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To: Michael Lesar, Chief
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Washington, D.C. 20555-0001

From: Commissioner James Boyd
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Re: **Re: Docket ID NRC-2009-0485: Comments on the U.S. Nuclear Regulatory Commission's Draft Safety Culture Policy Statement (Federal Register, Vol. 74, No. 214, November 6, 2009, pp. 57525--57529)**

CC:

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March 1, 2010

Michael Lesar, Chief
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U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Re: Docket ID NRC-2009-0485: Comments on the U.S. Nuclear Regulatory Commission's Draft Safety Culture Policy Statement (Federal Register, Vol. 74, No. 214, November 6, 2009, pp. 57525–57529)

Dear Mr. Lesar:

We appreciate the opportunity to comment on the U.S. Nuclear Regulatory Commission's (NRC) Draft Safety Culture Policy Statement published in the above-referenced Federal Register and commend the NRC for its extensive public outreach efforts to engage stakeholders in the development of this policy. NRC also should be commended for its efforts to improve and strengthen the safety culture at nuclear facilities in the U.S, for including safety culture in the Reactor Oversight Process (ROP), and for continuing efforts to improve NRC's internal safety culture.

Our comments on the NRC's "Draft Safety Culture Policy Statement" are attached. If you have any questions regarding these comments, please contact Barbara Byron at 916-654-4976 (bbyron@energy.state.ca.us) or Rachel MacDonald at 916-654-4862 (rmacdona@energy.state.ca.us).

Sincerely,

James D. Boyd, Commissioner and
California State Liaison Officer to the
Nuclear Regulatory Commission

cc: Paul Lohaus, NRC
Bill Maier, NRC
Enclosure: 1

ENCLOSURE

Comments on the U.S. Nuclear Regulatory Commission's Draft Safety Culture Policy Statement

March 1, 2010
California Energy Commission

INTRODUCTION

The U.S. Nuclear Regulatory Commission (NRC) staff has developed a draft Safety Culture Policy Statement in response to a direction from the Nuclear Regulatory Commission that is applicable to all licensees and includes safety and security considerations. We strongly support the NRC's efforts to enhance the safety culture[1] at nuclear facilities, to conduct independent assessments at these facilities, and for its extensive public outreach in developing this proposed safety culture policy. We also support and commend the NRC for changing the NRC's Reactor Oversight Process (ROP) to better address safety culture in response to the Davis Besse reactor vessel head degradation event in 2002[2].

The nuclear industry's Institute of Nuclear Power Operations (INPO) released in late 2004 the "Principles for a Strong Nuclear Safety Culture" to evaluate a plant's overall safety culture and provide an early warning of areas where that culture could be beginning to erode.[3] Much of the focus on plant safety culture by INPO and the NRC resulted from the Davis Besse event. Davis Besse had been rated an "excellent" or "good" facility for years and had been regularly audited by INPO and the NRC, and yet the plant still had a near-catastrophic safety system failure.[4] Davis Bessie was shut down for nearly two years for repairs and inspections, and a nationwide review of all similar plants was conducted to ensure that similar conditions did not exist at other reactors. INPO decided that a Safety Culture Assessment would need to be a permanent, periodic requirement.[5]

The California Energy Commission's *2009 Integrated Energy Policy Report* (IEPR) specifically addressed safety culture concerns relating to California's operating power plants, which are the San Onofre Nuclear Generation Station (SONGS) and the Diablo Canyon Nuclear Power Plant. The IEPR noted California's concern with the plant reliability implications of lapses in safety culture at nuclear power plants.

Our comments below highlight and supplement the comments that we provided on February 11, 2009, to Ms. June Cai on NRC's Proposed Policy Statement on Safety

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[1] The Nuclear Regulatory Commission (NRC) had originally defined a strong safety culture as a work environment where management and employees are dedicated to putting safety first. However, the proposed safety culture policy defines it as "that assembly of characteristics, attitudes, and behaviors in organizations and individuals which establishes that as an overriding priority, nuclear safety and security issues receive the attention warranted by their significance."

[2] The unexpected discovery of a football-sized hole due to corrosion in the reactor vessel head at Davis-Besse in 2002 is considered one of the most significant safety-related occurrences at nuclear reactors.

