advice Letter 6361-E requires that candidates for appointment to the DCISC be persons with knowledge, background, and experience in the field of nuclear power facilities and nuclear safety issues who demonstrate they have no conflicts of interest.<sup>12</sup>**

Summaries of the qualifications of each applicant are included in Appendix A of this Resolution.

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<sup>12</sup> Conflicts of interest guidelines are set forth in Section I.C of the second restated charter. They establish limits for DCISC members on income and gifts from PG&E or an affiliated company, and investments in PG&E or an affiliate. They also prohibit members of the DCISC from attempting to use their position to influence action of the Committee in which they have a financial interest. DCISC members are required to file a Statement of Economic Interest in the same manner as designated CPUC employees. No person shall serve on the DCISC who has a prior history of supporting or opposing PG&E as a witness or intervenor in nuclear licensing or CPUC proceedings associated with the Diablo Canyon Power Plant.

**Dr. Per Peterson is qualified to continue to serve on the Diablo Canyon Independent Safety Committee.**

Dr. Peterson is an incumbent member of the DCISC, having been appointed to his initial three-year term from July 2004 through June 2007 by then Attorney General, Bill Lockyer; Dr. Peterson was appointed again in 2008 by Governor Schwarzenegger and reappointed in 2011, 2014, 2017, and 2020. In addition to serving on the DCISC, Dr. Peterson is currently a Distinguished Professor in the Department of Nuclear Engineering at UC Berkeley, where he has worked since 1990 teaching courses covering the theoretical and practical aspects of nuclear reactor safety. In prior years at Berkeley, he has served as the Executive Associate Dean of the College of Engineering, and has chaired the Department of Nuclear Engineering, the Energy and Resources Group, and the Radiation Safety Committee. Since 2017, he has served part-time as Chief Nuclear Officer of Kairos Power, developing advanced reactor technology resulting from earlier research at UC Berkeley. In 2020, Dr. Peterson was elected to the National Academy of Engineering. He is also a Fellow of the American Nuclear Society. From 2001-2017, he chaired the Reactor Safeguards Committee for the Aerotest Research Reactor in Pleasanton, California. Dr. Peterson often serves on advisory panels for the federal government, the national laboratories, and the national academies on topics related to nuclear technologies, as well as expert panels at academic conferences and workshops. From 2010-2012, he served as a member of President Obama's Blue Ribbon Commission on America's Nuclear Future to help provide recommendations to the Administration, Congress, and the Department of Energy on strategies to manage U.S. spent fuel and high level wastes. Dr. Peterson earned his Masters and Ph.D. degrees in Mechanical Engineering from UC Berkeley between 1985 and 1988.

Dr. Peterson has no conflicts of interest that would preclude his continuing to serve on the DCISC. His qualifications show that he has the requisite knowledge, background, and experience in the field of nuclear power plants and nuclear safety issues.

**Dr. Najmedin Meshkati is qualified to serve on the Diablo Canyon Independent Safety Committee.**

Dr. Meshkati is a Professor of Civil/Environmental Engineering, Industrial & Systems Engineering, and International Relations at the University of Southern California, where he has taught and researched for 38 years, created a Nuclear Energy option in one of the engineering programs, created and taught graduate level courses about nuclear safety and safety culture, and conducted research on the safety, risk reduction, and reliability

enhancement of complex technological systems including nuclear power plants. His expertise in human-systems integration, and safety culture helped him serve as a member and technical advisor on a national panel convened to determine lessons learned from the Fukushima Nuclear Accident and recommend safety and security improvements for U.S. nuclear plants accordingly. Additionally, Dr. Meshkati has researched, visited, and inspected nuclear plants around the world including Chernobyl and Fukushima Daiichi; received research grants from the NRC; attended and given talks on his nuclear safety research at national and International Atomic Energy Agency (IAEA) conferences; and he had written and testified to the U.S. Commission on Improving the Effectiveness of the United Nations on the importance of the IAEA for global nuclear safety. Dr. Meshkati has a Ph.D. in industrial systems engineering from USC; an M.S. in Engineering Management; and a B.S. in Industrial Engineering and a B.A. in Political Science from Sharif (Arya-Meher) University of Technology in Iran and Shahid Beheshti University (National University of Iran), respectively.

Dr. Meshkati has no conflicts of interest that would preclude his serving on the DCISC. His qualifications show that he has knowledge, background, and experience in the field of nuclear power plants and nuclear safety issues.

**Dr. Michael Quinn is qualified to serve on the Diablo Canyon Independent Safety Committee.**

Dr. Quinn has spent over forty years in the nuclear industry: since 1999 he has worked as an executive operations assessor and consultant to the U.S. and Canadian commercial nuclear power industry facilitating regulatory compliance, reliability assessments, and performance improvement; during the 25 years prior he worked in the power block of a nuclear unit for a large nuclear utility. His experience includes developing and delivering root cause evaluation training to NRC staff, assessing significant issues during refueling operations at nuclear power plants, and leading root cause assessments at nuclear facilities. Dr. Quinn has also managed teams that developed and implemented corrective actions to address performance at over 30 nuclear facilities/units – including Diablo Canyon – and for three regulators in the United States and Canada. He has led teams in developing, implementing, and evaluating programs to establish a safety culture at nuclear power plants. Dr. Quinn has experience facilitating the shutdown of nuclear plants: maintaining operational excellence as closure approaches, retaining staff and addressing their concerns, and working to uphold plant safety culture and a safety conscious work environment. Dr. Quinn has taught nuclear safety event causal analysis to the U.S. Nuclear Regulatory Commission, the Canadian Nuclear Safety Commission, and the Japan Nuclear Regulation Authority.



Dr. Quinn has a Doctorate in Organizational Management Systems and an Executive Master of Business Administration degree, both from the University of New Haven, and a B.S. degree in Chemistry from Charter Oak College. He previously held a U.S. NRC Senior Reactor Operator License on a Westinghouse pressurized water reactor, and is a Certified Root Cause Investigator, Certified Root Cause Training Instructor, and Certified Radiation Safety Officer.

Dr. Quinn has no conflicts of interest that would preclude his serving on the DCISC. His qualifications show that he has knowledge, background, and experience in the field of nuclear power plants and nuclear safety issues.

**The candidates nominated by the Commission are the most qualified candidates from the pool of applicants.**

The CPUC's President, Alice Reynolds, has reviewed the qualifications, experience, and backgrounds of all the applicants and selected Dr. Per Peterson, Dr. Najmedin Meshkati, and Dr. Michael Quinn for submission to the Governor as candidates for the three-year DCISC position beginning July 1, 2023.

**President Reynolds' selection of Dr. Per Peterson, Dr. Najmedin Meshkati, and Dr. Michael Quinn as the candidates for the July 1, 2023 vacancy on the Diablo Canyon Independent Safety Committee is ratified.**

President Reynolds' selection of Dr. Peterson as a candidate for reappointment, and Dr. Meshkati and Dr. Quinn as candidates for appointment to the DCISC for a three-year term beginning July 1, 2023 is ratified. As mentioned above, President Reynolds recognizes that all of the applicants possess the qualifications to competently serve on the DCISC. The President's selections shall be provided to the Governor.

### **COMMENTS**

Public Utilities Code section 311(g)(1) provides that this resolution must be served on all parties and subject to at least 30 days public review. Please note that comments are due 20 days from the mailing date of this resolution. Section 311(g)(2) provides that this 30-day review period and 20-day comment period may be reduced or waived upon the stipulation of all parties in the proceeding.

The 30-day review and 20-day comment period for the draft of this resolution was neither waived nor reduced. Accordingly, this draft resolution was mailed to parties

for comments, and will be placed on the Commission's agenda no earlier than 30 days from today.

