IN THE UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT

No. 02-72735

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA,

AND

COUNTY OF SAN LUIS OBISPO

Petitioners-Appellants,

v.

U.S. NUCLEAR REGULATORY COMMISSION,

Defendants-Appellees,

PACIFIC GAS AND ELECTRIC COMPANY, et al.

Intervenors

PETITONERS' EXCERPTS OF RECORD
VOLUME II OF III

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DIABLO CANYON
INDEPENDENT SAFETY COMMITTEE

ELEVENTH ANNUAL REPORT
ON THE
SAFETY OF
DIABLO CANYON NUCLEAR POWER PLANT OPERATIONS

July 1, 2000 - June 30, 2001

Volume I – MAIN REPORT

Philip R. Clark, Chair*
E. Gail de Planque, Vice-Chair*
A. David Rossin

*for the period July 1, 2000 - June 30, 2001

Approved: October 17, 2001

The DCISC invites questions and comments on this report.
Contact the DCISC at the following:

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PREFACE

This report covers the activities of the Diablo Canyon Independent Safety Committee (DCISC) for the period July 1, 2000 through June 30, 2001. This is the eleventh annual report of the DCISC; the first report covered the six-month period January 1, 1990 - June 30, 1990. The report is presented in two volumes.

Volume I includes a brief introduction and history regarding the DCISC (Section 1.0), a summary of the public meetings held during the reporting period (Section 2.0), a review and evaluation of Nuclear Regulatory Commission (NRC) assessments and issues (Section 3.0), Committee Member and Consultant investigation topic summaries (Section 4.0), public input (Section 5.0), and a follow-up of Pacific Gas and Electric (PG&E) actions on DCISC recommendations (Section 6.0). A summary of the DCISC conclusions and recommendations (Section 7.0) and PG&E's response (Section 8.0) conclude the report. The conclusions and recommendations also appear throughout the main body of the report with a discussion of the subject involved. These appear in **boldface type.**

Volume II contains, among other things, full reports by Committee Members/Consultants, meeting notices and agendas, PG&E organization charts, a list of documents received by the DCISC, a summary of Diablo Canyon Power Plant operations for the reporting period, a record of plant tours by the DCISC, a glossary of terms, and communications and correspondence with members of the public.

The DCISC invites questions and comments on this report. Contact the DCISC at the following:

The Diablo Canyon Independent Safety Committee
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Diablo Canyon Independent Safety Committee

Annual Report on the
Safety of Diablo Canyon Nuclear Power Plant Operations

July 1, 2000 - June 30, 2001

EXECUTIVE SUMMARY

The Diablo Canyon Independent Safety Committee (DCISC) was established as part of the June 24, 1988 settlement agreement which arose out of the rate proceedings for the Diablo Canyon Power Plant (DCPP). The original settlement agreement was terminated by the California Public Utilities Commission (CPUC) in its decision to open the state electricity markets to competition on January 1, 1998; however, under the provisions of the Commission's Decision 97-05-088, issued on May 21, 1997, the DCISC will continue to function and fulfill its responsibilities as established under the terms of the 1988 settlement agreement. Following PG&E's filing on April 6, 2001, in the United States Bankruptcy Court for protection and reorganization under Chapter 11 of the U.S. Bankruptcy Code as a result of the energy situation in California, the DCISC has continued to receive funding as provided under the terms of the 1997 Decision.

The original settlement agreement provided for a three-member Independent Safety Committee for the purpose of reviewing and assessing the safety of operations of Diablo Canyon. One member each is appointed by the Governor of California, the Attorney General of California and the Chairperson of the California Energy Commission, respectively. The Committee Members during this period were Mr. Philip R. Clark, retired President and Chief Executive and Operating Officer of GPU Nuclear Corporation (appointed by the Chair of the California Energy Commission); Dr. E. Gail de Planque, consultant and former Commissioner of the U.S. Nuclear Regulatory Commission (appointed by the Attorney General; and Dr. A. David Rossin, consultant and former Assistant Secretary for Nuclear Energy, U.S. Department of Energy (appointed by the Governor). Mr. Clark served as Chair during this reporting period, and Dr. de Planque served as Vice-Chair.

The DCISC was formed in late 1989 with the appointments of Committee Members and began formal review activities and

meetings on January 1, 1990. The Committee regularly performs the following activities:

- Three sets of public meetings each year in the vicinity of the plant

- One tour of the Diablo Canyon Nuclear Power Plant with members of the public each year

- Numerous fact-finding visits by individual Committee Members and Consultants to assess issues, review plant programs and activities, and interview PG&E personnel

- Visits by the DCISC Members and legal counsel to offices of their appointing officials (California Attorney General, California Energy Commission, and The Governor) to update them on DCISC activities

- Use of several regular part-time technical consultants to perform assessments and reviews

- Use of legal counsel to advise the Committee on its activities

- Use of expert consultants, as needed, to investigate, assess, and review special issues such as seismology, pipe cracking, radiological effects, probabilistic risk assessment, and quality assurance

The DCISC issues a report for each reporting year, which runs from July 1 to June 30. The report is approved by the Committee Members at the Fall public meeting following the end of the reporting period. The first interim report and subsequent ten annual reports covered the following periods:

January 1, 1990 - June 30, 1990
July 1, 1990 - June 30, 1991
July 1, 1991 - June 30, 1992
July 1, 1992 - June 30, 1993
July 1, 1993 - June 30, 1994
July 1, 1994 - June 30, 1995
July 1, 1995 - June 30, 1996
July 1, 1996 - June 30, 1997
July 1, 1997 - June 30, 1998
July 1, 1998 - June 30, 1999
July 1, 1999 - June 20, 2000

This eleventh annual report covers the period July 1, 2000 - June 30, 2001.

Three public meetings were held in the vicinity of the plant in San Luis Obispo, California during this reporting period. The following significant items were covered:

- DCPP performance and operational events
- Refueling outage overviews, plans and results
- Review of DCPP performance indicators
- Human error performance improvement program
- Nuclear Safety Oversight Committee (NSOC) and President's Nuclear Advisory Committee (PNAC) activities
- Public comments
- Plans for and results of refueling outages
- Safety conscious work environment, including the employee concerns program
- Steam generator inspections and performance
- DCPP Self-Assessment Program
- Transition to Improved Technical Specifications
- DCPP Training Program
- Integrated Assessment Process & Results
- Radiation Exposure During Refueling Outages
- Implications for DCPP from the California Energy Crisis
- Five Year Business Plan
- On-Site Spent Fuel Storage Plans

- Plant-wide Safety Conscious Culture Survey
- Removal of Post-Accident Sample System
- On-Line Maintenance

Many other items were reviewed in 9 fact-finding visits, inspections and tours at DCPP by individual Committee Members and consultants. The DCISC Chair visited the California Energy Commission office and the Vice-Chair visited the Attorney General's office to provide updates on DCISC activities. In addition, the full Committee toured the plant with 15 members of the public on February 7, 2001. The third Committee Member contacted the Governor's Staff and provided a copy of the previous year's Annual Report for their review.

The DCISC concludes that PG&E operated DCPP safely during the period.

Based on its activities, the DCISC has the following <u>specific conclusions</u> from the major review topics examined during the current reporting period (references to sections of this report are shown in parentheses):

1. **PG&E appears to be taking positive steps in reviving neglected portions of its Aging Management Program with new leadership, augmented management support, and several new initiatives (the latter due in large part to aging-related failures of plant components). The DCISC has had concerns about the program in the last several reporting periods and is pleased to see progress towards improvement. A major element of DCPP aging management is the system long-term planning process in which system engineers are responsible for monitoring, measuring and planning for aging-related effects.**

   The DCISC will continue to follow PG&E's progress with aging management, including review of the Generation Vulnerability Identification Team report and the Passive Device Aging Management Investigation Team report. (4.1.3)

2. **The DCPP Maintenance Program appears to be functioning satisfactorily and implemented properly to meet NRC Maintenance Rule requirements. The Maintenance organization is functionally aligned to the work scope, and the On-Line Maintenance Program is soundly PRA-based.**

The DCISC will follow up on Maintenance activities and on the possible effects on safety of lowered/delayed plant capital spending. (4.2.3)

3. DCPP Conduct of Operations appeared satisfactory, including outage activities; Control Room policies and demeanor, and priorities; and preparation and implementation of the Improved Technical Specifications. The DCISC will continue to review this area as part of its normal activities. (4.3.3)

4. It appeared that DCPP has performed well in its emergency drills and exercises and has been working on improving its communication of accurate and understandable radiation release information to the public. The DCISC plans to follow this item. (4.4.3)

5. The PG&E engineering programs, including Configuration Management and Equipment Qualification, continue to be satisfactory for supporting safe operations at DCPP. (4.5.3)

6. Although DCPP has methods to track performance and work load of ARs and AEs and System Engineers, they do not appear to have a method for tracking work that is not covered by either ARs or AEs nor to identify the entire Engineering Workload to determine if they have enough resources to perform the work without getting behind. (4.5.3)

   The DCISC will continue to monitor PG&E's engineering performance, including workload management and a review of the results of the new Generation Vulnerability Identification Team report following its release in June 2001.

7. PG&E appears to have taken appropriate actions in response to plant off-normal operating events and system and equipment problems during this period and has applied appropriate corrective actions to prevent recurrence. The DCISC will continue to review this area as part of its normal activities. (4.6.3)

8. The DCPP Corrective Action Program (CAP) appears to have been improved as a result of self-assessments, external evaluations and reviews of other plant CAPs. Measures of program effectiveness were just being developed and

appeared headed in the right direction. The DCISC will review the CAP in early 2002, following completion of improvement action items and the next self-assessment. (4.6.3)

9. DCPP environmental performance appeared satisfactory, and the DCPP environmental program appeared to meet applicable requirements. The DCISC will continue to review the environmental program as part of its normal activities. (4.7.3)

10. Based on satisfactory DCISC and NRC reviews and inspections in the previous reporting period, the DCISC did not review fire protection in the current reporting period. A DCISC review of fire protection is planned for the next period. (4.8.3)

11. The Human Performance Program is doing an adequate job of error trending, evaluating the data, and working toward increasing performance and enhancing safety. Human error continues to be the largest cause of problems, and, although the numbers of human errors are small, the trends are not yet showing sustained improvement. The DCISC will continue to actively review human performance at DCPP. (4.9.3)

12. The DCPP Employee Assistance Program appears to be well utilized, and is carrying out its responsibilities appropriately. The DCISC will review this area as part of its normal activities. (4.9.3)

13. Operator fitness continues to be an issue of concern, which the DCISC will continue to track. Indicators point to a growing problem with operator fitness, and it was not apparent that DCPP had measures in place to deal with the problem. (4.9.3)

14. PG&E appears to be handling fuel or fuel-related problems appropriately. The DCPP Unit 1 core has been reliable and clean; however, Unit 2 has experienced a small amount of fuel damage due to baffle jetting and debris or a fuel defect. The assembly was removed, repaired and returned to the reactor. It appears PG&E will maintain its 19-21 month fuel cycle or move to an 18-month cycle. (4.10.3)

The DCISC will continue to follow on-going problems such as expansion of spent fuel storage, spent fuel pool

poison (Boraflex), and any fuel-related fuel problems or issues that arise.

15. Nuclear safety oversight and review functions and organizations appear to be functioning satisfactorily at DCPP. It also appears to be very beneficial to have the joint PNAC/NSOC meetings, since each committee covers much of the same agenda. The results of the 2001 INPO evaluation appear to be favorable. The DCISC will continue to monitor the PNAC and NSOC meetings to observe their review of plant safety issues. (4.11.3)

    The DCISC observed that although there was constructive and helpful dialogue during the NSOC meetings, there were limited challenges to existing thinking and processes. (4.11.3)

16. It appears that the Integrated Assessment Report is a positive tool for management's use to assess the overall performance of the plant. It combines all of the information from the various reports on the plant performance into one very useful document. The DCISC will continue to review the Integrated Assessment Report. (4.11.3)

17. It appears that PG&E managed the 1R10 and 2R10 outages very effectively to achieve the best outages at DCPP in all measures except cost and schedule. DCISC will continue to review the performance of each refueling outage. (4.12.3)

18. Although no specific reviews were made of DCPP overtime activities, there did not appear to be any problems. The DCISC will remain sensitive to overtime problems. (4.13.3)

19. As in past years, the DCISC concludes that the quality program and self-assessment program have been effective in identifying strengths and weaknesses of the activities at DCPP and bringing about effective corrective action. It appears that the NQS group is doing a good job in monitoring the top quality problems and bringing them to the attention of line management. The DCISC will continue to review DCPP quality programs as part of its normal activities. (4.14.3)

20. The DCPP radiation protection program for controlling

radiation doses inside and outside the plant appears effective overall. DCPP had experienced unusually high radiation dose rates during Outage 1R9 but had effectively reduced those levels in three subsequent outages. The DCISC will closely follow radiation protection during future outages. (4.15.3)

21. Overall, PG&E's risk assessment and risk management programs appear to be effective in supporting safe plant operation. The PRA Group has become pro-active and effective in supporting station decisions with risk-based analyses. The DCISC will continue to review risk management activities as part of its normal activities. (4.16.3)

22. PG&E's actions to improve its safety conscious work environment appear satisfactory. A cultural survey concluded that the safety culture was satisfactory and about average for the industry; however, some employees are reluctant to bring concerns to management. PG&E has an action plan to address these findings, and the DCISC will monitor these actions. (4.17.3)

23. PG&E's Steam Generator (SG) program appears effective. PG&E now expects that the DCPP steam generators will last the currently-licensed life of the plant, if the NRC approves the PG&E License Amendment Requests for Alternate Repair Criteria; however, economic considerations may call for early steam generator replacement. The DCISC will continue to closely monitor DCPP steam generator performance. (4.18.3)

24. PG&E appears to have taken appropriate action in addressing system and equipment performance issues; however as noted in several instances, the DCISC believes additional work is needed and has provided recommendations accordingly. The DCISC will continue to review this area as part of its normal activities. (4.19.3)

25. The DCPP training and development programs appeared satisfactory, and the DCISC will continue to monitor them. (4.20.3)

26. It appears that the Five-Year Business Plan is helpful in aligning the department and plant goals and objectives. Also, the hierarchy of DCPP performance plans represented

an effective method of disseminating management expectations to the whole organization. Nuclear safety was appropriately addressed. The DCISC will follow up periodically to assess how effectively the plans are being implemented. (4.21.3)

In addition to items being followed in the Conclusions above, the DCISC has concerns in the following areas:

1. **Human error continues to be the largest cause of problems, and, although the numbers of human errors are small, the trends are not yet showing sustained improvement. The DCISC will continue to actively review human performance at DCPP.**

2. **DCPP operators continue to age, and fitness levels appear to be declining, but PG&E does not have an active program to address the situation.**

3. **The potential impacts of bankruptcy need to be followed.**

4. **A recent study for NRC confirms the general experience that periods of rapid change and stress can have an adverse effect on the performance of organizations. DCPP has and continues to undergo major changes, including reorganization focusing on processes rather than functions. In addition, employees are understandably stressed by major changes underway in the industry and the PG&E filing for bankruptcy. DCPP recognizes these and has been taking steps to assure that they don't affect safe, reliable operation; however, the DCISC will continue to look for any adverse effects.**

DCISC recommendations are the following (references to sections of this report are shown in parentheses):

R01-1 **It is recommended that DCPP develop and implement a method to identify and monitor the entire Engineering Work Load to assure that the necessary work is performed to effectively support safe operation of the plant and to help in ensuring adequate engineering resources are available. (4.5.3)**

R01-2 **Because the predominant cause of events is human error, it is recommended that DCPP more closely coordinate the Corrective Action and Human Performance Programs and utilize training in human**

characteristics and skills (e.g., interviewing skills, human error characteristics) for personnel preparing root cause analyses and corrective actions. (4.9.3)

R01-3 It is recommended that PG&E continue to augment its programs for operator health and aging to consider such areas as operator "aging management", physical fitness, and mental alertness on shift to further improve operator human performance. (4.9.3)

R01-4 It is recommended that PG&E management raise its expectations of the Nuclear Safety Oversight Committee internal and external members to take a more aggressive stance in challenging problem solving and the status quo. Additionally, PG&E should consider adding independent external members (not just from STARS plants). (4.11.3)

R01-5 It is recommended that NSOC take a more active role in determining the scope of the biennial audit of NQS to give the audit more independence. The DCISC had made a similar recommendation in the previous Annual Report and requests that PG&E reconsider its response of having NSOC only review the audit plan. (4.14.3)

R01-6 It is recommended that PG&E take the initiative in dealing with staffing issues by developing a long-term staffing plan. (4.17.3)

R01-7 It is recommended that PG&E take actions necessary to improve the employees' perception of the Employee Concerns Program. (4.17.3)

R01-8 It is recommended that PG&E apply the normally used Corrective Action Program, Human Performance Program, and System Long Term Plan Program (and possibly others) to Security Services and develop an implementation plan. (4.19.3)

R01-9 It is recommended that PG&E develop a plan for how System Health Reports and Long Term Plans should be utilized by Operations and Maintenance. (4.19.3)

The DCISC will follow these concerns and recommendations during the next reporting period.

Public input and questions were received at the public meetings, during the public plant tour, and by telephone, letter or E-mail. Eight members of the public spoke at DCISC public meetings. The DCISC has responded to or is following their questions, concerns and requests (see Section 7.0, Public Input and Exhibit G, Public Contacts).

Diablo Canyon Independent Safety Committee

ANNUAL REPORT ON THE SAFETY OF DIABLO CANYON NUCLEAR POWER PLANT OPERATIONS

July 1, 2000 - June 30, 2001

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1.0 INTRODUCTION

1.1 Formation of the Independent Safety Committee

The establishment of the Diablo Canyon Independent Safety Committee ("DCISC") was provided for as one of the terms of a settlement agreement entered into by the Division of Ratepayer Advocates ("DRA") of the California Public Utilities Commission ("CPUC"), the Attorney General ("AG") for the State of California, and Pacific Gas and Electric Company ("PG&E"). The settlement agreement, dated June 24, 1988, covered the operation and revenue requirements associated with the two units of PG&E's Diablo Canyon Nuclear Power Plant ("Diablo Canyon") for the 30-year period following the commercial operation date of each unit. The agreement arose out of rate proceedings that had been pending before the CPUC for four years, and which included numerous hearings and pre-trial depositions. Just prior to the commencement of trial, the DRA, the AG and PG&E prepared and entered into the settlement agreement and submitted it to the CPUC for approval.

The agreement provided that:

> "An Independent Safety Committee shall be established consisting of three members, one each appointed by the Governor of the State of California, the Attorney General and the Chairperson of the California Energy Commission ("CEC"), respectively, serving staggered three-year terms. The Committee shall review Diablo Canyon operations for the purpose of assessing the safety of operations and suggesting any recommendations for safe operations. Neither the Committee nor its members shall have any responsibility or authority for plant operations, and they shall have no authority to direct PG&E personnel. The Committee shall conform in all respects to applicable federal laws, regulations and Nuclear Regulatory Commission ("NRC") policies."

The agreement further provided that the DCISC shall have the right to receive certain operating reports and records of Diablo Canyon, and that the DCISC shall have the right to conduct an annual examination of the Diablo Canyon site and such other supplementary visits to the plant site as it may deem appropriate. The DCISC is to prepare an annual report,

and such interim reports as may be appropriate, which shall include any recommendations of the Committee.

The settlement agreement and its supplemental implementing agreement were referred to the CPUC for review and approval. Following hearings before a CPUC Administrative Law Judge and the Commission itself, the CPUC, in December, 1988, approved the settlement agreement, finding that it was reasonable and "in the public interest" and that the "Safety Committee will be a useful monitor of safe operation at Diablo Canyon."

As required by the provisions of CPUC decisions and of Assembly Bill 1890 enacted by the California Legislature, which mandate electric utility rate restructuring and deregulation, PG&E filed an application which proposed a rate-making treatment for Diablo Canyon which would price the plant's output at market rates by the end of 2001. On May 21, 1997, the CPUC issued Decision 97-05-088, which found that the DCISC remains a key element of monitoring the safe operation of Diablo Canyon. The Decision ordered that the DCISC remain in existence under the terms and conditions of the settlement agreement (Decision 88-12-083, Appendix C, Attachment A) until further order of the Commission. Following PG&E's filing on April 6, 2001, in the United States Bankruptcy Court for protection and reorganization under Chapter 11 of the U.S. Bankruptcy Code as a result of the energy situation in California, the DCISC has continued to receive funding as provided under the terms of the 1997 Decision.

The first "Interim Report on Safety of Diablo Canyon Operations," covering the period of January 1 through June 30, 1990, was adopted by the DCISC on June 6, 1991, and there have been ten annual reports since then. This eleventh report covers the period July 1, 2000 - June 30, 2001 and was adopted by the DCISC at a public meeting on October 17, 2000.

1.2 Appointment of Committee Members

The settlement agreement provided that the Committee members are to be selected from a list of candidates jointly nominated by the President of the CPUC, the Dean of Engineering of the University of California at Berkeley, and the President of PG&E, and that they "shall propose as candidates only persons with knowledge, background and experience in the field of nuclear power facilities." In July, 1989, when CPUC President G. Mitchell Wilk announced a list of nine candidates nominated for appointment to the DCISC, he noted that "an

independent safety committee clearly requires members who could demonstrate objectivity and independence. For this reason, none of the nominees has testified for PG&E or any other party before the PUC or the Nuclear Regulatory Commission in any proceeding regarding Diablo Canyon".

1.2.1 Philip R. Clark

In August of 1994, Philip R. Clark was appointed by the Chairman of the California Energy Commission to complete the unfinished term of previous Committee Member Warren H. Owen ending on June 30, 1995 and to a new three-year term beginning on July 1, 1995. He was appointed in 1998 to a new three-year term of July 1, 1998 through June 30, 2001.

Mr. Clark was President, Chief Executive Officer, and Chief Operating Officer of GPU Nuclear Corporation. Additionally, he was director of GPU Nuclear, GPU Service Corporation and Saxton Nuclear Experimental Corporation. GPU Nuclear Corporation operates the Oyster Creek Nuclear Generating Station and Three Mile Island Nuclear Station, Unit 1 and is responsible for the shutdown of Three Mile Island Unit 2 and the Saxton Nuclear Experimental Plant. He retired from all these positions on December 31, 1995.

Mr. Clark earned a Bachelor's Degree in Civil Engineering from Polytechnic Institute of Brooklyn, NY where he also did graduate study. He attended the Oak Ridge School of Reactor Technology in 1953-4.

He worked as Associate Director, Reactors, Naval Reactor Division, US Department of Energy and as Chief, Reactor Engineering Division, Nuclear Power Directorate, Naval Sea Systems Command, Department of the Navy. In these positions, Mr. Clark reported to Admiral Hyman G. Rickover and directed a major element of the US Naval Nuclear Propulsion Program. He has worked in the nuclear power field for 45 years.

Mr. Clark's activities during this reporting period included Chairman of the Nuclear Advisors to Old Dominion Electric Cooperative, and member of the Independent Management Advisory Committee for Connecticut Yankee.

Mr. Clark is an elected Member of the National Academy of Engineering and a Fellow of the American Nuclear Society. He received the Navy Distinguished Civilian Service Award in 1972 and the US Energy Research and Development Administration

Special Achievement Award in 1976. He served as DCISC Chair July 1, 1996 - June 30, 1997, July 1, 1997 - June 30, 1998 and July 1, 2000 - June 30, 2001.

1.2.2 E. Gail de Planque

On February 3, 1998 E. Gail de Planque was appointed by the California Attorney General to succeed previous Committee Member Herbert H. Woodson (whose term ended on June 30, 1997) for a new three-year term ending June 30, 2000.

Dr. de Planque received her A.B. degree in Mathematics from Immaculata College, M.S. in Physics from Newark College of Engineering (now NJ Institute of Technology), and Ph.D. in Environmental Health Sciences from New York University. She attended the Program for Senior Managers in Government at Harvard University. Dr. de Planque was an Adjunct Associate Research Professor at New York Medical Center, a Member of the Engineering Science Department Advisory Committee to the Board of Trustees of the New Jersey Institute of Technology, and a Member of the Advisory Committee of the Nuclear Engineering and Engineering Physics Department at Rensselar Polytechnic Institute.

Dr. de Planque began her career in 1967 as a Research Physicist at the U.S. Department of Energy Environmental Measurements Laboratory. Her research centered around the application of basic physics of radiation interactions with matter to problems of radiation protection. Areas of specialty included solid-state dosimetry, radiation transport and shielding, environmental radiation, nuclear facilities monitoring, and problems of reactor and personnel dosimetry. She became Deputy Director of the Environmental Measurements Lab in 1982 and then Director in 1987, responsible for the guidance, direction and management of the program activities, budget, personnel, and administrative functions of the Laboratory. Concurrently, Dr. de Planque served as Vice President and then President of the American Nuclear Society from 1987 to 1989.

From 1991 to 1995, Dr. de Planque served as a Commissioner of the U.S. Nuclear Regulatory Commission.

Dr. de Planque is a Fellow of the American Nuclear Society; an elected Member of the National Academy of Engineering; Member of the Board on Energy and Environmental Systems of the National Research Council; Member of the National Council on

Radiation Protection and Measurements; President of the International Nuclear Societies Council; Member of the Association for Women in Science; Member of the Health Physics Society; Member of the American Physical Society; Member of the American Association for the Advancement of Science; and Secretary of the International Nuclear Energy Academy; among others. She has been involved in numerous national and international committees and working groups involved with radiation protection, standards, dosimetry, and measurements.

Current appointments include Northeast Utilities Board of Directors; British Nuclear Fuels, Plc. Board of Directors; British Nuclear Fuels, Inc. Board of Directors; Member, TU Electric Operations Review Committee; Member, External Advisory Committee, Amarillo National Resource Center for Plutonium; and Consultant for various utilities and the United Nations International Atomic Energy Agency.

Dr. de Planque served DCISC Chair for the period July 1, 1999 - June 30, 2000 and was elected Chair for the period July 1, 2001 - June 30, 2002.

1.2.3 A. David Rossin

In July 2000, Dr. A. David Rossin was appointed by Governor Gray Davis to a term on the Committee expiring July 1, 2002, to succeed previous Committee Member Professor William E. Kastenberg.

Dr. Rossin was Assistant Secretary for Nuclear Energy, U.S. Department of Energy, and he served as President of the American Nuclear Society from 1992-1993. He was Visiting Scientist in Nuclear Engineering at the University of California, Berkeley from 1988-1991 and taught graduate courses on the nuclear fuel cycle. Dr. Rossin has served as Director of the Nuclear Safety Analysis Center at the Electric Power Research Institute and Director of Research and Chair of the Nuclear Waste Task Force for the Commonwealth Edison Company. In 1982 he was voted Electric Industry Man of the Year ". . . for his efforts to improve public understanding of nuclear, energy and environmental issues." Dr. Rossin's research at Argonne National Laboratory involved predictions of embrittlement of nuclear reactor pressure vessel steel. He also specialized in nuclear reactor shielding and safety. He served on Argonne's Reactor Safety Review Committee for ten years and was its Chair for two years.

Dr. Rossin is President of Rossin and Associates, a consulting company which advises utility companies, trade associations, national laboratories and universities on nuclear and advanced energy technology, non-proliferation, waste management and other electricity related issues. He is a consultant to Lawrence Livermore National Laboratory and Los Alamos National Laboratory.

Dr. Rossin is currently an affiliated scholar at the Center for International Security and Cooperation at Stanford University. His present research is on the people and events which led up to the U.S. policy decisions of 1976-1977 to abandon reprocessing of spent nuclear fuel, its impacts, and the implications for the future. Dr. Rossin is currently writing a book based on this research. With Professor T. Kenneth Fowler, Dr. Rossin published a book titled "Conversations on Electricity and the Future - Findings of an International Seminar and Lessons from a Year of Surprises" (U.C. Printing Service, June 1991).

Dr. Rossin received his B.S. degree in engineering physics from Cornell University, his M.S. degree in nuclear engineering from the Massachusetts Institute of Technology, an M.B.A. from Northwestern University and his Ph.D. in metallurgy from Case Institute of Technology.

1.3 Documents Provided to the DCISC

The settlement agreement provides that the DCISC shall have the right to receive on a regular basis specified operating reports and records of Diablo Canyon, as well as "such other reports pertinent to safety as may be produced in the course of operations and may be requested by the Committee". Hundreds of documents have been provided by PG&E and the Nuclear Regulatory Commission to the DCISC, relating to both historical and current operations. Document lists are shown in Volume II, Exhibit A.

1.4 Committee Member Site Inspection Tours and Fact-finding Meetings

The DCISC Members and Consultants visit DCPP regularly to attend fact-finding meetings and tour areas of the plant to inspect systems, equipment or structures which the Committee has under review or has interest. Additionally, the Members and Consultants tour the plant annually with members of the public

as described below. A record of these fact-finding meetings is contained in Volume II, Exhibits D, and plant tours and inspections are presented in Exhibit E.

1.4.1 Inspections and Fact-finding Meetings By Mr. Philip R. Clark

DCISC Member Philip R. Clark made two visits to the DCPP site during the period July 1, 2000 - June 30, 2001 in addition to the public tour. These visits are summarized as follows (detailed trip reports for these visits can be found in Volume II of this report):

December 13-14, 2000 - to DCPP with Consultants Booker and Cass to attend a DCISC fact-finding meeting to observe PG&E responses to the DCISC annual report; human performance; an informal meeting with supervisors; employee fitness, attention enhancement, and stress management; employee concerns program; safety program; DCPP five year plan; DCPP competition transition program; engineering work load; alternate source terms; joint utility venture status; top ten quality problems; security computer system; self-assessment program; and asset teams (See Volume II, Exhibits D.4 and D.5).

March 14-15, 2001 - To DCPP with Consultant Wardell to attend a DCISC fact-finding meeting to review NRC outage safety report, corrective action program, Auxiliary Saltwater System, winter storm experience, on-line maintenance, configuration management, equipment qualification, RCS flow measurement, and environmental performance (See Volume II, Exhibit D.9).

1.4.2 Inspections and Fact-finding Meetings By Dr. E. Gail de Planque

DCISC Member E. Gail de Planque made two visits to the DCPP site during the reporting period. These visits are summarized as follows (detailed trip reports for these visits can be found in Volume II of this report)

May 1-2, 2001 - To DCPP with Consultant Wardell for a fact finding meeting to observe an NSOC meeting and to review radiation protection, outage preparations, emergency preparedness, STARS, and safety culture survey results (See Volume II, Exhibit D.8).

June 19, 2001 - To DCPP with Consultant Cass to review human performance, behavior-based safety plan, work processes, employee assistance program and an update with the DCPP medical director (See Volume II, Exhibit D.9).

1.4.3 Inspections and Fact-finding Meetings by Dr. A. David Rossin

DCISC Member A. David Rossin made three visits to the DCPP site during the reporting period. These visits are summarized as follows (detailed trip reports for these visits can be found in Volume II of this report).

October 25-25, 2000 - To DCPP with Consultant Wardell for a fact-finding meeting to observe an outage daily meeting; tour the containment and the outage work control center; review the outage safety plan, main turbine work, radioactive waste processing systems, reactor pressure vessel integrity, aging management, and radiation protection. The trip included meetings with the Station Vice-President, Engineering Vice-President and managers of Operations, Maintenance, Radiation Protection, Human Resources and Nuclear Quality & Licensing and with the NRC Resident Inspector (Volume II, Exhibit D.2).

November 14-15, 2000 - To DCPP with Consultant Booker for a fact-finding meeting to observe NSOC/PNAC meetings and to discuss intake structure inspection results, reactor trip corrective actions, industry cracked piping concerns, nuclear fuel matters, steam generator inspection results, and spent fuel storage status (See Volume II, Exhibit D.3).

April 18-19, 2001 - To DCPP with Consultant Booker to review DCPP radiological communications, results of safety culture survey, INPO evaluation results, accredited training programs, self-assessments, PG&E bankruptcy status, dry cask storage of spent fuel, probabilistic risk assessment, aging management, operator priorities, QA security audit, Component Cooling System, radiation protection, and the NQS biennial audit (See Volume II, Exhibit D.7).

1.4.4 Tour of DCPP by DCISC Members and Members of the Public on February 7, 2001

The DCISC performs a public tour of Diablo Canyon Power Plant each year with members of the public in conjunction with its January/February Public Meeting. The tour is noticed in

advance in the local newspapers, and members of the public sign up in advance.

The tour began at 7:30 AM at the PG&E Community Center, where 15 members of the public gathered to tour the plant exhibits and view the Diablo Canyon Power Plant video "Diablo Canyon Today." The public group was joined by the three DCISC Members, and three DCISC consultants. The DCISC Members introduced themselves and the Committee consultants, described the Committee's function and answered questions about the DCISC.

The group boarded a PG&E bus for the trip to the plant, while PG&E personnel briefed the group on the history and features of Diablo Canyon. Individual discussions took place between the members of the public and Committee representatives.

Upon arriving at the plant site, the group visited the Control Room Simulator and heard a discussion of operator training where an operating crew was observed at the controls. This included a questions and answer period.

Inside the plant, the group split into two sub-groups, was processed through plant security and received a welcome and briefing from plant personnel. The groups then toured the following areas of the station:

- Turbine Building main operating deck, the main turbines and generators and related piping and equipment
- Turbine Building lower decks and additional plant equipment, including the moisture separator reheaters, condenser, and steam dump valves
- Outside transformer area (including discussion of recent upgrades)
- Control Room (viewed through the glass door)

The group toured the Steam Generator mock-up and heard a presentation of how personnel performed inspections of steam generator tubes.

The group then viewed the Intake Structure from an overlook and participated in a discussion of ocean storms and kelp buildup problems.

The tour concluded at the site overlook above the plant buildings to view exterior features which were described by PG&E personnel. The group observed and heard described the 500

kV switchyard and an account of the September 22, 1999 lightning strike at the switchyard, which caused a reactor trip. This was followed by a drive-by of the 230 kV switchyard, a protected archeological site, and the plant water discharge to the ocean.

During the return to the visitor's center on the bus, members of the public and the Committee Members and Consultants held individual discussions concerning the DCISC, Diablo Canyon and nuclear power.

1.4.5 Visits by DCISC Members to California State Agencies

DCISC Chair Mr. Clark and Committee Counsel Wellington had a meeting on December 15, 2000 with Commissioner Laurie of the California Energy Commission. Mr. Clark provided information (a document summarizing DCISC activities and recent DCISC recommendations) to the Commissioner and his staff on the Committee and its activities, and he answered several questions concerning the Committee and its role.

On June 22, 2001, DCISC Vice-Chair Dr. de Planque and Committee Counsel Wellington met with staff attorneys of the California Attorney General's office in Sacramento to provide an update (since the last meeting between representatives of the Committee and the Attorney General's office on June 9, 2000) on the Committee's current activities, future plans and site visits. The staff members were interested in the DCISC activities, the California energy situation, the potential for any impact on DCPP operations due to the bankruptcy declaration by PG&E and issues related to nuclear power in general.

The DCISC has plans to schedule annual meetings between its Members and their appointing entities and with Commissioners or representatives of the California Public Utilities Commission to provide background on and information regarding current activities of the Committee.

2.0 REPORTS OF DCISC PUBLIC MEETINGS

The DCISC held three public meetings in the vicinity of the Diablo Canyon Power Plant. These meetings are listed below. Minutes of the meetings are located in this report as described. Full transcripts of each meeting are located in the DCPP Public Document Room in the library at the California Polytechnic Institute in San Luis Obispo, California.

2.1 September 14-15, 2000 Public Meetings

A Notice of Meeting (see Volume II, Exhibit B.1) was published in the local newspapers, along with several display advertisements, and was mailed to the media and those persons on the Committee's service list (see Volume II, Exhibit B.10). The meeting agenda is shown in Volume II, Exhibit B.2, and minutes of the meeting are included in Volume II, Exhibit B.3.

2.2 February 7-8, 2001 Public Meetings

A Notice of Meeting (see Volume II, Exhibit B.4) was published in the local newspapers, along with several display advertisements, and was mailed to the media and those persons on the Committee's service list (see Volume II, Exhibit B.10). The meeting agenda is shown in Volume II, Exhibit B.5, and minutes of the meeting are included in Volume II, Exhibit B.6.

2.3 June 20-21, 2001 Public Meetings

A Notice of Meeting (see Volume II, Exhibit B.7) was published in the local newspapers, along with several display advertisements, and was mailed to the media and those persons on the Committee's service list (see Volume II, Exhibit B.10). The meeting agenda is shown in Volume II, Exhibit B.8, and minutes of the meeting are included in Volume II, Exhibit B.9.

3.0 NUCLEAR REGULATORY COMMISSION (NRC) ASSESSMENTS AND ISSUES

3.1 Summary of License Event Reports

3.1.1 Discussion

License Event Reports (LERs) are reports required of the nuclear power plant licensee by Nuclear Regulatory Commission (NRC) regulations when an off-normal event occurs at an operating nuclear station. These events include operations or conditions outside of or in violation of station Technical Specifications (TS), procedures or NRC regulations. Events are to be promptly reported by telephone and by written report within 30 days of the event or initial knowledge of the event. Voluntary LERs are submitted for events, which NRC should know about or are significant but are not specifically required by NRC.

The LERs reported during this time period and corresponding corrective action were as follows:

1. Technical Specification (TS) 3.6.5, Containment Air Temperature Limiting Condition, was not met when a containment average air temperature indicator failed "as-is" and went undetected during subsequent daily surveillances for approximately 5½ months. (LER 2-2000-003-00).

The root cause was reported as an unanticipated failure mode for the temperature indicator; however, it appears to actually be personnel error because, when the indicator was replaced with a new design in 1988, engineering did not consider an "as-is" failure. It was believed that the indicator would fail either high or low which would be readily noticed. Based on that assumption, no routine surveillance was specified to look for a "fail-as-is" type of failure.

Immediate corrective action consisted of operators satisfying the technical specification by manually calculating containment air temperature using individual temperature readings. The temperature indicator was replaced, calibrated and returned to service. To prevent recurrence, the surveillance procedure was revised to direct operators to observe the instrument actively calculate containment average air temperature on their rounds.

Containment air temperature is an initial condition used in the design basis accident analysis. The maximum temperature is 120°F, and the TS assures that maximum is not exceeded during operation. PG&E analysis of the event concluded that there was no adverse impact on safety because three redundant temperature indicators were operational, containment air coolers were functioning normally, and there had been no temperature anomalies during the period. There was no safety system functional failure, and the event was determined to be of "green" (see Section 3.4 for definition of "green") safety significance, based on the NRC Significance Determination Process. There had been no previous similar events.

2. PG&E reported that more than one percent of the tubes in Steam Generator (SG) 1-2 were defective, based on analysis of eddy current testing during outage 1R10. The report is required by Technical Specifications. The majority of tube defects were caused by primary water stress corrosion cracking (PWSCC) and outside diameter stress corrosion cracking (ODSCC). (LER 1-2000-010-00).

Immediate corrective action included plugging of all defective tubes. PG&E maintains a long-term comprehensive program to minimize SG tube degradation. PG&E analysis of the defects showed that the tubes met the applicable criteria for tube structural integrity at the end of 1R10, and PG&E concluded that there was no safety concern. Similar reports had been made for Unit 1 defective SGs 1-1 and 1-2 tubes following outages 1 & 2R8.

3. During 1R10 in Mode 6, Refueling, an engineered safety feature (ESF) actuation signal initiated a trip of the auxiliary electrical power separating Vital Bus F from offsite power. The loss of auxiliary power actuated an undervoltage relay, starting Component Cooling Water Pump 1-1. (LER 1-2000-007-00).

The root cause was determined to be personnel error in that a utility licensed operator mistakenly performed two surveillance tests ("Outage and Pre-Outage Diesel Engine Analysis" and "Vital Bus Undervoltage Relay Calibration") simultaneously. A contributing cause was a procedure which did not contain adequate precautions to prevent the simultaneous tests.

Immediate corrective action was to halt the tests and review plant conditions to assure the individual tests could proceed

normally. The procedure was revised to include appropriate precautions.

Analysis of the event concluded that all plant equipment functioned as designed and that the event did not involve a safety system functional failure. The condition was determined to be "green" (Section 3.4) based on NRC's Significance Determination Process. No similar events had occurred.

4. An engineered safety feature actuation occurred when Auxiliary Saltwater (ASW) Pump 1-2 tripped due to an initiation of a load-shed signal to 4kV Vital Bus G components during the return of undervoltage protective relays to service. (LER 1-2000-008-00).

The root cause was high resistance (caused by looseness and corrosion) in a test switch that prevented adequate reset voltage from being applied to the undervoltage relays. A contributory cause was operator unfamiliarity with returning the relays to service.

Corrective actions included restoring ASW flow by aligning it to the Unit 2 ASW system and repairing the failed test switch. Additionally, an Operations incident summary was issued to alert operators to issues related to returning solid state relays to service. An investigation performed to determine whether the switch failure was a generic problem found no other problems.

The event resulted in loss of spent fuel cooling for about five minutes, a situation analyzed in the Final Safety Analysis Report. The event occurred when the Unit 1 reactor was defueled, and ASW Pump 1-2 was the only ESF load running on Vital Bus G. PG&E concluded that the event was not risk-significant and did not involve a safety system functional failure.

There had been no previous similar events.

5. During Unit 1 outage 1R10, there was excessive Component Cooling Water (CCW) flow between CCW headers because of valves which would not close properly. This condition prevented effective separation of the vital headers. (LER 1-2000-009-00).

The root cause was personnel error in that valve travel stops had been misadjusted when originally installed during

construction. The travel stops allowed the valve discs to rotate past the valve seats.

Immediate corrective actions included properly closing the valves, adjusting the valve travel stops, and verifying the proper adjustments of valve travel stops on similar valves. Corrective action to prevent recurrence consisted of maintenance verification testing for similar valves to ensure the travel stops are left properly adjusted after maintenance.

PG&E's analysis of the event indicated that the condition was not a safety system functional failure and that it was evaluated to be "green" (Section 3.4) using the NRC Significance Determination Process.

There has been no previous similar events.

6. During power operation on Unit 2, Emergency diesel Generators 2-1, 2-2 and 2-3 started, as designed, as a result of loss of power to the startup power system. The loss of power was due to an open disconnect switch separating the startup transformer from the 230 kV system for scheduled maintenance. (LER 1-2000-004-00).

The root cause of the event was personnel error (lack of attention to detail) due to both the operator and verifier failing to verify that the disconnect switch number matched the number on the procedure.

Immediate corrective action included reclosing the switch and securing the diesel generators. To prevent recurrence color-coded signs have been installed to designate the switch corresponding to each unit and the operators making the error were coached and counseled on correct self-verification techniques.

PG&E determined that this event had no adverse safety impact and that the event was not a safety system functional failure. Under the NRC Significance Determination Process, the event screened out "green" (Section 3.4).

There were no similar previous events of operators inadvertently opening these or similar disconnect switches.

7. Unit 1 was critical in Mode 2 - Startup following outage 1R10, when the operators manually tripped the reactor due to a failure in the rod control system. The failure was noticed by

an "urgent failure alarm", indicating a failure in the system. (LER 1-2000-011-00).

The root cause was determined to be failure of a portion of the Supervisory Buffer Memory Card that controls inward rod motion. Immediate action included initial investigation of the problem, tripping of the reactor and troubleshooting. The faulty card was replaced, and personnel performed the necessary maintenance verification testing before resuming startup.

PG&E analysis of the event concluded that there was no significant adverse safety impact because systems were in-place to detect and alarm the failure, procedures were in-place to direct appropriate operator action, and systems were in-place to automatically trip the reactor, if necessary.

There was a previous similar event in 1991, which was the failure of a rod power supply fuse believed due to personnel error; however, that root cause was different than the current event, and previous corrective action would not be expected to have prevented this event.

8. Unit 1 was in Mode 1 - Power Operation at 46% full power and undergoing incore flux map testing, when it experienced an automatic trip. The trip was due to an intermittent electrical short circuit in test equipment attached to the Nuclear Instrumentation (NI), concurrent with a preexisting tripped condition associated with the NI. The event was considered an engineered safety feature and reactor protection system actuation. (LER 1-2000-012-00).

Although the immediate cause of the trip was the electrical short in the test equipment, the root cause of the event was determined to be personnel error, i.e., the decision made to proceed with testing on the redundant NIs prior to restoring the tripped channel to service.

Immediate corrective action was to recover from the trip, perform an event investigation, and plan long-term corrections. The long-term actions were to revise the controlling test procedure; issuance of a memo to plant personnel regarding the possibility of an electrical short when using this type of equipment; providing an event case study to appropriate Engineering, Maintenance and Operations personnel; and revising similar procedures to clarify adjustments and test prerequisites.

Event analysis concluded that the reactor protective system properly tripped the reactor, and reactor trips have been

analyzed conditions in the Final Safety Analysis Report as acceptable and expected transients. All engineered safety equipment performed as expected in the shutdown.

PG&E determined that there had been no previous similar events.

9. Unit 1 was in Mode 3 - Hot Standby at 0% full power and, Unit 2 was in Mode 1 - Power Operation at 100% full power, when security discovered what appeared to have been an explosive device in the protected area. The device was treated as a credible bomb threat, and a Security Alert was declared, followed by an Unusual Event. About 1½ hours later, the device was determined to be a fake, and the Unusual Event was cancelled.(LER 1-2000-S01-00).

The fake bomb was apparently created as a prank with no malicious intent. The root cause was determined to have been a contractor work-group culture that tolerated unprofessional behavior.

The Security Review Group evaluated the event and determined that all security requirements had been met and that the security contingency plan had been effectively implemented. Because the bomb was a fake and not the result of criminal, terrorist or malicious intent, the FBI and Sheriff's Office did not pursue prosecution of the perpetrator. PG&E determined that had the bomb been real, it would not have been a threat to vital plant equipment given its location.

10. With Unit 1 and Unit 2 both at 100% full power in Mode 1 - Power Operation, a security officer left his rifle unattended in an office in the Turbine Building for approximately 22 minutes. The rifle was retrieved with all ammunition accounted for. (LER 1-2001-S02-00).

The cause was determined to have been personnel error, specifically, inattention to detail. Corrective actions included disciplinary action for the responsible officer, additional rifle racks in several security holding areas, and emphasis on the event by the Manager of Security Services to security officers.

Analysis by security concluded that the response to the event was within the bounds of the capability of the security force. No previous similar events existed.

11. Units 1 and 2 were in Mode 1 - Power Operation at 100%, when a broken wire was discovered in a trip circuit for the Containment Spray Pump (CSP) 2-2 Breaker. Additional inspections discovered additional degraded wires in CSP 1-1 circuits. Additionally, during repairs, operators inadvertently violated Technical Specifications (TS) by having all three power sources to Vital Bus H inoperable for greater than one hour. (LER 2-2-1-01-00).

The root cause of the degraded wires was the result of bending when the breaker cubicle doors are opened and closed for Operations and Maintenance access. Operators failed to meet TS because of incomplete and inconsistent procedural guidance.

The degraded wire for CSP 2-2 was replaced, and problems found on other wires in the 4.16 kV vital switchgear cubicles for both units were corrected in the same way. Corrective actions to prevent recurrence were being formulated by PG&E at the time of this writing. The DCISC will follow up on that plan (follow-up items are tracked on the Open Items List, Exhibit F).

Concerning operator action, Operating Procedures were revised to clearly indicate necessary precautions and acceptable conditions to meet TS. Operator training was conducted on the event.

PG&E event analysis concluded that of the 15 degraded wires found, 13 were operable, and two could have not performed their functions. In these two cases, redundant equipment could have performed the needed breaker trip functions. Thus, PG&E concluded that there was very low risk significance in this event. Analysis of incorrect operator action concluded that the effect ,during an accident, would have been a slight increase in peak Containment pressure resulting in delays in effective operation of Containment fan coolers and CSPs; however, the increase was well within the plant design and licensing basis.

No previous similar events of degraded wiring existed. One similar event occurred in 1995 in which the 230 kV offsite power system was unable to meet its design requirements; however, corrective actions would have not been expected to prevent the current event.

12. Units 1 and 2 were in Mode 1 - Power Operation at 100% full power, when the Emergency Diesel Generators (EDGs) started as designed upon loss of power on the 230 kV startup power system. The loss of power was due to phase-to-phase

arcing on the 230 kV lines because of heavy smoke from a fire. An Unusual Event was declared for an out-of-control fire for greater than 15 minutes. (LER 1-2001-001-00).

The root cause of the event was inadequate administrative controls and DCPP personnel oversight of California Department of Forestry activities during cutting and burning of brush in the transmission line corridor.

Fire crews monitored the fire until it self-extinguished. PG&E developed additional procedural guidance to formalize the administrative control and oversight of future burning activities. The procedures address advance planning and contingencies, improved communications between PG&E and Forestry personnel, and PG&E expectations for burning operations.

A similar event (including declaration of an Unusual Event) occurred in 1991 when a wind shift caused a controlled fire to jump fire lines. PG&E determined that those corrective actions (minimum training requirements for personnel, minimum personnel and equipment, and review and approval) would not have prevented the current event.

3.1.2 Voluntary LERs

There was one voluntary LER submitted by PG&E during this period.

1. PG&E determined that several non-load-bearing concrete walls in the Turbine Building did not meet design requirements applicable to the Hosgri Seismic Criteria. The walls were required to remain intact for seismic and fire protection of safety related equipment. Additionally, some attached components did not satisfy similar design requirements. The condition was discovered by a PG&E engineer while evaluating the effect of a proposed plant modification. (LER 1-2000-003-00).

The condition was caused by personnel error and an inadequate design process in that the original designers did not consider the potential that quality-related equipment would be mounted on the walls, and the calculations for the Hosgri seismic event did not consider the cumulative effect of the mounted equipment.

Corrective actions included performing calculations to assure that all safety functions were maintained; however, some loss of design margin resulted in the need for reinforcements to

restore the margin. Administrative controls, including drawings, procedures and the safety-related component list, were changed to prevent recurrence.

PG&E event analysis concluded that because the walls could have performed their functions, albeit with reduced design margins, there was no significant adverse impact on safety.

The DCISC had begun reviewing this event closely when it was first discovered in October 2000 and believed PG&E had effectively analyzed and corrected the problems; however, because of other similar engineering design problems, particularly in the Civil Engineering area, the DCISC had recommended PG&E investigate on a broader basis. PG&E satisfactorily responded to this recommendation (see Section 6.0 and Exhibit G of this report, Recommendation R00-11).

3.1.3 Reactor Trips Reported in LERs

Two reactor trips were reported on LERs:

Date	Unit	Type	Cause	Root Cause
11-5-00	1	Manual	Rod control system failure	Faulty component
11-20-00	1	Automatic	Electrical short in test equipment	Faulty component & personnel error

There were no significant problems during or following these trips.

In the past five DCISC reporting periods the following numbers of trips have occurred:

	Number of Trips	
Reporting Period	Automatic	Manual
1996/1997	4	2
1997/1998	1	1
1998/1999	0	1
1999/2000	2	2
2000/2001	1	1

3.1.4 LER Trends

The following table depicts the LER history for DCPP for the last five DCISC reporting periods:

Time Period	Number of LERs Submitted	
7/1/96 - 6/30/97	25	(plus 3 voluntary LERs)
7/1/97 - 6/30/98	21	(plus 0 voluntary LERs)
7/1/98 - 6/30/99	15	(plus 0 voluntary LERs)
7/1/99 - 6/30/00	15	(plus 1 voluntary LER)
7/1/00 - 6/30/01	12	(plus 1 voluntary LER)

During the current reporting period, 11 of the 13 (12 required and one voluntary) reported events were reported within the requirement of within 30 or 60 days of event discovery. The eleven events were realized at the actual occurrence of the event, and two events were realized about six months and many years later than occurrence because of their undetectable nature. Of the 13 LERs, 7 were self-identified by PG&E and 6 were self-revealing.

The stated root causes of the 13 LERs were as follows:

Root Cause	Number of Causes*	Percent of Total
Personnel error	8	50
Equipment failure/degradation	5	31
Inadequate admin. controls	3	19
Total	16	100

* The 13 LERs resulted from 16 causes

3.1.5 DCISC Evaluation, Conclusions and Recommendations

Each Licensee Event Report was investigated by PG&E to determine the plant conditions before and during the event, background and detailed event description, root cause and contributory causes, immediate and preventive corrective action, and previous LERs on identical or similar problems. No one LER was significant enough to seriously affect operational safety. Except for personnel error, no significant cause code trends were observed. LER investigation reports were submitted to all DCISC Members and Consultants for review; PG&E reported on each LER at DCISC public meetings.

The largest contributor to LERs continues to be personnel error. The table below shows five-year LER personnel error history. The specific personnel errors have been categorized as follows:

Reporting Period	Number of LERs	No. Personnel Errors	Percent Personnel Error
1996/1997	25	15	60
1997/1998	21	17	81
1998/1999	15	9*	60
1999/2000	15	8	53
2000/2001	13(16)**	8	50

* Two of these personnel errors had occurred 10-15 years previous

** The 16 causes were included for 13 LERs

The number of LERs is two fewer (13.3%) than the previous two periods and significantly less than in previous years. The five-year trend shows improvement.

The number of License Event Reports (LERs) has decreased in the last five years. Personnel error remains the major cause of LERs; however, it is also decreasing in both number and percentage of total. DCPP LER investigations appeared generally adequate, and corrective actions appeared to be appropriate for all LER events.

The DCISC is following PG&E's programs addressing personnel errors, and a description is included in this report in Section 4.9 - Human Performance.

The DCISC will continue to monitor LERs, their causes, and PG&E's actions to correct and prevent them in future fact finding and public meetings.

3.2 NRC Inspection Reports

3.2.1 Discussion

The NRC performs inspections at each nuclear power plant. The purpose is to determine how well the plant operators are implementing and following NRC regulations, plant Technical Specifications, and other requirements, procedures, or commitments. Generally, better regulatory performance results in fewer inspections. NRC meets with the nuclear plant operator twice per year to review plant safety

performance under the NRC Reactor Oversight Process (see Section 3.4 below). These meetings are usually public.

Inspections are performed by the plant Resident NRC Inspectors, inspectors from the NRC Region Office, experts from other NRC organizations, and NRC consultants. The bulk of inspections are routine, announced visits focusing on one or more specific areas of operation such as ALARA, maintenance, chemistry, security, operator examinations, or corrective actions. Special inspections are often made for investigation into previous events affecting plant safety and into special programs, such as NRC Generic Letter 89-10, Testing of Motor-Operated Valves.

Each inspection usually concludes with an exit interview with licensee personnel, followed by a written inspection report. Inspections can result in the following categories of findings:

- Unresolved Items are items for which information is not yet available or awaiting licensee response or action.

- Individual strengths are used to point out good practices and weaknesses for the licensee's attention for improvement and/or to prevent future problems.

- Deviations are variances from NRC regulations and/or licensee procedures or other requirements or commitments which are not as severe as outright violations.

- Concerns, typically including more than one individual weakness in a single area, are to alert the licensee to situations which could become violations if not corrected.

- Non-cited Violations are violations for which NRC credits the licensee for identifying the violation and/or for prompt, effective corrective action completed before or taken during the inspection. These are usually non-recurring, non-safety-significant items.

- Violations of NRC regulations, plant Technical Specifications, and other commitments, procedures, etc. require a formal response and corrective action. Violations carry four severity levels as described in Section 3.3, NRC Enforcement Actions.

Fewer violations generally mean better performance. Many in the industry think having a significant number of non-cited violations indicates an effective, aggressive regulatory

program, meaning the licensee quickly finds and corrects its own problems/violations rather than the NRC finding them.

During the period July 1, 2000 - June 30, 2001, there were 12 inspection reports received from the NRC for DCPP. This compares with 36, 22, 23, 20 and 20 in the previous five periods, respectively. PG&E's regulatory performance with NRC has been good, and this generally means fewer inspections. Of these 12, 8 were routine inspections performed by resident or regional NRC inspectors, and 4 were special inspections.

Routine Inspections

- Emergency preparedness
- Operations, maintenance & engineering (covers many subcategories)
- Radiation Protection and Chemistry Controls
- Inservice Inspection
- Project Engineering
- Safeguards
- Maintenance Rule
- 10CFR50.59
- Heat Exchangers
- Corrective Action Program

Special Inspections

- Fire in Unit 1 Non-vital 12kV Bus & Loss of Offsite Power
- Design Adequacy & Performance of Auxiliary Saltwater System and 4160v AC Systems
- Three Reactor Trips with Loss of Normal Heat Removal
- Unusual Event on Loss of 230kV Due to Offsite Brush Fire

3.2.2 DCISC Evaluation and Conclusions

The DCISC noted that there were no individual items or apparent significant new trends in Nuclear Regulatory Commission (NRC) inspections, which would warrant additional recommendations or actions. Personnel errors continue to be identified as problems in inspection reports, and the DCISC will continue to monitor that. Although the DCISC routinely follows-up on inspection report items in fact finding meetings, the DCISC plans no particular actions on NRC inspection reports, except as noted below in the discussion in Section 3.3, NRC Enforcement Actions.

3.3 NRC Enforcement Actions

3.3.1 Discussion

NRC considers items not in compliance with its regulations or with the licensee's commitments or procedures to be violations. Corrective action is required for all violations. NRC identifies five severity levels for violations.

Level I is the most severe, representing the most significant regulatory concern which usually involves actual or high potential impact on the safety of the public. Level IV violations are more than minor concern and should be corrected so as to prevent a more serious concern. Civil penalties (monetary fines) are usually imposed for Level I and II violations, are considered for Level III, and usually not imposed for Level IV violations. Most low-level violations are reported as Non-cited Violations provided the licensee places the violation into its corrective action program and provided the violation is not willful or repetitive. NRC has increased its scrutiny of corrective action programs. The categorization of violations in this report follows NRC's actual classification in each notice of a violation.

During the period July 1, 2000 - June 30, 2001, NRC cited no Level I, II, III or IV violations and identified 10 non-cited violations. The history of violations for this and the last four DCISC reporting periods is as follows:

DCISC	Number of	Violation Severity Level				Violations
Reporting Period	Inspections	III	IV	V	Non-Cited	Total
7/1/96 - 6/30/97	23	-	23	-	19	42
7/1/97 - 6/30/98	28	-	21	-	20	41
7/1/98 - 6/30/99	20	-	7	-	15*	22
7/1/99 - 6/30/00	20	-	2	-	29	31
7/1/00 - 6/30/01	12	-	-	-	10	10

* One Non-cited violation was Level III

PG&E has not received any Level I or II violations since the inception of the DCISC in 1990.

Non-Cited Violations

During the period July 1, 2000 - June 30, 2001, NRC reported 10 non-cited violations. These were considered "non-cited" because they satisfied the criteria specified in the NRC Enforcement Policy that either (1) PG&E identified the problem

and corrected the root cause as a normal part of ite Corrective Action Program before or during the NRC inspection visit, (2) the violation was minor enough to not warrant full violation status, or (3) they were part of NRC's policy (see above) to not normally cite Level IV violations. The non-cited violations were:

1. Inappropriate review of the Emergency Preparedness Program due to using as a reviewer an individual who had responsibility for the program - personnel error.

2. Portable load center not restrained as required to prevent potential seismic interaction with adjacent Component Cooling Water piping - personnel error.

3. Safety Injection accumulator discharge isolation valves energized above, rather than below, 1000 psig Reactor Coolant System pressure - personnel error.

4. Personnel failed to follow maintenance procedures on two occasions resulting in work on the wrong component or unit - personnel error.

5. Failure to perform a contamination survey of the upper internal lifting rig platform prior to a worker entering the area - personnel error.

6. Four workers failed to obtain radiation dose rate information prior to entering a high radiation area - personnel error.

7. Two cases of working on the wrong unit: (i) lifting a lead in the wrong unit's electrical panel, causing an inadvertent loss of the Reactor Coolant System leakage detection system and (ii) operating the wrong unit's startup power transfer switch, causing inadvertent loss of the Unit 2 startup transformer - personnel errors.

8. Failure to follow Physical Security Plan requirements in warehouse access control - personnel error.

9. Loss of Component Cooling Water System train separation due to leakage of train boundary valves caused by improper valve adjustment - personnel error.

10. Failure (i) to perform a radiation area survey associated with the replacement of a spent resin tank filter and (ii) to follow a procedure for two incidents of radioactive materials being found outside of the radiation control area - personnel error.

3.3.2 DCISC Evaluation and Conclusions

The number of NRC inspections in this period was sharply down from the number of inspections in recent periods. The number of NRC cited violations has dropped substantially (to zero) from previous periods (see table of five-year inspection violation history in Section 3.3.1). The numbers of non-cited violations decreased significantly this period, likely due to improved regulatory performance at DCPP and to NRC's policy to not cite violations for events which the plant operator identifies and corrects within its Corrective Action Program. DCISC noted no particular trend to the violations.

Approximately half of the non-cited violations were initially identified and reported by PG&E. The remainder were discovered by the NRC inspectors. Many of these were reported by NRC as a means of documenting their review of problems which PG&E had already identified and corrected, were corrected during inspection visits, or were of minor safety significance. Similarly to the NRC, the DCISC determined that the non-cited violations were minor.

The DCISC heard presentations by PG&E on each violation at public meetings and has reviewed each cited violation and PG&E's response, where applicable. PG&E corrective actions appeared adequate. There were no individual items of significance to warrant DCISC recommendations or actions.

The DCISC considers corrective actions taken on NRC violations generally satisfactory to correct the violations and to prevent recurrence of similar violations. DCISC will follow-up on selected violations to determine the effectiveness of corrective action (tracked on DCISC's Open Items List, Exhibit F).

As in previous periods, personnel error is the largest contributor to Licensee Event Reports and NRC Notices of Violation. The DCISC has and will continue to actively monitor PG&E's programs to reduce human error. (The DCISC review of DCPP Human Performance is in Section 4.9).

3.4 NRC Performance Evaluations

The Nuclear Regulatory Commission (NRC) had previously assessed each nuclear power plant licensee about every 18 months on its overall performance in meeting NRC requirements

using its Systematic Assessment of Licensee Performance (SALP). SALP was an integrated effort to collect data to evaluate the following four functional areas:

- Operations
- Maintenance
- Engineering
- Plant Support

Plant Support Area included Radiological Controls, Emergency Preparedness, Security, Housekeeping and Fire Protection. Safety Assessment and Quality Verification are considered for each of the four main functional areas rather than each as a separate area. In NRC's SALP process, performance was somewhat subjectively addressed for the above four functional areas. DCPP typically received NRC's highest SALP rating.

The Nuclear Regulatory Commission (NRC) revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC-licensed plants.

The new NRE Revised Reactor Oversight Process (RROP) monitors licensee performance in three broad areas (called strategic performance areas):

1. Reactor Safety (avoiding accidents and reducing the consequences of accidents if they occur)

2. Radiation Safety (protecting plant employees and the public during routine operations)

3. Safeguards (protecting the plant against sabotage or other security threats).

The process focuses on licensee performance within each of "Seven Cornerstones" of safety in the three areas:

Reactor Safety	Radiation Safety	Safeguards
• Initiating Events	• Occupational	• Physical Protection
• Mitigating Systems	• Public	
• Barrier Integrity		
• Emergency Preparedness		

To monitor these Seven Cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations:

1. Inspections and
2. Performance Indicators

Inspection findings will be evaluated according to their potential significance for safety, using the significance determination process, and assigned colors of GREEN, WHITE, YELLOW, or RED.

- GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance.

- WHITE findings indicate issues that are of low to moderate safety significance.

- YELLOW findings are issues that are of substantial safety significance.

- RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance Indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, or RED.

- GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections.

- WHITE corresponds to performance that may result in increased NRC oversight at the Resident Inspector or Regional level.

- YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight at the NRC Region level.

- RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety. NRC response at the Agency level could include a public meeting, utility-developed performance improvement plan, and/or a special NRC inspection team.

The assessment process integrates performance indicators and

inspection so the agency can reach objective conclusions regarding overall plant performance. The NRC will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

PG&E had prepared for the new program with the following actions:

- Issued a procedure for collection and submittal of Performance Indicator (PI) data for submittal to NRC
- Issued eight Administrative Work Procedures for detailed guidance for PI data development
- Provided RROP and Significance Determination Process (SDP) training to plant staff
- Incorporated PIs into department performance reports
- Implemented a communications plan
- Performed Significance Determination Process reviews of LERs and NCRs

The redesigned NRC inspection program uses a risk-informed approach to select areas of the plant to inspect within each cornerstone. The selection is based on potential risk, past operational experience, and regulatory requirements.

Each calendar quarter, NRC inspectors and the regional office will review plant performance indicators and inspection findings. Each year, NRC regional and headquarters offices will make a final review, to include a more detailed assessment of plant performance over the 12-month period, preparation of a performance report, and preparation of a six-month inspection plan. The report will be sent to each plant and discussed in a public meeting.

NRC performed its first inspection under the new RROP on the DCPP Fire Protection Program in which it found no discrepancies. The fire protection systems are considered "mitigating systems" Cornerstone in the RROP and were rated the highest rating, "Green".

NRC issued its first Midcycle Plant Performance Review (PPR) for DCPP in September 1999. The report did not identify any areas in which DCPP performance warranted additional inspection effort beyond the core inspection program. This report contained two sections: (1) a Plant Issues Matrix, a

listing of items summarized from NRC Inspection Reports and other docketed correspondence between the NRC and PG&E from October 1, 1998 and July 16, 1999 and (2) plans for future NRC inspections of DCPP. The Plant Issues Matrix contained the following items:

- Two Level IV violations
- 15 Non-cited violations
- 35 positive areas
- 13 negative areas
- Six strengths

The NRC issued its latest Annual Assessment Letter to PG&E on May 29, 2001. The letter included NRC's assessment of DCPP's safety performance for the period ending May 8, 2001 as well as plans for future inspections. The performance results represented an evaluation of NRC's Performance Indicators (PIs) for the most recent quarter and inspection results from April 2, 2000 through March 31, 2001.

The NRC concluded that, "Overall, DCPP operated in a manner that preserved public health and safety and fully met all cornerstone objectives." All inspection findings had been classified as having very low safety significance (Green), and all PIs indicated a level requiring no additional NRC oversight (Green).

The NRC did report that one Unit 2 PI, Scram with Loss of Normal Heat Removal, had been of "low-to-moderate safety significance (White)" for the first three of the four quarters (see PI table below). This PI had returned to Green in the third quarter of 2000. NRC had conducted a special inspection to evaluate PG&E's corrective action, which was acceptable.

The DCISC concurs with the NRC assessment that there were no significant performance issues; however, both organizations believe human performance can improve and are monitoring PG&E's actions and results.

The NRC Performance Indicators for DCPP through the first quarter 2001 were reported at the June 2001 DCISC Public Meeting as follows:

Performance Indicator	Unit 1 Value NRC Threshold Color	Unit 2 Value NRC Threshold Color	DCPP Unit Threshold
Cornerstone: Mitigating Events			
Unplanned scrams (automatic & manual) per 7000 critical hours over previous 4 quarters	2.8 3 Green	0 3 Green	1
Unplanned scrams involving loss of normal heat removal Per previous 12 quarters	2 2 Green	2 2 Green*	2
Unplanned transients per 7000 Critical hours over previous 4 quarters	0.9 6 Green	2.5 6 Green	3
Cornerstone: Mitigating Systems			
Safety System Unavailability - Emergency Power (average of previous 12 quarters)	1.7% 2.5% Green	0.6% 2.5% Green	1.9%
Safety System Unavailability - Residual Heat Removal System average of previous 12 quarters)	0.3% 1.5% Green	0.4% 1.5% Green	1.1%
Safety System Unavailability - Auxiliary Feedwater System (average of previous 12 quarters)	0.7% 2.0% Green	0.6% 2.0% Green	1.5%
Safety System Availability - High Pressure Safety Injection (average of previous 12 quarters)	0.5% 1.5% Green	0.6% 1.5% Green	1.1%
Safety System Functional Failures (over the previous 4 quarters)	0.0% 5 Green	0.0% 5 Green	1
Cornerstone: Barrier Integrity			
Reactor Coolant System Specific Activity (maximum monthly values % of Technical Specifications)	0.0% 50% Green	1.2% 50% Green	1%
Reactor Coolant System Leak Rate (maximum monthly values - % of Technical Specifications)	4.7% 50% Green	3.3% 50% Green	40%

Cornerstone: Emergency Preparedness	Total Station Value NRC Threshold Color	DCPP Station Threshold
Emergency Response Organization (ERO)-Drill/exercise performance - percentage of success/opportunities for notifications and PARs during drills, exercises, and events over the prior 8 quarters	92.6% 90% Green	95%
ERO Participation (percentage of key ERO personnel that have participated In a drill or exercise in the previous 8 quarters)	90.0% 80% Green	90%
Alert and Notification System Reliability (percentage reliability during the previous 8 quarters)	99.4% 94% Green	98%
Cornerstone: Occupational Exposure		
Occupational Exposure Control Effectiveness (the number of TS high radiation area occurrences, very high radiation area occurrences, and unintended exposure occurrences in the previous 4 quarters)	1 1 2 Green	0
Cornerstone: Public Exposure		
RETS/ODCM Radiological Effluent Occurrences (occurrences during the previous 4 quarters)	0 1 Green	0
Cornerstone: Physical Protection		
Protected Area Security Equipment Performance Index (unavailability of PA IDS/CCTV security systems over previous 4 quarters)	0.017 0.080 Green	134 hrs/mo
Personnel Screening Program Performance (prompt reportable events over the previous 4 quarters)	0 2 Green	1
Fitness-for-Duty (FFD)/Personnel Reliability Program Performance (prompt reportable events over previous 4 quarters)	0 2 Green	1

3.5 NRC Review of DCPP Safety with PG&E Bankruptcy

When PG&E declared bankruptcy on April 6, 2001 because of the California energy situation, PG&E advised NRC of its intention to declare bankruptcy and that it would not significantly affect DCPP safety or operations. PG&E has kept the NRC informed on a regular basis of its financial status and any effects on DCPP.

Because of PG&E's financial situation, NRC continued its resident inspector integrated inspection periods at six weeks (versus the normally quarterly period) through the end of 2001 as well as increased visits by NRC Region IV managers and bi-weekly calls with DCPP staff. These actions would be documented in inspection reports to better keep the public informed.

In its Inspection Report dated June 18, 2001, NRC concluded, "NRC inspections, to date, have confirmed that you are operating these reactors safely and that public health and safety is, thus far, assured." The DCISC concurs with this assessment.

3.6 DCISC Evaluation

The NRC concluded that, "Overall, Diablo Canyon operated in a manner that preserved public health and safety and fully met all cornerstone objectives" based on its inspection findings being classified as having very low safety significance and all PIs indicating a level requiring no additional NRC oversight. Based on its reviews, the DCISC concurs with this overall assessment.

The NRC Revised Reactor Oversight Program (RROP) appears to be more objective than the previous primarily-subjective Systematic Assessment of Licensee Performance (SALP); however, it is noted that the setting of performance bands is such that significant degradation from current performance can occur before drawing NRC action. PG&E has set its own thresholds lower than NRC's as early indicators of performance degradation.

The DCISC received regular reports on the NRC RROP Performance Indicators for DCPP at each of its Public Meetings. The DCISC will continue to monitor PG&E's DCPP safety performance using the NRC Performance Indicators at both fact-finding and public meetings.

4.0 SUMMARY OF MAJOR DCISC REVIEW TOPICS

This section of the Diablo Canyon Independent Safety Committee report summarizes, by major topic, past and current period review and fact finding activities performed by the DCISC. More detailed reviews (i.e., DCISC fact finding meetings and public meetings) of the topics are contained in Volume II as referenced below.

4.1 Plant Aging Management

4.1.1 Overview and Previous Activities

Aging-related degradation is the gradual degradation in the physical characteristics of a system, structure, or component (SSC) which occurs over time and use, and which could impair the ability to perform its design functions. The purpose of the Aging Management Program (AMP) is to ensure that the plant continues to operate safely and within its design and licensing bases throughout its life through the process of involving engineering, operations, and maintenance in activities to control age-related degradations or failures of SSCs to within acceptable limits.

The PG&E AMP includes a number of existing programs such as the steam generator strategic plan, reactor pressure vessel embrittlement program, erosion/corrosion program, intake structure concrete inspection activities, electrical cable aging, buried commodities, and concrete/steel structures, to name a few. The scope of the systems, structures and components to be covered by the program continues to evolve and expand.

In 1998 the Aging Management Program was transferred from San Francisco to the station Steam Generator Engineering Group. More reliance was being placed on support from EPRI, DOE Guidelines, and Westinghouse Owners' Group (WOG) Life Cycle Management (LCM) and License Renewal (LR) programs.

As a part of Aging Management, the plant has developed System Long Term Plans (SLTP) which specify needs and actions for systems for the next five years. The DCISC Team reviews and reports on the SLTPs when it reviews a system with the System Engineer at most fact-finding meetings.

In the last reporting period, the DCISC concluded that (1) the overall DCPP Aging Management Program management appears to have lost its momentum and become relatively inactive since 1998 and (2) there was no apparent improvement in some implementation problems. The DCISC was concerned that this period of inactivity would lead to future problems and recommended that PG&E take steps to augment the program.

4.1.2 Current Period Activities

During the current reporting period, there was one fact finding meeting held to obtain an update on the DCPP Aging Management Program (Volume II, Exhibit D.2, Section 3.15) and another to review a new aging management initiative, the Generation Vulnerability Investigation Team (Volume II, Exhibit D.7, Section 3.9). The results of these reviews are summarized below.

Aging Management Program

PG&E had completed a comprehensive review and revision to the Aging Management Program procedure (see below) which described management's vision and included the role of the System Long Term Plans (LTPs) and interactions with the Maintenance Rule as major components of AMP. (See Section 4.5 for a review of System Long-Term Plans.) **These actions appeared satisfactory to the DCISC during the current reporting period.**

PG&E also committed to identify an individual to take over the position of Aging Management Program Director and who could commit the amount of time necessary to ensure proper ownership and direction.

Nuclear Quality Services performed an Aging Management Program assessment, which resulted in the following findings of failures to follow the aging management procedures:

- The Plant Aging Management Working Group has not been meeting.
- The Aging Management Program Manager was not a full-time position.
- No aging management "training and awareness" had been conducted for system engineers, support engineers, maintenance foremen, mechanics, and operations.
- Management's expectations for the Aging Management Program were not clear.

A corrective action completion date of July 22, 2000 was initially established; however, this was revised to September 12, 2000. The controlling AMP procedure was revised in August 2000 to accomplish the following:

- Updated organizational structure and titles consistent with the present organization.

- Changed responsibility for Aging Management from Regulatory and Design Services to Engineering Services.
- Changed full-time Aging Management Program Manager to part-time Aging Management Program Coordinator (AMPC).
- Eliminated the Plant Aging Management Working Group (the AMPC will call in resources as needed).
- Revised the requirement from an annual to a periodic assessment report.

In addition to the above procedure changes, the following management expectations and actions were identified:

- Continue to rely on and develop the System Long-Term Plan process. The assigned System Engineer has the responsibility for taking the lead in each area.
- Consider undertaking an effort to identify "gaps" in the maintenance program for age-related failures (e.g., equipment failures, such as expansion joint, bus bar, and control board lamp socket failures) of components not previously included in the Aging Management Program. (This is similar to DCISC Recommendation R00-6 from the previous DCISC reporting period (se Volume II, Exhibit H)).
- Involve the Asset Teams to provide feedback on equipment condition. (Asset Teams are already included in the System Long Term Plan Process).
- Investigate what other STARS partners are doing to address aging management.

The newly named Aging Management Program Manager was to prepare a document identifying possible future directions for aging management. PG&E anticipated employing a consultant to perform a gap analysis in order to have a comprehensive, systematic approach. The document would be reviewed by the Manager of Engineering Services and then presented to management for concurrence. Additionally, PG&E plans to complete all system long term plans in 2001. Following Outage 1R10, DCPP planned to implement an Integrated Problem Resolution Team.

NQS closed all above items except the future directions document and will track it with the AR.