[3] "An Approach for Plants to Address INPO's Nuclear Safety Culture Expectations", Power Engineering, May 1, 2008.

[4] Ibid, p. 2.

[5] International Nuclear Safety Advisory Group (INSAG) Safety Series No. 75-INSAG-4 (1991).

Culture and Security Culture. We appreciate the opportunity to participate in the public workshop on February 3, 2009, on this topic and throughout this process. We continue to believe that one of the most important factors affecting plant safety and reliability is maintaining a robust and positive safety culture at each nuclear power plant. Our comments, responses to NRC questions, and recommendations are provided below.

GENERAL COMMENTS

1. **Although NRC has improved its Reactor Oversight Process (ROP) to include evaluating safety culture, additional improvements are needed in assessing safety culture and addressing shortcomings at nuclear power plants.**

The Davis-Besse event in 2002 represented a significant breakdown in safety standards at all levels and exposed a failure by the NRC to assure that plants are operating safely. Just before the discovery of the damaged reactor-vessel head, the Davis-Besse plant received the highest ratings possible in the NRC Reactor Oversight Process (ROP), with "green" ratings in all 17 performance indicators. After reviewing the Davis-Besse incident, the NRC Inspector General found that:

"*The fact that (the licensee) sought and the [NRC] staff allowed Davis-Besse to operate past December 31, 2001, without performing these inspections was driven in large part by the desire to lessen the financial impact on (the licensee) that would result in an early shutdown.*"[6]

NRC conducted a "lessons learned" review of the Davis-Besse event and published a report with recommendations and action plans including substantive changes to the ROP and NRC's internal procedures.

In 2006, the U.S. General Accountability Office (GAO) recommended that NRC aggressively monitor, evaluate, and, if needed, implement additional methods or processes to increase the effectiveness of its efforts under the ROP to assess safety culture at plants.[7] The GAO found that while the NRC had improved its ROP since the program began in 2000, continued efforts were needed to address shortcomings, particularly in terms of NRC's ability to identify and address early indications of declining plant safety performance.[8] Subsequently, NRC has increased its focus on cross-cutting safety issues – issues that comprise many of the elements of safety culture—and has developed new requirements under the ROP to more directly assess safety culture at poorer performing plants.

Yet, some participants in the Keystone Center's *Nuclear Power Joint Fact-Finding Report* in 2007 expressed concern that there remain "outlier" plants that lack a strong safety culture. (Davis-Besse was cited as an example, due primarily to organizational

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[6] NRC Inspector General, "*NRC's Regulation of Davis-Besse Regarding Damage to the Reactor Vessel Head.*" Dec., 30, 2002, p. 23.

[7] U.S. Government Accountability Office, "*Oversight of Nuclear Power Plant Safety Has Improved, but Refinements Are Needed*", September 2006, GAO-6-1029, p. 40.

[8] U.S. Government Accountability Office, "*Oversight of Nuclear Power Plant Safety Has Improved, but Refinements Are Needed*", September 2006, GAO-06-1029, p. 5.

and leadership issues.[9]) Other Keystone panel members, however, believe that the NRC has made significant strides in balancing public interest in nuclear safety with the operational interests of the industry.[10] Continued vigilance in evaluating and improving the safety culture at all nuclear plants is critical to maintaining reactor safety and reliability.

2. **NRC's independent, proactive safety culture assessment at nuclear power plants should not be eliminated and a plant's self-assessment, or utility/industry assessment, of safety culture must be supplemented by regular independent NRC inspections.**

During the February 3, 2009, NRC public workshop, the nuclear industry and utilities proposed relying mostly upon plant self-assessments and eliminating NRC's proactive safety culture assessments at nuclear power plants. However, the Davis-Besse event in 2002, the security guards found sleeping while on duty at Peach Bottom in 2007, and NRC-identified safety culture problems at some nuclear plants underscore the importance of a strong and independent safety culture oversight program in addition to utility/industry plant self-assessments. For example, self-assessments did not disclose problems at SONGS that were identified by NRC inspections, and self-assessments were insufficient to correct safety culture lapses at Palo Verde. Indeed, in plants with inadequate safety cultures, self assessment is likely to be insufficient to proactively identify problems and address safety culture lapses before a serious safety problem develops.