## **FINDINGS**

1. D.88-12-083 created the Diablo Canyon Independent Safety Committee (DCISC).
2. SB 846 continued the DCISC requiring that the DCISC continue operations through such time as all spent nuclear fuel has been moved to dry storage at the DCPPI Independent Spent Fuel Storage Installation and that it continues to make findings and recommendations appropriate to enhance the safety of the operation of the DCPPI
3. The DCISC is an independent, three-member committee responsible for monitoring the safety of PG&E's operation of the Diablo Canyon Power Plant.
4. D.07-01-028 adopted a restated charter for the DCISC including revised procedures for appointments of DCISC members.
5. D.21-09-003 ordered the submission of a second restated charter in an advice letter. The second restated charter for the DCISC was submitted in Advice Letter 6361-E and approved on December 9, 2021.
6. On January 6, 2023, in accordance with D.21-09-003 and Advice Letter 6361-E, an announcement was posted on the CPUC's website seeking applications for the July 1, 2023, vacancy on the DCISC.
7. The Governor is the appointing authority for the July 1, 2023, vacancy on the DCISC.
8. Dr. Per Peterson, the incumbent member of the DCISC whose term expires on June 30, 2023, responded to the CPUC's January 6, 2023, announcement and consents to being a candidate for reappointment to the DCISC.
9. Dr. Najmedin Meshkati, a Professor of Civil/Environmental Engineering, Industrial & Systems Engineering, and International Relations, responded to the CPUC's January 6, 2023, announcement, and submitted an application to be considered as a candidate for appointment to the DCISC.
10. Dr. Michael Quinn, a professional nuclear energy consultant, responded to the CPUC's January 6, 2023, announcement, and submitted an application to be considered as a candidate for appointment to the DCISC.

11. The CPUC invited comments on Dr. Peterson's, Dr. Meshkati's, and Dr. Quinn's qualifications in an announcement posted on the CPUC's website on February 17, 2023.
12. Comments supporting the appointment of Dr. Peterson, Dr. Meshkati, and Dr. Quinn to the DCISC were received in response to the CPUC's February 17, 2023, announcement inviting comments.
13. The CPUC's President, Alice Reynolds, has reviewed the qualifications, experience, and backgrounds of Dr. Peterson, Dr. Meshkati, and Dr. Quinn.
14. Dr. Peterson, Dr. Meshkati, and Dr. Quinn have knowledge, background, and experience in the field of nuclear power plants and nuclear safety issues, and are qualified candidates for appointment to the DCISC.
15. President Reynolds has chosen to provide the names of Dr. Peterson as a candidate for reappointment, and Dr. Meshkati and Dr. Quinn as candidates for appointment to the DCISC for a three-year term beginning July 1, 2023.
16. President Reynolds' selection of Dr. Peterson, Dr. Meshkati, and Dr. Quinn as the candidates for appointment to the DCISC for a three-year term beginning July 1, 2023, should be ratified and provided to the Governor.

**THEREFORE IT IS ORDERED THAT:**

1. President Reynolds' selection of Dr. Peterson, Dr. Meshkati, and Dr. Quinn as qualified candidates for consideration by the Governor of California for appointment to the Diablo Canyon Independent Safety Committee for a three-year term beginning July 1, 2023, is hereby ratified.

This Resolution is effective today.

I certify that the foregoing resolution was duly introduced, passed, and adopted at a conference of the Public Utilities Commission of the State of California held on June 29, 2023; the following Commissioners voting favorably thereon:

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RACHEL PETERSON  
Executive Director

## **APPENDIX A**

The following statements were supplied by the applicants as part of the application process and were available for public review and comment starting on February 17, 2023. The assertions of fact contained within these statements have not been disputed. These statements are provided verbatim.

**Dr. Per Peterson (Incumbent)**

Per F. Peterson is a Distinguished Professor in the Department of Nuclear Engineering at the University of California, Berkeley, where he holds the William and Jean McCallum Floyd Endowed Chair. Since 2017 he has also served part time as Chief Nuclear Officer of Kairos Power, a company developing advanced reactor technology resulting from earlier research at UC Berkeley. He is a member of the National Academy of Engineering and a Fellow of the American Nuclear Society.

Peterson grew up in Reno, Nevada, graduating from UNR with a degree in mechanical engineering in 1982. From 1982 to 1985 he worked at Bechtel on high-level nuclear waste processing, contributing to the design of the Defense Waste Processing facility which today is converting defense high level wastes into vitrified glass at the Savannah River Site. He then spent three years to complete masters and doctoral degrees in mechanical engineering at UC Berkeley, where he studied passive heat transfer processes. After completing a postdoctoral fellowship at the Tokyo Institute of Technology working on topics in heat and mass transfer, he joined the Department of Nuclear Engineering at UC Berkeley in 1990. There he served as a National Science Foundation Presidential Young Investigator from 1990 to 1995; as chair of the Energy and Resources Group, an interdisciplinary graduate group, from 1998 to 2000; and as chair of Nuclear Engineering from 2000 to 2005 and from 2009 to 2012. He subsequently served as Executive Associate Dean of the College of Engineering at UC Berkeley from 2015 to 2017 where he led college efforts in undergraduate education and in faculty promotion and tenure reviews.

Peterson's research and teaching at UC Berkeley have focused on high-temperature fusion and fission energy systems, as well as topics related to the safety and security of nuclear materials and waste management. He has served on or chaired advisory committees at Oak Ridge, Idaho, Los Alamos, Lawrence Livermore, and Pacific Northwest National Laboratories, as well as on National Research Council panels studying nuclear waste management and nuclear energy research. He participated in the development of the Generation IV Roadmap in 2002 as a member of the Evaluation Methodology Group and co-chaired its Proliferation Resistance and Physical Protection Working Group until 2017. He has published over 150 archival journal articles and over 190 referred conference proceeding papers, and holds multiple patents related to advanced reactors. His research in the 1990's contributed to the passive safety systems in the GE ESBWR and Westinghouse AP-1000 reactor designs. His 2003 Nuclear Technology article with Charles Forsberg and Paul Pickard identified salt cooled, solid

fuel reactors as a promising technology, today called fluoride salt cooled, high temperature reactors (FHRs).

At Berkeley, Peterson has taught extensively in courses related to nuclear reactor design and safety. This includes the undergraduate courses NE-161: Nuclear Power Engineering and NE-170: Nuclear Design, as well as the graduate courses NE-260: Thermal Aspects of Nuclear Reactors, NE-267: Nuclear Reactor Safety, and NE-275: Risk Assessment. Collectively these undergraduate and graduate courses cover all theoretical and practical aspects of nuclear reactor safety.

Peterson's research and publications cover both applied and fundamental topics related to nuclear technology. This work and some 340 research publications have covered topics in nuclear fusion energy, fission reactor design and safety analysis, nuclear waste management, and fundamental topics in heat transfer and fluid mechanics that are relevant to these applications. He is frequently called upon to speak about these topics, and to serve on advisory panels for the federal government, the national laboratories and the national academies on topics related to nuclear technologies, as well as expert panels at academic conferences and workshops.

From 2010 to 2012, Peterson served as a member of President Obama's Blue-Ribbon Commission (BRC) on America's Nuclear Future, where he co-chaired its Reactor and Fuel Cycle Technology subcommittee with retired Senator Pete Domenici. The BRC provided recommendations to the Administration, Congress, and the DOE on strategies to manage U.S. spent fuel and high-level wastes. These recommendations have clear relevance to California, including defining the national approach to manage used fuel left at decommissioned reactor sites that include Rancho Seco, Humboldt Bay, and San Onofre in California.

Peterson was elected to the National Academy of Engineering in 2020. He is also a Fellow of the American Nuclear Society and a former chair of its Thermal Hydraulics Division. He previously chaired the Radiation Safety Committee for UC Berkeley, which is regulated by the California Department of Public Health and is responsible for reviewing all authorizations for radioactive materials and radiation producing machines used in research on the UC Berkeley campus. He chaired the Reactor Safeguards Committee for the Aerotest Research Reactor in Pleasanton, California from 2001 to 2017. He was appointed in 2021 as a member of the National Academy's Nuclear and Radiation Studies Board. In 2004, he was appointed to the Diablo Canyon Independent Safety Committee by the Attorney General and served until 2007; he was

appointed to the Committee again in 2008 by the Governor and most recently was reappointed to the DCISC in 2021.