PG&E satisfactorily addressed the NQS aging management assessment findings. Management appears to be making progress in identifying the future direction of aging management, although progress has been slower than expected.

The DCISC plans to review aging management directions and management expectations in the gap analysis study after it is approved and follow up on the effectiveness of the Integrated Problem Resolution Team.

Generation Vulnerability Identification Team

DCPP has had seven or eight aging-related failures of equipment in the last year that impacted planned outages, generation or forced outages. All were caused by balance of plant equipment. The DCISC had reviewed these failures and reported on them in the last annual report, and, although not directly related to plant safety, some of the failures did produce transients and challenge safety systems. An Integrated Problem Response Team (IPRT) approach was sanctioned by the DCPP Management Team to address the lost generation. DCPP established the Generation Vulnerability Identification Team (GVIT) in late 2000 consisting of 12 members and sponsored by the Director of Engineering and Maintenance. The original scope of the work was:

- Focus on identifying potential generation losses from equipment failures that can exceed one full day of generation, or a greater than 10% derate for more than one day.
- Enhance/create a process for longer-term reliability or aging management issues that merit funding.
- Provide recommendations and solutions to management on resources, tools, and process changes.

This is phase one. PG&E will make a decision about aging management after completion of recommendations based on phase one. The majority of the work has been completed, and the final report will be out by June 30, 2001. The DCISC plans to review the report in the next reporting period.

It appears that DCPP is taking a positive approach in addressing their problems on loss of generation from aging equipment. The DCISC will review the final Generation Vulnerability Identification Team (GVIT) report after it is issued.

Passive Device Aging Management Investigation

The DCISC learned about a new initiative, Passive Device Aging Management Investigation, which was begun in late 2000.

Completion was expected in June 2001. The DCISC plans to review the program results in the next reporting period.

4.1.3 Conclusions

PG&E appears to be taking positive steps in reviving neglected portions of its Aging Management Program with new leadership, augmented management support, and several new initiatives (the latter due in large part to aging-related failures of plant components). The DCISC has had concerns about the program in the last several reporting periods and is pleased to see progress towards improvement. A major element of DCPP aging management is the system long-term planning process in which system engineers are responsible for monitoring, measuring and planning for aging-related effects.

The DCISC will continue to follow PG&E's progress with aging management, including review of the Generation Vulnerability Identification Team report and the Passive Device Aging Management Investigation Team report.

4.2 Conduct of Maintenance

4.2.1 Overview and Previous Activities

The DCPP maintenance program has been substantially improved since the startup of the DCPP. The initially high and increasing Operating Capacity Factor, from 86% in 1985 to 93.3% for Unit 1 and 96.2% for unit 2 in 2000, demonstrates that the DCPP maintenance program has been effective. The DCISC has reviewed the DCPP maintenance program, or key elements of it, at public meetings and fact-finding Meetings.

The NRC Maintenance Rule (10 CFR 50.65) issued in 1991, required that commercial nuclear plant licensees monitor the performance or condition, or provide effective preventative maintenance of all risk significant structures, systems and components (SSCs) against licensee established goals. PG&E implemented the Maintenance Rule requirements on all SSCs, as a basis for its Maintenance Program.

PG&E's drive for shorter refueling outages requires that some of the preventative and corrective maintenance that had been done during refueling outages be performed while at power in Mode 1. Because on-line maintenance, as opposed to outage maintenance, potentially places the plant at greater risk, the DCISC has investigated how risk considerations are entered into the decisions to do on-line maintenance.

PG&E had reorganized the Maintenance Department into Asset Teams. The Asset Teams were established as a result of the Work Control team to improve the process of maintaining and modifying DCPP to reduce costs while maintaining or improving quality. The five Teams have been reorganized into four teams, which are now: 1) Turbine Building Team, 2) NSSS Team, 3) Control Room/Electrical Team, and 4) Maintenance Support Team.

The DCISC concluded in previous periods that the Maintenance Program appeared satisfactory.

4.2.2 Current Period Activities

During the current period, the DCISC reviewed conduct of maintenance activities at three fact-finding meetings (Volume II, Exhibit D.2, D.5 & D.6) and one Public Meeting (Volume II, Exhibit B.9). These activities were as follows:

- Discussion with Maintenance Manager
- Asset Team Review
- On-Line Maintenance

Meeting with Manager of Maintenance Services

The newest DCISC Member and a consultant met with the Manager of Maintenance Services (Volume II, Exhibit D.2) for an informational briefing. The Manager reported on the Strategic Teaming and Resource Sharing (STARS) activities that affected Maintenance. He described the change from functional maintenance teams (e.g., electrical, mechanical) to multi-disciplinary Asset Teams, which has worked out well for the plant. In the area of human performance, the Manager stresses proper tailboards, communication and self-verification. Maintenance supervisors did not believe craft training was time well-spent; however, the craft believed otherwise. Maintenance Services is now performing a self-assessment of its training programs.

Asset Team Update

The Asset Team Leader (ATL) for the Turbine Team presented the overall update for all the Asset Teams (Volume II, Exhibit D.5). The Asset Teams complete about 190 Action Requests per month and if they can keep rework to under 10 per month, that has been considered acceptable by PG&E. In the Human Performance area, there has been a big push in midsummer for supervisors to talk to workers, for tailboards and for reverse (feedback) tailboards about human performance issues.

DCPP recently had four events involving work on the wrong piece of equipment or wrong unit. PG&E believes that part of the cause for these events is stress on the workers from PG&E workers moving in from other plants and alignment with other utilities. DCPP management talks to employees explaining that keeping focused on doing work safely is more important than worrying about outside events.

The Asset Team Leader discussed Industrial Safety and the 1R10 outage schedule. In 1R10 PG&E many meetings with employees emphasizing that safety was the focus and that, even though they had a short outage schedule, safety came first. PG&E made a big push on ALARA in 1R10 but did not meet the goal; however, they performed better than for any other Unit 1 outage.

The corrective maintenance (CM) backlog and schedule adherence for the year were reviewed. The present CM backlog is 556 with a goal of 425. Operations and Maintenance are doing well in prioritizing the jobs that need to be worked on schedule.

The issues facing the ATLs were described. DCPP needs to make the ATLs' jobs easier as DCPP has added more work to the ATL, which is one of the hardest jobs on site. The ATLs are not able to do everything that they are expected to do. The NSSS Team is changing the way they use the ATL. They have one ATL direct the work one week while the other ATL is planning work for the next week when he will be directing the jobs. The Team Leader feels that the Asset Teams have been successful. Work is getting done more effectively and workers are sharing work better. This is building a lot of ownership into the work force, though it can still be improved.

The ATLs were given tests in all disciplines to determine if they needed cross discipline training and system training. Resultant training was completed in January 2001.

It appears that the Maintenance Asset Teams have been making progress in improving overall performance of the group. They have made improvements in industrial safety and ALARA in 1R10. They have also determined the training necessary for the Asset Team Leaders in each of the disciplines, and the resultant training has been completed.

On-Line Maintenance

The DCISC met with the Outage Director and Supervisor of the Probabilistic Risk Assessment (PRA) Group to discuss the status of DCPP on-line maintenance (OLM) (Volume II, Exhibit D.6). The last DCISC review in December 1999 concluded that DCPP was using OLM more often to reduce outage scope and was developing and updating its risk assessment tools to appropriately control the resultant risk of removing components from service during operation.

It was reported that NRC Regulations had become mandatory in November 2000 in that the risk assessment requirement "shoulds" were changed to "shalls". Also, NRC Regulatory Guide 1.182 which embraces NUMARC 93-01 "Industry Guidelines for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants", is more closely focused on managing the calculated risk associated with maintenance. DCPP had revised its maintenance program to implement the new requirements.

A self-assessment was performed in September 2000 to determine the readiness of DCPP to implement the new requirements. The team consisted of several DCPP personnel and a Maintenance Rule representative from Callaway Nuclear Plant, a STARS member. The results showed that many of the necessary elements were in place in the existing PRA and On-Line Maintenance Programs, but four recommendations were made, and DCPP made these changes prior to the November 28, 2000 implementation date.

These changes require the Operations Work Week Managers to ensure that risk management actions are completed for planned work. This includes expected plant conditions and expected external conditions due to seasonal effects. The Control Room Shift Foremen are required to evaluate and manage risk of all activities or conditions based on the current plant state prior to implementation of maintenance activities. The procedure also requires an assessment of the plant trip risk with a checklist for both pre-planned and emergent activities.

Formal classroom training has been provided to Maintenance and Operations personnel on the new requirements. Additionally, just-in-time (JIT) tailboards are provided prior to performance of maintenance activities.

Additionally, with the move to Standard Technical Specifications, the On-Line Maintenance Program (OLM) (used to assess risk), can take advantage of the 7-day component-outage-window rather than the previous 72-hour window.

An NRC inspection was performed in February 2001 of various plant activities, including maintenance risk assessment. The NRC inspectors concluded that DCPP had exhibited good use of the Maintenance Rule. They noted that DCPP had provided good, effective compensatory measures during a California Grid Stage 3 alert conditions (i.e., possible increased electrical grid instability). DCPP had developed a special risk management guidance statement identifying additional reactor trip risk classifications for two risk-significant systems, the 500 kV electrical system and the 230 kV start-up power system, during Grid Stage 3 alerts in which there could be increased grid instability.

The California electricity supply shortage and increasing grid alerts have caused DCPP to defer some equipment maintenance during these periods to reduce the risk of plant trips. DCPP

practice was to move the equipment to a later maintenance window when they did not believe reliability would be affected; however, possible effects could be larger scope outages and a shift in focus from summer to winter. DCPP noted that the capital budget had been lowered due to PG&E's debt problems and that revised plans for spending were under development. The DCISC will follow up this item due to concerns of long-term safety and reliability, if spending is significantly lowered or delayed.

The DCISC received an update of the on-line maintenance program at the June 2001 Public Meeting (Volume II, Exhibit B.9). PG&E reviewed the schedule performance adherence trends from July 2000 through present. Their goal is 90% to meeting the schedule. It appears that they are meeting their goal except for times when they have forced outages or curtailments and need to reschedule the work. DCPP implemented the NRC Maintenance Rule A (4) in November 2000. They revised on-line maintenance risk management process to include plant trip hazards and external risks (weather, fire, etc.). The Senior Reactor Operators (Work Week Managers) and schedulers manage risk via daily work coordination process.

The cycle risk profile for units 1 & 2 listing monthly average Core Damage Frequency (CDF) contribution from maintenance was also reviewed. Noteworthy on-line maintenance examples discussed were: Unit 2 diesel expanded pre-outage maintenance significantly reduced 2R10 diesel outage work scope; ASW FCV-601 motor/actuator change-out; main annunciator upgrade units 1 & 2; and Unit 2 radiographic check valve inspection saved 800 person Rem in predicted 2R10 exposure.

Some of the major challenges that have occurred were discussed. Unit 1 on-line stator coil chemical cleaning was performed in February, 2001. DCPP initially curtailed capacity due to high generator stator temperatures. The chemical cleaning restored full capacity and avoided a forced outage. As a result of Stage 3 grid emergencies in California, comprehensive plant trip risk management policies were developed. A listing of the work scope impacts due to System electrical demands was also reviewed.

Upcoming efforts for DCPP are new 10CFR50.59 implementation in July 2001 and ORAM-Sentinel maintenance risk evaluation tool development by November, 2001, which the DCISC will review.

It appears that DCPP is managing on-line maintenance well,

using risk assessment as tool and has benefited from the results. DCISC will continue to follow DCPP use of on-line maintenance.

4.2.3 Conclusions

The DCPP Maintenance Program appears to be functioning satisfactorily and implemented properly to meet NRC Maintenance Rule requirements. The Maintenance organization is functionally aligned to the work scope, and the On-Line Maintenance Program is soundly PRA-based. The DCISC will follow up on the possible effects on safety of lowered/delayed plant capital spending.

4.3 Conduct Of Operations

4.3.1 Overview and Previous Activities

The following are operations-related items the DCISC has reviewed in previous reporting periods:

- Severe Accident Management Guidelines (SAMG) - SAMG provide guidance on how to manage a severe low probability occurrence to minimize the risk to the plant and public. All DCPP specific SAMG are complete. Training of the identified people for SAMG has been completed.

- Safety Parameter Display System (SPDS) - the SPDS was developed in response to the TMI-2 incident as part of the change over from "event based" to "symptom based" emergency operating procedures. The objective of the SPDS is to allow monitoring of the status of critical plant characteristics for use primarily by the Shift Technical Advisor (STA) during accident scenarios.

- Operations Tailboards - PG&E has placed increased emphasis on improving Operations tailboards, and a process of observing tailboards has been implemented.

- Clearance Process - DCISC continued to review of the improvements that PG&E has in the clearance process which has resulted in significantly improved performance.

- Jumper Program - The Jumper Program includes temporary changes made to the plant, such as electrical jumpers, lifted electrical leads, mechanical jumpers/bypasses, bypasses of safety functions, and installation of measuring and test equipment (MT&E). The goals of the program are to maintain plant configuration control, keep Operations and the System Engineer up-to-date, and minimize the number of jumpers. PG&E appeared to have an effective, tightly controlled process for controlling temporary electrical and mechanical jumpers.

In previous reporting periods the DCISC has found that the conduct of Operations appeared satisfactory.

4.3.2 Current Period Activities

The following operations-related items were reviewed by the DCISC during the current reporting period:

Meeting with Manager of Operations Services

The DCISC met with the Manager of Operations Services at the October, 2000 Fact-Finding Meeting (Volume II, Exhibit D.2). The following topics were discussed:

- Outage 1R10 - the outage was going well with low dose rates and "pretty good" human performance.
- Operations culture changes - improvements were needed in initial operator training, communications with management was more frequent, and they were working on better explaining the merit rating and pay system to operators.
- Staffing - a new operator class was being formed.
- Training - supervisory/management training was being developed for Operations.
- Human Performance - this indicator seems to be leveling off even though managers believe there is still room for improvement, so more emphasis may be needed.

Observe Control Room Shift Manager Turnover

The DCISC observed at the October Fact-Finding Meeting (Volume II, Exhibit D.2) the afternoon turnover between the departing day shift manager and the oncoming night shift manager. The two managers used the Shift Manager Turnover Report, which included all major conditions and activities for both units. It was noted that the first winter storm of the year was approaching with moderate ocean swells and kelp. The managers also used a Technical Specification Summary Sheet which listed component or train non-availability, compensatory actions and alternate line-ups. The Shift Foremen were separately performing the turnover and control board walkdown.

A Shift Brief was also observed for the departing and on-coming shifts for the Unit 1 outage. The on-coming Shift Manager coordinated the brief. A similar shift brief was to be performed later for the operating Unit 2.

The Outage 1R10 Operations shift turnovers and briefs appeared satisfactory.

Control Room Tour

The DCISC met with the Manager of Operations Services at the March, 2001 Fact-Finding Meeting for a tour of the recently re-configured Control Room. DCPP had implemented a new Control Room formality policy and had re-arranged the Control Room complex to provide fewer distractions to the operators. Access to the room was restricted solely to Control Room operators with permission required for anyone else to enter. All non-control-room-operator personnel (e.g., clerks and Shift Technical Advisor) were moved outside to adjoining offices. A new, adjacent briefing room was provided such that briefings would not interfere with on going operator duties. A safety priority sign provided a reminder that safety comes first, before generation, cost or schedule.

The updated Control Room and access policy appeared to provide a quieter, less distracting atmosphere for the control operators than before.

Establishment of Priorities for Operators

The DCPP Operations Manager and Day Shift Supervisor discussed with the DCISC Team the establishment of priorities for the operators. Operations management has been meeting with the operating crews since August 2000 to present these priorities.

Nuclear and personnel safety is the most important priority for the plant, and this is being stressed to all employees in Operations. The Operations Manager has visited other plant control rooms to observe professionalism of the operations crews. The Shift Manager has also taken some of the operating crew to other plants to observe operations. Operations management is working with the operating crews to improve professionalism in the control room including improvement the dress of the employees. The Operations Section Policy on "Expectations for Nuclear Operator Watchstanders" was also discussed. All Shift Managers have agreed to sign off on this policy.

The scheduling of work was reviewed. The Asset Teams and Operations have been working together to prioritize the work. Maintenance has been meeting schedule about 90% of the time. The rolling 12-week schedule for Surveillance Test Procedures has also been working well.

Operations tries to make schedule within reasonable cost.

Shift Manager and Shift Supervisors make the decision whether work can be deferred. As an example, the last storm season led to bringing both units down to 20% power. The decision to bring the units down was based on what was best for plant safety, not what State power load was, energy needs, cost or anything else.

DCPP stated that the PG&E bankruptcy has not had any impact on employees. They continue to communicate all information to the employees on PG&E financial status. They also feel that morale in Operations and the leadership team has improved in the last year.

By making nuclear safety the highest priority, it appears that DCPP continues to stress the proper priorities to the operating crews and is working on improving professionalism in the control room.

Improved Technical Specifications

PG&E reported at the September 2000 Public Meeting (Volume II, Exhibit B.3) that the program to transition DCPP to the Improved Technical Specification (ITS) had recently been completed. DCISC had reviewed the DCPP ITS at previous fact-finding and public meetings. The ITS were developed beginning in 1995, with DCPP working in conjunction with the Wolf Creek, Callaway and Comanche Peak nuclear plants which partnered with DCPP in that effort. The Licensee Amendment Request (LAR) was submitted to the NRC in June 1997, and all Plants received and responded to requests for additional information. The NRC issued the License Amendment (LA) in May, 1999.

The new set of Technical Specifications (TS) themselves is somewhat less lengthy than before; however, the basis for the TS has expanded considerably. The implementation of the TS was originally scheduled for the end of May 2000. However, that date was changed and an emergency LAR submitted to the NRC to permit postponement of implementation of the ITS until the end of June, 2000 due to PG&E's concern over implementing the ITS during the restart of both Units because of the 12 kV bus outage which had occurred.

An ITS Implementation Project Manager was created, and a Team was formed to identify all required changes resulting from the ITS. DCPP submitted a clean-up LAR to the NRC during March, 2000 which addressed the changes resulting from the

Implementation Program (IP) for the ITS. A Management Oversight Team was formed to monitor progress of the IP. A self-assessment was performed utilizing personnel from DCPP's Licensing and Quality Assurance organizations as well as personnel from the partnering utilities. This self-assessment identified enhancements to the implementation efforts but no major issues were found which would hamper the process.

PG&E reviewed the comprehensive efforts made to adequately train the licensed operators and other necessary DCPP personnel to the ITS. These efforts included a detailed review of TS rules of usage and all the changes made to the TS.

There had been no errors reported or identified from application of the ITS. There have been some instances where a TS, or a portion of a TS, has been relocated to the FSAR or to the Equipment Control Guidelines (ECG) to address a specific licensing commitment, a surveillance requirement or to better define operability criteria for a system. The ECG is a form of administrative TS which may be altered without prior NRC approval under the provisions of 10CFR50.59.

It appears that PG&E has been successful in preparing and implementing the Improved Technical Specifications (ITS). They were also successful with their training of operators and other necessary DCPP personnel on the ITS.

4.3.3 Conclusions

DCPP Conduct of Operations appeared satisfactory, including outage activities; Control Room policies and demeanor, and priorities; and preparation and implementation of the Improved Technical Specifications.

4.4 Emergency Preparedness

4.4.1 Overview and Previous Activities

An Emergency Preparedness Program has been in-place since the beginning of the nuclear power industry; however, the accident at Three Mile Island brought substantial changes. Prior to Three Mile Island, Emergency Operating Procedures (EOPs) were primarily event-based, requiring the operator to know which event was taking place. Afterward, the EOPs became symptom-based, making it easier for the operator to decide what actions to take. The three major facilities used in an emergency drill include (1) the simulator which is used where operators responded to the accident, (2) the Technical Support Center (TSC) where the Recovery Manager, engineering, computer, radiological assessment, NRC, and operations, as well as documents and procedures, are located and (3) the offsite Emergency Operations Facility (EOF). An Operations Support Center (OSC) provides a location to stage and dispatch operations, maintenance, firefighting and radiation protection personnel.

The DCISC reviews Emergency Preparedness at DCPP on a regular basis. Past reviews have included the following:

- Review of a full emergency exercise in October 1990
- Tour of Off-Site Emergency Operations Center in August 1994
- A tour of the Technical Support Center (TSC) in April 1995
- Observation of the November 28-29, 1995 annual emergency exercise.
- Review of the status of the emergency offsite communication capability at DCPP.
- Observation of the July 30, 1999 Emergency Drill
- Observation of the November 4, 1998 annual graded emergency exercise
- Observation of the December 3, 1999 Emergency Drill designed to test the UDAC dose assessment and projection function
- Observation of the annual graded emergency exercise on May 10, 2000. The exercise included participation by DCPP, San Luis Obispo County, State of California, NRC and FEMA personnel as players. The NRC and FEMA observed and graded the exercise.
- Resolution of problems with the Unified Dose Assessment Center (UDAC), the joint DCPP/County radiation dose calculation and assessment function.

The DCISC had concluded that DCPP has performed well in its emergency drills and exercises, making improvements as needed, especially in radiation release dose calculation and reporting activities.

4.4.2 Current Period Activities

The DCISC reviewed the following Emergency preparedness items during the current period:

Alternate Source Terms

The DCISC reviewed DCPP's potential use of alternate source terms (Volume II, Exhibit D.5, Section 3.3). A "source term" is the assumed timing, magnitude, and chemical form that radiation releases take, and it is used to calculate radiation releases from nuclear accidents. The original source term was contained in NRC Technical Information Document (TID) 14844. The results of design basis accident analyses using this TID are conservative. The Alternate Source Term (AST) is an NRC-accepted alternative to TID 14844, based on significant improvements in understanding the generation and behavior of fission product releases from severe nuclear power plant accidents since the publication of TID-14844. The AST is insufficient by itself as a basis for nuclear emergency preparedness requirements; however, the potential benefits in implementing the AST are:

- Increase in allowable containment leak rates
- Simplify the control room filtration system by changing the number and/or types of filters
- Increase in allowable valve stroke times for containment isolation valves
- Increase post-LOCA recirculation leakage
- Relax equipment qualification requirements by reducing EQ concerns for the equipment required to be operable in the short-term
- Relax containment isolation requirements
- Eliminate or limit containment spray additives, or improve operating margin for containment pressure.
- Update plant accident atmospheric dispersion factors(x/Q) using current meteorological data.

Currently, DCPP has sufficient margin in all of the design basis accidents except Steam Generator Tube Rupture, which is being reanalyzed by Westinghouse using TID 14844. PG&E believes there are no immediate needs for reanalysis using AST at this time but will continue to monitor other utilities' progress in their implementations of the AST.

Observe Multi-Facility Table Top Emergency Exercise

The DCISC observed two "table top" emergency drills of two emergency organizations on Friday March 16, 2001 (Volume II, Exhibit D.6, Section 3.4). The Technical Support Center (TSC) and the Emergency Offsite Facility (EOF) [and associated Unified Dose Assessment Center (UDAC)] were exercised independently with participants playing their roles around tables in their respective facilities without outside participation, hence the term "table top". Each organization participated in two separate predetermined scenarios. Each scenario included objectives for evaluation.

The initial events for Scenario #1 at the TSC were typical for a drill, i.e., loss of essential equipment, in this case, Auxiliary Salt Water (ASW) Pumps (during a winter ocean storm) and additional equipment such as Auxiliary Feedwater Pumps. The scenario proceeded through all emergency action levels (EALs) to a General Emergency (GE).

The TSC facility had been rearranged since the last DCISC visit and exhibited improved utilization of space, thus benefiting communications. The TSC was staffed in a timely manner and proceeded to establish communications and plant status information flow. Support teams represented were engineering, radiological assessment, and government liaisons. Status and prioritized action boards were maintained. Regular status reports were made. Emergency Action Levels (EALs) were decided and announced in an accurate and timely manner. The demeanor in the TSC appeared to be organized and professional. There was good use of three-way communication.

The critique received good participation, and it appeared to be on target. There were no major problems, and areas for improvement included improved information flow and shorter tailboards. The participants and monitors agreed that all objectives were met.

Scenario #2 was observed at the Emergency Offsite Facility (EOF). The EOF was partially staffed with representatives from

engineering, radiological assessment/monitoring, ERO management, and government liaisons. This scenario was initiated by an earthquake resulting in loss of all offsite power and a small steam leak from a steam generator in containment. An emergency diesel generator failed to start, and auxiliary feedwater pumps tripped, resulting in loss of the ability to maintain hot shutdown conditions. The players recognized the conditions and proceeded to General Emergency. Protective actions and notifications appeared accurate and timely. Radiological monitoring teams were controlled appropriately and provided good input. Three-way communication was apparent. Radiological assessment by UDAC appeared to provide timely and accurate assessments.

The EOF critique appeared productive. Emergency action levels were identified correctly, as were protective action recommendations. Status briefs were short and to the point. Engineering was effective, and government notifications were done well. UDAC performed well (in what was considered a particularly challenging scenario). All objectives were met.

Emergency Preparedness Radiological Processes & Tools

The DCISC reviewed DCPP radiation dose projection calculation methods and assessments used in emergency planning (Volume II, Exhibit D.8, Section 3.4). DCPP utilizes two computer programs to perform its dose projections: EARS (Emergency Assessment and Response System) and MIDAS (Meteorological Information and Dose Assessment System). EARS is supplied radiological data by the Radiation Monitoring System comprised of 80 radiation monitors surrounding the plant. It uses these data to calculate time-dependent release rates, which are input to MIDAS, along with meteorological data from the Meteorological Data Acquisition System. MIDAS is a terrain-specific atmospheric dispersion model, which calculates resultant downwind dose rates and doses at onsite and offsite locations within a 50-mile radius of DCPP.

These programs have been adapted to the unusually complex terrain surrounding DCPP, e.g., ocean, land and mountains. The programs have been verified by dye tests and have performed well in emergency exercises. The results of the calculations in the programs are used to recommend protective action levels (PALs) to San Luis Obispo County to advise the public regarding sheltering and/or evacuation following a plant event. DCPP has been pleased with the performance of EARS and MIDAS.

Communicating Radiological Information to the Public

The DCISC reviewed some problems PG&E has had with conveying accurate radiation release information to the public during its May 2000 unusual event and during the May 10, 2000 emergency exercise (Volume II, Exhibit D.8, Section 3.5).

The unusual event included a fire which caused the plant to shut down, utilizing its main steam safety relief valves to relieve steam pressure. The NRC had made a news statement that radioactive steam had been released, resulting in confusion about what constituted a radiological "release" above and beyond normal approved releases.

The problems in the emergency exercise occurred at the mock public/news media briefing at the Joint Media Center. The county and PG&E plant spokespersons did not provide readily understandable radiological information for the public regarding calculated/actual dose levels and their effects and information on sheltering.

DCPP was working on the definition of a radiological "release" specifically attributable to an event. NRC is also working on their definition. DCPP is selecting the appropriately skilled persons with radiological knowledge to be added in the EOF. Such a person will hear first-hand plant and radiological conditions resulting from an event and will be the DCPP spokesperson to the news media and public. Specialized speaker training will be provided. It is anticipated that the improvements will be completed by the end of 2001.

4.4.3 Conclusions

It appeared that DCPP has performed well in its emergency drills and exercises and has been working on improving its communication of accurate and understandable radiation release information to the public. The DCISC plans to follow this item.

4.5 Engineering Program

4.5.1 Overview and Previous Activities

The DCISC has had a number of Public Meeting presentations by PG&E and several fact-finding meetings with PG&E to investigate the following aspects of the engineering/design program:

- Design Change Process Improvement
- Proactive Engineering Program
- Engineering Reorganization and Self-Assessment
- System Engineering Responsibilities/Walkdowns
- NTS Performance Indicators
- Management of Engineering Workload and Timeliness
- Operation & Maintenance within Design Basis (Configuration Management)
- Results of the NRC A&E Inspection
- Decreasing Vendor Support
- Licensing and Design Basis Affirmation Program (LDBAP)
- Engineering Transition
- 10CFR50.59 Major Modifications

In previous annual reports, the DCISC had concluded that PG&E had a strong engineering program.

4.5.2 Current Period Activities

The DCISC has investigated a number of Engineering activities at three fact-finding meetings (Volume II, Exhibit D.2, D.5 & D.6) during the current reporting period.

Meeting with Manager of Engineering Services

The DCISC met with the Manager of Engineering Services to discuss the activities of the Engineering group (Volume II, Exhibit D.2). He described the engineering transition in which the engineering function moved from PG&E Headquarters in San Francisco to the plant. He also described the System Engineer Program. For Outage 1R10, Engineering had formed local leak rate testing teams with Operations, which had been effective. Engineering had hired ten recent graduate engineers who were going through a structured training and familiarization process. The average age of employees (now

about 47) was increasing steadily, and an increase in retirements was expected, prompting the need for new hires.

Engineering Work Load Performance Indicator

The Manager, Engineering Services (ES) presented the ES workload and the indicators used to monitor their performance (Volume II, Exhibit D.5). They track Engineering Services Action Requests (ARs) and Action Evaluations (AEs).

Their goal for total ARs and AEs is to be down to 2000. In 2000 they trended down to less than 2000 and then up to about 2300 to 2400 and are now down to about 2000. Design Engineering spends about 80-90% of its time on ARs and AEs. Not all Engineers are doing things that can be tracked. It appears that PG&E does not have the ability to track all the work that is not covered by ARs and AEs and does not know if DCPP is doing everything that needs to be done.

DCPP measures how System Engineers are doing by how they are performing system walkdowns. In Design Engineering, they do not have enough manpower to do all the work that needs to be performed and some work has to be sent out to contractors (outsourcing). The Engineering Group did meet their deadline to get all the design packages to the outage group to support 2R10 refueling outage.

DCISC suggested that DCPP should have some method to identify the entire Engineering Workload to determine if they have enough resources to perform the work without getting behind.

It appears that DCPP has methods to track performance and workload of ARs and AEs and looks at the performance of System Engineers. However, they do not appear to have a method for tracking everything that is not covered by either ARs or AEs. They also do not have a method to identify the entire the Engineering Work Load to determine if they have enough resources to perform the work without getting behind.

The DCISC believes that DCPP should investigate a method to identify the entire Engineering Workload to assure that the necessary work is performed to effectively support safe operation of the plant.

Configuration Management Program

The DCISC Team met with the Configuration Management Program (CMP) Manager for an update on Configuration Control. The purpose of Configuration Management (CM) is to assure consistency between design requirements, physical configuration and facility configuration information (i.e., as-built documents, including procedures). PG&E described the current CMP referring to the controlling directive and described recent program changes. CM is implemented through more than 200 plant procedures, which conform to the controlling directive. Changes consisted primarily of augmenting the implementing procedures to include CM guidance and a checklist and better instructions for assuring that the impact of any change is reflected in all related documents. Effectiveness of CM is measured by the CM Index.

The only adverse trend has been related to the maintenance of the Component Data Base where an Non-Conformance Report (NCR) had just been cleared with corrective actions to improve the consistency of updating the database. Self-assessments are being used to determine whether the issue has been resolved. There have been no NRC Notices of Violation of CM in the last two years. The next self-assessment of CM is planned for July - August 2001 and will include personnel from other (STARS) plants.

A Generation Vulnerability Identification Team has been initiated to identify probable future generation losses by evaluating the preventive maintenance, aging management, and decision making process against current DCPP internal and industry expert states-of-knowledge. This report is planned to be complete by June 30, 2001 and recommendations implemented by year-end.

The Configuration Management Program at DCPP appeared satisfactory with measures in place to gauge the ongoing program effectiveness, which the DCISC should review annually. The DCISC should review the results of the Generation Vulnerability Identification Team report following its release in June 2001.

Equipment Qualification Program

The DCISC met with the head of the Equipment Qualification Program (EQP) to obtain the status of the program. In the last several years the only problem in the EQP had been a 1998 NCR

for a valve that had been tentatively identified as unqualified, and which had been resolved. The valve had been properly qualified, but the qualification documentation had been misinterpreted. There had been no other problems. Currently, the only major EQP group initiative was updating its records, from handwritten files into a computer database.

NQS has performed audits every two years, and one was underway at the time of the DCISC visit. A self-assessment was performed in 2000 by a contractor using a "vertical slice" approach; there were five EQ files needing category changes but no significant findings.

The documentation and updating of accident environmental conditions are controlled as design basis information and updated as necessary.

The Equipment Qualification Program appeared to be functioning well with no significant outstanding issues.

4.5.3 Conclusions and Recommendations

The PG&E engineering programs, including Configuration Management and Equipment Qualification, continue to be satisfactory for supporting safe operations at DCPP.

Although DCPP has methods to track performance and work load of ARs and AEs and System Engineers, they do not appear to have a method for tracking work that is not covered by either ARs or AEs nor to identify the entire Engineering Workload to determine if they have enough resources to perform the work without getting behind.

R01-1 It is recommended that DCPP develop and implement a method to identify and monitor the entire Engineering Work Load to assure that the necessary work is performed to effectively support safe operation of the plant and to help in ensuring adequate engineering resources are available.

The DCISC will continue to monitor PG&E's engineering performance, including workload management and a review of the results of the new Generation Vulnerability Identification Team report following its release in June 2001.

4.6 Event/Problem Analysis and Corrective Action

4.6.1 Overview and Previous Activities

During the previous reporting year, the DCISC fact finding team reviewed numerous events at DCPP and analyses performed in support of the resolution of these events and/or to improve safety margins. The events, analyses, and programs reviewed included the following:

- The potential for containment debris to block the recirculation sump following a LOCA for which PG&E's program for assuring sump flow appeared adequate.

- DCPP Unit trips - the DCISC reviews each trip in fact-finding and public meetings.

- Emergency diesel generator (EDGs) starts - the DCISC reviews these and other engineered safety feature activations.

- Operating Experience Assessment Program - the DCISC has reviewed PG&E's program and organization for reviewing and applying industry event experience to DCPP. The program appeared satisfactory.

- Corrective Action Program - the NQS Audit/self-assessment of the Corrective Action Program (CAP) found that overall the CAP has been very effective. INPO also looked at the CAP as part of their recent INPO evaluation and were pleased with what they found. The NRC performed a CAP inspection in early 2000, which was satisfactory. The DCISC believed that PG&E should continue to look at ways to determine if the corrective action taken was effective at solving the problem.

- Recent Ocean Storm Response Experience and Strategy - the DCISC reviewed and found satisfactory PG&E's plans and responses to ocean storm surges.

- ECCS Voiding - gas accumulation or voiding is an industry concern due to the potential to render ECCS pumps inoperable during certain design basis accidents. Although PG&E did not investigate and solve the voiding concerns in a timely manner, it now appears that they have taken appropriate action to solve this problem for the future.

- Expansion Joint Failures - the corrective action following the catastrophic failure of two non-safety-related elastomeric piping expansion joints appeared to adequately address expansion joints. The cause was lack of an effective inspection and replacement program for such joints. The DCISC considers this to have been a programmatic weakness at DCPP and categorizes it as a concern.

- Spent Fuel Cooling Events - DCPP had experienced two loss of spent fuel cooling events caused by inadequate clearances during maintenance activity. PG&E appeared to have taken appropriate actions by adding additional instrumentation and alarms..

The DCISC has found the DCPP Corrective Action Program satisfactory in previous periods.

4.6.2 Current Period Activities

Follow-up on Corrective Action from September 22, 1999 Reactor Trip

The cause of the September 22, 1999 reactor trip was a lightning strike in the 500 kV switchyard. Although the reactor trip was handled well by operators, there were some weaknesses noted: Operations and Chemistry were not aligned on planned condenser tube leak searches, more PA announcements were needed, there were some problems in securing the AFW pump, the four-hour emergency report to NRC was late, communication between the control room and 500 kV switchyard was less than optimal, and the Spent Fuel Pump was not noted to have tripped until regular rounds on the next shift.

Later, when attempting to restart the reactor, the reactor was manually tripped due to an inadvertent transfer from auxiliary power (backfeed) to start-up power. The transfer resulted from switchyard operators not advising the Control Room when resetting the overvoltage trip relay, contrary to the requirements of restart policy. This was considered non-cognitive personnel error on the part of the switchyard operator.

The physical electrical control system changes appeared to be adequate; however, the DCISC plans to follow up on the problems between the Control Room and switchyard.

INPO SOERs 98-1 and 98-2

The DCISC reviewed the DCPP response to Significant Operating Experience Reports (SOERs) 98-1 (Safety System Status Control, August 17, 1998) and 98-2 (Circuit Breaker Reliability, September 18, 1998).

DCPP completed its implementation, and review of the implementation summary indicated that the implementation appeared satisfactory and that PG&E had taken a very proactive role in looking into these problems.

May 15, 2000 Fire and Unusual Event

The event had begun with an 12kV electrical bus overload causing a fire which caused the loss of various pieces of electrical equipment and ultimately led to a turbine trip and an automatic Unit 1 reactor trip in accordance with the plant design. Steam relief following the trip was through the plant main steam safety valves to the atmosphere.

During the fire, reactor trip and main steam safety valve opening, the plant responded normally, and operators shut down the plant satisfactorily. Operators correctly used Emergency Operating Procedures to classify the event as an Unusual Event and to perform notifications to NRC, San Luis Obispo County and State of California officials.

The initial NRC press release warned that the steam released probably contained small amounts of radioactivity. While technically accurate, the news release failed to explain until later that radiation monitors in and around the plant could not detect any radiation above background and that any release was so small as to not pose a public safety threat. The news release led to much public confusion and many phone calls.

The NRC admitted that it unnecessarily alarmed the public into thinking it was being irradiated and is looking at ways to do a better job of explaining the technical aspects of radiation at the plant. PG&E is pursuing communications improvements based on this event and on communications problems at the May 10, 2000 annual emergency exercise. The DCISC is following PG&E's actions on emergency communications initiatives.

Corrective Action Program

In the previous reporting period the DCISC had recommended that DCPP benchmark other plants with strong CAP effectiveness processes. DCPP had reviewed DCPP actions. PG&E reported on several external reviews/assessments of DCPP CAP. These were

- NEI Benchmarking, which found that (1) the DCPP Plant Information Management System (PIMS) is usable but not up to industry best practices and (2) DCPP is just beginning to develop leading indicators of the effectiveness of its CAP.
- INPO reviews found that (1) DCPP was not reporting or learning enough from low-level Action Requests (ARs) and (2) the AR Review Team was a strength.

The DCISC Team reviewed the current three-year plan (CAP/HP Programmatic Upgrade Action Plan) The plan appeared comprehensive, and most actions had been completed. The remaining items were to be completed by early 2002.

NSOC has been reviewing the CAP and is carrying it as an open item. NSOC has established a CAP Subcommittee, which began to review CAP following Outage 2R10. The DCISC plans to review this at the next NSOC meeting it observes (see Section 4.11.2).

DCPP is developing leading and lagging CAP effectiveness indicators. The DCISC reviewed the lagging and leading indicators developed to date. Lagging indicators had been formulated for the following areas:

- Problem identification (trend of numbers of ARs initiated)
- Problem review (six measures of timeliness of reviews and numbers of QEs and NCRs)
- Problem analysis (four measures, including cause analysis average age, NCR rejection rate, and quality grade of QEs and NCRs)
- Timeliness of corrective actions (seven measures, including various corrective action document average ages, actions overdue, etc.)
- Effectiveness of corrective actions (three indicators: percent NCRs and QEs evaluated as effective and number of recurring events in last year from previous QEs and NCRs)

The DCISC believes these are appropriate measures, the most important being the evaluations of corrective action effectiveness and number of recurring events.

Leading indicators included:

- Numbers of Event Trend Records (ETRs) generated
- Trends of management observations
- Adverse trend identification
- Proactive culture acknowledged (e.g., "good catches")

The leading indicators were still in stages of early development.

The DCISC believes that human skills play an important role in analyzing for root causes and developing effective corrective action. It was not apparent that the Human Performance Program and the CAP were closely tied at DCPP. This would seem prudent given that human error is the most prevalent event cause code. Training of personnel in corrective action processes should include such skills as effective interviewing in that much of the information utilized is obtained from personnel involved in the event. Personnel analyzing events, which are primarily caused by human error, should be knowledgeable in human cause characteristics in addition to the traditional system and equipment cause characteristics.

The DCPP Corrective Action Program appeared to have been improved as a result of self-assessments, external evaluations and reviews of other plant CAPs. Measures of program effectiveness were just being developed and appeared headed in the right direction. The DCISC will review the CAP in early 2002, following completion of improvement action items and the next self-assessment.

Because the predominant cause of events is human error, the DCISC believes that DCPP should more closely coordinate the Corrective Action and Human Performance Programs and utilize training in human characteristics and skills (e.g., interviewing skills, human error characteristics) for personnel preparing root cause analyses and corrective actions.

Winter Storm Experience/Procedures

DCPP's policy is to maintain the plant in a safe condition while maintaining a low reactor power level. From reviews of

the program, it appeared that DCPP had developed an effective tool and process for responding to winter storms without having to shut down the plant.

The plant storm response had been based on the "P9" plant protection level of 15% power for the most severe storms. In this case PG&E could take the plant down to approximately 15% power (with a turbine trip but without need for the condenser circulating pumps, the component most affected by the storm) and ride out the storm without having to scram the reactor. DCPP had raised the limit of the P9 protection level from 15% to 50% along with the new Standard Technical Specifications; however, procedurally DCPP would now normally run back to 20% (maximum limit of 25%). This decision (and a decision to shut down) is made with the aid of a prepared storm evaluation chart and a plant simulator run. The evaluation sheet includes such parameters as swell strength, wind direction and strength, kelp loading, etc. If a storm is severe enough, the plant will be fully shut down.

During the December 22, 2000 storm, the plant was taken to 50% power, but lost a circulating pump due to a high kelp loading and was taken to 20% to ride out the storm. It then returned to full power upon return of the second circulating pump. A January 2001 storm was very severe but with low kelp loading, and the plant rode it out at 20% power for two days before returning to full power. DCPP analyzes each storm for improvement of both procedures and equipment.

Upgrades were being considered to the components most affected by storms, e.g., the intake traveling screens. Larger motors are planned for installation during outage 2R10, and a new bar rack cleaning device is being evaluated.

DCPP appears to have satisfactory plans and equipment for responding to winter storms with the ability to maintain the plant in a safe condition. The DCISC will continue to monitor DCPP winter storm plans and experience.

4.6.3 Conclusions and Recommendations

PG&E appears to have taken appropriate actions in response to plant off-normal operating events and system and equipment problems during this period and has applied appropriate corrective actions to prevent recurrence. The

DCISC will continue to review this area as part of its normal activities.

The DCPP Corrective Action Program (CAP) appears to have been improved as a result of self-assessments, external evaluations and reviews of other plant CAPs. Measures of program effectiveness were just being developed and appeared headed in the right direction. The DCISC will review the CAP in early 2002, following completion of improvement action items and the next self-assessment.

R01-2 Because the predominant cause of events is human error, it is recommended that DCPP more closely coordinate the Corrective Action and Human Performance Programs and utilize training in human characteristics and skills (e.g., interviewing skills, human error characteristics) for personnel preparing root cause analyses and corrective actions.

4.7 Environmental

4.7.1 Overview and Previous Activities

The DCISC's responsibility is reviewing DCPP operational nuclear safety; however, some of those activities and items reviewed have related non-radiological environmental aspects. Where this is the case, the DCISC reviews the environmental areas as well. (Radiological matters, including radioactive releases, are reported in other sections of this report). Environmental concerns DCISC has reviewed in previous periods include:

- Underground Diesel Fuel Oil Tank Replacement
- Auxiliary Transformer 1-1 Failure
- Intake Screen Fouling by Kelp during Storms
- Polychlorinated Biphenyls (PCBs)
- Elimination of BioLab
- Annual Summary Report on Discharge Monitoring

The DCISC had previously concluded that the DCPP environmental program was satisfactory.

4.7.2 Current Period Activities

During the current period, DCISC reviewed the Environmental Program for 1999 and first half of 2000 at the July 6 & 7, 2000 Fact-Finding Meeting (Volume II, Exhibit D.1) and at the March 14-16, 2001 Fact-Finding Meeting (Volume II, Exhibit D.6) for the year 2000.

PG&E reported the following results for 1999:

- All required regulatory submittals and correspondence were completed on-time
- One reportable release to the environment: approximately one ounce of hydraulic fluid was released from the kelp harvester and cleaned up
- One exceedance of the NPDES effluent permit limitation at an intermittent point: a contractor left an oil residue in an empty container
- Three environmental agency inspections.
- No unusual or important environmental events related to plant operation

There had been no violations or potential violations for 2000 at the time of the fact-finding.

There were no significant findings reported in the environmental audits and inspections that were performed at DCPP.

The DCISC reviewed PG&E's 1999 annual submittal of the non-radiological environmental operating report to the NRC. The reports and activities were routine, and with several exceptions (Volume II, Exhibit D.1), there were no unusual or important events or violations.

During 2000, there were two agency inspections. The inspection of hazardous waste resulted in one minor issue on the separation distance between storage pallets and control methods for satellite accumulation areas. Corrective action is planned, and neither is expected to be a problem.

There was one minor spill during the year 2000. This was the loss of about one ounce of hydraulic fluid into the intake bay from a kelp harvester. Although trivial in severity, the event was reportable because it produced a sheen on the water. The spill was cleaned up quickly.

An entrainment study report was submitted in March 2000 to the Regional Water Quality Control Board. The Board had issued a draft report, and PG&E was resolving outstanding issues. The primary resolution to settle impingement and thermal effects issues was to set aside land for conservation. This was not expected to affect plant systems or operation.

4.7.3 Conclusion

DCPP environmental performance appeared satisfactory, and the DCPP environmental program appeared to meet applicable requirements. The DCISC will continue to review the environmental program as part of its normal activities.

4.8 Fire Protection

4.8.1 Overview and Previous Activities

Fire protection requirements are contained in NRC's regulations in 10CFR50 Appendix R. Appendix R specifies the minimum requirements for safe shutdown systems and equipment, fire hazards analysis, prevention, detection and mitigation, fire brigades and training, emergency lighting, fire barrier and penetration qualifications, and fire doors. PG&E has committed to implementing these requirements, utilizing interpretations and deviations approved by NRC. The NRC periodically performs inspections of the DCPP fire protection program implementation.

The DCISC has looked into the following aspects of DCPP fire protection:

- Public comments and concerns about discrepancies identified in NRC inspection reports - these concerns were being addressed satisfactorily.

- NRC inspection reports and PG&E LERs on fire protection, along with PG&E's responses and corrective actions - responses and corrective actions were adequate.

- Failures of Thermo-Lag 330 insulation - fire watches were established, and these deficient materials were replaced satisfactorily.

- Risk of using highly combustible gases in vital areas - this matter was satisfactorily addressed.

- Erosion/corrosion and microbiological impact on the fire water system - PG&E has an effective program to monitor and address potential problems.

- Pyrocrete insulation inadequacies - satisfactory fire watches and corrective actions have been applied.

- Penetration Seal Project - a large number of deficient penetration fire seals was compensated by fire watches and a major long-term program of replacement seals. The program was expanded to include High Energy Line Break (HELB) and Medium Energy Line Break (MELB) seals and building gap seals. PG&E completed the program in mid-2000.

- Fire Protection Water System - the DCISC met with the Fire Protection Water System Engineer to review the design, problems and current activities on the system. The major problem was corrosion, which was being adequately addressed. The system appeared satisfactory, and the System Engineer appeared knowledgeable.

- NRC Fire Protection Inspection - in April 2000 the NRC performed a comprehensive triennial fire protection baseline inspection of DCPP. The NRC did not identify any discrepancies and determined that the overall measure of the Mitigating System Cornerstone was "Green", the best rating.

The DCISC concluded in previous periods that the DCPP Fire Protection Program appeared adequate.

4.8.2 Current Period Activities

The DCISC did not perform any reviews of the DCPP Fire Protection System during this reporting period, based on its satisfactory reviews in the previous period and on satisfactory results and conclusions in NRC's comprehensive fire protection inspection in April 2000 (above). The DCISC plans a fire protection review in the next period.

4.8.3 Conclusions

Based on satisfactory DCISC and NRC reviews and inspections in the previous reporting period, the DCISC did not review fire protection in the current reporting period. A DCISC review of fire protection is planned for the next period.

4.9 Human Performance

4.9.1 Overview and Previous Activities

The goal of the human performance program is to reduce the number of human errors and improve the safety of plant operations by improving human performance. In past reporting periods the DCISC has reviewed the following aspects of human performance at DCPP:

- The Human Performance Fundamentals Course
- The Human Performance Evaluation System (HPES)
- Human Performance Improvement Program (HPIP)
- Effect of rotating shift-work on performance of Control Room Operators'
- Physical fitness of Control Room Operators (CROs)
- Stress Intervention classes
- The implementation of Asset Teams

During the previous period (July 1, 1999 - June 30, 2000), the DCISC reviewed the following Human Performance items/programs:

- Operator Health and fitness: DCISC recommended that PG&E augment its programs for operator health and aging to consider such areas as "operator aging management", to include physical fitness, and mental alertness (especially on night shift) to further improve operator human performance. PG&E responded with the following actions:

  1. Classes on health-related topics were held for Operations crews every other five-week training cycle.
  2. PG&E was providing additional break time and encouraging use of the fitness facility for watch-licensed personnel.
  3. The DCPP medical staff was further evaluating its operator fitness levels.

  The DCISC accepted this response and continued to monitor this issue.

- "Centers of Excellence": In early 2000, six Centers of Excellence replaced the SPARK Team. They act as coaching resources to provide a pool of expertise in support of the various processes.

- Fitness for Duty and Employee Assistance Program (EAP): The substance abuse program revealed a slight increase in positive results in random testing over 1998. The two EAP contractors appear to be fulfilling their duties adequately.

- The Medical Center provided routine physicals, follows employees' health problems, and provides plant-wide health and fitness programs, such as stress reduction. With sufficient support, they would be capable of incorporating more specific programs addressing self-regulation (stress reduction, attention enhancement), disease prevention/ health maintenance, and effects of aging on operators.

It appeared in previous periods that the DCPP Human Performance Programs for the various Departments could be effective in reducing human errors, although definitive improvement has not been evident.

4.9.2 Current Period Activities

The DCISC reviewed the human performance at DCPP during the current reporting as described below.

Human Performance (HP) Program

HP has the full support of plant management, with a steering committee of senior managers, and working committees representing the various departments. They meet monthly to review plant HP data, and provide systems for error prevention.

The monthly human error rate (errors/10,000 workhours) has fluctuated over the last several years, typically peaking during outages. The rate peaked in July 2000 (non-outage) at about 1.5, dropped a little and rose to 1.45 during outage 2R10 in October. It dropped to about 1.1 at year-end. In early 2001 the rate had bettered the DCPP goal of 0.9 at about 0.7 but had an increasing trend through May.

There was a 40% reduction in HP errors from outage 1R10 (at 1.5) to 2R10 (at 0.9) in May 2001. Outage 2R10 had the lowest error rate yet -- only one error. The previous record was 3. Another dramatic improvement was that maintenance had gone 3 successive outages without a significant error.

About 40-50% of the errors occurred in Maintenance and Operations. These groups represent the main sources of human error because they are hands-on, while other, more management-type errors are less immediately detectable. The goal is to reduce the error rate consistently to earlier lower levels.

The following actions have been initiated:

- An improved Management Observation Program (MOP) was introduced in August 2000 with more focus on behavior and less on results.

- Maintenance began using EPRI's "Payoff," a database with input from front line workers and first line supervisors who answer a set of basic questions, allowing targeted self-assessments based on ATR reports

- The HP Group began tracking observable behaviors in Operations, and will be picking the top 8-12 objectives to prevent errors. They have action plans to develop observable behaviors that will meet specific objectives.

- As part of the transition from Work Function to Work Process, a new tailboard observation and feedback program was instituted in Maintenance Services to help shape future work procedures.

- An increase in pre-work simulations was a large contributing factor to the low error rate during the 2R10 outage. This included classroom work with maintenance mock-ups, providing an opportunity to practice and become familiar with equipment and procedures and to anticipate possible error situations.

- Supervisor communications training is an important component, as well, and is discussed in Section 4.20 (Training).

Personnel Accountability Policy

DCPP is using an Personnel Accountability Policy (AP) based on creating an environment in which errors are routinely reported, and individual consequences, both positive and negative, are aligned with individual performance. Errors can be reduced by minimizing contributing factors, and by applying corrective actions in order to prevent more significant

occurrences in the future. (Volume II, Exhibit D.1, Section 3.3). It appears to take a complete range of factors into account, and provides a useful tool for tracking HP and correcting errors.

Human Performance Measures for Engineering (Latent Errors)

There is a separate Engineering HP Committee, with 10 sub-process owners. It meets twice a year and reports on performance, including evaluating event trend records (ETRs). A higher level of coordination among engineering, operations, and vendors is required for optimal results. Specific HP training for engineers began in Spring 2001. The DCISC plans to continue to follow engineering HP.

Informal Meeting With Supervisors to Discuss HP Issues

An informal meeting was held between a DCISC Member and consultant and 16 supervisors from various departments including Engineering, NQS, Chemistry, Radiation Protection, Operations, Security, and Maintenance. The purpose was to gain an understanding of human performance at the work group level. Following are some of the issues discussed:

Chemistry/Environmental has been downsized, leaving workers feeling overburdened, and with some resistance to the additional responsibilities of an HP program.

Safety Group:

- Due to efforts of engineering and maintenance, AR's are now handled on average within 130 days, as opposed to the previous average of 600 days.
- Documented ETRs (event trend records) increased from 30% to 75%. Seven self-assessments were done in engineering in 2000, and then used to identify processes to observe next year.

Maintenance:

- Craft wanted feedback about how data is being used, and what is being done as a result, even if it's used only for trending.
- More important than the actual data collected, is the worker's desire to have the supervisors present in the field.
- Operations appears to have the opposite experience. Being more independent, they resent feeling under scrutiny. To

improve the situation, they request that critiques be oriented toward acknowledgment for what is being done correctly, and not just what is wrong.

- Behavioral observation class in Operations has an accompanying video which works well as a teaching tool. The training department plans on a similar one for Maintenance.
- Department-specific observation cards were instituted by HP.
- After initial resistance, craft is now more enrolled in the HP process. Successful implementation of the "we culture" was reflected during the 2R10 outage, with excellent interdepartmental cooperation.

DCPP supervisors seemed very open in their discussion of Human Performance. Issues have been recognized and are being acted upon.

Meeting with Human Resources Director

The DCISC met with the Human Resources Director who described the Culture Transition Initiative, which was developed following concerns identified by the Synergy Safety Culture Survey. The Initiative is being taken to improve trust in management and create an improved safety conscious workforce. The Initiative is based on developing the five following behaviors:

1. Understand others
2. Embrace feedback
3. Provide face time
4. Develop and support common goals
5. Create a positive work environment

She described the series of training sessions which have taken place with top management, middle management and employees. She also described the bi-monthly meetings held with supervisory levels at the plant and the 360-degree personnel performance feedback process for each manager/supervisor. The DCISC has been following this initiative since its inception.

Employee Assistance Program

EAP duties are shared by two part-time counselors, each working 15 hours per week. Based in the administration building, office hours are from 8:30 AM to 3:00 PM except during outages, when they are from 2:00 PM to 9:00 PM, with 24/7 availability by phone for emergencies. The EAP staff also

attends Fitness for Duty meetings, and trainings in San Francisco. Despite the energy crisis, overall morale appears to be stable. (Volume II, Exhibit D.9, Section 3.4).

EAP counselors teach the monthly behavior observation class, monitor the Fitness for Duty (FFD) program, and provide counseling on job-related issues. For other problems, employees are referred to local therapists and psychiatrists, where prior authorization allows an immediate 10 visits which are covered by the company health insurance plan.

EAP plans on doing more team counseling and offering more classes and affinity groups (e.g., aging parents, parents of teenagers) which allows the employees to share information, resources, and overall mutual support.

EAP distributes two informative quarterly publications, published under contract by Value Options, one for the entire plant and one geared to supervisors.

EAP appears to be well utilized, is carrying out its responsibilities appropriately, and has creative plans for the future.

Operators' Physical Fitness, Attention Enhancement, and Stress Management

The DCISC met with the new Director of Operations to discuss incentives for increased physical fitness, attention enhancement, and stress management, an ongoing concern of the DCISC and of the medical center. (Volume II, Exhibit D.4, Section 3.6).

PG&E Policy OP1.DC12, Conduct of Routine Operations, recognizes the need for activities that enhance alertness, such as a nutrition or exercise breaks, a rest period, or taking a shower. Two thirty-minute breaks per 12 hour shift are allowed, as long as there is adequate coverage while the operator is relieved from duty, and s/he must then be available by phone, pager, or radio. (Volume II, Exhibit D.9, Section 3.1).

HP is considering a program referred to as the Sleep, Activity, Fatigue, and Task Effectiveness (SAFTE) model. A questionnaire-based computer program, The Fatigue Avoidance Scheduling Tool (FAST) calculates an individual's pattern of alertness/fatigue, and allows team scheduling based on the

individual findings. Based on the timing and amount of sleep an individual or team receives prior to and during the period, effectiveness predictions provided by FAST enable planners to optimize work/rest schedules for up to 3 weeks.

Operator fitness continues to be an issue. The current Operations Director's appreciation of its importance, and his background as an operator are both positive influences in this area. Human Performance issues are being addressed appropriately as well.

Meeting with DCPP Medical Director

The Medical Director is concerned, as has been the DCISC, about Operators' health and fitness (Volume II, Exhibit D.4, Section 3.11). He discussed the American National Standards Institute (ANSI) requirements for Aerobic Fitness.

PG&E's medical form has a "no solo" category for licensed operators who do not meet the required 7.14 mets (a measure of physical fitness). They are then not allowed to be the sole licensed operator in or out of the control room. The ultimate decision is left to the discretion of the supervising physician. Because there are four licensees in the control room at all times, this is unlikely to be a significant problem; however, the issue arises as to how many "no-solos" can one have at a time on a shift, especially during an emergency.

Most of the "no-solos" are simply out of shape. There is an upward trend in weight gain, which is a marker of lifestyle. Old statistics on non-solos, from 1994-1998, indicate that 20% were under 7.2 mets. Updated statistics will be available after chart review in preparation for an NRC audit in April.

The medical center continues to work diligently at screening, treating, and counseling employees. The lack of specific incentives makes their job more difficult in terms of compliance. Incentives for fitness would likely provide more motivation, as it did in security.

Safety Class On Cardiac Health

The Medical Director taught a one-hour class on cardiac health, part of the health series, previously discussed by the DCISC (Volume II, Exhibit D.4, Section 3.10). The class credits each attending employee with one Safety meeting.

He explained new diagnostic tests, treatments, preventive measures, and risk factors. These factors increase with age, and include smoking, lack of exercise, poor diet, high cholesterol, and high blood pressure. He described the various screening procedures, symptoms of a heart attack, treatment, and follow-up lifestyle changes and medications.

The safety class on cardiac health was well attended, with an enthusiastic, involved audience. Covering complex material in an understandable way, the class made an excellent contribution to the health of employees and their families.

It was clear that the employees have a close and trusting relationship with medical center personnel, with many staying afterwards to ask questions or otherwise touch base with the doctor.

4.9.3 Conclusions and Recommendation

The Human Performance Program is doing an adequate job of error trending, evaluating the data, and working toward increasing performance and enhancing safety. Human error continues to be the largest cause of problems, and, although the numbers of human errors are small, the trends are not yet showing sustained improvement. The DCISC will continue to actively review human performance at DCPP.

The DCPP Employee Assistance Program appears to be well utilized, and is carrying out its responsibilities appropriately. The DCISC will review this area as part of its normal activities.

Operator fitness continues to be an issue of concern, which the DCISC will continue to track. Indicators point to a growing problem with operator fitness, and it was not apparent that DCPP had measures in place to deal with the problem.

R01-3 **It is recommended that PG&E continue to augment its programs for operator health and aging to consider such areas as operator "aging management", physical fitness, and mental alertness on shift to further improve operator human performance.**

4.10 Nuclear Fuel Performance/Fuel Cycles/Storage

4.10.1 Overview and Previous Activities

The DCISC has been following performance of nuclear fuel and fuel-related matters at DCPP since its beginning in 1990. The Committee receives regular reports on nuclear fuel performance and any problems from PG&E both in fact-finding and public meetings and as input to the annual report. DCISC follows-up on problems and activities in its fact-finding meetings at DCPP and PG&E Headquarters.

DCPP fuel reliability is the most important fuel attribute monitored during operation. It is important to assure that the fuel integrity is preserved to avoid fission product leakage into the reactor coolant system (RCS) and ultimately into RCS cleanup and support systems resulting in increased personnel dose, radioactive waste and potential off-site releases.

Since DCISC was formed in 1990, fuel reliability had been excellent until November 1994 when Unit 2 fuel began to show signs of leakage and experienced localized fuel damage. Leakage is measured by the amount of radioactivity in RCS samples, with a current goal of less than 5.0 x 10-4 microCuries (µCi) of Iodine-131 per gram of coolant. The following depicts the measured (and corrected) radioactivity trend for a five-year period:

Period	Goal		Unit 1 Actual		Unit 2 Actual	
96-97	5.0 x 10-4	µCi/gm	1.47 x 10-5	µCi/gm	1.0 x 10-6	µCi/gm
97-98	5.0 x 10-4		5.75 x 10-5		1.0 x 10-6	
98-99	5.0 x 10-4		3.14 x 10-5		3.06 x 10-4	
99-00	5.0 x 10-4		1.0 x 10-6		9.06 x 10-4	
00-01	5.0 x 10-4		1.0 x 10-6		5.41 x 10-4	

In addition to regular fuel performance updates, DCISC has investigated the following fuel-related topics:

- Spent fuel pool safety issues - as a result of a public concern, the DCISC met with the Spent Fuel Pool (SFP) System Engineer to discuss the Spent Fuel Pool Cooling System and related issues. PG&E had performed an adequate assessment of these items and concluded there was not a concern at DCPP.
- Future plans for additional spent fuel storage - without the Department of Energy spent fuel storage facility, DCPP must have a solution to its spent fuel storage problem in place

by 2006. Plans and long-lead activities have been initiated for on-site dry cask storage. The DCISC continues to follow this matter.

- Boraflex Degradation - boron is leaching out of Boraflex sleeves in the spent fuel pool racks and potentially compromising the neutron absorption ability of the Boraflex to maintain subcriticality. DCPP plans to revise its spent fuel pool criticality analysis taking credit for soluble Boron in the spent fuel pool water and submit a corresponding license application change to NRC. Three other stations have received NRC approval on similar applications.
- Stuck Control Rods - stuck control rods, or incomplete rod insertion, first appeared in high-burnup French reactors, in which control rods bowed and would not fully insert. The problem has been shown to not affect DCPP, and the DCISC considers the issue closed
- Axial Flux Axial Offset Anomaly - Axial flux offset anomaly is an unexpected deviation of the actual reactor core axial flux offset compared to predictions. It was not a problem at DCPP, and the issue was closed.
- Fuel Pellet-Gap Re-opening - a problem in high exposure fuel in which the normally closed fuel pellet and clad gap re-opens, potentially causing corrosion. The fuel manufacturer has determined the condition is not a safety issue. Westinghouse and PG&E are awaiting NRC's review of their fuel model to begin a new fuel design, which should eliminate the re-opening problem.
- ATWS Moderator Core Temperature Coefficient - DCPP was licensed with a 5% positive moderator temperature coefficient (PMTC). NRC has been reviewing the effectiveness of plant ATWS mitigating system (AMSAC) with coefficients this positive. Analyses have been performed, but this is an open NRC issue, and the DCISC plans additional reviews following NRC's review.
- Unit 2 Fuel Leakage - PG&E began seeing the first indications of Unit 2 fuel leakage on August 20, 1998. Upon inspection of spent fuel in Outage 2R9, two leakage problems were found. The first was a pinhole leak in an internal assembly fuel rod. The leak was believed to have been caused by either core debris or a material defect. The leak had closed itself up after opening. The second area of damage was the first occurrence of baffle jetting experienced at DCPP. Corrective action was to add corner fuel clips to susceptible corner assemblies. Baffle-jetting

effects were also found on Unit 2, cycle 8 fuel upon a review of fuel inspection videotapes.

- Nuclear Fuels Group Transition - the transition of the nuclear fuels group from San Francisco to DCPP appeared to have been performed effectively
- Fuel Assembly Top Nozzle Leaf Spring Problem - during inspection of spent fuel removed from the core in outage 2R9, a problem was discovered with the Top Nozzle Leaf Springs in several fuel assemblies; however, no fuel damage resulted. Root cause analysis indicated the cause was over-torquing of the bolts in a specific batch of Westinghouse fuel. DCPP performed a justification for continued operation and did not allow any susceptible assemblies back into the core. Unit 1 did not contain assemblies from this batch of fuel.

The DCISC concluded that PG&E appeared to be handling fuel or fuel-related problems appropriately in previous periods.

4.10.2 Current Period Activities

The DCISC has investigated the following items during the current reporting period:

Spent Fuel Storage Status

PG&E has selected dry cask storage and has a letter of intent with the contractor, Holtec. A project team has been formed at an off-site location and consists of Engineering, Licensing, QA, Community Affairs, Environmental, Legal, Contracts, and Land Use Permitting.

The two license applications will be submitted to the NRC in August (10CFR72) and September 2001 (10CFR50) for the 138-storage cask facility. This will accommodate all spent fuel and complete off-load for the 40 year license life. The land use permit will also be for full storage. The building permit will be in two stages, first phase for one half storage and second phase for the other half in 2017. DCPP will license both 32 and 24 assembly storage canisters. The storage cask system will be anchored because of seismic conditions.

The facility needs to be completed by 2006. The preliminary engineering design was completed by 12/2000 and final design by 3/2001. They are also working on security requirements and radiation monitoring. A Project Oversight committee has been

formed and the License Application will be reviewed by PSRC. The facility work has also been coordinated with Operations, Maintenance and Environmental.

PG&E has sent letters to County Supervisors, Government Agencies, Concerned Citizens, and Intervenor Groups. They have also called State Elected Officials and Local Reporters as well as holding meetings with County Officials and County Planning Supervisors. A web site has been developed for project information. They also plan on having small public meetings to give out information.

It appears that PG&E is taking appropriate action to design and license on-site spent fuel storage facilities in a timely manner to safely accommodate all plant generated spent fuel. They are also informing the Government Officials and the Public in a timely manner.

1R10 Nuclear Fuel Performance/Inspection

DCPP did not have any indications of leaking fuel during the past Unit 1 fuel cycle and did not find any during the inspection. DCPP has never had any leaking fuel in Unit 1 but did find a large number of failures of the top nozzle spring screws with the twice-burned fuel assemblies. The screws are breaking, but there were no loose parts. Westinghouse identified this problem after 1R9 at other plants and DCPP found this problem in 2R9 and 1R10. Fuel inspections conducted during 1R10 showed fewer top nozzle spring screw failures than 2R9 inspections.

DCPP prepared an Operability Evaluation to document the operability of Units 1 & 2 utilizing Westinghouse fuel assemblies with potentially fractured top nozzle spring screws. The evaluation demonstrated that plant operation utilizing fuel assemblies with fractured top nozzle hold down spring screws will not have an adverse effect on the integrity of the components of the reactor coolant system or connecting systems. The fix will be a different type of material for the screws. DCPP will go to a new design for fuel to be installed during 1R11 and 2R11, but may still have this problem through cycle 1R12 and 2R12.

PG&E appears to be taking appropriate actions dealing with the top nozzle spring screw failure and has prepared an Operability Evaluation addressing the issue.

Gap Re-Opening

Nuclear fuel is designed with a gap between the nuclear fuel pellets and the surrounding zircaloy cladding. During operation the fuel pellets swell, closing the gap. Operating models assume the gap remains closed; however, it has been determined that the gap can re-open in some fuel locations, adversely affecting heat transfer from the pellet through the clad. This condition can cause excessive corrosion of the clad. PG&E and Westinghouse had determined that, although DCPP did not achieve desired margins with then current fuel designs, safe operation was not affected. DCPP has recently revised its Operability Evaluation (OE) for fuel with pellet-clad gap re-opening and clad oxidation concerns.

Westinghouse has completed a gap re-opening and clad oxidation assessment for Unit 1 Cycle 11 that shows that gap re-opening will not occur and that clad oxidation will remain within limits. Based on this assessment and conclusions, the OE can be closed for Unit 1.

Westinghouse has also completed a gap re-opening and clad oxidation assessment for Unit 2 Cycle 11. This assessment shows that gap re-opening is predicted to occur first in the Region 9A center assembly and in Region 11A and 11B fuel. Based on the Westinghouse analysis for Unit 2 condition of the fuel pellet clad gap re-opening, the core is operable within license conditions. Also, the 10 CFR 50.46 limit of 17% total localized oxidation is met. The OE will be reviewed with the PRSC prior to the Unit 2 restart from 2R10.

PG&E appears to be taking appropriate actions to deal with the fuel pellet gap re-opening problems and has resolved the issue on Unit 1. This issue should be resolved in Unit 2 when a new fuel design in installed in 2R10. The DCISC should review the status of gap re-opening in 2001 when Westinghouse has resolved the issue.

Extended Fuel Cycle

The fuel cycles for DCPP were originally designed for 12 months and DCPP has been moving toward a 24-month cycle. However, because of potential technical problems, they have settled on a 21-month fuel cycle. DCPP continues to evaluate cycle lengths as economics may change and as they participate in the STARS Initiative, whose members favor an 18-month cycle.

The DCISC will review fuel cycle length again in late 2001, if PG&E has changed their plans.

Boraflex

There has been no change in the Boraflex degradation issue since the last reporting period (see Section 4.10.1 above).

4.10.3 Conclusions

PG&E appears to be handling fuel or fuel-related problems appropriately. The DCPP Unit 1 core has been reliable and clean; however, Unit 2 has experienced a small amount of fuel damage due to baffle jetting and debris or a fuel defect. The assembly was removed, repaired and returned to the reactor. It appears PG&E will maintain its 19-21 month fuel cycle or move to an 18-month cycle.

The DCISC will continue to follow on-going problems such as expansion of spent fuel storage, spent fuel pool poison (Boraflex), and any fuel-related fuel problems or issues that arise.

4.11 Nuclear Safety Oversight and Review

4.11.1 Overview and Previous Activities

Nuclear Safety Oversight and Review (NSOR) is an important function in the safe operation of nuclear power plants. NSOR represents an independent, higher and/or broader level of review of operations, events, occurrences, etc. than can be obtained from the organizations performing the day-to-day plant, technical and quality functions. NRC regulations require, and DCPP Technical Specifications (TS) provide for, a high level of oversight in the form of the Nuclear Safety Oversight Committee (NSOC).

PG&E has in-place the following review and oversight organizations/functions:

- President's Nuclear Advisory Committee (PNAC)
- Nuclear Safety Oversight Committee (NSOC)
- Independent Safety Engineering Group (ISEG)
- Technical Review Groups (TRG) for Specific Issues
- Plant Safety Review Committee (PSRC)

In addition, PG&E has procedures to establish, on an ad hoc basis, Event Investigation Teams for significant events.

Additionally, the nuclear industry seeks operational safety and excellence with the Institute of Nuclear Power Operations (INPO) which performs periodic performance evaluations of each operating nuclear plant; coordinates the collection, review and dissemination of operating event information; issues good practice guidelines; provides specific event, technical and functional reviews; and issues and monitors performance goals for the industry. PG&E is a member of INPO and participates in their programs.

Finally, the Nuclear Regulatory Commission (NRC) is charged by law to regulate the nuclear industry. In carrying out this responsibility the NRC issues regulations and guides for nuclear safety and performs inspections at facilities to assure regulations are met. NRC's role at DCPP is discussed in Chapter 3.0 NRC Assessments and Issues.

The Diablo Canyon Independent Safety Committee (DCISC) provides an additional level of nuclear safety review and oversight. As stated in Chapter 1.0, DCISC is charged to " .

. . review Diablo Canyon operations for the purpose of assessing the safety of operations and suggesting any recommendations for safe operations". In carrying out its responsibilities DCISC receives and reviews DCPP operating and technical and NRC documents; performs fact-findings at DCPP and holds several public meetings each year to hear PG&E reports on plant operational safety and receive public input.

As part of its program, the DCISC has monitored the operation and effectiveness of all levels of PG&E review and oversight since its inception in 1990. Since 1990, DCISC has reviewed the following organizations and functions:

- Review of PG&E safety committee and operating experience evaluation activities. The DCISC looked at the entire interfacing structure of review organizations.

- PG&E overviews of the structure of independent safety review groups to the DCISC at public meetings - PG&E has described the President's Nuclear Advisory Committee (PNAC), the Nuclear Safety Oversight Committee (NSOC), the Plant Staff Review Committee (PSRC) and the Nuclear Quality Services (NQS) Department.

- Nuclear Quality, Analysis & Licensing (NQAL) includes (1) Regulatory Services, (2) Nuclear Quality Services - Operations, Plant Support and Corrective Action, (3) Nuclear Quality Services - Engineering, Procurement & Maintenance, (4) Licensing Projects, (5) Nuclear Safety Employee Concerns Program, (6) System Transient Analysis and (7) Probabilistic Risk Assessment.

- Plant Staff Review Committee (PSRC). The PSRC was established to review overall plant operating and maintenance experience, proposed changes and tests, the adequacy of procedures, security, fire protection, environmental matters and other subjects which have a bearing on nuclear safety.

- DCISC Members and Consultants periodically attended regularly scheduled meetings of the President's Nuclear Advisory Committee (PNAC), Nuclear Safety Oversight Committee (NSOC), and Plant Staff Review Committee (PSRC).

- At each of the DCISC Public Meetings, PG&E gives a

summary of the activities of the NSOC and PNAC meetings held since the last DCISC Public Meeting.

In previous periods the DCISC has concluded that the Nuclear Safety Oversight function has been carried out satisfactorily.

4.11.2 Current Period Activities

During this period, PG&E gave presentations at DCISC Public Meetings on September 14 & 15, 2000, February 7 & 8, 2001 and June 20 & 21, 2001 (Volume II, Exhibits B.3, B.6 and B.9) on the NSOC meetings held prior to each of these public meetings. PG&E reviewed the major topics discussed at the meeting and any conclusions, recommendations made and problems noted at the meetings. DCISC fact-finding teams reviewed the following President's Nuclear Advisory Committee (PNAC) and Nuclear Safety Oversight Committee (NSOC) activities at fact-finding meetings:

Observation of NSOC/PNAC Meetings

November 14, 2000 - Joint NSOC/PNAC Meeting

DCISC representatives attended the regularly scheduled meeting of the NSOC/PNAC held at DCPP on November 14, 2000 (Volume II, Exhibit D.3).

The DCPP NSOC/PNAC held one of its regular, scheduled meetings on November 14, 2000 at DCPP. The following items were discussed:

1. License Amendment Requests (LARs)
2. System Engineering Program and Management Expectations of System Engineers - A summary of the roles and responsibilities of system engineers was presented.
3. Subcommittee Reports:

A. Plant status and performance indicators: two human performance errors, one unplanned automatic reactor trip, the Unit 1 refueling outage were also discussed.

B. PSRC Summary: A summary of issues discussed at the PSRC meetings were reviewed.

C. LER and NOV summary: A summary of four recent licensee event reports (LERs) that were submitted to the NRC

was reviewed. Three NCVs that were issued during the last period were also reviewed. The trend of NCVs at DCPP is comparable to the average number received at other Region IV plants. One of the External Members pointed out that NCVs are no longer the best measure of performance and that management needs to be sensitive to monitoring problem trends at the plant.

D. LBIE Assessment: Twenty LBIE reviews were completed during the assessment period. There were no significant issues identified related to LBIEs.

E. NCR and NQS interest items: Three NCRs that were initiated during this period were discussed. The External Members felt two of the NCRs were weak, and that additional action is warranted to improve the NCRs and the root cause analyses. Additionally, they felt that the number of NCRs generated is low for a good performing plant.

NQS reviewed the projected 2001 audit schedule for DCPP and stated that the audit plan is integrated with self-assessment plans. They also stated that an audit of the self-assessment program will be performed as part to the audit of the quality assurance program for 2001.