Therefore, the NRC's proactive safety culture assessment at nuclear power plants should not be eliminated but rather should be strengthened. Although we support industry's attempts to improve their self-assessment processes and believe self-assessments to be essential components of an adequate safety culture program, we do not agree that self-assessments should fully or partially replace independent NRC safety culture assessments.

3. **NRC should continue to strengthen its oversight and assessment process to evaluate the adequacy of a plant's safety culture and safety conscious work environment and should establish an incentive and enforcement program for developing/maintaining a positive safety culture.**

Much of NRC's focus in evaluating plant safety culture is on identifying plants with poorer scores in the ROP. NRC's response to plants with poorer scores is to increase the amount of inspections and evaluation and to develop improvement plans. In some cases, this is not sufficient. For example, the Office of the Inspector General criticized the NRC in a 2002 report for requiring absolute proof of a safety problem, rather than lack of reasonable assurance of maintaining health and safety, before it will act to shut down a nuclear power plant.[11] More recently, some members of the Keystone Report Project Team expressed their beliefs that most NRC Commissioners, responding in part to Congressional oversight, "*favor the financial interests of the nuclear power industry,*

[9] Ibid, p. 52.
[10] Ibid.
[11] Office of The Inspector General, U.S. Nuclear Regulatory Commission, "OIG 2002 Survey of NRC's Safety Culture and Climate: Special Evaluation", OIG-03-0A-03, December 11, 2002.

sometimes at the expense of public health and safety."[12] Others, as mentioned above, believed that the NRC has made significant strides in balancing the public interest in nuclear safety with the operational interests of the industry.[13] While the NRC has made clear statements that safety comes first, the NRC must consistently demonstrate this attitude by aggressively handling any safety lapses at nuclear plants.

4. **NRC should continue to strengthen its oversight of the safety culture and safety conscious work environment at California nuclear power plants.**

The NRC in 2007 identified safety culture concerns at SONGS, particularly with respect to human performance and problem identification and resolution. Since then, SCE's management installed a new leadership team at SONGS and instituted a series of safety reforms and safety culture monitoring programs. SCE implemented safety improvement plans, conducted extensive evaluations to identify the root causes of safety lapses, began weekly monitoring of core performance indicators, began weekly site-wide meetings on human performance and safety issues, set up a system for workers to voice safety concerns, and conducted safety culture assessment. However, the NRC concluded in 2009 that although SONGS was operated in a manner that preserved public health and safety, problems in human performance and in problem identification and resolution persist.

As a result of these safety culture problems, the NRC is maintaining the additional oversight that it initially imposed on SONGS in December 2008. At that time, the NRC discovered that a battery used to power a backup generator at the plant had been inoperable since 2004. Although the NRC ranked this finding to be of low to moderate safety significance, the agency noted that the persistence of the problem for four years pointed to inadequate maintenance procedures for the plant overall. The NRC was particularly concerned that it had identified problems in the areas of human performance and problem identification and resolution over the course of four consecutive assessments, including one in September 2009.[14] The NRC has also recently expressed concern with instances of "failure to use conservative assumptions" in decision-making[15] and has expressed dissatisfaction that SONGS' self-evaluations had not identified seven other problems at the plant.[16] This highlights the need for and importance of independent

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[12] Nuclear Power Joint Fact-Finding, June 2007, The Keystone Center, www.keystone.org

[13] Examples provided in the Keystone Report of the NRC inappropriately emphasizing industry economics and promotional interest over public health included the NRC assessment of its own safety culture in 2002 which found that slightly more than half of its employees feel that is was "safe to speak up" in the NRC, an improvement from a similar survey done four years earlier. Also, former Senator Pete Domenici in his book claimed that by threatening to cut its budget by one-third during a 1998 meeting with the then NRC chair, he successfully persuaded the NRC to make changes to its regulatory approach which some consider weakened NRC safety oversight. In addition, Davis-Besse received the top rating in all 18 categories of NRC's performance owner/operator rating system just before it w2as discovered to have a hole in the pressure vessel head.