**Dr. Michael Quinn**

Michael Quinn has invested 40-plus years into the public health and safety of the nuclear power industry, entailing 25 years in the operations power block at a nuclear power station, and during the past 23 years as an executive operations assessor and consultant to the commercial nuclear industry in the U.S. and Canada.

Dr. Quinn's expertise entails but is not limited to nuclear safety; nuclear operations; significant operational event assessments; nuclear program inspection and performance evaluation; technical program rigor; high reliability and corrective action program/human performance/safety culture program implementation.

Throughout his career, Michael has brought the tenets of Compliance, Integrity, Transparency, and Competency to nuclear power facilities and high-reliability organizations with whom he has been engaged.

**What Dr. Quinn can bring to the DCISC:**

- Current and comprehensive nuclear safety and operations assessment and Evaluation experience in over 30 nuclear facilities since 2000
- Prior to 2000, 25 years of in-house, nuclear operations licensee experience at two nuclear power stations through all operational modes, including 13 Refueling and Maintenance Outages
- Experience as a Senior Reactor Operator Licensed Director and Duty Officer (US NRC License No. 10071); SRO licensed for 15 years

**Current Nuclear Operations Experience: Nuclear Licensees, Nuclear Regulators, and Nuclear Suppliers**

Consistent with the activities the DCISC provides in its independent assessment of Diablo Canyon operations, Dr. Quinn has provided the same, plus additional assessment service initiatives to over 25 nuclear facilities/units and for three regulators in the United States and Canada since 2000. An overview:

- Currently a Lead on the Recovery Team at the NIST Center for Neutron Research (NCNR) in Gaithersburg MD; there was a significant reactor event in 2021 that resulted in nuclear fuel damage; the reactor remains shutdown and is presently in Column 4 of US NRC IP 95003.

- Recently led a Team that assessed a series of significant events, Conduct of Operations, and Safety Culture, at the trans-uranic waste repository Waste Isolation Pilot Plant (WIPP) outside Carlsbad NM
- Provided requested assessment to 'unplanned' nuclear events at 17 nuclear power units in the United States and Canada
- Conducted Operational Reliability assessments impacting 18 nuclear facilities
- Conducted Technical Engineering and Operational Rigor assessments including 15 nuclear safety-related units/facilities (e.g., a large Department of Energy engineering remediation project for management of 50MM gallons of nuclear mixed waste; and an Independent Spent Fuel Storage Installation [ISFSI])
- Taught Operational and Event Causal Analysis (a 24-hour course) over 45 times to the US Nuclear Regulatory Commission, entailing hundreds of Inspectors and technical staff; contracted into 2023  
(in this course teaches NRC staff how to evaluate nuclear station event analysis reports and their associated corrective action implementation effectiveness)
- Taught Operational and Event Causal Analysis (a 24-hour course) to the Japan Nuclear Regulation Authority (JNRA) staff as well as to the Canada Nuclear Safety Commission (CNSC) staff
- Dr. Quinn is the only individual who has taught nuclear safety event causal analysis evaluation to the US Nuclear Regulatory Commission, the Japan Nuclear Regulation Authority, and the Canadian Nuclear Safety Commission.

Over the past 23 years Dr. Quinn has been engaged by nuclear organizations in the safe operation of nuclear units, as well as in the operational, new build, refurbishment, decommissioning and spent nuclear fuel storage installation sectors of the nuclear industry in the U.S. and Canada. On the regulatory side, during the 2006-2023 period he has trained U.S. NRC resident inspectors and regional office technical staff on methods to evaluating significant nuclear licensee operational events and processes, with a focus on nuclear safety and the three cross-cutting areas of *Human Performance, Problem Identification and Resolution (PI&R), and Safety Culture*.

During the past 20-plus years, Dr. Quinn continues to evaluate and to remediate licensee and supplier organizational and corrective action programs; providing PI&R, Human Performance, and Safety Culture consulting, coaching, assessment, and training. He provides related consulting services to several nuclear industry sectors, including: the commercial nuclear power industry in the U.S. and Canada; U.S. Government (e.g., U.S. NRC, U.S. Department of Energy); nuclear supplier organizations - large

nuclear steam supply system providers (e.g., Westinghouse and Mitsubishi); as well as smaller nuclear suppliers to the industry.

From a major nuclear industry 'campaign' perspective, Dr. Quinn has been/is engaged in many industry issue campaigns and challenges that include/have included:

- Nuclear fuel handling, storage, cask operations
- Safety culture challenges to nuclear operations
- Safeguards at operating and decommissioning nuclear units
- Technical program rigor and quality challenges resulting in non-compliances
- Independent Spent Fuel Storage Installations (ISFSI) operations and events
- Radioactive effluents and radioactive waste treatment; Groundwater tritium
- Radiological/ trans-uranic worker uptake events
- Corrective action program and 10CFR50 Appendix B Criteria challenges
- Post-accident response and subsequent upgrades (NUREG 0737)
- Containment sump screen upgrade (GSI-191)
- And very importantly, the impact that a potential 'final shutdown decision' (as Diablo Canyon was facing in 2024-2025) has on nuclear station staffs' performance while attempting to maintain focus on operational excellence. Experience includes maintaining operations 'within the envelope,' key staff retention, addressing increases in event frequency and severity, increased employee concerns, and safety culture/ safety conscious work environment (SCWE) declines, amongst others.

### **Nuclear Operations Experience within the Power Block 1975-1999**

While in the operations power block of a pressurized water reactor (PWR) unit with a large nuclear utility from 1975 to 1999, Michael earned a U.S. NRC Senior Reactor Operator License on a Westinghouse (PWR) unit, and held leadership positions that included Director of Nuclear Station Services; Nuclear Station Duty Officer; Chair-Nuclear Plant Operations Review Committee [operations oversight including 50.59 Reviews]; Corrective Action Review Board (CARB) Chair; Director of Nuclear Station Emergency Operations (DSEO); Refueling and Maintenance Outage Shift Manager; Manager of Chemistry and Radiochemistry; and Project Manager, reporting to the President, on a three-unit, four-year Nuclear Station Recovery Team.

During this time frame Michael was a member of the senior station leadership team at Haddam Neck Station, a nuclear unit that consistently performed at U.S. NRC SALP-1 and INPO-1 performance levels (presently termed U.S. NRC ROP Column 1 and INPO-1 respectively).

**LICENSES/ CERTIFICATIONS CONTRIBUTORY TO A POTENTIAL POSITION ON THE DCISC:**

- U.S. NRC Senior Reactor Operator License #10071 on a Westinghouse PWR (Diablo Canyon is a Westinghouse PWR NSSS design)
- Certified Root Cause Investigator (Nuclear Safety Review Concepts Event Evaluation and PII)
- Certified Root Cause Training Instructor
- Certified Radiation Safety Officer

Michael earned a Doctorate in Organizational Management Systems (organizational system dynamics), and preceding that effort he had completed an Executive Master of Business Administration degree and had earned a Bachelor of Science degree in Chemistry.

Michael's collective current and past nuclear power experience is congruent with the Diablo Canyon Independent Safety Committee's (DCISC) mission and requirements. He can bring current and comprehensive assessment experience in nuclear operations, decommissioning, and *Independent Spent Fuel Storage Installation (ISFSI)* management to supplement the depth and breadth of the DCISC team.

Dr. Quinn has a demonstrated history of articulating his evaluations in an objective, empirically-based, and plain language manner to a spectrum of stakeholders (e.g., utility commissions, the public, station staff, utility staff, state and federal regulators, interest groups, and the boardroom).

In summary, Michael offers current and comprehensive nuclear industry assessment and evaluation experience that support consideration of his candidacy for a role on the Diablo Canyon Independent Safety Committee.