4. QPAR and Performance Indicator Status: The third quarter QPAR was reviewed. The overall performance of NPG is satisfactory. Maintenance Services received a yellow window for this quarter. Part of the reason is continued human performance problems, continued problems with the lubrication program, and weaknesses in the maintenance training program.

All NRC performance indicators are green this quarter. However, the indicator for loss of normal heat sink and for ERO drill/exercise performance are near the threshold for being white.

5. Integrated Assessment Report: The integrated assessment report is intended to evaluate performance of the plant not addressed by specific performance indicators. The report is developed based on input from licensing, quality assurance and senior management regarding trends in performance. Five key performance areas were identified in the report as needing attention (Volume II, Section D.3). The Plant Manager has been assigned as the owner of this report.

6. Strategy to Address Human Performance Issues: The

human performance program is being revised to add more formality. The new program is based on the formation of a human performance steering committee. The purpose of the steering committee is to develop a common philosophy and strategy to address human performance improvement and champion human performance at DCPP.

7. RP and ALARA Program Strategies: This presentation included an overview of current RP and ALARA programs, and future direction and strategies. Both units are in the middle of the third quartile for RP performance in the industry. Although neither unit has ever had less than 100 person-Rem per outage, 1R10 was the lowest Unit 1 collective dose outage. Much of the reduced dose was due to good shutdown chemistry control and zinc injection over the last two years.

PG&E stated that DCPP intends to focus on being a top industry performer in this area. Dose is an indicator of efficiency of work processes. Shutdown chemistry initiatives need to be continued. Planning and scheduling of work needs to be improved.

8. Other Items: The Chairman of NSOC reported on his visit to the offsite review committee meeting of another nuclear utility. The Chairman is considering moving to a more formal subcommittee process and will continue to share observations of operation of other committees.

Overall, the PNAC/NSOC meeting was well planned, well organized and attended, and PNAC/NSOC appears to have fulfilled their required duties. There was an exchange of observations, opinions, and suggestions at the PNAC/NSOC meeting and good participation by the outside Members. It also appears to be very beneficial to have the joint PNAC/NSOC meetings, since each committee covers much of the same agenda. DCISC should continue to monitor some PNAC and NSOC meetings to observe their review of plant safety issues.

<u>May 1 & 2, 2001 - NSOC Meeting</u>

The following topics were discussed:

1. INPO Results - INPO evaluation reports and a summary of the evaluation results were reviewed. A description of corrective actions was also presented.

2. Bankruptcy Impact - DCPP considers the bankruptcy

"business as usual" regarding plant operations and management. The plant has its full 2001 authorized budget and expects the same in 2002. Management provides daily and weekly communications within the plant to keep employees current. There are weekly updates for the NRC, and there have been no adverse safety effects. There had been pressure from the Governor's office to not reduce power during ocean storms; however, PG&E will follow their procedures to reduce power when necessary to maintain plant safety.

3. NSOC Re-organization - The Chairman of NSOC discussed potential re-organization of NSOC. The Oversight and Corrective Action Subcommittee would remain. Human Performance and Equipment Performance Subcommittee are up for consideration and discussion.

Most significantly, STARS will have a Nuclear Safety Review Board initiative team, which the DCPP NSOC Chairman will lead. The STARS Team will review the regulatory compliance requirements to attempt to eliminate the requirement for NSOC but retain the function and combine resources for STARS plants. They anticipate having a proposal for the STARS Chief Nuclear Officers in about six months but maintain the status quo for one year.

4. Corrective Action Oversight and Assessment Subcommittee - The following items for this new NSOC subcommittee were reviewed:

A. NQS Audits and Assessments - the first quarter 2001 work products were reviewed. Two audits were considered particularly good and one audit was considered excellent.

B. Self-Assessment - the subcommittee reviewed the self-assessments for the last two quarters.

C. Corrective Action Program (CAP) - the CAP appeared sound and appropriate, especially with updates being implemented to improve trend analysis.

D. Subcommittee Summary - The subcommittee believed and recommended that self-assessment, corrective action, management observations, Event Trend Records (ETR) trends, and human performance be considered as an integrated whole. (The DCISC believed this subcommittee action was well-researched and a good model for other NSOC actions.)

5. NSOC Summary Reports

A. Plant Performance Indicators - plant performance indicators were presented. NRC indicators were all green. The human performance trend was flat and barely making INPO top quartile. Event-free days were at 33, below the goal of 60 days. An outside Member stated that the plant needed to lower human errors through trending, cause-code analysis and benchmarking.

B. Plant Staff Review Committee Summary - there was nothing significant to report.

C. Safety Evaluations - there were no significant problems. Safety evaluation reviews indicated that the quality of some Licensing Basis Impact Evaluations (LBIEs) had degraded in that they needed amplifying/clarifying comments as a basis for answers.

6. License Amendment Request - a request was presented for the elimination of the Post-Accident Sample System (PASS). NSOC approved the request.

7. Synergy Survey Results - results of the 2000 Synergy Comprehensive Cultural Assessment were presented.(Volume II, Exhibit D.7)

8. Integrated Assessment Report - the Vice-President & Manager of DCPP presented the results of the Integrated Assessment Report. Key performance areas were as follows:

- Human performance error rate had increased
- Personal safety practices had improved
- Equipment failures had increased
- Plant standards and management expectations had not been consistently met or enforced

NSOC Members asked questions for clarification and provided helpful suggestions about methods to improve and about other plants which have good programs.

9. Human Performance - The Station Manager provided an update on human performance. Based on analysis of error causes, the Human Performance Steering Committee (HPSC) believed that there were three key behaviors, which would have prevented many human errors at DCPP. These were (1) 3-way communication, (2) effective tailboards, and (3) self-

verification. This was substantiated by INPO.

Human performance error rate showed improvement in early 2000 but has degraded beginning in third quarter 2000. There have been four recent Event-Free Day "clock resets" due to a more frequent error rate. Lack of proper self-verification has been the primary cause of human error.

A self-assessment was conducted in March 2001 with an interdisciplinary team and an industry expert.

The HPSC established a one-year plan with the following aspects:

- Augmented human performance training for Operations, Maintenance, Radiation Protection and Engineering
- Goal-setting
- Self-assessment
- Communications
- Observations
- Rewards for successful Event-Free Days

NSOC agreed that these were the correct actions, and they were high priority.

10. 2R10 Outage Plans - The Station Manager presented DCPP's plans for Outage 2R10, which had just begun. The motto for the outage was "Rising Above the Sea of Uncertainty". High-level goals for the outage were as follows:

- ALARA Goal - 109 person-Rem
- Safety Goal - no disabling injuries
- Duration Goal - 25 days, 19 hours
- Cost Goal - $29.1 million

There were no significant NSOC questions or comments.

The DCISC observed discussion around each agenda item. Much of it appeared to be questioning for information/education and helpful suggestions for benchmarking or improvement. With few exceptions from one outside Member, there was little in the way of challenges to current thinking and processes. This could have been due to the newness of two outside Members. An example of good investigation, analysis and expectation by NSOC was the new Corrective Action Oversight and Assessment Subcommittee. The DCISC will continue to follow NSOC activities and monitor the planned changes over the next year.

The DCISC believes both internal and external Nuclear Safety Oversight Committee members should express higher expectations of DCPP and take a more aggressive stance in challenging problem solving and the status quo.

Results of INPO Evaluation

PG&E reviewed the results of the 2001 INPO evaluation with the DCISC. This was the eighth INPO evaluation of DCPP. DCISC has reviewed these evaluations at previous fact-finding meetings. INPO identified 10 strengths and 11 areas for improvement, with no repeat areas for improvement. The two most significant areas for improvement were discussed.

DCPP had performed a pre INPO self-assessment and identified most of the same areas for improvement. They let INPO review this self-assessment.

INPO also reviewed 6 operator-training programs for accreditation. PG&E will meet with INPO accreditation board in June, 2001 to get the results of these programs. INPO will review the other 6 training programs with the next DCPP evaluation.

The detailed results of the INPO evaluation were presented but are not included in this report as they are proprietary between INPO and PG&E.

The results of the recent INPO evaluation of DCPP appear to be favorable as DCPP continues to receive good reports from INPO.

Integrated Assessment Process Overview and Update

DCISC reviewed the Integrated Assessment Process (IAP) at the September 2000 Public Meeting (Volume II, Sec. B.3) and received an update on the program at the June 2001 Public Meeting (Volume II, Sec. B.9).

PG&E stated that the purpose of the Integrated Assessment Process (IAP) is to use information obtained from various performance assessments to facilitate the early identification of declining or marginal performance. The IAP facilities communication to senior management and Plant staff of those recommendations which are made to enhance performance and it provides a means to evaluate DCPP performance against NRC criteria. The IAP does tend to focus on areas needing

improvement, rather than those demonstrating identified strengths. The IAP utilizes data from; 1) NQS Quality Performance Assessment Report (QPAR), 2) Line Self-Assessments, 3) NRC Performance Indicators, 4) NRC Inspection findings, 5) Assessment of NRC violations, and 6) Significance Determination Evaluation.

PG&E reported on the results of the 1st Quarter 2001 IAP report. Key Performance Issues were:

1. Human Performance:
   - Error rate is above historical levels.
   - DCPP has an 18-month plan to improve human performance that was completed in 4th Qtr. 2001.
   - The plan includes establishment of HPSC, implementation of three phase training program, development of accountability model, and implementation of communications plan for human performance issues.
   - DCPP has completed phase I & II Human Performance training for all departments including Engineering.
   - There was a 40% reduction Human Performance errors in outage form 1R10 to 2R10, which included the lowest outage error rate ever.
   - There was 1 human error in 2R10. The best before was 3 in an outage.
   - Maintenance has gone 3 successive outages without a significant human error.
   - Accountability model is fully implemented.

2. Personnel Safety Practices:
   - Personnel are not consistently adhering to personnel safety practices.
   - Resolution requires overall improvements in safety culture and associated behaviors.
   - Actions include leadership team heightened awareness and field observations, periodic communications of safety issues/successes, and implementation of new program with fewer and clearer requirements.
   - Bases on the STARS Round-Robin Industrial Safety Self-Assessment, DCPP has taken action to make improvements in the safety program.

3. Equipment Failures:
   - A number of equipment failures in the last

two years have resulted in lengthy forced or extended refueling outages.

- Engineering Services and Maintenance Services sponsoring the Generation Vulnerability Identification (GVIT) to help resolve this issue.
- GVIT chartered to develop a process that integrates into existing processes to minimize/prevent unplanned capacity loss.

3. Management Expectations:
   - Plant standards/management expectations are not being consistently met nor evaluated/reinforced.
   - A focus area of the cultural work in 2001 will be to improve reinforcement of management expectations.
   - 3 Qtr. 2001 training session for all supervisors will be held regarding how to set and monitor expectations, and dealing with conflict.

Areas being monitored that are of lesser significance are; 1) trending of low level errors, 2) ERO drill/exercise performance, 3) Maintenance training, 4) high radiation area violations, and 5) pre-outage milestones. The IAR report also listed five positive performance areas. These were; 10 CAP effectiveness, 2) operations and control room formality, 3) Management communications to employees and external entities during ongoing financial/energy crisis, 4) Procurement Group interaction with suppliers during financial crisis, and 5) plant housekeeping and overall material condition.

It appears that the Integrated Assessment Report is a positive tool for management's use to assess the overall performance of the plant. It combines all of the information from the various reports on the plant performance into one very useful document.

4.11.3 Conclusions and Recommendations

Nuclear safety oversight and review functions and organizations appear to be functioning satisfactorily at DCPP. It also appears to be very beneficial to have the joint PNAC/NSOC meetings, since each committee covers much of the same agenda. The results of the 2001 INPO evaluation appear to

be favorable. The DCISC will continue to monitor the PNAC and NSOC meetings to observe their review of plant safety issues.

The DCISC observed that although there was constructive and helpful dialogue during the NSOC meetings, there were limited challenges to existing thinking and processes.

R01-4 It is recommended that PG&E management raise its expectations of the Nuclear Safety Oversight Committee internal and external members to take a more aggressive stance in challenging problem solving and the status quo. Additionally, PG&E should consider adding independent external members (not just from STARS plants).

It appears that the Integrated Assessment Report is a positive tool for management's use to assess the overall performance of the plant. It combines all of the information from the various reports on the plant performance into one very useful document. The DCISC will continue to review the Integrated Assessment Report.

4.12 Outage Management

4.12.1 Overview and Previous Activities

The DCISC monitors PG&E's outage plans, actions, and results in the following ways:

- Regular fact-finding meetings to discuss planned major modifications, inspections, maintenance and activities
- Regular reports from PG&E at DCISC Public Meetings on outage plans and outage performance, noting any special situations or problems affecting safety
- Visits to DCPP during outages to monitor the Outage Coordination Center, Control Room and activities of interest
- Reviews of documentation and reports of outage activities such as steam generator tube inspections, major equipment problems, overtime usage, and events affecting safety

PG&E completed its ninth Unit 2 refueling outage. Outage management performance has steadily improved since the DCISC began review in 1990. Outage length, typically over one hundred days initially, had plateaued in the high fifty-day range through 1R6. Outage 2R6 dropped to 34 days, 1R7 up to 57 days (with outage complications), 2R7 was 48 days, 1R8 at 44 days, 2R8 at 42 days, 1R9 at 35 days and finally 2R9 at 31.7 days. PG&E expects its outages can routinely run in the high-twenty to low-thirty day range.

Other outage indicators also are showing continuous improvement. With exception of anomalous 1R9 radiation levels, radiation exposure and personnel injuries have been steadily declining in the last three outages as follows:

	Radiation Exposure (person-Rem)		Personnel Safety (recordable injuries)		Solid Radwaste (cu.ft./lbs.)	
Outage	Unit 1	Unit 2	Unit 1	Unit 2	Unit 1	Unit 2
R7	275	149	8	5	1032	893
R8	192	145	9	4	41099*	44323*
R9	314**	120	3	4	38945	34564
R10	162	108	2	1	48485	38171

* This measure was changed to pounds in 1R8.
** Radiation exposure for 1R9 is discussed below.

Hot Mid-Loop (HML) Operations

Hot mid-loop operation is one of the most significant operations during the outage because it increases the potential for fuel damage in the shutdown mode. This higher risk configuration is necessary to maintain a short outage while performing increased steam generator maintenance and inspection. PG&E has been looking at options to reduce the risk during hot mid-loop operation. The risk assessment program ORAM is used to help control the risk during outages. Hot mid-loop operation was used in the 2R8 outage.

The DCISC reviewed the increased risk resulting from HML operation. PG&E had performed calculations and prepared graphs of Reactor Coolant System (RCS) boiling risk as a function of time for the steps leading up to, during and following HML operation. The average boiling risk for HML operation, 1.81 x 10-6 per hour, was 14% higher than that without HML operation, 1.56 x 10-6 per hour. The DCISC found the increased risk acceptable, considering the preparation, planning, training, and contingency analysis performed by PG&E.

PG&E had exhibited effective outage management, including hot mid-loop operations, during previous reporting periods.

Outage 1R9 Radiation Exposures

DCPP experienced much higher than normal radiation levels during Outage 1R9. DCPP encountered a significant problem in outage 1R9 where it experienced unusually high radiation dose rates from the Reactor Coolant System and Residual Heat Removal System. The root cause of the high dose rates was believed to be plant chemistry and a December 1998 plant trip. Appropriate corrective actions were being taken to improve RP performance and practices.

The DCISC has concluded in previous periods that PG&E has effectively managed its refueling outages.

4.12.2 Current Period Activities

There were two outages performed during this reporting period (1R10 in October 2000 & 2R10 in May 2001).

Outage 1R10 - October 2000. DCISC reviewed the plans, observed the outage and had presentations of the results of the outage

at three Fact-Finding Meetings (Volume II, Exhibits D.2, D.3, & D.6) and PG&E made presentations at two Public Meetings September, 2000 and February, 2001 (Volume II, Exhibits B.3 & B.6).

The DCISC observed many of the outage events during the October 25 & 26, 2000 Fact-Finding Meeting. They attended the daily outage meeting for outage 1R9. This was the 17th day of the outage. Overall progress to date was reported and the outage was about two days behind schedule. Radiation exposure to date was 104.3 person-Rem, compared to an estimated 119.9 person-Rem. There had been two recordable injuries to date, neither of which was rated as serious. There had been three reportable events in contrast to the Outage Safety Plan goal of zero. The schedule for the remaining outage activities was distributed and reviewed.

The 1R10 Daily Outage Meeting appeared appropriate for tracking outage activities, planning, and coordination, as well as maintaining system status to protect personnel and nuclear safety

The DCISC Team observed activities in the Outage Work Control Center (OWCC). Operations had formed "super crews" to handle work control during the outage. Super crews consisted of two twelve-hour shifts comprised of operators who were not involved in running either unit during the outage. They primarily coordinated clearances, one of the more important operations-related functions at the plant, and assisted Operations with outage-related duties.

The Outage Safety Plan was reviewed. The DCISC has reviewed the Plan in the past and found it to be a good tool for safety awareness and guidance for maintaining plant safety status in conjunction with the defense-in-depth approach to nuclear safety. The Plan summarized the outage scope and goals, RCS inventory control and contingency plans. The Plan appeared comprehensive and on-target. In the outage coordination room there was a useful chart on the wall showing Reactor Vessel and Cavity water level and heat removal modes during various plant states and operational activities. The DCISC believes this chart helps keep personnel aware of the conditions that apply during each mode.

Hot mid-loop operation was the most successful to date. It was performed in the shortest time on record at Diablo Canyon, and with no challenges.

The main turbine work carried out in Outage 1R10 was also reviewed. The plant had performed an inspection of No. 3 Low Pressure Turbine and replaced the rotor with a refurbished spare as it normally does each outage. The inspection revealed that part of a blade and part of the connected shroud had been lost. The rotor will be repaired prior to the next outage. High cycle fatigue was believed to be the cause. A tour of the Unit 1 turbine area was performed.

The DCISC Team also performed a tour of the Unit 1 Containment. The group observed fuel movement, installation of the new sump debris racks, radiation protection activities, and other miscellaneous activities. The refueling equipment appeared to work well.

Radiation protection practices inside containment appeared appropriate, although there seemed to be more personnel in containment than necessary. Upon exiting the containment, the group was effectively processed by Radiation Protection personnel.

Except for three reportable events, the 1R10 outage was being performed safely in accordance with plans and goals.

Outage 1R10 RP Results - the Director, Radiation Protection, presented a summary of performance of the Radiation Protection Dept. during 1R10 at the November 2000 Fact-Finding Meeting. The official exposure for 1R10 was 162.5 person-Rem which made 1R10 the lowest dose outage in unit one's outage history. Unit one outages have generally seen a radiation dosage in the range of 200 to 300 person-Rem (1R9 had an official exposure of 314 person-Rem). Much of the reduced dose was due to good shutdown chemistry control and zinc injection over the last two years.

There were 77 personnel contamination incidents for exposure of both clothing and skin, which PG&E stated was a good performance. The Director discussed examples where their observations have identified potential improvements to reduce the number of radiation contaminations. One example involves the shoe covers that are use at Diablo Canyon. There are new designs that are easier to wear and avoid some repeating contamination problems.

The DCISC reviewed the NRC License Event Reports (LERs) from outage 1R10. There were a total of eight LERs for the outage.

Four were caused by personnel error, and the remaining by equipment failure (3) and poor contractor culture (1). None of the errors were considered system- induced. PG&E determined that the majority of these errors were preventable through the use of good self-verification, concurrent independent verification, and the practice of STAR (Stop, Think, Act, & Review).

DCPP appeared to take a reasonable approach to the analysis of causes of reportable events during Outage 1R10. The predominant cause was human error, and they are taking additional steps to improve human performance with new programs and organization and training focused more on human behavior.

Overall, with the exception of meeting the schedule, it appears that 1R10 was a very successful outage from personnel and nuclear safety and cost.

Outage 2R10 - May 2001. DCISC reviewed the plans and had presentation of the results of the outage at one Fact-Finding Meeting (Volume II, Exhibits D.8) and PG&E made presentations at two Public Meetings in February 2001 and June 2001 (Volume II, Exhibits B.6 & B.9).

Radiation Protection (RP) Planning for Outage 2R10

The DCISC Team discussed RP plans for Outage 2R10 with the DCPP Manager of RP. In addition to the normal plans, there were the following changes:

- Simplified Radiological Posting - previous signs identifying High Radiation Areas (HRAs) were too confusing because the layout was not standardized and contained many different instructions and labels. The revised signage consisted of three easy-to-comprehend pieces of information, always in the same order. Each of the labels is color-coded for quick identification and understanding.

- Work briefings moved outside of Containment - previous in-Containment briefings were adding to doses, and moving them to low-dose areas will help to lower doses.

- Hot Particle Control emphasis changed - the previous high emphasis on Hot Particle Control was changed to overall Contamination Control, which includes all radioactive

contamination.

- Improvements in protective clothing footwear - a change from the integral nylon/rubber bootie to a separate nylon bootie and rubber overshoe will be safer on slippery surfaces and will help reduce contaminations.

In addition to the normal radiation protection planning for Outage 2R10, DCPP has made what appear to be simple, logical and effective changes to radiological postings, lower-dose work planning locations, contamination control, and protective clothing.

Plans for Refueling Outage 2R10 and Safety Plans

PG&E presented the plans for 2R10 refueling outage with the safety plans at the February 2001 Public Meeting (Volume II, Exhibit B.6). The major maintenance scope of the outage include: refueling and fuel repair, steam generator maintenance, main turbine generator maintenance, 4 kv and 480 v bus H maintenance, valve maintenance and surveillance testing. Chemistry indications of fuel damage have been found for unit 2 which may involve one open rod on one fuel assembly and consequently, PG&E will be doing in-mast sipping of the fuel assemblies removed to locate any fuel damage. They will have contingency plans in place to deal with any damaged fuel discovered once it is in the spent fuel pool.

The major projects identified for 2R10 include:

- Main feedwater piping replacement
- Containment Recirculating Sump Screen modifications
- Reactor Coolant Pump Motor cable replacement
- Main Generator Current Transformer dismounting
- Reactor Vessel Refueling Level Indication System upgrade
- Reactor Coolant System Vacuum Refill System

Personnel goals for 2R10 include achieving an exposure goal of <=109 person-Rem with no personnel safety incidents, errors or disabling or reportable injuries. Nuclear safety goals include no loss of core cooling with the core in any location, event-free mid-loop operations and no equipment damage.

The budget for outage duration and cost is for a 35-day outage at a direct cost of $31 million, the goal is for a 30-day outage at a direct cost of $30 million. The plan is to achieve

the outage in 26-27 days at a direct cost of no more than $28 million. PG&E reviewed the schedule for 2R10 major milestones in outage preplanning including work order preparation, issuance of the Rev. 0 Schedule, completion and issuance of work instructions.

The Outage Safety Plan would be very similar to that for 1R10. There have been no unusual activities or risks identified and the overall risk will be about the same as recent DCPP outages. The higher risk evolutions will be the two mid-loop operations, before core offload and following core reload.

PG&E presented the focus areas for improvement during 2R10 including expanded use of pre-outage milestones, top priorities for safety and quality and attention to human performance fundamentals through use of tailboards briefings, self-verification and use of three-way communications. PG&E is also working to improve the Lessons Learned Program to encourage personnel to make immediate comment and offer suggestions to the Program in a timely fashion so they may be evaluated and if appropriate, incorporated and implemented during the next refueling outage.

Results of 2R10

PG&E presented the results of 2R10 at the June 2001 Public Meeting (Volume II, Exhibit B.9). 2R10 was one of DCPP's best outages from nuclear and personnel safety and schedule standpoints. In the area of personnel safety, they had no disabling injuries (DI) and only one recordable injury (RI) vs. no Di and 4 RI at previous best outage. The exposure was 107.6 person Rem vs. 120.4 person Rem at previous best outage and a 2R10 goal of 109 person Rem. There was one human performance significant event vs. two in the previous best outage and 26 security events vs. 24 in the previous best outage. The outage was 29 days and 11 hours vs. 31 days and 18 hours in the previous best outage resulting in a cost of $30 million vs. $25.5 million for the previous best outage.

The human performance significant event was the start up feeder breaker inadvertently left in "Test" position during performance of STP. The schedule was delayed 3 days and 16 hours because of generator core tightening/inspection. All the major routine scope work was completed as well as the major project scope work. Significant emergent scope included 1) generator through bolt/building bolt torque and 2) CRDM canopy seal weld repair (Volume II, Exhibit B.9). Areas identified

for improvement included 1) Pre-Outage Planning and Preparation, 2) Schedule Adherence and 3) cost Forecasting and Control.

Excellent shutdown chemistry was one of the reasons the dose of 107.6 person Rem was the lowest for any outage. The posting program was changed and there were no high radiation area boundary violations. DCPP instituted new RCA turnstiles before the outage and had no RCA entries without functional electronic dosimeter. New steam generator protective clothing improved preparation time and mobility. The overall results were; 1) lowest steam generator bowl dose rates ever, 2) low dose for steam generator work, 3) low dose for outage and 4) good success with RHR system flushes.

It appeared that PG&E managed the 2R10 outage very effectively to achieve the best outage at DCPP in all measures except cost. DCISC will continue to review the performance of each refueling outage.

4.12.3 Conclusions

It appears that PG&E managed the 1R10 and 2R10 outages very effectively to achieve the best outages at DCPP in all measures except cost and schedule. DCISC will continue to review the performance of each refueling outage.

4.13 Overtime Control

4.13.1 Overview and Previous Activities

The DCISC has been following overtime control at DCPP for a number of years. There had been problems with personnel exceeding plant overtime guidance and requirements; however, it appears PG&E has solved overtime problems and has good controls in-place. The DCISC will continue to monitor overtime performance but not report it separately, unless problems occur, such as that described below.

In its Inspection Report 50-275/323/00-05 the NRC identified a non-cited violation for failure of Maintenance management to review monthly overtime reports. Because of the difficulties in obtaining overtime records and the number of errors observed with the records, the NRC inspectors concluded that inadequate controls existed in the Maintenance organization for routine oversight of overtime usage. Several Maintenance craftsmen exceeded Technical Specifications (TS) limits for overtime usage.

A DCPP Maintenance Services investigation showed that none of the 103 potential occurrences were actually unapproved TS overtime exceedences, but a number of record-keeping errors were identified, and Maintenance Services had not performed the required monthly reviews. The problem was put into the Corrective Action Program for correction.

NQS also performed an audit of personnel errors during the time frame of the potential overtime exceedences. No cases were found where overtime contributed to personnel error. A NQS review of Operations overtime records found that review and approval requirements were being met.

It appears that the failure of management to perform Technical Specification required monthly review of overtime reports was isolated to Maintenance Services, and there were no unapproved no unapproved overtime exceedences; however, there were a number of errors in overtime records.

4.13.2 Current Period Activities

Based on satisfactory overtime controls and performance, the DCISC did not perform a review of overtime during the current reporting period. The DCISC will continue

to monitor overtime usage and indications of problems.

4.13.3 Conclusions

Although no specific reviews were made of DCPP overtime activities, there did not appear to be any problems. The DCISC will remain sensitive to overtime problems.

4.14 Quality Programs

4.14.1 Overview and Previous Activities

The DCISC has followed PG&E's quality programs continuously since 1990. The DCISC has looked at the following aspects of the quality programs in fact-finding meetings and public meetings in previous periods:

- Overview of Quality at Diablo Canyon - PG&E has made presentations at DCISC public meetings on the quality program at DCPP.

- Effectiveness of QPARs as a Source of Tracking Broken Barriers to Unsafe Operation - NQS is responsible for the collection of long-term data and issuance on a quarterly basis as the Quality Performance Assessment Report (QPAR). The report provides input on broken barriers to unsafe operation, cause of barrier failure and trend data. The DCISC receives this report quarterly.

- Utility Review of PG&E QA/QC Departments Audits - the PNAC requires an independent assessment be made of QA/QC annually. PG&E previously used the JUMA Audits to satisfy this requirement. The Region IV Utilities that participated in the JUMA Audits agreed to disband the current JUMA process and support the Independent Audit/Review by resource sharing on a given topical area. The DCISC regularly reviews these audits.

- NPG Quality Plans - The Quality Plans, which are owned by each department manager, are designed to provide early detection of quality problems for the purpose of keeping the organization focused on the quality of their products. The DCISC regularly reviews these plans.

- Quality Assurance (QA) Self-Assessments - PG&E has made technical presentations at DCISC fact-finding meetings and public meetings to review their QA Self Assessments.

- Quality Problems - DCPP has made significant progress in reducing the backlog of Quality Problems.

- Operating Experience Activities - In the area of Operating Experience Activities (OEA), NQS has reduced the backlog. The DCISC periodically reviews the OEA function.

NQS has established an Audit Review Board (ARB) whose objectives are: 1) foster a strong, effective and efficient QA function, 2) ensure a consistent and aggressive critical evaluation of plant programs, performance, and material condition, and 3) serve as a forum for early identification and resolution of conditions that may impede the conduct of audits. NQS looks at the year-end QPAR on how each department is doing for the year to give an overall assessment of yearly performance.

In previous periods the DCISC has found that the quality assurance function appeared effective.

4.14.2 Current Period Activities

During the current period, the DCISC had DCPP NQS presentations on Quality Programs at three Public Meeting (Volume II, Exhibits B.3, B.6 & B.9) and three Fact-Finding Meetings (Volume II, Exhibits D.2, D.5, & D.7).

Meeting with Manager of Nuclear Quality and Licensing

The DCIS met with the Manager of Nuclear Quality and Licensing (NQAL) at the October, 2000 Fact-Finding Meeting (Volume II, Exhibit D.2). He described the recent changes which brought Nuclear Safety and Licensing (NSAL) and Nuclear Quality Services (NQS) together into one organization, NQAL. Included in the organization are the Corrective Action Program, Transient Analysis, and Probabilistic Risk Assessment. DCPP management believes these related functions will work most effectively and efficiently together. The transition to the Improved Technical Specifications, specifically the preparation, training and support provided to Operations was also described. He believed that the transition had been accomplished successfully with few problems.

Top Ten Quality Problems

The DCPP NQS Supervisor discussed the NQS Quality Problem Action List for Aging Quality Problems at the December, 2000 Fact-Finding Meeting (Volume II, Exhibit D.5). The list contains Nonconformance Reports (NCR), Quality Evaluations (QE), and "A" Type Action Requests. The list identifies the oldest quality problems in each of the QP reporting methods. Quality problems on the list may not necessarily be old, but

may need attention by the line organization. He also reviewed three NCRs and two QEs, which they felt, were the most important quality problems.

The Corrective Action Program (CAP)/Human Performance (HP) programmatic upgrade action plan (current - 3 year plan) was also discussed. This included; 1) Cause analysis process improvements, 2) ETR process improvements, 3) Generic CAP improvements, and 4) Human Performance improvements.

It appears that the NQS group is doing a good job in monitoring the top quality problems and bringing them to the attention of line management.

Update on Self-Assessments

DCISC reviewed the self-assessment program at two Fact-Finding Meetings (Volume II, Exhibits D.5 & D.7) and at one Public Meeting (Volume II, Exhibit B.3).

The current Self-Assessment Program was started at DCPP in late 1999. The program structure included a defined owner, a program guide, management oversight, and designated department self-assessment coordinators. PG&E stated that the program is doing very well, but still can be improved. The program should reach maturity by the end of 2001. The managers are continually encouraged to improve on their self-assessments. DCPP performed 55 self-assessments during 2000. They have set a goal of about 40 self-assessments per year by the line organizations and have met or exceeded these goals. Overall, they have produced a large number of quality reports.

DCPP has generated 15 reports in the first quarter of 2001, but the quality of some of the reports has declined. Critiques are performed for every assessment and the results provided back to the team leader and the Self-Assessment Advisory Board. The critiques provide a performance measurement for the team leaders and may lead to continual improvement in report quality, schedule adherence, and team composition. They are working with other STARS plants on self-assessments to perform round-robin assessments between plants and share resources.

DCPP now has a new grading process for self-assessments, which they believe, will improve the quality of the self-assessments. They have established a core group of 12-14 employees that meet monthly to review the reports. They reported that Operations continues to do self-assessments very

well and Engineering has improved on theirs. They still need self-assessments to address generic items. Each self-assessment report result goes into the corrective action program. DCPP plans on performing some self-assessments during 2R10.

It appears that DCPP has the self-assessment program well under way and are producing about the desired number of assessments. They are also taking action to improve the quality of the assessments, including the reports. They expect to have the program fully implemented by the end of 2001. It is recommended that DCISC continue to review the program and some of the self-assessment reports at a fact-finding meeting in the 2nd Quarter 2002.

Security Response/Reaction to QA Security Audit

The Security Services Manager, reviewed with the DCISC Team the Security response to the NQS audit of Security at the April, 2001 Fact-Finding Meeting (Volume II, Sec. D.7).

The NQS audit recommends that Security use the Plant Quality Program to identify and correct problems.

Security has agreed to the following changes: 1) Security will now write Action Requests (ARs) on all equipment problems and use a trending program and 2) Security will set certain threshold levels for which they will write ARs, but will not write them for every logged event. Security will also do trending on all the logged events.

NQS also recommended that Security eliminate the Security Review Group process and utilize plant Corrective Action Program with NCRs and QEs as applicable. Security is working with NQS on this matter, but had not agreed to it at this time.

The Security Manager also discussed NRC developments in the Security Area. The Utility Security Working Group is working with NEI to resolve these issues with the NRC.

It appears that Security has been responsive to most of NQS's recommendations from the audit and working with NQS to settle the final remaining issue. The DCISC will follow up on these issues at a future Fact-Finding Meeting.

Nuclear Quality Services (NQS) - Status of Improvements from last Biennial Audit and NQS Self-Assessment

The Manager - NQS Eng/Proc/Maint presented the status of improvements from the 1999 NQS Biennial Audit and the results of the 2000/2001 NQS Self-Assessment at the April, 2001 Fact-Finding Meeting (Volume II, Sec. D.7). Every two years, NQS performs a Self-Assessment of key NQS activities.

The corrective action for the three audit findings and the ten recommendations from the 1999 NQS Biennial Audit have been completed.

The 2000 self-assessment was started in December, 2000 and completed in April, 2001. The scope of the Self-Assessment included Internal Audit Performance, Personnel Qualifications, and QA Program.

The summary of the preliminary report results were: 1) Internal audit process and implementation meet and in some cases exceed Regulatory Requirements, and overall performance is rated as good and very effective and 2) oversight qualifications meet requirements.

There were three findings, nine recommendations, and four strengths included in the report. NQS stated that the three findings were not significant ones. The report also noted that 1) audits were probing, performance-based, technically oriented, and monitored significant emergent issues and program changes, 2) audits contributed to plant performance by identifying significant issues and improved the performance of audited organizations, and 3) audit scopes were comprehensive and covered the appropriate regulatory requirements.

The role of the NSOC in selecting the scope of the NQS independent audit was also discussed. NSOC reviews the scope of these audits after NQS determines the scope, but has had little input into the process. The DCISC stated that they thought that NSOC should take a more active role in determining the scope of the biennial audit of NQS to give the audit more independence.

It appears that NQS is performing Self-Assessments in a timely manner and the scope of the audits seems to be satisfactory.

The DCISC believes that NSOC should take a more active role in determining the scope of the biennial audit of NQS to give the

audit more independence. The DCISC had made a similar recommendation (Recommendation R00-10) in the previous Annual Report and requests that PG&E reconsider its response of having NSOC merely review the audit plan.

Recommendation Basis: NQS has the responsibility to determine the scope and areas to be inspected for the Biennial Audit/Self-Assessment. NSOC reviews and approves the scope of the audit but NQS reports that NSOC has not suggested any changes or additions to the audits. NQS also manages the Audit and obtain the necessary inspectors for the Audit. These Audits are performed for NSOC to determine the effectiveness of the QA Program. The DCISC believes that for the Audit to be independent, NSOC should specifically input on and review and comment on what areas they think should be audited.

Nuclear Quality Services (NQS) Review of year 2000

PG&E reviewed and discussed the Quality Performance Assessments Reports (QPARs) issued during the year 2000 at the February, 2001 Public Meeting (Volume II, Exhibit B.6).

PG&E stated that the identified strengths and positive observations in the QPARs were the increased focus on radiation protection practices, which contributed to the lowest accumulated dose during 1R10 for a unit 1 outage, the lowest number of personnel contamination incidents ever at DCPP and the lowest non-surface contamination area personnel contamination incidents for a non outage period at DCPP. The QPARs indicate that the DCPP organization responded well to plant transients, curtailments and shutdowns during 2000, and improvement was noted in the quality and use of self-assessments performed.

Implementation of the Improved Technical Specifications was judged to have been well coordinated and peer certification of the Probabilistic Risk Assessment (PRA) Program ranked that program as the best observed among ten similar plants. PG&E stated that conservative decision-making, good use of self-assessment and innovation in design were characteristics of noteworthy performance by the Engineering Services organization during 2000. Increased focus and management support of Human Performance as evidenced by formation of a Human Performance Steering Committee (HPSC) and subcommittee in Operations, Maintenance, and Engineering were identified as strengths. One licensed operator training class was conducted

and all candidates passed their NRC exams.

The 2000 QPARs identified certain areas for improvement including a number of equipment related problems, which highlight a need for a comprehensive program to address age-related degradation of DCPP equipment. Use of Event Trend Records (ETRs) has had limited success in identifying adverse trends although that Program continues to show improvement. There are, however, some organizations, which do not use the Program effectively. The QPARs identified less than effective use of the Operator Walkaround/Burden List and an increase in the numbers of Control Board Action Requests (ARs). PG&E stated that the QPARs and NQS assessments have identified many of the same issues and, together with Self-Assessments and the NRC PIs, they are used by PG&E to produce the Comprehensive Integrated Assessment Report for DCPP.

It appears that using the QPARs is a good method for DCPP management to identify the overall performance of DCPP for the year. The QPARs identify the adverse trends, the areas that need improvement, and the areas that are performing well. DCISC receives the QPARs, which are issued quarterly. DCISC will continue to request NQS to review QPARs at fact-finding and public meetings.

4.14.3 Conclusions and Recommendations

As in past years, the DCISC concludes that the quality program and self-assessment program have been effective in identifying strengths and weaknesses of the activities at DCPP and bringing about effective corrective action. It appears that the NQS group is doing a good job in monitoring the top quality problems and bringing them to the attention of line management. The DCISC will continue to review DCPP quality programs as part of its normal activities.

R01-5 **It is recommended that NSOC take a more active role in determining the scope of the biennial audit of NQS to give the audit more independence. The DCISC had made a similar recommendation in the previous Annual Report and requests that PG&E reconsider its response of having NSOC only review the audit plan.**

4.15 Radiation Protection

4.15.1 Overview and Previous Activities

DCPP Technical Specifications contain requirements, programs, and procedures to specify the details of their radiation protection programs. Although limits are specified, plant operators use the philosophy of As Low As Reasonably Achievable (ALARA) to maintain radiation exposures and releases as low as they can. DCPP has a formal ALARA program; the program applies to personnel exposure in the plant as well as normal releases to the environment. PG&E files reports semi-annually and annually regarding personnel exposures, releases outside DCPP and regular soil, vegetation, water and air samples taken around the plant.

The DCISC regularly monitors DCPP personnel exposure as one of its performance indicators. It also reviews any radiation protection events or incidents that are reported in LERs or NRC violations. The DCPP performance in radiation protection has been satisfactory, and there have been few problems; however, PG&E performance is not in the top quartile of the industry.

The major personnel exposure occurs during refueling outages when most of the work in the Radiation Control Area (RCA) is performed. DCPP sets outage and annual goals for exposure, and reports these at each DCISC public meeting. DCPP also submits a semi-annual report to NRC on any planned, normal radioactive releases from the plant; DCISC reviews this report. Any abnormal releases are reported in special reports, typically LERs, although there have been none since the DCISC began in 1990.

DCISC reviews in previous periods include the following:

- Radiation Protection Events
- Control of High Radiation Areas
- Respirator Issue Problems
- Control of Surface Contamination Areas
- Personnel Contamination Experience and Plans
- Radiation Protection Performance
- Overview of the Radwaste Systems
- Overview of Radiation Protection Program, including self-assessments and assessments by NQS, INPO and NRC.

- Outage 1R9 Radiation Protection - DCPP encountered a significant problem in outage 1R9 where it experienced unusually high radiation dose rates. This resulted in accumulated exposures of 314 person-Rem. The root cause of the high dose rates was believed to be plant chemistry and a December 1998 plant trip. Appropriate corrective actions were being taken to improve RP performance and practices.
- Radioactive Releases - Over the last five years, DCPP radioactive releases have been a small fraction of Technical Specification limits.
- Refueling Outage 2R9 Radiation Protection Results - the station successfully met its 2R9 120 person-Rem goal. Personnel contaminations were 128 compared to 209 in Outage 1R9 and a reduced number of radiological occurrence reports compared to recent outages.

The DCISC has judged the DCPP radiation protection program effective in the past.

4.15.2 Current Period Activities

The DCISC regularly reviews DCPP radiation doses at its fact-finding and public meetings.

The five-year results through June, 2000 are as follows:

DCPP Radiation Doses (person-Rem)

Year	Unit 1 Outage	Unit 2 Outage	Other	Total
1997	193	-	26	219
1998	-	154	17	171
1999	314	120	19	453
2000	163	-	18	171
2001*	-	108	6	114

* Through June, 2001

Through 1999 the best nuclear plants in the U.S. have doses below 80 person-Rem average per reactor per year for a rolling three-year average. The DCPP 2000 comparable was 267 person-Rem. For 1996, 1997, 1998 and 1999 the DCPP averages were 176, 114, 281 and 268 person-Rem, respectively.

Management of Radiation Exposure During Recent Outages

The DCPP radiation dosage rate experienced during the 1R9 refueling outage resulted in a 314 person-Rem dose and exceeded by a considerable margin the dose goal set for 1R9 of 184 person-Rem. The DCISC reviewed RP plans for upcoming Outage 2R10 with the Radiation Protection Manager. In addition to the normal plans, there were the following changes:

- Simplified Radiological Posting - previous signs identifying High Radiation Areas (HRAs) were too confusing because the layout was not standardized and contained many different instructions and labels. The revised signage consisted of three easy-to-comprehend, color-coded pieces of information (contamination levels, airborne radiation levels, and radiation dose rates), always in the same order.
- Work briefings moved outside of Containment - previous in-Containment briefings were adding to doses, and moving them to low-dose areas will help to lower doses.
- Hot Particle Control emphasis changed - the previous high emphasis on Hot Particle Control was changed to overall Contamination Control, which includes all radioactive contamination.
- Improvements in protective clothing footwear - a change from the integral nylon/rubber bootie to a separate nylon bootie and rubber overshoe will be safer on slippery surfaces and will help reduce contaminations.

The goal for 1R10 was set at 147.5 person-Rem, to be achieved using shutdown techniques similar to those used during 2R9 with the addition of an RHR flush during startup. Other planned flushes included containment spray/RHR on the 115-foot level of containment and the RHR above the RHR sump.

The radiation dose for 1R10 was 162.5 Rem which made 1R10 the lowest dose outage in U-1's operational history. U-1 outages have generally seen a radiation dosage in the range 200-300 Rem for a typical outage. The duration of 1R10 was 40 days 10 hours and there were 77 personnel contamination incidents (PCI) for exposure of both clothing and skin, which Emergent work contributed 12.9 Rem and the extended duration of the outage added 1 Rem for a total additional dose of 13.9 Rem.

For outage 2R10 adjustments in the shutdown/RCS cleanup strategy were implemented to deal with a significant increase

in RCS contamination late in the operating cycle. As result, dose levels were reduced at many locations, including the lowest steam generator bowl dose rates in plant history. The overall exposure for 2R10 was 107.6 person-Rem. This represents a 10% reduction from DCPP's previous lowest value of 120.4 person-Rem in 2R9.

Changes in Radiation Protection Management, Philosophy, and Organization

The DCISC met with the new DCPP Manager of Radiation Protection who came from another nuclear facility and possesses substantial radiation protection experience. He reported the following current organizational structure issues:

- Diffuse supervisory accountability - there were too many direct reports to some supervisors (e.g., the General Foreman)
- Rad Engineers (individual contributors) report directly to the Manager of RP
- Rad Engineers not organizationally tied to plant process teams and production goals
- High Impact Teams had been set up to follow processes but cross supervisory boundaries

These issues and loosely defined program roles were leading to overlaps and knowledge disconnects between personnel in field implementation.

Organizational structure goals include:

- Process-based organization aligned with Operations and Maintenance organizations
- Supervisory accountability for process ownership
- Clearly-defined, non-overlapping roles and responsibilities tied to Asset Teams such as
  - Radwaste/Decon
  - Maintenance Asset Team Support
  - Operations Support
  - RP Programs Support
- Improved RP planning, e.g., Maintenance planning model and a full-time outage RP planner to help reduce dependency on contractors.
- Implement new structure following Outage 2R10

The desired structure would include improved supervisory development with rotations into Quality Assurance (QA), Shift Technical Advisor (STA) rotation for Rad Engineers, possible RP Training rotation, and RP supervisor rotation. The improvements would also include a better performance evaluation system for individual contributor and supervisor advancement. DCPP planned to implement these changes following Outage 2R10.

Radiation Control Area Tour

The DCISC toured portions of the DCPP Radiation Control Area (RCA) with the Radiation Protection Manager. The purpose of the tour was to observe existing and improved radiation area controls. The tour included the following areas:

- Steam Generator (SG) Outage Primary Telemetry & Remote Dose Monitoring Facility - a mobile office with equipment to remotely monitor SG inspection activities and related radiation fields.
- 140-foot elevation Unit 2 Containment RCA Access Control - main access control point for ingress and egress to the Containment.
- 85-foot elevation RCA Auxiliary Building Access Control Point - main access control point for ingress and egress to the Auxiliary building. The group was processed in and out of the RCA here, including logging into the RCA access control system, receiving RP instructions, receiving alarming dosimeters, and receiving hand and foot radiological screening upon exiting. DCPP had added dosimetry-system-controlled turnstiles to prevent personnel from entering the RCA without properly logging into the system.
- 85-foot elevation Unit 2 Containment Penetration Room
- Several equipment rooms

The DCISC observed numerous examples of the new radiological posting system, remote radiation monitoring and ALARA cold areas (low dose rate waiting areas). **All aspects of RP controls observed in the RCA appeared satisfactory and effective. It appeared that effective use was being made of radiological posting, monitoring, and controls.**

4.15.3 Conclusion

The DCPP radiation protection program for controlling radiation doses inside and outside the plant appears effective overall. DCPP had experienced unusually high radiation dose rates during Outage 1R9 but had effectively reduced those levels in three subsequent outages. The DCISC will closely follow radiation protection during future outages.

4.16 Risk Assessment and Management

4.16.1 Overview and Previous Activities

PG&E has developed in-house capability to perform risk assessments. PG&E periodically updates its Probabilistic Risk Assessment (PRA) to incorporate changes in plant configuration and, if appropriate, operational changes. The PRA Group has been updating the original 1995 risk assessment which included the sum of internal, seismic, fire and shutdown risks. The 1995 core damage frequency (CDF) was 1.12x10-4 per year, and the revised risk is lower at 9.72x10-5 per year - a 13% decrease. Much of the reduction is due to implementation of the Maintenance Rule and resultant increased equipment reliability and PRA modeling improvements. The reduced overall risk permits more flexibility in scheduling on-line maintenance. The NRC criteria are based on a 1.0x10-6 per year risk threshold for on-line maintenance, and DCPP will have more room within that threshold to perform additional maintenance on line.

At PG&E, risk assessment has become an important tool in providing guidance to decision-makers and planners on how to best minimize the risk of plant operations. PG&E applications of PRA include, start up risk assessment, risk assessment of on-line maintenance, risk assessment of primary vessel pressurized thermal stress (PTS) and out-of-service risk assessments in support of the Maintenance Rule.

PG&E controls its risk from on-line maintenance procedurally. For On-Line Maintenance the PRA Group prepares a Risk Profile on a weekly, monthly and fuel cycle basis. The PRA Group works very closely with personnel performing the On-Line Maintenance risk assessment, and the program has been working very well.

The On-Line Maintenance (OLM) model has been used by Operations and Maintenance as an on-line planning tool for various operations and maintenance activities. DCPP is considering using ORAM Sentinel (Outage Risk and Management) instead of OLM. Using ORAM, the PRA Group has increased allowable outage times (AOTs) for the Auxiliary Feedwater Pump and identified more sources of water. Similarly, AOTs have been increased for the EDGs, startup power, and CCWPs. AOTs have decreased for the SI, Charging and RHR pumps and have decreased significantly for the SSPS, which represents the highest-risk AOT. The Group planned to develop a shutdown model in 2001.

The DCISC has found that the PG&E PRA performance appeared effective in previous reporting periods. The PRA Group continues to take a strong, effective role in plant risk-based decision making.

4.16.2 Current Period Activities

The DCISC reviewed the following PRA items during the current reporting period:

NRC Report on Refueling Outage Risk

The DCISC Team reviewed a recent NRC report on outage safety (Volume II, Exhibit D.6, Section 3.3). The NRC report analyzed data from 19 refueling outages, including 16 pressurized water reactors (PWRs) and 3 boiling water reactors (BWRs). The PWR list included DCPP-1 and -2. The purpose of the study was for NRC to gain an understanding of the overall risk of each refueling from two perspectives: plant configuration risk and modification impact risk.

The report showed the expected and actual total risk estimates for each outage and identified the peak risk per hour. The report identified major modifications and maintenance activities, which could significantly add to outage risk. Human errors and other operational issues contributing to risk were listed. The operational issues were of particular interest because they included events, which could cause loss of core cooling and potential core damage. The events included loss of offsite power, loss of shutdown cooling, inadvertent isolation of service water, improper alignment of spent fuel cooling, etc. The NRC looked specifically at mid-loop operations as a relatively high contributor to risk but also concluded that it received increased attention and awareness, which lessened its impact.

The NRC noted, as did the DCISC, that there was a wide range of risk values observed in the estimates of both the cumulative outage risk and peak risk. This was attributed to differences in modeling and other related data or analysis issues as opposed to actual differences in risk.

DCPP personnel were familiar with the study and had performed a full plant-specific, operational risk assessment as well as a generic industry modeling of shutdown risk. DCPP has begun a

formal, comprehensive, plant-specific shutdown risk analysis, which it expects to complete in 2002. They currently estimate outage risk at about 10-20% of total plant risk. Upon completion of the full shutdown analysis, DCPP will be able to compare risks in it and the operational assessment to better determine when or whether to perform on-line maintenance.

DCPP Probabilistic Risk Assessment (PRA) Program Update

The DCISC reviewed the status of the DCPP PRA Program (Volume II, Exhibit D.7, Section 3.8). The PRA Group continues to progress in the new NRC risk informed era. The group presently has three full-time qualified engineers and a supervisor. Their routine support activities are model configuration control, risk assessments for Operations, the Maintenance Rule and for Engineering, and risk-informed applications for management.

Progress that has been made is as follows:

- Completion of the second plant model update in two years
- Successful Westinghouse Owners Group (WOG) peer certification
- Integrated model for seismic, fire and internal events including flooding
- High PRA Group scores on the Cultural Survey
- Submittal of RI-ISI (risk informed - in service inspection of piping) to the NRC in December 2000 and January 2001
- Development of a risk-ranking tool for reliability improvement projects
- Submittal of a PRA AOT (allowed outage time) for CCP 2-1 to the NRC, which has been approved
- Currently developing the next generation of ORAM-SENTINEL
- First plant to undertake NRC benchmarking on SDP (Significant Determination Process) Phase II

PG&E reported that, following its benchmarking, the NRC said that DCPP had one of the best PRA Groups in the industry. The DCPP PRA Group discontinued use of ALTRAN Corp., a PRA consultant, for support of PRA activities. They use PL&G, another PRA consultant, to assist with any questions involving the PRA model. Future plans call for evaluating the priority of the next PRA-AOT application for the second half of 2001 (diesel generators or one ECCS SSC). The development of a Shutdown & Transition model has been deferred to 2002.

It appears that DCPP has been successful in staffing and developing the PRA Group at the site. The PRA Group is also supportive of daily plant activities and has prepared themselves to work in the new NRC risk-informed era.

4.16.3 Conclusions

Overall, PG&E's risk assessment and risk management programs appear to be effective in supporting safe plant operation. The PRA Group has become pro-active and effective in supporting station decisions with risk-based analyses. The DCISC will continue to review risk management activities as part of its normal activities.

4.17 Safety Conscious Work Environment

4.17.1 Overview and Previous Period Activities

The safety conscious work environment supports employees with such programs as the (non-confidential) Action Request (AR) problem-documentation process, and the Employee Concerns Program (ECP), whereby any employee may report a safety concern with anonymity and confidentiality, if desired and the non-confidential Differing Professional Opinion Program. There have been two major surveys, by the Martin-Sigmon organization (1997) and Synergy, Inc (September/October, 1998, November 1999 (mini-survey), and November 2000). Their findings and recommendations, discussed below, were accepted and implemented.

- In April 1996, a PG&E Operations shift foreman contacted a member of the DCISC about a number of safety-related concerns, already raised with PG&E. After several discussions with the employee, and a review of PG&E's investigations, the DCISC determined that PG&E had performed a satisfactory investigation.

- PG&E engaged Martin-Sigmon Consulting Services in February 1997 to conduct an independent assessment of PG&E's Employee Concerns Program (ECP) and the safety culture in Nuclear Power Generation (NPG).

- The number of concerns raised by employees with the ECP remained fairly constant in 1997 (36) and 1998 (37). The number of NRC allegations also remained consistent: 1996 had 21, 1997 had 18, and 1998 had 22. In 1999, there was a significant decrease in both DCPP (13) and NRC (3) referrals. NRC referred one concern back to DCPP to investigate. None of these concerns raised significant safety issues.

- Synergy, Inc assessed the plant's safety culture in September and October 1998. It concluded that the nuclear safety culture at DCPP is adequate-to-good, and that DCPP personnel are very willing to identify potential nuclear safety issues and concern.

- Synergy recommended specific actions by management for further improvement of the safety culture, as follows: Employee trust and confidence in management appeared to be generally lower than desired site-wide, with employees

perceiving a lack of openness by DCPP management to input from the workforce. Some personnel perceived a chilling effect due to the relief from duty of the concerned Operations shift foreman. Employees were also concerned about future decisions regarding continued operation of DCPP. Synergy suggested specific actions to improve trust in management, management and supervisory practices, new leadership in operations and in maintenance, and the establishment of a 5-year business plan.

- The results of the 1999 Synergy Mini-Survey results were as follows:
  - FH&S and NSSS Maintenance showed very significant improvement in almost all areas.
  - RP and Operations showed significant improvement in Nuclear Safety Culture and Safety Conscious Work Environment
  - Chemistry showed significant decline in almost all areas

- DCPP established a site on their intranet website for updates on the ECP program, findings of the Synergy cultural surveys and non-sensitive results of ECP Investigations. ECP members are listed and can be readily contacted by e-mail and phone.

- "Managing in NPG" is an effort to improve the safety conscious culture, training managers to be more open to employee input. First-line supervisors have been meeting monthly since December 1999, with plans to eventually include the entire plant. Evaluation questionnaires are used at every meeting to gauge progress and satisfaction.

- PG&E established "Centers of Excellence" for process support of the Asset Teams, to facilitate cost reductions, safety, and communication. The Asset Teams are streamlining procedures with workers' inputs in the process.

- PG&E conducted separate training classes for supervisors on responding effectively to employee concerns, and for other employees, to help them be more effective when raising concerns to their supervisors.

- The inclusion of the first-line supervisors and then, the entire plant was a positive move in the safety conscious culture change, and appears to be going along as planned.

- PG&E added 8 new classes for maintenance supervisors to facilitate the implementation of the cultural transition. "Process Partners" assigns individuals with experience and expertise in both maintenance issues and team process to assist the Team Leaders in implementing the Work Control Process and the "We culture."

The DCISC has found DCPP programs to provide and support a safety conscious work environment acceptable in previous periods.

4.17.2 Current Period Activities

Employee Concerns Program

The DCISC met with representatives of the Employee Concerns Program (ECP). They reported that the number of formal concerns raised within that Program has decreased from previous years. Employees continue to utilize the ECP for informal contacts, which are handled through discussion, intervention or mediation. On the other hand, the number of NRC allegations from all sources concerning DCPP is higher than in previous years.

While the ECP appears to be satisfactory, it is noted that there has been an increase in the numbers of allegations, which are approximately double the average of other plants in the region. The DCISC will follow-up on this area.

Organization Development Program

The DCISC reviewed the Organization Development (OD) Program. The PG&E expectation for OD has been redefined, to deal with interpersonal skills in the organization, including training in facilitation and communication. OD personnel are doing one-on-one coaching, as well gradually replacing the outside consultants in facilitating the cultural shift.

Leadership development is continuously being assessed. The 360 feedback has been used by officers, managers, and directors, to determine leadership behaviors, important in the move from function to process management. It is tied to Performance Incentive Program goals for senior management, and it is now being introduced to the supervisors. The Synergy Survey will reflect their level of achievement.

Operations has been included in the General Supervisor Training, providing an opportunity to better integrate them into the plant. The next step is to move these skills to craft personnel. The new work groups, or Centers of Excellence, are meeting regularly, and plan on expanding their scope of synergy.

There are regular "connection events" where different employees are invited on rotation to have a "brown bag" lunch with an officer or manager, to discuss the culture change. With dwindling numbers of attendees, PG&E is considering less formal interactions, with the managers being available for informal conversation in the lunch area.

Double (function and process) budgeting began on July 1, 2000. On January 1, 2001, both function and process will give way to process only.

Regarding staffing, with baby boomers retiring, the Plant will be running into large attrition through retirement, making retention and recruitment a high priority. It takes 3-5 years to get new personnel fully effective in their jobs. All nuclear plants have the same issue, so there is more competition for skilled workers. The new hires will impact the culture, with more demand for increased attention to pay, job flexibility, and challenging of the "command and control" management style. **The DCISC believes that PG&E should take the initiative in dealing with staffing issues by developing a long-term staffing plan.**

There are major positive shifts going on at DCPP, in keeping with the times and other businesses. Based on a well-accepted model by organizational transformation guru, Michael Hammer, this culture change is on par with other plants and with other industries implementing similar changes in a regulated environment.

Effects of Reengineering

Reengineering is a term coined by organizational consultants and authors Michael Hammer and James Lampy. It refers to the fundamental rethinking and radical redesign of business that is directed toward desired outcome. Unlike traditional organizational structure, which is more focused on tasks, jobs, people, or structure, the focus is on process. From that perspective emerges a new range of options for improving performance in the areas of quality, responsiveness and cost-

effectiveness. The organization not only looks at how it actually performs its processes to achieve its goals, but also how the process can be improved.

Work units change from functional to process teams; jobs change from simple tasks to multidimensional; employee roles change from controlled to empowered; performance measures change from activity to results; advancement criteria change from performance to ability; executives change from scorekeepers to leaders.

At DCPP the Centers of Excellence are supports for the various processes which are now the focus. The various new programs reflect and encourage this transition from the prior, more traditional organizational structure.

2001 Culture Transition Strategies

The Culture Transition Initiative was developed following concerns identified by the 1998 Synergy Safety Culture Survey. The Initiative is being taken to improve trust in management and create an improved safety conscious workforce, based on developing the following five behaviors:

1. Understand others
2. Embrace feedback
3. Provide face time
4. Develop and support common goals
5. Create a positive work environment

Officers, directors and managers have demonstrated a strong understanding of the new culture and efforts are being made to fully implement the process with the supervisors. This is the first year that individual contributors, including bargaining unit employees, will be participating in creating a new culture at DCPP. An important part of PG&E's strategy involves gaining acceptance from the bargaining unit members of the cultural changes being implemented at DCPP.

The compensation, positive discipline, and exit interview programs are examples of DCPP programs which have evolved and been aligned to support the cultural transformation process. For details, see the minutes of public meeting February 2001 and July 2000 Fact-Finding meeting (Volume II, Exhibits B.6 D.1, Section 3.5).

Results of December 2000 Culture Survey

The DCISC met with the Supervisor of Employee Concerns Program on April 18, 2001, and May 2, 2001. The purpose was to review the results of the 2000 Comprehensive Safety Cultural Assessment that was conducted in November/December, 2000 on the plant-wide safety culture. The survey, which also included 40 employee interviews, was designed to provide comparison to the previous survey, conducted in 1998.

SYNERGY, the company designing and analyzing the survey, also compared the results of the DCPP survey to 12 other nuclear plants in their database to provide an industry ranking. The 2000 survey response by the employees showed improvement over the 1998 survey (80.4 % Vs 62%).

The first plant-wide culture survey was conducted in 1998, and the DCISC reviewed its results at its January 21-22, 1999 Fact-finding meeting (Reference 6.7), and its January 28-29, 1999 Public Meeting (Reference 6.8).

The following overall results were reported:

- Overall, the DCPP nuclear safety culture (NSC) was rated "good to very good" and was perceived as having improved (+6%) since the 1998 survey.
- The safety conscious work environment was rated "very good to excellent" and was perceived to have improved notably (+7%).
- The Employee Concerns Program (ECP) was rated "adequate to good" and was perceived to have improved moderately (+4%).

It was noted that seven of the eight previous "targeted organizations" showed significant (>10%) or notable (>5%) improvement. One of the eight, Shift Operations, remained steady, except for a decline in the Employee Concerns Program rating. PG&E and Synergy believe the decline was likely due to lingering concerns about the Operations Shift Foreman who was removed from duty in 1998.

On the other hand, the summary of results on "clearing the air on removal from duty of the Shift Foreman" showed that it appears that most Operations personnel have put this matter behind them. There remains a small but vocal minority who apparently have not, being concerned specifically about issues related to his employee concerns and to the related Department of Labor report. It appears that most of the lingering bad

feelings are directed at off-site senior management as opposed to on-site management.

PG&E's actions following the survey are as follows:

- Develop an action plan and communications schedule with the Culture Steering Team and management
- Communicate the results and action plans to plant management
- Communicate the results and action plans to employees via e-mail and site-wide meetings
- Following Outage 2R10, Managers will hold section-wide meetings to discuss results and section action plans

The 2000 Synergy Culture Survey results appeared positive for DCPP with perceived improvements in all but a few areas. PG&E is developing an action and communications plan to address results and issues.

The DCISC will continue to monitor the implementation of this plan. The DCISC believes that PG&E should take actions necessary to improve the employees' perception of the Employee Concerns Program.

New Behavioral Observation Based Safety Process (BOBS)

In response to an injury rate above the goal, DCPP instituted a new program to track incidents, identify barriers to working safely and institute continuous improvement in work processes and practices. Details can be found in the December 13, 2000 and June 19, 2001 fact-finding meetings. Called BOBS (Behavioral Observation Based Safety Process), the program involves many levels of the organization, with focus on the relationship between various elements: person, conditions, and behavior.

Using a specific checklist, trained craft people observe workers in the field and give immediate feedback regarding issues of job safety. BOBS is currently system-wide in maintenance, and will expand plant-wide, as at Comanche Peak, which is a flagship for the program. Craft people were sent there to benchmark and learn the program.

Summary of BOBS:

- Steering committee looks for barriers
- Peer observation of work by craft

- Immediate feedback
- Implementation of solutions

Results based on the program's feedback have been as follows:

1. Increase in personal protective equipment use, due to increased enforcement and greater availability.

2. With the aging work force, increased vulnerability to injury has become an issue, with risk factors that include slower reaction time, decreased flexibility, and longer healing time for injuries. As a result, precautionary measures have been implemented.

3. During the recent outage, the safety report data correlated well with minor injury reports (pink slips) produced by BOBS. As a result, they are now working on refining and reinforcing the process.

4. Motivation is high, with the workers gaining a passion for safety, with resulting increased savings and efficiency. There is an increased sense of control and empowerment, increased individual and "community" responsibility, and an increase in morale.

5. The program has helped increase safety awareness at all levels, and is supported by the overall culture. Rather than being left to the supervisor, the safety culture is pushed down to the individual contributor level. It affects not only first line supervisors, and crafts workers, but contractors as well.

The Behavioral Observation Based Safety Process appears to provide a major cultural change, and provides a positive force in increasing work safety. Even though its focus is on safety, it is teaching craft many of the concepts and skills involved in the "We culture", with resulting impact in other areas such as communication. It is an excellent way of enrolling craft in the "We Culture" not just from the top down but from the bottom up.

4.17.3 Conclusions and Recommendations

PG&E's actions to improve its safety conscious work environment appear satisfactory. A cultural survey concluded that the safety culture was satisfactory and about average for

the industry; however, some employees are reluctant to bring concerns to management. PG&E has an action plan to address these findings, and the DCISC will monitor these actions.

R01-6 It is recommended that PG&E take the initiative in dealing with staffing issues by developing a long-term staffing plan.

R01-7 It is recommended that PG&E take actions necessary to improve the employees' perception of the Employee Concerns Program.

4.18 Steam Generator Performance

4.18.1 Overview and Previous Activities

Steam generator (SG) tube reliability is important to operational safety, because the SG tubes are part of the Reactor Coolant System (RCS) boundary. The nuclear industry has experienced substantial problems with a variety of failure mechanisms, notably tube stress corrosion cracking.

The DCPP SGs have experienced fewer tube cracks than most of the industry's SGs. This has been primarily a result of delay in the startup of the DCPP which allowed PG&E to take advantage of the industry experience with respect to water chemistry control, heat treatment of tube bends and shot peening of tube expansion areas.

The DCISC reviews steam generator performance following each refueling outage.

Steam Generator Tube Inspections in Outage 1R9

The DCISC reviewed the results of the 1R9 outage inspections of steam generator (SG) tubes. Overall, 461 tubes, or 3.4% of Unit 1 SG tubes have been plugged. This is well below the 15% technical specification limit, which would require operational limits due to safety analyses. For U-1 the leading cause of tube plugging has been PWSCC, resulting in 234 tubes plugged through 1R8. ODSCC has resulted in 60 tubes plugged.

Outage 2R9 Steam Generator Inspection Results

There were 67 tubes plugged in 2R9. Applying the ARC for Unit 2 permitted 138 previously plugged tubes to be reclaimed and saved 117 tubes from being plugged. The result was a net return of 71 tubes back to service. The total number of plugged tubes in Unit 2 is 365 or 2.7%. The leading cause of plugging in Unit 2 is PWSCC with 251; the second leading cause, ODSCC, with 46 tubes.

During previous periods, the DCPP steam generators appeared to be in good health and well within safety limits. PG&E's monitoring plan appeared satisfactory.

4.18.2 Current Period Activities

The principal degradation mechanisms affecting DCPP Steam Generators (SGs) include: outside diameter stress corrosion cracking (ODSCC) and primary water stress corrosion cracking (PWSCC)at the hot legs, at the tube sheets and at dented intersection and non-dented intersection; U-bend PWSCC; anti-vibration bar(AVB)wear scarring; fatigue and cold leg thinning (CLT). The degradation requires regular tube inspections during refueling outages. During the current reporting period, the DCISC reviewed the results of the 1R10 and 2R10 refueling outage SG tube inspections.

Outage 1R10 SG Inspection Results

During 1R10, a standard inspection of the SGs was performed, which took approximately ten days. The inspection included (1) inspecting 100% of the full length of the SG tubes with a bobbin; a detailed rotating coil +point probe inspection of 100% of the U-bend areas and the short radius U-bends in Rows 1 and 2; (2) 100% inspection of the hot leg top of the tubesheet; (3) 100% inspection of the hot leg dented tube support plate (TSP) intersections in critical areas, plus 20% in the buffer zone; and (4) bobbin inspections at TSP intersections.

Tube degradation was identified during 1R10 inspections of SGs 1-1, 1-2, 1-3 and 1-4. A total of 108 tubes were plugged and 43 were unplugged, for a net total of 65 tubes plugged. The overall percentage of tubes plugged for the Unit-1 SGs is now 3.9%, with a limit of 15% in each SG and 15% overall. PG&E does not expect U-1's SGs to approach the 15% limit before 2005-2006; however, a plugged tube percentage of 10% or greater would begin to have an impact on generation performance for U-1. This is due to Reactor Coolant System (RCS) flow and change in heat transfer area, requiring all turbine valves to be wide open, impacting MW generation. At 12% plugged in any one SG, PG&E believes sleeving the tubes may be necessary.

SG 1-2 has the highest percentage of plugged tubes at 8.8%. During 1R10, there were 852 tubes, which did not require plugging due to application of sizing techniques and the ARC. SGs 1-1 and 1-2 were manufactured by a different manufacturer than 1-3 and 1-4, which is believed to explain, to a great extent, the differences in the inspection results.

The Indian Point-2 U-bend tube failure experience was caused by flow slot hour-glassing due to significant denting at the upper TSP. This caused high stresses in the U-bend apex, leading to axial PWSCC. Early detection was not made during inspections, as the crack signal was masked by noise due to deposits. PG&E has implemented lessons-learned from the Indian Point-2 experience, including: (1) establishing data quality guidelines which resulted in a significant number of U-bend retests using higher frequency probes and smaller diameter probes; (2) preventively plugging 23 tubes due to unacceptable data quality; and (3) plugging 4 tubes due to small circumferential indications near U-bend tangents. One tube with circumferential indications was tested in place to 4000 pounds with no resulting tube leakage.

PG&E plans to obtain NRC approval for a revised ARC to allow tubes with >40% axial PWSCC to remain in service in time to implement this ARC for one cycle during 2R10. PG&E will also seek NRC approval of reduced ARC exclusion zone at wedge locations and will request extension of W* ARC for another two cycles. Chemical cleaning is being proposed during 1R11 and 2R11 to remove scale and reduce the potential for free span ODSCC. Sleeving and electro-sleeving options are being investigated for eventual licensing.

It appears that SG tube plugging does not have any impact on the safety or generation of the plant at this time. The DCISC will continue to review SG tube inspections and results after each refueling outage.

Outage 2R10 SG Inspection Results

Inspection results for Outage 2R10, which concluded in May 2001, will be reviewed in the next reporting period.

4.18.3 Conclusions

PG&E's Steam Generator (SG) program appears effective. PG&E now expects that the DCPP steam generators will last the currently-licensed life of the plant, if the NRC approves the PG&E License Amendment Requests for Alternate Repair Criteria; however, economic considerations may call for early steam generator replacement. The DCISC will continue to closely monitor DCPP steam generator performance.

4.19 System and Equipment Performance/Problems

4.19.1 Overview and Previous Activities

During past periods, the DCISC had reviewed the performance and problems of some DCPP equipment and systems as well as the actions taken by PG&E to resolve them. The problems reviewed include:

- Reactor Baffle Jetting
- Vessel Head Control Rod Drive Penetrations
- Failure in Welded-Steel Moment Frames
- Water in Auxiliary Feed Water (AFW) Pump Governor
- Centrifugal Charging Pump (CCP) Orifice Performance
- Cracks in Piping Connected to the RCS
- Status of the MOV Program
- Depletion of Battery Power Supply
- Containment Liner Corrosion
- Component Cooling Water (CCW) Temperature Increase
- Single Failure Vulnerability
- Impact of Ventilation System on I&C
- Relief for Reactor Vessel Inspection
- Containment Sump Screen Replacement
- Status of the Y2K Problem at DCPP
- Intake Area Concrete Delamination
- Reactor Coolant Flow Measurement Instrumentation
- Security Computer Problems
- Seismic Gap Problems
- Reactor Coolant Pump 1-3 Leakage and Repair
- Systems reviewed with the System Engineer:
  - Emergency Electrical Power System
  - Spent Fuel Cooling System
  - Fire Protection Water System
  - Security System
  - Emergency Power System

During the previous period (July 1, 1999 - June 30, 2000), the DCISC reviewed the following items:

- Seismic Adequacy of Emergency Diesel Generator Walls
- Use of Potentially-Unqualified Valve

- CFCU Motor Cracks
- SOER 98-02 Circuit Breaker Reliability
- Year 2000 Update
- Status of NRC GL 96-05 - Periodic Verification of Design Basis Capability of Safety Related MOVs
- Program to Develop and Track Plant System Health and System Long-Range Plans
- OE 97-01 - Acceptability of Continued Operation with Containment Piping Penetration Overpressure Concerns
- Turbine Blade Cracking
- Reactor Vessel Head Penetration Cracks
- Containment Debris, Sump Issues and RHR Flow Evaluations
- ISI of Containment Structures
- Security Computer Problems & New Computer System
- Control Board Degraded Lamp Sockets

System reviews with System Engineers performed during the prior period were as follows:

- Auxiliary Salt Water (ASW) System
- Main Steam System
- Emergency Diesel Generator (EDG) System

In previous periods PG&E's identification and correction of system and equipment problems has been satisfactory. Their management of plant systems using the System Engineer ownership concept has appeared effective.

4.19.2 Current Period Activities

The DCISC reviewed the following system and equipment areas during the current reporting period:

System Summary Health Reports and Long-Term Plans

The DCISC reviewed DCPP system health indicators. System Engineers have a system notebook for use in monitoring the health of that system. The notebook includes:

1) Walkdowns
2) Trending
3) Jumpers
4) POAs/OEs
5) Maintenance Rule

6) Long Term Plans
7) Predictive Maintenance
8) ARs/AEs
9) Upcoming Maintenance Activities

DCPP had just started using a System Summary Health Report on two systems: 125/250 VDC System and Diesel Generator/Fuel Oil System. This summary is currently being expanded to other systems. DCPP planned to develop a method in 2000 to include Operations and Maintenance in the review of system performance.

The System Long Term Plan was a new program, which included issues and budgeting. DCPP had selected four systems as a pilot project and plan to have these completed in 1999. Each System Engineer develops a Long Term Plan for the system and will be reviewed by MOE (Maintenance, Operations & Engineering). The plan is sent to Estimating and Budgeting and then reviewed and approved by ARRT (Action Request Review Team). In the future MOE will make recommendations through the normal budgeting process.

Five systems plans were initially completed. The System Engineers had prepared 15 System Long Term Plans, obtained Maintenance and Operations review and input, and completed the plans by the end of 2000.

The DCISC regularly reviews systems with the System Engineer, and the review includes the System Health Report and Long Term Plans. PG&E considers the Long Term Plans a key element of the Aging Management Program.

Turbine Blade Cracking

DCPP experienced cracks appearing in some blades of the low pressure turbines. PG&E believed that the cracks were not a threat to nuclear safety from a possible thrown blade becoming a missile if ejected through the turbine casing.

From an analytical standpoint, the ejection of small pieces such as individual blades lack the energy required to penetrate the casing and to be a hazard to a nuclear safety system. This is based on a Westinghouse (turbine manufacturer) analysis. This is supported by actual cases in which similar blades have separated in similar turbines without penetrating the casing. These cases include separations of one-to-five blades.

Reactor Pressure Vessel Integrity

DCPP Technical Specification (TS) 5.6.6 is the licensing requirement governing reactor vessel lifetime. Extended exposure to neutrons changes the toughness of steel, raising strength but increasing the brittleness of the material. Steel exhibits a rise in the temperature at which its toughness properties change from "brittle" at low temperature to tough or ductile above this transition temperature. The TS requires that vessel steel remain in a tough condition at pressure, not only for operation but for pressure testing and early pressurization at startup when the vessel has not yet reached full operating temperature. Another limiting condition applies to a safety-related hypothetical event in which the maximum injection of emergency coolant takes place. These requirements are believed to be highly conservative, but significant uncertainties still exist in material behavior, neutron dosimetry, variation of material condition throughout the vessel wall, mechanical testing and fracture mechanics, coolant injection rates and temperature effects, and the low probability of the limiting event.

Vessel material data is obtained from surveillance capsules containing specimens that can be tested to measure toughness with a number of years of lead-time become available. DCPP has its own surveillance capsules in place in the vessel, and the first two (Unit 1) and three (Unit 2) have already been removed and tested. DCPP also has some EPRI research capsules installed for irradiation.