[14] Nuclear Regulatory Commission, Mid-Cycle Performance Review and Inspection Plan – San Onofre Nuclear Generating Station, September 1, 2009, p. 1, available at: [http://www.nrc.gov//NRR/OVERSIGHT/ASSESS/LETTERS/sano_2009q2.pdf]

[15] Nuclear Regulatory Commission, Mid-cycle Performance Review and Inspection Plan – San Onofre Nuclear Generating Station, September 1, 2009, p. 2.

[16] Nuclear Regulatory Commission, Office of Public Affairs, "NRC to Provide Additional Oversight to San Onofre Nuclear Generating Station," December 22, 2008.

safety culture inspections rather than relying solely upon utility/industry self-assessments to identify problems.

Although Diablo Canyon has not received significant enforcement actions in recent years from the NRC, there have been worker allegations at Diablo Canyon, most recently in 2008. In December 2008 and in Spring 2009, PG&E employees picketed at Diablo Canyon and PG&E Headquarters in San Francisco to call attention to what they claimed were unsafe working conditions.

NRC should continue to strengthen its oversight in reviewing the safety culture and the safety conscious work environment at SONGS and Diablo Canyon. This oversight should include continued NRC review and independent assessment of plant worker safety allegations.

5. **NRC's oversight of security measures at commercial nuclear power plants should continue to be improved.**

The U.S. General Accountability Office (GAO) has posed questions about the NRC's oversight of security measures at commercial nuclear power plants. For example, GAO found in 2006 that NRC inspectors often used a process involving "non-cited violations" that may have minimized licensee attention to security problems.[17] Also, NRC has no routine, centralized process for collecting, analyzing, and disseminating security-inspection findings that may be common to other plants. GAO noted potential issues in NRC security inspections; for example, a lapse in the protection of information about the planned scenario for a mock attack may have given the plant's security officers knowledge that allowed them to perform better than they otherwise would have.[18]

6. **Independent safety culture assessments should be a major component of nuclear reactor license renewal reviews and evaluations.**

NRC plant license renewal reviews currently emphasize the hardware and equipment of a plant and whether plant components, which are subject to age-related degradation, can continue to operate safely for an additional 20 years with license extension approval. We believe that the safety culture at a plant, the safety conscious work environment, and the adequacy of plant maintenance programs are also essential to the safe and reliable operation of a plant for an additional 20 years. Therefore, an evaluation of the adequacy of a plant's safety culture and safety conscious work environment should be included in license renewal reviews.

ANSWERS TO NRC'S SPECIFIC QUESTIONS IN THE FEDERAL REGISTER NOTICE:

(1) The draft policy statement provides a description of areas important to safety culture, (i.e., safety culture characteristics). Are there any characteristics relevant to a particular type of licensee or certificate holder (if so, please specify which type) that do not appear to be addressed?

[17] See Nuclear Regulatory Commission: Oversight of Nuclear Power Plant Safety Has Improved, But Refinements Are Needed. September 2006. GAO-06-1020. [http://www.gao.gov/new.items/do6388.pdf]
[18] http://ww.gao.gov/new.items/do6388.pdf

Although the proposed policy statement describes safety culture characteristics, it could be improved by setting guidelines, expectations and goals for establishing, maintaining, evaluating and enforcing an adequate safety culture. For example, to the extent these guidelines can be incorporated into plant assessments, more detail should be provided on NRC's security/safety culture expectations, such as setting goals, assigning responsibilities, providing staff and resources (e.g., establishing a permanent position for safety culture manager), and periodically evaluating the adequacy of a plant's safety culture.

(2) *Are there safety culture characteristics as described in the draft policy statement that you believe do not contribute to safety culture and, therefore, should not be included?*

No.

(3) *Regarding the understanding of what the Commission means by a "positive safety culture," would it help to include the safety culture characteristics in the Statement of Policy section in the policy statement?*

Yes, it would help to include the safety culture characteristics in the Statement of Policy section to provide more substance to the discussion in this section and to highlight their importance to the overall policy statement.

(4) The draft policy statement includes the following definition of safety culture: "Safety culture is that assembly of characteristics, attitudes, and behaviors in organizations and individuals which establishes that as an overriding priority, nuclear safety and security issues receive the attention warranted by their significance." Does this definition need further clarification to be useful?