On a personal note:

- From 2002-2011 and 2012-2021, Dr. Quinn served on the Connecticut Community Care Inc. (CCC) Board of Directors, a non-profit health care service provider of 250 employees who are responsible for over 9,000 medically compromised individuals in need.

Michael, after serving as Chair of the Board, rotated off the Board per the CCC Charter requirement to serve no more than three consecutive three-year terms.

- During his tenure as Chair of the Board, Dr. Quinn helped guide the CCC organization, and the Board, through 2020-2021 with a focused and effective response to the Coronavirus impact on the organization's 9000 clients in Connecticut.
- Michael is a four-decade American Red Cross blood donor.

LinkedIn: <https://www.linkedin.com/in/quinnmd/>

**Dr. Najmedin Meshkati**

The following is a synopsis of University of Southern California (USC) Professor Najmedin Meshkati's qualifications, experience, and publications in the field of nuclear safety. For the past 38 years, he has been teaching and conducting research on safety, risk reduction and reliability enhancement of complex technological systems, including nuclear power plants.

Dr. Meshkati has no association with Diablo Canyon proceedings, no conflict of interest, and has no investment or income, whatsoever from entities listed on page 4 of the *Diablo Canyon Independent Safety Committee Application for Nomination*.

*A Short Biography*

Dr. Najmedin Meshkati is a (tenured, full) Professor of Civil/Environmental Engineering, Industrial & Systems Engineering; and International Relations at the University of Southern California (USC); an Associate (ex-Research Fellow) with the Project on Managing the Atom at Belfer Center for Science and International Affairs at Harvard Kennedy School; and has been an Associate with the Mossavar-Rahmani Center for Business and Government at Harvard (2018-2020).

Meshkati was a Jefferson Science Fellow and a Senior Science and Engineering Advisor, Office of Science and Technology Adviser to the Secretary of State, US State Department, Washington, DC (2009-2010). He is a Commissioner of The Joint Commission (a not-for-profit organization that accredits and certifies thousands of healthcare organizations and programs in the United States and operates in many countries around the world) and on the Governance Board of the Patient Safety Movement Foundation. He is a member of the NASEM (National Academies of Sciences, Engineering and Medicine) Gulf Offshore Energy Safety (GOES) Board and served for two terms (2016-2022) on the NASEM Board on Human-Systems Integration (BOHSI). He was a member of the Steering Committee of the California Council of Science and Technology (CCST) for the study of the Underground Natural Gas Storage in California (2016-2017), which issued the final report: *"Long-Term Viability of Underground Natural Gas Storage in California: An Independent Review of Scientific and Technical Information"* (January 18, 2018). In January 2023, he was appointed to the FAA Expert Panel to conduct a congressionally-mandated review of Boeing's safety management processes and Boeing's safety culture as a part of the Aircraft Certification, Safety & Accountability Act (ACSAA), Section 103 Organization Designation Authorization (ODA). He has served as a member of the

Global Advisory Council of the Civilian Research and Development Foundation (CRDF) Global, chaired by Ambassador Thomas R. Pickering (2013-2016).

The National Academy of Sciences (NAS), National Academy of Engineering (NAE), and National Research Council (NRC) has selected him for his interdisciplinary expertise concerning human performance and safety culture and served as a member and technical advisor on two national panels in the United States investigating two major recent accidents: The NAS/NRC Committee “Lessons Learned from the Fukushima Nuclear Accident for Improving Safety and Security of U.S. Nuclear Plants” (2012-2014); and the NAE/NRC “Committee on the Analysis of Causes of the Deepwater Horizon Explosion, Fire, and Oil Spill to Identify Measures to Prevent Similar Accidents in the Future” (2010-2011).

Dr. Meshkati has inspected many petrochemical and nuclear power plants around the world, including Chernobyl (1997), Fukushima Daiichi, and Daini (2012). He has worked with the U.S. Chemical Safety and Hazard Investigation Board, as an expert on human factors and safety culture, on the investigation of the BP Refinery explosion in Texas City (2005) and served as a member of the National Research Council (NRC) Committee on Human Performance, Organizational Systems and Maritime Safety. He also served as a member of the NRC Marine Board’s Subcommittee on Coordinated R&D Strategies for Human Performance to Improve Marine Operations and Safety.

Dr. Meshkati is an elected Fellow of the Human Factors and Ergonomics Society (HFES); the 2015 recipient of the HFES highest award, the *Arnold M. Small President’s Distinguished Service Award*, for his “career-long contributions that have brought honor to the profession and the Society”; and the 2007 recipient of the HFES *Oliver Keith Hansen Outreach Award* for his “scholarly efforts on human factors of complex, large-scale technological systems.” He is the inaugural recipient of the *Ernest Amory Codman Lectureship and Award* (from The Joint Commission for his leadership and efforts in continuously improving the safety and quality of care). He is an AT&T Faculty Fellow in Industrial Ecology, a NASA Faculty Fellow (Jet Propulsion Laboratory, 2003 and 2004), and a recipient of the *Presidential Young Investigator Award* from the National Science Foundation (NSF) in 1989.

Dr. Meshkati simultaneously received a B.S. in Industrial Engineering and a B.A. in Political Science in 1976, from Sharif (Arya-Meher) University of Technology in Iran and Shahid Beheshti University (National University of Iran), respectively; a M.S. in Engineering Management in 1978; and a Ph.D. in Industrial and Systems Engineering in 1983 from USC. He is a Certified Professional Ergonomist (CPE # 650).

*Prof Meshkati's National and International Nuclear Safety-Related Technical Efforts*

The evidence presented in the following paragraphs indubitably attest to the fact that, as a practitioner, researcher, and a fervent advocate, Dr. Meshkati has passionately devoted a great majority of his professional career for the past twenty-five years to striving for improvement of the safety of nuclear facilities [Nuclear Power Plants (NPPs) and processing facilities] around the world.

Dr. Meshkati has visited and conducted research on 16 nuclear power reactors in the world. In addition, he has investigated and written about major industrial accidents and disasters such as Three Mile Island nuclear plant in the United States, Bhopal chemical plant in India, and Chernobyl nuclear plant in Ukraine, which he visited and inspected in 1997; and Fukushima Daiichi and Daini. He has attended and given talks based on his research at several International Atomic Energy Agency's (IAEA) conferences on nuclear safety in the last twenty years. The last one was in 2016 for the 30th anniversary of the Chernobyl accident. He also wrote extensively and gave testimonies in the US on the importance of IAEA for global nuclear safety in 1993.

The following, is a summary of Dr. Meshkati's nuclear safety efforts in the last 38 years which are relevant to the mission and thrust of the DCISC:

- He has served as a [Member](#) of the U.S. National Academy of Sciences/National Research Council "Committee on Lessons Learned from the Fukushima Nuclear Accident for Improving Safety and Security of U.S. Nuclear Plants", visited Daiichi and Danini NPS in Nov 2011, and worked on the Committee's seminal published report, [Lessons Learned from the Fukushima Nuclear Accident for Improving Safety of U.S. Nuclear Plants](#) (2014).
- He is a member of the [Board on Human-Systems Integration \(BOHSI\)](#), The U.S. National Academies (Sciences, Engineering, and Medicine).
- He was a Research Fellow (and now an "Associate") with the [Project on Managing the Atom](#), Belfer Center for Science and International Affairs at Harvard Kennedy School, Harvard University (2018-2019).
- Have developed and taught two relevant graduate courses at the University of Southern California (USC): CEE 571, "Nuclear Safety and Security: Human Performance and Safety Culture"; and CEE 599, "Complex Systems Safety and Resiliency: Safety Culture, Systems Design & Integration."



- His “Chernobyl Page” with students - Research and information of the causes of the accidents - has been cited and linked by the IAEA's [Information Sites Related to Chernobyl - IAEA-NDS](#)
- Authored many scholarly and commentary articles on the Three Mile Island, Chernobyl, Fukushima (Daiichi and Daini), and Onagawa (The following is a partial list of the recent ones):

[Nuclear Lessons: The Chernobyl and Fukushima nuclear accidents were failures of culture as well as technology](#), *MIT Technology Review* (June 21, 2011).