DCPP continues to comply with its Technical Specification Limiting Conditions for Operation (LCO) for the reactor vessel, and its internal compliance program appears to be in order and under active attention by the plant staff.

Intake Structure Inspection & Results

Diablo Canyon's Intake Structure/Circulating Water Conduits (CWC) surveillance program, initiated in 1991 for Units 1 and 2, monitors, restores and preserves the structural integrity of the reinforced concrete structures. The inspections provide data for trending the degradation of the structures as well as providing data on the concrete condition, assessing corrosive degradation and furnishing engineering properties of the concrete to assist in the development of future inspection criteria and repair priorities. The surveillance program is

directed by ES Civil Engineering and performed by Technical and Ecological Services. Non-submerged areas of the structures are inspected annually and submerged areas (dewatered during refueling outages) are inspected once per fuel cycle based on a sampling program.

As a result of an aggressive surveillance and repair program, the quantity of the delaminations and degraded concrete at the intake structure and CWCs have decreased significantly since the inception of the programs in 1991. The surveillance and repair programs have effectively controlled the effects of the harsh coastal environment and allowed the structures to perform their intended functions. The structures are currently in good condition and are classified as (a)(2) status under the Maintenance Rule Program. The overall condition of the intake structure and the CWCs is classified as good. It appears that the aggressive surveillance and repair program implemented by DCPP has ensured that the design basis is maintained.

V.C. Summer Piping Concerns

A 4-inch circumferential crack was discovered in October 2000 at the Summer Nuclear Station in the A loop reactor coolant system hot leg piping. Further inspection and testing have confirmed axial cracking and inner wall cracking as well.

This is the first discovery of a significant crack in PWR RCS piping. Early investigations of this cracking revealed that there may well be unique circumstances which explain why this cracking occurred. The crack is at the pipe-to-nozzle weld joint. This particular joint was field-welded, and during the welding, inspection revealed improper bonding. A large part of the weld had to be chipped out and replaced. It is likely that the techniques used for positioning the pipe during this process resulted in residual stresses and perhaps other weld integrity problems.

Root cause analyses have not yet been completed. NRC has issued an information notice regarding the cracking but has not called for any actions by licensees. During the DCPP 1R10 outage, an experienced staff engineer from the In-Service Inspection group visually examined primary piping to nozzle weld joint regions. No indications of cracking or leakage were found.

Security System Computer Performance and Long Term Plan

DCPP replaced the main frame security computer in January 2000 and experienced some startup problems; however, the overall system appears satisfactory. At the request of NQS, Security has begun implementing the Corrective Action Program by generating ARs to identify problems and track their resolution; however, their program to trend security equipment problems was not being implementing properly. They presently do not have a long-term plan for security equipment, but intend to develop one.

Security has performed four self-assessments this year to identify issues and correct them. They have implemented a supervisor observation program for each supervisor to perform once each month. Security Services has not formalized a Human Performance Program like other departments. The Director is on the DCPP Human Performance Steering Committee. Security is considering doing more in improving human performance and has started trending information on how security personnel impact security events.

Security has lagged behind other departments at the plant in implementing the Corrective Action Program, Human Performance Program, and System Long Term Plan Program. The DCISC believes that PG&E should determine the extent to which these normally used plant programs (and possibly others) apply to Security Services and develop an implementation plan.

RCS Hot Leg Flow Measurement

The DCISC reviewed an update on Reactor Coolant System (RCS) flow measurement. This topic involved the development of a new analytical model for the existing flow instrumentation to permit increased operating margins, specifically full power operation with the Technical Specification 15% steam generator tube plugging limit. Several other nuclear plants had obtained NRC approval to use the new methodology, and DCPP was preparing a new submittal to NRC. NRC had not approved a previous DCPP submittal because of hot leg thermal streaming, which could adversely affect the readings.

DCPP is sending operating data to Westinghouse for the development and substantiation of a DCPP model; however, there was no money budgeted for 2001 for the development. Revised analysis and a Westinghouse topical report are planned for 2002.

Other plants have made submittals to NRC and have received approval. Sequoyah utilized 10CFR50.59 for the change, but NRC is not accepting this approach any longer. South Texas Plant received approval but is not using the model. McGuire Nuclear Station uses an approved methodology but from a different model. DCPP had considered an ultrasonic flow detector, but it is expensive and requires more extensive calibration.

Apparently, DCPP will not take any actions on the new RCS flow measurement methodology until 2002, due to budget considerations.

DCPP is proceeding slowly on using the new Reactor Coolant System hot leg flow measurement methodology due to budget considerations; however, there is no adverse safety impact and no urgency until steam generator plugging gets close to the 15% limit. With the long time, which has passed since this program was started, and the mixed results with similar projects in the industry, PG&E may wish to re-examine its plans.

<u>The DCISC reviewed the following systems with their respective System Engineers as part of its ongoing system reviews:</u>

Control Room Ventilation System

The CRVS functions to provide a habitable environment in the Control Room (CR) to allow operators to remotely manipulate systems, structures and components to shut down the reactor and maintain it in a safe shutdown condition. The CRVS operates during normal operation and off-normal and accident modes. Units 1 and 2 contain separate and independent CRVS. The safety-related system is designed to enter one of the following modes, depending on plant conditions:

- Mode 1: Normal Operation
- Mode 2: Smoke Removal
- Mode 3: Full Recirculation (when the other unit goes into Mode 4)
- Mode 4: Accident

Activation into a particular mode is by a Safety Injection Signal, radiation monitor signal or manually. Manual activation would occur, for example, upon smoke generation from a fire. In normal operation supply air is pulled from the normal air intakes mounted on the ends of the turbine

building, filtered and conditioned prior to being admitted to the CR. In Mode 4 the outside air intake is changed to a remote intake, and the system activates heaters and high efficiency particulate & charcoal filters to remove radioactive or other contaminates which might be released within or outside the plant in an accident. The system is designed to maintain a slightly positive pressure in the CR to prevent unfiltered in-leakage. Portions of the system are safety-related, i.e., necessary to function during accidents.

The DCISC reviewed Maintenance Rule Performance Reports on the CRVS. The results for the CRVS appeared satisfactory.

The System Engineer led the DCISC on a walkdown of the system using the System Engineer Walkdown Checklist and pointing out significant system features and components. The physical system observed appeared satisfactory.

The DCPP Control Room Ventilation System appeared satisfactory, and the System Engineer was knowledgeable about the system.

Low Level Liquid & Solid Radwaste Handling Systems

The liquid radwaste system included the Chemical and Volume Control System, Spent Fuel Pool Cleanup System, and Boron Recycle System. System inputs, processing equipment, alignment, and discharges were described. Annual radioactive waste discharges have been a small fraction of NRC limits.

The Solid Radwaste System included Spent Resin Transfer, Spent Filter Handling, Mobile Vendor Packaging, and Dry Active Waste Packaging. PG&E has on-site storage space for about 500 boxes of Class A waste and has contracted with Envirocare Disposal to dispose of some solid waste. DCPP plans to dispose of Class B & C waste at Barnwell, SC as long as that site is open and use Envirocare. The plant has about 18 years' storage space on-site.

Auxiliary Saltwater System

The ASW System supplies cooling water to the Component Cooling Water heat exchangers from the ultimate heat sink (Pacific Ocean) in order to reject heat from primary plant systems.

The only significant active components are the redundant Auxiliary Salt Water Pumps located in the Intake Structure.

There are two ASW Pumps for each of the two redundant trains of the system. Each pump is located in a watertight compartment to prevent water damage to the motor as a result of flooding or tsunami. Watertight doors assure that flooding of one compartment does not affect the opposite train operability, thus maintaining safe shutdown capability. The System Engineer reported that an ASW Pump could be replaced on-line, if necessary, in about 60 hours as compared to the 72-hour Technical Specification allowed outage time.

The ASW system long-term plan was developed by the system engineer for system improvements, upgrades, modifications or major repairs/maintenance to assure long-term reliability. The plans for ASW appeared satisfactory.

The DCISC team reviewed ASW system health, i.e., performance indicators, which were based on the Maintenance Rule Program. One component, a CCW heat exchanger, was in Alert status due to having a higher rate of fouling than others. Also, some ASW vacuum breakers had been sticking but had been repaired. Several years ago, ASW underground piping near the intake structure had experienced severe corrosion and was replaced. The DCISC had monitored this replacement at the time and had found it satisfactory. All indicators showed that ASW had been operating satisfactorily.

The DCISC toured of the accessible portions of the ASW System both at the intake structure and in the plant, observing items normally inspected on the system engineer monthly walkdown and inspection. The system appeared in good order, and the plant appeared in good materiel condition.

The Auxiliary Salt Water System, DCPP's connection to its Ultimate Heat Sink (the Pacific Ocean), appeared to be in good operating and readiness condition. The System Engineer appeared to be knowledgeable and up-to-date on the system design, performance and health.

System Review - Component Cooling Water (CCW)

The DCISC reviewed the CCW System Health Report for the first quarter of 2001. The System Health Report lists information on:

- Performance Indicators
- Performance Indicators Discussion
- SSC's in Maintenance Rule (MR) a(1) Status

- Scheduled Major Maintenance or Modifications
- System Long Term Plan's (LTP's) Requested or Approved for Current Year
- NRC Issues/Self-Assessments/Engineering Analysis

PG&E reported that the overall condition of CCW system is good, based on the System Health Report.

The System Notebooks document the monthly formal system walk downs, the weekly tour (looking at the plant) and the LTP. The System Engineer reviewed the LTP for this system. The plan consists of:

1) LTP Summary, which lists the item number, budget year, approximate cost, item description, status and date of status.
2) Appendix A - Detailed information on each item.
3) Appendix B - Excluded/Declined/Completed LTP Items

All System Engineers are to have a System Health Report ready for each system before start of 2R10. The System Engineer will then show these reports to Operations Department to get them to use it. The System Engineer reported that the System Health Reports are presently being used by the Engineering Department but do not get much use by the other Departments.

It appears that the System Health Reports and the Long Term Plans are useful in determining the condition of the system and planning long-term maintenance or modification on the system. From information reviewed on the System Health Report, the Component Cooling Water System appears to be in good condition.

The DCISC believes that PG&E should develop a plan for how these reports should be utilized by Operations and Maintenance.

4.19.3 Conclusions and Recommendations

PG&E appears to have taken appropriate action in addressing system and equipment performance issues; however as noted in several instances, the DCISC believes additional work is needed and has provided recommendations accordingly. The DCISC will continue to review this area as part of its normal activities.

R01-8 It is recommended that PG&E apply the normally used Corrective Action Program, Human Performance Program, and System Long Term Plan Program (and possibly others) to Security Services and develop an implementation plan.

R01-9 It is recommended that PG&E develop a plan for how System Health Reports and Long Term Plans should be utilized by Operations and Maintenance.

4.20 Training and Development Programs

4.20.1 Overview and Previous Period Activities

The DCISC has looked at the following development, culture change, and improvement programs at DCPP during the past reporting periods:

- Facilitative Leadership program
- Outdoor day-long team-building program
- Operations Personnel Training - much-needed training in building communication skills, besides technical competencies, and bringing DCPP up to current high standards
- Cultural Strategy Training - to help clarify DCPP's current culture, as reflected in part by the Synergy Report, and design one that is optimal, particularly for the new competitive environment
- Operator Training Program Self-Assessment - -The DCPP self-assessment of actions on areas-for-improvement from the INPO operator training program accreditation appeared to be sufficiently responsive.
- Observation of "Managing for Nuclear Safety Revisited" training - informative and on-target in preparing supervisors to effectively receive and respond to employee concerns
- "Observation and Intervention Skills" Training - to help operations supervisors better observe operators at work, assess their performance, intervene when necessary, and reinforce good behavior.
- Asset Team Support - Human Performance support of the asset teams had dwindled as lid the relationship with the SPARK team. The DCISC believed that these coach-the-coaches meetings should be reinstated.
- Supervisory Leadership Meeting - Follow-up to the previous Cultural Strategy training with upper management, now geared to supervisors
- Observation Operator Re-qualification Class - to review and be able to trouble shoot failures in the emergency diesel generator
- INPO Accredited Training Programs - There are twelve INPO-accredited training programs, which are currently under the purview of the Learning Services organization. For details, refer to minutes of Sept public meeting. Six of these accredited training programs focus solely on the Operations organization: Non-licensed Operator, Reactor Operator, Senior Reactor Operator, Shift Manager, Shift Technical

Advisor, and Operations Continuing Training. Two of the INPO-accredited programs serve both the Chemistry and Radiation Protection organizations, as their personnel are multi-functional. INPO-accredited programs are also focused on Mechanical Maintenance, Maintenance Supervisor, and Engineering Support.

The DCISC has found that the DCPP training and development programs acceptable in previous periods.

4.20.2 Current Period Activities

Observe Shift Technical Advisor Training Class

The purpose of the training was to present the knowledge necessary for STA-qualified individuals to perform Plant Engineering Procedure PEP M-98A used to calculate the feedwater nozzle-fouling factor and maximum expected electrical generation. The training lasted two hours for the five STAs (one per operating shift). The procedure had previously been implemented by Engineering Services during their normal day schedule but was being assigned to the STAs because of their 24-hour presence at the plant.

A student handout was provided which included pertinent drawings, theory and equations, equipment set-up, and other technical and procedural information. The instructor distributed photographs of clean and fouled nozzles. The instructor maintained good interaction with the class by asking questions and stimulating discussion. Following the classroom session, the STAs went into the plant and actually performed the procedure (not observed).

The Shift Technical Advisor qualification training in performance of the DCPP procedure for setting final feedwater nozzle venturi readings by ultrasonic crossflow appeared appropriate and effective. The instructor exhibited good knowledge of the subject and interacted well with the students.

Tracking Data Concerning the Accredited Training & Instructor Training Programs

The DCISC discussed with Maintenance Training and Chemistry/Radiation Training Instructors the various means

that are used to track data concerning the accredited training and instructor training programs.

There is a Senior Management Oversight Training Committee and each group has an oversight training committee. These committees meet quarterly or more often if necessary to review the status of performance, problems and actions taken for each of the accredited training programs.

A Performance Plan Review Report is prepared monthly for the accredited programs and quarterly for the instructor training program. The information for the Performance Plan Review Report is gathered by the instructors and sent to the Director of the line organization for approval. The report has an executive summary that lists 1) summary of the month's training, 2) the top 5 training program issues and 3) areas for improvement (and work in progress). The report also includes answers to a list of 10 questions (each question is worth a total of 10 points) on the overall performance of the training program for that period. Operations training programs must have a pass grade of 80% and the other training programs a pass grade of 70%.

The performance plans were reviewed for Instructor Training Program, Technical Maintenance, Mechanical Maintenance and Chemistry/Radiation Protection.

It appears that the method DCPP has for tracking the performance of the accredited training & instructor-training programs is comprehensive and involves both the training and line organizations. The DCISC will review the Performance Plan Review for the remaining of the accredited training programs in the fall of 2001 and all of the Performance Plan Reviews in 2002 to determine the status of the improvements that DCPP identifies.

4.20.3 Conclusions

The DCPP training and development programs appeared satisfactory, and the DCISC will continue to monitor them.

4.21 Strategic and Business Plans

4.21.1 Overview and Previous Activities

California Assembly Bill 1890, passed in 1996, legislated electric rate restructuring in California. With deregulation coming in the electric utility industry in California beginning in 1998, PG&E has been preparing for competition by realigning its organizations and rate structure and reducing costs of generating and delivering electricity. DCPP is following the corporate lead by doing its part in reducing costs and critically reviewing its ways of doing business.

PG&E hoped to reach its competitive position primarily through redesigning many of its processes to be more efficient and require fewer personnel. Twelve of the most significant processes have been scheduled for redesign. In addition, eight other initiatives, including Unit 1 uprating and Increasing Spent Fuel Storage, have been identified. Most of the efforts were completed by 2000 with some continuing into 2002.

PG&E has developed a DCPP Five Year Business Plan. The purpose of the plan was to be sure all departments' goals and plant goals match and have total alignment. Prior to the business plan, the plant and department goals and objectives did not have total alignment.

PG&E began discussions in July 1999 to form a Joint Utility Venture (JUV). The JUV was a potential venture with four other similar, well-run nuclear stations (Callaway, Wolf Creek, South Texas and Comanche Peak) to explore shared cost savings and increased industry influence through alliances and to ultimately decide whether to form a joint nuclear operating company (JNOC).

The name was changed to the Strategic Teaming and Resource Sharing (STARS) initiative. A STARS management structure was established and implementation teams would be created to begin on approved initiatives. New functional teams will be created to explore the next opportunities, and the Joint Nuclear Operating Company economic feasibility study will begin in 2001.

One priority remaining was to develop a culture supportive of the business changes. The so-called "We Culture", shaped by an outside consultant team, emphasizes ongoing communication and

feedback. The DCPP supervisors have been added to the ongoing process, and have been meeting regularly ever since.

In previous reporting periods PG&E's transition programs and activities appeared satisfactory with no apparent adverse effect on safety of operations.

4.21.2 Current Period Activities

DCISC reviewed Strategic and business Plans at four Fact-Finding Meetings (Volume II, Exhibit D.4, D.5, D.6,& D.8) and one DCISC Public Meetings (Volume II, Exhibit B.6) as described below.

Five Year Business Plan

The DCISC reviewed the Five-Year Business Plan at the December, 2000 Fact-Finding Meeting (Volume II, Exhibit D.4), and PG&E made a presentation on the Plan at the February, 2001 Public Meeting (Volume II, Exhibit B.6).

PG&E reported that their Five-Year Business Plan is a strategic performance plan, which identifies key focus areas and that the Plan is updated annually. They reviewed some of the major initiatives, past and future, which have or are expected to impact DCPP operations. These efforts should bring DCPP operating costs down to permit the plant to operate effectively in the competitive electric power market in California. The Cost Management Plan, Performance Plans and the Re-Engineering Program were integral parts of efforts to reduce the cost. These efforts were largely successful in reducing the costs and, given the present state of the market for electric power in California, there is no question that DCPP is a very competitive generating resource.

PG&E discussed the four separate strategies to facilitate the transition of DCPP to the new market environment. These include: 1) the STARS alliance formed with four other nuclear plants with very similar designs to DCPP and that a joint nuclear operating company may eventually emerge from the STARS alliance; 2) continuing the Process Focus for addressing re-engineering and cultural change efforts in terms of budget, costs, goals and organizing personnel to break down functional barriers; 3) continuing encouragement and development of cultural change within the DCPP organization; and 4) market development and creation of a strong market as that market

evolves.

PG&E reviewed and discussed the DCPP Performance Plan through 2004 and beyond, which defines PG&E's overall goals for the DCPP organization into safety, industry leadership, generation performance, financial performance, and human performance categories. For every overall goal established by the Performance Plan, there is a corresponding plan to functionally link that overall goal within the organization, and the implementation plans are organized by process or by Centers of Excellence concepts.

PG&E also intends to work with its STARS partners to meet long-term staffing requirements for the DCPP organization and plans are in place to secure, train and develop and maintain a workforce with the necessary skills required to continue operating DCPP.

It appears that the Five-Year Business Plan is helpful in aligning the department and plant goals and objectives. DCISC will review this plan at Fact-Finding Meetings after they are developed each year.

Strategic Teaming and Resource Sharing (STARS)

The DCISC received updates on the STARS Program at the December 2000 and May 2001 Fact-Finding Meetings (Volume II, Exhibit D.5 & D.8). STARS is an effort to consolidate the resources of five similar nuclear stations to achieve economies of scale and greater reduction of risk. The stations are Diablo Canyon, South Texas, Comanche Peak, Callaway and Wolf Creek.

Work in progress includes 1) Labor-Sharing Oversight; 2) Digital Control Systems Upgrades; 3) Refueling Services; 4) Fuel Services; 5) Common In-Processing; 6) Control Room Habitability; 7) Risk-Informed ISI Project; 8) Common Event Reporting Program; and 9) 10CFR50.59 Project.

The five Chief Nuclear Officers met in April 2001 and agreed on a collaborative document for moving forward with STARS. The venture has heard that both INPO and NRC are interested in considering dealing with the five stations "as one" to the degree possible. PG&E believed that all the shared initiatives were going well. In the financial area, use of common contracts appeared to be saving 7-10%; however, some vendors were wary due to existing separate contracts (e.g., turbine

maintenance). To date the STARS initiative has exceeded its cost savings goals (i.e., over $5 million at the end of 2000) mostly in the supply chain area. There has not been much opportunity for labor sharing during outages because of the similarity of schedules.

STARS stations will be looking more at operating, generation and service companies in 2001. A study will be performed to determine what value exists in this approach. In any event, STARS will continue as an alliance looking to share strengths. The participants will begin looking at pilot programs to determine how they can get the most out of intangibles.

The DCPP participation in the Strategic Teaming and Resource Sharing (STARS) appears to be continuing as planned, and there have been cost savings as expected. There does not appear to be any adverse impact on nuclear safety.

Transition Program to Prepare for Competition

DCISC reviewed the status of the Transition Program for the year 2000 at the December, 2000 Fact-Finding Meeting (Volume II, Exhibit D.5). The remaining action of the Transition Plan has been incorporated into DCPP Performance Plan or Center of Excellence (COE) Plans. There is a Performance Incentive Plan (PIP), and Performance goals are based on functional processes. Budgeting is based on the four Core Processes and COE. The four Core Processes are 1) Production; 2) Manage Plant Assets; 3) Supply Chain; and 4) Revenue Realization. The six Centers of Excellence are: 1) Engineering; 2) People Performance; 3) Business Support: 4) Loss Prevention; 5) Information Management; and 6) Maintain License.

All personnel are in one of the COEs and then loaned out to the Processes. The budget for the year 2000 was reviewed, as was the overall status of the DCPP Transition Plan. The status of each of the elements of the Transition Plan were discussed.

Original plans had some assumptions that are no longer valid and will be revisited. Staffing at DCPP is currently at 1257. Over all, the Transition Plan is largely complete.

It appears that DCPP has completed their efforts with the Transition Program and has the implementation well under way.

Performance Plans

The DCISC met with DCPP Personnel from the Business Support Group at the March, 2001 Fact-Finding Meeting (Volume II, Exhibit d.6) to follow up on an item from the February 2001 DCISC Public Meeting (Volume II, Exhibit B. 6) on DCPP performance plans. PG&E covered the high level strategic plan at the public meeting, and the DCISC was interested in the lower level implementing plans and the DCPP Performance Plan.

The overall DCPP Performance Plan contained results achieved in 2000 and those to be achieved in 2001 - 2004 (and beyond). The major areas of focus are 1) Safety; 2) Industry Leadership; 3) Generation Performance; 4) Financial Performance; and 5) People (Performance, Development, Sustain an Excellent Workforce, and Learning Organization).

The overall DCPP Performance Plan was broken down into nine process-based and Center-of-Excellence-based Performance Plans. This is a new breakdown for DCPP and a departure from the previous functional organization. These process plans contained process-specific actions and numerical measures for the period 2001-2004 in the categories of Safety, Industry Leadership, Generation Performance, Financial Performance and People. These strategies, measures and goals are aligned with the higher-level DCPP goals. Individual manager and contributor performance plans will be aligned with these goals. Thus, each employee should have a "line of sight" from his/her individual and team plans to the DCPP plan.

Nuclear safety was included in these plans in eight measures/goals. These were further specified in the process-based plan actions and measures.

The DCISC believes the hierarchy of DCPP performance plans represented an effective method of disseminating management expectations to the whole organization. Nuclear safety is appropriately addressed. The DCISC should follow up periodically to assess how effectively the plans are being implemented.

4.21.3 Conclusion

It appears that the Five-Year Business Plan is helpful in aligning the department and plant goals and objectives. Also, the hierarchy of DCPP performance plans

represented an effective method of disseminating management expectations to the whole organization. Nuclear safety was appropriately addressed. The DCISC will follow up periodically to assess how effectively the plans are being implemented.

5.0 DCISC PERFORMANCE INDICATORS

The DCISC uses 18 selected performance indicators (PIs) to measure the safety performance of the Diablo Canyon Power Plant. These PIs are updated for each DCISC public meeting and presented with more detailed supporting information by PG&E. The PIs in the enclosed table represent those presented at the DCISC June 2001 Public Meeting. At its June 2001 Public Meeting, the DCISC decided to replace these PIs with a combination of existing INPO, NRC and DCPP performance measures. The use of these indicators will be developed during the next reporting period.

6.0 DCISC OPEN ITEMS LIST

The DCISC Open Items List is a database used to track items for follow-up and monitoring. The List is updated and reviewed at each public meeting. The Open Items List included in Exhibit F in Volume II was used at the DCISC June 2001 Public Meeting.

7.0 PUBLIC INPUT

During the current reporting period, July 1, 2000 - June 30, 2001, the Diablo Canyon Independent Safety Committee (DCISC) provided the opportunity for public input at the following DCISC public meetings:

September 14 & 15, 2000	Public Meeting at The Cliffs at Shell Beach Conference Center at Shell Beach
February 7 & 8, 2001	Public Meeting at The Cliffs at Shell Beach Conference Center at Shell Beach
June 20 & 21, 2001	Public Meeting at The Cliffs at Shell Beach Conference Center at at Shell Beach

Additionally, on February 7, 2001 a tour of DCPP was conducted for 15 members of the public, all three DCISC Members, and three of its consultants (reference Section 1.4.4 of this report). During the plant tour, several members of the public asked specific questions about plant and equipment being observed. These were all answered by PG&E or DCISC.

During the three public meetings, members of the public raised the following issues/concerns as follows:

<u>September 14 & 15, 2000 Public Meeting</u>

No members of the public provided comments at the September 14 & 15, 2000 public meetings.

<u>February 7 & 8, 2001 Public Meeting</u>

The following two persons spoke at the February 7 & 8, 2001 public meeting:

Mr. John Gagliardini of Arroyo Grande, California expressed his opinion that PG&E should receive contracts for further research and development efforts concerning nuclear power. He stated that he had reviewed information on other PG&E projects in the local area including the Gunneson Land Project 18PO13, and he expressed his opinion that it was not PG&E's fault that these projects did not ultimately result in additional electric power generation. There were no questions or

comments and the Chair then thanked Mr. Gagliardini for his comment.

Mr. Les Goldfisher directed the Committee's attention to a lecture being held that evening, at California Polytechnic University in San Luis Obispo, by Professor Ernest J. Sternglass concerning the health effects of nuclear fallout and releases from the operation of nuclear power plants. Mr. Clark noted that all the Committee Members have been long aware of Professor Sternglass' views. Dr. de Planque commented that she has been aware of Professor Sternglass' studies for 30 years that the evidence was not sufficient to sustain Professor Sternglass' conclusions concerning the effects of radiation and that his claims have not been substantiated by significant numbers of scientists working in the field, both in this country and abroad. Mr. Clark also noted that there is an extensive radioactivity monitoring program of the local area around DCPP, reviewed regularly by the NRC, which has consistently shown the radiation levels around the Plant are undistinguishable from natural background levels existing in nature and that studies have consistently shown that the impact of the operation of nuclear power plants on radiation level is low and does not present a health issue.

June 20 & 21, 2001 Public Meeting

The following persons spoke at the June 20 & 21, 2001 public meeting:

Ms. June von Ruden, a resident of Pismo Beach, observed that in her opinion the forum provided by the Committee is a valuable one and that it was unfortunate that more members of the public did not choose to attend. She suggested that the public comment period should be at the beginning of DCISC public meetings for those who cannot wait until the scheduled presentations for a session have concluded, and also noted that the use of the reference to "Technical Presentations" in the notices of meetings of the Committee might discourage some from attending its meetings. The Chair and Members believed that this was a good idea and agreed to take Ms. Von Ruden's suggestions under advisement.

Ms.. von Ruden reported that a staff person from DCPP had sent her a letter in April to express concern over the Synergy report characterization of certain aspects of DCPP operations as "adequate" or "nominally adequate." The writer expressed concern over working conditions and lack of ability to interface with DCPP management. Her contact also expressed a belief that the Employee Concerns Program (ECP) was useless and that DCPP employees harbor significant mistrust of PG&E

and the NRC. Her source alleged that management's actions were resulting in very significant levels of stress on the DCPP workforce and that outage operations were given a higher priority by PG&E than employee stress and fatigue. Ms. von Ruden provided the DCISC with a copy of the letter, after blocking out identifying information. The DCISC chair responded that the letter would be of interest to the Committee.

Ms. von Ruden remarked that emergency planning cannot wait until a crisis occurs. She noted that this particular day has been denoted as "Lights Out Day" by some organizations, a day when electricity users were being asked to join in a protest by curtailing their use of electricity for 4-5 hours and she questioned if that action might affect DCPP operations. DCISC Members replied that, as electricity demand varies drastically on a daily basis, it was highly unlikely that this protest would have any impact on generation facilities in California.

Ms. von Ruden inquired whether re-racking to change the capacity of the present Spent Fuel Pool was really a viable option for PG&E. She remarked that an engineer who claimed to have been involved in the construction of the original Spent Fuel Pool rack configuration had informed her some 20 years ago that the steel in those racks had cracked. She inquired whether the hillside located near the proposed dry cask storage facility was subject to the type of landslides common in the local area and she questioned whether the bolting process would be adequate to its purpose. She also inquired as to the cost of installing one canister on the pad and whether this work would be done by DCPP or PG&E's contractor personnel. The DCISC Chair replied that the regulatory approval process requires soil sampling to determine the adequacy of the proposed site and other issues raised by Ms. Von Ruden would also be addressed by the approval process. PG&E's Mr. Dave Oatley stated that any re-racking proposal of the Spent Fuel Pool would require further NRC approvals and public input.

Ms. Sheila Baker of San Luis Obispo suggested that the Committee consider inviting members or representatives of the unions and other non-management personnel working at DCPP to speak to the Committee during its regular public meetings to open up the dialogue beyond what is achieved by having only PG&E management make presentations to the DCISC. The DCISC Chair replied that the Committee will consider how to better open the public meeting process and dialogue to all who may wish to address the forum. Dr. Cass observed that while PG&E's efforts are having a positive effect on safety, a barrier exists between management and employees.

Ms. Baker asked whether plans for the proposed Yucca Mountain storage facility would affect the fuel storage situation at DCPP and whether rail or barge transportation might be utilized. Mr. Oatley of PG&E replied that, if available, Yucca Mountain would be an option for storage of DCPP spent fuel. He stated that no transportation mode had been selected, but the Holtec cask storage system allowed for transportation options. The DCISC Chair replied that any future method of transportation of spent fuel would be subject to a rigorous regulatory approval process including public hearings.

Ms. Pam Marshall Heatheringthon, the Executive Director of the Environmental Center in San Luis Obispo, expressed her concern regarding negotiations between PG&E and the Creditor's Committee established by the Bankruptcy Court. She asked whether different reorganization plans might be presented for consideration. The DCISC replied that it was following the safety of DCPP with regard to the bankruptcy and would likely review any proposed reorganization plan to assess its effect on plant safety. She reminded the Members that the DCISC bears a heavy responsibility to represent the public.

Ms. Heatheringthon questioned why PG&E was unable to respond concerning Holtec's use of helium in the dry cask spent fuel storage canisters. The DCISC replied that use of an inert gas for these applications was well known and that adequacy of the particular selection was not a concern. Ms. Heatheringthon inquired if the power lines serving the 230kV and 500kV switchyard would pass over the proposed dry cask storage facility. Mr. Oatley responded that this matter would be analyzed in PG&E's application for the facility.

Mr. David Weisman, a resident of Morro Bay, stated that he was alarmed concerning the bankruptcy situation and the availability of fuel for the DCPP emergency diesel generators. He questioned whether PG&E management, in making a decision whether to bring in a fuel truck, might feel pressured between the need for financial economy and the need to ensure a sufficient supply of diesel fuel. The Committee responded that it was satisfied with DCPP's diesel fuel supply and that it was following the safety of DCPP operations during the bankruptcy.

Mr. Weisman stated that dry cask storage for DCPP fuel was being treated as an inevitable event, while the reasons for dry cask storage were not being adequately addressed. He questioned whether the availability of a proposed storage facility for nuclear waste to be located at Yucca Mountain, coupled with the proposed increase in on-site dry cask storage

capacity at DCPP, might lead to an extension of licensing for DCPP and require further debate on fundamental issues concerning viability and advisability of continuing the use of nuclear power and the consequent creation of more radioactive waste. He also remarked that he had questions concerning the delay of the geotechnical reports and concerning the high temperature of stored fuel, in the event that it was buried by a landslide due to a seismic or other event. He mentioned a study by a Professor Resnokoff which seemed to indicate the temperature of the stored fuel could be raised significantly and result in a danger of melting the shielding materials which might subsequently ignite and burn, or possible lead to the melting of the fuel itself. He observed that the Plant site is located along the coast and might be vulnerable to attack by terrorist launched from open water. He remarked that the public input to the debate concerning on-site storage of spent nuclear fuels is solicited concerning the small details and is not focused or solicited with reference to the overall considerations. He noted that state standards, as well as those of other federal regulatory bodies, may differ from the standards set by the NRC. Mr. Weisman believed the public would be interested to know how these questions wold be addressed by the licensing and approval process. The DCISC Chair replied that the licensing and approval process requires these questions be addressed. PG&E's Mr. Strickland responded that PG&E has committed to seismic design safety and maintains a geosciences department which studies long-term seismic impacts.

Mr. Weisman observed that the lack of many members of the public at the public meetings of the DCISC may reflect the public's perception that PG&E's plans are already firm and any further discussion would necessarily concern only the technicalities of achieving a result which has already been determined and is beyond the ability of the public to have meaningful input into the matter.

Mr. Weisman also observed that the current membership of the DCISC reflects science and technical backgrounds. He asked how someone with a background in public health and safety might receive consideration for appointment to the Diablo Canyon Independent Safety Committee. A DCISC Member replied that the appointing officials take seriously a nominee's concern for public health and safety and that technical understanding of how a nuclear power plant operates is essential to assessing safety.

Ms. Fay Magilhill observed that she was impressed with the efforts being made to address safety; however, she asked whether the Committee adequately examines worst case scenarios

when reviewing safety of DCPP operations. The DCISC Chair replied that if the Committee were aware of any undue risk, it is obligated to raise the issue with PG&E, NRC or state agencies. Ms. Magilhill believed that people living near nuclear facilities are better able to judge whether a plant should remain in operation than the regulators, who are heavily involved in nuclear power issues on a broad basis. The DCISC Vice-Chair responded that at the NRC safety is the primary concern. Ms. Magilhill urged the Members of the DCISC to maintain an openness beyond their own professional and technical backgrounds in nuclear power. The DCISC Chair replied that none of the Committee Members have any professional connection or financial or other investment in PG&E or DCPP.

These appearances by the public are documented in Volume II, Exhibits B.3, B.6, and B.9 (public meeting minutes) of this report and reported verbatim in the meeting transcripts on file at the Diablo Canyon Public Document Room in the California Polytechnic University Library in San Luis Obispo.

Letters and phone calls have been received by the DCISC Legal Counsel's office with questions, concerns and requests for information. During this reporting period, 26 calls were received from individuals on the DCISC toll-free telephone line. The breakdown of these calls is as follows:

Number of Calls	Number of E-mails	Reason for Contact
15	-	Inquiry about February 2001 plant tour
6	27	DCPP issues or nuclear information requests
5	3	Other (administrative, document requests, media and miscellaneous other than from the public)

When requested, answers, responses or documents were provided either during the call, a return call, or by a letter or documents from the Committee. The DCISC Telephone/ Correspondence Log is included as Exhibit G.1 and correspondence with the public is included as Exhibit G.2.

The Committee maintains a California toll-free telephone number (800-439-4688), an E-mail address (dcsafety@dcisc.org) and a site on the World Wide Web at www.dcisc.org for receiving

questions, concerns or information to and from the public. The DCISC has developed an information pamphlet describing the Committee and its function (see Volume II, Exhibit I).

DCISC activities and meetings are documented for public information in several ways as described below. All documents are available at the Public Document Room at the California Polytechnic University (Cal Poly) Library in San Luis Obispo, CA.

- An Annual Report is published each year (July 1 through June 30) which is a comprehensive description of Committee activities throughout the period.
- Minutes of each Public Meeting are contained in the Annual Report and at the Cal Poly Library.
- A transcript of each Public Meeting is maintained at the Cal Poly Library
- Reports of DCISC visits to the Diablo Canyon Power Plant are contained in the Annual Report.

8.0 PG&E ACTIONS ON PREVIOUS DCISC REPORT RECOMMENDATIONS

The DCISC has made 154 recommendations in its previous Annual Reports. The recommendations, PG&E responses and DCISC dispositions from the previous DCISC reporting period are included in Exhibit H in Volume II, along with references to the location for the bases for the recommendations.

PG&E's initial responses to the 13 DCISC recommendations in the last Annual Report were included in Section 8.0 of that report. At its February 7, 2001 public meeting the DCISC found all PG&E responses satisfactory; however, follow-up or monitoring was required on several recommendations as reported in Exhibit H.

The PG&E responses to all of the recommendations made in the current report are contained in Section 10.0. DCISC comments on the PG&E responses to the current DCISC recommendations will be made in the next DCISC Annual Report.

Overall, the DCISC concludes that the actions taken by PG&E relative to past DCISC recommendations have been satisfactory and have helped to maintain or improve safety and reliability.

9.0 CONCLUSIONS, CONCERNS AND RECOMMENDATIONS

During the eleventh annual period (July 1, 2000 - June 30, 2001) since its inception in late 1989, the Diablo Canyon Independent Safety Committee (DCISC) held three public meetings in the vicinity of Diablo Canyon Power Plant (DCPP). The meetings included numerous technical, programmatic and plant status presentations by PG&E and input from the public. In addition, Committee Members and/or Consultants have performed several plant tours (including a general plant tour with 15 members of the public) and nine fact-finding visits and inspections at DCPP. The DCISC Chair visited the California Attorney General's offices to brief the staff on DCISC activities. The DCISC employed two general/nuclear safety consultants and one medical/human behavior consultant to review a large variety of nuclear plant operations, documents and concerns. These efforts and activities are documented in this report.

9.1 Conclusions

Based on its activities, the DCISC concludes that PG&E has operated and maintained the DCPP safely during the period.

Specific conclusions are:

1. **PG&E appears to be taking positive steps in reviving neglected portions of its Aging Management Program with new leadership, augmented management support, and several new initiatives (the latter due in large part to aging-related failures of plant components). The DCISC has had concerns about the program in the last several reporting periods and is pleased to see progress towards improvement. A major element of DCPP aging management is the system long-term planning process in which system engineers are responsible for monitoring, measuring and planning for aging-related effects.**

   The DCISC will continue to follow PG&E's progress with aging management, including review of the Generation Vulnerability Identification Team report and the Passive Device Aging Management Investigation Team report. (4.1.3)

2. **The DCPP Maintenance Program appears to be functioning satisfactorily and implemented properly to meet NRC**

Maintenance Rule requirements. The Maintenance organization is functionally aligned to the work scope, and the On-Line Maintenance Program is soundly PRA-based. The DCISC will follow up on Maintenance activities and on the possible effects on safety of lowered/delayed plant capital spending. (4.2.3)

3. DCPP Conduct of Operations appeared satisfactory, including outage activities; Control Room policies and demeanor, and priorities; and preparation and implementation of the Improved Technical Specifications. The DCISC will continue to review this area as part of its normal activities. (4.3.3)

4. It appeared that DCPP has performed well in its emergency drills and exercises and has been working on improving its communication of accurate and understandable radiation release information to the public. The DCISC plans to follow this item. (4.4.3)

5. The PG&E engineering programs, including Configuration Management and Equipment Qualification, continue to be satisfactory for supporting safe operations at DCPP. (4.5.3)

6. Although DCPP has methods to track performance and work load of ARs and AEs and System Engineers, they do not appear to have a method for tracking work that is not covered by either ARs or AEs nor to identify the entire Engineering Workload to determine if they have enough resources to perform the work without getting behind. (4.5.3)

   The DCISC will continue to monitor PG&E's engineering performance, including workload management and a review of the results of the new Generation Vulnerability Identification Team report following its release in June 2001.

7. PG&E appears to have taken appropriate actions in response to plant off-normal operating events and system and equipment problems during this period and has applied appropriate corrective actions to prevent recurrence. The DCISC will continue to review this area as part of its normal activities. (4.6.3)

8. The DCPP Corrective Action Program (CAP) appears to have been improved as a result of self-assessments, external evaluations and reviews of other plant CAPs. Measures of program effectiveness were just being developed and appeared headed in the right direction. The DCISC will review the CAP in early 2002, following completion of improvement action items and the next self-assessment. (4.6.3)

9. DCPP environmental performance appeared satisfactory, and the DCPP environmental program appeared to meet applicable requirements. The DCISC will continue to review the environmental program as part of its normal activities. (4.7.3)

10. Based on satisfactory DCISC and NRC reviews and inspections in the previous reporting period, the DCISC did not review fire protection in the current reporting period. A DCISC review of fire protection is planned for the next period. (4.8.3)

11. The Human Performance Program is doing an adequate job of error trending, evaluating the data, and working toward increasing performance and enhancing safety. Human error continues to be the largest cause of problems, and, although the numbers of human errors are small, the trends are not yet showing sustained improvement. The DCISC will continue to actively review human performance at DCPP. (4.9.3)

12. The DCPP Employee Assistance Program appears to be well utilized, and is carrying out its responsibilities appropriately. The DCISC will review this area as part of its normal activities. (4.9.3)

13. Operator fitness continues to be an issue of concern, which the DCISC will continue to track. Indicators point to a growing problem with operator fitness, and it was not apparent that DCPP had measures in place to deal with the problem. (4.9.3)

14. PG&E appears to be handling fuel or fuel-related problems appropriately. The DCPP Unit 1 core has been reliable and clean; however, Unit 2 has experienced a small amount of fuel damage due to baffle jetting and debris or a fuel defect. The assembly was removed, repaired and returned to

the reactor. It appears PG&E will maintain its 19-21 month fuel cycle or move to an 18-month cycle. (4.10.3)

The DCISC will continue to follow on-going problems such as expansion of spent fuel storage, spent fuel pool poison (Boraflex), and any fuel-related fuel problems or issues that arise.

15. Nuclear safety oversight and review functions and organizations appear to be functioning satisfactorily at DCPP. It also appears to be very beneficial to have the joint PNAC/NSOC meetings, since each committee covers much of the same agenda. The results of the 2001 INPO evaluation appear to be favorable. The DCISC will continue to monitor the PNAC and NSOC meetings to observe their review of plant safety issues. (4.11.3)

    The DCISC observed that although there was constructive and helpful dialogue during the NSOC meetings, there were limited challenges to existing thinking and processes. (4.11.3)

16. It appears that the Integrated Assessment Report is a positive tool for management's use to assess the overall performance of the plant. It combines all of the information from the various reports on the plant performance into one very useful document. The DCISC will continue to review the Integrated Assessment Report. (4.11.3)

17. It appears that PG&E managed the 1R10 and 2R10 outages very effectively to achieve the best outages at DCPP in all measures except cost and schedule. DCISC will continue to review the performance of each refueling outage. (4.12.3)

18. Although no specific reviews were made of DCPP overtime activities, there did not appear to be any problems. The DCISC will remain sensitive to overtime problems. (4.13.3)

19. As in past years, the DCISC concludes that the quality program and self-assessment program have been effective in identifying strengths and weaknesses of the activities at DCPP and bringing about effective corrective action. It appears that the NQS group is doing a good job in monitoring the top quality problems and bringing them to the attention of line management. The DCISC will continue

to review DCPP quality programs as part of its normal activities. (4.14.3)

20. The DCPP radiation protection program for controlling radiation doses inside and outside the plant appears effective overall. DCPP had experienced unusually high radiation dose rates during Outage 1R9 but had effectively reduced those levels in three subsequent outages. The DCISC will closely follow radiation protection during future outages. (4.15.3)

21. Overall, PG&E's risk assessment and risk management programs appear to be effective in supporting safe plant operation. The PRA Group has become pro-active and effective in supporting station decisions with risk-based analyses. The DCISC will continue to review risk management activities as part of its normal activities. (4.16.3)

22. PG&E's actions to improve its safety conscious work environment appear satisfactory. A cultural survey concluded that the safety culture was satisfactory and about average for the industry; however, some employees are reluctant to bring concerns to management. PG&E has an action plan to address these findings, and the DCISC will monitor these actions. (4.17.3)

23. PG&E's Steam Generator (SG) program appears effective. PG&E now expects that the DCPP steam generators will last the currently-licensed life of the plant, if the NRC approves the PG&E License Amendment Requests for Alternate Repair Criteria; however, economic considerations may call for early steam generator replacement. The DCISC will continue to closely monitor DCPP steam generator performance. (4.18.3)

24. PG&E appears to have taken appropriate action in addressing system and equipment performance issues; however as noted in several instances, the DCISC believes additional work is needed and has provided recommendations accordingly. The DCISC will continue to review this area as part of its normal activities. (4.19.3)

25. The DCPP training and development programs appeared satisfactory, and the DCISC will continue to monitor them. (4.20.3)

26. It appears that the Five-Year Business Plan is helpful in

aligning the department and plant goals and objectives. Also, the hierarchy of DCPP performance plans represented an effective method of disseminating management expectations to the whole organization. Nuclear safety was appropriately addressed. The DCISC will follow up periodically to assess how effectively the plans are being implemented. (4.21.3)

9.2 Concerns

There are some concerns, which the DCISC believes PG&E needs to address in order to ensure continued and improved safe operation. The more significant general DCISC concerns are listed below.

1. **Human error continues to be the largest cause of problems, and, although the numbers of human errors are small, the trends are not yet showing sustained improvement. The DCISC will continue to actively review human performance at DCPP.**

2. **DCPP operators continue to age, and fitness levels appear to be declining, but PG&E does not have an active program to address the situation.**

3. **The potential impacts of bankruptcy need to be followed.**

4. **A recent study for NRC confirms the general experience that periods of rapid change and stress can have an adverse effect on the performance of organizations. DCPP has and continues to undergo major changes, including reorganization focusing on processes rather than functions. In addition, employees are understandably stressed by major changes underway in the industry and the PG&E filing for bankruptcy. DCPP recognizes these and has been taking steps to assure that they don't affect safe, reliable operation; however, the DCISC will continue to look for any adverse effects.**

9.3 Recommendations

There are nine new recommendations regarding PG&E actions, which DCISC believes, are prudent for continued and improved safe operation. The specific recommendations are stated and highlighted in bold type in the various sections of this report. These recommendations are repeated below in order of

appearance in the report, and references to the report sections are shown.

R01-1 It is recommended that DCPP develop and implement a method to identify and monitor the entire Engineering Work Load to assure that the necessary work is performed to effectively support safe operation of the plant and to help in ensuring adequate engineering resources are available. (4.5.3)

R01-2 Because the predominant cause of events is human error, it is recommended that DCPP more closely coordinate the Corrective Action and Human Performance Programs and utilize training in human characteristics and skills (e.g., interviewing skills, human error characteristics) for personnel preparing root cause analyses and corrective actions. (4.9.3)

R01-3 It is recommended that PG&E continue to augment its programs for operator health and aging to consider such areas as operator "aging management", physical fitness, and mental alertness on shift to further improve operator human performance. (4.9.3)

R01-4 It is recommended that PG&E management raise its expectations of the Nuclear Safety Oversight Committee internal and external members to take a more aggressive stance in challenging problem solving and the status quo. Additionally, PG&E should consider adding independent external members (not just from STARS plants). (4.11.3)

R01-5 It is recommended that NSOC take a more active role in determining the scope of the biennial audit of NQS to give the audit more independence. The DCISC had made a similar recommendation in the previous Annual Report and requests that PG&E reconsider its response of having NSOC only review the audit plan. (4.14.3)

R01-6 It is recommended that PG&E take the initiative in dealing with staffing issues by developing a long-term staffing plan. (4.17.3)

R01-7 **It is recommended that PG&E take actions necessary to improve the employees' perception of the Employee Concerns Program. (4.17.3)**

R01-8 **It is recommended that PG&E apply the normally used Corrective Action Program, Human Performance Program, and System Long Term Plan Program (and possibly others) to Security Services and develop an implementation plan. (4.19.3)**

R01-9 **It is recommended that PG&E develop a plan for how System Health Reports and Long Term Plans should be utilized by Operations and Maintenance. (4.19.3)**

The DCISC has also reviewed and considered issues raised by members of the public and has responded to or is investigating them. The DCISC finds that no issues have been raised by the public during this reporting period that would cause additional reviews or actions other than those DCISC has in place. There has been limited public interest and input at the three DCISC public meetings, with the toll-free DCISC phone line or in correspondence received by the DCISC Members. The DCISC will continue its efforts to more fully involve the public.

Finally, the DCISC appreciates PG&E's cooperation in arranging and providing information for DCISC fact-finding meetings and tours at its Headquarters and DCPP and for the professional, high quality presentations at DCISC meetings.

10.0 PG&E RESPONSE

(This section is reserved for PG&E's response to the DCISC annual report).

DIABLO CANYON
INDEPENDENT SAFETY COMMITTEE

ELEVENTH ANNUAL REPORT
ON THE
SAFETY OF
DIABLO CANYON NUCLEAR POWER PLANT OPERATIONS

July 1, 2000 - June 30, 2001

Volume II – EXHIBITS

Philip R. Clark, Chair*
E. Gail de Planque, Vice-Chair*
A. David Rossin

*for the period July 1, 2000 - June 30, 2001

Approved: October 17, 2001

The DCISC invites questions and comments on this report.
Contact the DCISC at the following:

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THE DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

NOTICE IS HEREBY GIVEN that on September 14 and 15, 2000, at The Cliffs at Shell Beach Conference Center, 2757 Shell Beach Road, Shell Beach, California, a public meeting will be held by the Diablo Canyon Independent Safety Committee (DCISC), in four separate sessions, at the times indicated, to consider the following matters:

1. **Morning Session - (9/14/2000) - 9:00 A.M.** Opening comments, approve minutes of June 7-8, 2000 meeting; discussion of administrative matters including the review and approval of the DCISC Annual Report on Safety of Diablo Canyon Operations for the period July 1, 1999 - June 30, 2000; open items on the DCISC issues list; an update on financial matters and DCISC future plans; Committee member and staff-consultant reports; receive, approve and authorize transmittal of fact-finding reports to PG&E; Committee correspondence; and receive public comments and communications to the Committee.

2. **Afternoon Session - (9/14/2000) - 2:00 P.M.:** Comments by Committee members; consider technical presentations from PG&E on topics relating to plant safety and operations including implementation of the Diablo Canyon Self-Assessment Program, a discussion of the plans for Unit 1's tenth refueling outage(1R10) and a report on the radiation exposure management program for 1R10; and receive public comments and communications to the Committee.

3. **Evening Session - (9/14/2000) - 5:30 P.M.:** Consideration of further technical presentations from PG&E on topics relating to plant safety and operations including an update on plant performance and operational status, a review of the DCISC selected performance indicators, an update on the activities of PG&E's Nuclear Safety Oversight Committee, a review of Reportable Events and NRC Notices of Violation; and receive public comments and communications to the Committee.

4. **Morning Session - (9/15/2000) - 8:00 A.M.:** Introductory comments; consideration of further technical presentations from PG&E on topics relating to plant operations including an overview of the Training Program, a presentation on the 1999 Biennial Nuclear Quality Services audit and self-assessment, an overview of the Integrated Assessment Program, discussion of tracking and trending of non-cited violations and a report on the transition to improved Technical Specifications; receive public comments and communication to

the Committee; and wrap-up discussion by Committee members and the scheduling of future site visits, study sessions and meetings.

The specific meeting agenda and the staff reports and materials regarding the above meeting agenda items will be available for public review commencing Monday, September 11, 2000, at the NRC Public Document Room of the Cal Poly Library in San Luis Obispo or on the Committee's website at www.dcisc.org. **For further information regarding the public meetings, please contact Robert Wellington, Committee Legal Counsel, 857 Cass Street, Suite D, Monterey, California, 93940; telephone: 1-800-439-4688.**

Dated: August 29, 2000

DIABLO CANYON
INDEPENDENT SAFETY COMMITTEE

Committee Members: Philip R. Clark
E. Gail de Planque
A. David Rossin

* *

AGENDA

Thursday & Friday
September 14-15, 2000
Shell Beach, California

The Cliffs at Shell Beach
Conference Center
2757 Shell Beach Road

Morning Session - 9/14/2000 - 9:00 A.M.

I. CALL TO ORDER - ROLL CALL

II. INTRODUCTIONS

III. CONSENT AGENDA (Routine items which the Committee can approve with a single motion and vote. A member may request that any item be placed on the regular agenda for separate consideration.)

A. Minutes of June 7-8, 2000 Meetings: Approve

IV. ACTION ITEMS

A. DCISC Annual Report on Safety of Diablo Canyon Operations; July 1, 1999 - June 30, 2000 — Discussion/Action
B. Update on Financial and Budgetary Matters and DCISC Activities During 2000 — Discussion/Action
C. Nomination and Election of DCISC Vice-Chair for the July 1, 2000 - June 30, 2001 Term — Action
D. Approval of Consultant Contract: William E. Kastenberg — Action
E. Update on DCISC Web Site — Discussion
F. Timeliness of Fact-Finding Reports & Public Meeting Transcript — Discussion/Direction
G. Resolution of Appreciation and Commendation - William E. Kastenberg — Approve

V. COMMITTEE MEMBER REPORTS AND DISCUSSION

A. Site visits and Other Committee Activities

B. Documents Provided to the Committee

VI. STAFF-CONSULTANT REPORTS

A. Ferman Wardell:
Review of Open Items List;
Annual Report and Fact-finding topics

B. Jim E. Booker:
Fact-finding topics and reports

C. Dr. Hyla Cass:
Human performance issues

D. Robert Wellington:
Administrative and legal matters

VII. COMMITTEE FACT-FINDING REPORTS:
Receive, approve and authorize transmittal to PG&E

VIII. CORRESPONDENCE

IX. PUBLIC COMMENTS AND COMMUNICATIONS (Oral communications on Committee matters, limited to 5 minutes per speaker. No action will be taken on matters raised, but they may be referred for further study, response or action.)

X. ADJOURN MORNING MEETING

Afternoon Session - 9/14/2000 - 2:00 P.M.

XI. RECONVENE FOR AFTERNOON MEETING

XII. COMMITTEE MEMBER COMMENTS

XIII. INFORMATION ITEMS BEFORE THE COMMITTEE

A. Technical Presentations Requested by the Committee of P.G.& E. Representatives:
1) General Introductions
2) Implementation of the Self-Assessment Program
3) Overall Plans for Unit 1's Tenth Refueling Outage
4) Management of Radiation Exposure During Unit 1's Tenth Refueling Outage

XIV. PUBLIC COMMENTS AND COMMUNICATIONS (Oral communications on Committee matters, limited to 5 minutes per speaker. No action will be taken on matters raised, but they may be referred for further study, response or action.)

XV. ADJOURN AFTERNOON MEETING

Evening Session - 9/14/2000 - 5:00 P.M.

XVI. RECONVENE FOR EVENING MEETING

XVII. COMMITTEE MEMBER COMMENTS

XVIII. INFORMATION ITEMS BEFORE THE COMMITTEE (Cont'd.)

5) Update on Plant Performance, Plant Events and Operational Status
6) Review of Selected Performance Indicators
7) Activities of PG&E's Nuclear Safety Oversight Committee and President's Nuclear Advisory Committee
8) Review of Reportable Events and NRC Notices of Violation

XIX. PUBLIC COMMENTS AND COMMUNICATIONS (Oral communications on Committee matters, limited to 5 minutes per speaker. No action will be taken on matters raised, but they may be referred for further study, response or action.)

XX. ADJOURN EVENING MEETING

Morning Session - 9/15/2000 - 8:00 A.M.

XXI. RECONVENE FOR MORNING MEETING

XXII. INTRODUCTORY COMMENTS

XXIII. INFORMATION ITEMS BEFORE THE COMMITTEE (Cont'd.)

9) Overview of the Training Program
10) Results of the 1999 Biennial Nuclear Quality Services Audit and Self-Assessment

11) Overview of the Integrated Assessment Program
12) Review of Tracking and Trending Results for Non-Cited Violations
13) Report on the Transition to Improved Technical Specifications

XXIV. PUBLIC COMMENTS AND COMMUNICATIONS (Oral communications on Committee matters, limited to 5 minutes per speaker. No action will be taken on matters raised, but they may be referred for further study, response or action.)

XXV. CONCLUDING REMARKS AND DISCUSSION BY COMMITTEE MEMBERS

A. Future Actions by the Committee
B. Further Information to Obtain/Review
C. Scheduling of Future Site Visits, Study Sessions and Meetings

XXVI. ADJOURNMENT OF THIRTY-FIRST SET OF MEETINGS.

M I N U T E S
of the
SEPTEMBER 2000 MEETINGS
OF THE
DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

Thursday & Friday
September 14-15, 2000
Shell Beach, California

Notice of Meeting

A legal Notice of Meeting was published in local newspapers, along with several display advertisements, and was mailed to the media and those persons on the Committee's service list.

Agenda

I CALL TO ORDER - ROLL CALL

The September 14, 2000 meeting of the Diablo Canyon Independent Safety Committee (DCISC) was called to order by Committee Chair Philip Clark at 9:00 A.M. at the Cliffs at Shell Beach Conference Center in Shell Beach, California. Roll call was taken.

Present:	Committee Chair Philip Clark
	Committee Member E. Gail de Planque
	Committee Member A. David Rossin
Absent:	None

II INTRODUCTIONS

The Chair observed that this was Dr. Rossin's first meeting as a new Member of the Committee and welcomed him. Mr. Clark introduced the Committee's consultants and Legal Counsel in attendance at the meeting. Present were Consultants Booker, Wardell and Dr. Cass and Legal Counsel Wellington.

III CONSENT AGENDA

The Chair requested Mr. Wellington to introduce the only item from the Consent Agenda, a routine item which the Committee could approve by vote or on motion of a member remove to the regular agenda. That item was approval of the

Minutes of the public meeting held by the DCISC on June 7-8, 2000. Some minor editorial corrections and clarifications were noted and upon a motion made by Dr. de Planque, seconded by Dr. Rossin, those Minutes were unanimously approved as amended.

Committee Business

IV ACTION ITEMS

A. DCISC Annual Report on Safety of Diablo Canyon Operations; July 1, 1999 - June 30, 2000. The Chair requested Consultant Wardell to review the latest draft of the Committee's 1999-2000 Annual Report on Safety of Diablo Canyon Operations, two earlier drafts having been circulated and comments received and incorporated into the latest draft. The Chair led a review of the latest draft of the Executive Summary section of the Report and each of the Committee's Conclusions, Concerns and Recommendations. A copy of the Executive Summary was included in the public agenda packet for this meeting. PG&E Senior Vice President Greg Rueger provided information to the Members during their discussion. Members and consultants discussed the content of several sections of the Report which expressed the Committee's Conclusions and offered suggested changes to certain sections including those concerning the Radiation Protection and Steam Generator Programs. The Members and consultants discussed the sections containing the Committee's Concerns with Mr. Rueger and Mr. Stan Ketelsen of PG&E's Regulatory Services organization. Members and consultants had several questions and requested clarification concerning certain of the Concerns contained in the draft Report from the PG&E representatives present. The Committee Members then briefly reviewed and discussed the basis for each of their Recommendations as contained in the current draft of the Annual Report. Members and consultants agreed to provide Mr. Wardell with all of their final comments and suggestions for the final version of their 1999-2000 Annual Report. That final version will be prepared by Mr. Wardell and will incorporate those comments and suggestions adopted by the Members during this meeting as well as those received from former DCISC Member Dr. William Kastenberg who was a serving Member of the Committee during this Annual Report period.

The Members and consultants discussed with Mr. Rueger and Mr. Ketelsen the procedure for PG&E to receive, review and respond to the 1999-2000 DCISC Annual Report. PG&E's response

will then be included within the final Report. **Opportunity for further questions and clarification, if necessary, of the Annual Report will be scheduled during a future fact-finding meeting with PG&E representatives.**

The Chair expressed the Committee's appreciation and thanks to Consultant Wardell for all his efforts in coordinating and assembling the Annual Report.

B. Update on Financial & Budgetary Matters. Legal Counsel Wellington reviewed with the Members some financial information received from the Committee's accountants. Members reviewed and discussed planned activities by the DCISC for the remainder of this calendar year. Consultant Wardell noted that there are presently three fact-findings scheduled with PG&E for the rest of 2000, during October, November and December, and the Members discussed their respective schedules to determine their availability to attend these fact-findings. **The Chair requested a revised and simplified monthly budget summary be prepared by the Committee's accountants and made available to the Members to better enable them to monitor the Committee's financial status.** Following a review of the current budget and resources on hand, it was determined that the Committee's current budget appears adequate at present to fund the Committee's remaining activities for calendar year 2000, and to maintain a sufficient contingent reserve.

A short break followed.

C. Nomination and Election of DCISC Vice-Chair for the July 1, 2000 - June 30, 2001 Term. The Chair noted that Dr. Kastenberg had been duly elected DCISC Vice-Chair for the current term, however, as his appointment to the Committee has lapsed and he is no longer serving as a Member, it was therefore appropriate to select a Member to serve as Vice-Chair. Upon nomination by Dr. Rossin, seconded by Mr. Clark, Dr. de Planque was elected to the office of DCISC Vice-Chair for the term July 1, 2000 through June 30, 2001..

D. Approval of Consultant Contract: Dr. William E. Kastenberg. Members briefly reviewed the scope of services for a proposed consulting agreement with former DCISC Member Dr. Kastenberg to provide for his review of the 1999-2000 Annual Report. Upon a motion made by Dr. de Planque, seconded by Dr. Rossin, that contract was approved by the Committee.

E. Update on DCISC Web Site. Legal Counsel Wellington briefly reviewed the content and components of the Committee's new world-wide-web site and he discussed with Mr. Ketelsen procedures to refer, as appropriate inquiries concerning Diablo Canyon Power Plant (DCPP) to Mr. Ketelsen or to the PG&E or the NRC websites as appropriate.

F. Timeliness of Fact-Finding Reports & Public Meeting Transcripts. Committee Members discussed with the consultants a schedule for the preparation, completion and review of the written reports which are prepared by the consultants following every fact-finding meeting. **The Members directed that these reports should be prepared by the consultant attending the fact-finding and made available for the review and comments of all Members within four to eight weeks after the fact-finding and that all pending reports should be closed out prior to or during the next public meeting of the Committee. Mr. Wellington remarked that the transcript of the discussion at the Committee's public meetings could be produced and available for review within forty-five days of the public meeting. The transcript would then be sent to PG&E with a request that, if they chose to provide any comment or revisions, these be provided to the DCISC within thirty days.** The Committee will continue to file its public meeting transcripts with the NRC Public Document Room at the R.E. Kennedy Library at California Polytechnic University in San Luis Obispo. **The Committee further directed that minutes of their public meetings prepared from the transcripts be available for review by the Members, consultants and PG&E at least two weeks prior to the next scheduled public meeting.**

G. Resolution of Appreciation and Commendation - Dr. William E. Kastenberg. Following the Committee Members review and approval of the content of their Resolution and upon a motion of Dr. de Planque, seconded by Dr. Rossin, the Committee Members unanimously adopted a Resolution of the Diablo Canyon Independent Safety Committee thanking and commending Dr. William E. Kastenberg for his service on the Committee since its inception.

H. PG&E's pending Application before the California Public Utilities Commission (CPUC. At the request of the Chair, Mr. Rueger discussed PG&E's pending Application before the CPUC and the potential effect on the continued existence of the DCISC should the CPUC grant the Application

as submitted. Mr. Rueger stated that PG&E's Application contains a request that the transition period to a deregulated market for electric power in California be terminated. He briefly reviewed the terms of the present CPUC Settlement Agreement which provides for profits from DCPP operations to be shared on a fifty-fifty basis with PG&E's customers. PG&E's June 30, 2000 Application addresses certain areas of the Settlement Agreement and Mr. Rueger briefly discussed some of the provisions which will require further clarification. He stated that three groups, the DCISC, the CPUC's Office of Ratepayer Advocates (ORA) and the group Towards Utility Rate Normalization (TURN) have filed comments with the CPUC concerning PG&E's Application and Mr. Rueger reported that this matter is now pending before the CPUC.

The Chair referred to the Response by the DCISC to the PG&E Application and remarked that, while the Committee's Response does not advocate continuing the Committee in existence, the Committee believes that, as the DCISC was established through an express provision of a decision by the CPUC, any future action by the CPUC which would disestablish the DCISC should be unambiguous. Mr. Clark stated that the Committee and its Members should be available and prepared to address questions from any of the parties or their appointing entities. **The Committee then approved and requested Legal Counsel Wellington to attend the pre-hearing conference with the CPUC to observe, respond to questions and to report back to the Members concerning any actions taken or schedule for further consideration adopted by the CPUC.**

V COMMITTEE MEMBER REPORTS AND DISCUSSION

a) Site Visits and Other Committee Activities: Dr. de Planque and DCISC Legal Counsel Wellington reported on meetings they attended on June 9, 2000, with representatives of the California Attorney General and the California Energy Commission in Sacramento, and they briefly reviewed some of the topics discussed which included: the content of the current DCISC Open Items List, the agenda for the June 2000 public meeting, proposed revisions to the NRC's safety oversight function, final resolution of a recent employment discrimination case involving a DCPP employee and the status of the pending application by PG&E before the CPUC.

b) Documents provided to the Committee: Mr. Wellington briefly reviewed the lists of the various documents, copies of correspondence and reports provided to

the Committee by PG&E and the NRC. Copies of these lists are included in the public agenda packet for every DCISC public meeting.

VI STAFF-CONSULTANT REPORTS

Consultant Wardell reviewed certain of the items on the current Open Items List which is used to track the status of those items which the DCISC has identified for follow-up, further information or future action. Mr. Wardell identified certain items which have been consolidated or closed out since the last public meeting of the DCISC in June 2000. A copy of the current Open Items List was included in the public agenda packet for this meeting.

Mr. Wardell reported on a fact-finding he attended on July 6-7, 2000, with Drs. Kastenberg and Cass. He discussed the topics reviewed during meetings with PG&E representatives at those meetings which included: the September 22, 1999 reactor trip event due to a lightning strike in the switchyard; the DCPP lightning protection program; the status of the System Health Indicators and long-term plans for individual Plant systems; the single index NRC Maintenance Rule-based system indicator being developed to track aggregate performance of DCPP systems; an overview of environmental performance; the results of the recent audits and surveillances performed by the Nuclear Quality Services (NQS) organization; the recent efforts to resolve an issue concerning the Plant cooling water discharge with the Regional Water Quality Control Board; turbine blade cracking; the status of the DCISC-selected performance indicators and efforts to consolidate those indicators with the NRC-mandated performance indicators; Institute of Nuclear Power Operations (INPO) Significant Operating Event Reports (SOERs) 98-1 and 98-2; and the Control Room ventilation system. DCISC representatives also received reports on the fire and declaration of Unusual Event which occurred on May 15, 2000 and PG&E's efforts to resolve issues concerning communication of information concerning the Plant's status to the public during that event. Mr. Rueger and Mr. Jeff Lewis of PG&E's News Department discussed with the Members the issue of public communication during the May 15, 2000 Unusual Event and the respective roles and efforts of PG&E and the NRC in disseminating timely, accurate and useful information to the general public. **Dr. de Planque suggested, and Mr. Rueger agreed, that PG&E may want to discuss with the NRC at a future meeting those issues which concern improving communication**

with the public.

Following the Thursday afternoon technical presentation by Mr. Nugent (see page 13-15) concerning the transition to the Improved Technical Specifications, the Committee resumed consideration of consultant reports.

Consultant Booker stated that he had not participated in any fact-finding since the last public meetings of the DCISC in June 2000.

Consultant Dr. Cass reported on the fact-finding she attended on July 6-7, 2000 at DCPP to review human performance issues. She stated that the Human Performance Group reviews low-level Action Requests (ARs) using a new model now entitled the "Personnel Accountability Policy" to analyze personnel accountability and the relationship to human performance events, and she briefly reviewed the evolution of that Policy. She
reported that the principles of the Policy include identifying blameless error and associated corrective actions throughout the organization and using coaching and counseling to achieve correction rather than discipline. The Operations and Maintenance organizations at DCPP are presently perceived as those most susceptible to personnel errors and she reported that there were seven events during this past year, with an increasing trend in personnel error observed during the past three months. Dr. Cass stated that preliminary analysis has identified the need for better pre-job tailboard review conferences, rigorous feedback, improved communication and self-verification by the workforce to address the increase in personnel error. Front line workers and first line supervisors are now polled after completing a job or work order to develop an anonymous database which will be used to provide information to management as well as feedback to workers and supervisors and result in an improved work-control process. In concluding this segment of her report, Dr. Cass observed that the Human Performance Group at DCPP appears to be taking positive steps to analyze and address human errors. Tools are being developed to support the cultural changes which are occurring and to improve human performance. **Dr. Cass stated that the Committee may wish to consider making a recommendation that PG&E closely interface efforts in the area of human performance with organizational development and other plant-wide efforts to develop a comprehensive and integrated program to address human error and to foster increased cross-Plant communication.**

Dr. Cass reported on the recent activities of the Organizational Development Program. She stated that the Program deals with interpersonal skills in the organization including training and the facilitation of communication. She stated that a method entitled 360°Feedback is presently being used by officers, managers and directors to determine leadership behaviors and plans are under consideration to introduce this method to supervisors. This feedback method is tied to the Performance Incentive Program which provides employees with a financial incentive for their performance. Dr. Cass remarked that efforts are being made to expand the new culture and integrate the various union bargaining units and the craft organizations at DCPP into a plant-wide training dynamic to ensure all groups receive an appropriate level of training. PG&E Vice President and DCPP Plant Manager David Oatley remarked that the shift foremen and shift managers as well as some of the key individuals in the bargaining units are currently included in the officer-management-supervisor cultural meetings which focus on safety and human performance. Dr. Cass stated that DCPP is making efforts to address its future needs, in recruiting new employees as well as to retain current employees, as a significant portion of the present DCPP workforce reaches retirement age. In concluding this portion of her report, Dr. Cass observed that the Organizational Development Program appears to be comprehensive and is playing a significant role in the major cultural shift which has and is occurring at DCPP. Mr. Clark reviewed with Dr. Cass and the PG&E representatives present the ongoing efforts being made to coordinate the efforts of the Human Performance and Industrial Safety organizations.

Dr. Cass reported on her visit to the DCPP Medical Center to review the Stress Reduction Program, overall operator fitness and the efforts to enhance alertness and wakefulness of personnel working the night shifts. Dr. Cass, in response to a question from Dr. Rossin, briefly reviewed the origin of the Committee's interest in these topics and the impact of chronic stress on safety. She also discussed a program entitled Dash for Cash which is aimed at providing a financial reward to those employees who voluntarily improve their physical fitness and health. This program has been offered to DCPP personnel in the Security Department and she reviewed that Program's impact and the requirements which must be met by those security officers who carry weapons within the Plant. Dr. Cass remarked that a similar program might be effective in motivating Operations Department personnel to greater levels

employee. The preliminary conclusions reached by the Department of Labor were, apparently inadvertently, released by the employee's legal representatives and that information received wide distribution in the media. Mr. Rueger commented that PG&E has since settled the matter with the individual involved; however, he remarked that the premature and one-sided release of only the Department of Labor's conclusions affected how the matter was perceived by the public at large as well as by many DCPP employees and that PG&E has discussed with the NRC the impact of that situation. He discussed with the Members attempts to better coordinate the investigatory efforts of the Department of Labor and the NRC. In response to a question from Mr. Clark, Dr. Cass stated that the discussion during the meeting was not transcribed; however, a report on the meeting will be made available electronically on the NRC website. Mr. Rueger stated that, while the NRC advertised the meeting in the local media, he was surprised by the small number of members of the public who attended. Mr. Wellington remarked that the Committee's administrative office did not receive written notice of the meeting.

VII COMMITTEE FACT-FINDING REPORTS

On Thursday, the discussion of this item was deferred to the Friday's public meeting, September 15, 2000.

Following the last of the technical presentations by PG&E on Friday afternoon, the Committee returned to consideration of the July 2000 fact-finding report. Subject to the inclusion of editorial comment provided by the Members and upon motion by Dr. Rossin, seconded by Dr. de Planque, the July 2000 fact-finding report was unanimously approved for transmittal to PG&E.

VIII CORRESPONDENCE

Committee Legal Counsel Wellington directed the attention of the Members to copies of the correspondence sent and received by the Committee since the last public meetings of the DCISC in June 2000.

IX PUBLIC COMMENTS AND COMMUNICATION

The Chair, prior to adjourning the morning session, invited any persons present in the audience to address any comments or communications to the Committee. There was no response to this invitation.

of fitness. She also reviewed several other programs aimed at improving the overall health of employees.

Committee Legal Counsel Wellington reported that he had sent information to Mr. John Gagliardini, a member of the public who had addressed comments concerning the ownership of the lands underlying DCPP to the Committee Members during several of their previous public meetings. **Mr. Wellington also reported that he is continuing discussions with PG&E's Regulatory Services and Legal departments concerning an issue concerning the use of a unilateral advocate within the Employee Advocate Program.**

Following the final technical presentation on Friday afternoon by Mr. Russell Gray (see page 31-33) concerning the management of radiation exposure during refueling outage 1R10, Dr. Cass reported her attendance with Consultant Wardell at a public meeting held by the NRC on Thursday evening, September 14, 2000, in San Luis Obispo to present an overview of the NRC process to address claims of discrimination at NRC licensed facilities under the provisions of regulations contained in 10 CFR 50.7. She stated that during this presentation the NRC reviewed the significance and importance of employees feeling safe from discrimination should they chose to identify concerns regarding operational issues within a nuclear plant, without fear of retaliation, and that multiple avenues must be maintained within the work environment for workers to identify and communicate their concerns. The NRC's presentation also reviewed the anxiety which currently exists and the challenges faced by employees and management created by their changing work environment and impact of those factors on reporting safety concerns.

Dr. Cass observed that PG&E reported that 90% of the allegations reported to the NRC are ultimately determined to be unsubstantiated. The 10% of allegations which are found to be substantiated receive intense scrutiny in and by the media. Dr. Cass reported that a representative from DCPP made a presentation on the investigation and determination by the NRC that PG&E had not discriminated against one of its employees who raised safety concerns. The DCISC had been closely involved in reviewing that employee's concerns and the employee has addressed the Committee several times during its past public meetings. However, Dr. Cass reported that the Department of Labor, in their preliminary investigation, concluded that there had been discrimination by PG&E in responding to and dealing with the allegations raised by that

X ADJOURNMENT

The morning meeting of the Diablo Canyon Independent Safety Committee was adjourned by the Chair at 12:45 P.M.

XI RECONVENE FOR AFTERNOON SESSION

The Chair convened the DCISC for its afternoon meeting at 2:00 P.M.

XII COMMITTEE MEMBER COMMENTS

There were no comments from the Committee members at this time.

XIII INFORMATION ITEMS BEFORE THE COMMITTEE

Senior Vice President Rueger recognized Mr. Oatley and PG&E Vice President for Power Generation and Nuclear Services Larry Womack to assist with the technical presentations to the DCISC.

Mr. Rueger introduced Mr. Steve Hiett, DCPP Self-Assessment Coordinator, to make the first of the technical presentation requested by Committee.

Implementation of the Self-Assessment Program.

Mr. Hiett began his presentation with a review of the Self-Assessment Program's history and he stated that it was a focus area for the nuclear power industry as the industry begins to move towards re-evaluating the threshold for regulation. Mr. Clark had a question concerning PG&E's perception of the NRC's direction as it alters its regulatory posture with the nuclear power industry and Mr. Rueger responded with his observations that the NRC is attempting to direct its resources toward identified areas wherein regulatory and licensee focus has been demonstrated in the past to have been the most effective. Mr. Hiett reviewed the upgrades made to the Self-Assessment Program which include: establishment of the Self-Assessment Coordinator position to manage and direct self-assessments; issuance of a program guide for performing self-assessments, establishment of departmental coordinators for self-assessment education; and establishment of an integrated scheduling program for self-assessments. The Self-Assessment Advisory Board, chaired by

the Vice President and Plant Manager, was established to provide a critical and independent review of self-assessment results and plans. Mr. Hiett briefly discussed efforts to coordinate and integrate the Self-Assessment Program with the audits performed by NQS, INPO and the NRC to ensure that an opportunity is provided to coordinate the implementation of findings and results of self-assessments. He reported that DCPP is concentrating on increasing the Self-Assessment Program's visibility within the Plant and is increasingly making use of industry peers to participate in performing self-assessments and is using industry-wide accepted standards of excellence as Self-Assessment Program measuring tools.