Yes. This description of "safety culture" needs more detail, is too vague, and does not convey the high priority of establishing and maintaining a strong, positive safety culture. For example, what is meant by "should receive the attention warranted by their significance"? Again, this definition is too vague.

The NRC had originally defined a strong safety culture as a work environment where management and employees are dedicated to putting safety first. Although this is very simplistic, it reflects the high priority that should be placed on safety culture and safety over all other considerations.

The NRC's "Policy Statement on the Conduct of Nuclear Power Plant Operations," *Federal Register* notice, January 24, 1989, refers to safety culture as "the necessary full attention to safety matters" and the "personal dedication and accountability of all individuals engaged in any activity which has a bearing on the safety of nuclear power plants. A strong safety culture is one that has a strong safety-first focus." This old NRC definition seems more appropriate. Even better is the INPO definition of safety culture as "an organization's values and behaviors ---- modeled by its leaders and internalized by its members – that serve to make nuclear safety the overriding priority."[19]

[19] Institute of Nuclear Power Operations (INPO), "*Principles for a Strong Nuclear Safety Culture*", November 2004, which can be found at:

(5) *The draft policy statement states, "All licensees and certificate holders should consider and foster the safety culture characteristics commensurate with the safety and security significance of activities and the nature and complexity of their organization and functions) in carrying out their day-to-day work activities and decisions." Given the diversity among the licensees and certificate holders regulated by the NRC and the Agreement States, does this statement need further clarification?*

Yes. This statement needs further clarification. The use of wording like "consider and foster the safety culture characteristics commensurate with the safety and security significance of activities..." is too vague. The NRC should provide licensees with more guidance on what might be the essential components of an adequate safety culture. This should include specific standards and expectations. For example, some aspects include developing and offering regular staff training and informational materials on safety culture practices, providing periodic follow-up evaluation of the effectiveness of safety culture programs, establishing processes whereby employee-raised safety concerns can be addressed, and ensuring (via employee polling) that employees are confident that their concerns will be fairly and adequately addressed with no fear or retaliation or punishment.

(6) *How well does the draft safety culture policy statement enhance licensees' and certificate holders' understanding of the NRC's expectations that they maintain a positive safety culture that includes issues related to security?*

It is a good beginning, but more detail is needed. The NRC should clearly state NRC's expectations for plant owners and operators to maintain an adequate safety culture that includes security considerations.

(7) *In addition to issuing a safety culture policy statement, what might the NRC consider doing, or doing differently, to increase licensees' and certificate holders' attention to safety culture in the materials area?*

NRC should clearly define its expectations for the components of an adequate safety culture program for licensees using radioactive materials, e.g., well-defined goals and employee roles, periodic evaluations, and incentives/enforcement to reinforce those expectations. An adequate safety culture program must be clearly defined, evaluated, enforced and evaluated. Resources must be adequate and responsibilities and roles clearly defined to identify and correct potential safety problems.

(8) How can the NRC better involve stakeholders to address safety culture, including security, for all NRC and Agreement State licensees and certificate holders?

The NRC has made commendable efforts to engage stakeholders in its public outreach program, including holding public workshops and webinars and issuing Federal Register notices in its process for developing the safety culture policy. The Energy Commission supports NRC's continued stakeholder involvement to facilitate open discussion of concerns and issues. These meetings ideally should be easily accessible by the public

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[http://www.efcog.org/wg/ism_pmi/docs/Safety_Culture/Dec07/INPO%20PrinciplesForStrongNuclearSafetyCulture.pdf]

and/or made available via webinars in light of limited travel funds available for attending these meetings in person.

CONCLUSIONS:

We strongly support NRC's increased focus on safety culture, its increased review of safety culture programs (including enhancing ROP assessments), and periodic NRC inspections and enforcement. While the primary responsibility for establishing and maintaining a strong safety culture is that of the plant owner/operator, we strongly support NRC's performing proactive safety culture assessments rather than solely relying upon utility/industry assessments. We support INPO's requirement that utilities conduct safety culture assessments at least every other year as measured against an industry standard. However, although self-assessments are very important, they must be independently verified through NRC inspections. Safety culture at a plant can change quickly, and lapses can be disastrous. It would be unwise to wait for cross-cutting reviews or alternate year assessments to identify and correct safety culture problems.