[We Must Cooperate on Nuclear Safety](#), *The New York Times* (September 22, 2011).

[Fukushima’s Unsung Heroes and Implications of the New Seminal Report by the U.S. National Academy of Sciences for the Future of \(Japan’s\) Nuclear Power Industry](#), *Huffington Post* (November 12, 2014).

[The unsung heroes of Fukushima](#), *The Japan Times* (August 25, 2014).

[Onagawa: The Japanese nuclear power plant that didn’t meltdown on 3/11](#), *Bulletin of the Atomic Scientists*, (co-authored with former industrial engineering remarkable student, Ms. Airi Rue, March 10, 2014).

[Culture of safety can make or break nuclear power plants](#), *The Japan Times*, (co-authored with former industrial engineering remarkable student, Ms. Airi Rue, March 14, 2014).

[Fukushima Nuclear Accident: Lessons Learned For U.S. Nuclear Power Plants](#), Editorial in the USC Viterbi Magazine, Spring 2015. [This article includes the following photo of me in the Tyvek suit, facemask, and respirator holding a railing in a control room of Fukushima Daiichi plant ]

[Operators' Improvisation in Complex Technological Systems: Successfully Tackling Ambiguity, Enhancing Resiliency and the Last Resort to Averting Disaster](#), *Journal of Contingencies and Crisis Management*, Vol. 23, Issue 2, pp. 90-96, 2015.

[How to Deal with Increasingly Complex Safety-Critical Technologies: Public Policy Recommendations from the Control Room of the Three Mile Island Nuclear Reactor to the Cockpit of the Boeing 737 Max](#), Belfer Center for Science and International Affairs, Harvard University (co-authored with Dr. Sébastien Philippe, March 28, 2019).

[Thirty-three Years Since the Catastrophe at Chernobyl: A Universal Lesson for the Global Nuclear Power Industry](#), Belfer Center for Science and International Affairs, Harvard University (co-authored with Prof Serhii Plokhly of Harvard, April 25, 2019).

["From TMI and Chernobyl to Fukushima: Safety and Security Culture as Tools of Engineering Diplomacy"](#), invited presentation, hosted by the Permanent Mission of Ukraine to the United Nations on the 33rd anniversary of the Chornobyl, United Nations Headquarters, New York City, Friday, April 26, 2019.

Moreover, Dr. Meshkati's career in NPP operational safety includes teaching, conducting research, consulting and practicing, and actively participating in public policy-related matters such as writing prominently visible Op-Ed articles in several national and international newspapers and magazines such the *New York Times*, *International New York Times* (*International Herald Tribune*), *Los Angeles Times*, *Washington Post*, *Wall Street Journal*, *Financial Times*, *The Economist*, *The Hill*, *Baltimore Sun*, *Charleston Gazette*, *Houston Chronicle*, *Sacramento Bee*, *MIT Technology Review*, *Japan Times*, *Korea Herald* (South Korea), *Strait Times* (Singapore), *Times of India*, *Hurriyet Daily News* (Turkey), *Gulf Today* (UAE), *The Nation* (UAE), *Gulf News* (Qatar), *Iran News* (Iran), *Shargh* (Iran), *South China Morning Post* (Hong Kong), *Winnipeg Free Press*, *Waterloo Region Record*, *Windsor Star* (Canada), *Scientific Malaysian*, etc.

In 2022; Dr. Meshkati published three commentary articles in *The Conversation* in [March](#), [August](#), and [September](#) on the nuclear safety risks and the dire situation of the Zaporizhzhia Nuclear Power Plant (ZNPP) in Ukraine after the Russian invasion. These articles, according to *The Conversation's* dashboard data, have had so far more than 79,000 reads around the world and have been translated into French, Spanish, Polish, Norwegian, Chinese, Latvian, Catalan, etc., and been cross-linked and re-published in major new sites in several countries, such as [Britannica](#); and referred to in the *New York Times*, Aljazeera, Deutsche Welle, Australian Broadcasting Corp, and other news outlets around the world, such as [Telam](#) in Argentina.

In an invited testimony before the U.S. Commission on Improving the Effectiveness of the U.N., which was originally appointed by President George Bush in 1993, Dr. Meshkati argued for the expansion of the domain and the broadening of the International Atomic Energy Agency's (IAEA) activities. His testimony was entitled "The Critical Role of the United Nations in Ensuring the Safety of Nuclear Power Plants Around the World," and thereafter, he assiduously pushed for the creation of the [Department](#) of Nuclear Safety at the IAEA and relentlessly lobbied for it in the United States and at international meetings.

Learning that the IAEA had finally created the new Department of Nuclear Safety in 1996, was like a music to his ears.

In addition to the NSF PYI grant, Dr. Meshkati has been awarded two research grants from the U.S. Nuclear Regulatory Commission (U.S. NRC) for his research on the critical role of human and organizational factors in the safety of NPPs. In the first study, which examined the integration of control room interface with operators' tasks and their team structures, Dr. Meshkati designed, developed, and implemented a special interactive real-time version of the computer simulator of the Experimental Breeder Reactor (EBR-II) in Idaho Falls. Another salient function of this simulator was to simulate seven malfunction scenarios which are the combinations of transients like primary pump coasts down, secondary pump coasts down, secondary pump increases, control rods run out, and failed indicators. An experiment was conducted in the early November 1993, at the EBR-II plant where some thirty operators of the actual plant were asked to operate the simulator using two types of interfaces.

His second NRC research grant, which is the continuation of the first one and is in-progress, deals with the validations of findings in light of more complex plant malfunctions. Dr. Meshkati reported his research through journal articles, technical reports and presentations to the U.S. NRC and other organizations.

He is also a member of the Review Panel for the National Research Council (NRC), which is the principal operating agency of the National Academy of Sciences and the National Academy of Engineering. He has been invited by the NRC and its Board of Radioactive Waste Management to comment on and review a report for the Department of Energy [*Systems Analysis and Systems Engineering in Environmental Remediation Programs at the Department of Energy's Hanford Site* (Version 1/13/98, Draft--1/13/98).

*Prof Meshkati's Nuclear Safety-related Memberships, Testimonies and Presentations*

- Invited testimony, entitled "Leadership and Safety Culture: Personal Reflections on Lessons Learned", before the US Defense Nuclear Facilities Safety Board (DNFSB) Public Hearing and Meeting on Safety Culture, Washington, DC, August 27, 2014.
- Member of the Planning Committee of the Center for Space Nuclear Research (CSNR), which is operated by the Universities Space Research Association (USRA) in collaboration with the Idaho National Laboratory (INL), Idaho Falls, Idaho, founded in 2005.

- Member of the research proposal Review Panel for the Nuclear Energy Research Initiative University Program (NERI), selected by the US Department of Energy, Office of Nuclear Energy (2003-2005).
- Member of the Evaluation Committee for the “R&D Enterprises” and the Laboratory Directed Research and Development Program at the Idaho National Engineering and Environmental Laboratory (INEEL) (August 1999).

Invited testimony before the U.S. Commission on Improving the Effectiveness of the United Nations, Los Angeles, California, “The Critical Role of the United Nations in Ensuring the Safety of Nuclear Power Plants Around the World” (February 1, 1993).

**END OF APPENDIX A**

## **APPENDIX B**

The following are all of the public comments submitted regarding the applicants for the Diablo Canyon Independent Safety Committee. The comments are presented in chronological order and are provided verbatim.

22 February 2023

Nominations

c/o David Zizmor, Energy Division, California Public Utilities Commission  
505 Van Ness Avenue  
San Francisco, CA 94102

SUBJECT: Letter in support of Per F. Peterson, DCISC

[Although I am currently a member of the Diablo Canyon Independent Safety Committee, this letter is being written by me personally and is not related to my DCISC affiliation.]