This year there have been 33 self-assessments which have met the Program's standards and Mr. Hiett reported that the quality of information contained in the written reports has improved significantly. In response to a question from Dr. de Planque, Mr. Hiett replied that the writing course taught at DCPP by INPO to improve the report writing skills of personnel charged with documenting the results of the self-assessments did address incorporating industry accepted standard terminology into report findings. Mr. Hiett discussed the content and format of the self-assessment reports with the Members and he stated that one of his roles as the Program Coordinator is to review and integrate all the reports and attempt to identify common areas or trends. He reviewed the results of self-assessments performed and **Mr. Clark requested that a future Committee fact-finding be scheduled to include a review of the Self-Assessment Program and the next NQS Quality Performance and Assessment Report (QPAR).**

Mr. Hiett concluded his presentation with his observation that DCPP management's belief in the success of the Self-Assessment Program involves the communication to, and recognition and acceptance by, the line organizations and the workforce that critical or opposing views are welcome and that management remains open to criticism and suggestions. In response to a question from Mr. Clark, Mr. Oatley and Mr. Hiett responded that areas for self-assessments are generally not selected or based upon an upcoming audit by another reviewing body, but are selected based upon existing data and review of identified trends. **Mr. Clark requested that the DCISC receive a copy of the integrated schedule for the Self-Assessment Program and a copy of the most recent quarterly report for the Program.**

Mr. Rueger introduced Mr. Mike Davis, Systems Scheduling

Supervisor at DCPP for a presentation to the Committee.

Plans for Unit 1's Tenth Refueling Outage (1R10).

Mr. Davis began his presentation by reviewing the 1R10 outage scope and issues and areas identified by experiences during past outages for improvement during 1R10. The critical outage scope of activities for 1R10, which is scheduled to commence on October 8, 2000, include:

- Refueling the reactor.
- Critical valve maintenance.
- Steam generator maintenance.
- Low pressure turbine/generator inspection and maintenance.
- Low pressure C rotor replacement
- Diesel generator maintenance.
- Vital bus H maintenance.

Mr. Davis briefly discussed and responded to questions concerning each of these activities. Mr. Oatley and Mr. Womack both responded to a question from Mr. Clark concerning the qualification of the techniques used for inspection and assessment of the condition of the steam generator tubing.

Mr. Davis then reviewed the major projects and modifications to DCPP systems scheduled for 1R10, which include replacement of the Residual Heat Removal System (RHR) sump screen to increase its area; replacement of the Reactor Coolant Pump (RCP) cable on RCPs 1-1 and 1-3 due to aging; replacement of the Main Feedwater pump Lovejoy speed control system with the more modern Woodward system; and increasing Unit 1's power output rating. Mr. Davis reported that no significant risks to the reactor core are expected to occur during 1R10 and that the overall outage risk factors are approximately the same as experienced during other recent DCPP refueling outages. Mr. Davis and Mr. Oatley discussed with the Members the activities planned during the second of two mid-loop operations, when there will necessarily be only one Component Cooling Water Pump (CCWP) available because of work taking place within the 4kV switchgear room. Goals for 1R10 include achieving the personnel radiation exposure goal of <= 148 person-rem, no disabling or reportable injuries, no loss of core cooling with the core in any location, event free mid-loop operations, no significant personnel errors or equipment damage.

Mr. Davis reviewed the initiatives planned for 1R10 to improve personnel safety. These include conducting a tailboard review meeting prior to commencing any job to discuss safety risks and compensatory measures. Personnel stand-downs during which safety expectations will be discussed are to be conducted prior to 1R10 to demonstrate that attention to safe work practices remains at the highest level of management's attention. During 1R10 there will be increased in-field supervisory oversight to ensure that management's expectations are being met. He observed that the primary focus for improving human performance involves the Maintenance, Operations and Chemistry/Radiation Protection organizations and emphasis will be placed upon self-verification techniques, closed-loop communication, tailboards and adherence to standards and expectations. Emphasis will also be placed on personal accountability with in-field supervisory oversight and use of human performance communication and culpability tools.

Concerning the outage duration and cost goals, Mr. Davis reported that PG&E currently hopes to achieve 1R10 in 30 days or less and at a cost of $30 million or less. The present projected duration is 26 days 3 hours, while DCPP's previous best outage performance during 2R9 was 31 days 18 hours. He identified pre-outage preparation; improved schedule review; fewer projects, with no failed fuel or fuel repairs scheduled; incorporation of lessons learned in Main Feedwater Pump speed control replacement; no reactor vessel surveillance specimen removal required; and the co-location of Operations and Outage Management organizations as significant contributors to the projected short duration. Mr. Davis and Mr. Womack briefly discussed with Dr. Rossin some of the contingencies possible in the event that fuel damage was discovered or occurred during core off-load. The PG&E representatives then reviewed the pre-outage preparation schedule which is developed to attempt to preclude unforeseen issues arising just prior to an outage, and Mr. Davis reviewed the critical path schedule for 1R10. Members had several questions concerning the availability of radiation protection technicians for 1R10 to which Mr. Davis and Mr. Oatley both responded.

A short break followed this presentation.

Mr. Rueger introduced the Licensing Supervisor for Regulatory Services at DCPP, Mr. Pat Nugent, to make the next presentation to the Committee.

Report on the Transition to Improved Technical Specifications.

Mr. Nugent stated that the program to transition DCPP to the Improved Technical Specifications (ITS) has recently been completed. He stated that the ITS were developed beginning in 1995, with DCPP working in conjunction with the Wolf Creek, Callaway and Comanche Peak nuclear plants which partnered with DCPP in that effort. The Licensee Amendment Request (LAR) was submitted in June 1997, and all Plants received and responded to requests for additional information. The NRC issued the License Amendment (LA) for the ITS in May 1999. In response to a question from Mr. Clark, Mr. Nugent replied that the new set of technical specifications (TS) themselves are somewhat less lengthy than before; however, the basis for the TS have expanded considerably. He remarked that implementation of the ITS was originally scheduled for the end of May 2000. However, that date was later changed and an emergency LAR submitted to permit postponement of implementation of the ITS until the end of June 2000 due to PG&E's concern over implementing the ITS during the restart of both Units because of the 12kV bus outage which had occurred.

An ITS Implementation Project Manager position was created and a Team was formed to identify all required changes resulting from the ITS which included members from the Surveillance Test, Operations, Engineering, Licensing, Instrumentation and Control Procedures, Administrative Procedures and Final Safety Analysis Report (FSAR) organizations. Mr. Nugent reviewed the number, scope, complexity and volume of major and minor changes and revisions made to various documentation and the changes and additions to programs and test procedures which required the attention of and review by the Team.

DCPP submitted a clean-up LAR to the NRC during March 2000 which addressed the changes resulting from the Implementation Program for the ITS, and a Management Oversight Team was formed to monitor progress of the Implementation Program. Work curves were created using the projections developed by various organizations and these were reviewed frequently to assure that sufficient resources were available to meet goals. Mr. Nugent stated that this effort was based in part upon the successful Y2K Program. A self-assessment of the Implementation Program was performed in April 2000, utilizing personnel from DCPP's Licensing and Quality Assurance organizations as well as personnel from Wolf Creek,

Callaway and Comanche Peak Plants. This self-assessment identified enhancements to the implementation efforts but no major issues were found which would hamper the process.

Mr. Nugent reviewed the comprehensive efforts made to adequately train the licensed operators and other necessary DCPP personnel on the ITS. These efforts included a detailed review of TS rules of usage and all the changes made to the TS, which were illustrated by comparing the current TS with the ITS. In response to a question from Mr. Clark, Mr. Nugent reviewed the emphasis placed upon what he termed the rules of usage for the TS which provide guidance for the actual application of the TS.

Mr. Nugent reviewed the results of the Implementation Program which have been measured in terms of the absence of requests by DCPP for enforcement discretion of any LARs from the NRC, which might have been necessary to address problems experienced with the ITS. The Implementation Program was completed as scheduled. He identified some of the lessons learned during the ITS Implementation Program which include some unanticipated ramifications resulting from their application to the Containment Isolation Valve requirements of when to apply administrative controls to open valves. Personnel have been asking questions of the Implementation Team to clarify issues; however, there have been no errors reported or identified to date from the application of the ITS. He stated that there have been some instances where a TS, or a portion of a TS, has been relocated to the FSAR or to the Equipment Control Guidelines (ECG) to address a specific licensing commitment, a surveillance requirement or to better define operability criteria for a system. He described the ECGs as a form of administrative TS which may be altered without prior NRC approval under the provisions of 10 CFR 50.59.

In concluding his presentation, Mr. Nugent remarked that the Implementation Program for ITS was a huge effort for DCPP and it involved thousands of procedures, hundreds of individuals and required strict project management coordination. The success of the Implementation Program demonstrated the feasibility of working jointly with other utilities and this resulted in a better product.

Committee Members had questions for Mr. Nugent following his presentation concerning the value to DCPP of such a comprehensive industry-wide effort to make the change to ITS.

Mr. Nugent, Mr. Oatley and Mr. Rueger reviewed the NRC's rationale for implementing the joint ITS rather than continuing to deal with TS changes only on a plant-specific basis. Mr. Womack reviewed the evolution of the development of TS since the mid-1970's and he stated that this latest effort by the industry represents the first real action to consolidate or truly standardize the basis and the underlying assumptions for the limits in the TS and to make them consistent. The PG&E representatives discussed and commented upon the savings in time and cost, and the advantage to scheduling, which resulted from working together with the other utilities to develop the ITS and the savings to the NRC in terms of its review efforts. In response to a question from Mr. Clark, Mr. Oatley responded that the operators are now accustomed to the new ITS and, in general, have approved of the better understanding afforded by the articulated bases now incorporated within the ITS. In response to a question from Consultant Booker, Mr. Nugent confirmed that the other plants which participated with DCPP in developing the ITS will also be cooperating on changes as they become necessary.

Following Mr. Nugent's presentation, the Committee returned to consideration of its consultants' reports under Section VI of the agenda, as reported above.

XIV PUBLIC COMMENTS AND COMMUNICATIONS

The Chair, prior to adjourning the afternoon session, invited any persons present in the audience to address any comments or communications to the Committee. There was no response to this invitation.

XV ADJOURN AFTERNOON MEETING

The afternoon meeting of the Diablo Canyon Independent Safety Committee was adjourned by the Chair at 4:45 P.M.

XVI RECONVENE FOR EVENING MEETING

Mr. Clark called to order the evening public meeting of the DCISC at 5:00 P.M.

XVII COMMITTEE MEMBER COMMENTS

The Chair introduced the Members and consultants present and requested PG&E Senior Vice President Rueger to

continue with the technical presentations to the Committee.

XVIII INFORMATION ITEMS BEFORE THE COMMITTEE (Cont'd.)

Mr. Rueger requested Mr. Oatley to make a presentation to the Committee concerning overall Plant performance and operational events since the last public meeting of the DCISC in June 2000.

Update on Plant Performance, Plant Events and Operational Status.

Mr. Oatley began by reviewing the events and accomplishments at DCPP since the last public meeting of the DCISC. These have included hosting an INPO Plant Evaluation Training Team during May 2000, reaching a tentative agreement in June with the California Regional Water Quality Board concerning all issues regarding DCPP's ocean cooling water discharge permit, achieving implementation of the ITS during June, and the successful completion during August of an intensive three-week NRC assessment of the Auxiliary Saltwater (ASW) and 4 kV Systems. A review was also conducted of corrective actions taken or planned due to a "white" status for the NRC Performance Indicator for loss of normal heat sink because of kelp loading at the Intake Structure.

Mr. Oatley reviewed generation performance for both Units. For Unit 1(U-1), year-to-date, the operating capacity factor is presently 93.72%. Mr. Oatley briefly reviewed the events, both planned events and forced outages, which have impacted U-1's performance. For Unit 2 (U-2) the year-to-date operating capacity factor is presently 100.17% and events impacting U-2 were briefly reviewed by Mr. Oatley. He reported that U-2 has experienced some minor fuel failure, which were characterized as tight defects associated with two or three rods, following the 2R9 refueling outage in September-October 1999.

Mr. Oatley reviewed PG&E's recent decision to accept a ten- day forced outage for U-2 due to the catastrophic disintegration of a metal bellows which connects fixed piping to the underside of the Turbine and he discussed with the Committee the rationale for the decision to shut down U-2 and repair the failed bellows and some of the other bellows which were found to be cracked. The failure of the bellows resulted in debris being deposited within the condenser and this might have been damaging to condenser tubing. The

bellows' age was determined to have been the cause of the failure and Mr. Oatley reported that three other plants have also experienced forced outages due to this problem. Mr. Clark asked a question concerning PG&E's past evaluation of the bellows and the decision to try to keep U-2 operating until the serious nature of the failure became apparent. Mr. Rueger responded that there were several reasons for PG&E to try to keep U-2 operating after the damage to the bellows was initially suspected, including a lack of indication of the serious extent and potential impact of the failure and the fact that the other bellows were not believed to be damaged. Mr. Rueger observed that PG&E recognized that an unplanned outage would have to be scheduled to address the bellows failure but that PG&E wished to avoid, if possible, any conflict with scheduled refueling outage 1R10 while continuing to monitor for salt leakage from the condenser and to evaluate the performance of U-2 and to take time to plan for the necessary forced outage. Mr. Oatley remarked that PG&E was in contact with the condenser's manufacturer, Westinghouse, and that Westinghouse did not indicate their concern in U-2 continuing operation for one week.

During U-2's forced outage, 7 of a total of 27 metal bellows were replaced and plans are to replace the remainder during U-2's next refueling outage (2R10) scheduled for May 2001. U-1 will have all its metal bellows replaced during 1R10 during October 2000. In response to a question from Mr. Clark, Mr. Oatley and Mr. Rueger responded that U-2's unplanned forced outage probably did have a detrimental effect on the NRC Performance Indicators for DCPP in a manner different than had the forced outage taken place one week later, although both PG&E representatives stated that this did not impact in any way the initial decision to attempt to continue U-2 in operation. Mr. Oatley remarked that he has recently sent a letter to all DCPP Operations personnel stating that neither any possible impact on the NRC Performance Indicators nor the current condition of the California electrical grid system should be considered in any context whatsoever when making operational decisions.

Review of Selected Performance Indicators.

Mr. Rueger briefly discussed and reviewed with the Members and consultants the 23 indicators currently being tracked by PG&E for the DCISC to measure DCPP performance, the goals presently established for those indicators and their performance as measured to date. He summarized their status,

through the end of August 2000, as follows (↑ indicates an improving trend, ↓ indicates a declining trend and → indicates a steady performance since that indicator was last reported to the Committee):

Eleven of the indicators are on or better than the target:

↑ Personnel contamination incidents.
↑ Non-outage corrective maintenance backlog.
↑ Operating Experience Assessment (OEA) backlog.
↓ Quality problem completion.
→ Event-free days.
→ U-2 operating capacity factor.
→ Unplanned reportable releases.
→ U-1 primary system chemistry index.
→ U-2 primary system chemistry index.
→ U-1 secondary system chemistry index.
→ U-2 secondary system chemistry index.

Three of the indicators are close to meeting expectations:

↓ Radiation exposure.
↓ Meeting corrective maintenance due dates.
↓ U-1 operating capacity factor.

Three of the indicators are clearly not meeting expectations:

↑ Industrial safety.
↓ Unplanned automatic reactor trips.
↓ Unplanned safety system actuation.

One is a qualitative indicator, without a set target:

System Health Indicator (no target).

One indicator has been deleted:

Maintenance Services Rework Event Trend Records (ETR).

Two of the indicators are not applicable for this period:

U-1 refueling outage duration.
U-2 refueling outage duration.

Two confidential indicators reviewed with the DCISC during fact-findings include:

→ Human factor security events.
↓ Vital area events.

Members and consultants had several questions during Mr. Rueger's review. Mr. Rueger and Mr. Oatley discussed the impact that a single event, such as the 12kV failure, can have on several of the indicators and they discussed the trends evident in several of the indicators.

Mr. Rueger discussed with the Committee the effect on DCPP operations of recent efforts to deregulate the electric power industry in California. He stated that a shortage of generating capacity within California has posed very significant challenges to assuring sufficient supplies of electricity are available to meet demand and that the impact of that shortage of supply is having significant impact upon the price of electric power. He observed that the Northern and Southern California electric power markets are separately administered by California's Independent System Operator (ISO). He also reviewed several of the fundamental factors which have contributed to significant increases in consumers electric bills in Southern California, as well as to a curtailment of supply, when the rate freeze ended in areas of Southern California. These factors included a significant increase in demand due to hot weather, growth of demand in out-of-state areas which previously exported power to California and significant increases in the price of natural gas and damage to a main natural gas supply pipeline to California. Mr. Rueger opined that these are very significant factors which have precluded, at present, a truly competitive market for electric power in California and that collusion amongst power generating entities has not played a significant role in increasing the price of power. Mr. Rueger stated that, as the rate freeze is still in effect for Northern California consumers, the full effects of the deregulated market have yet to be felt in Northern California and that issues of deregulation and its resulting impact on the price of power as well as a final decision as to what share of the increased costs are going to be paid by the consumer and by the utilities is going to be an important political issue for some time to come. He stated that any immediate impact on DCPP will depend on several price-related factors which may affect the time that DCPP-produced power is actually able to command market-rate prices. Members and consultants discussed with Mr. Rueger the factors and events which are driving the market for electric power and some of the future projections which will affect that market in California and elsewhere.

Activities of PG&E's Nuclear Safety Oversight and President's Nuclear Advisory Committees.

Mr. Womack reviewed the activities of the Nuclear Safety Oversight Committee (NSOC) since the last public meeting of the DCISC.

A regular meeting of NSOC was convened at DCPP on July 25-26, 2000. Mr. Womack identified some of the items of particular interest to the DCISC which were discussed during that meeting. These included an update on the status of cultural transformation efforts, a summary of the 12kV bus event, the status of the Corrective Action Process and Enhancements, and the status of the issues before the State Regional Water Quality Board. Mr. Womack reported that NSOC has two new members, both of whom are external to PG&E. These new members are the Site Vice President at Comanche Peak and the Chief Operating Officer of the Wolf Creek nuclear generating facilities. He reported that by the beginning of 2001 NSOC will consist of a total of three external members and five members from within PG&E. Mr. Clark remarked that, during past discussion with PG&E, the Committee raised the question of the value of having a member of NSOC who specialized in human performance issues and Mr. Womack responded that PG&E periodically reviews the performance of NSOC with similar committees at other plants to assess NSOC's future role.

Mr. Jim Tomkins, Manager for Nuclear Safety, Assessment and Licensing at DCPP was recognized to make the next presentation to the Committee.

Review of Reportable Events and NRC Notices of Violation.

Mr. Tomkins stated that there have been three reportable events at DCPP during the period June 7, 2000 through September 13, 2000. He then reviewed each in detail.

The first event involved a 12kV fault and fire which resulted in a declaration of an Unusual Event and a trip of U-1 and a loss of off-site power. The 12kV fault caused a fire and significant damage to 4kV bus and loss of vital power to vital loads. This led to a reactor trip and U-1 shut down safely as designed. The declaration of an Unusual Event was made based upon a fire which lasted longer than fifteen minutes and the loss of both sources of off-site power during

this event. The root cause was determined to have been the thermal failure of a bolted connection, apparently due to degradation or inadequate preventative maintenance, which was exacerbated by a marginal design. Most of the actual physical evidence was destroyed by the fire. Actions taken to preclude a re-occurrence have included upgrading the damaged 12kV bus material from aluminum to copper and refurbishing the damaged 4kV bus. INPO performed an Assist Visit to develop perspective on this event. Long-term corrective actions will include inspection, re-torquing and installation of new boots for all of the bolted joints; upgrading buses with little design margin to copper; and institution of a preventative maintenance program for non-segregated buses. In response to a questions from Dr. Rossin, Mr. Tomkins replied that off-site power to the 12kV system was not completely lost, but the Plant did rely on the emergency diesel generators (EDGs) for the 4kV system for about a day until offsite power was fully restored. Mr. Tomkins further reported that the NRC conducted a Special Inspection from May 15 to June 29, 2000 and held a public meeting in the local area concerning this event on June 29, 2000.

The NRC concluded that Plant's response was good, overall, and the Unusual Event was properly classified. NRC analysis confirmed the root cause and the corrective actions were found to be appropriate. The NRC did issue one non-cited violation (NCV) which resulted from a missed opportunity to detect the degraded condition following a transformer explosion in 1995.

On May 15, 2000, a second reportable event occurred which involved TS 3.0.3 being inadvertently entered when operators restored power to all Reactor Coolant System (RCS) accumulator isolation valves while RCS pressure was at 1500 psig, which was 500 psig above the minimum TS limit. Those valves are required to be operable and open-in-place any time RCS pressure is above 1000 psig. The cause was personnel error and the shift foreman was coached regarding the TS requirements. Operating Procedure L-5 will be changed to contain the TS pressurizer pressure requirement and a lamicoid notice now located at the equipment site will be revised to reference the TS number. Mr. Tomkins and Mr. Oatley discussed with Mr. Clark the nature of the individual counseling provided to the shift foreman and the need to address more than just the specifics of any single personnel error in attempting to prevent a reoccurrence.

Mr. Tomkins reported that on May 25, 2000, a third

reportable event occurred when U-1 was in Mode 3 and TS 3.4.9.1 was not met when operators failed to adequately document compliance with requirements for system heat-up limits. The cause was a faulty procedure which, while it required the Plant process computer to automatically record RCS parameter data, did not require the operators to periodically review that data. Allowable limits were never exceeded during this event. Procedures have been revised to assure adequate documentation of compliance and monitoring of RCS heatup and cooldown surveillance requirements.

Mr. Tomkins reviewed and discussed with the DCISC Notices of Violation (NOVs) from June 7 to September 13, 2000. He reported that there have been no cited NOVs received during this period. Three NCVs were issued for events which included: a portable load center not being restrained to prevent potential seismic interaction with adjacent component cooling water (CCW) piping, the use of an employee from the Emergency Planning organizations to assist in conducting an audit of that program and for re-energizing the safety injection accumulator discharge isolation valves above 1000 psig RCS pressure, which was discussed with the Committee during the review of the reportable events.

Mr. Tomkins observed that there have been significant reductions in the numbers of received NOVs to date in 2000 as compared to 1999. Common cause trend analysis performed by NQS has not identified any discernable trend in the cause of NOVs, however three NCVs have been received involving inadequate control of TS equipment. All NCVs received have been entered into the DCPP Trend Program. During 2000 there have been 13 NCVs received, as compared to a total of 34 during 1999.

In concluding this presentation, Mr. Tomkins briefly reviewed the NRC Performance Indicators and stated that the current white status window status for the Initiating Events Indicator is expected to return to green status very shortly. Mr. Oatley, Mr. Rueger and Mr. Tomkins discussed with the DCISC Members the development of the NRC Performance Indicator Program, its present areas of emphasis and the rationale for the development of certain indicators, currently being reviewed with the industry by the NRC.

XIX PUBLIC COMMENTS AND COMMUNICATIONS

The Chair invited any members of the public present

in the audience who wished to address any remarks or comments to the DCISC to do so at this time. There was no response to this invitation.

XX ADJOURN EVENING SESSION

The evening meeting of the Diablo Canyon Independent Safety Committee was adjourned by the Chair at 6:40 P.M.

XXI RECONVENE FOR MORNING SESSION

The Friday, September 15, 2000 morning meeting of the Diablo Canyon Independent Safety Committee was called to order by the Chair at 8:05 A.M.

XXII INTRODUCTORY COMMENTS BY COMMITTEE MEMBERS

The Chair introduced the Members and the Committee's consultants and Legal Counsel present for this session of the public meeting. PG&E Senior Vice President Rueger was then asked to continue with the technical presentations requested by the Committee.

Mr. Rueger introduced the Director of Learning Services, Mr. Tim Blake, to make a presentation to the DCISC.

XXIII INFORMATION ITEMS BEFORE THE COMMITTEE (Cont'd.)

Overview of the Training Program.

Mr. Blake began the presentation with an overview of the twelve INPO-accredited training programs which are currently under the purview of the Learning Services organization. Six of these accredited training programs focus solely on the Operations organization:

- Non-licensed Operator.
- Reactor Operator.
- Senior Reactor Operator.
- Shift Manager.
- Shift Technical Advisor.
- Operations Continuing Training.

Members discussed with Mr. Blake and with Mr. Rueger the grouping of shift technical advisors, a position requiring an engineering degree, with the Operations training organization

rather than as a part of the Technical training organization. Mr. Rueger observed that treating the shift technical advisors as a part of the Operations organization appears to conform to current industry norms and is consistent with the function of the position as it has evolved at DCPP.

Two of the INPO-accredited programs serve both the Chemistry and Radiation Protection organizations, as their personnel are multi-functional:

- Chemistry Technician.
- Radiation Protection Technician.

Technical maintenance INPO-accredited training programs include:

- I&C Technician and Supervisor.
- Electrical Maintenance Personnel & Supervisor.

INPO-accredited programs are also focused on:

- Mechanical Maintenance.
- Maintenance Supervisor.*
- Engineering Support.

(*The maintenance supervisor programs have been separated into separate electrical and mechanical components.)

Mr. Blake then briefly reviewed and discussed the various other training programs at DCPP which are not INPO-accredited, these include:

- General Employee Training.
- Fire Brigade Training.
- Hazardous Material Emergency Response Training.
- Instructor Training.
- Respirator Training.
- Chemistry Technician Proficiency Training.
- Chemistry and Radiation Protection Non-Accredited Training.
- Radioactive Material Shipping & Radwaste Training.
- Qualification and Certification of Plant Staff.

In response to a query from Mr. Clark, Mr. Blake replied that each of these individual programs has a significant

element of supervisory skill training included as an integral part of the program.

Mr. Blake stated that the training programs are monitored in several ways. Performance Plan Reviews are prepared on a monthly basis for all accredited programs and are recognized as an important tool and used in conjunction with departmental goals by the Learning Services organization. Accredited programs also undergo annual self-assessments. An INPO Evaluation and Accrediting Board review takes place every four years for each of the INPO-accredited programs. NQS performs a continuous audit function for each of the training programs and NQS also reviews the qualification and training credentials of all personnel.

PG&E representatives discussed some of the instances where employees were discovered not to be properly qualified to perform assigned tasks, and Mr. Rueger reviewed some of the controls and the databases which are utilized at DCPP to remind employees of the necessity for timely re-qualification or other training requirements. Mr. Blake stated that the Performance Plan Review process tracks numerous items through the use of feedback, industry and Plant operating experience, assessments of the status of corrective actions and through PG&E's participation in outside assessment activities at other plants. He identified several of the warning flags which have been developed by INPO for the training organization and include: a lack of ownership by line and training managers; weak self-assessments; dissatisfaction as expressed by participants in the programs; failure to use the training experience to improve performance; lack of expertise; or distraction of management's attention from training program and its goals.

Mr. Blake reviewed with the Committee the Learning Services Training Program Evaluations Sheet and the Performance Plan Review for July 2000, which he described as a tool monitored by management on a monthly basis to review ten separate and distinct areas. This report is used to track performance concerning each INPO accredited training program. Members had several questions concerning the process of assembling the data for the Performance Plan Review and the nature and value of the feedback received from the participants in the training efforts, to which Mr. Blake and Mr. Womack and Mr. Oatley responded. **Mr. Clark stated that the Committee would like to review the tracking data concerning the INPO-accredited training and instructor**

training programs at DCPP on a quarterly basis and he suggested PG&E may want to review something similar to the Performance Plan Review format of the INPO-accredited training programs to monitor the non-accredited training programs. In response to a question from Dr. de Planque, Mr. Blake discussed the column on the Performance Plan Review entitled Human Performance in Lessons which reflects the efforts of the training organization to focus line-management on a forward-looking, proactive perspective on training issues to prevent error rather than focusing on training conducted in response to a particular incident or event.

Mr. Blake reviewed and discussed the Learning Services departmental goals which are updated on a monthly basis and which include assessment of: student satisfaction with training; support of the line organizations; self-assessment results; workload management; budget performance; NRC exam performance; human performance initiatives and training observations by management. He remarked that each INPO accredited training program has its own steering committee consisting of members from line management, incumbent program participants and Learning Services personnel. These steering committees review program feedback, select training settings and topics and review human performance issues. In response to questions from the Committee Members, the PG&E representatives reviewed current changes and evolutions within the various training programs at DCPP and remarked that the process-based budget management efforts will provide new data on the actual time expended by the DCPP organization in the entire training process and they reviewed some of the components of training organizations at some of PG&E's other non-nuclear facilities.

In response to a question from Mr. Clark, Mr. Oatley replied that around 16 or 17 employees have been added to DCPP's workforce by virtue of their union seniority rights as a result of PG&E divesting itself of most of its other generation assets, as required under the provisions of California's deregulation legislation. In response to a question from Consultant Wardell, Mr. Blake replied that the multi-discipline Asset Team leaders have completed the first phase of their required technical training and are expected to complete the balance of their training by the end of 2001.

Mr. Rueger then introduced the Director of Nuclear Quality Services at DCPP, Mr. Dave Taggart, to make the next presentation to the Committee.

Results of the 1999 Biennial Nuclear Quality Services Audit and Self-Assessment.

Mr. Taggart stated that Nuclear Quality Services (NQS) performs a self-assessment of its key activities every two years. During the years when self-assessments are not performed, NQS coordinates an audit of key NQS activities performed by independent industry peers, which in the past was referred to as the Joint Utility Management Audit (JUMA). The 1999 Biennial Audit was performed during the period December 6-10, 1999. He then discussed and reviewed the scope of that audit which included:

- Internal Audits.
- Supplier Audits.
- Receipt Inspection Program.
- Procurement Quality Testing Lab.
- Auditor Personnel Qualifications.
- Inspector Personnel Qualifications.
- Follow-up on Previous JUMA Findings.

In response to a query from Consultant Booker, Mr. Taggart replied that the scope of a Biennial Audit is determined by procedures which require the audit to address certain mandatory topics and by a review of previous problems or changes which have occurred within the DCPP organization. Mr. Taggart and Mr. Rueger stated that the audit findings are primarily directed to PNAC for its review, comment and direction and that a required minimum scope of the Quality Assurance (QA) audit function is an integral part of the FSAR. NSOC's external members have occasionally been asked to review the DCPP Quality Program and the performance of audits and to make recommendations to NSOC as a whole. Mr. Taggart remarked that the latest audit represented about 250 person-hours of assessment time and included industry peers from Palo Verde, WNP-2 (Columbia), Cooper and Fermi nuclear power plants. In response to a question from Dr. Rossin, Mr. Oatley responded that PG&E encourages and makes available DCPP personnel for similar efforts at other nuclear facilities in its attempt to identify the best practices industry-wide.

Mr. Taggart then reviewed with the Committee a summary of the independent peer group's conclusions and the results of the Biennial Audit as follows:

- The Internal Audit Program, the Supplier Audit Program and the Receipt Inspection Program exhibited good and very effective performance.

- The Material Testing Program exhibited satisfactory and effective performance.

- Improvements were necessary in the areas assessed from the last JUMA and the 1998 NQS Self-Assessment.

- Good teamwork was observed, both internally and externally within NQS.

There were three findings made by the 1999 audit team which included:

- Receipt Inspection Certification Packages were found with administrative errors.

- Two auditor certifications were found to be past due for their annual evaluation.

- A potential conflict was identified between Procurement Engineering and NQS procedures on sampling.

Mr. Taggart reported that the 1999 audit identified six strengths including:

- Senior NPG management participation and support of the internal audit process as demonstrated by the Senior Vice President's participation on the 1998 audit of Emergency Preparedness.

- Audits and assessments of the Engineering organization were found to be thorough, in-depth, performance-based and technically probing.

- Third party reviews and follow-up by NQS procurement assessment for potential impact on DCPP.

- Development and use of the Plant Information Management System (PIMS) qualified suppliers list database, as well as other databases that support the receipt inspector.

- Development and implementation of the receipt inspector

qualifications guidelines.

- Receipt inspector qualifications and proactive support of the plant.

Mr. Taggart and Dr. Rossin briefly discussed the current requirements concerning the purchase and use of commercial grade materials by nuclear facilities. In response to a question from Consultant Wardell, Mr. Taggart confirmed that the next Biennial Audit is scheduled for 2001.

Mr. Womack reported to the DCISC that the NQS and Nuclear Safety Licensing and Assessment organizations at DCPP will be consolidated shortly in order to improve efficiency and he briefly reviewed the proposed structure of the new organization.

A short break followed.

Mr. Rueger requested Mr. Oatley to make the next technical presentation to the Committee.

Integrated Assessment Process Overview.

Mr. Oatley observed that the purpose of the Integrated Assessment Process is to use information obtained from various performance assessments to facilitate the early identification of declining or marginal performance. The Integrated Assessment Process facilitates communication to senior management and Plant staff of those recommendations which are made to enhance performance and it provides a means to evaluate DCPP performance against NRC criteria. He remarked that the Integrated Assessment Process does tend to focus on areas needing improvement, rather than those demonstrating identified strengths. The Integrated Assessment Process utilizes data from:

- NQS Quality Performance Assessment Report (QPAR).
- Line Self-Assessments.
- NRC Performance Indicators.
- NRC Inspection findings.
- Assessments of NRC violations.
- Significance Determination Evaluations.

Mr. Oatley reviewed the results of the Integrated Assessment Process for the second quarter of 2000 which he

stated has been compiled into a report directed to Mr. Rueger, as PG&E's Chief Nuclear Officer, from information provided by the Plant Manager and senior managers at DCPP. The second quarter report for 2000, while finding that overall performance was acceptable, identified the following issues:

- DCPP human performance is not improving and may be declining slightly in the Maintenance and Operations organizations.

- DCPP currently has an NRC Performance Indicator white status window for unplanned loss of normal heat sink for U-2.

- DCPP does not adequately trend low level errors due to inadequate guidance on when to write an Event Trend Record (ETR) and because of the complexity of the present software in use.

- DCPP has not made sufficient progress toward lowering personnel radiation exposure during non-outage periods.

Mr. Clark remarked that the Integrated Assessment Report appears to be a positive tool and he requested copies of the 2000 first and second quarter reports and a copy of the third quarter report when it is prepared for the Committee's review.

Mr. Oatley reviewed trends at DCPP since 1997 concerning the rate of human error which indicate that human error is increasing slightly at DCPP, although the Plant remains in the top quartile of the industry for acceptable human error performance. He observed that the increase in this trend somewhat correlates to those times within the Maintenance organization when there has existed the most concern regarding job security among the present workforce, as PG&E employees from other non-nuclear facilities were afforded and exercised their union rights to claim jobs at DCPP, as well as to those times when refueling outages were conducted which utilized additional contractor personnel on-site. Mr. Oatley reviewed efforts being made to identify the reasons for human errors and to create strategies to address them. Members discussed with Mr. Oatley and Mr. Rueger the value of using incentives and competition in lowering rates of human error, as well as use of self-verification efforts employing formal three-part communication and tail-board reviews and training sessions.

Mr. Clark remarked that the Committee is planning a fact-

finding during December 2000 to study how the various efforts to minimize human error at DCPP are integrated.

Mr. Rueger introduced Mr. Bruce Terrell, Supervisor of the Corrective Action Program at DCPP to make the next technical presentation to the Committee.

Review of Tracking and Trending Results for Non-Cited Violations.

Mr. Terrell began his presentation by reviewing the NCV criteria which he described as those violations with a very low safety significance and he discussed with the Members the definition of low safety significance as currently employed by the NRC. Mr. Rueger remarked that since the NRC has revised their process all nuclear plants have seen a drop in NOVs and the tracking and trending program for the NCVs at DCPP is an effort to make sure that these NCVs are given strict attention.

Mr. Terrell reviewed the circumstances which could result in a NCV rising to the level of a cited NOV. These include a failure to restore compliance within a reasonable time, failure to place the violation in the Corrective Action Program to address its reoccurrence, a repetitive violation which is the result of inadequate corrective actions or a finding that a violation is willful.

Mr. Terrell discussed the mechanics of managing the review process for tracking the NCVs. Status of corrective actions for NCVs are reviewed weekly and are analyzed by an engineer and the Error Review Team to ensure that the level of remediation is appropriate and adequate to the nature of the identified error. A tracking Action Request (AR) is initiated and all trend data for each NCV is entered on the Event Trend Record. Periodic trending of the NCVs is performed to determine the effectiveness of corrective actions. During the past one-year period, DCPP has received 27 NCVs, of which 8 are still open with corrective actions yet to be completed. One specific event has had a repeat occurrence. This involved the presence of a flammable, compressed gas container in the power block and DCPP management is evaluating the need for additional corrective actions. Mr. Terrell stated that the NCV trending data is the starting point for a process which ultimately includes evaluation of the entire scope of Plant ETR data. No discernable negative trends have been discovered to date within the ETR data categories, which include:

- Procedures being used.
- Work process data concerning procedural problems.
- Worker-related data concerning human error and procedural adherence.
- Organizational data from Operations, Maintenance, Engineering, etc.

Mr. Terrell briefly reviewed the individual attributes of the 27 NCVs received during the preceding one-year period as follows: 23 of the 27 involved surveillance test procedures; 22 of the 27 involved TS; 21 of the 27 involved administrative procedures. He then summarized the NCV trends according to the origin of the problems and he observed that problems in using and adhering to the TS were the most frequent contributor to NCVs at DCPP. Members and consultants had several questions for Mr. Terrell concerning the data he presented. Mr. Terrell then reviewed Plant trend data which, he remarked, identified inattention and failure to adhere to procedure as significant items in the ETR database.

Mr. Terrell concluded his presentation with a review of the NCV ETRs by organization and noted that more than one department can be involved with generating a single NCV. Maintenance and Operations departments were identified as contributing to the largest share of NCVs which was not unexpected due to their direct impact on the Plant's operation.

In concluding his presentation, Mr. Terrell stated that DCPP does have a program in place to review and trend all the NCVs received from the NRC as well as to analyze the various attributes of individual NCVs.

Mr. Rueger introduced Mr. Russell Gray to make the final technical presentation to the Committee.

Management of Radiation Exposure During 1R10.

Mr. Gray began the presentation with a brief history of the high radiation dosage rate experienced during the 1R9 refueling outage, which resulted in a 309.5 person-rem exposure and exceeded by a considerable margin the exposure goal set for 1R9 of 184 person-rem. Mr. Gray stated that the reasons for the higher exposure rate experienced during 1R9 were:

- RHR pipe dose rate was 2 to 4 times higher than that experienced during 1R8.

- The reactor head dose rate was about 2 times higher than that experienced during 1R8.

- The excess letdown system showed a significantly higher dose rate.

Mr. Gray observed, however, that the steam generator bowl dose rate during 1R9 decreased by an average of 12% due to the use of zinc injection during the 1R8-1R9 operating cycle. The zinc was injected in an effort to mitigate potential primary water stress corrosion cracking. He also identified as contributing to the high dose rate during 1R9 the forced outage experienced during December 1999; an increase in particulate activity transport during the end of the 1R8-1R9 cycle; and higher concentration of cobalt due to the injections of zinc and plate-out activity when RHR was placed in service.

Mr. Gray then reviewed the initiatives undertaken at DCPP during 2R9 to avoid the experiences of 1R9 and their anticipated effect. The RCS pH was lowered near the end of the fuel cycle in an attempt to avoid an end-of-cycle increase in RCS activity. The Chemical Volume and Control System (CVCS) filters were changed out during the end of cycle to reduce dissolution of source term at the end of the cycle. The zinc injection concentration was lowered to reduce the potential effect of the zinc. There was a complete boration of the RCS prior to cooldown to ensure acid reducing conditions prior to cooldown. A hold was reestablished at 325°F prior to RHR initiation, to support the dissolution of particulates. The RCS temperature at which the RHR is placed in service was lowered to reduce thermal delta which may drive particulate drop out. The RHR was pre-heated before being placed into service to reduce thermal delta which may drive particulate drop out. Forced oxygenation of the RCS was scheduled for a specific time, in order that a minimum of work could be scheduled for the high dose rate period during forced oxygenation.

Mr. Gray reviewed efforts made within the DCPP organization to achieve lower dose rates during 2R9. These included emphasis on principles of accountability, the As Low As Reasonably Achievable (ALARA) Program, coordination between workgroups, better staffing, outage planning and work

practices and increased training for radiation and technical workers. A Rad Worker Handbook was developed and extensive tailboards were conducted with workgroups. Databases were established to trend workers' practices and ALARA Program staffing was redesigned. Service level agreements were made with the Asset Teams and there was increased management involvement with radiation protection issues. The results for 2R9 were the lowest dose rates ever experienced at DCPP for an outage, 120.3 person-rem, and improved rad worker performance in terms of low numbers of documented errors.

Mr. Gray discussed the May 2000 forced outage for U-1 caused by a bus fire which tripped the plant. Little radiological work was performed but a 2.5 person-rem dosage was accumulated during this forced outage. Lessons concerning chemistry were incorporated into the forced outage and forced oxygenation was performed and resulted in a good cleanup. However, Mr. Gray remarked that U-1 developed unexpectedly high dose rates in the RHR and Letdown Systems during start up for reasons which are still not fully understood.

Mr. Gray stated that DCPP, as compared to other nuclear facilities, showed a higher dose rate for personnel, on the order of 2 to 3 person-rem per month, and he observed that management recognized that this was too high for a pressurized water reactor. An effort was initiated, entitled Manage the Mili-Rem, to focus attention on small doses. He discussed and described some other efforts being undertaken DCPP to reduce dose, including increased use of temporary shielding during non-outage periods; reduction in the number of radiation protection surveys and containment entries; purchase of new telemetry and electronic dosimetry systems; improvement to equipment and techniques to reduce exposure to rad waste personnel; and the use of ultrasound for venting the Emergency Core Cooling System (ECCS).

The goal for 1R10 was set as an exposure goal of 147.5 person-rem, to be achieved using shutdown techniques similar to those used during 2R9 with the addition of an RHR flush during startup. Other planned flushes will include containment spray/RHR on the 115 foot level of containment and the RHR above the RHR sump. Work activities have been planned factoring daily exposure goals and any deviation from these goals will receive management attention.

Plans for monitoring radiation exposure during 1R10 include early characterization of radiological conditions and

a communication plan. Mr. Gray stated that the overall outage exposure goal for 1R10 is somewhat high due to the dosage received during the May forced outage. Mr. Gray discussed with the Members the various factors impacting the exposure rates, given the outage duration, and he then compared exposure rates experienced at other facilities and discussed the possibility of altering the exposure goal as an outage progresses. The PG&E representatives discussed their method of setting goals with Dr. Rossin and stated that these goals are not normally varied during an outage. The 1R9 outage was an exception to this rule due to the greater source term experienced and its impact on the outage incentive package. In response to a question from Dr. Rossin, Mr. Gray replied that the administrative limit of 2 rem for any employee is never exceeded and the highest dosage for any employee has been an exposure of 1.7 to 1.8 rem. Mr. Clark questioned, and Mr. Gray and Mr. Rueger confirmed, that a source-term reduction program is currently an element of the ALARA program. Mr. Gray observed that there are significant differences in dose rate between U-1 and U-2 and Mr. Clark mentioned that the North Anna Plant has similar differences between its operating units. Mr. Gray confirmed that PG&E is working with the Electric Power Research Institute (EPRI) and INPO to identify the reasons for the differences between the DCPP units.

XXIX PUBLIC COMMENTS AND COMMUNICATIONS

The Chair invited public comments at this time, however, there were no comments by members of the public. The Committee then returned to a discussion on the approval of fact-finding reports.

XXV CONCLUDING REMARKS AND DISCUSSION

Drs. de Planque and Rossin observed that the technical presentations made by PG&E were valuable and informative. Mr. Clark reviewed and discussed with the PG&E representatives the two days of fact-finding scheduled for December 2000, with Dr. Cass, to review human performance issues as well as other technical issues at the Plant site. Dr. Rossin reported that he is planning a fact-finding with Consultant Wardell during October 2000 and is also planning to attend the meetings of PNAC and NSOC with Consultant Booker in November 2000. Dr. Rossin also remarked that he is planning a meeting with Mr. Rueger in San Francisco at Mr. Rueger's convenience. Dr. de Planque stated that she planned to

schedule a fact-finding during Spring of 2001 to attend an emergency drill and she requested that PG&E provide a schedule for the PNAC and NSOC meetings scheduled for 2001 when it is available.

The next public meeting of the DCISC are scheduled for February 7-8, June 20-21 and October 17-18, 2001.

XXVI ADJOURNMENT OF THIRTY-FIRST SET OF MEETINGS

There being no further business, upon a motion by Dr. Rossin, seconded by Dr. de Planque, the thirty-first meeting of the Diablo Canyon Independent Safety Committee was adjourned by the Chair at 12:10 P.M.

NOTICE OF MEETING, PUBLIC FACT-FINDING AND PLANT TOUR BY THE DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

NOTICE IS HEREBY GIVEN that on February 7, 2001, at 8:00 A.M., the members of the Diablo Canyon Independent Safety Committee ("DCISC") will conduct an inspection tour of the Diablo Canyon Power Plant. This tour, which will take approximately four hours, will be open to the public on a limited basis, as follows: because the plant is an operating nuclear power plant, the tour will be limited to fifteen (15) members of the public on a reserved first-come, first-served basis, with preference given to those members of the public who have not attended previous DCISC tours, and with prior clearance of all public attendees required in compliance with NRC procedures.

NOTICE IS HEREBY FURTHER GIVEN that on February 7 and 8, 2001, at the Cliffs at Shell Beach Conference Center, 2757 Shell Beach Road, Shell Beach, California, a public meeting and fact-finding will be held by the DCISC in four separate sessions, at the times indicated, to consider the following matters:

1. **Afternoon Session - (2/7/2001) - 1:30 P.M.**: Introductory comments, approve minutes of September 14-15, 2000 meetings; consider PG&E's response to the 1999-2000 DCISC Annual Report; a review of the DCISC Open Items List; discussion of administrative matters; Committee member and staff-consultant reports including a report on the plant tour; receive, approve and authorize transmittal of fact-finding reports to PG&E; and to receive public comments and communications to the Committee.

2. **Evening Session - (2/7/2001) - 5:30 P.M.**: Comments by Committee members; consider various technical presentations requested by the Committee from PG&E on topics relating to plant safety and operations, including an update on plant events and operational status, a review of DCISC and NRC selected performance indicators, an update on the activities of PG&E's Nuclear Safety Oversight Committee, a review of NRC Notices of Violations and Licensee Event Reports, a presentation on Nuclear Quality Services 2000 Review; and receive public comments and communications to the Committee.

3. **Morning Session - (2/8/2001) - 8:00 A.M.**: Opening comments by Committee members; consider further technical

presentations from PG&E on topics relating to plant safety and operations, including the 2001 Culture Transition Strategies, a review of refueling outage 1R10 steam generator tube test results, a review of refueling outage 1R10 As Low As Reasonably Achievable (ALARA) and dose results, a presentation on the status of the California energy issue, a discussion of the California energy issue and Diablo Canyon Power Plant's actions; receive public comments and communications to the Committee; and wrap-up discussion by Committee members and the scheduling of future site visits, study sessions and meetings.

4. **Afternoon Public Fact-Finding - (2/8/2001) - 1:30 P.M.**: Convene public fact-finding and consider technical presentations by PG&E on topics relating to plant safety and operations including the overall result of refueling outage 1R10, a presentation on refueling outage 1R10 and the Safety Plan, a discussion of PG&E's Nuclear Power Generation Five-Year Business Plan; receive public comments and communications to the Committee; and adjournment of the public fact-finding.

The specific meeting and fact-finding agenda and the staff reports and materials regarding the above agenda items will be available for public review commencing Monday, February 5, 2001, at the NRC Public Document Room of the Cal Poly Library in San Luis Obispo. **For further information regarding the public meeting and fact-finding, please contact Robert Wellington, Committee Legal Counsel, 857 Cass Street, Suite D, Monterey, California, 93940; telephone: 1-800-439-4688 or visit the Committee's website at www.dcisc.org. To make a reservation for the plant tour, please telephone the Committee's office on a weekday between the hours of 9:00 A.M. and 5:00 P.M. at 1-800-439-4688. Please make your call prior to 5:00 P.M. on Thursday, January 25, 2001, when tour reservations will be closed.**

Dated: January 18, 2001.

Exhibit B.5

DIABLO CANYON
INDEPENDENT SAFETY COMMITTEE

Committee Members: Philip R. Clark
E. Gail de Planque
A. David Rossin

* *

AGENDA

Wednesday & Thursday
February 7 & 8, 2001
Shell Beach, California

Cliffs at Shell Beach
Hotel Conference Center
2757 Shell Beach Road

Afternoon Session - 2/7/2001 - 1:30 P.M.

I. CALL TO ORDER - ROLL CALL

II. INTRODUCTIONS

III. CONSENT AGENDA (Routine items which the Committee can approve with a single motion and vote. A member may request that any item be placed on the regular agenda for separate consideration.)

A. Minutes of September 14-15, 2000 Meetings:Approve

IV. ACTION ITEMS

A. PG&E Response to the 1999/2000 DCISC Annual Report — Discussion
B. Review of the Open Items List — Discussion/Action
C. Update on Financial and Budgetary Matters for 2000/2001 — Discussion/Action
D. DCISC Activities During 2001 — Discussion

V. COMMITTEE MEMBER REPORTS AND DISCUSSION

A. Site visits and Other Committee Activities
B. Documents Provided to the Committee

VI. STAFF-CONSULTANT REPORTS

A. Ferman Wardell
Fact-finding topics
B. Jim E. Booker
Fact-finding reports
C. Dr. Hyla Cass

Human performance Issues

D. Robert Wellington
Administrative and legal matters

VII. COMMITTEE FACT-FINDING REPORTS:
Receive, approve and authorize transmittal to PG&E

VIII. CORRESPONDENCE

IX. PUBLIC COMMENTS AND COMMUNICATIONS (Oral communications on Committee matters, limited to 5 minutes per speaker. No immediate action will be taken on matters raised, but they may be referred for further study, response or action.)

X. ADJOURN AFTERNOON MEETING

Evening Session - 2/7/2001 - 5:30 P.M.

XI. RECONVENE FOR EVENING MEETING

XII. INTRODUCTORY COMMENTS

XIII. INFORMATION ITEMS BEFORE THE COMMITTEE

A. Technical Presentations Requested by the Committee of P.G.& E. Representatives:

1) General Introductions
2) Plant Events and Operational Status
3) Review of DCISC-Selected Performance Indicators
4) Review of NRC-Selected Performance Indicators
5) Activities of PG&E's Nuclear Safety Oversight Committee
6) Review of NRC Notices of Violations and Licensee Event Reports
7) Nuclear Quality Services 2000 Review

XIV. PUBLIC COMMENTS AND COMMUNICATIONS (Oral communications on Committee matters, limited to 5 minutes per speaker. No action will be taken on matters raised, but they may be referred for further study, response or action.)

XV. ADJOURN EVENING MEETING

Morning Session - 2/8/2001 - 8:00 A.M.

XVI. RECONVENE FOR MORNING MEETING

XVII. INTRODUCTORY COMMENTS

XVIII. INFORMATION ITEMS BEFORE THE COMMITTEE (Cont'd.)

8) 2001 Culture Transition Strategies
9) Refueling Outage 1R10 Steam Generator Tube Test Results
10) Refueling Outage 1R10 "As Low As Reasonably Achievable" (ALARA) and Dose Results
11) Status of California Energy Issue
12) California Energy Issue - Diablo Canyon Power Plant's Actions

XIX. PUBLIC COMMENTS AND COMMUNICATIONS (Oral communications on Committee matters, limited to 5 minutes per speaker. No action will be taken on matters raised, but they may be referred for further study, response or action.)

XX. ADJOURN MORNING MEETING

Afternoon Session - 2/8/2001 - 1:30 P.M.

XXI. RECONVENE FOR AFTERNOON MEETING

XXII. MEMBERS COMMENTS

XXIII. INFORMATION ITEMS BEFORE THE COMMITTEE (Con'd.)

13) Refueling Outage 1R10 Overall Results
14) Refueling Outage 2R10 and Safety Plan
15) Five-Year Nuclear Power Generation Business Plan

XXIV. PUBLIC COMMENTS AND COMMUNICATIONS (Oral communications on Committee matters, limited to 5 minutes per speaker. No action will be taken on matters raised, but they may be referred for further study, response or action.)

XXV. CONCLUDING REMARKS AND DISCUSSION BY COMMITTEE MEMBERS

A. Future Actions by the Committee
B. Further Information to Obtain/Review
C. Scheduling of Future Site Visits, Study Sessions and Meetings

XXVI. ADJOURNMENT OF THIRTY-SECOND SET OF MEETINGS.

M I N U T E S
of the
FEBRUARY 2001 MEETING
OF THE
DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

Wednesday & Thursday
February 7-8, 2001
Shell Beach, California

Notice of Meeting

A legal Notice of Meeting was published in local newspapers, along with several display advertisements, and was mailed to the media and those persons on the Committee's service list.

Agenda

I CALL TO ORDER

The February 7, 2001, afternoon meeting of the Diablo Canyon Independent Safety Committee(DCISC)was called to order by Committee Chair Philip R. Clark at 1:30 P.M. at the Cliffs at Shell Beach Hotel Conference Center in Shell Beach, California.

Present:	Committee Chair Philip R. Clark
	Committee Member Dr. E. Gail de Planque
	Committee Member Dr. A. David Rossin
Absent:	None

II INTRODUCTIONS

Mr. Clark introduced the Committee Members, the consultants and Legal Counsel in attendance at these meetings.

III CONSENT AGENDA

The Chair requested Legal Counsel Wellington to present the only item from the Consent Agenda, a routine item which the Committee could approve by vote or, on motion of a Member, remove to the regular agenda. That item was approval of the Minutes of the September 14-15, 2000 DCISC Meetings. Revisions to content were suggested and approved by the Members and editorial corrections were noted and provided to Mr. Wellington.

Committee Business

IV ACTION ITEMS

A. PG&E Response to the 1999/2000 DCISC Annual Report. Committee Members and consultants discussed, reviewed and evaluated responses by PG&E to the Committee's Recommendations contained in its 1999/2000 Annual Report on Safety of Diablo Canyon Operations and they discussed certain of the PG&E responses with PG&E Vice President Larry Womack:

R2000-1 Re: PG&E emphasis on assuring employees, particularly within Operations, improve Technical Specification(TS)adherence - Response found acceptable, however, the DCISC will continue to follow-up on PG&E's performance concerning adherence to TS in the future.

R2000-2 Re: including all Licensee Event Reports(LERs), which involve problems affecting offsite power, in the Corrective Action Program effectiveness review and to report the results to the DCISC during a future fact-finding or public meeting - Response found acceptable.

R2000-3 Re: assuring that, during review of the Aging Management Program, adequate program controls and functions are maintained and any revised program is designed and resourced to be at least as strong and effective as the previous program - Response found acceptable, subject to PG&E providing a list of the systems which will and will not be covered by the long-term Aging Management planning process.

R2000-4 Re: training of foremen for all the Asset Teams in areas where they lack expertise - Response found acceptable.

R2000-5 Re: PG&E visiting other utilities with strong Corrective Action Programs to measure their effectiveness and help in the further development of the Diablo Canyon Power Plant(DCPP)Corrective Action Program - Response found acceptable, subject to DCISC review of

the Nuclear Energy Institute (NEI) Corrective Action Benchmarking Project report and PG&E's implementation of the lessons identified in that report.

R2000-6 Re: performing a comprehensive review to assure all materials subject to aging or requiring periodic replacement are included in aging and replacement management programs and to address any other areas where a manufacturer's guidance may not have been followed - Response found acceptable.

R2000-7 Re: investigating a method to coordinate various Human Performance Programs and to disseminate information within the DCPP organization on these Programs - Response found acceptable.

R2000-8 Re: augmentation of programs for operator health, fitness and aging to address relevant issues and to further improve operator human performance - Response found acceptable.

R2000-9 Re: emphasizing teaching operators to recognize the priorities of the tasks themselves, rather than relying largely on prioritized procedures - Response found acceptable. The issue may be followed-up during a future fact-finding.

R2000-10 Re: Nuclear Quality Services (NQS) involving the Nuclear Safety Oversight Committee (NSOC) in the selection and the scope of the Biennial Audit/Self-Assessments to be sure of the independence of the NQS department - Response found acceptable.

R2000-11 Re: initiating a review by the Design Engineering organization, or at the Plant Staff Review Committee (PSRC) or NSOC level, to determine if any other design basis requirements, particularly in the civil engineering area, have not been implemented such as with the Seismic Gap Program, the emergency diesel generator (EDG) seismic wall problem and the previously corrected seismic masonry wall inadequacies - Response found

acceptable.

R2000-12 Re: continuing short and long-term development of the System Summary Health Report for all systems and sharing this information with Operations, Maintenance and Engineering - Response found acceptable, subject to receipt of a comprehensive listing of DCPP systems for which System Summary Health Reports will be implemented.

R2000-13 Re: review of the Intake Structures concrete inspection plan for each refueling outage to assure that the entire inspection plan is implemented and conducted and that necessary repairs are made to these structures - Response found acceptable, however, DCISC will follow-up concerning the specific reasons for not inspecting these structures during certain past refueling outages.

The Chair reported that the Committee accepted all of the PG&E responses to the DCISC Recommendations contained in the 1999/2000 Annual Report.

B. Review of Open Items List. Consultant Ferman Wardell reviewed the Open Items List which is used to track items which the Committee designated for follow-up, requested further information during fact-finding, at its public meetings or in its Annual Report. In response to a query from the Chair, Mr. Wardell reported that the total number of items on the List appears to be decreasing slightly. The Chair reviewed with the other Members the efforts made to consolidate and review the frequency with which the Committee commits to revisit certain of the topics on the Open Items List. Mr. Clark requested the Members and consultants carefully review all the items which are recommended on the List for closure to verify the appropriateness of that action. Any requests to continue items indicated for closure on the current Open Items List should be provided to Mr. Wardell during this public meeting of the DCISC.

C. Update on Financial & Budgetary Matters for 2000-2001. The Chair requested Mr. Wellington to review financial reports received from the Committee's Accountant. Members discussed with Mr. Wellington the DCISC spending for 2000, and the amount to be remitted to

PG&E for grantor trust funds remaining and not disbursed by the Committee at the end of the 2000 calendar year. **The Members directed the Committee's accountant to discontinue the reference to profit on the Committee's financial statements, as the Committee receives its funding in trust from PG&E as the grantor, and the DCISC does not retain any profit from its operations. The Committee directed Mr. Wellington to instruct the Committee's Accountant to review the Committee's financial records and continue to comply with California's new child support enforcement regulations.**

D. DCISC Activities During 2001. Mr. Clark stated that he plans to attend a fact-finding meeting with Consultant Wardell at DCPP during March 14-15,2001. Dr. Rossin and Consultant Jim Booker will coordinate their schedules with PG&E's calendar of events to arrange for a fact-finding for the third week of April 2001. Dr. de Planque reported that she is planning to attend fact-finding meetings and a meeting of NSOC at the Plant during May 1-2, 2001, and that she would be available to meet with State representatives, either before or after the next scheduled public meeting of the Committee on June 20-21, 2001. The Committee Members and consultants discussed coordinating a fact-finding on human performance issues with Consultant Dr. Hyla Cass and PG&E during June 2001. Dr. de Planque will investigate any possibility of altering her existing commitments to permit her attendance at the Emergency Drill scheduled for August 17, 2001. **The Chair requested that Members and consultants coordinate agendas for future fact-findings with Mr. Wardell and Mr. Booker to ensure continued coverage of those items selected for follow-up on the Open Items List.** The next public meetings of the DCISC are scheduled for June 20-21 and October 17-18, 2001. **The Chair requested that the Members continue the practice of making an annual visit to their appointing State agencies to update them and discuss the Committee's current activities.**

A short break followed.

V COMMITTEE MEMBER REPORTS AND DISCUSSION

a) Site Visits and Other Committee Activities: Dr. Rossin reported that he participated in two fact-findings with PG&E, the first with Consultant Wardell was held on October 25-26, 2000, and took place during a refueling outage. The DCISC representatives observed a shift turnover and activities within Containment. They also held discussions with PG&E concerning issues of low-level radioactive waste and the

integrity of the reactor pressure vessel and met with the Director of Human Resources at DCPP.

A second fact-finding with Consultant Booker included attending a meeting of NSOC and discussions with PG&E concerning pipe cracking, fuel, and spent fuel storage issues. Dr. Rossin reported that these fact-findings proved to be useful and informative.

In response to a query from Mr. Clark, Mr. Womack replied that PG&E has made a decision to proceed with dry spent fuel storage and is presently working with HOLTECH, a contractor, on the design of a dry cask spent fuel storage facility for DCPP. In response to a question from Dr. Rossin, Vice President Womack opined that there would be concern and possible opposition from segments of the local community to PG&E's License Amendment Request(LAR)to the NRC to approve dry cask on-site storage of spent fuel.

Mr. Clark reported on a fact-finding held in December 2000, with Consultants Dr. Cass and Mr. Booker. The first day of the fact-finding concerned human performance, behavior, health and wellness issues and Mr. Clark reported that PG&E appears to be making significant efforts to address human error. The second day of the fact-finding concerned topics which will be reviewed during Mr. Booker's report.

Mr. Clark then reported briefly on his meeting with Commissioner Laurie of the California Energy Commission. The Commissioner and his staff received information on the Committee and its activities from Mr. Clark and he answered several questions concerning the Committee and its role.

b) Documents provided to the Committee: Mr. Wellington reviewed the lists of the documents provided to the Committee by PG&E, the NRC and other sources since the last public meetings of the Committee.

VI STAFF-CONSULTANT REPORTS

Consultant Wardell reported on the October 25-26, 2000, fact-finding meeting with Dr. Rossin. This fact-finding was conducted during the tenth refueling outage for Unit 1 (1R10) and the DCISC representatives observed an Outage Daily Meeting, visited the Outage Work Control Center and discussed the Outage Safety Plan with the Outage Director. Mr. Wardell reported that there were three reportable events during 1R10 which PG&E will review with the DCISC. It was reported that

PG&E created a chart, used during 1R10, to determine the risk of loss of heat removal at any time during a refueling outage. This chart is used during Outage Daily Meetings and it shows the Reactor

Coolant System (RCS) water level versus heat removal for various modes of operation. Mr. Wardell and Dr. Rossin commented that the chart was a useful tool and Dr. Rossin suggested that PG&E consider sharing this valuable and effective tool within the nuclear industry.

The DCISC representatives then met with the Turbine Component Engineer to discuss work performed on the Unit 1 (U-1) Turbine, resulting from a blade which was lost due to hot cycle fatigue. They also toured Containment, observed fuel movement, Radiation Protection (RP) controls and a Control Room Shift Manager turnover and control board walkdown. During the fact-finding, Dr. Rossin had an opportunity to meet with several DCPP managers. Mr. Wardell and Dr. Rossin also met with the NRC Resident Inspector for DCPP and the Inspector confirmed the NRC's intent to continue to review issues at DCPP regarding human performance and the effects of deregulation on the transmission system and grid reliability. They also discussed with the inspector the NRC's implementation of its risk-based review process. The DCISC representatives also took a driving tour of DCPP to familiarize Dr. Rossin with the important physical features of the Plant site. **Mr. Clark commented that the Committee may wish to consider meeting on a regular basis with the NRC's Resident Inspector at DCPP during some of its fact-findings held at the Plant site.**

Dr. Rossin and Mr. Wardell met with the System Engineer for the Liquid and Solid Radioactive Waste Processing Systems and received a briefing on those Systems. They held discussions with the Component Engineer concerning the integrity of the Reactor Pressure Vessel. In response to a query by Mr. Clark, Dr. Rossin replied that it appears there is sufficient margin concerning Reactor Pressure Vessel embrittlement to permit continued operations during the full term of the current license period for DCPP. The DCISC representatives also met with the current Director of the Aging Management Program and observed that PG&E has not yet met some of its earlier established goals for the Aging Management Program. The Program Director discussed some areas which PG&E will be addressing to meet management's expectations for the Aging Management Program. A discussion

was also held with the RP Program Director during this fact-finding. A detailed report of the Fact-Finding will be developed and included in the Annual Report.

Mr. Wardell briefly discussed the Annual Report preparation schedule and distributed individual assignments for sections of the Committee's Eleventh Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, covering the period July 1, 2000 through June 30, 2001.

Committee Consultant Booker reported on the November 14-15, 2000, fact-finding conducted with Dr. Rossin. DCISC representatives attended a joint meeting of PG&E President's Nuclear Advisory Committee (PNAC) and the NSOC and they reported that the joint meeting format proved an excellent and efficient venue to permit the participants to remain informed on the major issues affecting DCPP and that the DCISC should consider recommending to PG&E that the joint format be continued whenever possible.

The DCISC representatives received a presentation on the Intake Structure inspection and repair and the RP Program results during 1R10 and they reviewed the corrective actions taken and those planned, which resulted from a U-1 reactor trip on September 22, 1999, caused by a lightning strike in a switchyard. They also reviewed the results of the steam generator (SG) inspections during 1R10 and discussed PG&E's plans for addressing the spent fuel storage issue and the efforts to disseminate information to the public concerning those plans. The DCISC representatives held discussions concerning DCPP nuclear fuel and issues relating to the use of boraflex in the Spent Fuel Pool. In response to a query from Dr. de Planque and an observation by Dr. Rossin, **it was noted that all reference to discussions and observations contained within Committee fact-finding reports should clearly indicate when a comment is taken from NSOC or PNAC materials or participants and when a comment expresses the opinion or observations of the DCISC representatives.** A detailed report of the Fact-Finding will be developed and included in the Annual Report.

Mr. Booker reported on a fact-finding held on December 14, 2000, with DCISC Member Clark. Topics reviewed with PG&E on that occasion included a report on the status of the Transition Program preparing DCPP for competition and he noted that activities outstanding from the Transition Plan are now being included in the long-term Performance Plans for DCPP.

The DCISC representatives discussed the Engineering Workload Performance Indicators used to assess resources available to accomplish work assigned. In response to a question from Dr. Rossin and Mr. Clark, Vice President Womack observed that PG&E is not surprised that some employees have raised issues concerning the number of *ad hoc* committees on which they serve, however, PG&E continues to believe the efficiency-improving objectives which are realized through the use of plant-wide, rather than intra departmental committee participation warrant the time spent in those efforts. Mr. Womack discussed PG&E's expectations concerning communication to their workforce from the directors, managers and supervisors participating in committees. Mr. Clark and Mr. Booker also had a presentation by PG&E on NRC approved alternate source terms which can be used by utilities for accident calculations and PG&E's plans to implement these alternate requirements. The DCISC representatives reviewed the status of the STARS Program, in which DCPP participates and which fosters cooperation by and between four other nuclear power plants with similar design. Mr. Booker reported that the NQS organization reviewed the efforts made in addressing computer problems experienced by DCPP's Security organization and that the DCISC representatives were provided an update on the Self-Assessment Program. **Mr. Clark commented that the Committee may wish to consider conducting a review of the DCPP Security organization and the level of attention given to that organization by PG&E management.**

Committee Consultant Dr. Hyla Cass M.D. reported to the Committee on the fact-finding of December 13-14, 2000, which she attended with Member Clark. Dr. Cass commented on multiple issues which were addressed by the Committee in their 1999/2000 DCISC Annual Report and which concern human performance.

Dr. Cass observed that the DCISC representatives discussed during the fact-finding the efforts at DCPP to create additional incentives for increased physical fitness and to implement successful stress management techniques.

The Human Performance Coordinator for DCPP presented an overview to the DCISC representatives which indicated that efforts to improve human performance have the full support of Plant Management and a steering committee of senior managers is working with various departments to review human performance issues and systems for error prevention on a plant-wide basis to ensure efforts to improve human

performance continue throughout the DCPP organization. These efforts include emphasizing the use of effective tailboard pre work briefings and the importance of three-way communication and self-verification.

Dr. Cass reported that the error rate at DCPP, as measured over periods of 90 days and using 10,000 person-hour work increments, has shown an upward trend over the past one-year period. Vice President Womack confirmed the error rate was trending higher and he stated that this justifies PG&E placing additional focus on human performance improvement and the reduction of the error rate.

Dr. Cass reviewed with the Committee some of the innovations PG&E has introduced, including determining which organizations are responsible and assessing organizational, as well as individual responsibility, for error and using the first page of the Outage Plan of the Day publication to emphasize safety and human performance.

Dr. Cass observed that 40% to 50% of errors involve the Maintenance organization and that DCPP Management has implemented a Management Observation Program (MOP)to focus on behavioral causes for errors rather than on the results. She stated that poor communication, a lack of attention to tailboards and the STARS self-verification system, and over reliance upon direction by others have contributed to the error rate within the Maintenance organization.

Dr. Cass observed that aging of the DCPP workforce is another factor impacting Plant-wide industrial safety.

Dr. Cass noted that PG&E reported it is placing increasing reliance on tailboards, three-way communication and self-verification techniques and Dr. Cass opined that PG&E recognizes that organizational culpability does not exonerate an individual from responsibility and a need for counseling or coaching.

Dr. Cass reported that it appears that the error rate is not significantly impacted by PG&E's use of contractor personnel during refueling outages. Dr. de Planque questioned whether PG&E is using definitions which are accepted industry-wide concerning identification and categorization of error. Vice President Womack remarked that there are currently no accepted standards for event tracking and the types of errors precipitating an event, however, he noted that the Corrective

Action Program does provide a framework through the use of the Action Request (AR) process and the initiation of an Event Trent Record (ETR).

Dr. Cass observed that there is a separate Engineering Human Performance Committee which reports on Engineering performance, including the evaluation of ETRs, and that efforts are being made within the industry to address human performance issues.

Dr. Cass reported that she and Mr. Clark met informally with DCPP supervisors representing various departments. During this meeting they discussed issues raised by the supervisor including: 1) the average time taken to address ARs, which is now around 130-days as compared to 600-days previously; 2) increased efforts to foster cooperation between the craft personnel in the Maintenance and Operations organizations which appeared to be beneficial to Plant performance during the last refueling outage; 3) the Maintenance craft organization expressed need for more supervisors in the field and increased inclusion of their organization in the use and evaluation of results and feedback from the data collected, surveys made or complaints registered; 4) the Operations organization expressed awareness of an increased scrutiny from supervisors and their feeling that human performance critiques should be framed more in terms of positive praise. Dr. Cass expressed her observation that the dialogue with the DCPP workforce appeared to be open and thoughtful.

The DCISC representatives also met with the Director of Operations to discuss incentives and efforts to increase physical fitness, attention enhancement and effective stress management. The Committee has addressed the need for these efforts in its last two Annual Reports and during numerous fact-findings with PG&E. She reported that there is currently a requirement that operators maintain a defined level of fitness or they are not permitted to be alone in the Control Room. However, as DCPP requires four licensed operators to be in the Control Room at any time, this requirement is not a significant motivating factor for Operations personnel. Health classes have been scheduled as a part of the operators' requalification training program and Dr. Cass observed they should prove valuable in disseminating information on the benefits of increased physical fitness. She remarked that the current Operations Director has been recognized as a leader and innovator in the use of physical fitness as a team-

building activity and Dr. Cass recommended that the Committee continue to encourage those efforts.

Dr. Cass reported that PG&E has adopted new policies which remove certain nonessential activities and functions from the environs of the Control Room, thereby creating a more formal atmosphere in the DCPP Control Room. She remarked that this effort appears to be part of a positive direction to enhance professionalism and decrease distraction in the Control Room.

The DCISC representatives met with a representative of the Employee Concerns Program (ECP)who reported that the number of formal concerns raised within that Program has decreased from previous years. Employees continue to utilize the ECP for informal contacts which are handled through discussion, intervention or mediation. However, the number of NRC allegations from all sources concerning DCPP is higher than in previous years. The DCISC representatives expressed their belief that PG&E should determine the reasons for the increase in the numbers of allegations which are approximately double the average of other plants in the region. **Mr. Clark briefly discussed the need by PG&E to appropriately address differences in their handling of concerns, as opposed to informal contacts, raised with the ECP. Dr. Cass observed that the next Synergy Inc. survey of the safety culture at DCPP is scheduled to be completed soon and she confirmed that the Committee requested an opportunity to review the results of that survey when they are available.**

Dr. Cass reported that a new Behavior-Based Safety Process has been instituted within the Maintenance organization at DCPP in response to the higher injury rate experienced. This process tracks incidents and identifies barriers to work safety in an effort to institute continuous improvement in work process and practices.

In concluding her presentation, Dr. Cass remarked on her visit to the DCPP Medical Center to observe a cardiac health class and her observation that the Medical Center is doing a remarkable job in tracking the health of those employees whose health and fitness are below par, while maintaining a supportive environment and a good relationship with DCPP personnel.

Legal Counsel Robert Wellington reported to the Committee concerning the prehearing conference for the recent

Application by PG&E to the California Public Utilities Commission (CPUC) which was conducted by Administrative Law Judge Barnett on September 19, 2000. That Application by PG&E, among other matters, addresses the continuation of the DCISC's functions. Mr. Wellington observed that an order by CPUC Commissioner Wood, following the prehearing conference, has effectively tabled the PG&E Application and suspended the procedural schedule relating to continued consideration of PG&E's Application. The matter could, however, be reinstated at any time in which event the Committee should receive timely notice.

Mr. Wellington also reminded the Committee Members that Conflict of Interest Statements, Form 700, under provisions mandated by the California Fair Political Practices Commission, are due annually from each member of the DCISC. He also distributed a revised Committee Roster containing information relative to the Committee's operations. Mr. Wellington also discussed an increase in the number of contacts received from students and other members of the public which are generated by the Committee's presence on the worldwide web and which involve inquiries about nuclear power issues of a general nature. A procedure was discussed and agreed on to generate an appropriate reply to these inquiries.

VII COMMITTEE FACT-FINDING REPORTS: RECEIVE, APPROVE AND AUTHORIZE TRANSMITTAL TO PG&E

Members discussed with the consultants editorial and substantive revisions to the fact-finding reports awaiting approval and transmittal to PG&E and coordinated the status of items reviewed in those reports with the current Open Items List.

VIII CORRESPONDENCE

Copies of correspondence to and from the Independent Safety Committee were included in the agenda packets provided to those present and placed on file in the Public Document Room of the R.E. Kennedy Library at California Polytechnic University at San Luis Obispo.

IX PUBLIC COMMENTS AND COMMUNICATIONS

The Chair inquired whether there were any members of the public present who wished to address any remarks to the Committee. There was no response at this time to this inquiry.

X ADJOURNMENT

The February 7, 2001, afternoon meeting of the Diablo Canyon Independent Safety Committee was adjourned by the Chair at 5:15 P.M.

XI RECONVENE FOR EVENING MEETING

The evening meeting of the DCISC was called to order by the Chair at 5:30 P.M.

XII INTRODUCTORY COMMENTS

There were no comments from Members at this time.

XIII INFORMATION ITEMS BEFORE THE COMMITTEE

Mr. Clark requested PG&E Vice President Womack to begin the technical presentations requested by the DCISC for this public meeting. Mr. Womack introduced Mr. Jim Becker to make the first presentation to the Committee.

Update on Plant Performance, Plant Events and Operational Status.