I am writing this letter to support the reappointment of Per F. Peterson to the Diablo Canyon Independent Safety Committee (DCISC). I am currently a member of the DCISC and have been a member since mid-2007, when I was appointed to a 3-year term by then-Attorney General Brown. I was reappointed by AG Brown for another term in mid-2010, reappointed again in mid-2016 by Attorney General Harris, reappointed again in mid-2019 by AG Becerra, and again in 2022 by AG Bonta.

Per Peterson was a DCISC member from 2004 to 2007, appointed by former Attorney General Lockyer. He then served five more 3-year terms (2008 to 2011, 2011 to 2014, 2014 to 2017, 2017 to 2020, and 2020 to the present), these after having been appointed by Governor Schwarzenegger, reappointed in 2014 and 2017 by Governor Brown, and in 2020 by Governor Newsom. His current term will end in June 2023, and he is now up for reappointment again.

Professor Peterson's qualifications are outstanding. He currently holds the William and Jean McCallum Floyd Endowed Chair as a professor of nuclear engineering in the Department of Nuclear Engineering at UC-Berkeley, which incidentally is the only such NE department at any university in the State of California. He has served twice as that department's chairman.

Per Peterson has an international reputation as one of the outstanding experts in nuclear power plant safety. In recognition of his outstanding professional accomplishments, Peterson was elected in 2020 to membership in the U.S. National Academy of Engineering. This honor is probably the highest honor available to any American engineer, and it accurately represents the high esteem, peerless stature, and

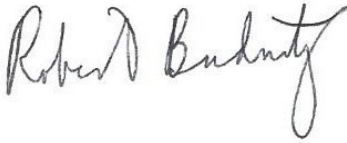
lifetime achievements that characterize him. He has published widely, and he is also famous as a leading nuclear-engineering educator. His publications and influence in the field are very broadly recognized as first-rate. He was also honored when, in 2010, he was asked to serve on President Obama's "Blue Ribbon Commission on American's Nuclear Future," established to provide technical and policy advice to the administration and the Congress on long-term policies to assure that nuclear energy's future both domestically and abroad is as safe and as proliferation-resistant as it needs to be. He served with distinction on that Commission through publication of its final report in 2012.

In 2011, in the immediate aftermath of the tsunami-caused nuclear reactor accident at Fukushima, Japan, Dr. Peterson was asked by the U.S. Secretary of Energy, Dr. Steven Chu, to serve on a small ad hoc 5-member "science advisory team" that advised on how best the U.S. Government as a whole could respond with its resources to assist the Japanese in understanding the accident, securing the safety of the installation, and assuring the safety of the nearby populations. This assignment, which lasted for about 6 months, was at the highest level and advised the entire U.S. Government, including the White House, the President's Science Adviser, the military, the US Department of Energy, and the U.S. Nuclear Regulatory Commission. (I was honored to be another of the 5 members of that special "science advisory team.") Dr. Peterson's outstanding knowledge, sound critical thinking, and keen advice played a major role in helping to assure that the U.S. Government as a whole provided the best available advice and equipment to assist Japan. I saw this first-hand, because as noted I was another member of that small advisory team.

I have known Per Peterson for many years, but for the purposes of this letter I wish mainly to emphasize the excellent quality of his service with me on the DCISC. He has brought strong experience in nuclear safety, and a very broad knowledge of how nuclear plants work and how safety is achieved. He is 100-percent impartial in his judgments. He has been very effective in interacting with members of the general public who attend our DCISC public meetings, who have gone on our DCISC sponsored tours of the Diablo Canyon power plant, and who write letters to the DCISC on various matters. He also has an excellent understanding of how a review committee like the DCISC can be most effective in carrying out its mission of helping to inform the State of California about the safety of the power plant at Diablo Canyon.

His service on the DCISC has been exemplary. In my view, his reappointment to the DCISC would be a great service to the citizens of California.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert J. Budnitz". The signature is written in a cursive style with a large, stylized "R" and "B".

[original signed by Robert J. Budnitz]



**To the attention of: David Zizmor, Esq.****January 19, 2023**

Public Utilities Regulatory Analyst

California Public Utilities Commission – Energy Division

Dear Mr. Zizmor:

I wish to endorse the candidacy of Dr. Najmedin Meshkati for the Diablo Canyon Independent Safety Committee (DCISC) 3-year term beginning July 1, 2023, as published in a notice of January 6, 2023.

It is a pleasure and privilege to enthusiastically endorse the candidacy of Dr. Meshkati. As evidenced by his professional credentials and accomplishments Dr. Meshkati is an internationally respected authority in the field of risk reduction in complex technological systems. While his expertise spans a broad spectrum of technical and scientific endeavors, including health care, I know Dr. Meshkati best from his many years of contributions in the field of nuclear energy.

For context, before retirement I worked for four decades in nuclear power including commercial nuclear power plants, the Institute of Nuclear Power Operations, and the U.S. Department of Energy (DOE) including special assignments with the International Atomic Energy Agency. My primary role was as a specialist in human and organizational factors for safe nuclear operations. In the 1980's I conducted safety inspections at Diablo Canyon and served as a consultant for the restart of Rancho Seco and subsequently for the safe closure of that plant. In retirement I continue to serve as consulting advisor for DOE and IAEA.

I have had the pleasure of knowing Dr. Meshakati personally and professionally for some three decades. The state of California has been home to him and his family for some 40 years. During that time, he has distinguished himself and his beloved University nationally and internationally acquiring multi-discipline expertise of technical, human/organizational factors and governmental scientific policy that set him apart as unique in his scholarly and applied fields of knowledge.

From my professional experience I appreciate that the scope of DCISC responsibilities in the future will require expertise far beyond the typical (though substantial) technical knowledge and experience of nuclear power plant operations. The decisions to cease power operations at Diablo Canyon placed the plant on a complicated trajectory toward shutdown. The recent decisions and actions to continue operations of the plant supportive of grid reliability and energy de-carbonization introduce levels of

complexity requiring unique skill and knowledge beyond the considerable requirements of normal nuclear operations.

Oversight bodies for operating nuclear plants often focus on technical issues of engineering, maintenance and work control. Alterations of operating tempos pose additional concerns of workforce stability, skill and knowledge retention, governance, budget stabilities, as well as organizational, human performance, culture and institutional support.

For example, the history of nuclear plant closures demonstrates that as plant approaches shut down the workforce begins to change significantly. Often the most capable professionals seek employment elsewhere, and those of longest tenure with irreplaceable historical knowledge find it in their personal interest to retire. The collective knowledge and working relationships of management, technical workforce, and regulatory bodies that support reliability become vulnerable and specialized attention to these factors is required. This is most likely a key issue for Diablo Canyon continued operations.

The foundational knowledge of engineering, defense in depth and essential safety functions remains always necessary, yet it is no longer sufficient. Attention to Resilience is now foremost in strategic approaches of national and international nuclear leadership. The focus on Resilience is about how operating organizations, regulators and oversight bodies adapt and respond under conditions of uncertainty to meet the electrical energy needs of the public they serve (the COVID19 pandemic and the Fukushima nuclear disaster are vivid examples). The theme of the 2022 annual Institute of Nuclear Power Operations Chief Operating Officers Conference was Resilience. Remarks at the conference from the Chair of the Nuclear Regulatory Commission (the Honorable Christopher T. Hanson) highlighted key challenges of which the DCISC needs to be mindful and competent to consider:

“The theme of the conference this year is resilience... I think after the events of the last two and a half years, we should all be looking closely at the concept of resilience. Because one of the key lessons of the pandemic for me is that highly optimized systems are not always very resilient... Resilience isn't focusing on a few things here or there, it is seeing the entire field and making informed decisions based on that wider perspective....a range of possible futures. As we evaluate those futures, we have to incorporate internal factors like workforce structure, rulemakings, processes and procedures. But we also have to

incorporate external factors like industry and market dynamics, climate change, and public sentiment.”