Mr. Becker reviewed operational performance during 2000 for both units and reported that Unit 2(U-2)completed a 9.7 day forced outage and manual shutdown in September 2000, as a result of indications of a failed expansion joint on a steam extraction line from the low pressure turbine. The expansion bellows in the Main Condenser was replaced and a Main Condenser tube leak was also repaired. U-1 conducted its tenth refueling outage (1R10)in October 2000, and the expansion bellows in U-1's Main Condenser were also replaced as a preventative measure. The 1R10 duration was 40.4 days, which was longer than the goal of 26 days, due to a number of equipment issues associated primarily with the Turbine and Generator. The results of 1R10, with reference to radiation exposure, were the best ever for PG&E, achieving 162 person Rem during the outage.

PG&E finalized a negotiated settlement with the State Water Quality Control Board (SWQCB) concerning the effect of DCPP's cooling water discharge to the ocean. In response to a question by Mr. Clark, Mr. Becker stated that it was his belief that the agreement between PG&E and the SWCQB would

have little or no effect on DCPP operations, however, it would affect the monitoring of the cooling water discharge.

Mr. Becker reported that in November there was an automatic U-1 reactor trip and an outage of 1.8 days due to an electrical fault in test instrumentation during 1R10 power ascension causing the protection system to actuate. A Licensee Event Report (LER) was submitted to the NRC concerning this event. During 1R10 PG&E completed the work necessary to permit U-1 to operate at a higher electrical output, approximately 24 megawatts higher than in the cycle previously permitted. Nominal electrical output for each unit is now approximately 1155 megawatts. A planned 1.6 day forced outage for U-2 took place on December 9-10, 2000, to repair a hydrogen leak on a weld on the Generator lead box and for planned cleaning of the 2-1 Circulating Water Pump tunnel and removal of bio-fouling from the tunnel. Mr. Becker reported that PG&E actually scheduled this forced outage a few days prior to December 9-10, but postponed commencing the forced outage for one week at the request of the California Independent System Operator(ISO)and PG&E's scheduling coordinator for electricity.

Mr. Becker reported PG&E has now completed the five-year Fire Penetration Barrier Project which involved an extensive inspection program and upgrade to the design and installation of the fire barriers themselves. Modifications were completed to the U-1 Residual Heat Removal(RHR)sump during 1R10 and a similar modification will be accomplished for U-2 during its next scheduled refueling outage. He reported significant progress in developing DCPP's involvement with the STARS cooperative initiative program and he responded to questions from the Committee and confirmed that the STARS' initiatives have been, in general, well received by the DCPP workforce. In concluding his presentation, Mr. Becker observed that a more rigorous, formal and strategic Self-Assessment Program is now in place at DCPP which has more than met management's goal of performing 40 high quality Self-Assessments during 2000.

Vice President Womack introduced Mr. Jim Tomkins, Director of Nuclear Quality Analysis and Licensing at DCPP and asked him to make the next presentation to the Committee.

Review of NRC Licensee Event Reports, Notices of Violations and NRC Issues.

Mr. Tomkins reviewed and discussed with the Members and

consultants recent Licensee Event Reports (LERs) for DCPP. These included:

A voluntary LER for identified seismic inadequacy of non load bearing walls in the Turbine Building, in the vicinity of the Emergency Diesel Generator Rooms was initiated on August 19, 2000, when engineering determined that several walls and some components subsequently attached to the walls as constructed did not meet design criteria applicable to a postulated seismic event involving the nearby Hosgri fault. PG&E determined through an operability evaluation(OE)that, although design criteria were not met, the walls and the wall-supported components would have been capable of performing their safety function during a seismic event. The cause of the LER was determined to be personnel error and inadequate design control. Procedures have been enhanced, the design criteria memoranda (DCM) have been revised, and these walls and their attached components will be upgraded during the next several refueling outages.

When containment temperature indicator (TI-26) failed "as-is" and this condition was not recognized for a six-month period during daily TS surveillance, it was determined that TS 3.6.5.1 was not met and a LER resulted. The cause was a failure to recognize the "as-is" failure mode during design change and surveillance process development. Daily TS surveillance now requires that an operator manipulate the temperature indicator and observe it calculate the Containment average air temperature.

Inspection during 1R10 determined that slightly more than 1% of the Steam Generator(SG)tubes were determined to be defective, 38 tubes out of approximately 3,300 tubes within the SG. The cause was determined to be primary water stress corrosion cracking(PWSCC) and outside diameter stress corrosion cracking (ODSCC) at tube support plate (TSP) intersections. Defective tubes were plugged and PG&E verified that all defective tubes met Regulatory Guideline 1.121 for structural integrity at the end of U-1, Cycle 10.

While performing concurrent tests during 1R10, a first level undervoltage relay actuated which resulted in an unplanned start of Component Cooling Water(CCW) Pump 1-1 and constituted an Engineered Safety Feature(ESF) actuation. Personnel error by the licensed operator and the scheduler, both of whom determined that two tests could be performed simultaneously, was determined to have been the cause. Testing

procedures have been revised to include a prerequisite not to test when an EDG is running. During 1R10 testing and restoration, a first level undervoltage relay failed to reset, resulting in an ESF actuation signal, which shed the only ESF load on the bus, Auxiliary Saltwater (ASW) Pump 1-1 which was feeding the CCW and cooling the spent fuel pool. The cause was found to be the high resistance, due to corrosion, in a test switch pivot point. Corrective actions included repair of the switch and the issuance of a summary alert to operators regarding returning solid state relays to service. There was also a LER initiated for an ESF actuation when two operators opened 230kV switch 211-2, for U-2, instead of 211-1 for U-1. The undervoltage condition on the startup bus resulted in an auto start of all three U-2 EDGs, which did not load as there was still power to the vital buses from the auxiliary transformer. The cause was established as inattention to detail and failure to verify that the intended switch was being actuated. Color-coded signs have been added to the switches for both units and individuals have received coaching on self-verification.

Confirming an observation from the Committee, Mr. Becker stated that PG&E has experienced an increase in errors involving misidentification of unit components located in the same area of the Plant or through misidentification of individual trains and the use of the wrong equipment. He reported that PG&E is employing three techniques to reduce these types of errors: self-verification, tailboards and effective communications. In response to a question, Mr. Becker confirmed that PG&E is also employing post evolution critiques to review lessons learned. Mr. Chuck Belmont of PG&E also commented on efforts at DCPP to reduce errors by operators through self-verification and the use of techniques to assist operators in identifying the proper components of these complex systems.

Mr. Tomkins then reviewed a LER initiated due to excessive flow which was observed from two valves when a temporary leak test of the CCW butterfly valve rubber seat seals was performed. It was found that these valves would have been unable to isolate a leak from the other vital header within 20 minutes, as required by the design basis. Personnel error was the cause, as travel stops were not set correctly and the discs were allowed to overtravel. The travel stops have been checked and adjusted on the CCW valves used to separate headers for both units and maintenance verification tests will be required after each instance of future valve

maintenance.

A LER-type Special Security Event Report was initiated when notification of an Unusual Event was given due to the discovery of a bomb-like device located about 100 yards from the Turbine Building and within protected area for U-1. The suspicious object was identified as resembling an explosive device. The cause of this event was a contractor workgroup culture which tolerated unprofessional behavior. The suspicious object had been in place for several months. A memo has been sent to all DCPP personnel stressing professionalism and the Vice President and Plant Manager have held two meetings with DCPP supervisors to emphasize their oversight role and to stress the supervisors incorporating lessons learned in general employee training and behavioral observation training.

A LER was filed with the NRC when, during 1R10 low power physics testing, U-1 was manually tripped due to control rod problems initiated when rod control was lost due to an instrument failure. The safety function of the rod control function was not impacted by the failure. The cause was the failure of a Westinghouse supervisory buffer memory card, which has been replaced, and the necessary maintenance verification testing has been performed. DCPP will be using new testing methodology provided by Westinghouse to test these cards individually.

A failure to test equipment resulted in a U-1 automatic reactor trip and a LER following 1R10, with the Unit at 46% power operation, when an intermittent electrical short occurred in test equipment. The cause was the poor decision to test other NI channels with NI-41 then in a tripped condition. Procedures have been revised to require a sufficient number of test devices and to eliminate the need to use toggle switches. A memo has been issued to plant personnel warning of the possibility of electrical shorts in digital volt meters and a case study has been provided to appropriate Plant personnel regarding this event and expected test prerequisites.

Mr. Tomkins reviewed the LER trends at DCPP and reported that, as of December 31, 2000: sixteen LERs have been submitted of which ten involved personnel error during equipment return-to- service, design and testing; five LERs involved equipment failures; and one involved inadequate procedures. Corrective actions have included coaching, training and procedure revisions.

No Notices of Violation (NOV) were received from the NRC during 2000, while four Non-Cited Violations (NCVs) have been received during 2000, all of which have been discussed with the Committee during previous public meetings. Mr. Tomkins reported that this represents a 50% reduction in the number of NCVs since 1999. Of the four NCVs, two were for procedural violations resulting in work being performed on the wrong component or unit. Common cause trend analysis performed by NQS did not identify any discernable trends in the cause for the NCVs and all NCVs were entered into the DCPP NCV Tracking/Trending Program. He then compared the NOVs and NCVs received by DCPP over the past three years and compared DCPP's performance concerning NOVs and NCVs with other plants in NRC Region IV during 2000. DCPP received no NOVs which compared to a 0.6 average for Region IV plants. DCPP received seventeen NCVs which compared to an average of eighteen for Region IV plants. In response to a question from Dr. de Planque, Mr. Tomkins and Mr. Belmont reported that PG&E has emphasized the need for an aggressive, significant and successful Corrective Action Program regarding violation of the Equipment Control Guidelines(ECGs)to achieve full implementation of the improved Standard TS.

Discussion of the NRC's Performance Indicators.

Mr. Tomkins reviewed the status of the NRC performance indicators(PIs). The indicators produce red, white or green status indications for levels of performance evaluation for the indicators in each category.

Mr. Tomkins reviewed with the Committee the current status and recent actions relative to the PIs. He reported that all DCPP PIs have returned to green status, however, the two trips following 1R10 currently challenge the Unplanned Scrams PI threshold. Both units are at the threshold for Scrams with Loss of Normal Heat Removal PI, and he noted that this PI at DCPP actually entered a white window during part of 2000. He reported that the NRC has now implemented a pilot program concerning Initiating Events and that PG&E has been successful in obtaining tentative approval from the NRC with reference to two Frequently Asked Questions(FAQs) concerning power operations during storm activity and on the Mitigating Systems PI. He then reviewed and discussed with the Members and consultants the PIs and their present values, the threshold and present color status for the PIs for both Units at DCPP and the station thresholds set by PG&E for the PIs

through the fourth quarter of 2000. These were as follows:

Category - Initiating Events

(1) Unplanned Scrams (automatic and manual) per 7000 critical hours over previous 4 quarters.

Values for U-1 and U-2 are 2.8 and 0.0 respectively and the NRC threshold for each unit is 3. Status - Both Green. Station threshold for each unit is 2.

(2) Unplanned Scrams Involving Loss of Normal Heat Removal per previous 12 quarters.

Value for both units is 2 and the NRC threshold for each unit is 2. Status - Both Green. Station threshold for each unit is 2.

(3) Unplanned Transients per 7000 critical hours over previous 4 quarters.

Values for U-1 and U-2 are 0.9 and 1.6 respectively and the NRC threshold for each unit is 6. Status - Both Green. Station threshold for each unit is 3.

Category - Mitigating Systems

(4) Safety System Unavailability - Emergency Power (average of previous 12 quarters).

Values for U-1 and U-2 are 1.7% and 0.3% respectively and the NRC threshold for each unit is 2.5%. Status - Both Green. Station threshold for each unit is 1.9%.

(5) Safety System Unavailability - RHR (average of previous 12 quarters).

Values for U-1 and U-2 are 0.3% and 0.4% respectively and the NRC threshold for each unit is 1.5%. Status - Both Green. Station threshold for each unit is 1.1%

(6) Safety System Unavailability - AFW (average of previous 12 quarters).

Values for U-1 and U-2 are 0.8% and 0.6% respectively and the NRC threshold for each unit is 2%. Status - Both Green. Station threshold for each unit is 1.5%

(7) Safety System Unavailability - High Pressure Safety Injection (HPSI) (average of previous 12 quarters).

Values for U-1 and U-2 are 0.5% and 0.8% respectively and the NRC threshold for each unit is 1.5%. Status - Both Green. Station threshold for each unit is 1.1%

(8) Safety System Functional Failures (over the previous 4 quarters).

Value for both units is 0 and the NRC threshold for each unit is 5. Status - Both Green. Station threshold for each unit is 2.

Category - Barrier Integrity

(9) Reactor Coolant System (RCS) Specific Activity (maximum monthly values - % of Tech Spec limit).

Values for U-1 and U-2 are 0.1% and 0.9% respectively and the NRC threshold for each unit is 50%. Status - Both Green. Station threshold for each is 1%.

(10) RCS Leak Rate (maximum monthly values - % of Tech Spec limit).

Values for U-1 and U-2 are 8.0% and 3.3% respectively and the NRC threshold for each unit is 50%. Status - Both Green. Station threshold for each unit is 40%.

Category - Emergency Preparedness

(11) Emergency Response Organization (ERO) Drill/Exercise Performance - percentage of success/opportunities for notifications and PARs during drills, exercises and events of the past 8 quarters.

Value for U-1 and U-2 combined is 92.8% and the NRC threshold is not less than 90%. Status - Green. Station threshold is 95%.

(12) ERO Participation - percentage of key ERO personnel that have participated in a drill or exercise in the previous 8 quarters.

Value for U-1 and U-2 combined is 91.8% and the NRC

threshold is not less than 80%. Status - Green. Station threshold is 90%.

(13) Alert and Notification System Reliability - percentage reliability during the previous 4 quarters.

Value for U-1 and U-2 combined is 99.5% and the NRC threshold is not less than 94%. Status - Green. Station threshold is 98%.

Category - Occupational Exposure

(14) Occupational Exposure Control Effectiveness - the number of T.S. high radiation area occurrences, very high radiation area occurrences, and unintended exposure occurrences in the previous 4 quarters.

Value for U-1 and U-2 combined is 0 and the NRC threshold is 2. Status - Green. Station threshold is 0.

Category - Public Exposure

(15) RETS/ODCM Radiological Effluent Occurrences - occurrences during the previous 4 quarters.

Value for U-1 and U-2 combined is 0 and the NRC threshold is 1. Status - Green. Station threshold is 0.

Category - Physical Protection

(16) Protected Area Security Equipment Performance Index - availability of PA IDS/CCTV security systems over previous 4 quarters.

Value for U-1 and U-2 combined is 0.030 and the NRC threshold is 0.080. Status - Green. Station threshold is 134 hrs/mo.

(17) Personnel Screening Program Performance - prompt reportable events over the previous 4 quarters.

Value for U-1 and U-2 combined is 0 and the NRC threshold is 2. Status - Green. Station threshold is 1.

(18) Fitness-for-Duty (FFD) Personnel Reliability Program Performance - reportable events over previous 4 quarters.

Value for U-1 and U-2 combined is 0 and the NRC threshold is 2. Status - Green. Station threshold is 1.

Members and consultants discussed performance and aspects of the performance indicators with Mr. Tomkins.

Nuclear Quality Services 2000 Review.

Mr. Tomkins reviewed and discussed the Quality Performance Assessment Reports(QPARs)issued during 2000.

Identified strengths and positive observations in the QPARs were the increased focus on radiation protection practices, which contributed to the lowest accumulated dose during 1R10 for a U-1 outage, the lowest number of outage personnel contamination incidents ever at DCPP and the lowest numbers of non-surface contamination area personnel contamination incidents for a non outage period at DCPP. Mr. Tomkins observed that the QPARs indicate that the DCPP organization responded well to plant transients, curtailments and shutdowns during 2000, and improvement was noted in the quality and use of Self-Assessments performed. Implementation of the Improved Technical Specifications was judged to have been well-coordinated and peer certification of the Probabilistic Risk Assessment(PRA)Program ranked that program as the best observed among ten similar plants. He stated that conservative decision making, good use of self-assessment and innovation in design were characteristics of noteworthy performance by the Engineering Services organization during 2000. Increased focus and management support of Human Performance as evidenced by formation of a Human Performance Steering Committee and subcommittee in Operations, Maintenance and Engineering were identified as strengths. One licensed operator training class was conducted and all candidates passed their NRC exams.

Mr. Tomkins stated that the 2000 QPARs identified certain areas for improvement including a number of equipment related problems, which highlights a need for a comprehensive program to address age-related degradation of DCPP equipment. Use of Event Trend Records(ETRs)has had limited success in identifying adverse trends although that Program continues to show improvement. There are, however, some organizations which do not use the Program effectively. The QPARs identified less than effective use of the Operator Walkaround/Burden List and an increase in the numbers of Control Board Action Requests(ARs).

In conclusion, and in response to a question from Mr. Clark, Mr. Tomkins stated that the QPARs and the NQS Assessments have identified many of the same issues and, together with Self-Assessments and the NRC PIs, they are used by STATION to produce the Comprehensive Integrated Assessment Report for DCPP.

Review of DCISC Selected Performance Indicators.

PG&E Vice President Larry Womack discussed, reviewed with the Members and consultants and responded to questions from them concerning the 22 indicators selected by the DCISC to track DCPP performance. These he summarized as follows (σ indicates an improving trend, τ indicates a declining trend, and υ indicates a steady performance since that indicator was last reported to the Committee):

Ten of the indicators are on or better than the target.

- υ Personnel Contamination Incidents.
- σ Meeting Corrective Maintenance Due Dates
- υ Operating Experience Assessment (OEA) Backlog.
- υ Quality Problem Completion.
- υ Event-Free Days.
- τ U-2 Operating Capacity Factor.
- υ U-1 Primary System Chemistry Index.
- υ U-2 Primary System Chemistry Index.
- υ U-1 Secondary System Chemistry Index.
- υ U-2 Secondary System Chemistry Index.

Three of the indicators are close to meeting expectations:

- υ Radiation Exposure.
- τ Non Outage Corrective Maintenance Backlog.
- τ Unplanned Reportable Releases.

Five of the indicators are not meeting expectations.

- τ Industrial Safety.
- τ Unplanned Automatic Reactor Trips.
- υ Unplanned Safety System Actuations.
- τ U-1 Operating Capacity Factor.
  1R10 Refueling Outage Duration.

One is a qualitative indicator with no set target.

System Health Indicator.

One of the indicators is not applicable for this period.

U-2 Refueling Outage Duration.

Two are confidential indicators reviewed with the DCISC during fact-findings include:

- Human-Factor Security Events.
- Vital Area Events.

The Members and consultants discussed the DCISC Performance Indicators with Mr. Womack and it was noted that data used to determine their status includes comparisons to station goals, rather than industry, INPO or NRC regional goals. Mr. Womack confirmed that PG&E presently tracks each of the DCISC Indicators as a part of another tracking process or under a different mandate, and he stated the tracking of the DCISC goals is not, at present, a burden on PG&E. He confirmed that the summaries provided to the Members concerning the Indicators were end-of-year 2000 results.

Committee Members requested that, at the next public meeting of the DCISC, PG&E need only prepare and present the summary results of the DCISC Performance Indicators for their review.

Activities of PG&E's Nuclear Safety Oversight Committee.

Vice President Womack reported to the Committee concerning the regular joint meeting of the NSOC and the PNAC which was held at DCPP on November 14, 2000. Dr. Rossin and Mr. Booker attended the meeting as the DCISC representatives. Mr. Womack reviewed topics discussed during the meeting, which have all been presented to the DCISC. These include: the System Engineering Program and PG&E managements' expectations of system engineers; the strategies used to address human performance issues; and Radiation Protection(RP)and As Low As Reasonably Achievable(ALARA) Program strategies. Mr. Womack confirmed that the meeting of the NSOC which was scheduled for February 2001, was canceled and an initial meeting of what Mr. Womack described as a subcommittee of the NSOC was held. Mr. Womack discussed PG&E's plans to develop other *ad hoc* and standing subcommittees of the NSOC and to coordinate efforts with PG&E's partners in the STARS Program to align their offsite committee review functions and he stated that he will

report further to the DCISC during future public meetings as these efforts develop. In closing, Mr. Womack discussed with the Members and consultants the need to retain the independence of the NSOC function in context of the participation by STARS member's personnel.

XIV PUBLIC COMMENTS AND COMMUNICATIONS

The Chair invited any member of the public present who wished to address any comment or communication to the Committee to do so at this time. There was no response to this invitation.

XV ADJOURN EVENING AFTERNOON MEETING

The evening meeting of the DCISC was adjourned by the Chair at 7:35 P.M.

XVI RECONVENE FOR MORNING MEETING

The February 8, 2001, meeting of the Diablo Canyon Independent Safety Committee was called to order by the Chair at 8:00 A.M.

XVII INTRODUCTORY COMMENTS

Mr. Clark introduced the members and consultants present for this session.

The Committee took up the approval of the November 2000, Fact-Finding Report and, subject to minor editorial corrections, on a motion by Dr. Rossin, seconded by Dr. de Planque, the November 2000 Fact-Finding Report was unanimously approved for transmittal to PG&E.

The Chair recognized Mr. Stan Ketelsen of PG&E's Nuclear Regulatory Services organization to express the appreciation and thanks of the Committee Members and consultants for his help and professionalism during the time he has worked with the DCISC. Mr. Ketelsen will be moving to another assignment within PG&E.

The Chair then requested PG&E Vice President Larry Womack to continue with the technical presentations to the Committee. Mr. Womack introduced Ms. Linda Jolley, Manager of Human

Resource Services at DCPP.

XVIII INFORMATION ITEMS BEFORE THE COMMITTEE (Cont'd.)

2001 Culture Transition Strategies.

Ms. Jolley began her presentation by discussing the results of the cultural transition effort during 2000, which she described as a progressive effort to continue to enlist employee support in changing DCPP culture and to facilitate safety. She stated that during 2000, the focus of the cultural transition effort had been primarily on the leadership group, the officers and directors, who were later joined by managers. However, currently supervisory personnel are being added to the transition effort through use of a method she described as the cascade approach. All levels of management are now being aligned to support and exhibit leadership behaviors within their work process. She observed that DCPP is managed by process and by what are termed the Centers of Excellence, and that the cultural transformation process at DCPP is designed to foster greater trust, productivity and collaboration among the workforce. Part of this process involves changing the way people think about their daily jobs and requires personnel to hold the leaders accountable for growth and development. She stated her opinion that the leadership group at DCPP was making good progress in achieving these goals, with the leadership team members exemplifying the standards and expectations of leadership in the new culture. She discussed the application of the cultural transformation process to the new competitive power marketplace in California and she acknowledged that some confusion concerning the future still exists within the workforce at DCPP and that the cultural environment appropriate to a competitive market environment is presently in a redefinition process.

Ms. Jolley confirmed that 2001 is the first year that individual contributors, including bargaining unit employees, will be participating in creating a new culture at DCPP. In response to a question from Mr. Clark, Ms. Jolley replied that an important part of PG&E's strategy involves gaining acceptance from the bargaining unit members of the cultural changes being implemented at DCPP. She stated that systems and infrastructures are now in place to support and sustain the new culture and she cited the compensation, positive discipline, and exit interview programs as examples of programs which have evolved and been aligned to support the

cultural transformation process. She discussed some of the systems, measurement techniques and the infrastructure being created to support the transformation effort and human performance fundamentals. **Mr. Clark expressed the interest of the Committee in reviewing the metrics developed for measuring benefits from the cultural transformation effort when those are all established.**

Mr. Womack remarked that the Performance Plans, which the DCISC has reviewed during its past public meetings and fact-finding, are based on the Centers of Excellence which have been created to measure progress in achieving cultural transition at DCPP. In response to a question from Dr. Rossin concerning the various levels of supervision and lines of responsibility at the Plant, Ms. Jolley replied that the officers, directors and managers have demonstrated a strong understanding of the new culture and that efforts are being made to fully implement the process with the supervisors. Ms. Jolley acknowledged Dr. Rossin's concern regarding the need for clear reporting responsibilities between the individual contributors and their supervisors. She stated that the connections between individual contributors and their existing supervisors remain strong and defined and that the process of including individual contributors in the cultural transformation process will be further developed over the next year. **Ms. Jolley agreed to provide the DCISC copies of information used internally by PG&E to develop and assess progress concerning the continuing process of cultural transformation and which is used to review and assess the impact of communication with the workforce regarding the supervisory hierarchy at DCPP. The DCISC will be kept informed as PG&E makes efforts to incorporate involvement of the individual contributors.** In response to a question from Dr. de Planque, Ms. Jolley described PG&E's efforts to implement the Cultural Transformation Program as about on par with other plants and with other industries implementing similar changes in a regulated environment.

Ms. Jolley then reviewed and discussed each of the strategies being used at DCPP in the cultural transformation effort, these include:

- First-Line Supervisor Development - to assess skills and identify and develop those which positively impact the culture, while continuing to define, coach, and modify behaviors to enhance the supervisors' identification with the cultural transformation process.

- Leadership Development - of the officers, process owners and Centers of Excellence leadership through use of workshops, to further develop behaviors through Leadership Team sessions to further the leader's identification with the process and the Centers of Excellence, to support cultural and process initiatives and to leverage new skills to enhance supervisor development, including use and evaluation of information received from feedback and face-time interaction.

- System Alignment - to evaluate existing processes and programs for alignment to support the new culture and incorporate systemic elements to ensure existing systems support human performance fundamentals.

- Employee Communication & Education - to develop and implement individual behaviors and revamp, reenergize and reinforce human performance fundamentals through communication, market and business education, meeting with bargaining unit leadership and employees in informal forums to discuss and review process goals, perceived problems, results and measurements of success.

The Chair thanked Ms. Jolley and observed that the cultural transition efforts at DCPP appear to have been carefully considered by PG&E management. Mr. Clark recognized PG&E Senior Vice President Greg Rueger, who joined the PG&E representatives present for the public meeting.

Mr. Womack then introduced Mr. John Arhar, Engineer in the Steam Generator Group at DCPP for a presentation to the Committee.

Refueling Outage 1R10 Steam Generator Tube Test Results.

Mr. Arhar began his presentation by briefly reviewing the principal degradation mechanisms affecting DCPP Steam Generators (SGs), these include: outside diameter stress corrosion cracking (ODSCC)and primary water stress corrosion cracking(PWSCC)at the hot legs, at the tube sheets and at dented intersection and non- dented intersection; U-bend PWSCC; anti-vibration bar(AVB)wear scarring; fatigue and cold leg thinning(CLT). During 1R10 a standard inspection of the SGs was performed, which took approximately ten days. The inspection included: inspecting 100% of the full length of the SG tubes with a bobbin; a detailed rotating coil +point probe

inspection of 100% of the U-bend areas and the short radius U-bends in Rows 1 and 2; 100% inspection of the hot leg top of the tubesheet; 100% inspection of the hot leg dented tube support plate (TSP) intersections in critical areas, plus 20% in the buffer zone; and bobbin indications at TSP intersections. During 1R10 there were 43 tubes unplugged and reinspected for return to service under new repair criteria, which, Mr. Arhar stated, was substantially all of the tubes which can be unplugged under the repair criteria presently approved for DCPP. In response to a question from Mr. Clark, Mr. Arhar and Mr. Womack confirmed that the SG inspection efforts during 1R10 took into account the recent failures involving the SGs at the Indian Point-2 nuclear facility.

Mr. Arhar summarized the SG tube repair criteria as it has evolved from the original TS criteria of 40% depth size by bobbin applied to AVB wear and cold leg thinning. The new alternate repair criteria(ARC)provides: per Generic Letter 95-05, concerning voltage-based ARC for axial ODSCC at the TSP; W* for axial PWSCC in tubesheet and 40% depth sizing by +Point for axial PWSCC at dented TSPs. An ARC to allow >40% axial PWSCC damaged tubes to remain in service is pending NRC review of PG&E's License Amendment Request(LAR). Members discussed with Mr. Arhar and Mr. Womack the heightened level of attention which SG tube failure, as opposed to tube rupture, is receiving from the NRC and the public as a result of the Indian Point experience. In response to a comment by Mr. Clark, Mr. Arhar opined that the ARC does not contribute to an actual increase in the risk of a SG tube leak, as the ARC is confined to support structures during normal operation, however, potential for increased leakage would be likely to exist after an accident which resulted in removal of or damage to the support structure.

Mr. Arhar then reviewed the results of tube degradation identified during 1R10 inspections of SGs 1-1, 1-2, 1-3 and 1-4. A total of 108 tubes were plugged and 43 were unplugged, for a net total of 65 tubes plugged during 1R10. The overall percentage of tubes plugged for the Unit-1 SGs is now 3.9%, with a limit of 15% in each SG and 15% overall. In response to a question, Mr. Arhar stated that PG&E does not expect U-1's SGs to approach the 15% limit before 2005-2006, however, a plugged tube percentage of 10% or greater would begin to have an impact on generation performance for U-1, due to Reactor Coolant System (RCS) flow and change in heat transfer area. SG 1-2 has the highest percentage of plugged tubes at 8.8%. Mr. Arhar reported that during 1R10 there were 852 tubes which did

not require plugging due to application of sizing techniques and the ARC. He discussed and reviewed the history of tube plugging for U-1 since 1R1 and over a period of 12.9 effective full power years of operation. In response to an observation from Consultant Booker, Mr. Arhar confirmed that SG 1-1 and 1-2 were manufactured by a different manufacturer than 1-3 and 1-4, and that this difference explains, to a great extent, the differences in the inspection results.

Mr. Arhar reviewed the lessons learned from the Indian Point-2 U-bend tube failure experience, which was caused by flow slot hour-glassing due to significant denting at the upper TSP causing high stresses in the U-bend apex, leading to axial PWSCC. Early detection was not made during inspections, as the crack signal was masked by noise due to deposits. He stated that PG&E has implemented lessons learned from the Indian Point-2 experience including: establishing data quality guidelines which resulted in a significant number of U-bend retests using higher frequency probes and smaller diameter probes; 23 tubes were preventively plugged due to unacceptable data quality; 4 tubes were plugged due to small circumferential indications near U-bend tangents. One tube with circumferential indications was tested in place to 4000 pounds with no resulting tube leakage.

In concluding this presentation, Mr. Arhar reviewed the next steps PG&E plans to take including obtaining NRC approval for a revised ARC to allow >40% axial PWSCC to remain in service and he stated that PG&E hopes to receive approval for its request to implement this ARC for one cycle during 2R10. In response to a question from Dr. Rossin, Mr. Arhar stated that PG&E has been successful in unplugging tubes using a tungsten inert gas relaxation technique. PG&E will also seek NRC approval of reduced ARC exclusion zone at wedge locations and will request extension of W* ARC for another two cycles. Chemical cleaning is being proposed during 1R11 and 2R11 to remove scale and reduce the potential for free span ODSCC and sleeving and electro-sleeving options are being investigated for eventual licensing. In conclusion and in response to a question, Mr. Arhar briefly discussed the experience and methodology used with ANO SGs during burst pressure tube testing.

A brief break followed this presentation.

The Chair recognized Senior Vice President Rueger for the next presentation to the Committee.

Status of California Energy Issue & DCPP's Actions.

Mr. Rueger began his remarks to the Committee with the caveat that much of the information he will discuss with the DCISC represents his own opinions concerning the present situation and may not accurately reflect PG&E's opinion or position. He observed that prices for electrical power have escalated rapidly in California since the last public meeting of the DCISC in September 2000. At that time, expectations were that power prices would come down following reduction of the normal summer requirements. He stated that questions have now arisen about when concerns regarding price and supply issues were first raised with the CPUC and Mr. Rueger opined that these are legitimate questions which are now being addressed.

Mr. Rueger stated his observation that, fundamentally, the problems in California and the Western part of the United States are due to the present shortage of available energy, compared to the situation ten years ago when there was a 30% surplus. This shortage resulted from the large growth in load demand which is consuming necessary reserves as the economy in the region expands, coupled with a situation where only about 4% of actual generating capacity was added during the same period. Out of state resources, which traditionally have supplied California's needs during peak demand periods, are presently unavailable as they are required to meet increased demand in their areas. Mr. Rueger opined that the only impact from deregulation which has directly impacted the current shortage, although he acknowledged that in hindsight the deregulation formula was certainly not perfect, was the fact that there has been no investment in the construction of generating facilities during the transition period. This is due, in part, to the protracted period of uncertainty on the part of the utilities and the new market participants on precisely what their new roles will be. He noted that new plants will be entering the marketplace eventually, however, the uncertainties in the market may stop or delay investment and prolong the shortages in California and the West for some time to come. Mr. Rueger observed that the regulatory system in California is not one which makes it easy or fast to create new sources of energy supplies without fully addressing and responding to local concern and opposition to facility location and other issues.

Mr. Rueger discussed the impact of the requirement that

utilities purchase and sell power on the Power Exchange which he described as a spot market for electric power. Utilities are slowly being allowed to purchase on longer-term contracts for what is termed their net open position requirements, *i.e.*, beyond their own generation capacity, however, the utilities are still restricted as to the percentage of their overall requirements which may be purchased on long-term contracts. The result of this short term market activity has been the creation of a situation where virtually 100% of a utility's needs were required to be met in the short term market and at very high prices. DCPP's power production, while not sold directly into the market because the transition period for DCPP has not yet been terminated by the CPUC, has resulted in the reduction of PG&E's net open position. Mr. Rueger observed that DCPP power is now the lowest cost electric power resource available to the State, due to the very bad year experienced in 2000/2001 for the production of hydro power.

The deregulation scheme also created what is termed a "second price auction," which has resulted in the award of contracts based on bids for power generation at the price bid by the last bidder. Mr. Rueger stated that although theoretically this system might function successfully, in a short term market with no price cap one legitimate generator charging a very high price creates the situation where the entire market pays a higher price. Due to a shortage of supply, no comparative market exists and no significant regulatory action has been taken to control the market. Mr. Rueger also observed that the CPUC rate freeze for Southern California Edison and PG&E has meant that the price increases paid for the power supplied could not be passed on to their customers and hence no corresponding reduction in demand due to the high prices has taken place. He summarized the current situation as comprising a broken market with extremely high prices in conjunction with a continuing legal obligation on the part of the utilities to purchase high-cost power to meet their commitments to their customer at a flat rate of return. He stated that one of the few realistic alternatives to escape the situation for the utilities is to consider defaulting on payments owed and to seek protection from creditors in bankruptcy. In response to an observation by Dr. Rossin, Mr. Rueger commented that when San Diego Gas & Electric Company's customers received large increases in their electric bills, the Legislature's imposition of a rate cap resulted in energy usage, which initially dropped around 11% after customers' bills increased, returning very quickly to its pre-increase

levels. Mr. Rueger opined that, over time, one of the impacts will be that the high prices paid by the utilities for power used by their customers will be passed on to consumers at all levels.

Mr. Rueger stated that the energy picture has been as much driven by supply considerations, due to a very dry year for hydro production in California and the driest year on record for the Northwest, as financial over the past winter. PG&E has the largest investor-owned hydro power production system in the United States. Normally, winter is not a time when supply problems are encountered, however, he remarked that there havebeen three Stage-3 Emergencies in the last 26 days and at least two days when rolling blackouts were experienced. Mr. Rueger commented on the constraints imposed on electric power transmission which exist within California and which limit PG&E's ability to transport power from Southern to Northern California, and which has caused Northern California to bear the brunt of rolling blackouts. In response to a question from Dr. Rossin, Mr. Rueger noted that to date it has not been economically feasible to build a new parallel line to increase transmission capabilities, however, the high cost power has made the $300 million necessary for the construction of such a line feasible and PG&E has been given authorization from the ISO to augment the transmission grid by constructing additional lines. Mr. Rueger observed that, because prices stayed extremely high through this winter, the financial situation for PG&E and Southern California Edison has deteriorated rapidly and their suppliers have expressed concern about receiving payment. With the extremely high cost of power purchased on the Power Exchange during the November-December 2000 period, PG&E has found itself unable to pay for that power. He noted that in January 2001, a number of independent power generators were not producing power due to what he termed a virus of condenser tube leaks, which may have masked the reality that these independents feared they would not receive payment for any power they sold into the market. In response to this situation the California Department of Water & Power Resources began to purchase power on behalf of the utilities, and he noted that in a matter of days approximately 4,000 additional megawatts became available.

Mr. Rueger remarked that, unlike electricity, PG&E is able to pass on increases in prices it pays for gas to its customers. However, the financial transactions necessary to purchase that gas have been structured so that the PG&E must

have the capability to borrow funds for a period of time. With the current uncertainties and the financial situation impacting PG&E's credit rating, gas suppliers are demanding payment prior to delivering gas and PG&E has been challenged to keep the supplies of gas available. He remarked that any disruption or diversion of gas supplies from PG&E's core residential customers would be a huge problem, due to the resulting need to enter every residence to restore service. However, disrupting gas supplies from PG&E's non-core customers operating gas-fired electric power generators would have a severe negative impact on the supply of electric power. The U.S. Department of Energy issued a mandatory order requiring domestic gas suppliers to continue deliveries, and Mr. Rueger remarked that Canadian sources, which supply about one half of PG&E's gas needs, have never stopped their deliveries. PG&E has negotiated terms with gas suppliers which would give the suppliers an advantageous position in a possible bankruptcy, and the order by the Department of Energy is not expected to be extended. Mr. Rueger, in response to a question from Dr. Rossin, discussed efforts to mitigate the effects of the second price auction and attempts which have taken place to manipulate power requirements and bidding prices on the Power Exchange. He remarked that, because the market has had no consistent cap, a situation was allowed to exist wherein out-of-state brokers were able to control power allocations and were actually able to purchase PG&E generated power at $250 a megawatt hour and then sell that same power back into the market the next day for $1,400 a megawatt hour.

In response to this situation, the Federal Energy Regulatory Commission instituted what is termed a "soft price cap." However, the soft price cap considers opportunity as a justification for price which largely negates the soft cap's effect. He further noted that the computers used by the Power Exchange and the ISO have proven to be inadequate to implement the soft price cap. The Power Exchange has now been essentially replaced by the ISO in the deregulation scheme, as California is now purchasing its power requirements on the market. In response to a question from Consultant Booker, Mr. Rueger replied that, although PG&E's natural gas system is configured to provide for storage during the summer months, many independent generators have opted to use their stored reserves during the summer because of the high gas prices. These independent generators must now purchase gas on the spot market. Mr. Rueger remarked that the capacity of the PG&E's reserves to serve new sources of gas-fired electrical generation, provide supplies to meet normal requirements and

to maintain normal reserves during the summer months may be challenged. However, at present PG&E believes the system will be able to cope with these problems, and he again directed the Committee's attention to the interrelated nature of the issues.

Mr. Rueger observed that February 1, 2001, was the first instance when PG&E actually defaulted on a payment due for energy. PG&E is committed to maintaining a working cash reserve, sufficient to continue the vital public service provided by the Utility's activities. He reported that payment in full to electric energy suppliers and principal payments on loan obligations have necessarily been suspended due to PG&E's cash flow situation and to keep its other utility-related functions operating. Dividend payments to shareholders have also been stopped. He observed that PG&E is attempting to avoid being forced into bankruptcy and remains cautiously hopeful that the State can act in time to avoid that situation. Mr. Rueger expressed his view that the State should: 1) act to stabilize the situation and keep the energy supply viable by purchasing its long-term power requirements and address the situation created by the current rates, which do not pass the cost of the power provided to the consumer; 2) address the debt incurred by the utilities; and 3) bring power from new sources into the State, create new generation resources within the State and implement immediate and effective energy conservation measures.

In discussing DCPP's actions in response to the California energy issue, Mr. Rueger confirmed that the situation in the State has impacted DCPP, however, PG&E has been working to minimize any impact on operational considerations. He observed that because of the challenges faced by California, DCPP has been recognized as an important, crucial and reliable contributor to meeting the State's energy requirements. Mr. Rueger remarked that there have been few instances when PG&E recognized any attempt to pressure or influence DCPP operational decisions in response to the State's energy situation. He stated that the NRC has been supportive of PG&E and DCPP management in resisting such situations. He also provided some examples of instances when PG&E has responded to the State's immediate need, and safely modified, postponed or curtailed certain operational activities in order to continue to operate within acceptable safety parameters as determined by PG&E and the NRC.

Mr. Rueger also acknowledged that the California energy

situation has received the attention of DCPP employees and he noted that PG&E is working to communicate with the employees through daily meetings with the leadership teams, directors and managers concerning current information on the energy situation. Efforts have also continued to communicate with all DCPP employees during All Hands Meetings and by holding informal brown bag lunch assemblies to provide information and respond to questions from employees. Dr. de Planque commented on an article by Mr. Rueger in a newsletter and expressed her opinion that it was very well done and noted that his emphasis on safety was clear and direct. Mr. Rueger remarked that PG&E continues to monitor the early warning indicators for employee distraction and he observed that personnel error rates have actually improved over the recent period. In response to a question from Mr. Clark, Mr. Rueger replied that, as the NRC has ultimate jurisdiction for DCPP operations, there is no person in California who could issue an emergency order to PG&E to operate the Plant. Dr. de Planque remarked on the challenge which DCPP may face due to requirements for off site power availability and Mr. Rueger confirmed that PG&E has held discussions with the NRC on this subject and has previously made equipment changes to increase voltage support.

Mr. Rueger observed that DCPP's emergency siren system would be minimally affected by the rolling blackouts. In response to a question from DCISC Consultant Booker, Mr. Rueger confirmed that the PG&E's financial situation has had some impact on estimated budget expenditures at DCPP, although he remarked that very few of the budget reductions which would affect power generation activities because those activities are considered crucial functions. He observed that there will be no impact due to financial condition on upcoming outage activities for either unit. Minor projects which have been deferred at DCPP for the first months of 2001, due to the financial situation of the Utility, total only about $2-$2.5 million. Impact will be directly felt with regard to deferment of employee merit salary increases and financial bonus for DCPP performance. PG&E has communicated to its employees that such payments must be suspended until sufficient cash reserves are again available. A small number of contractors have been released at DCPP. Mr. Clark encouraged Mr. Rueger and PG&E to be alert for employees who might tend to make non-conservative decisions, based upon the California energy situation and PG&E's current financial difficulties, and Mr. Rueger confirmed that PG&E was cognizant of the possibility and he observed DCPP management has purposely assumed a "business as usual" posture concerning

regularly scheduled activities, including an upcoming inspection of DCPP by INPO, and is continuing to emphasize that no sacrifices in safety are acceptable at any time. He remarked that much of the publicity concerning DCPP's operation and its importance in meeting California's energy needs has been very positive, and has even included positive feedback from groups fundamentally opposed to nuclear power and that employees are aware that the State is very cognizant of the important part Diablo plays in meeting its needs for energy.

Mr. Clark remarked that the Committee would appreciate being kept up to date with regard to plans by PG&E which would impact DCPP operations, resources or staffing. Dr. de Planque offered, on behalf of the Committee, to foster communication between PG&E and any or all of the Committee Members' appointing entities. Mr. Clark noted that PG&E's actions at DCPP in response to the California energy situation appear to be appropriate to the situation and that management has taken effective action in communicating concerning the situation with employees. **The DCISC will continue to monitor the situation, however, at the present time the Committee has not identified any new concern about the continued safe operation of DCPP due to the current California energy situation.**

Mr. Rueger requested Mr. Bob Hite to make the next presentation to the Committee.

Refueling Outage 1R10 - "As Low As Reasonably Achievable" (ALARA) and Dose Results.

Mr. Hite stated that the official exposure for 1R10 was 162.5 Rem which made 1R10 the lowest dose outage in U-1's operational history. U-1 outages have generally seen a radiation dosage in the range 300 Rem for a typical outage. The duration of 1R10 was 40 days 10 hours and there were 77 personnel contamination incidents (PCI) for exposure of both clothing and skin, which Mr. Hite observed was a good performance. He then briefly reviewed other statistics relating to the dose results for 1R10. The exposure estimate for 1R10 was 168 Rem and the goal for the outage was 147.5 Rem. Emergent work contributed 12.9 Rem and the extended duration of the outage added 1 Rem for a total additional exposure of 13.9 Rem.

Mr. Hite reviewed and discussed with the DCISC 1R10 radiation work permits and the estimated-to-actual exposure as

follows:

Radiation Work Permit	Estimated Exposure	Actual Exposure
Primary SG Eddy Current Work	25.0 Rem	23.9 Rem
Primary SG Nozzle Dams	7.9 Rem	8.9 Rem
Scaffolding in Containment	4.7 Rem	7.2 Rem
SG Secondary Side Inspection	5.8 Rem	7.2 Rem
Reactor Reassembly	7.8 Rem	6.0 Rem

Mr. Hite discussed the exposure experienced during 1R9 which resulted in a higher dose rate than planned and a higher exposure than expected. He stated that there was a concentrated and successful effort to make sure that the 1R10 forced O2 crud burst dose rate, which activity contributed to the higher dosage experienced for U-1 during 1R9, was explicitly planned for 1R10 and scheduled to reduce the 1R9 experience. He discussed the effect of zinc injection on the dose rates in the high-dose areas and described the dose reduction rate and the consequent benefits during 1R10. Dr. de Planque expressed her observation, and Mr. Hite agreed, that the nuclear industry should look at dose distribution equally with collective dose when examining the impact of managing dose rates and **she suggested the DCISC may want to schedule an examination of dose distribution results during a future fact-finding.** Mr. Hite opined that the largest contributor to collective exposure reduction is good scheduling, planning and implementation of work control processes. He remarked that there has also been a concerted effort over the last two refueling outages to employ state of the art filtration techniques to reduce crud source term in the primary coolant, which directly reduces available contamination.

Mr. Hite confirmed that DCPP is considering utilizing more remote monitoring techniques and technology to further reduce personnel exposure during future outages. He remarked that U-1 experienced fairly significant reductions in SG inside bowl dose rate averages since 1R7 and the experience of 1R10 at 10.1 Rem/Hr is actually less than the experience of 10.3 Rem/Hr during U-1's first refueling outage. He described this as the results of forced oxygenation and the crud burst and subsequent cleanup work for the ALARA Program. He observed that extending an outage results in an overall collective dose increase and short duration, efficient outages contribute to lower dosages. He then reviewed the DCPP annual radiation exposure and the three-year rolling average used by

the NRC to grade performance. Members discussed with Mr. Hite the INPO goals and comparison of performance data. In response to a question from Mr. Clark, Mr. Hite stated that at present, with the available data, the contribution of zinc is not demonstrable because of a present lack of sufficient isotopic gamma scans of the piping surfaces to determine the relative ratios of Cobalt 58 and 60 and Zinc 65. However, he stated that it has been his professional experience with boiling water reactors that zinc assists in reducing dose rate and collective dose results.

In response to a question from Dr. de Planque concerning the availability of RP technicians, Mr. Rueger and Mr. Hite replied that DCPP and other plants are continuing to work together and with their contractors to ensure qualified personnel are available for refueling outages. In response to a question from Consultant Booker, Mr. Hite remarked that the exposure goal for 2R10 is expected to be around 109 Rem.

XIX PUBLIC COMMENTS AND COMMUNICATIONS

The Chair invited any member of the public present who wished to address any comment or communication to the Committee to do so at this time. There was no response to this invitation.

XX ADJOURN MORNING SESSION

The morning meeting of the Diablo Canyon Independent Safety Committee was adjourned by the Chair at 11:55 P.M.

XXI RECONVENE FOR AFTERNOON MEETING

The afternoon session of the DCISC was called to order by Mr. Philip Clark, Chair of the Committee at 1:30 P.M.

XXII INTRODUCTORY COMMENTS BY COMMITTEE MEMBERS

The Chair noted that DCISC Member Dr. de Planque was present, Dr. Rossin having left the meeting earlier, and that a quorum of the Committee was present to continue the public meeting and requested Vice President Womack to present the final technical presentations scheduled for this public meeting of the DCISC.

XXIII INFORMATION ITEMS BEFORE THE COMMITTEE (Cont'd.)

PG&E Vice President Womack introduced DCPP Outage Manager Mr. Brad Hinds to make the next two technical presentations to the Committee.

Refueling Outage 1R10 Overall Results.

Mr. Hinds stated that 1R10 was his first outage experience as Outage Manager for DCPP, having been at the Plant since 1994 and having served previously in Operations as a shift technical advisor and as DCPP Manager of Scheduling and Project Management.

Mr. Hinds observed that 1R10 was a very good outage as regards nuclear safety. There were four personnel injuries during 1R10 which equaled the best performance for a refueling outage. Senior Vice President Rueger noted that PG&E is focused on developing and communicating fundamentals of a safety program at DCPP which is based upon everyday behavior and which encourages involvement from employees to remain vigilant against unsafe work habits of their fellow employees. Mr. Hinds stated that there were three significant human performance events during 1R10 on which the Committee has received prior presentations by PG&E and Mr. Hinds observed that none of these events challenged nuclear safety.

The baseline schedule for 1R10 was 26 days and the actual schedule was 40 days. Significant factors contributing to the delay were: six days delay attributable to Main Generator Phase C repair; three days attributable to Phase B repairs; three days attributable to M-48 testing and leak repair; and 1 day delay due to voltage regulator repair. All these delays were for items which were emergent in nature and were unrelated to work activities planned for the outage. Mr. Hinds discussed these items, the repairs effected, and the rationale and future plans for generator testing by which they were identified. Mr. Hinds observed that work which was planned was well scheduled and that absent the need to make repairs to the Main Generator the outage might have been accomplished within the scheduled 29-day duration.

Mr. Hinds reviewed the major routine scope of the items which were accomplished during 1R10. These included:

- Refueling the Reactor.
- Critical valve maintenance.
- Steam Generator maintenance and inspections.
- Turbine Generator maintenance and inspection.

- Diesel Generator maintenance.
- Vital Bus H maintenance.
- Surveillance testing.

He then reviewed and discussed the activities which constituted projects of major scope for the 1R10 outage, and he noted that no items of major scope were deferred during the outage. The items accomplished included:

- Containment Recirculating Sump Screen replacement.
- Reactor Coolant Pump cable replacement
- Main Feedwater Pump speed control replacement.
- Unit up-rated by 23 Mwe.

Mr. Hinds identified and discussed certain experiences during 1R10 which have been identified as areas of possible improvement for future outages. These include routine comprehensive preoutage planning and preparation, adherence and coordination of the outage schedule, and cost forecasting and control. In responding to a question, posed during an earlier presentation, concerning why one SG had significantly higher dose accumulation than the other, Mr. Hinds observed that the Reactor Coolant Pump for that particular SG was secured earlier during the shutdown sequence, raising the bowl dose rates. In response to a question from Mr. Clark concerning outage goals and incentives, Mr. Hinds remarked that the goals set for 1R10 were challenging to the organization but were achievable and Mr. Rueger remarked that the schedule duration represented the largest unachieved goal and that outage cost goal was essentially met.

Refueling Outage 2R10 and Safety Plan.

Mr. Hinds reviewed and discussed with the Committee the major maintenance scope of the upcoming tenth refueling outage for U-2, these include:

- Refueling and fuel repair.
- Steam Generator maintenance.
- Main Turbine Generator maintenance
- 4kV and 480V Bus H maintenance.
- Valve maintenance.
- Surveillance testing.

Mr. Hinds reported that chemistry indications of fuel

damage have been found for U-2 which may involve one open rod on one fuel assembly and that consequently, PG&E will be doing "in mast" sipping of the fuel assemblies removed to locate any fuel damage and will have contingency plans in place to deal with any damaged fuel discovered once it is in the spent fuel pool. Mr. Hinds then discussed with the DCISC the scope and the reasons for the major projects identified to date for 2R10, these include:

- Main feedwater piping replacement.
- Containment Recirculating Sump Screen modification.
- Reactor Coolant Pump motor cable replacement.
- Main Generator current transformer dismounting.
- Reactor Vessel Refueling Level Indication System upgrade.
- Reactor Coolant System Vacuum Refill System.

Personnel goals for 2R10 include achieving an exposure goal of 109 person Rem with no personnel safety incidents, errors or disabling or reportable injuries. Nuclear safety goals include no loss of core cooling with the core in any location, event-free mid-loop operations and no equipment damage. The budget for outage duration and cost for 2R10 is for a 35-day outage at a direct cost of $31 million, the goal is for a 30-day outage at a direct cost of $30 million and the plan is to achieve the outage in 26-27 days at a direct cost of no more than $28 million. Mr. Hinds reviewed the schedule for 2R10 major milestones in outage preplanning including work order preparation, issuance of the Rev 0 Schedule, completion and issuance of work instructions for the outage which is scheduled to commence April 29, 2001. Mr. Hinds observed that the Outage Safety Plan will be very similar to that for 1R10 and that there have been no unusual activities or risks identified and that overall risk as about the same as recent DCPP outages. He identified the higher risk evolutions as the two mid-loop operations, before core offload and following core reload. **Mr. Clark suggested that the Committee may wish to review any differences between DCPP outage risk and that of other Region IV plants, or whether the differences might be attributable to PRA modeling.**

In concluding this presentation, Mr. Hinds discussed the focus areas for improvement during 2R10 including expanded use of pre-outage milestones, top priority for safety and quality and attention to human performance fundamentals through use of tailboard briefings, self-verification and use of three-way communications. Mr. Clark observed that the Audit Report on

1R10 identified post evaluation critiques as an area for possible improvement and Mr. Hinds confirmed that PG&E is working to improve the Lessons Learned Program to encourage personnel to make immediate comment and offer suggestions to the Program in a timely fashion so they may be evaluated and if appropriate incorporated and implemented during the next refueling outage.

In response to questions from Consultant Wardell, Mr. Hinds confirmed that there were no significant errors involving clearance coordination during 1R10, that Emergency Core Cooling System(ECCS)voiding was not a problem during 1R10 due to enhanced void venting procedures for the ECCS, and that baffle jetting was not a problem during 1R10. Mr. Hinds remarked that because evidence of baffle jetting was found during 2R9, fuel assemblies will be clipped in the spent fuel pool during 2R10 prior to core reload as a precaution to prevent baffle jetting during the next U-2 operating cycle. Vice President Womack commented on the difference in design of reactor internals between U-1 and U-2 and he stated that it is PG&E's belief that U-2's design, with a partially bolted baffle and the direction of cooling flow between the core barrel and baffle, represents the principal cause for the onset of baffle jetting for U-2 during its last two cycles.

Mr. Clark called upon Senior Vice President Rueger to make the final presentation to the Committee for this meeting.

Five-Year Nuclear Power Generation Business Plan.

Mr. Rueger stated that PG&E's Five-Year Business Plan is a strategic performance plan which identifies key focus areas and that the Plan is updated annually. He reviewed with the Committee some of the major initiatives, past and future, which have or are expected to impact DCPP operations. Mr. Rueger reviewed PG&E's efforts to bring DCPP operating costs down to permit the plant to operate effectively in the competitive electric power market in California. He remarked that PG&E identified a gap of approximately $200 million, which had to be made up from either increased revenue or reduced generation costs for DCPP power. The Cost Management Plan, Performance Plans and the Re-Engineering Program, concerning which the DCISC has received information during past public presentations, were integral parts of efforts to reduce the gap and Mr. Rueger observed that these efforts were largely successful in reducing the gap and that, given the present state of the market for electric power in California,

there is no question that DCPP is a very competitive generating resource. At the present time, DCPP-produced power is the lowest-cost available within California.

Mr. Rueger identified and discussed with the Committee four separate strategies to facilitate the transition of DCPP to the new market environment. These include: the STARS alliance formed with four other nuclear plants with very similar designs to DCPP, and Mr. Rueger opined that a joint nuclear operating company may eventually emerge from the STARS alliance; continuing the Process Focus for addressing reengineering and cultural change efforts in terms of budget, costs, goals and organizing personnel to break down functional barriers; continuing encouragement and development of cultural change within the DCPP organization; and market development and creation of a strong market alliance for bidding DCPP power into the competitive market as that market evolves. Mr. Rueger observed that PG&E has been preparing DCPP for entry into the market and he briefly reviewed some of the efforts made. He stated that PG&E is now at a point where DCPP must continue to demonstrate profitability and sustained good performance at lower cost to secure its current value, and he identified and discussed some of the challenges DCPP will face in extending its value through the current license periods of 2021 and 2025 respectively for both units. PG&E has chosen not to address the issue of license extension for either unit, or major asset replacement for DCPP, until around 2005 and may do so in concert with some or all of its STARS partners. In response to a question from Mr. Clark concerning the reactor pressure vessel, Mr. Rueger confirmed PG&E received construction period recapture on its license term from the NRC and that both reactor vessels are being preliminarily evaluated for license extension. U-2 appears to have no major issues in this regard, while U-1 may require some modification prior to receipt of a license extension.

Mr. Rueger reviewed and discussed the DCPP Performance Plan through 2004 and beyond, which defines PG&E's overall goals for the DCPP organization into safety, industry leadership, generation performance, financial performance, human performance categories. Mr. Rueger remarked that, for every overall goal established by the Performance Plan, there is a corresponding plan to functionally link that overall goal with a practical plan for actually achieving the goal within the organization, and he confirmed that those implementation plans are organized by process or by Centers of Excellence concepts. **Mr. Clark requested PG&E provide a current set of**

the overall Performance Plan documents, together with the supporting plans to implement the strategies, to the Committee when they are available and that the Committee may wish to schedule a fact-finding to further review the Performance Plan. Mr. Rueger and Mr. Clark briefly discussed PG&E's current requirement to keep certain information concerning generation cost as proprietary due to the present competitive environment for power generation.

In response to a question from Dr. de Planque, Mr. Rueger confirmed that PG&E intends to work with its STARS partners to meet long-term staffing requirements for the DCPP organization and strategies are in place to secure, train and develop and maintain a workforce with the necessary skills required to continue operating DCPP.

The Chair then expressed the Committee's thanks and appreciation to PG&E and Mr. Rueger for the excellent quality of the technical presentations made to the DCISC during this public meeting. A short break followed.

XXIV PUBLIC COMMENTS AND COMMUNICATION

The Chair recognized Mr. John Gagliardini of Arroyo Grande, California, to address some remarks to the Committee.

Mr. Gagliardini expressed his opinion that PG&E should receive contracts for further research and development efforts concerning nuclear power. He stated that he had reviewed information on other PG&E projects in the local area including the Gunneson Land Project 18P013, and he expressed his opinion that it was not PG&E's fault that these projects did not ultimately result in additional electric power generation. There were no questions or comments and the Chair then thanked Mr. Gagliardini for his comment.

Mr. Les Goldfisher was then recognized to address remarks to the DCISC.

Mr. Goldfisher stated that he was present as a concerned citizen and that he wished to direct the Committee's attention to a lecture being held that evening, at California Polytechnic University in San Luis Obispo, by Professor Ernest J. Sternglass concerning the health effects of nuclear fallout and releases from the operation of nuclear power plants. Mr. Goldfisher read a press release concerning the subject matter of Professor Sternglass' lecture, which includes a discussion

concerning the level of Strontium-90 found in the teeth of children residing in the vicinity of U.S. nuclear facilities and data regarding cancer and infant mortality rates. Mr. Clark thanked Mr. Goldfisher and noted that he believes that all the Committee Members have been long aware of Professor Sternglass' views. Dr. de Planque commented that she has been aware of Professor Sternglass' studies for 30 years and that it is her recollection that Professor Sternglass' studies were considered by the Health Physics Society during the 1970's and that the Society's position at that time was that the evidence was not sufficient to sustain Professor Sternglass' conclusions concerning the effects of radiation. Dr. de Planque observed that the data she has reviewed, as a part of her professional field, indicate that health effects below certain levels, and certainly at low-level environmental levels, are not evident at all in epidemiological studies or any other human studies. Dr. de Planque noted that she is not familiar with Professor Sternglass' current data regarding children's teeth and could not comment on it, however, she noted that there are many reasons why radioactivity in teeth might be observed. She remarked that it was her opinion that Professor Sternglass' claims, based upon the data he has presented, have not been substantiated by significant numbers of scientists working in the field, both in this country and abroad. Mr. Clark noted that there is an extensive radioactivity monitoring program of the local area around DCPP, reviewed regularly by the NRC, which has consistently shown the radiation levels around the Plant are undistinguishable from natural background levels existing in nature and that studies have consistently shown that the impact of the operation of nuclear power plants on radiation level is low and does not present a health issue. Mr. Clark noted that Mr. Goldfisher has attended past meetings of the Committee and participated in the public tour of DCPP held this date. He remarked that the DCISC's role does not include supporting or opposing nuclear power and that the nuclear industry is doing many things to disseminate facts concerning nuclear operational issues. Legal Counsel Wellington noted that he had previously provided a copy of the press release concerning Professor Sternglass' lecture to the Committee Members and consultants.

XXV CONCLUDING REMARKS AND DISCUSSION

Mr. Wellington reviewed with the Members the present status of the Committee finances and he noted that all outstanding balances or amounts carried over from past year's

grants of funding from PG&E have been resolved. Mr. Wellington noted that PG&E will shortly receive a full refund of the grant balance remaining unspent from the funds provided for the Committee's operations during 2000. Mr. Clark remarked that it was his observation that during 2000, the Committee operated within its budget and he commented that, if possible, funds should be reserved through the end of any calendar year to address any unforseen contingencies affecting DCPP operations.

The Chair directed that Consultant Booker obtain Dr. Rossin's comments on the December 13 and 14, 1999, fact-finding reports and incorporate those comments, if any, into the final reports. Final versions of the reports will then be sent to the Members for their review and, upon their verbal approval, the December 13 and 14, 1999 fact-finding reports were authorized for transmittal to PG&E.

Future public meetings of the Committee are scheduled for June 20-21 and October 17-18, 2001, and a public meeting of the Committee was tentatively scheduled for January 29-30, 2002, by the two Members present.

XXVI ADJOURNMENT OF THE THIRTY-SECOND PUBLIC MEETING

There being no further business, the Chair adjourned the thirty-second public meeting of the Diablo Canyon Independent Safety Committee at 3:36 P.M.

NOTICE OF MEETING OF
THE DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

NOTICE IS HEREBY GIVEN that on June 20 and 21, 2001, at The Cliffs at Shell Beach Conference Center, 2757 Shell Beach Road, Shell Beach, California, a public meeting will be held by the Diablo Canyon Independent Safety Committee (DCISC), in five separate sessions, at the times indicated, to consider the following matters:

1. **Morning Session - (6/20/2001) - 9:00 A.M.** Opening comments, approve minutes of February 7-8, 2001 meeting; discussion of administrative matters including open items on the DCISC issues list; an update on financial matters and DCISC future plans; election of DCISC Chair and Vice-Chair to serve for the period July 1, 2001 through June 30, 2002; Committee member and staff-consultant reports; receive, approve and authorize transmittal of fact-finding reports to PG&E; Committee correspondence; and receive public comments and communications to the Committee.

2. **Afternoon Session - (6/20/2001) - 2:00 P.M.:** Comments by Committee members; consider technical presentations from PG&E on topics relating to plant safety and operations, including the results of the tenth refueling outage for Unit 2 (2R10), a report on 2R10 radiation exposure rate, the results of the December 2000 culture survey by Synergy Inc.; and receive public comments and communications to the Committee.

3. **Evening Session - (6/20/2001) - 5:30 P.M.:** Consideration of further technical presentations from PG&E on topics relating to plant safety and operations, including an update on plant events and operational status, a review of the DCISC selected performance indicators, an update on the activities of PG&E's Nuclear Safety Oversight Committee, a review of Reportable Events and NRC Notices of Violation; and receive public comments and communications to the Committee.

4. **Morning Session - (6/21/2001) - 8:30 A.M.:** Introductory comments; consideration of further technical presentations from PG&E on topics relating to plant operations, including the PG&E bankruptcy status and impact on Diablo Canyon, the status and plan for dry cask storage of spent fuel, a status update on proposed removal of the Post-Accident Sample System, an update on on-line maintenance; and receive public comments and communication to the Committee.

5. **Afternoon Session - (6/21/2001) - 1:30 P.M.**: Comments by Committee members; consider technical presentations from PG&E on topics relating to plant safety and operations, including the results and recommendations of the Integrated Assessment Report; receive public comments and communications to the Committee; and wrap-up discussion by Committee members and the scheduling of future site visits, study sessions and meetings.

The specific meeting agenda and the staff reports and materials regarding the above meeting agenda items will be available for public review commencing Monday, June 18, 2001, at the NRC Public Document Room of the Cal Poly Library in San Luis Obispo or on the Committee's website at www.dcisc.org. **For further information regarding the public meetings, please contact Robert Wellington, Committee Legal Counsel, 857 Cass Street, Suite D, Monterey, California, 93940; telephone: 1-800-439-4688.**

Dated: June 6, 2001

DIABLO CANYON
INDEPENDENT SAFETY COMMITTEE

Committee Members: Philip R. Clark
E. Gail de Planque
A. David Rossin

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AGENDA

Tuesday & Wednesday
June 20-21, 2001
Shell Beach, California

The Cliffs at Shell Beach
Conference Center
2757 Shell Beach Road

Morning Session - 6/20/2001 - 9:00 A.M.

I. CALL TO ORDER - ROLL CALL

II. INTRODUCTIONS

III. CONSENT AGENDA (Routine items which the Committee can approve with a single motion and vote. A member may request that any item be placed on the regular agenda for separate consideration.)

A. Minutes of February 7-8, 2001 Meetings: Approve

IV. ACTION ITEMS

A. Discussion of Open Items on the DCISC Issues List — Discussion/Action
B. Update on Financial and Budgetary Matters — Discussion/Action
C. DCISC Activities During 2001 — Discussion
D. Nomination and election of Chair & Vice-Chair for the July 1, 2001 - June 30, 2002 term — Action

V. COMMITTEE MEMBER REPORTS AND DISCUSSION

A. Site visits and Other Committee Activities
B. Documents Provided to the Committee

VI. STAFF-CONSULTANT REPORTS

A. Ferman Wardell:
Annual Report preparation;

Fact-Finding topics and reports

B. Jim E. Booker:
Fact-findings topics and reports

C. Dr. Hyla Cass
Human performance issues

D. Legal Counsel Robert Wellington:
Administrative and Legal matters

VII. COMMITTEE FACT-FINDING REPORTS:
Receive, approve and authorize transmittal to PG&E

VIII. CORRESPONDENCE

IX. PUBLIC COMMENTS AND COMMUNICATIONS (Oral communications on Committee matters, limited to 5 minutes per speaker. No action will be taken on matters raised, but they may be referred for further study, response or action.)

X. ADJOURN MORNING MEETING (at approximately 12:30 p.m.)

Afternoon Session - 6/20/2001 - 2:00 P.M.

XI. RECONVENE FOR AFTERNOON MEETING

XII. COMMITTEE MEMBER COMMENTS

XIII. INFORMATION ITEMS BEFORE THE COMMITTEE

A. Technical Presentations Requested by the Committee of P.G.& E. Representatives:
1) General Introductions
2) Results of tenth refueling outage for Unit 2 (2R10)
3) 2R10 Radiation Exposure Rate Results
4) Results of December 2000 by Synergy Inc.

XIV. PUBLIC COMMENTS AND COMMUNICATIONS (Oral communications on Committee matters, limited to 5 minutes per speaker. No action will be taken on matters raised, but they may be referred for further study, response or action.)

XV. ADJOURN AFTERNOON MEETING (at approximately 5:00 p.m.)

Evening Session - 6/20/2001 - 5:30 P.M.

XVI. RECONVENE FOR EVENING MEETING

XVII. INTRODUCTORY COMMENTS

XVIII. INFORMATION ITEMS BEFORE THE COMMITTEE (Cont'd.)

5) Update on Plant Events and Operational Status
6) Review of DCISC Selected Performance Indicators
7) Activities of PG&E's Nuclear Safety Oversight Committee
8) Review of Reportable Events and NRC Notices of Violation

XIX. PUBLIC COMMENTS AND COMMUNICATIONS (Oral communications on Committee matters, limited to 5 minutes per speaker. No action will be taken on matters raised, but they may be referred for further study, response or action.)

XX. ADJOURN EVENING MEETING (at approximately 7:30 p.m.)

Morning Session - 6/21/2001 - 8:30 A.M.

XXI. RECONVENE FOR MORNING MEETING

XXII. INTRODUCTORY COMMENTS

XXIII. INFORMATION ITEMS BEFORE THE COMMITTEE (Cont'd.)

9) PG&E Bankruptcy Status and Impact on Diablo Canyon
10) Status and Plan for Dry Cask Storage of Spent Fuel
11) Status Update on Proposed Removal of the Post-Accident Sample System
12) Update on On-Line Maintenance

XXIV. PUBLIC COMMENTS AND COMMUNICATIONS (Oral communications on Committee matters, limited to 5 minutes per speaker. No action will be taken on matters raised, but they may be referred for further study, response or action.)

XXV. ADJOURN MORNING MEETING (at approximately 12 Noon.)

Afternoon Session - 6/21/2001 - 1:30 P.M.

XXVI. RECONVENE FOR AFTERNOON MEETING

XXVII. INTRODUCTORY COMMENTS

XXVIII. INFORMATION ITEMS BEFORE THE COMMITTEE (Cont'd.)

13) Results and Recommendations of the Integrated Assessment Report

XXIX. PUBLIC COMMENTS AND COMMUNICATIONS (Oral communications on Committee matters, limited to 5 minutes per speaker. No action will be taken on matters raised, but they may be referred for further study, response or action.)

XXX. CONCLUDING REMARKS AND DISCUSSION BY COMMITTEE MEMBERS

A. Future Actions by the Committee
B. Further Information to Obtain/Review
C. Scheduling of Future Site Visits, Study Sessions and Meetings

XXXI. ADJOURNMENT OF THIRTY-THIRD SET OF MEETINGS. (at approximately 3:30 p.m.)

M I N U T E S
of the
JUNE 2001 MEETING
OF THE
DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

Wednesday & Thursday
June 20-21, 2001
Shell Beach, California

Notice of Meeting

A legal Notice of Meeting was published in local newspapers, along with several display advertisements, and was mailed to the media and those persons on the Committee's service list. A copy of the agenda was posted on the Committee's website at www.dcisc.org.

Agenda

I CALL TO ORDER - ROLL CALL

The June 20, 2001 public meeting of the Diablo Canyon Independent Safety Committee(DCISC)was called to order by Committee Chair Mr. Philip R. Clark at 9:00 A.M. at the Cliffs-at-Shell Beach Conference Center in Shell Beach, California. Roll call was taken.

Present: Committee Chair Philip R. Clark
Committee Vice-Chair E. Gail de Planque
Committee Member A. David Rossin

Absent: None

II INTRODUCTIONS

The Chair introduced the Committee's Consultants and Legal Counsel in attendance at the meeting. Present were Consultants Booker, Wardell and Dr. Cass and Legal Counsel Wellington.

III CONSENT AGENDA

The Chair introduced the only item from the Consent Agenda, a routine item which the Committee could approve by vote or on motion of a member remove to the regular agenda. That item

was approval of the Minutes of the February 7-8, 2001 DCISC

meeting. Dr. de Planque noted that editorial changes were necessary to certain sections of those Minutes and Consultant Booker and Members Clark and Rossin requested clarification from the Committee's consultants and PG&E representatives concerning certain references from the draft of the Minutes. Following discussion and agreement on required revisions, and on a motion made by Dr. Rossin, seconded by Dr. de Planque, the Minutes of the February 7-8, 2001 DCISC meeting were then unanimously approved as revised.

Committee Business

IV ACTION ITEMS

A. Discussion of Open Items on the DCISC Issues List: Committee Members and the Consultants discussed the current version of the Open Items List which tracks progress on items for further action, information requested or follow-up action identified during fact-findings conducted by and between Committee and PG&E representatives and during the DCISC's public meetings. Dr. Rossin observed that the descriptive wording used on the Open Items List should be as precise as possible and should accurately convey the message, observations or conclusions set forth in the individual fact-finding reports and the minutes of the public meetings. Members discussed with Consultant Wardell and Mr. Stan Ketelsen, of PG&E Regulatory Services, the status of certain items and requests for information on the current Open Items List. Mr. Clark noted that the Open Items List serves as a valuable reference prior to fact-finding meetings and is used to identify background sources for the participating PG&E and DCISC representatives. Committee Members and the Consultants discussed with Mr. Ketelsen the status of certain topics and trends identified on the Open Items List and identified certain items as topics for future Committee fact-finding.

B. Update on Financial and Budgetary Matters: Legal Counsel Robert Wellington briefly reviewed the present status of the Committee's finances. He reported that the DCISC has received funding for the post-petition portion of the second quarter of 2001, following PG&E's declaration of Chapter 11 bankruptcy on April 6, 2001. Mr. Wellington confirmed that the unspent balance of the grant for calendar year 2000 will be refunded to PG&E. The Committee's Accountant has complied with new California reporting requirements for IRS Form 1099 recipients which concern enforcement of child support obligations.

C. DCISC Activities During 2001: Members and Consultants reviewed a schedule prepared by Consultant Wardell

for their proposed activities during the remainder of the 2001 calendar year and discussed the proposed schedule and their availability.

D. Nomination and Election of DCISC Chair and Vice-Chair for the July 1, 2001 - June 30, 2002 Term: Mr. Clark nominated Dr. de Planque to serve as the DCISC Chair for the upcoming term, following a second by Dr. Rossin and with Dr. de Planque abstaining, Dr. de Planque was elected to that position. Mr. Clark then nominated Dr. Rossin to serve as DCISC Vice-Chair for the next term and with a second by Dr. de Planque and with Dr. Rossin abstaining, Dr. Rossin was elected as the next DCISC Vice-Chair.

V COMMITTEE MEMBER REPORTS AND DISCUSSION

a) Site Visits and Other Committee Activities: Dr. Rossin reported on his attendance at a fact-finding with Consultant Booker held at Diablo Canyon Power Plant(DCPP)during April 2001. Dr. de Planque reported that she attended a fact-finding with Consultants Wardell and Dr. Cass on May 1-2, 2001, which included their attendance as observers at a meeting of PG&E's Nuclear Safety Oversight Committee(NSOC). Mr. Clark reported that he and Consultant Wardell attended a fact-finding at DCPP during March 2001.

b) Documents provided to the Committee: Lists of the documents provided to the Committee since its last public meeting in February 2001 were included as a part of the public agenda packet for this meeting.

A short break followed.

VI STAFF-CONSULTANT REPORTS

Consultant Wardell reviewed topics from the March 14-16, 2001 fact-finding he attended with Member Mr. Clark. These included revision of the DCISC-DCPP Performance Indicators, with reference to eliminating possible duplication between the DCISC-selected indicators and the performance indicators developed by and reported to the Nuclear Regulatory Commission(NRC)and the Institute for Nuclear Power Operations(INPO),and a suggestion that a section be added to the DCISC Annual Report concerning performance indicators and the DCISC representatives met with the current Assistant NRC Resident Inspector for DCPP. Topics reviewed included: the modeling techniques used in NRC reports on refueling outage risk and plant-specific shutdown risk analysis; the NRC Maintenance Rule, enhancements to on-line maintenance, and the impact of the California energy supply situation on

maintenance; enhancements to the Corrective Action Program(CAP)based upon the Nuclear Energy Institute(NEI) benchmarking study and INPO review, CAP indicators, root-cause analysis and the CAP interface with human resources and performance improvement programs; winter storm operational experience and power generation curtailment; environmental performance; Reactor Coolant System(RCS)hot leg flow measurement data development; the amount of time PG&E officers currently have available for review of DCPP operational activities given the utility's bankruptcy situation and management's other commitments; a system review of the Auxiliary Saltwater System(ASW)and ASW long-term plans; two Licensee Event Reports(LERs)instituted during 2000, both of which involved relays. The DCISC representatives toured the Intake Structure and portions of the main Plant and the Control Room and discussed with PG&E representatives the Configuration Management and Equipment Qualification Programs; regulatory compliance issues and LERs initiated due to human error during Unit 1's(U-1)tenth refueling outage(1R10) and implementation of any support programs for the DCPP Performance Plans. Consultant Wardell observed a Shift Technical Advisor training class, attended a management discussion concerning the "Brown Bag" direct management-employee informational exchange program conducted weekly during lunch hour, and he attended a table-top emergency exercise at the Technical Support Center(TSC) and an exercise scenario at the Emergency Offsite Facility(EOF).

Mr. Wardell then reviewed the topics from the May fact-finding he attended with Committee Member Dr. de Planque and their attendance at a meeting of NSOC. Topics reviewed included recent changes proposed in the Radiation Protection (RP) organization to increase accountability, define roles and enhance the process bases and to better align RP with the Operations and Maintenance organizations and the RP special preparations for 2R10 and new innovations proposed for RP signage. DCISC representatives toured the Radiation Control Area(RCA)and reviewed with PG&E the analytical tools used in the Emergency Preparedness Program and efforts by DCPP, in conjunction with the NRC, to improve communication of radiological information to the public. They received updates on the objectives of the Strategic Teaming and Resource Sharing(STARS)joint-utility cooperative program and results of the Cultural Assessment performed by Synergy, Inc. The DCISC representatives attended as observers a meeting of NSOC which included a report on the activities of the NSOC Corrective Action Oversight and Assessment Sub-Committee, established to review Nuclear Quality Services(NQS)audits, self-assessments and the CAP.

Consultant Booker reported on a fact-finding attended with Member Dr. Rossin which was held at DCPP on April 18-19, 2001. Topics reviewed included: a discussion with DCPP Communications Director Jeff Lewis concerning communication with the public about the new proposed spent fuel dry storage facility to be located at DCPP; results of the Synergy Cultural Survey and a preliminary review of the recent INPO evaluation; a presentation from a training instructor from the Chemistry Department concerning the training program accreditation efforts; an update on the self-assessment process; the status of the bankruptcy matter; plans for on-site dry cask storage of spent fuel; an update on the Probabilistic Risk Assessment(PRA)and the Aging Management Programs; the Quality Assurance(QA)audit of the Security Department; an overview of the Component Cooling Water System(CCW); an informal discussion with the RP Program Manager; and a presentation from NQS on the status of improvements they have made since the last biennial audit in NQS self-assessment and plans for utilizing peers from other plants to help with the next biennial audit.

Dr. Cass reported on a fact-finding meeting she attended with Member Dr. de Planque on June 19, 2001. Topics included an update on human performance, which indicated that there has been a decrease in the human error rate at DCPP since the last refueling outage. Dr. Cass reported on an inquiry received by the Committee's Administrative Office from an operator at another commercial nuclear power generating facility which concerned PG&E's policy and use of "power naps" during night operations at DCPP and her inquiries to PG&E on this subject during the fact-finding. She briefly discussed the PG&E policy for enhancing stress management skills by permitting two 30-minute breaks in each 12-hour shift, during which employees are allowed to exercise, shower, take a nutrition break or to nap or otherwise relax to enhance their alertness. **PG&E was requested to reply to the inquiry received on behalf of the Committee and to provide the DCISC with a copy of their reply.**

Dr. Cass provided examples and an update to the information she received during a December 13, 2000 fact-finding, reviewing a multi-level, behavioral, observation-based safety enhancement program, termed "BOBsCATz" (Behavior Observation-Based Safety Cuts Accidents To Zero), for DCPP Maintenance personnel to track incidents, evaluate and identify risks, communicate and correct or eliminate barriers to personnel safety and unsafe work practices. She reported her observation that communication fostered by the Program, which is built on mutual trust and understanding of plant-specific issues, has created a shift in culture for the craft

workers involved and resulted in an increase in the availability of equipment and material necessary to work safely. She noted that improvement has been reported in terms of work control areas, housekeeping, material storage, environment, hoses and leads, barricading and posting job sites. Dr. Cass observed that these enhancements to a safe work environment should also have a beneficial effect on that significant portion of the DCPP workforce, which is impacted by age-related issues. Dr. de Planque observed that the Program is being used to predict what areas are at risk and then direct attention and resources to those areas. Dr. Cass, in response to a question from Dr. Rossin, reported that the BOBCATZ Program's steering committee are all volunteers and that the Program appears to have the support of the bargaining unit and has fostered a sense of empowerment and control and improved morale within the craft personnel. Dr. de Planque remarked that the group she and Dr. Cass interviewed appeared to be incredibly motivated and showed very strong ownership of the Program and she observed that she has rarely seen the level of enthusiasm for a program, which was demonstrated by this group. Dr. Cass reported that there is a plan to expand the Program to the Operations, Security and RP organizations in the future.

Dr. Cass reported on a general, overall work process review presented to the Committee's representatives to outline and compare the old function-based manner of managing work to the new process-based method of task management and to impact and improve safety. **She reported that the transition to the process-based work management model is still underway and that the Committee has committed to follow PG&E's progress during future fact-finding. The Chair requested that he and Dr. Rossin be provided with a copy of the comprehensive design chart developed by PG&E for use in implementing the process-based model.**

Dr. Cass reported on her review of the Employee Assistance Program(EAP)which was recently relocated to the Administration Building, outside the protected area, and she observed this may result in an increase in privacy for personnel availing themselves of the EAP. She stated that the EAP works closely with the Fitness-For-Duty Program to identify and address, or refer if necessary, employee-related alcohol, drug, psychological or family issues. Supervisors receive monthly training in behavioral observation and she noted that the majority of referrals to EAP are by way of self-referral. She observed that the EAP appears to have gradually gained a significant level of trust among DCPP employees and that the EAP newsletter appears to be an effective tool for focusing employee attention on EAP issues

and available services. Issues arising from the aging of the DCPP workforce, the recent utility bankruptcy and the energy supply situation and its impact on PG&E's business have been addressed to varying degrees by the EAP. Members and Consultants posed questions for Dr. Cass concerning need for an off-site location for EAP access by family members, reporting requirements should a situation have the potential to constitute an imminent threat to nuclear safety and issues involving anonymity for participants in EAP or any associated 12-step programs.

In concluding her report, Dr. Cass remarked that a representative of the DCPP Medical Center reviewed issues concerning operator fitness and the aging of the DCPP workforce and the PG&E representative confirmed that annual testing is done to identify potential problems. Security officers were offered, and some received, a $1,200 bonus for passing a physical fitness test. The Medical Center and the NRC conduct reviews of licensed operator's medical files and an absence from work due to a medical condition of over three days requires medical consultation prior to returning to work. Mr. Clark commented on favorable industry-wide trends concerning employee drug or alcohol use, and noted that a recent NRC testing conducted at unidentified nuclear facilities resulting in 1 positive from a random test of 505 employees. **Mr. Clark requested that the DCISC obtain and conduct a confidential review of current statistics from DCPP.**

Legal Counsel Wellington reminded the members that the California Fair Political Practices Commission requires annual statements concerning conflict of interest from each member of the Committee and he provided copies of the current Form 700 used for this purpose. He distributed updated Committee rosters containing addresses, email and telephone contact information. The Committee's newly revised general informational pamphlet was also distributed to Members and Consultants and available to those present in the audience.

Mr. Wellington noted that the Minutes of the February meeting were provided to PG&E for their comment, if any, and that the transcript of the public meetings would continue to be filed with the NRC Public Document Room at the R.E. Kennedy Library at California Polytechnic University at San Luis Obispo and are available in print or electronic format to anyone requesting a copy. He observed that the DCISC is receiving an increasing number of contacts initiated through its website at www.dcisc.org and **he stated that members of the public communicating with the DCISC to request information from or concerning PG&E should be contacted, and their agreement and understanding regarding confidentiality obtained, prior to the**

Committee providing information about the request to PG&E. The Committee requested an update during its next public meeting in October 2001, concerning the number of contacts made on the DCISC website. Mr. Wellington reported that he is continuing to monitor the situation with reference to PG&E's filing for bankruptcy protection under Chapter 11 of the Federal Bankruptcy Code. He reported that PG&E's Application concerning the rate freeze which was before a California Public Utilities Commission (CPUC) Administrative Law Judge and which if granted would terminate the Committee, has been taken off the CPUC's calendar, however, it remains pending. Mr. Clark remarked that he had spoken recently with PG&E Senior Vice President Rueger and reported that Mr. Rueger stated that PG&E is not, at the present time, actively seeking the elimination of the Committee and that the nomination and appointment process for DCISC members, currently in abeyance, would resume.

Mr. Clark suggested that the Committee Members may wish to consider developing a fresh approach to consideration of the impact of human performance and behavioral issues on safety at DCPP, possibly using an approach akin to past Committee dedicated studies of particular issues such as the cracking experienced by the Chemical Volume and Control System (CVCS) and the DCPP Seismic and QA Programs.

VII COMMITTEE FACT-FINDING REPORTS

Discussion concerning fact-finding reports was deferred to the afternoon session on Wednesday during the Members concluding remarks.

VIII CORRESPONDENCE

Copies of correspondence to and from the Independent Safety Committee were included in the agenda packets provided to those present and placed on file in the NRC Public Document Room of the R.E. Kennedy Library.

IX PUBLIC COMMENTS AND COMMUNICATIONS

Mr. Clark invited any member of the public present who wished to address the Committee to do so at this time. There was no response to this invitation.

X ADJOURNMENT

The morning meeting of the Diablo Canyon Independent Safety Committee was adjourned by the Chair at 12:35 P.M.

XI RECONVENE FOR AFTERNOON SESSION

The Chair convened the DCISC for its afternoon meeting at 2:00 P.M.

XII COMMITTEE MEMBER COMMENTS

There were no comments by Members at this time. The Chair requested PG&E Vice President Larry Womack to introduce the first of the technical presentations requested by the Committee.

XIII INFORMATION ITEMS BEFORE THE COMMITTEE

Mr. Womack introduced DCPP Director of Outage Planning-Outage Management Jeff Hays to make the first technical presentation to the Committee

Results of the Tenth Refueling Outage for Unit 2 (2R10).

Mr. Hays began the presentation by briefly reviewing his professional background. He observed that 2R10 represents DCPP's most successful outage to date and he compared and discussed 2R10's goals, budgets, actual results achieved and the previous best performance for DCPP in several categories as follows:

- Safety - goal was 0 disabling and 0 reportable injuries, actual performance was 0 disabling and 1 reportable injury which involved a laceration to the forehead of a maintenance worker when a drain plug he was removing from a charging pump sheared off. Previous best prior performance during an outage period for either Unit was 0 disabling and 4 reportable injuries.

- "As Low As Reasonably Achievable" (ALARA) Radiation Exposure - goal was 109 person-rem, actual performance was 107.6 person-rem and best prior performance during an outage period for either Unit was 120.4 person-rem.

- Human Performance - goal was 0 significant events, actual performance was 1 significant event, which resulted in a start up of the emergency diesel generator (EDG) system when a feeder breaker was inadvertently left in test position because its position was not properly tagged to accurately indicate its status to Control Room personnel performing surveillance testing procedure (STP) M-13H. Best prior performance during an outage period for either Unit was 2

significant events.

- Security - goal was <= 26 events, actual performance was 26 events and best prior performance during an outage period for either Unit was 24 events.

- Cost - goal was $29.2 million, budget was $30 million, actual cost was $30 million and lowest outage cost to date for either Unit has been $25.5 million.

- Schedule - goal was 25 days and 19 hours, budget was 35 days, actual performance was 29 days and 11 hours. Generator core tightening inspection added 3 days and 16 hours to the baseline schedule. Best prior performance during an outage period for either Unit was 31 days and 18 hours.

Members and consultants asked several questions during Mr. Hays discussion of the 2R10 outage achievements to which he and Vice President Womack responded.

Mr. Hays reviewed and commented on the routine and recurring major items of work which are contributors to the scope of any DCPP outage and other major projects and emergent work which were addressed and identified during 2R10, these included:

- Refueling the Reactor.

- Critical Valve Maintenance.

- Steam Generator(SG)Maintenance and Inspection.

- Turbine Generator Maintenance and Inspection.

- Diesel Generator Maintenance.

- Vital Bus-H Maintenance.

- Surveillance Testing.

Major projects included in the scope of 2R10 included:

- Containment Recirculation Sump Screen Replacement.

- Reactor Coolant Pump Cable Replacement.

- Current Transformer De-Mount.

- Traveling Screen Motor Upgrading.
- 12kV Auxiliary Bus 2-1 Upgrading to Copper.
- Feedwater Piping Replacement.
- Vacuum DeGas System installation.

Significant emergent work which was identified and addressed during 2R10 included torque work on generator through bolts and building bolts and repairs to Control Rod Drive Mechanism(CRDM)H-10 canopy seal weld. Members and Consultants discussed with Mr. Hays and Mr. Womack the impact of the emergent work. **It was suggested that a presentation be included during the scheduled fact-finding in July 2001 to further review the experience and the inspection results at DCPP and at other nuclear facilities with reference to CRDM cracking and leakage issues.**

In concluding his presentation, Mr. Hays identified pre-outage planning, an increase in the number of outage preparation milestones, adherence and monitoring of outage scheduling, cost forecasting, daily tracking and increased control as areas identified for future improvement from DCPP's 2R10 experience. He confirmed that the next DCPP refueling outage is presently scheduled for May 5, 2002 for U-1. In response to a question from Mr. Clark, Mr. Hays observed that the number of clearance-related errors was reduced during 2R10 from that experienced during past outages.

Vice President Womack then introduced DCPP Radiation Protection Manager Bob Hite for a presentation to the Committee.

2R10 Radiation Exposure Rate Results.

Mr. Hite reviewed the major goals for 2R10 which included <109 person-rem cumulative personnel exposure, 0 high radiation area boundary violations, 0 Radiological Control Area(RCA) entries without electronic dosimetry and 0 disabling injuries.

Mr. Hite reviewed for the Committee some of the major challenges for DCPP during 2R10 concerning radiation protection including source term concerns in the Reactor Coolant System(RCS)leading up to the outage, due to suspected fuel defects and an increase in noble gas, the shutdown chemistry process and RCS vacuum fill due to the very short transition from Mode 5 to Mode 4 operations.

Mr. Hite confirmed that the 2R10 personnel dosage was 107.6 person-rem, which was the result of an excellent shutdown chemistry process and he noted that the emergent work was well handled and was not a significant contributor to the overall dose results. He noted that DCPP performance for U-1 and U-2 is presently in the middle of the third quartile of INPO-tracked 3-year rolling averages of plant performance statistics for personnel exposure during refueling outages. In response to a query from Dr. de Planque, Mr. Hite replied that it is unusual for an individual to receive 1 rem of exposure and that no DCPP personnel are allowed to go over 2 rem without prior approval by PG&E management. He reported that there were no high radiation area boundary violations during 2R10. The RCA posting program was significantly overhauled with the necessary information color coded and radiation protection control points for personnel were relocated during 2R10 to outside of Containment. There were no RCA entries without functional electronic dosimetry in place and new turnstiles connected to dosimetry readers were installed which helped facilitate meeting this goal.

Mr. Hite reviewed some of the accomplishments during 2R10 in the area of protection from exposure including new protective clothing for personnel working in or near the SG internals and use of a new method for venting the SGs at the removal of the man-ways. However, a containment ventilation isolation notice was received with reference to work performed on SG-4 during 2R10.

In concluding his presentation to the Committee, Mr. Hite observed that exposure results for 2R10 included the lowest SG bowl dose rates experienced at DCPP, low dose rates overall for SG work and for 2R10 as a whole, with a total of 44 contaminations. Mr. Hite noted that good results were achieved with Residual Heat Removal (RHR) System flushes and RCS chemistry cleanup and he provided charts with data to support his observations. He discussed with the Committee the impact of zinc injection on dose reduction chemistry. Mr. Womack remarked that it was his belief that DCPP was the first pressurized water reactor to inject zinc and that the results on dosage chemistry and on primary water stress corrosion cracking (PWSCC) within the SGs has been beneficial.

A short break followed this presentation.

Vice President Womack introduced Employee Concerns Program Supervisor Rich Cheney for the next presentation to the Committee.

Results of the December 2000 Comprehensive Cultural Assessment.

Mr. Cheney stated that a Comprehensive Cultural Assessment (CCA) survey was conducted by Synergy, Inc. during November-December 2000, and included 40 on-site interviews with DCPP employees. The CCA survey was designed by Synergy to provide a comparison to the previous survey Synergy conducted at DCPP during 1998. He reported that 81% of the questions asked during the 2000 CCA were comparable to those from the 1998 survey. Results of the 2000 CCA were also compared to those from twelve other plants in Synergy's database to provide DCPP with a ranking within the industry. Mr. Cheney noted that the 80.4% response rate to the 2000 CCA exceeded the 61.8% response rate to the 1998/99 CCA and he reviewed the scope and methodology used by Synergy to rank and trend response to the 2000 CCA survey.

Mr. Cheney then summarized the results and conclusions of Synergy's 2000 CCA for DCPP and he compared the responses received from the major organizations within DCPP. Nuclear Safety Culture (NSC) was rated as good to very good and is perceived as having improved notably since the 1998 CCA. Nuclear safety values, behavior and practices, a composite indicator, rated as good to very good and is perceived to have improved notably. Safety Conscious Work Environment (SCWE) rated as very good to excellent and is perceived to have improved notably. The Employee Concerns Program (ECP) rated as adequate to good and is perceived to have improved. However, the ECP was rated uniformly lower than nuclear safety values or the SCWE by all DCPP organizations. Mr. Cheney observed that on an industry-wide basis DCPP's NSC ranks around the 70th percentile. Relative strengths for DCPP in the area of NSC include SCWE, nuclear safety priorities, operational nuclear safety and the CAP. Relative weaknesses identified in the area of NSC include employee confidence in decisions concerning allocation of resources to assure nuclear safety, confidence in the ECP and its effectiveness, and the timeliness and overall effectiveness of the Action Request (AR) process. **Mr. Cheney discussed these results with the Members and, in response to a question from Drs. Rossin and de Planque, he promised to clarify the display chart containing the industry comparison data and replied that the methodology and responses are subjective in regards to the relative strength or weakness of a particular area.** In response to a query from Mr. Clark, Mr. Cheney confirmed that responses concerning allocation of resources might be a result of forward-looking thinking by some employees concerning the California energy situation and its potential impact on DCPP.

Mr. Cheney noted that DCPP employees' willingness to take appropriate action was rated very good to excellent and the environment for raising potential nuclear safety issues or quality concerns was rated very good, especially with front-line supervisors. Vice President Womack noted that of the mix of survey respondents, approximately 80% of the 1,300 people who responded to the survey do not really consistently work within areas of DCPP which are subject to control by the Quality Assurance(QA)organization and are not, as a core function of their jobs, involved in initiating ARs or Non Conformance Reports (NCRs) involving nuclear-safety related issues. SCWE indicators and precursor ratings for management and supervision improved from the 1998 CCA. The four DCPP organizations with the relative lowest SCWE ratings in the 1998 CCA improved significantly. DCPP site rating for the overall effectiveness of the ECP improved 4%, however, the ECP rating by Operations shift personnel declined. Mr. Cheney stated that this was believed by PG&E to be directly related to the aftermath of the removal of a DCPP Shift Foreman who raised safety concerns with DCPP management, the DCISC, the local media and in several other public forums.

Mr. Cheney noted that, of the 8 division-level organizations targeted for improvement by the 1998 CCA, 7 showed significant or notable improvement in the NSC while only shift operations had not shown improvement. In response to a question from Dr. Rossin concerning future tracking to follow the process-based reorganization at DCPP, **Mr. Cheney and Mr. Womack replied that DCPP will retain the ability to collect and monitor comparable and meaningful results and they confirmed, in response to an observation by Mr. Clark, that PG&E will begin work to identify function and to monitor results against DCPP's new process-based Centers of Excellence organizational framework.** Mr. Cheney observed that significant progress was achieved for most of the 1998 CCA targeted organization. Only 2 of the 8 continue to be targeted based upon the 2000 CCA NSC results. A total of 4 organizations are designated as targeted organizations based upon the 2000 CCA NSC results, these are the Shift Operations, Control Room Electrical Maintenance, Nuclear Steam Supply System(NSSS) Maintenance and Procedure Services organizations.

The general culture work environment was rated as adequate to good by those participating in the 2000 CCA, which Synergy identified as a notable improving trend since the 1998 CCA. DCPP ranks approximately in the 68th percentile in the industry for general culture work environment. Areas of relative strength included keeping a focus on continuous improvement, conduct of work and work practices, high

standards, an environment of dignity, trust and respect, teamwork and industrial safety. Areas identified as weaknesses include communications, personnel development, job satisfaction and morale, management of change, performance recognition and responsiveness to the 1998 CCA. Of 8 organizations targeted by the 1998 CCA, 7 showed improvement, while Shift Operations demonstrated a decline.

Mr. Cheney reported that leadership, management and supervision were rated as adequate and were perceived by Synergy as improving since the 1998 CCA. Areas of relative strength included leadership's ensuring high standards, supportive work environment for openness and receptivity and promoting and demonstrating teamwork. Areas of relative weakness include management of change, establishment of effective plans, providing direction and building confidence in management, setting a good example and building trust in management, personnel management and promoting employee involvement. Of the 8 organizations targeted by the 1998 CCA, 6 showed improvement, 1 showed no change and Shift Operations showed a nominal decline.

In concluding his presentation, Mr. Cheney observed that significant progress was achieved since the 1998 CCA in the organizations targeted for general culture work environment improvement and only 3 of the 8 targeted by the 1998 CCA continue to be targeted based upon the 2000 CCA. Organizations targeted for general culture work environment improvement by the 2000 CCA include Shift Operations, Control Room Maintenance, Procurement Services, General Services and Security Services. Significant progress was achieved for most of the 1998 CCA targeted organizations concerning leadership, management and supervisory skills improvement, however 4 of the 8 continue to be targeted based upon the 2000 CCA. Organizations targeted for leadership, management and supervisory skills improvement include Shift Operations, Control Room Maintenance, Security Services, General Services, Procurement Services, Scheduling, Maintenance Support Team, Other Maintenance, ATUR Maintenance and NSSS Maintenance. Progress was achieved on each of the 5 general culture and work environment-related issues and on each of the 2 leadership, management and supervisory skills issues identified by the 1998 CCA. Mr. Cheney pointed out that Synergy specifically concluded that the full benefits of the ongoing initiative to embrace and reinforce the new value system at DCPP have yet to be realized. He observed that the scores from the bargaining unit employees were, on average, 9%-10% lower than the rest of the site population and that Synergy noted that these were the lowest in their experience.

Members and consultants discussed with Mr. Cheney and Vice President Womack possible reasons for the CCA results and their observations concerning the 2000 CCA by Synergy. Mr. Cheney discussed and reviewed results of 3 areas of special analysis by Synergy in the 2000 CCA including industrial safety, responsiveness to the 1998 CCA and progress on selected management initiatives. **Mr. Clark requested a copy of the written comments from the interviews used by Synergy in their 2000 CCA special analyses.** In response to a question from Mr. Clark, Mr. Cheney remarked that he was not particularly surprised by the results of the most recent Synergy CCA. Vice President Womack remarked that he was surprised that Operations sustained its position as a leader in the organization from a safety culture perspective but did not progress, as did other organizations, in either the general culture or the leadership, management and supervisory skills areas. **Dr. de Planque requested Mr. Cheney to determine if the INPO rankings were public information and to explore, if possible, any correlation between INPO's and Synergy's results.** Mr. Womack observed that PG&E is presently considering options for actions in response to the 2000 Synergy CAA and Mr. Cheney discussed with Consultant Booker some of proposals addressed to the EAP. Mr. Clark discussed with Mr. Womack PG&E's plans and the options available and under consideration to following up the results of the 2000 CCA and Mr. Womack confirmed to Dr. Rossin that the results of the Synergy 2000 CCA survey were presented to the DCPP organization.

XIV PUBLIC COMMENTS AND COMMUNICATIONS

Mr. Clark invited any member of the public present who wished to address the Committee to do so at this time. Ms. June von Ruden, a resident of Pismo Beach, was recognized to address remarks to the Committee and to PG&E representatives present.

Ms. von Ruden observed that she has addressed remarks to the Committee and PG&E in the past and expressed her belief that the forum provided by the Committee is a valuable one and that it was unfortunate that more members of the public did not choose to attend the public meetings. **She suggested that a public comment period at the beginning of a DCISC public meeting might be valuable for those who cannot wait until the scheduled presentations for a session have concluded. She also noted that the use of the reference to "Technical Presentations" in the notices of meetings of the Committee might discourage some from attending its meetings.**

Ms. von Ruden reported that a staff person from DCPP had sent her a letter in April to express concern over the Synergy report and the characterization in that report of certain aspects of DCPP operations as "adequate" or "nominally adequate." She stated that the writer expressed concern over working conditions and lack of ability to interface with DCPP management. She stated that her contact also expressed a belief that the Employee Concerns Program(ECP)was useless and that DCPP employees harbor significant mistrust of PG&E and the NRC. Her source alleged that management's actions were resulting in very significant levels of stress on the DCPP workforce and that outage operations were given a higher priority by PG&E than employee stress and fatigue. **Ms. von Ruden stated that she would provide the DCISC with a copy of the letter, after blocking out identifying information, and she urged the Committee to give it serious consideration and she stated that it was her impression that its author was not motivated by anger nor vindictiveness toward PG&E.**

The Chair thanked Ms. von Ruden for her comments and her attendance at the meeting and observed that a copy of the letter would be of interest to the Committee, provided that Ms. von Ruden was satisfied the author wished it to be shared with the Committee. **The Chair and the Members agreed to take Ms. von Ruden's suggestions concerning a specific time for public comments on the meeting agenda and the wording of the notice for the public meetings under advisement.**

XV ADJOURN AFTERNOON MEETING

The afternoon public meeting of the Diablo Canyon Independent Safety Committee was adjourned by the Chair at 4:59 P.M.

XVI RECONVENE FOR EVENING MEETING

Mr. Clark called to order the evening public meeting of the DCISC at 5:30 P.M.

XVII COMMITTEE MEMBER COMMENTS

The Chair reconvened the evening meeting of the DCISC and asked PG&E Vice president Larry Womack to continue the technical presentations to the Committee.

XVIII INFORMATION ITEMS BEFORE THE COMMITTEE (Cont'd.)

Vice President Womack remarked that Vice President-

Diablo Canyon Operations and Plant Manager David Oatley was unable to attend this meeting as he was attending the INPO Accreditation Board review for 6 DCPP operating programs and noted that INPO has unanimously renewed their accreditation of DCPP programs.

Update on Plant Performance and Operational Status.

Mr. Womack noted that the period since the last public meeting of the DCISC have been largely uneventful with regard to DCPP power generation operations. He observed that during that time period turbine valve testing was performed on each Unit and U-2 successfully completed 2R10. Total Plant generation during March 2001 was the greatest in DCPP operating history. In response to a query from Dr. Rossin, Mr. Womack replied that while he was not involved in the communication it was his understanding and belief that either the Governor or someone from the Governor's office did call PG&E's CEO or President to request that DCPP return to power and not curtail generation to 20% on both Units as planned in anticipation of Pacific Ocean storm activity, however, generation was reduced as planned. Vice President Womack reviewed operational activities during the period since the last public meeting of the DCISC, these included:

- Receipt of a new INPO 2-year rolling summary index rating of 97.8, the highest ever for DCPP.

- Declaration of an Unusual Event lasting 1½ hours when the California Department of Forestry (CDF) lost control of a planned burn, north of the 500kV switchyard, causing two phases of the 230kV lines to arc and loss of one source of offsite power to DCPP.

- Receipt of the eighth consecutive Number 1 rating from INPO.

- U-2 completed its entire 18-month Operating Cycle-10 without a mid-cycle cleaning of the twin circulating water tunnels, a first for DCPP.

- 2R10 achieved in record time with best safety record, lowest radiation exposure, shortest core off-load duration, earliest start of core re-load, shortest duration of reactor head de-tensioning, lowest dose rates for exposure related to work on the SGs and shortest outage duration.

Members asked several questions during Mr. Womack's operational review.

Review of DCISC Selected Performance Indicators

Vice President Womack discussed and reviewed with the Members and Consultants the 21 indicators currently being tracked at the request of the DCISC to measure DCPP performance. He summarized their status through the end of April 2001, as follows (σ indicates an improving trend, τ indicates a declining trend and ν indicates a steady performance since last reported to the Committee):

Thirteen of the indicators are on or better than the target.

- σ Radiation Exposure.
- σ Personnel Contamination Incidents.
- ν Operating Experience Assessment (OEA) Backlog.
- ν Quality Problem Completion.
- ν Unplanned Automatic Reactor Trips.
- σ U-1 Operating Capacity Factor.
- ν U-2 Operating Capacity Factor.
- ν U-2 Refueling Outage Duration.
- ν Unplanned Reportable Releases.
- ν U-1 Primary System Chemistry Index.
- ν U-2 Primary System Chemistry Index.
- ν U-1 Secondary System Chemistry Index.
- ν U-2 Secondary System Chemistry Index.

Two of the indicators are close to meeting expectations:

- σ Non-Outage Corrective Maintenance Backlog.
- σ Industrial Safety.

Three of the indicators are clearly not meeting expectations:

- ν Meeting Corrective Maintenance Due Dates.
- ν Event-Free Days.
- σ Unplanned Safety System Actuation.

One of the indicators is not applicable for this period.

- U-1 Refueling Outage Duration.

Confidential indicators reviewed with the DCISC during fact-findings include:

- σ Human Factor Security Events.
- σ Vital Area Events.

Members and Consultants discussed with Mr. Womack the results and trends demonstrated by the indicators including the efforts made in achieving the substantial reduction in collective radiation exposures since DCPP began commercial power generation activities in 1987. Members and Consultants discussed with Mr. Womack some of the constraints to reporting publicly on the results and status of the industry performance indicators used by INPO.

Vice President Womack briefly summarized and reviewed with the Members the activities of NSOC and PG&E's President's Nuclear Advisory Committee(PNAC)since the last public meeting of the Committee in February 2001.

Activities of PG&E's Nuclear Safety Oversight Committees.

Vice President Womack reported that a regular meeting of NSOC was convened at DCPP, with outage 2R10 in progress, on May 2, 2001. Topics discussed during that meeting included INPO results, the impact of the bankruptcy proceedings, the proposed reorganization of NSOC and a report from the NSOC Subcommittee on Oversight and Corrective Actions. Mr. Womack characterized the Subcommittee's activities and its report as successful and useful and he remarked that the use of other subcommittees, as well as *ad hoc* or standing committees, of NSOC will be considered by PG&E for use in the future. Other topics reviewed during the May 2, 2001 NSOC meeting included a License Amendment Request(LAR) to eliminate the Post Accident Sampling System(PASS), the results of the CCA survey conducted by Synergy, a review of human performance results from the Integrated Assessment Report(IAR) and plans for 2R10.

Dr. de Planque reported briefly on her attendance with Consultant Wardell at the May 2, 2001 meeting of NSOC. She remarked on her observation that there was a lack of critical dialogue on the part of some of the outside members of NSOC, those members of NSOC from outside the PG&E organization. She noted that the DCISC has recommended to PG&E management that it encourage all the members, particularly the outside members, of NSOC to take an active, questioning and analytical approach to their participation on NSOC. She noted that while two of the external members on NSOC are new, there is currently only one truly independent member of that Committee. While she stated that she recognized the value of the STARS joint utility cooperative efforts, she encouraged PG&E to consider adding additional independent outside membership to NSOC. Vice President Womack replied that the DCISC recommendation was presently under consideration by PG&E and he reviewed some of the other proposed changes in the

composition of NSOC.

Mr. Clark observed that the DCISC is presently considering how to continue and to improve its re-examination of issues relative to human performance. Mr. Womack opined that the first step in any such re-examination should be to establish objectives and to select participants.

Mr. Womack reported that a regular meeting of PNAC was held at PG&E's San Francisco Headquarters on April 9, 2001. Topics discussed during that meeting included Reportable Events, Notice of Violations, NRC issues and the NRC Reactor Oversight Program(ROP) performance indicators. PNAC also reviewed the Quality Performance and Assessment Report(QPAR) and the activities of NQS. Members of PNAC discussed recent activities of the DCISC, events and status concerning PG&E's Humboldt Bay Nuclear Power Plant, the Integrated Plant Assessment Report, preparations for 2R10 and the results of the Synergy 2000 CCA survey of DCPP.

Vice President Womack then requested Manager of Regulatory Services Pat Nugent to make the next presentation to the Committee.

Review of Reportable Events and Notices of Violation.

Mr. Nugent reviewed the first of two Reportable Events, which occurred at DCPP since the last public meeting of the DCISC in February 2001. He noted that one LER involved equipment failure and both involved inadequate procedures.

A single LER was initiated for wires, which were found to be degraded in vital switchgear cubicles in 4.16kV vital buses. The degradation was identified when a containment spray pump breaker failed a test and it was determined that the cause of the failure was short-radius bending of a wire near cubicle door hinges, resulting in a break in the wire and causing an over current trip on the breaker. All cubicles were inspected and degraded wires were replaced. In response to a question from Dr. Rossin, Mr. Nugent observed that the cubicle design is a typical General Electric design and, although PG&E has consulted with other plants concerning this issue, no indication of widespread failures of this type have been reported in the industry. The final cause analysis will determine the long-term corrective actions, which will include a Preventative Maintenance Program for the wiring. It was subsequently determined that Technical Specification (TS)3.0.3 was violated when, during repair of the degraded wires, two sources of offsite power supply and the EDG to Bus-H were inadvertently made inoperable without formal entry into TS

3.0.3. The cause was determined to have been confusing procedures related to offsite power, which caused operators to leave the transformer tap-changer in the wrong position, thus causing potential inoperability of a startup source. Mr. Nugent replied to a question from Dr. Rossin that the Plant was in a TS mandated Eight Hour Action Statement for 1 diesel and 1 offsite source inoperable at the time, rather than 1 diesel and 2 offsite sources inoperable. TS 3.0.3 would have required one hour to make preparation for orderly shutdown of the Units or for resolution of the TS issue. Mr. Nugent confirmed an observation by Consultant Booker that this event could constitute a potential Notice of Violation (NOV), however, he noted that the event was within the single failure criteria of the design basis such that even with the degraded wire, some other failure had to occur in order to make the degraded condition of the wire affect DCPP operations. Actions taken in response to the event include upgrading procedures and training operators. In response to a question from Mr. Clark, Mr. Nugent commented that the NRC determined the event to be of relatively low safety significance, however, he observed that PG&E was troubled by the fact that the operators' knowledge did not permit them to recognize the situation until after the fact. Dr. Rossin questioned whether the System Engineer had the opportunity, following this event, to undertake an objective and in depth analysis of other events, unrelated to the breaker cubicles, which might contribute to a similar result. Mr. Nugent replied that, while the LER evaluates immediate influences on other potential situations related to the breaker cubicles, it is a difficult task to comprehensively address all the broader issues which may be related to electrical configuration. Vice President Womack observed that DCPP entered into this operational evolution with full participation and review by Engineering and Maintenance and that, while this situation was not specifically analyzed in the Safety Analysis Report (SAR), the implications of the tap changer settings should have been identified beforehand. He stated that this situation fell short of PG&E's expectations regarding guidance available to operators and concerning the operators' willingness to seek further guidance, if necessary, during off-normal operations.

A second LER was initiated when DCPP experienced an automatic EDG anticipatory start due to a wildland fire and loss of 230kV startup power. Heavy smoke from a CDF planned burn caused phase-to-phase arcing and tripping of 230kV startup power lines and EDGs for U-1 and U-2 started automatically but did not load. An Unusual Event was declared. The cause was determined to be inadequate administrative controls and inadequate oversight by DCPP personnel of the cutting and brush burning operations by the

CDF crews. CDF initiated changes to the normal burn pattern used in the vicinity of DCPP without consultation with PG&E. Actions taken in response include generating new procedural guidance to address PG&E oversight and expectations for CDF vegetation management activities. DCPP remained connected to the 500kV system and both Units remained at full power during the event.

Mr. Nugent reviewed and discussed violations and findings received from the NRC since the last public meeting of the DCISC. There were 0 NOVs, 4 non-cited violations(NCVs) and 1 finding during that period.

The first NCV discussed involved a violation of the Physical Security Plan for failure to follow warehouse access control requirements. A second NCV was received for a violation of 10 Code of Federal Regulation(CFR)50, Appendix B, for leakage of Component Cooling Water(CCW) system train boundary valves, resulting in the CCW system being operated outside design basis. A third NCV was received for a violation of 10CFR20.1501 for failure to follow procedure when a radiation technician left the area without performing the required radiation area survey associated with the replacement of the spent resin filter when that task took longer than planned to accomplish. A fourth NCV was received for violation of TS 5.4.1.a for failure to follow procedure RCP D-614 when two incidents of radioactive materials being found outside of the Radiological Controlled Area(RCA)were identified. In response to a question from Consultant Booker, Mr. Nugent and Mr. Ketelsen confirmed that PG&E is conducting a root cause analysis and determining corrective actions for each self-identified NCV. Mr. Nugent observed that the NRC issued a finding for failure to perform a Maintenance Preventable Functional Failure Review prior to closure of a tracking AR for inadvertent removal from service of Startup Transformer 2-1. Committee Members observed that all but one of the NCVs and the finding discussed involved some form of human performance failure. In concluding this portion of his presentation, Mr. Nugent observed that during 2001, in comparison with NRC Region IV plants, DCPP has received 0 NOVs while the Region IV average is 0.14, while DCPP received 4 NCVs as compared to the Region IV average of 4. Since 1999, NCVs for DCPP have dropped from 34 in 1999 to 17 in 2000 to 4 to date in 2001. In response to a question from Dr. de Planque, Mr. Nugent observed that the NRC has changed its oversight process and that this change was primarily responsible for the downward trend in NCVs from 1999 to 2000.

Mr. Stan Ketelsen noted that, with reference to the wildfire burn which resulted in an LER, the fire was separated

from the 500kV lines (the second off-site power source) by a significant distance as well as by the wind direction.

Mr. Nugent reviewed the status of some of the NRC Performance Indicators(PIs). These indicators produce red, white or green status indications for levels of performance evaluation for the indicators in each category. He reviewed with the Committee the current status and recent actions relative to certain of the PIs. He reported that all DCPP PIs are currently in green status, however, the two trips following 1R10 currently challenge the Unplanned Scrams PI threshold for entering white status. Both Units are at the threshold between green and white status for scrams with Loss of Normal Heat Removal PI and he noted that this is due to kelp loading on the traveling screens at the Intake Structure and is beyond DCPP's ability to control. PG&E has submitted a question to the NRC relative to the treatment of these events and their effect on the PIs and he briefly discussed PG&E's efforts to anticipate the effect of storm-loaded debris on the traveling screens with the Members. He reported that DCPP was involved in the NRC's implementing pilot program concerning Initiating Events. He noted that a revision of NEI 99-02, the implementation guideline for the Revised Reactor Oversight Program(ROP), has been adopted, which incorporated answers to some 200+ NRC-approved Frequently Asked Questions to clarify the PIs.

Mr. Clark noted that the binder of exhibits prepared by PG&E for the public meeting contains a report on the PIs, their present value, the NRC threshold and present color status for the PIs for both operating Units at DCPP and the station thresholds set by PG&E for the PIs through the first quarter of 2001.

Members and consultants questioned Mr. Nugent concerning the Emergency Preparedness data:

<u>Category - Emergency Preparedness</u>

(a) Emergency Response Organization(ERO)Drill/Exercise Performance - percentage of success/opportunities for notifications and Protective Action Recommendations(PARS) during drills, exercises and events of the past 6 quarters.

Value for U-1 and U-2 combined is 92.6% and the NRC threshold is not less than 90%. Status - Green. Station threshold is 95%.

(b) ERO Participation - percentage of key ERO personnel that

have participated in a drill or exercise in the previous 8 quarters.

Value for U-1 and U-2 combined is 90.0% and the NRC threshold is not less than 80%. Status - Green. Station threshold is 90%.

(c) Alert and Notification System Reliability - percentage reliability during the previous 4 quarters.

Value for U-1 and U-2 combined is 99.4% and the NRC threshold is not less than 94%. Status - Green. Station threshold is 98%.

Mr. Booker noted that PG&E has exceeded the station threshold for item (a) above and Mr. Nugent noted that PG&E is trying to improve with reference to that indicator by conducting tabletop training exercises with the personnel involved concerning time requirements for notifications and requirements associated with making PARs. He noted that the composition of the Emergency Operations Facility staff has been changed in order to better facilitate making PARs notifications on time and that additional drills have been scheduled. Mr. Womack noted that the numerical data used in that indicator does not take into account consequences or potential consequences and forces licensees into actions which may not necessarily return significant benefit for public safety, however, he noted that PG&E is striving for 100% performance. Members and consultants discussed several of the aspects of this indicator with Mr. Nugent and Vice President Womack.

Following Mr. Nugent's presentation, **Mr. Clark inquired concerning the implications for DCPP of a recent event at the North Anna nuclear facility, which involved a Westinghouse fuel assembly. Mr. Womack replied that DCPP has evaluated and reviewed the event, which involved a fuel assembly coming apart, and determined that DCPP is not susceptible to a similar type event due to differences in fuel design. Mr. Clark noted that this event might be a potential issue for review in conjunction with planning for the next DCPP refueling outage.**

XIX PUBLIC COMMENTS AND COMMUNICATIONS

The Chair invited any members of the public present in the audience who wished to address any remarks or comments to the DCISC to do so at this time. There was no response to this invitation.

XX ADJOURN EVENING SESSION

The evening meeting of the Diablo Canyon Independent Safety Committee was adjourned by the Chair at 7:18 P.M.

XXI RECONVENE FOR MORNING SESSION

The June 21, 2001 meeting of the Diablo Canyon Independent Safety Committee was called to order by the Chair at 8:30 A.M.

XXII INTRODUCTORY COMMENTS BY COMMITTEE MEMBERS

Mr. Clark introduced the Members and consultants present and requested Vice President of Operations David Oatley to introduce the next technical presentation requested by the DCISC.

XXIII INFORMATION ITEMS BEFORE THE COMMITTEE (Cont'd.)

PG&E Bankruptcy Status and Impact on Diablo Canyon.

Mr. Oatley reviewed events during 2001 which resulted in PG&E's filing for Chapter 11 bankruptcy protection in federal court. He reviewed the prices for electric power procurement in California which have escalated from $7 billion in 1999 to $25 billion in 2000 to an estimated $50-$60 billion for 2001. He stated that at the end of 2000, PG&E was losing an estimated $3-$4 million per hour on the difference between the price paid for electric power and the price allowed by the regulators to be passed on to the customer. The extremely large debt accumulation, approximately $9 billion by January 2001, made it impossible for PG&E to pay for past energy purchases from suppliers or to secure financing for further power purchases and, accordingly, the State of California through its Department of Water and Power Resources began procuring energy for California investor-owned utilities by the end of January 2001. The State now provides PG&E with additional energy required to supply customers, beyond that which PG&E produces through operation of its remaining generating facilities. In response to a query from Dr. Rossin, Mr. Oatley confirmed that PG&E sold all power through California's Independent System Operator and the Power Exchange, until the Power Exchange ceased operation. PG&E bid DCPP power at $35.00 per megawatt hour and additional needs are supplied by the State at a cost of between $200-$400 per megawatt hour. Mr. Oatley noted that PG&E had $500 million in cash, the minimum required for operations, when default was

declared and bankruptcy protection sought on April 6, 2001. Mr. Oatley briefly described discussions held just prior to April 6, between PG&E and the Office of the Governor, wherein he stated PG&E attempted to avert the bankruptcy. He discussed the delays which took place in those negotiations, PG&E's lack of interest in selling its transmission system, the CPUC's decision to raise electric rates eventually payable to PG&E by 3¢ per kilowatt hour and the rates paid to the Department of Water and Power Resources by PG&E by 4¢ per kilowatt hour.

Vice President Oatley stated that PG&E does not view Chapter 11 bankruptcy protection as an end in itself, but rather as a portal the utility must pass through relatively quickly to restore economic vigor. The bankruptcy format should, in PG&E's estimation, provide a more consistent frame work in which to make the decisions necessary to move forward. He described PG&E's bankruptcy strategy as twofold: 1) work through Chapter 11 quickly, and 2) stabilize the business. He described DCPP's priorities concerning the bankruptcy situation as threefold: 1) continue to do whatever necessary to operate safely and reliably, 2) continue to do whatever necessary to support activities to sustain a Number 1 ranking by INPO, and 3) to continue activities to improve and maintain DCPP training programs.

Mr. Oatley briefly reviewed the effects of the declaration of bankruptcy which include the need to receive judicial permission to continue paying wages and benefits to PG&E employees. DCPP has been in weekly contact with the NRC concerning DCPP operational issues and to monitor any impacts from the utility's financial situation. He reported that PG&E currently has approximately $2.7 billion on hand, with pre-petition payables of approximately $9 billion to be adjudicated in the bankruptcy. PG&E currently estimates the bankruptcy proceedings may take one to four years to fully resolve the complex and numerous issues before the court. PG&E currently has a petition pending approval for a retention plan for key management employees and Mr. Oatley reported that DCPP has not, thus far, lost any personnel on account of the bankruptcy. The first date for filing a reorganization plan in the bankruptcy proceeding is August 5, 2001, and Vice President Oatley remarked that there is a creditors' committee which now represents the interests of PG&E's creditors and which will participate in negotiating, during a 60-day period, with PG&E concerning details of the reorganization plan and he noted that committee has submitted a filing in excess of 27,000 pages for consideration by the court.

Mr. Oatley observed that PG&E believes there to be four fundamental options to achieve successful reorganization: 1)

raising rates to match costs and recover debts, 2) reduce or eliminate payment to some or all creditors, 3) sale of PG&E's assets, or 4) utilize existing assets in a different manner to generate revenue.

In response to a question from Mr. Clark, Vice President Oatley responded that the impact on DCPP of the bankruptcy filing, to date, has been very minimal with no reduction in staff and only a minimal number of non-core business activities deferred. The bankruptcy situation has had no impact on decisions concerning required maintenance and there has been no deferral of preventative or corrective maintenance tasks. He noted that there was no change or alteration in the schedule, budget or the scope of activities planned and accomplished during 2R10. Management initially met with managers and directors on a daily basis to discuss information received and on a weekly basis to review PG&E's current status and options. Brown Bag lunch meetings have been held every Friday with employees to allow them to ask questions of management. Mr. Oatley stated that PG&E is also placing special emphasis on human performance safety programs and has seen a reduction in the rate of human errors during and since 2R10. The industrial safety rate is comparable to the previous year, however, disabling and recordable injury rates are trending significantly lower. In response to a question from Consultant Booker, Mr. Oatley replied that, to date, there has been no reluctance on the part of DCPP's contractors to continue to supply DCPP. He noted that diesel fuel for the EDGs was in short supply due to the rotating outages affecting oil refineries in Northern California, however, PG&E obtained a supply of diesel fuel from a Southern California refinery which was not subject to the outages. He noted that DCPP has developed an energy crisis contingency plan, using some of the process and data developed for the Y2K Program, to identify critical suppliers and backup sources necessary to operate the Plant safety and reliably. As a part of energy crisis contingency planning, DCPP has developed internal policies for addressing requests for actions impacting generation received from any State agency.

Members and consultants discussed with Mr. Oatley the regulatory requirement to maintain a 7-day supply of diesel oil on hand at DCPP at all times and some of the strategies devised to meet that consideration. In response to a question from Mr. Clark, Vice President Oatley noted that PG&E analyzed and performed NQS audits concerning operability issues on the 230kV and 500kV off-site power systems and determined there was no effect on DCPP generation operations from the rotating outages occurring on the 115kV transmission system around California. The emergency warning siren system has been placed

on a block exempt from the rotating outages, however, Mr. Oatley noted that a rotating outage of more than 8-hours duration might affect operations at the off site Emergency Operations Facility. In response to a questions from Mr. Clark, Mr. Oatley confirmed that sufficient onsite power is available through the EDGs to safely shutdown and maintain both DCPP Units in safe shutdown, should all offsite power supplies be lost. TS require 65,000 gallons of diesel fuel to be on hand at DCPP at all times during operations in Modes 1 through 4. In concluding his presentation, Vice President Oatley confirmed that DCPP personnel were paid incentive and merit pay earned during 2000, prior to the declaration of bankruptcy. Mr. Clark remarked that the Committee Members and consultants have visited DCPP since the declaration of bankruptcy and no evidence of adverse impacts on safety have been identified due to the bankruptcy.

The Chair then recognized several members of the public present in the audience to address remarks to the Committee. (See Public Comments and Communication, Pages 34-40, below.)

Following comments from members of the audience, Mr. Oatley requested the Program Manager for the Used Fuel Storage Project, Mr. Jearl Strickland to make the next presentation to the DCISC.

Status and Plans for Dry Cask Storage of Spent Fuel.

Mr. Strickland began this update on the status of the Used Fuel Dry Storage Project with an overview of that Project. He noted that DCPP is currently licensed by the NRC for operations until the year 2021 for U-1 and until 2025 for U-2. Used fuel is currently stored on site using wet storage technology, underwater in a vertical stacking configuration in the Spent Fuel Pool. Additional wet storage capacity was added for DCPP fuel during the 1980's and he noted that, at present, there is only enough on site capacity to serve DCPP until 2006. PG&E management, after reviewing options for reconfiguring and extending wet storage capacity at DCPP, selected a dry storage option for development and Holtec International has been selected as the NRC-licensed dry storage system vendor. The proposed dry storage facility will accommodate up to 138 storage units which is sufficient capacity, with the spent fuel pools off-loaded, to handle all spent fuel through the end of the current licensing period for both Units. Mr. Strickland reviewed the placement of the facility at the Plant site, which is proposed for an area which was excavated previously during construction of the 500kV and 230kV switchyards and, accordingly, its soil and rock composition, which are similar to that upon which the

DCPP power block rests, as well as its seismic properties, are well understood. He observed that the dry storage facility would be constructed in a sequenced manner and would eventually have 7 pads, accommodating up to 20 storage units each.

Mr. Strickland stated that the Holtec long-term storage system is comprised of 3 major components: the transport cask; the storage overpack, comprised of 2 steel vessels; and the multi-purpose cannister which can accommodate up to 32 stored fuel assemblies. He reviewed with the Committee the process proposed for storing the spent fuel. Mr. Strickland observed that DCPP site-specific seismic considerations have prompted PG&E to request of Holtec a design modification for the DCPP configured storage facility which will anchor the overpack to the concrete pad using anchor bolts.

Mr. Strickland reviewed and discussed with the DCISC the project's current status as follows: a contract with Holtec is presently being negotiated and is close to being finalized; the environmental reports are essentially complete; the Safety Analysis Report(SAR)is complete, with the exception of the geotechnical sections; Part 72 Technical Specifications are complete and are being reviewed by the Plant Staff Review Committee(PSRC);and the Security Plan modifications are in draft form. Mr. Strickland reviewed project delays which were caused principally by PG&E's corporate financial status, unique geotechnical issues related to the site characterization and slope stability, the design of the foundation and the design of the cask transfer facility. The NRC has requested additional information concerning the Holtec High Seismic license submittal. He reviewed the project schedule and noted that facility construction is expected to finish by 2005, and he identified the milestones in obtaining regulatory approval as NRC Facility Development(10 CFR Part 72) submittal in August 2001, NRC Power Plant Modifications(10 CFR Part 50) submittals and Coastal Development Permit application submittal in September 2001. In response to a question from Consultant Booker, Mr. Strickland replied that the PSRC has reviewed the environmental reports and all aspects of the SAR except geotechnical.

In conclusion, Mr. Strickland noted that information has been and is continuing to be provided to members of the public concerning this project. PG&E has posted a website at www.pge.com/diablocanyon to provide information and to receive and answer questions. PG&E provided briefings to various local interest groups and he noted that the regulatory review process also provides a separate venue for public input into the project. In response to a question from Consultant

Wardell, Mr. Strickland replied that the proposed DCPP design modification anchoring the overpack to the pad has enhanced the ability of the system to receive qualification without a similar need to address the sliding and toppling considerations as at other nuclear facilities using the Holtec System. He noted that while the multi-purpose canisters are designed to be air tight, the overpack has vents for natural convection cooling. He also observed that regulations do not presently require the facility to maintain a separate radiation monitoring system, apart from that currently existing and maintained for dosimetry at DCPP perimeter fences. **The Committee requested to review the SAR and environmental reports when they are available and Mr. Strickland confirmed that would probably be sometime during September 2001.** Mr. Strickland confirmed, in response to a question from Dr. Rossin, that there would be a few degrees of difference in temperature on the outside of the storage units from the ambient surrounding temperature and he **promised to review with Holtec their choice of a helium atmosphere for their storage design and to provide their response to the Committee.**

A short break followed.

When the Committee was again seated, the Chair again recognized some members of the audience present to address remarks to the DCISC. (See Public Comment and Communication, Pages 34-40, below.)

PG&E Vice President Oatley reported to the Committee that there were 852 SG tubes which would have been plugged in the SGs had the Alternate Repair Criteria not received approval. He also reported that DCPP has two 50,000 gallon diesel fuel tanks, for a total of 100,000 gallons of fuel available when filled to capacity, for the EDGs. He noted that actual diesel fuel storage inventory is not permitted to drop below 65,000 gallons, which is the amount required by TS for 7 days operation.

Mr. Oatley then introduced DCPP Manager of Regulatory Services Pat Nugent to make the next presentation to the Committee.

Status Update on Proposed Removal of the Post-Accident Sampling System.

Mr. Nugent stated that PG&E applied for a License Amendment from the NRC to remove the requirement for the Post-Accident Sampling System (PASS) at DCPP. PG&E made the request

because the PASS samples do not provide timely information following an accident and because on-line instrumentation is available to monitor core damage in real time. He stated that a Westinghouse performed evaluation concluded that there was no reason to continue the PASS at DCPP and he noted that the NRC has initiated a new process termed the Consolidated Line Item Improvement Process (CLIIP) in order to address applications for license amendments received from DCPP and other utilities concerning elimination of PASS requirements. PASS CLIIP was announced in the Federal Register on October 31, 2000, and provides a one year window of opportunity to submit License Amendment Requests(LARs). CLIIP allows a licensee to request an amendment for a generic issue provided it meets the model safety evaluation and requested commitments. Mr. Nugent observed that the DCPP LAR makes three commitments, requested by PASS CLIIP, and he discussed these briefly:

- Development of Contingency Plans for Samples.
- Description Capability for Classifying Events at Alert Level.
- Establishment of Capability for Monitoring Radioactive Iodine.

Mr. Nugent noted that all three of these commitments can be monitored on-line by using the radiation monitors on the Letdown System and the radiation and hydrogen monitors in Containment. In response to a question from Mr. Clark, Mr. Nugent confirmed that DCPP must demonstrate its capability with reference to each of the commitments. Mr. Nugent confirmed an observation by Dr. de Planque that technology has overtaken the original rationale for PASS.

Vice President Oatley asked DCPP Operations Section Work Control Supervisor Mr. Jim Dye to make the next technical presentation to the Committee.

Update re: On-Line Maintenance.

Mr. Dye stated that, as the Work Control Supervisor for the Operations Section at DCPP, it was his task to monitor and schedule on-line maintenance during non-refueling outage periods. He briefly reviewed recent DCPP performance and operational milestones. He discussed recent process improvements which have included: improved TS implementation, with over 500 new maintenance tracking documents created or modified to track allowable outage time and cumulative out-of-

service time for safety-related components; Control Room enhancements which INPO noted as strengths and which improved Control Room professionalism and reduced operator distraction; and an upgraded Work Around List for use by the operators to improve and focus maintenance and engineering efforts. Mr. Dye reviewed and provided an example of the Operator Work Around List and discussed how the list is used to distribute DCPP resources.

Mr. Dye observed that the Storm Swell Warning Process was an example of a recent process improvement and was used to assist in making decisions and taking positive action for precautionary curtailment of power generation operations due to storm swell activity and consequent debris loading. He briefly described how the Process was utilized on two separate occasions to curtail power operations and minimize stress on the Plant in the event of a trip. Mr. Dye provided examples of graphs created to show the rolling average for on-line maintenance activity and for trending schedule adherence performance. Mr. Dye stated that DCPP considers as Category A Work Items those items, which have potential shutdown implications, are associated with TS Action Statements or with probabilistic risk issues. Those items are characterized as high priority and every effort is made to perform any work on those items according to a strict schedule, to result in the least impact to the operating organization.

Mr. Dye observed that on-line maintenance risk management control processes have been revised to include not only internal plant trip hazards but also external risks from weather, fires and other events. He reviewed with the Committee some of the charts used to track cumulative risk from maintenance activities for both Units over a two-year period. In response to a question from Consultant Wardell, Mr. Dye and Mr. Oatley observed that, while increased use of on-line maintenance does create periods of increased risk, by only scheduling and sequencing necessary on-line maintenance and minimizing the duration of those activities the overall risk is kept within acceptable limits. In response to a question from Dr. Rossin, Mr. Oatley observed that currently the risk of not doing maintenance is not modeled in the Probabilistic Risk Assessment(PRA). In response to a question from Dr. de Planque, Mr. Dye and Mr. Oatley opined that DCPP on-line maintenance activities are about average compared to other nuclear power plants and they noted that the PRA used at DCPP differs from those used by other STARS plants.

Mr. Dye then reviewed and discussed with the Committee some examples of recent on-line maintenance activities at DCPP including U-2 diesel expanded pre-outage maintenance which

significantly reduced 2R10 diesel outage work scope and the ASW Flow Control Valve (FCV)-601 motor/actuator change out which entailed dual unit risk management coordination to ensure maximum access to all available heat-sink inventory. Mr. Dye also discussed maintenance challenges associated with forced outages including the U-2 feedwater heater bellows, U-2 generator lead box weld crack and the post 1R10 turbine balance shot.

Mr. Dye then reviewed and discussed two of the lessons learned involving on-line maintenance efforts including revisions of fire control and risk management procedures, resulting from loss of 230kV power due to the planned burn in April 2001 and deferment of the U-2 containment scaffolding storage project from pre-outage to 2R10. He stated that new rules governing implementation of 10 CFR 50.59, which will affect on-line maintenance decisions and calculations of risk probability, will be effective as of July 2001, and that the development of the ORAM-Sentinel maintenance risk evaluation tool should be completed, and ORAM-Sentinel should be ready for implementation by November 2001. Mr. Dye noted that the Operations Department shift foremen have generally indicated their approval of ORAM-Sentinel. **The Committee expressed its interest in reviewing implementation of ORAM-Sentinel during a fact-finding in November 2001.** In response to a question from Consultant Wardell, Mr. Dye noted that power operations to meet the California energy situation have had some impact upon, and required flexibility from, DCPP on-line maintenance activities. Mr. Oatley observed that any work deferred due to California's energy supply considerations has not, to date, created reliability or safety issues for DCPP.

XXIV PUBLIC COMMENTS AND COMMUNICATION

Following Vice President Oatley's presentation (see Page 29 above) concerning the PG&E bankruptcy, the Chair recognized some members of the audience to address comments to the Committee.

Ms. Sheila Baker of San Luis Obispo inquired if members from any of the unions at DCPP or any non-management DCPP personnel were invited to present information to the DCISC during its public meetings. The Chair replied that the Members and consultants meet with individual DCPP employees, including members of unions, when making fact-finding visits to the Plant site. Ms. Baker suggested that the Committee might wish to consider inviting members or representatives of the unions and other non-management personnel working at DCPP to speak to the Committee during its regular public meetings to open up the dialogue beyond what is achieved by having only PG&E

management make presentations to the DCISC. **Mr. Clark thanked Ms. Baker for her comments and replied that the Committee accepts Ms. Baker's suggestions and will consider how to better open the public meeting process and dialogue to all who may wish to avail themselves of the forum.** Dr. Cass observed that she recently met with some of DCPP's union employees in the Maintenance organization and, while her meetings indicated that PG&E's efforts are having a positive effect on safety, she recognized that the public may perceive that, given recent changes and events, a barrier exists between management and employees at DCPP.

The Chair then recognized Ms. Pam Marshall Heatheringthon, the Executive Director of the Environmental Center in San Luis Obispo, to address remarks to the Committee.

Ms. Heatheringthon thanked the Committee for its promised consideration of Ms. Baker's comments and expressed her concern regarding negotiations between PG&E and the Creditor's Committee established by the Bankruptcy Court and queried whether different reorganization plans might be presented for consideration. The Chair observed that the focus of the Committee is not on the bankruptcy proceedings, per se, but rather on whether DCPP will continue to be operated safely. Mr. Clark confirmed that the Committee would very likely review any proposed reorganization plan to assess if it adequately supports safety of DCPP operations, however, the context for such a review is uncertain at this time. DCISC Legal Counsel Wellington confirmed that the Committee is continuing to monitor the bankruptcy situation. In response to a question from Ms. Heatheringthon, Mr. Clark replied that the DCISC had no prior notice concerning PG&E's decision to seek protection in bankruptcy. Together with the general public the Committee followed the progress of the deregulations efforts in California, accordingly the Committee was aware of and had received presentations from PG&E concerning the California energy situation and PG&E's possible options. Ms. Heatheringthon closed by reminding the Members that the DCISC bears a heavy responsibility to represent the public and she expressed her thanks to the Committee.

Following the presentation on dry cask storage plans at DCPP (see Page 31 above), the Chair again recognized several individuals present in the audience to address remarks to the Committee.

Mr. David Weisman, a resident of Morro Bay, was recognized by the Chair and stated that he had become alarmed during the presentation by PG&E Vice President Oatley

concerning the bankruptcy situation concerning the availability of fuel for the DCPP emergency diesel generators, because of the possibility that the California electric supply system may not be adequate to handle demand over the coming summer months. Mr. Weisman questioned whether the expense of bringing in a tanker truck to ensure an additional supply of diesel fuel was available was a legitimate concern, given the high cost and expense associated with the normal operation of DCPP. He questioned whether PG&E management, in making a decision whether to bring in a fuel truck, might feel pressured between the need for financial economy and the need to ensure a sufficient supply of diesel fuel. Mr. Clark observed that the Committee recognizes the tensions inherent in such decision-making and commented that PG&E's past actions have indicated their willingness to commit sufficient resources to safety. The Members each indicated that they were satisfied with Vice President Oatley's comments concerning the diesel fuel supply and storage issue. Dr. Rossin and the Chair remarked that the NRC, as well as the Committee, are paying particular attention to DCPP operations to identify any negative impact occasioned by the utility's bankruptcy and that adherence to formal technical specifications also creates an effective format to assure the safety of DCPP operations. Dr. de Planque observed that those specification also have significant built-in safety margins and they are based upon a cognitive, in-depth review of operational safety and she remarked that the Y2K preparations were largely directed at dealing with unpredictable variables and extreme scenarios and may serve very well to model responses to the current energy supply situation. Mr. Clark thanked Mr. Weisman for his comments and confirmed that the NRC does post the results of its periodic inspections on its website, generally at six week intervals.

Ms. June von Ruden delivered to Legal Counsel Wellington a copy of the letter she discussed earlier with the Members. Ms. von Ruden remarked that it was her experience, as a long-time resident of California, that emergency planning cannot wait until a crisis occurs. Ms. von Ruden noted that this particular day has been denoted as "Lights Out Day" by some organizations, a day when electricity users were being asked to join in a protest by curtailing their use of electricity for 4-5 hours and she questioned if that action might affect DCPP operations. Members replied that, as electricity demand normally varies drastically on a daily basis, it was highly unlikely that this protest would have any impact on generation facilities in California.

Mr. David Weisman was again recognized and addressed remarks to the Committee. Mr. Weisman stated that it was his

impression that dry cask storage for DCPP fuel was being treated as an inevitable event, while the reasons for dry cask storage were not being adequately addressed. He questioned whether the availability of a proposed storage facility for nuclear waste, to be located at Yucca Mountain, coupled with the proposed increase in on-site dry cask storage capacity at DCPP, might lead to an extension of licensing for DCPP and require further debate on fundamental issues concerning viability and advisability of continuing the use of nuclear power and the consequent creation of more radioactive waste. He also remarked that he had questions concerning the delay of the geotechnical reports and concerning the high temperature of stored fuel in the event that it was buried by a landslide due to a seismic or other event. He mentioned a study by a Professor Resnikoff which seemed to indicate the temperature of the stored fuel could be raised significantly and result in a danger of melting the shielding materials which might subsequently ignite and burn, or possible lead to the melting of the fuel itself. He observed that the Plant site is located along the coast and might be vulnerable to attack by terrorists launched from open water.

Mr. Weisman remarked it was his observation that the public input to the debate concerning on-site storage of spent nuclear fuels is solicited concerning the small details and is not focused or solicited with reference to the overall considerations and he noted that state standards, as well as those of other federal regulatory bodies, may differ from the standards set by the NRC. Mr. Weisman expressed his belief that the public would be interested to know how these questions wold be addressed by the licensing and approval process. Mr. Clark remarked that Mr. Weisman had done a good job of articulating some very important questions and that the Committee cannot at this time provide all the answers to Mr. Weisman's questions, however, he noted that the licensing and approval process requires that all these questions be addressed or plans for dry cask storage cannot move forward. He noted that the documents mentioned during Mr. Strickland's presentation will be required to address pertinent questions such as those raised by Mr. Weisman and will be made available to the public. Dr. de Planque and Mr. Strickland noted that although there are a number of utilities considering contracting with Holtec for storage systems, no storage units have yet been fabricated for DCPP and the NRC will require a public process before issuing any license to do so. Mr. Strickland acknowledged that there may be a tendency in public presentations concerning dry cask storage to accept that option as a fact, however, there is still a possibility that PG&E's plans may not receive approval or be approved only after significant revision or that other options might become

available for consideration. Mr. Strickland observed that DCPP has a unique history concerning long-term seismic considerations and design which has evolved over a long period of time. He observed that PG&E's commitment to DCPP seismic design safety includes maintaining a geosciences department which studies impacts from seismic events worldwide and provides significant benefits for the local area. Mr. Weisman observed that the lack of many members of the public at the public meetings of the DCISC may reflect the public's perception that PG&E's plans are already firm and any further discussion would necessarily concern only the technicalities of achieving a result which has already been determined and is beyond the ability of the public to have meaningful input into the matter.

Ms. Pam Marshall Heatheringthon, present in the audience, was recognized. She questioned why Mr. Strickland was unable to respond concerning Holtec's use of helium in the storage canisters, to which Dr. Rossin responded that the need to use an inert gas for such purposes is well known and thoroughly understood and he stated his question concerned why Holtec selected the relatively rare helium rather than the more commonly available nitrogen for their purposes. Dr. Rossin confirmed, in response to an observation from Mr. Clark, that his question concerned the design only and that he had no question regarding the adequacy of helium for Holtec's purposes. Ms. Heatheringthon inquired if the power lines serving the 230kV and 500kV switchyard would pass over the proposed dry cask storage facility, to which Mr. Oatley responded that the matter would be analyzed in PG&E's regulatory applications and addressed in the environmental reports.

Ms. June von Ruden then inquired whether, based upon earlier efforts she had been involved in, re-racking to change the capacity of the present Spent Fuel Pool was really a viable option for PG&E. She also remarked that an engineer who claimed to have been involved in the construction of the original Spent Fuel Pool rack configuration had informed her some 20 years ago that the steel in those racks had cracked. She also inquired whether the hillside located near the proposed dry cask storage facility was subject to the type of landslides common in the local area and she questioned whether the bolting process would be adequate to its purpose. She also inquired as to the cost of installing one canister on the pad and whether this work would be done by DCPP or PG&E's contractor personnel. Mr. Clark observed that the regulatory approval process requires soil sampling to determine the adequacy of the proposed site and the other issues raised by Ms. von Ruden would also be addressed by the approval

processes. Vice President Oatley confirmed that PG&E had received a license from the NRC during the 1980's concerning its re-racking proposal for the Spent Fuel Pool, which included public hearings on the proposal, and that any future plans to change the configuration of the racks would require further NRC approvals and public input.

Ms. Fay Magilhill addressed the Committee and observed that she was impressed with the efforts being made to address safety, however, she inquired whether the Committee adequately examines worst case scenarios when reviewing safety of DCPP operations. Mr. Clark confirmed that, if the Committee was aware of an undue risk to the public, it would have an obligation to raise that issue with PG&E, the NRC or with the State agencies which appoint the DCISC's members. Dr. de Planque and Mr. Clark replied that only the NRC could issue a mandatory order to PG&E to shutdown DCPP. Ms. Magilhill opined that people living near nuclear facilities are better able to judge whether a plant should remain in operation than the regulators, who are heavily involved in nuclear power issues on a broad basis. Dr. de Planque confirmed from her service on the NRC that safety is the primary consideration for the NRC. Dr. Rossin commented on the continuing debate in the nuclear context of how safe is safe enough? He noted that identifying serious scenarios concerning nuclear power operations and the development of strategies to mitigate and deal with them is a continual process within the nuclear industry and has given rise to a defense-in-depth concept. He noted that the NRC requires a Safety Analysis Report from every nuclear plant in the country which addresses issues concerning providing reasonable assurances of safety to members of the public. He noted, however, that decisions will continue to be based upon evaluation of risk and he commented on the difficulties of communicating those principles through the public media. Mr. Clark noted that none of the Committee Members has any professional connection or a financial or other investment in PG&E or DCPP and noted that his own experience with U.S. Navy reactors, where the philosophy is "assume your son is going to be aboard that ship," has guided his considerations in assessing life on, near and around commercial nuclear plants. Ms. Magilhill thanked the Committee and closed her remarks by urging the Members of the DCISC to maintain an openness beyond their own professional and technical backgrounds in nuclear power.

Mr. David Weisman observed that the current membership of the DCISC reflects science and technical backgrounds and he queried how someone with a background in public health and safety might receive consideration for appointment to the Diablo Canyon Independent Safety Committee. Dr. Rosin replied

that the appointing officials do take into serious consideration a nominee's concern for public health and safety in making their appointments to the DCISC and he noted that the Committee's founding principles require that it be competent to make an independent assessment of DCPP's safe operation and that technical understanding of how a nuclear power plant operates is essential to fulfilling the Committee's mandate from the CPUC.

Ms. Sheila Baker was recognized and she queried whether plans for the proposed Yucca Mountain storage facility would affect the fuel storage situation at DCPP. PG&E Vice President Oatley replied that, in the event licensed storage facilities ever become available at Yucca Mountain, DCPP would have an option to transport fuel requiring storage to that facility in and by transportation facilities designed and approved for that purpose. Ms. Baker questioned whether rail or barge transportation might be utilized and Mr. Oatley replied that no methods of transporting the spent fuel have yet been considered, however, the proposed Holtec dry cask storage system does allow for flexibility of transport options in the future. He also noted that any option for off-site storage of DCPP spent fuel would be subject to first-in first-out priorities which would allow those nuclear power plants which have operated the longest, and consequently have the most spent fuel, to make first use of any new storage facility and that it could take some years before DCPP was eligible to send its spent fuel for off-site storage. Mr. Clark noted that any future method under consideration for adoption by DCPP, including the use of barges to transport the fuel, would necessarily be subject to a rigorous regulatory approval process including public hearings.

There were no comments from any members of the public present in the audience following Mr. Dye's presentation concerning on-line maintenance activities (page 32 above).

XXV ADJOURN MORNING MEETING

The morning meeting of the Diablo Canyon Independent Safety Committee was adjourned by the Chair at 12:07 P.M.

XXVI RECONVENE FOR AFTERNOON MEETING

The afternoon meeting of the DCISC was called to order by the Chair at 1:30 P.M.

XXVII INTRODUCTORY COMMENTS

The Chair requested Vice President-DCPP Operations and Plant Manager David Oatley to continue with the technical presentations.

XXVIII INFORMATION ITEMS BEFORE THE COMMITTEE (Cont'd.)

Results and Recommendations of the Integrated Assessment Report.

Vice President Oatley stated that the purpose of the Integrated Assessment Report (IAR) was to identify key performance issues with significant actual or potential impact on safe, error free operations, the resolution of which require high levels of commitment of current or future resources. The IAR is used to communicate key performance issues to PG&E's Chief Nuclear Officer and to DCPP personnel.

Mr. Oatley reviewed and discussed key performance issues identified in the IAR including:

- Human Performance - Error rate is above historical levels and an 18-month plan to improve human performance is scheduled for completion in the 4th quarter of 2001. This plan will establish a Human Performance Steering Committee to implement a 3-phase training program, address development of an accountability model and implementation of a communication plan for human performance issues. Mr. Oatley observed that DCPP has experienced some improvement in human performance from 1R10 to 2R10.

- Personnel Safety Practices - Mr. Oatley noted that DCPP personnel are not consistently adhering to safety practices and that resolution of this matter requires an overall improvement in the Plant's safety culture and associated behaviors. Actions taken include heightening awareness of safety practice issues by the leadership team and supervisors through observation, accountability, communication and implementation of new programs, policies and procedures with fewer and simpler requirements based upon the STARS industrial safety self-assessment.

- Equipment Failures - Mr. Oatley commented that a number of equipment failures in the last two years have resulted in lengthy forced outages or extended the scheduled duration of refueling outages. A Generation Vulnerability Identification Team (GVIT) has been established in the Engineering Services and Maintenance

organizations to help resolve this issue by development of a means to integrate into existing processes the capability to minimize or entirely prevent unplanned capacity loss. **Mr. Clark expressed the Committee's interest in reviewing the GVIT's report when it is available.**

- Management Expectations - Mr. Oatley noted that DCPP standards and managements' expectations are not being consistently met nor evaluated and reinforced. A focus area for the cultural work during 2001 will be to improve reinforcement of management expectations. Training sessions will be conducted for all supervisors to set and monitor expectations and to the train supervisors on dealing with conflict. In response to questions from Drs. Rossin and Cass, Mr. Oatley noted that Operations and Maintenance personnel have received extensive formal training in this area, however, effort will be made to make additional in-house provided training widespread throughout the DCPP organization.

Vice President Oatley then reviewed and discussed with the Members some other areas which have experienced satisfactory levels of performance or improvement, but which PG&E management see as currently less significant than the key performance issues identified by the IAR. These areas will continue to be monitored, and include trending of low level errors, Emergency Response Organization drill and exercise performance, Maintenance training, high radiation area violations and pre-outage milestones. He identified some areas of positive performance including the CAP, Operations and Control Room formality, management communication to employees and external entities during California's energy crisis, interaction between the procurement groups and suppliers during PG&E's bankruptcy filing and DCPP housekeeping and overall material condition. **Mr. Clark noted that the DCISC has expressed concern about the CAP's ability to effectively resolve problems in a timely manner, although, he also noted that all evaluators found the CAP effective in getting problems into its system and remarked the Committee would continue its interest in the CAP.**

Mr. Clark noted that human performance has been a focus area for improvement at DCPP for approximately ten years and that over that period the Committee has reviewed the many initiatives and efforts by PG&E to improve human performance at DCPP. He remarked that the Committee is interested in whether PG&E has involved all the necessary experts and resources to formulate and develop a plan to improve human

performance and break the current cycle. Vice President Oatley replied that DCPP's recent performance has moved it into median quartile among all U.S. nuclear plants, although, he noted that the trend at DCPP was again upward toward the best quartile. He opined that human error cannot be entirely eliminated and that an effective program to address improvement must evolve over time. Mr. Oatley noted that PG&E has currently employed experienced, recognized human performance experts and identifies improving communication, self-verification and pre-work briefings (tailboards) as areas for analysis of good human performance practices, however, cyclically over time other areas and external events will naturally become key drivers of human performance initiatives. Dr. de Planque observed that PG&E's efforts in the area of human performance appear to be similar to efforts of several years ago within the nuclear industry concerning what were then termed Human Factors Principles and that any effort to analyze and improve human performance must necessarily be a developing effort. **Mr. Clark requested PG&E to timely provide some written training material on the human performance improvement process and noted the Committee may wish to again discuss this topic at the next public meeting during October 2001.** Dr. Rossin commented on the difficulties inherent in trending human performance events to develop meaningful lessons for future improvement.

This concluded the technical presentations to the Committee for this public meeting and the Chair thanked PG&E Vice President David Oatley for the presentations.

XXIX PUBLIC COMMENTS AND COMMUNICATIONS

There were no comments by any members of the public at this time.

XXX CONCLUDING REMARKS AND DISCUSSION

Future meetings of the DCISC are scheduled for October 17-18, 2001, and tentatively for January 29-30, 2002, June 5-6, 2002 and October 16-17, 2002. **Mr. Ketelsen of PG&E will confirm availability of PG&E personnel for the January 29-30,2002 scheduled public meeting.**

Consultant Wardell briefly reviewed the outline and schedule for preparation of the Committee's 2000/2001 Annual Report.