The knowledge base of nuclear technology and operations is sound, but continues (as it must) to evolve. There is a growing documented knowledge base of resilience challenges, and sound knowledge of technical processes, however knowledge related to the human, organizational and institutional factors that support resilience is more rare. It is in this particular arena that Dr. Meshkati stands apart from other distinguished potential candidates whose expertise focuses on the technical.

In February of 2022 Dr. Meshkati was selected as one of the “Titans” of the Human Factors and Ergonomics Society (HFES). HFES is the world’s largest scientific association for human factors/ergonomics professionals. Previously in 2015 HFES presented to Dr. Meshkati the society’s highest honor, the Arnold M. Small President’s Distinguished Service Award, for his “career-long contributions that have brought honor to the profession and the society.” Dr. Meshkati’s investigations, analyses and scholarship about the human, organizational and safety culture factors associated with server accidents, such a Fukushima nuclear plant disaster in Japan, are well known and admired. Recently he was asked to comment on the dangers associated with the Russian invasion of Ukraine and seizure of the Zaporizhzhya nuclear plant. His astute commentary focused on the human factors as the most concerning and most vulnerable aspect of that atrocity; recognizing that human operators and workers always constitute society’s first and last layer of defense. Returning to the more local focus on California and Diablo Canyon, the research of Dr. Meshkati and his students on the role of “Leadership Safety Values and Actions” in the checkered history of Pacific Gas and Electric management is further illustration of his ability to discern causal factors beyond the technical, often tracing responsibility beyond technical and worker ‘error’ to allocate, when appropriate, fundamental accountability to those who wield authority and budgets to the disservice of the public.

Dr. Meshkati’s technical and professional qualifications for selection to the DCISC are unassailable. Beyond that, he is known by his colleagues as a consummate professional; dedicated to the integrity of his profession; dedicated to the education of future leaders of science, technology, industry and government; dedicated to the safety and well-being of the United States and all peace-loving nations; and dedicated to the safety and well-being of the people of his beloved home state of California.

With gratitude to the Commission for the opportunity to comment on this vitally important appointment, it is an honor and distinct privilege to endorse and recommend

selection of Dr. Najmedin Meshkati as a member of the Diablo Canyon Independent Safety Committee.

Respectfully,

William E. Carnes

former Senior Advisor, U.S. Department of Energy (retired)

Myrtle Beach, S.C.



**ALLIANCE FOR NUCLEAR RESPONSIBILITY**

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March 7, 2023

David Zizmor  
California Public Utilities Commission  
505 Van Ness Avenue  
Energy Division, Fourth Floor  
San Francisco, CA 94102

Via email: [david.zizmor@cpuc.ca.gov](mailto:david.zizmor@cpuc.ca.gov)

Re: Diablo Canyon Independent Safety Committee  
Appointment of Dr. Michael Quinn—SUPPORT

Dear Mr. Zizmor:

The Alliance for Nuclear Responsibility would like to support the nomination of Dr. Michael Quinn to the Diablo Canyon Independent Safety Committee (DCISC) as the appointee of the California Attorney General.

The Alliance's mission includes monitoring ratepayer investments to improve safety and mitigate environmental damage from the operation of the state's last aging reactor. The DCISC is charged with monitoring safety oversight at Diablo Canyon. However, as their charter is a creation of the CPUC, no less an obligation should be their consideration of ratepayer impacts, for safety—or the lack thereof—comes at a price.

These oversight concerns grow more pressing as PG&E is once again applying a 20-year license renewal from the NRC:

- How and who will monitor PG&E's lapsed maintenance and review the appropriate level of capital improvement needed for the remaining years of operation?
- How and who will monitor the NRC's oversight with regards to waivers that may or may not be issued for repairs and upgrades, given the shortened relicensing application window?
- Who will ensure that the workplace behavior conditions noted in the NRC report referenced below are ameliorated?

The current DCISC members have been in place for over a decade and regrettably collegiality has given way to complacency. As the Alliance has previously noted in its February 6, 2023 letter to the Committee regarding, NRC “Diablo Canyon Power Plant – Biennial Problem Identification and Resolution Inspection Report” dated January 27, 2023, there were numerous issues and concerns raised by the NRC that should have come to the attention of the DCISC. As attorney John Geesman noted in our correspondence of February 6, “These matters appear to have escaped discovery by the DCISC despite repeated fact-finding visits to the plant, and they conflict with the upbeat content of the Specific Conclusions in the DCISC’s recently-adopted 32nd Annual Report.”

With all due respect to the long-term tenure of the current candidate, it is far past due to have fresh eyes examining an increasingly geriatric and frail patient.

That is why the Alliance welcomes the candidacy of Dr. Quinn to the DCISC. Today, faced with the dual issues of attempted NRC license renewal *and* proceeding with the decommissioning process only his resume’ indicated specialized training and experience in both areas of concern.

While it is true that all the candidates show strong backgrounds with nuclear science and regulation, Dr. Quinn’s resume stands out for its emphasis on the *practical*. He has actual plant operation experience and has held a licensed Senior Reactor Operator credential. In addition to numerous technical positions, his career features additional areas of concentration (as was the focus of his Ph.D) in *the management and human relations aspects* of operating complex, technical systems.

Of the current candidates, Dr. Quinn’s recognition of Diablo’s changing status is unique, and we believe a valuable insight into his thought process and expertise.

The human performance aspects of nuclear power operations are likely to be looming as large as the technical considerations in these next few years. The experiences of a candidate such as Dr. Quinn in identifying and working to mitigate any shortcomings that could impact reactor operations and public safety would be welcomed by ratepayers and stakeholders alike.

As well, Dr. Quinn’s tenure at nuclear plants in Connecticut includes the time in which those facilities transitioned from operation to decommissioning. As Diablo’s decommissioning is inevitable, his experiences will be valuable; it is not found in the CVs of the other candidates.

The Alliance for Nuclear Responsibility endorses Dr. Michael Quinn for appointment to the Diablo Canyon Independent Safety Committee.

Yours truly,

/s/

Rochelle Becker  
Executive Director  
Alliance for Nuclear Responsibility

**To: David Zizmor, Esq.,**  
**From: Bill Hoyle**  
**Re: support for appointment of Dr. Meshkati**  
**Date: February 5, 2023**

**Dear David Zizmor, Esq.,**

I strongly recommend the appointment of Dr. Najmedin Meshkati to the Diablo Canyon Independent Safety Committee for a 3-year term beginning July 1, 2023 as published on January 6, 2023.

I worked closely with Dr. Meshkati for more than 20 years on the most complex safety investigations conducted by the U.S. Chemical Safety Board, CSB. CSB is an independent federal agency modeled after the highly-regarded National Transportation Safety Board. CSB is a scientific, non-regulatory agency that conducts studies and investigations of major accidents involving hazardous materials.

Dr. Meshkati is nationally-recognized expert on human factors, safety culture, high reliability organizations and the safe operations of nuclear power plants. He has extensive experience serving on safety committees of the prestigious National Academy of Sciences. He has won numerous awards for his contributions to improving safety.

Dr. Meshkati will be an invaluable addition to the Diablo Canyon Independent Safety Committee.

Sincerely yours,

Bill Hoyle  
Manager and Senior Investigator, U.S. Chemical Safety Board, retired



February 6, 2023

Mr. David Zizmor  
Public Utilities Regulatory Analyst  
California Public Utilities Commission – Energy Division  
505 Van Ness Avenue  
San Francisco, CA 94102  
Via Email: DAVID.ZIZMOR@CPUC.CA.GOV

Re: Nomination of Dr. Najmedin Meshkati for the Diablo Canyon Independent Safety Committee

Dear Mr. Zizmor:

On behalf of the Human Factors and Ergonomics Society (HFES), we strongly support the nomination of Dr. Najmedin Meshkati, Professor of Civil and Environmental Engineering, Industrial Systems Engineering, and International Relations at the University of Southern California (USC) for the Diablo Canyon Independent Safety Committee (DCISC).

HFES enthusiastically supports the nomination of Dr. Meshkati for appointment to the DCISC because of his extensive expertise in the safety, reliability, and efficiency of complex, large-scale systems, particularly with respect to human factors and safety culture which HFES believes to be critical to the continued successful use of nuclear power. As you know, a neglect of human factors design principles and safety culture problems were behind major nuclear power accidents at Three Mile Island and Chernobyl. Paying close attention to these factors should form a critical part of any successful safety review.

Dr. Meshkati provides a unique perspective that would greatly benefit the DCISC by providing an interdisciplinary, human-system oriented approach to the safety of Diablo Canyon NPP. Dr. Meshkati would serve as an indispensable resource to ensure that human factors and safety culture concerns are being sufficiently considered by DCISC.

For the past 38-years, Dr. Meshkati's research has focused on risk reduction and reliability enhancement of complex socio-technological systems, including nuclear safety. Dr. Meshkati's expertise in this area is widely recognized. He was a Research Fellow (and now an "Associate") with the Project on Managing the Atom at the Belfer Center for Science and International Affairs at the Harvard University Kennedy School. He has developed and taught two graduate courses on nuclear safety at USC: "Nuclear Safety and Security: Human Performance and Safety Culture" and "Complex Systems Safety and Resiliency: Safety Culture, Systems Design & Integration."

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Dr. Meshkati served two terms on the National Academies of Science, Engineering and Medicine's Board on Human-Systems Integration (BOHSI) and has served on investigations of major accidents, including Fukushima, by the National Academies. He has also worked with the California Council of Science and Technology (CCST) on the study of the underground natural gas storage in California after the Aliso Canyon accident. Dr. Meshkati can bring this wealth of diverse experience from numerous safety-critical domains to the DCISC to provide an indispensable multidisciplinary approach.

Dr. Meshkati is a member and Fellow of the Human Factors and Ergonomics Society (HFES). HFES is the world's largest scientific association for human factors and ergonomics (HF/E) professionals, with more than 3,000 members globally. Following the Three Mile Island accident in 1979, HFES reviewed a number of nuclear plant control rooms and published an extensive report, which became a seminal source for nuclear safety. HFES strongly supports an interdisciplinary orientation to nuclear safety for this position and urges the CPUC and DCISC to include a Human Factors expert on this committee.

Thank you for the opportunity to support Dr. Meshkati – HFES strongly supports his nomination for appointment to the Diablo Canyon Independent Safety Committee. Dr. Meshkati possesses the expertise and experience needed to make strong contributions to this committee's work. We believe he is uniquely qualified for the position and encourage you to give due consideration to his nomination.

Sincerely,

Carolyn Sommerich, PhD  
President  
Human Factors and Ergonomics Society

Steven C. Kemp, CAE  
Executive Director  
Human Factors and Ergonomics Society

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February 3, 2023

David Zizmor, Esq.  
Public Utilities Regulatory Analyst  
California Public Utilities Commission – Energy Division

**Subject: Recommendation in Support of Najmedin Meshkati's Appointment to the Diablo Canyon Independent Safety Commission (DCISC)**

Dear Mr. Zizmor,

It is with great enthusiasm that I offer my full support of the appointment of Dr. Najmedin Meshkati to the Diablo Canyon Independent Safety Committee (DCISC).

California is home to many of the world's leading education and research institutions. At CCST—a nonpartisan, nonprofit organization created at the request of the State Legislature 35 years ago—we believe California's policies are stronger with science. We work with scientists from across this broad network to provide science and technology advice to state decision makers. As such, I have experienced firsthand that Dr. Meshkati has the extensive knowledge and expertise required to serve on DCISC and will fulfill the responsibilities of his appointment with the utmost integrity and professionalism.

Dr. Meshkati is a nationally recognized expert on the safety, reliability, and efficiency of large-scale, complex systems, including nuclear power plants, with over 35 years of teaching, interdisciplinary research, and leadership in the field. He has demonstrated a continued dedication to leveraging his expertise to inform policy making decisions, serving as a member and technical advisor on two national panels convened by the National Academies of Science, Engineering Medicine to investigate major recent events: the Fukushima Nuclear disaster and the Deepwater Horizon explosion.

I and my team at CCST had the pleasure of working with Dr. Meshkati on a report commissioned by the CPUC to determine the long-term viability of underground natural gas storage in California. Dr. Meshkati served on the report's Steering Committee, a group of experts who helped guide the report authors, write conclusions and recommendations based on findings of the authors, and write an executive summary for the report. Dr. Meshkati was integral to the chapter of the report which explored the risks to health, safety, environment, and gas storage system infrastructure at California subsurface gas storage facilities. He went above and beyond his role as a Steering Committee member, authoring a section published in the report on the importance of effective and healthy safety culture, drawing from his many years of expertise on risk reduction and safety in the nuclear and oil and gas industries. The

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recommendations in that chapter of the report were actionable and impactful due to Dr. Meshkati's real world experience and scientific expertise. Dr. Meshkati was always very responsive and actively engaged with our team, which is so important to the success of this type of advisory work. He is one of the most effective and thoughtful Steering Committee members I've had the pleasure of working with.

For these reasons, I would like to eagerly endorse the appointment of Dr. Najmedin Meshkati to the Diablo Canyon Independent Safety Committee.

Warmest Regards,



Amber Mace  
CEO of the California Council on Science and Technology

## Comments on Qualifications of Dr. Michael Quinn

Dear Sir,

I am honored to have the opportunity to provide comments on the qualifications of Dr. Quinn. I have worked in the nuclear industry for 45 years with experience in reactor operations, training, maintenance, start-up, troubled plant recovery, and coordination of oversight for TVA's nuclear plants. I am a graduate of the United States Naval Academy who qualified as a Nuclear Engineer in the Naval Reactors Program.

For the past 3 years, I have had the honor to work with Dr. Quinn on multiple projects involving recovery of troubled plants and organizations. Dr. Quinn is the ideal candidate for appointment to the Diablo Canyon Independent Safety Committee. His far-ranging knowledge of nuclear operations and management of nuclear safety issues is evident based on his continuing professional successes. He has an SRO license and years of experience in identification and correction of safety issues. He is a recognized expert in root cause analysis as well as nuclear safety culture assessment and implementation. His recent experience includes leading teams to identify performance issues at the Waste Isolation Pilot Project (nuclear facility storing transuranic waste) and to evaluate the state of the nuclear safety culture at the NIST NCR reactor facility.

As TVA's Nuclear Safety Review Board coordinator during the restart of Sequoyah and Browns Ferry Nuclear Plants, I had the opportunity to interact with each member of our off-site review committees. Dr. Quinn would have been a welcome addition.

Most recently, I have had the opportunity to observe Dr. Quinn's ability to assess complicated organizational and technical issues at high hazard nuclear facilities. He has the unique ability to be able to identify issues, capture their significance, and develop recommendations to correct the issues. His knowledge of NRC regulations is unsurpassed. He has an excellent relationship with NRC personnel and management having instructed many of them in the NRC root cause analysis course. Specifically, he and his team are the exclusive instructors teaching NRC personnel how to assess and review the adequacy of root cause submittals to the NRC. Dr. Quinn is well spoken and is sensitive to the importance of his reports and how they impact public perceptions. I have witnessed his outstanding ability to effectively communicate to all levels of management and external stakeholders.

Dr. Quinn's ability to lead teams is unparalleled. He functions at a high level, is energetic, and ensures all team members are heard. He has demonstrated mastery of capturing the data inputs, processing the information and communicating all critical items to the customers and regulators in a manner that promotes understanding of

important issues. He is excellent at identifying issues that could potentially lead to future problems and has a history of developing corrective actions to resolve the potential issues. He is candid, personable, and has the unique ability to see and understand the “big picture” issues and needs. I am honored to have worked with him.

In short, I cannot think of a better person than Dr. Quinn for the Diablo Canyon Independent Safety Committee. He will make an immediate positive impact if chosen for the position.

Steven K. Crowe, Captain, USNR (ret)