Mr. Clark requested that Members and consultants consider what future efforts by the DCISC may be appropriate to address

human performance issues at DCPP.

Members discussed the suggestion made earlier during the public meeting concerning members of the bargaining unit at DCPP making a presentation to the DCISC during a public meeting. The Chair noted that DCISC contact and interaction with DCPP line employees, including bargaining unit members, will continue during fact-finding. **Dr. de Planque suggested the possibility of scheduling a presentation during a public meeting by a panel of representatives of the EAP, the ECP, Human Performance, and the Medical Center organizations.** Dr. Rossin observed that the Committee should continue to focus on programs and that the Committee should not foster a perception by DCPP's employees that it functions in any way an alternative to the ECP. **Members discussed with Vice President Oatley issues involved in inviting a working-level or first line leadership person from the DCPP bargaining unit to represent the BOBCATZ Program and to make a presentation to the Committee. Mr. Oatley promised to review these issues and to respond to the Committee. Dr. de Planque observed that it may be valuable to consider inviting a representative from the various safety oversight groups at DCPP, such as NSOC, PSRC, PNAC, to make a process-based presentation to the DCISC concerning their particular group's oversight functions.**

On a motion by Dr. Rossin, seconded by Dr. de Planque the Committee unanimously approved the draft of the Report of the March 14-16, 2001 fact-finding and authorized its transmittal to PG&E. On motion by Mr. Clark, seconded by Dr. Rossin, the Committee unanimously approved the draft of the Report of the May 14-16, 2001 fact-finding, subject to inclusion of minor editorial correction, and authorized its transmittal to PG&E.

XXXI ADJOURNMENT OF THIRTY-THIRD SET OF MEETINGS

Mr. Clark thanked Vice President Oatley and the PG&E presenters and personnel during these public sessions for their excellent presentations and responsiveness to the Committee. Drs. de Planque and Rossin expressed their thanks to Mr. Clark for his efforts as the Committee's Chair for the period July 1, 2000 through June 30, 2001. Mr. Clark expressed his good wishes to Dr. de Planque for her term as the next DCISC Chair.

There being no further business, the thirty-third public meeting of the Diablo Canyon Independent Safety Committee was adjourned at 2:50 P.M.

DIABLO CANYON POWER PLANT (DCPP) OPERATIONS

1.0 PG&E/DCPP Organization

The PG&E Generation Business Unit organization, including DCPP, is shown in Attachments 1, 2 and 3 to Exhibit C.

2.0 Summary of Diablo Canyon Operations

2.1 Summary of Units 1 and 2 Operations

The operating performance of the two DCPP units has been excellent for the period of July 2000 through June 2001. Unit 1 has operated continuously for 175 days from January 6, 2001, following its return to service from an 8-hour forced outage, through June 30, 2001, the end of this reporting period. Unit 1 achieved a 93.3 percent operating capacity factor for 2000 and a 100.3 percent factor for 2001 through June 30.

Unit 2 has operated continuously for 34 days from May 28, 2001, following its return to service from its 2R10 refueling outage through June 30, 2001, the end of this reporting period. The 29-day, 11-hour long tenth refueling outage was the shortest outage in DCPP history. Unit 2 achieved a 96.2 percent operating capacity factor for 2000 and improved to a 97.7 percent factor for 2001 though June 30.

2.2 Units 1 and 2 Performance Indicators

The following sections provide a summary of PG&E's performance in the subject areas for the period of July 2000 through June 2001.

2.2.1 Capacity Factor

The two units at Diablo Canyon have operated with a high capacity factor relative to the industry average. The objective was to have both units achieve an operating capacity factor (capacity factor between refueling outages) of at least 96 percent for both 2000 and 2001.

The 2000 year-end operating capacity factor for Unit 1 was 93.3 percent and for Unit 2 was 96.2 percent. During this time, Unit 1 went through its 1R10 refueling outage and was off-line for 40 days, 9 hours, 54 minutes, including an unplanned outage

extension of 14.3 days due to main generator/exciter problems. The Unit 1 capacity factor through the end of 2000 also reflects an automatic reactor trip due to testing equipment problems on November 20, 2000. During the last half of 2000, Unit 1 experienced a minor curtailment to 83 percent to resolve a generator cooling water overheating problem and Unit 2 had a nine-day forced outage to repair extraction steam expansion bellows and condenser tube leaks. In addition, on December 22, 2000, both units experienced a precautionary curtailment to 23 percent due to high sea conditions.

The operating capacity factors for Units 1 and 2 for the year through June 2001 are 100.3 percent and 97.7 percent respectively, with both Units expected to achieve the 96 percent objective performance as the units continue to operate through 2001. Both units were curtailed to 21 percent power for 1.7 days in January as a precautionary measure due to high ocean swells. During June 2001, Unit 1 experienced 2.3 days at reduced power to address unexpected contamination of the condensate storage tank and condenser hotwell water. Unit 2 continued its excellent performance in 2001, completing its record setting 2R10 Refueling Outage Power Ascension without problems. Unit 2 operated the remainder of June at full power.

2.2.2 Refueling Outages

The Unit 1 tenth refueling outage (1R10) began on October 8, 2000 with a target duration of 26 days. The outage was completed in 40 days and 10 hours, with the majority of the overrun associated with emergent repairs on the main generator. Despite the extended duration, there were a number of accomplishments in 1R10. The total of four injuries (two recordable and two disabling) matched the previous best for an outage. Radiation dose of 158.1 person-rem was 20% lower than any previous Unit 1 outage. Human performance was very good, with only two significant events - an emergency safeguards feature actuation due to the simultaneous performance of two incompatible tests, and a wrong-component error that effected Unit 2 startup power. Schedule accomplishments included the shortest core off-loaded window (174 hours), the earliest reactor head installation (19 days, 14 hours), and the shortest window from head installation to Mode 4 (55 hours, without vacuum fill). Outage cost of $29.3 million was below the goal of $30M and was the lowest Unit 1 outage cost ever.

As noted, the majority of the schedule delays were due to the main generator. On Day 18 of 1R10, high potential testing of the stator identified a fault on phase C. Mobilization and repairs pushed availability of the secondary side approximately

six days. Tests following that repair revealed a fault on phase B, which required another three days to repair. Leak testing after generator reassembly revealed a leak in a radial lead seal on the rotor that required an additional three days to repair. Another day was lost due to problems with the exciter voltage regulator panel during start up. The overrun was generally well managed, as the primary side was heated up, reactor core testing completed, and then returned to Mode 3 to await secondary side availability.

Overall performance in 1R10 was good as evidenced by the accomplishments noted above. Throughout 1R10 the organization as a whole maintained focus on safety and human performance. There were several new projects successfully completed in 1R10: Containment recirculation sump screen replacement; reactor coolant pump motor cable replacement; and uprating Unit 1 electrical output by 23 megawatts. Replacement of the main feedwater pump control system, performed on Unit 2 in 2R9, was also completed. Ninety-one lessons learned and several team and department critiques were collected to help improve performance in 2R10 and future outages.

The Unit 2 tenth refueling outage (2R10) began on April 28, 2001 at 17:55 and ended on May 28, 2001 at 05:18 for a duration of 29 days, 11 hours and 24 minutes. Outage goals for 2R10 included a duration less than 26 days at a cost of $30 million or less. The outage duration exceeded the scheduled 25 day 19 hour duration but was the shortest refueling outage in plant history by more than two days. The final outage cost was $30.0 million.

There were a number of significant accomplishments during 2R10 outage as well. Adjustments in the shutdown/RCS cleanup strategy were implemented to deal with a significant increase in RCS contamination late in the operating cycle. As result, dose levels were reduced at many locations, including the lowest steam generator bowl dose rates in plant history. The overall dose for 2R10 was 107.6 person-rem. This represents a 10% reduction from DCPP's previous lowest value of 120.4 person-rem in 2R9. 2R10 was also the safest refueling outage with no disabling injuries and only one recordable injury. Although the one significant human performance event exceeded the goal of zero, it was less than the previous best of two in 1R10. Lower level Human Performance events were also 30% lower than 1R10. Other highlights include the safe and successful installation and use of the vacuum refill system on the reactor coolant system.

The most significant delay in the schedule was for repairs to the main generator. Inspections revealed that torque on the through bolts and building bolts on the stator were as much as 50% below the specified values. Tightening of the bolts required

additional disassembly and reassembly of the generator end brackets, resulting in an extension of the generator schedule by about seven days and an impact of about four days to the overall schedule. In-place repair of scoring on the generator rotor shaft in the hydrogen seal area was also required.

2.2.3 Collective Radiation Dose

The bulk of personnel radiation dose occurs during refueling outages. Therefore, the total annual dose is largely dependent upon the outage planning effectiveness, radiation levels, outage duration, and number of outages conducted in the year.

The collective radiation dose goal for 2000 was 161 person-rem total for both units. Included in that total was the Unit 1 tenth refueling outage goal of 150 person-rem. The actual dose during 1R10 was 162.3 person-rem. The total collective radiation dose for the year 2000 was 180.7 person-rem.

The collective radiation dose goal for 2001 is 120 person-rem for both units. The total dose through June 2001 is 114.1 person-rem, which includes 107.6 person-rem dose from the Unit 2 tenth refueling outage. The actual dose from 2R10 was 1.4 person-rem below the 109 person-rem projection, and represents a 10% reduction from DCPP's previous lowest value of 120.4 person-rem in 2R9.

2.2.4 Industrial Safety Lost-Time Accident Rate

The 2000 PG&E industrial safety goal was to have zero lost time injuries. The year-end total for 2000 was four lost time injuries. For 2001, the industrial safety goal is unchanged at zero lost-time injuries for the year. Two lost-time injuries have been recorded for 2001 through June.

In response to the increase in lost-time injuries the following actions have been taken or are being implemented. Maintenance Services has adopted a "Behavior-Based Safety Program" where work is observed by peer evaluators and both safe and at-risk behavior is noted, with immediate feedback provided to the worker being observed so that behaviors can be corrected. A senior management safety observation program is being implemented where officers, managers, and key directors will be in the plant observing worker safety practices and behaviors. Observation results will be trended to evaluate effectiveness and determine further actions.

2.2.5 Unplanned Reactor Trips

The PG&E goal is to have no unplanned automatic reactor trip per unit per year while critical. Unnecessary reactor trips not only reduce plant capacity factor, they also represent unnecessary challenges to safety systems and may indicate substandard operating or maintenance practices. Manual trips are not counted because PG&E believes this might inhibit operator-initiated trips and actions to protect equipment.

During this assessment period there was 1 unplanned automatic reactor trip. On November 20, 2000, Unit 1 experienced an automatic reactor trip during the 1R10 power ascension due to testing equipment problems.

2.2.6 Unplanned Safety System Actuations

This indicator is the sum of the number of unplanned emergency core cooling system (ECCS) actuations (whether the ECCS actuation set point has been reached or from a spurious or inadvertent ECCS signal) and the number of unplanned emergency AC power system actuations that result from the loss of power to a safeguards bus. For Diablo Canyon, ECCS actuations include actuations of the high-pressure injection system, the low-pressure injection system, or the accumulators. Such actuations should be avoided because the plant should be maintained in a safe configuration to preclude actuations, and unnecessary challenges to plant safety systems should be minimized.

The PG&E goal for this indicator continues to be no unplanned safety system actuations at DCPP. During this assessment period, there was one unplanned safety system actuation for Unit 2. On May 20, 2001, during the 2R10 refueling outage, Unit 2 experienced a failure of an electrical bus transfer test on vital 4kV Bus H due to an improperly positioned circuit breaker.

2.2.7 Secondary Chemistry Index (SCI)

The purpose of the secondary chemistry index is to evaluate and trend chemistry control in the steam generators. Experience has shown that operation with impurity concentrations above the normal values used in this indicator will likely cause significant corrosion damage. However, the impurity levels below which corrosion damage is prevented have not yet been clearly established. Therefore, PG&E believes plants should be operated with the lowest practicable impurity levels.

The index goal for 2001 is "less than or equal to 1.02", the same goal used for 2000. This index is based on a normalized ratio of the steam generator parameters divided by their limiting factors per INPO specifications where 1.00 is the lowest and most desirable score. The year-to-date average through the end of June 2001 is 1.00 for Unit 1, unchanged over the previous year, and 1.02 for Unit 2, a slight increase over the last year from 1.01. The increase in the Unit 2 index occurred in June 2001 primarily as a result of the temporarily increased feedwater iron concentrations that were expected following 2R10. The average index in Unit 2 is expected to decrease prior to the end of 2001.

The minimum index reported is never less than 1.00 even though the actual number may be lower. Improvements in these indicators over the past several years can be attributed to continued emphasis on the optimization of the secondary chemistry program. Specifically, emphasis has been placed on control of parameters which impact feedwater iron concentration, the most challenging component of the index for Diablo Canyon, and on control of steam generator sodium. Chemistry continues to evaluate techniques to reduce feedwater iron concentrations; however, PG&E's business decision to continue using the full-flow condensate demineralizer to guard against a potential catastrophic saltwater leak into the condensate system (and resulting damage to the steam generators) limits the feedwater pH to reduce iron transport. To maintain low steam generator sodium concentrations, a goal of less than 3 gallons per day saltwater leakage into the main condenser was established in 2000. This is the main source of steam generator sodium. To date, this goal has been achieved in Unit 1 but leaks in Unit 2 main condenser continue to evade detection.

2.2.8 Fuel Reliability

The purpose of the fuel reliability indicator is to monitor progress in achieving and maintaining high fuel integrity. Failed fuel represents a breach in the initial barrier for preventing offsite release of fission products. Such failure has a detrimental effect on operations and also increases the radiological hazards to plant workers.

The PG&E goal for 2000 was to ensure that the "corrected" coolant radioactivity due to fuel failures did not exceed 5x10-4 microcuries per gram (µCi/g) of Iodine-131 in each unit. Unit 1 performance for this indicator for the second half of 2000 was 1x10-6 µCi/g for every month. Unit 2 performance for this indicator for the second half of 2000 averaged 5.22x10-4 µCi/g, with a high monthly value of 6.34x10-4 µCi/g in July and a year-

end value of 5.52x10-4 µCi/g. Thus, only Unit 1 met the goal for all months of the second half of 2000.

The goal for 2001 remains at 5x10-4 µCi/g. The value for Unit 1 through the end of June was 1x10-6 µCi/g. The average value for Unit 2 through the end of June was 5.41x10-4 µCi/g, with a high monthly value of 1.12x10-3 µCi/g in June. Thus, only Unit 1 met the goal for all months of the first half of 2001.

Based on both steady-state coolant activities and transient iodine spiking, Unit 1 operated without any failed rods since Cycle 4, whereas Unit 2 operated with indications of failed fuel in Cycle 10 since January 31, 2000, and in Cycle 11 since June 12, 2001. During 2R10, in-mast sipping and ultrasonic inspection identified a single failed rod, which was subsequently replaced with a stainless steel rod. The failure appears to have been debris induced, because a single small hole was found just below the bottom grid.

In Unit 2 Cycle 11, an estimated one rod with a small defect currently exists at the end of the first half of 2001. Preparations are being made to perform in-mast sipping of all 193 fuel assemblies during the 2R11 fuel offload. Identified leaking assemblies will be inspected ultrasonically to locate the leaking fuel rods so that they can be replaced with solid stainless steel rods.

PG&E continues to follow its fuel reliability programs, including the aggressive preventive maintenance inspection of new and irradiated fuel, continued implementation of procedural guidelines to prevent fuel damage during both power and refueling operations, implementation of chemistry controls, fuel assembly reconstitution for identified rod failures, tracking and disposition of damaged fuel assemblies, and strict controls to exclude foreign material from the reactor coolant system.

2.3 Employee Concerns Program Statistics

The Employee Concerns Program (ECP) is an alternate resource for reporting concerns having nuclear or personal safety significance. This includes issues of harassment, intimidation, retaliation, and discrimination (HIRD). This resource is available to all PG&E and contractor employees that support activities for Nuclear Power Generation (NPG). The process is designed to offer the concerned individual complete anonymity without fear of retaliation.

The ECP receives concerns primarily from direct contact with

concerned individuals or in the form of allegations referred to the ECP from the NRC. Below are statistics comparing past indicators with the present:

Item	1998	1999	2000	2001 *(as of 06/30)*
NRC allegations	23	4	15	5
PG&E ECP concerns	37	17	2	5
Anonymous concerns	32%	0%	0%	10%
HIRD concerns	26%	47%	100%	60%

The ECP staff is also contacted by individuals with issues that do not meet the established Employee Concern criteria for full investigations. These issues are generally resolved through mediation, intervention, referral, or another means acceptable to the employee. ECP documents these "Employee Contacts" along with their resolution. As of June 30, 2001 there have been 12 Employee Contacts.

The ECP staffing has remained consistent with what was reported last year. Staffing includes two lead investigators with one supervising engineer. This staffing is considered appropriate.

In December 2000, PG&E completed data collection for its most recent survey by SYNERGY of the culture of the DCPP organization. The results of the survey were finalized in March 2001. The results of the survey indicate notable improvement in both the safety culture and general culture and work environment.

Although improvement has occurred in each of the following areas, site wide scores indicate opportunities for continued improvements in the areas of:

- Employee confidence in the Employee Concerns Program
- Employee confidence of the timeliness and effectiveness of the corrective action process
- Communication of basis and appropriateness of management's decision in areas involving cost, production or schedule versus nuclear safety

Overall, the nuclear safety culture and the general culture

and work environment at DCPP are improving. Some organizations, such as Shift Operations, have only begun to show improvement. However, the precursors related to the overall nuclear safety culture score are indicating an improving trend. This trend is expected to continue as specific opportunities for improvement --identified as a result of this survey-- are addressed, and as necessary incorporated into the ongoing cultural initiatives at DCPP.

2.4 Fitness for Duty

The PG&E Fitness for Duty (FFD) Program testing of personnel for alcohol and drugs is divided into three categories:

- Random testing - targeted to perform an annual number of tests equal to or greater than 50% of the number of personnel
- Follow-up testing - required for three years for those who have previously tested positive for alcohol or drugs or those who have a record of drug or alcohol abuse prior to coming to DCPP
- For-cause testing as referred by DCPP management

PG&E has found that positive results of random testing have increased slightly for utility and contract employees during the past year. There have been six positive random tests during the period July 1, 2000 through June 30,2001. In the past, the random positive rate for utility and contract employees has varied from year to year with an overall downward trend.

For follow-up testing, approximately 1-2% of those tests yield a positive indication of alcohol or drugs, which is a relatively low number, considering the population being tested.

For-cause testing is dependent upon those specifically requested by supervision for testing and has varied from six positive indications out of 11 tested during 1996 to four positive indication out of eight tested through mid-2001. This indicates that DCPP managers are being careful to refer people only for reasonable cause.

DCPP's FFD program continues to identify individuals who are not fit for duty and individuals who violate the company FFD policies.

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE REPORT

Report on Fact Finding Meeting at DCPP
On July 6-7, 2000

by

W.E. Kastenberg and H. Cass and R.F. Wardell, Consultants

1.0 SUMMARY

The results of the July 6-7, 2000 fact-finding trip to the Diablo Canyon Power Plant in Avila Beach are presented. The subjects addressed and summarized in Section 3 include:

- Corrective Actions from September 22, 1999 Reactor Trip
- Human Performance
- System Health Indicators and Long Term Plans
- Environmental Performance
- Organization Development Program
- Turbine Blade Cracking
- DCISC Performance Indicators
- INPO SOERs 98-1 and 98-2
- May 15, 2000 Fire and Unusual Event
- Control Room Ventilation System Review
- Meeting with Medical Facility Director

The conclusions and recommendations for each subject are summarized in Sections 4 and 5.

2.0 INTRODUCTION

This fact finding trip to the DCPP was made to evaluate specific safety matters for the DCISC. The objective of the safety matter review was to determine if PG&E's performance in

these areas is appropriate and if any of these are important enough to warrant further review, follow-up, or presentation at a public meeting. These safety matters include follow-up and/or continuing review efforts by the Committee as well as those identified as a result of reviews of various safety related documents.

3.0 DISCUSSION

3.1 Corrective Action from September 22, 1999 Reactor Trip

The DCISC reviewed the September 22, 1999 reactor trip at a fact-finding meeting in November 1999 (Reference 6.1). The cause of the trip was a lightning strike in the 500 kV switchyard. Lightning struck the static ground wire protecting the Unit 1 500 kV tie line. This tripped the 500 kV overvoltage relay and opened the Unit 1 Power Circuit Breakers (PCBs). The Unit 1 generators increased speed and lost synchronization with the PG&E system. The synchronization-check relays on the 12 kV buses prohibited fast transfer, as designed, causing the Reactor Coolant Pumps (RCPs) to slow. This resulted in RCS pressure increasing and the Power Operated Relief Valves (PORVs) opening, which in turn caused RCS pressure to decrease. The pressure decrease resulted in higher RCS temperature, and the reactor tripped on the over-temperature delta-T setpoint.

Although the reactor trip was handled well by operators, there were some weaknesses noted: Operations and Chemistry were not aligned on planned condenser tube leak searches, more PA announcements were needed, there were some problems in securing the AFW pump, the four-hour emergency report to NRC was late, communication between the control room and 500 kV switchyard was less than optimal, and the Spent Fuel Pump was not noted to have tripped until regular rounds on the next shift. These were being addressed.

Later, when attempting to restart the reactor, the reactor was manually tripped due to an inadvertent transfer from auxiliary power (backfeed) to start-up power. The transfer resulted from switchyard operators not advising the Control Room when resetting the overvoltage trip relay, contrary to the requirements of restart policy. This was considered non-cognitive personnel error on the part of the switchyard operator.

Immediate corrective action to prevent recurrence included the following:

- Defeat the instantaneous overvoltage feature (which was determined to not be necessary). A timer is to be added to the circuitry which will be modified to ensure a trip signal will not lock in.
- Switchyard operators received training on the unique design of the overvoltage relay, how to determine its trip state, and how to reset the device.
- Cautionary lamacoids have been placed at the relay to remind switchyard operators to reset the relays before cutting in the devices.

The Fact-finding Team met with Pat Colbert in Electrical Engineering to review corrective actions taken for the control system design to prevent recurrence. The following actions were proposed:

- Replace the existing unshielded control cable from the 500kV potential devices to the switchyard control room with shielded cable - to be completed in upcoming refueling outages.
- Install a time delay relay on the instantaneous portion of the overvoltage relay - completed.
- Dtermine the method employed to permanently cut out the instantaneous feature of the overvoltage relay - completed.

These changes are being tracked with Action Requests. The lightning protection system was determined to meet company and industry standards, but changes will be considered by the system engineer in the determination of system long-term plans.

<u>Conclusion</u>: The electrical control system changes appeared to be adequate to prevent recurrence of the reactor trip caused by a lightning strike; however, the DCISC was also interested in the other corrective actions addressing condenser tube leak searches, PA announcements, securing the AFW pump, emergency reporting, and communication between the Control Room and switchyard. Lack of indication of the Spent Fuel Pump trip has been addressed by instrumentation added in another AR. The DCISC should follow up on the remaining corrective actions in a future fact-finding meeting in the fourth quarter of 2000.

3.2 Human Performance

The DCISC met with Al Jorgensen, Director of the Human Performance (HP) Program, for an update on human performance results and initiatives. The Human Performance Group (HPG) is part of the Corrective Action Group which reports to Nuclear Quality Services.

While human performance errors are inevitable, these events can be reduced by minimizing contributing factors and by applying corrective actions in order to prevent more significant occurrences in the future. The Human Performance Team analyzes low level ARs using the new analysis and culpability model, the Personnel Accountability Policy, which addresses accountability in relationship to HP events or issues. It is based on the accountability policy which Al Jorgensen wrote with Bill Blunt in 1996 as part of the EPRI program and was later adopted by INPO. Principles include blameless error (with corrective actions all the way up the line) and coaching, rather than discipline.

The main points are as follows:

- A consistent accountability policy must be applied horizontally and vertically throughout the organization addressing all those directly and indirectly involved. Individuals can then learn from their errors.

- Definitions were given of the various terms used, such as accountable, consequences, human error, and positive discipline.

- The document covers responsibilities of managers, directors, and supervisors to provide positive recognition for employees and groups whose performance exemplifies accountability.

- Employees are responsible to report errors and assist in determining corrective actions.

- "Investigating Events and Determining Accountability" includes issues of intentionality. A Culpability Evaluation Tool is provided for the use of first line supervisors to help determine the level or severity of disciplinary actions in response to events or near misses caused by human error. "Culpable" is a weaker form of "guilty," used to connote some malfeasance or error of ignorance, omission, or negligence.

- In the long run, performance improvement is paramount. As performance improves, fewer errors will be committed. This in turn reduces the frequency and severity of adverse consequences known as "events".

- Responsible adults, more often than not, demand equitable accountability and will respond favorably as long as the rules, process and consequences are clearly understood up front.

- General guidance is provided regarding the thought process to be used in evaluating an error. In most accidents or events there is likely to be a number of errors. During the evaluation, more errors may be discovered that require additional attention. It is important to understand the type of error-, rule-, skill- or knowledge-based. This will help to determine what type of corrective measures are required.

- It is important to rule out Fitness For Duty (FFD) issues which can include substance use, fatigue, or mental and emotional stress.

- Intentionality is an important component: Was the action intended? Was the result? Was there a knowing procedure violation? Was an error system-induced?

- Finally there is the issue of substitution. One could for example, ask the individual's peers, "Given the circumstances that prevailed at the time, could you be sure that you would not have committed the same or similar unsafe act (error)." If the answer is "probably not", then blame is inappropriate. If the answer to the substitution test is "yes", then you should proceed to the section addressing whether or not the individual has a history of unsafe acts.

- Even though many experts claim "a great majority of unsafe acts in high tech environments fall in the category of "blameless error," since the system or organization induces most of the errors, there are strong arguments in favor of disciplining the few who commit egregious unsafe acts. In most organizations, the people in the front line know who the habitual rule benders are. Getting away with it on a daily basis undermines morale as well as the credibility of the disciplinary process. Fair and consistent application of an

Exhibit D.2

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE REPORT

Report on Fact Finding Meeting at DCPP On October 25-26, 2000

by

A.D. Rossin, Member, and R.F. Wardell, Consultant

1.0 SUMMARY

The results of the October 25-26, 2000 fact-finding trip to the Diablo Canyon Power Plant in Avila Beach are presented. The subjects addressed and summarized in Section 3 include:

- Observe Outage 1R10 Daily Meeting
- Tour Outage Work Control Center
- Outage 1R10 Overview and Outage Safety Plan
- Meeting with Manager of Operations Services
- Meeting with NRC Resident Inspector
- Meeting with Vice President and Plant Manager
- Meeting with Manager of Engineering Services
- Meeting with Manager of Maintenance Services
- Outage 1R10 Main Turbine Work
- Tour of Containment
- Observe Control Room Shift Manager Turnover
- Driving Tour of DCPP Site and Intake Facility
- Low Level Liquid & Solid Radwaste Handling Systems
- Reactor Pressure Vessel Integrity
- Aging Management
- Radiation Protection Overview
- Meeting with Human Resources Director
- Meeting with Manager of Nuclear Quality & Licensing

The conclusions and recommendations for each subject are summarized in Sections 4 and 5.

2.0 INTRODUCTION

This fact finding trip to the DCPP was made to evaluate specific safety matters for the DCISC. The objective of the safety matter review was to determine if PG&E's performance in these areas is appropriate and if any of these areas revealed observations which are important enough to warrant further review, follow-up, or presentation at a public meeting. These safety matters include follow-up and/or continuing review efforts by the Committee as well as those identified as a result of reviews of various safety related documents.

The DCISC Team met with the DCPP Vice-President and Plant Manager, and with a number of managers of DCPP organizations and groups as described below. The primary purpose of these meetings was for new DCISC Member Dr. David Rossin to meet them, to acquaint him with the responsibilities and activities of each manager, to describe Dr. Rossin's particular areas of interest, and to understand a number of the plant's important issues and initiatives.

3.0 DISCUSSION

3.1 Observe Outage 1R10 Daily Meeting

The DCISC Fact-finding Team attended the 9:00 AM daily outage meeting for Outage 1R10. This was the 17th day of the outage. The meeting was run by the Outage Director, Brad Hinds. Overall progress to date was reported: the outage was approximately $788,000 over budget and about two days behind schedule. Radiation exposure to date was 104.3 person-Rem, compared to an estimated 119.9 person-Rem. There had been two recordable injuries to date, neither of which was rated as serious. There had been three reportable events in contrast to the Outage Safety Plan goal of zero. These are described below in Section 3.3. The schedule for the remaining outage activities was distributed and reviewed. Each function at the plant was represented, and the respective leaders reported on current status, progress and/or problems. This included the following:

- Safety (including radiation exposure)
- General plant information
- Plant status (Operations)
- Asset Team Reports

- Engineering
- Chemistry
- Radiation Protection
- Materials
- Security
- Goals for dayshift
- Handoffs for dayshift

Conclusion: The Daily Outage Meeting appeared appropriate for tracking outage activities, planning, and coordination, as well as maintaining system status to protect personnel and nuclear safety. The Outage Director and participants exhibited good three-way communication and questioning to achieve understanding of reports and status. This proved to be a very good demonstration of how three-way communication can be used effectively.

3.2 Tour Outage Work Control Center

The DCISC Team observed activities in the Outage Work Control Center (OWCC). A tour of the Center was provided by Gary Anderson, Assistant OWCC Director. Operations had formed "super crews" to handle work control during the outage. Super crews consisted of two twelve-hour shifts comprised of operators who were not involved in running either unit during the outage. They primarily coordinated clearances, one of the more important operations-related functions at the plant, and assisted Operations with outage-related duties.

Conclusion: The Outage Work Control Center appeared to be useful and functioning appropriately to coordinate non-control-room operations activities and clearances. Clearances are particularly important and time-consuming during outages, and the super crews appear to be an efficient way to handle them.

3.3 Outage 1R10 Overview and Outage Safety Plan

The DCISC Team met with Brad Hinds, Outage 1R10 Director, and Dave Williams, owner of the Outage Safety Plan. The purpose of the meeting was to obtain a high-level review of outage performance and review the Outage Safety Plan. The DCISC Team had earlier received and reviewed the Plan of the Day (POD 17) for the 17th day of the outage.

Hinds reported that DCPP management emphasized "safety first" with respect to personnel and nuclear safety. There had been two minor personnel injuries to-date. Radiation protection efforts had been successful in that the Steam Generator bowl doses were the lowest since Outage 1R1, primarily due to a joint effort by Chemistry and Operations to chemically decontaminate the Reactor Coolant System (RCS) early in the shutdown. This is in sharp contrast to Outage 1R9 where dose rates were substantially higher than normal, some of which was due to radiation from this area.

The Outage Safety Plan was reviewed. The DCISC has reviewed the Plan in the past and found it to be a good tool for safety awareness and guidance for maintaining plant safety status in conjunction with the defense-in-depth approach to nuclear safety. The Plan summarized the outage scope and goals and consisted of the following safety attributes:

- Decay heat removal under various RCS configurations and contingency plans
- RCS inventory control and contingency plans
- Reactivity control and contingency plans
- Electrical power sources and contingency plans
- Spent fuel cooling and contingency plans
- Containment closure
- Containment fan cooler and Component Cooling Water (CCW) requirements
- High risk evolutions and associated contingency plans
- Infrequently performed tests or evolutions

The Plan appeared comprehensive and on-target. In the outage coordination room there was a useful chart on the wall showing Reactor Vessel and Cavity water level and heat removal modes during various plant states and operational activities. The Team believes this chart helps keep personnel aware of the conditions that apply during each mode.

Concerning nuclear safety, one goal was to have no reportable events; however, there had already been the following three reportable events:

- A CCW pump started (as designed) due to a breaker misalignment

- An Emergency Diesel Generator (EDG) inadvertently started (as designed) upon a loss of start-up power due to work on the wrong unit
- An Auxiliary Salt Water pump tripped when a relay failed to reset during testing

The DCISC will follow up on these items in a future meeting.

Several major modifications/operations were reviewed. These were the following:

- Reactor Coolant Pump (RCP) cable replacement - completed and in testing.
- Steam Generator tube leak - a small leak was believed to exist. It had not yet been found, but repair of suspect tube plugs was in progress.
- Hot mid-loop operation was the most successful to date. It was performed in the shortest time on record at Diablo Canyon, and with no challenges.

Conclusion: Except for three reportable events, the 1R10 outage was being performed safely in accordance with plans and goals as of the date of the Fact Finding meeting. The DCISC will follow up on these events in a future meeting.

3.4 Meeting with Manager of Operations Services

The DCISC Team met with Jim Becker, Manager of Operations Services. The following topics were discussed:

- Outage 1R10 - the outage was going well with low dose rates and "pretty good" human performance.
- Operations culture changes - improvements were needed in initial operator training, communications with management was more frequent, and they were working on better explaining the merit rating and pay system to operators.
- Staffing - a new operator class was being formed.
- Training - supervisory/management training was being developed for Operations.
- Human Performance - this indicator seems to be leveling off even though managers believe there is still room for improvement, so more emphasis may be needed.

3.5 Meeting with NRC Resident Inspector

The DCISC Team met with David Proulx, NRC Resident Inspector. The primary purpose of the meeting was for new DCISC Member David Rossin to meet Mr. Proulx, describe the activities and plans of the DCISC, and hear about NRC's activities at DCPP. Mr. Proulx indicated that the NRC was looking particularly at human performance, effects of deregulation (especially transmission grid reliability), and its new Revised Reactor Oversight Program (RROP). The last item was a major change for the NRC, and the plant resident inspectors were still learning how to use the risk-based approach.

3.6 Meeting with Vice-President and Plant Manager

The DCISC Team met with Vice-President and Plant Manager, Dave Oatley. Human performance was an item that was receiving attention at all levels in the plant. Mr. Oatley reported that management was rolling out three-way communication, self-verification and similar techniques in the Maintenance and Engineering areas because the techniques had been successful in Operations. Improved techniques and behaviors were also being emphasized. A new Human Performance Steering Committee has been formed. Regarding the current 1R10 refueling outage, Mr. Oatley was pleased with progress to-date and particularly with ALARA efforts and results. He stated they were also working on better radiation release communications with the public.

3.7 Meeting with Manager of Engineering Services

The DCISC Fact-finding Team met with Dave Miklush, Manager of Engineering Services. Mr. Miklush described the engineering transition in which the engineering function moved from PG&E Headquarters in San Francisco to the plant. He also described the System Engineer Program. For Outage 1R10, Engineering had formed local leak rate testing teams with Operations, which had been effective. The number of Engineering Fixit Teams had been doubled for the outage. Engineering had hired ten recent graduate engineers who were going through a structured training and familiarization process. The average age of employees (now about 47) was

increasing steadily, and an increase in retirements was expected, prompting the need for new hires.

The Aging Management Program for the plant was described. A high-level review had been completed, and actions were being taken to better support the Program (see Section 3.15 below).

3.8 Meeting with Manager of Maintenance Services

The Fact-finding Team met with Bob Waltos, Manager of Maintenance Services. Mr. Waltos reported on the Strategic Teaming and Resource Sharing (STARS) activities that affected Maintenance. He described the change from functional maintenance teams (e.g., electrical, mechanical) to multi-disciplinary Asset Teams, which has worked out well for the plant. In the area of human performance, Mr. Waltos stresses proper tailboards, communication and self-verification. Maintenance supervisors did not believe craft training was time well-spent; however, the craft believed otherwise. Maintenance Services is now performing a self-assessment of its training programs.

3.9 Outage 1R10 Main Turbine Work

The DCISC Team met with Ken Palmer, Component Engineer - Turbines to review the main turbine work carried out in Outage 1R10. The plant had performed an inspection of No. 3 Low Pressure Turbine and replaced the rotor with a refurbished spare as it normally does each outage. The inspection revealed that part of a blade and part of the connected shroud had been lost. This was being analyzed. High cycle fatigue was believed to be the cause. There were no apparent adverse consequences due to the failure. Several bearings were changed out due to damage resulting from temporary rotor bowing. This occurred during a 30-hour loss of turning gear in May 2000 when the unit shut down due to an electrical bus failure and fire. The group performed a tour of the Unit 1 turbine area, observing several parts which had been replaced, and the generator exciter, the only component which had not been closed.

Conclusion: The Outage 1R10 turbine work appeared appropriate based on limited review. The DCISC should continue to review turbine work performed during outages.

3.10 Tour of Containment

Messrs. Rossin and Wardell performed a tour of the Unit 1 Containment accompanied by Stan Ketelsen and Ken Bych, who was acting as Containment Coordinator during the outage. The group observed fuel movement, installation of the new sump debris racks, radiation protection activities, and other miscellaneous activities. Fuel movement and placement in the core was videotaped and independently verified by a reactor engineer. The refueling equipment appeared to work well. Also observed were the major reactor coolant system components such as reactor vessel, reactor coolant pumps, piping, steam generators, and pressurizer.

Radiation protection practices inside containment appeared appropriate, although there seemed to be more personnel in containment than necessary. Upon exiting the containment, the group was effectively processed by Radiation Protection personnel. The DCPP personnel dosimetry equipment and procedures appeared satisfactory. Containment air lock procedures were properly followed in that only one of the two air lock doors was open at a time.

Conclusion: Activities inside Containment during Outage 1R10 appeared to be properly controlled. Radiation protection appeared effective with knowledgeable and helpful RP personnel conveniently stationed in safe work areas.

3.11 Observe Control Room Shift Manager Turnover

The DCISC Team observed the afternoon turnover between David Bahner (departing day shift manager) and Rich Luckett (oncoming night shift manager). The two managers used the Shift Manager Turnover Report (Attachment 1), which included all major conditions and activities for both units. It was noted that the first winter storm of the year was approaching with moderate ocean swells and kelp. The managers also used a Technical Specification Summary Sheet which listed component or train non-availability, compensatory actions and alternate line-ups. The managers performed a walkdown of the Units 1 and 2 control boards to ascertain and agree on the status of systems and components. The Shift Foremen were separately performing the same turnover and control board walkdown.

The DCISC Team also observed a Shift Brief for the departing and on-coming shifts for the Unit 1 outage. The on-coming

Shift Manager, Rich Luckett, coordinated the brief. The following items were reported: Shift Manager brief, Shift Foreman brief, Chemistry, intake systems, turbine, auxiliary building, polishers, Diesel testing, fire brigade, testing (shift engineer), outage coordination center, materials, safety, and upcoming items. A similar shift brief was to be performed later for the operating Unit 2.

Conclusion: The Outage 1R10 Operations shift turnovers and briefs appeared satisfactory.

3.12 Driving Tour of DCPP Site and Intake Facility

A driving tour of the DCPP site was made to familiarize Dr. Rossin with the external layout of the plant. The following were observed: site overlook (where most external major plant features were identified), 230 kV switchyard, 500 kV switchyard, raw water processing pools, security posts, main plant cooling water intake and discharge, and training and maintenance training buildings.

As part of the tour, the group was provided a tour of the intake structure by Joe Anastosio, Intake System Engineer. Items identified were the breakwater, traveling screens, kelp, "muffin monster" (kelp macerator), Auxiliary Salt Water Pumps, Circulator Pumps, previously failed expansion joints, and intake structure concrete repairs.

3.13 Low Level Liquid & Solid Radwaste Handling Systems

The DCISC Team met with Clint Miller, Radwaste System Engineer, for an informational overview of the Radwaste Processing Systems. He described both the liquid and solid radwaste systems. The liquid radwaste system included the Chemical and Volume Control System, Spent Fuel Pool Cleanup System, and Boron Recycle System. System inputs, processing equipment, alignment, and discharges were described. Annual radioactive waste discharges have been a small fraction of NRC limits.

The Solid Radwaste System included Spent Resin Transfer, Spent Filter Handling, Mobile Vendor Packaging, and Dry Active Waste Packaging. PG&E has on-site storage space for about 500 boxes of Class A waste and has contracted with Envirocare Disposal to dispose of some solid waste. DCPP plans to dispose of Class

B & C waste at Barnwell, SC as long as that site is open and use Envirocare. The plant has about 18 years' storage space on-site.

3.14 Reactor Pressure Vessel Integrity

The Fact-finding Team met with Brian Lo Conte, who has responsibility for this issue. (Dr. Rossin had requested a briefing on the Diablo Canyon Plant status as a result of his long-term interest in pressure vessel embrittlement and his early research on Effective Compliance Lifetime calculations.)

Mr. Lo Conte provided documentation on Technical Specification (TS) 5.6.6, the licensing requirement governing vessel lifetime. Extended exposure to neutrons changes the toughness of steel, raising strength but increasing the brittleness of the material. Steel exhibits a rise in the temperature at which its toughness properties change from "brittle" at low temperature to tough or ductile above this transition temperature. The TS requires that vessel steel remain in its tough condition at pressure, not only for operation but for pressure testing and early pressurization at startup when the vessel has not yet reached full operating temperature. Another limiting condition applies to a safety-related hypothetical event in which the maximum injection of emergency coolant takes place.

These requirements have been developed following years of research, review and negotiations, and are now in use throughout the regulated industry. They are believed to be highly conservative, but significant uncertainties still exist in material behavior, neutron dosimetry, variation of material condition throughout the vessel wall, mechanical testing and fracture mechanics, coolant injection rates and temperature effects, and the low probability of the limiting event.

For most reactors and most license extension applications, calculations are likely to show that the vessels will remain in compliance. More data will be obtained as surveillance capsules containing specimens that can be tested to measure toughness with a number of years of lead-time become available. DCPP has its own surveillance capsules in place in the vessel, and the first two (Unit 1) and three (Unit 2) have already been removed and tested. DCPP also has some EPRI research capsules installed for irradiation.

However, at some future time, certain plants may find themselves fighting for vessel lifetime with the knowledge that the calculations give numbers that could limit effective vessel lifetime. The bottom line is that DCPP does not appear to face this situation, based on current projections.

Conclusion: DCPP continues to comply with its Technical Specification Limiting Conditions for Operation (LCO) for the reactor vessel, and its internal compliance program appears to be in order and under active attention by the plant staff. The documentation furnished to the team is extensive, and appears to be complete enough for DCISC review.

The DCISC should receive a briefing on pressure vessel compliance status after the next set of surveillance samples is analyzed and effective vessel lifetime projections are updated.

3.15 Aging Management

The DCISC Team met with Steve Chesnut, Director of Balance of Plant Engineering, under which the DCPP Aging Management Program resides. In the March 23-24, 2000 DCISC fact-finding meeting (Reference 6.1) the Aging Management Program appeared to have been static or declining, not well coordinated, not fully implemented per procedures, and lacking strong management support. PG&E had initiated a comprehensive review of the program to correct these shortcomings. The review was to have been completed in July 2000. The DCISC had recommended that the review (and subsequent actions) assure that the revised program retain adequate program controls and functions and be at least as strong as the current one, properly implemented.

Mr. Chesnut described the following NQS assessment findings of failures to follow the aging management procedures (Reference 6.2):

- The Plant Aging Management Working Group has not been meeting.
- The Aging Management Program Manager was not a full-time position.
- No aging management "training and awareness" had been conducted for system engineers, support engineers, maintenance foremen, mechanics, and operations.

- Management's expectations for the Aging Management Program were not clear.

NQS identified the discrepancies as a Quality Problem in an Action Request. Suggested actions were the following:

- Establish and reaffirm management's expectations
- Revise applicable procedures to reflect management's expectations and the current plant organization
- Convene the Aging Management Working Group
- Other identified actions

A completion date of July 22, 2000 was initially established; however, this was revised to September 12. The procedure (Reference 6.4) was revised in August to accomplish the following:

- Updated organizational structure and titles consistent with the present organization.
- Changed responsibility for Aging Management from Regulatory and Design Services to Engineering Services.
- Changed full-time Aging Management Program Manager to part-time Aging Management Program Coordinator (AMPC).
- Eliminated the Plant Aging Management Working Group (the AMPC will call in resources as needed).
- Revised the requirement from an annual to a periodic assessment report.

In addition to the above procedure changes, the following management expectations and actions were identified:

- Continue to rely on and develop the System Long Term Plan process. The cognizant System Engineer has the responsibility for taking the lead in each area.
- Consider undertaking an effort to identify "gaps" in the maintenance program for age-related failures (e.g., equipment failures, such as expansion joint, bus bar, and control board lamp socket failures) of components not previously included in the Aging Management Program. (This is similar to DCISC Recommendation R00-6 (Reference 6.3)).
- Involve the Asset Teams to provide feedback on equipment condition. (Asset Teams are already included in the System Long Term Plan Process).

- Investigate what other STARS partners are doing to address aging management.

The Aging Management Program Coordinator (Steve Chesnut) is to prepare a document identifying possible future directions for aging management. PG&E anticipates employing a consultant to perform a gap analysis in order to have a comprehensive, systematic approach. The document would be reviewed by the Manager of Engineering Services and then presented to management for concurrence. These actions are to be completed by December 17, 2000. Additionally, PG&E plans to complete all system long term plans in 2001. Following Outage 1R10, DCPP plans to implement an Integrated Problem Resolution Team, which the DCISC should follow.

NQS closed all above items except the future directions document and will track it with the AR.

Conclusion: PG&E satisfactorily addressed the NQS aging management assessment findings. Management appears to be making progress in identifying the future direction of aging management, although progress has been slower than expected.

The DCISC should review aging management directions and management expectations in the gap analysis study after it is approved. The DCISC should follow up on the effectiveness of the Integrated Problem Resolution Team.

3.16 Radiation Protection Overview

The Fact-finding Team met with Bob Hite, the new Radiation Protection Director. Mr. Hite has recently been hired at DCPP from Duane Arnold Nuclear Plant, a boiling water reactor.

Mr. Hite reported that radiation protection performance for Outage 1R10 to date has been good. Performance in terms of time and radiation exposure varied from projections. Some projects came in higher than planned; some were lower. The crud burst procedure early in the shutdown was successful, largely due to the previous zinc addition. Personnel contaminations were much lower than usual, also due in large part to the effective crud burst and radioactive crud removal. Challenges continue to be access control and high radiation area violations.

In response to Dr. Rossin's questions, Mr. Hite explained that DCPP reported its radiation exposure data to NRC under the following regulations/requirements: (1) Regulatory Guide 1.16 (Reporting of Operating Information - Appendix A of Technical Specifications), (2) 10CFR20 traditional reports, and (3) the new 10CFR20 electronic format which tracks exposures for each individual.

Dr. Rossin and Mr. Hite discussed their philosophies regarding radiation protection and ALARA programs and organizations. Mr. Hite plans to make changes in the RP program and organization at DCPP similar to those he had implemented at Duane Arnold which he considered successful.

Conclusion: The new Radiation Protection Director appeared knowledgeable and experienced. It is recommended that the DCISC closely follow the upcoming changes in management, organization and progress in Radiation Protection.

3.17 Meeting with Human Resources Director

The DCISC Team met with Linda Jolley, Human Resources Director.

Ms. Jolley described the Culture Transition Initiative, which was developed following concerns identified by the Synergy Safety Culture Survey. The Initiative is being taken to improve trust in management and create an improved safety conscious workforce. The Initiative is based on developing the five following behaviors:

1. Understand others
2. Embrace feedback
3. Provide face time
4. Develop and support common goals
5. Create a positive work environment

Ms. Jolley described the series of training sessions which have taken place with top management, middle management and employees. She also described the bi-monthly meetings held with supervisory levels at the plant and the 360-degree personnel performance feedback process for each manager/supervisor. The DCISC has been following this initiative since its inception.

Ms. Jolley reported that the Culture Transition Strategies for 2001 are near completion and that she would like to provide them at the next DCISC meeting. It is recommended that this be reviewed at the December 2000 fact-finding meeting at which one day will be dedicated to Human Performance items.

3.18 Meeting with Manager of Nuclear Quality and Licensing

The DCISC Fact-finding Team met with Jim Tompkins, Manager of Nuclear Quality and Licensing (NQAL). Mr. Tompkins described the recent changes which brought Nuclear Safety and Licensing (NSAL) and Nuclear Quality Services (NQS) together into one organization, NQAL. Included in the organization are the Corrective Action Program, Transient Analysis, and Probabilistic Risk Assessment. DCPP management believes these related functions will work most effectively and efficiently together. Mr. Tompkins described the transition to the Improved Technical Specifications, specifically the preparation, training and support provided to Operations. He believed that the transition had been accomplished successfully with few problems.

4.0 CONCLUSIONS

4.1 The Daily Outage Meeting appeared appropriate for tracking outage activities, planning, and coordination, as well as maintaining system status to protect personnel and nuclear safety. The Outage Director and participants exhibited good three-way communication and questioning to achieve understanding of reports and status. This proved to be a very good demonstration of how three-way communication can be used effectively.

4.2 The Outage Work Control Center appeared to be useful and functioning appropriately to coordinate non-control-room operations activities and clearances. Clearances are particularly important and time-consuming during outages, and the super crews appear to be an efficient way to handle them.

4.3 Except for three reportable events, the 1R10 outage was being performed safely in accordance with plans and goals as of the date of the Fact Finding meeting. The DCISC will follow up on these events in a future meeting.

4.4 The Outage 1R10 turbine work appeared appropriate based on limited review. The DCISC should continue to review turbine work performed during outages.

4.5 Activities inside Containment during Outage 1R10 appeared to be properly controlled. Radiation protection appeared effective with knowledgeable and helpful RP personnel conveniently stationed in safe work areas .

4.6 The Outage 1R10 Operations shift turnovers and briefs appeared satisfactory.

4.7 DCPP continues to comply with its Technical Specification Limiting Conditions for Operation (LCO) for the reactor vessel, and its internal compliance program appears to be in order and under active attention by the plant staff. The documentation furnished to the team is extensive, and appears to be complete enough for DCISC review.

4.8 The DCISC should receive a briefing on pressure vessel compliance status after the next set of surveillance samples is analyzed and effective vessel lifetime projections are updated.

4.9 PG&E satisfactorily addressed the NQS aging management assessment findings. Management appears to be making progress in identifying the future direction of aging management, although progress has been slower than expected.

4.10 The DCISC should review aging management directions and management expectations in the gap analysis study after it is approved.

4.11 The DCISC should follow up on the effectiveness of the Integrated Problem Resolution Team.

4.12 The new Radiation Protection Director appeared knowledgeable and experienced. It is recommended that the DCISC closely follow the upcoming changes in management, organization and progress in Radiation Protection.

5.0 RECOMMENDATIONS

There are no recommendations for PG&E in this report.

6.0 REFERENCES

6.1 "Diablo Canyon Independent Safety Committee Tenth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 1999 - June 30, 2000", Approved September 14, 2000, Exhibit D.9, Section 3.1.

6.2 DCPP Action Request A0490751, Plant Aging Management Program Implementation, Initiated September 10, 1999.

6.3 "Diablo Canyon Independent Safety Committee Tenth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 1999 - June 30, 2000", Approved September 14, 2000, Section 4.6.3.

6.4 PG&E, DCPP NPG, Inter-Departmental Administrative Procedure, "Plant Aging Management Program," Procedure No. TS1.ID2, Revision 2, Effective Date: August 3, 2000.

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE REPORT

Report on NSOC & PNAC Meeting and Fact Finding Meeting at DCPP on November 14 & 15, 2000

by

A.D. Rossin, Member and J.E. Booker, Consultant

1.0 SUMMARY

The results of the November 14-15, 2000 joint PNAC & NSOC meeting attendance and fact-finding trip to the Diablo Canyon Power Plant in Avila Beach are presented. The subjects addressed and summarized in Section 3 include:

- Joint PNAC & NSOC Meeting
- Intake Structure Inspection & Results
- Outage 1R10 RP Results
- Corrective actions on 9/22/99 Unit 1 reactor trip
- V.C. Summer Piping Concerns
- SG Inspection Results
- Spent Fuel Storage Status
- Nuclear Fuel Items
  - 1R10 Nuclear Fuel Performance/Inspection
  - Gap re-opening
  - Extended Fuel Cycle
  - Boraflex

The conclusions and recommendations for each subject are summarized in Sections 4 and 5.

2.0 INTRODUCTION

This fact finding trip to the DCPP was made to evaluate specific safety matters for the DCISC. The objective of the safety matter review was to determine if PG&E's performance in these areas is appropriate and if any of these are important enough to warrant further review, follow-up, or presentation at a public meeting. These safety matters include follow-up and/or continuing review efforts by the Committee as well as those identified as a result of reviews of various safety related documents.

3.0 DISCUSSION

3.1 Joint PNAC/NSOC Meeting

The DCPP President's Nuclear Advisory Committee (PNAC) and the Nuclear Safety Oversight Committee (NSOC) held one of its regular scheduled meetings on November 14, 2000 at DCPP. A. D. Rossin and J. Booker attended on behalf of the DCISC as observers. The agenda is included as Attachment 1. Attendees were: PNAC & NSOC Members: PG&E members L. Womack, J. Becker, B. Crockett, D. Oatley, J. Tomkins, G. Rueger, G. Smith, and M. Hughes and external members M. Blevins, J. Martin and C. Warren. Other attendees with PG&E were: P. Nugent, D. Miklush, B. Terrell, J. Hodges, D. Spaulding, D. Taggart and D. Locke.

The following items were discussed:

1. License Amendment Requests (LAR): Two LARs were presented and approved by NSOC: 1) Accumulator Limits Clarification and 2) TS Bases Control Program.

2. System Engineering Program and Management Expectations of System Engineers: A summary of the roles and responsibilities of system engineers was presented. The roles and responsibilities include:

- Operations and Asset Team Support
- System engineering interface functions
- System engineering qualification and training
- System performance monitoring
- Design and license basis knowledge and maintenance
- Maintenance rule program functions
- System long term planning

Several functions have been added to the responsibilities of the system engineers. These include development of long-term plans and maintenance of the design basis of the system. The system engineer is also responsible to be cognizant of the PM program and basis for their system.

One of the External Members asked if DCPP was planning on resurrecting the system health reports. PG&E responded that System Engineering felt that it was important that the long-

term planning process be firmly established prior to developing new system health reports.

The status of the ability of the system engineers to perform their seven functions will be discussed at a future meeting. The responsibility of the system engineers in evaluating industry-operating experience was also discussed.

PG&E said that they were also looking at Preventive Maintenance (PM) on passive/static systems (such as bus failures and leaking bellows) to prevent forced outages.

3. Subcommittee Reports:

A. Plant status and performance indicators: Site capacity factor for both units is in excess of 91%. The industry personnel safety accident rate is currently 0.28 per 200,000 hours of work. Recordable injuries are at the goal of less than or equal to 10 per year. Radiation exposure for 2000 is expected to be lowest for Unit 1 ever. The current average number of event-free days is 30 days, which meets the goal. However, the trend is not in a favorable direction.

Two human performance errors were discussed: 1) working on the wrong fan and 2) loss of start-up power to Unit 2. The loss of start-up power to Unit 2 was due to operation of an incorrect switch. The Unit 1 start-up transformer was intended to be cleared but the Unit 2 transformer was cleared instead.

One unplanned automatic reactor trip had occurred through the end of October. The Unit 1 refueling outage was also discussed.

B. PSRC Summary: A summary of issues discussed at the PSRC meetings were reviewed. These issues include:

- NCR N0002109 - related to plant monitoring equipment
- NCR N0002114 - related to the lubrication program
- Changes to the emergency plan to relocate the OSC and assembly areas
- Operability of the 230 kV system during rolling blackouts on 6/14/00
- Revision of the P-9 setpoint and procedures to accommodate kelp attack coping strategies
- Deletion of commitment to only use EDG 7 day AOT for unplanned maintenance

- NCR N0002115 related to the licensing basis for the containment isolation valves
- Installation of scaffolding around recirc sump for installation of temporary shielding

C. LER and NOV summary: A summary of four recent licensee event reports (LERs) that were submitted to the NRC was reviewed. Eleven LERs have been submitted to date, and four additional LERs will be submitted prior to the end of the year concerning events that occurred during the outage. Three NCVs that were issued during the last period were also reviewed. The trend of NCVs at DCPP is comparable to the average number received at other Region IV plants. One of the External Members pointed out that NCVs are no longer the best measure of performance and that management needs to be sensitive to monitoring problem trends at the plant.

D. LBIE Assessment: Twenty LBIE reviews were completed during the assessment period. There were no significant issues identified related to LBIEs. However, a QE was issued regarding implementation of an LBIE related to installation of scaffolding around the RHR sump.

DCPP originally had 600 employees qualified to do LBIEs. They have reduced the number to approximately 300 and will probably reduce down to about 150. They feel that they produce better LBIEs with fewer better-trained employees.

E. NCR and NQS interest items: The three NCRs that were initiated during this period were discussed. The External Members felt two of the NCRs were weak, and that additional action is warranted to improve the NCRs and the root cause analyses. Additionally, they felt that the number of NCRs generated is low for a good performing plant. They recommended that DCPP perform benchmarking of other plants and a self-assessment also be performed. PG&E staff indicated that they have been participating in an NEI task force on root cause and have identified many improvements to the process to be implemented over the next year. PG&E agreed to review the improvements with NSOC at the next NSOC meeting.

NQS reviewed the projected 2001 audit schedule for DCPP. In response to a question, they stated that the audit plan is integrated with self-assessment plans and that they will provide the integrated schedule to NSOC. They also stated that

an audit of the self-assessment program would be performed as part to the audit of the quality assurance program for 2001.

4. QPAR and Performance Indicator Status: The third quarter QPAR was reviewed. The overall performance of NPG is satisfactory. An area for improvement is the use of internal and external operating experience. Engineering services received green windows for the third consecutive quarter. Improvement in the areas of human performance, operations training, consistency in reinforcing expectations, and aging management were identified. Maintenance Services received a yellow window for this quarter. Part of the reason is continued human performance problems, continued problems with the lubrication program, and weaknesses in the maintenance training program.

All NRC performance indicators are green this quarter. However, the indicator for loss of normal heat sink and for ERO drill/exercise performance are near the threshold for being white.

5. Integrated Assessment Report: The integrated assessment report is intended to evaluate performance of the plant not addressed by specific performance indicators. The report is developed based on input from licensing, quality assurance and senior management regarding trends in performance. Key performance areas identified in the report as needing attention include:

- Increased human performance error rate
- Personnel safety practices
- Age related equipment failure
- Reinforcement of management expectations
- Scram with loss of normal heat sink performance indicator

The Plant Manager has been assigned as the owner of this report. A senior manager team has been formed to provide input in the area. Also, training of supervisors is being planned regarding human performance issues. Error rates related to human performance and personnel safety seem to correlate with employee concerns about potential bumping of PG&E employees from other locations into DCPP. Error rates started to fall after the first wave of bumping was completed. Steps are being taken to try to prevent this during the next wave of bumping.

Other areas being monitored include:

- Trending of low level errors
- Personnel exposure during non-outage periods
- ERO drill/exercise performance indicator
- Maintenance training weakness

6. Strategy to Address Human Performance Issues: The human performance program is being revised to add more formality. The new program is based on the formation of a human performance steering committee. The purpose of the steering committee is to develop a common philosophy and strategy to address human performance improvement and champion human performance at DCPP. The committee currently meets monthly and reviews leading and lagging human performance rate indicators, human performance related issues from self-assessments, industrial safety, human performance review committee meeting minutes, status of human performance related long-term strategic plans, and emerging issues.

Human performance fundamentals training is being scheduled for all Operations, Maintenance, and Engineering personnel. The initial course will be completed by the end of 2001. Continuing training will include refresher training on the subject.

Human performance errors related to the clearance process have been decreasing over the last few outages. Six errors occurred in 1R10 as opposed to eight in 1R9 and seven in 2R9. However, the overall error rate in Operations indicates a trend in declining performance.

7. RP and ALARA Program Strategies: The purpose of this presentation was to present an overview of current RP and ALARA programs, and future direction and strategies. Both units are in the middle of the third quartile for RP performance in the industry. Although neither unit has ever had less than 100 person-rem per outage, 1R10 was the lowest Unit 1 collective dose outage. Much of the reduced dose was due to good shutdown chemistry control and zinc injection over the last two years. The Director of RP indicated that traditional thinking is that a lot of money must be spent to reduce dose. However, he indicated it should be able to be done by focusing on planning, scheduling and aligning RP with maintenance and operations processes and in-field workers.

Several recent audits and inspections have been conducted. The feedback is being consolidated to identify and correct programmatic issues. Specific improvements will include:

- Better RWP format
- Better define roles and responsibilities
- Review current controls for improvements including hot particle zone coverage, multi-badging, dose tracking and trending, and technology improvements to prepare for a reduced number of available contract technicians

DCPP needs to focus on being a top industry performer. Dose is an indicator of efficiency of work processes. Shutdown chemistry initiatives need to be continued. Planning and scheduling of work needs to be improved.

8. Other Items: The Chairman of NSOC reported on his visit to the offsite review committee meeting of another nuclear utility. He shared several observations from the meeting:

- The full committee meets only twice each year. Subcommittees meet four times each year. Much of the detailed discussion occurs at the subcommittee level.
- DCPP has fewer external members on NSOC than other offsite review boards
- Information reviewed by different review boards varies. He will continue to consider whether additional subjects should be considered for review by NSOC

The Chairman is considering moving to a more formal subcommittee process and will continue to share observations of operation of other committees.

DCISC Conclusion: Overall, the PNAC/NSOC meeting was well-planned, well organized and attended, and PNAC/NSOC appears to have fulfilled their required duties. There was an exchange of observations, opinions, and suggestions at the PNAC/NSOC meeting and good participation by the outside Members. It also appears to be very beneficial to have the joint PNAC/NSOC meetings, since each committee covers much of the same agenda. DCISC should continue to monitor the PNAC and NSOC meetings to observe their review of plant safety issues.

3.2 Intake Structure Inspection & Results

PG&E presented the intake structure inspection results during 1R10 (October, 2000). The intake structure concrete

delaminations has been reviewed at many Fact Findings, Public Meetings, and plant tours and has also been reported in DCISC annual reports.

Diablo Canyon's Intake Structure/Circulating Water Conduits (CWC) surveillance program, initiated in 1991 for Units 1 and 2, monitors, restores and preserves the structural integrity of the reinforced concrete structures in accordance with plant procedure TS1.ID4 (Reference 6.1). The inspections provide data for trending the degradation of the structures as well as providing data on the concrete condition, assessing corrosive degradation and furnishing engineering properties of the concrete to assist in the development of future inspection criteria and repair priorities. The surveillance program is directed by ES Civil Engineering and performed by Technical and Ecological Services. Non-submerged areas of the structures are inspected annually and submerged areas (dewatered during refueling outages) are inspected once per fuel cycle based on a sampling program.

As a result of an aggressive surveillance and repair program, the quantity of the delaminations and degraded concrete at the intake structure and CWCs have decreased significantly since the inception of the programs in 1991. The surveillance and repair programs have effectively controlled the effects of the harsh coastal environment and allowed the structures to perform their intended functions. The structures are currently in good condition and are classified as (a)(2) status under the Maintenance Rule Program. The results of the 1R10 surveillance and repairs are summarized below:

Circulating Water Conduit (CWC) - The Unit 1 & 2 CWCs have been retrofitted with a sacrificial cathodic protection (CP) system (installed in Unit 1 -9/95 & Unit 2 - 4/96). As a result, corrosion of the embedded reinforcement has been arrested. No concrete repairs were performed during 1R10. Critical elements of the structure have been repaired in previous outages.

Intake Structure submerged areas (i.e. CWC forebays, ASW forebays, traveling screen forebays) - The majority of the degraded concrete has been repaired in the submerged areas with the exception of the traveling forebays and the bar rack bays. Though the investigation has shown that the degradation in these areas does not currently jeopardize the building structural integrity, measures to repair and or arrest the steel corrosion have begun. Specifically, an impressed current

CP system was installed in traveling screen forebay 1-1 during 1R10. This system is designed to prevent further steel reinforcement corrosion. If this newly installed CP system performs as designed, it will be applied to the remaining forebays.

Intake Structure non-submerged areas (i.e. topdeck, pump deck, ASW vaults, seawall) - The repair and surveillance program has reduced the total amount of degraded concrete by 60% in the non-submerged areas. The majority of the areas that have structural significance have been repaired. The remaining required repairs are planned to be repaired during 2R10.

Conclusion: The overall condition of the intake structure and the CWCs is classified as good. It appears that the aggressive surveillance and repair program implemented by DCPP has ensured that the design basis is maintained.

3.3 Outage 1R10 RP Results

Bob Hite, Director Radiation Protection (RP), presented a summary of performance of the Radiation Protection Dept. during 1R10. A lot of attention was paid to ALARA. Hite explained that ALARA is a useful planning tool, and that better planned outage work leads to lower costs and better attention to detail.

At the NSOC meeting on 11/14/00, an NSOC member noted that Diablo Canyon has been in the middle of the third quartile for nuclear plant ALARA performance, and that this outage will not change that. Hite discussed the radiation exposure goals that had been set for 18 projects during 1R10. Exposures exceeded the goals in 10 projects. The "goals" were really more like "stretch performance objectives" based on work that would be carried out as planned. These plans did not include additional radiation allowances for contingency. The results and the planning are OK, however the numbers require explanation.
One radiation issue stemming from operations that was noted was the number of radiation contaminations. Most of these should be avoidable. Some are actually built into the way things are done. Contaminations are costly, and they do affect the morale of plant workers. Bob Hite discussed examples where their observations have identified potential improvements. One example involves the shoe covers that are use at Diablo Canyon. There are new designs that are easier to wear and avoid some repeating contamination problems. Whether new

clothing can be obtained in time for the upcoming 2R10 is not clear yet.

There are a number of areas in which Radiation Protection needs to take the lead in identifying and implementing changes. Audit teams are unlikely to identify any of these problem areas. There will be some costs, but the savings may well be worth it. Radiation Protection needs management support to make these changes take place.

The August 2000, audit of Radiation Protection Performance was a very complete and detailed audit. The audit reported that the health of the program is good, and rated almost all areas as satisfactory. A number of items were identified for improvement. Most of these involve documentation or adherence to commitments for numbers of inspections, etc. The findings should all be attended to and closed out.

PG&E reviewed the July 2000 reports for Radiation Protection and for Chemical & Environmental Operations. These involved Performance Plan Indicators. These should be evaluated critically to determine which indicators have real meaning and which should be related to performance measures. Indicators that require frequent explanations to interpret the meaning of results are probably not simple enough or meaningful enough to use for this purpose.

Conclusion: PG&E was able to reduce the dose during 1R10 such that 1R10 was the lowest of any Unit 1 refueling outages. PG&E also believes that DCPP needs to focus on being a top industry performer in this area and that planning and scheduling of work needs to be improved. DCISC will continue to follow this area.

3.4 Corrective actions on 9/22/99 Unit 1 reactor trip.

This item was discussed at the November 18 & 19, 1999 fact finding meeting (Reference 6.2). The cause of Unit 1 reactor trip on 9/22/99 was lightning that struck the static ground wire protecting the Unit 1 500 kV tie line from the plant to the 500 kV switchyard. This tripped the 500 kV overvoltage relay and opened the Unit 1 Power Circuit Breakers, which then led to the reactor trip.

The purpose of this discussion was to review the PG&E actions to prevent further trips like this. PG&E has investigated the

cause for the relay activation and have identified two fixes which prevent future relay action such as this one. One will be to install a time delay on the instantaneous portion of the trip circuit. This was installed in 1R10 and will be installed in 2R10. They will also install shielded cable from the PT device to the Switchyard Control building, which will be installed in 2R10 and 1R11.

Conclusion: It appears that PG&E has completed a very through investigation of the reactor trip that resulted from a lightning strike in the switchyard, and has taken appropriate action. When completed, the changes should prevent similar relay action.

3.5 V.C. Summer Piping Concerns

Dave Gonzales, In-Service Inspection Group Leader and Jeff Portney, Primary Systems Group Leader, Systems Engineering Dept. presented the information that PG&E had gathered concerning the crack in a weld area of RCS Hot Leg Pipe at V. C. Summer plant. During containment inspection at Summer on Oct. 7, 2000, a large and unexpected quantity of crystalline boric acid was found on the floor and in the air boot around the A loop hot leg pipe. This is a 2-1/2 foot diameter pipe. On Oct. 12 they removed the air boot enough to do liquid penetrant testing. A 4-inch circumferential crack was discovered. Since then, further inspection and testing have confirmed axial cracking and inner wall cracking as well. Summer contacted the W Owners Group and EPRI, and assembled a team of industry experts. The Plant Manager called his counterparts at other PWR's to provide each with an early briefing. Dave Gonzales was present during the speakerphone discussion between the Summer plant manager and David Oatley.

Implications: This is the first discovery of a significant crack in PWR RCS piping. If a guillotine break of a hot leg pipe were to occur, it would result in a design basis LOCA. BWR pipe cracking discovered in the 1970's was a different phenomenon. Since that time, leak-before-break has been recognized as the basis for continued safe operation for BWR's.

Early investigations of this cracking revealed that there may well be unique circumstances which explain why this cracking occurred. The crack is at the pipe-to-nozzle weld joint. This particular joint was field-welded, and during the welding,

inspection revealed improper bonding. A large part of the weld had to be chipped out and replaced. It is likely that the techniques used for positioning the pipe during this process resulted in residual stresses and perhaps other weld integrity problems.

The other issue is that primary coolant leakage had been occurring over an extended period of time and had not been discovered. Hot water evaporated in the air boot leaving crystalline material that was not found until visual inspection during a refueling outage. No leak detection system had provided any indications of leakage.

Root cause analyses have not yet been completed. NRC has issued notice 2000-17 (Reference 6.3), but has not called for any actions by licensees. During the 1R10 outage, an experienced staff engineer from the In-Service Inspection group crawled through the manway around the reactor vessel and visually examined primary piping to nozzle weld joint regions. No indications of cracking or leakage were found.

Mr. Gonzales and Mr. Portney provided an excellent explanation of the event and the information that had been obtained to date. Updates should be scheduled at future fact finding meetings.

Conclusion: PG&E is taking action to keep informed of the primary coolant piping cracks and investigation at V.C. Summer. They have also performed visual inspection around the reactor vessel of the primary piping to nozzle weld joint regions.

3.6 SG Inspection Results

PG&E reported on the inspection and plugging of steam generator (SG) during 1R10. The SG inspections and results have been reviewed at many fact finding meetings and DCISC Public Meetings. Including tubes plugged and unplugged during this inspection, they had a net of 65 tubes or 0.5% plugged in all four SGs. This is not as many as they have plugged in 1R7 (117 tubes) and 1R8 (199 tubes). They currently have a total 526 tubes plugged in all four SG which is 3.9%. The license limit is 15% of total for all SGs or any one SG. PG&E feels that when they reach 10% plugged for all SGs, they will get to where all turbine valves will be wide open and will impact MW

generation. When they get to 12% in any one SG, they will start sleeving the tubes.

Through 1R9 there were 3.5% of the tubes plugged in SG 1-1, 8.1% in SG 1-2, 0.7% in SG 1-2 and 1.4% in SG 1-4 for a total of 3.4%. PG&E thinks that they will not have to do any sleeving for about 10 years.

Conclusion: It appears that SG tube plugging does not have any impact on the safety or generation of the plant at this time and should not likely have any impact for approximately 10 years. It is recommended that DCISC continue to review SG tube inspections and results after each refueling outage.

3.7 Spent Fuel Storage Status

PG&E presented the status of spent fuel storage at the site. They have selected dry cask storage and have a letter of intent with the contractor. A project team has been formed at an off-site location and consists of Engineering, Licensing, QA, Community Affairs, Environmental, Legal, Contracts, and Land Use Permitting.

The License will be submitted to the NRC in April 2001 for 138 storage casks. This will accommodate all spent fuel and complete off-load for the 40 year license life. The land use permit will also be for full storage. The building permit will be in two stages, first phase for one half storage and second phase for the other half in 2017. DCPP will license both 32 and 24 assembly storage canisters. The storage cask system will be anchored because of seismic conditions.

The facility needs to be completed by 2006. The preliminary engineering design will be completed by 12/2000 and final design by 3/2001. They are also working on security requirements and radiation monitoring. A Project Oversight committee has been formed and the License Application will be reviewed by PSRC. The facility work has also been coordinated with Operations, Maintenance and Environmental.

PG&E has sent letters to County Supervisors, Government Agencies, Concerned Citizens, and Intervener Groups. They have also called State Elected Officials and Local Reporters as well as holding meetings with County Officials and County Planning Supervisors. A web site has been developed for

project information. They also plan on having small public meetings to give out information.

Conclusion: It appears that PG&E is taking appropriate action to design and license on-site spent fuel storage facilities in a timely manner to accommodate all plant generated spent fuel. They are also informing the Government Officials and the Public in a timely manner.

3.8 Nuclear Fuel Items

The following nuclear fuel related items have been reviewed at prior fact finding meetings and presented at Public Meetings. The purpose of these discussions was to review the status of these items.

1R10 Nuclear Fuel Performance/Inspection

DCPP did not have any leaking fuel during the past cycle and did not find any during the inspection. DCPP has never had any leaking fuel in Unit 1. They did find a large number of failures of the top nozzle spring screws with the twice-burned fuel assemblies. The screws are breaking, but they did not have any loose parts. Westinghouse identified this problem after 1R9 at other plants and DCPP found this problem in 2R9 and 1R10. Fuel inspections conducted during 1R10 showed fewer top nozzle spring screw failures than 2R9 inspections.

DCPP prepared an Operability Evaluation (Reference 6.4) to document the operability of Units 1 & 2 utilizing Westinghouse fuel assemblies with potentiality fractured top nozzle spring screws. The evaluation demonstrated that plant operation utilizing fuel assemblies with fractured top nozzle hold down spring screws will not have an adverse effect on the integrity of the components of the reactor coolant system or connecting systems. The fix is to go to a different type of material for the screws.

DCPP will go to a new design for fuel to be installed during 1R11 and 2R11, but may still have problem through cycle 1R12 and 2R12.

Conclusion: PG&E appears to be taking appropriate actions dealing with the top nozzle spring screw failure and has prepared an Operability Evaluation addressing the issue.

Gap Re-Opening

Nuclear fuel is designed with a gap between the nuclear fuel pellets and the surrounding zircaloy cladding. During operation the fuel pellets swell, closing the gap. Operating models assume the gap remains closed; however, it has been determined that the gap can re-open in some fuel locations, adversely affecting heat transfer from the pellet through the clad. This condition can cause excessive corrosion of the clad. PG&E and Westinghouse had determined that although DCPP did not achieve desired margins with then current fuel designs, safe operation was not affected. DCPP has recently revised the Operability Evaluation (OE)(Reference 6.5) for fuel with pellet-clad gap re-opening and clad oxidation concerns.

Westinghouse has completed a gap re-opening and clad oxidation assessment for Unit 1, Cycle 11 that shows that gap re-opening will not occur and that clad oxidation will remain within limits. Based on this assessment and conclusions, the OE can be closed for Unit 1.

Westinghouse has also completed a gap re-opening and clad oxidation assessment for Unit 2 Cycle 11. This assessment shows that gap re-opening is predicted to occur first in the Region 9A center assembly and in Region 11A and 11B fuel. Based on the Westinghouse analysis for Unit 2 condition of the fuel pellet clad gap re-opening, the core is operable within license conditions. Also, the 10 CFR 50.46 limit of 17% total localized oxidation is met. The OE will be reviewed with the PRSC prior to the Unit 2 restart from 2R10 or upon Westinghouse resolving this issue.

Conclusion: PG&E appears to be taking appropriate actions to deal with the fuel pellet gap re-opening problems and has resolved the issue on Unit 1. This issue should be resolved in Unit 2 when a new fuel design in installed in 2R10. The DCISC should review the status of gap re-opening in 2001 when Westinghouse has resolved the issue.

Extended Fuel Cycle:

The fuel cycles for DCPP were originally designed for 12 months and DCPP has been moving toward a 24-month cycle. However, because of potential technical problems, they have settled on a 21-month fuel cycle. DCPP continues to evaluate

cycle lengths as economics may change and as they participate in the Joint Utility Venture.

Conclusion: The DCISC should review fuel cycle length again in late 2001 if PG&E has changed their plans.

Boraflex

Nothing has changed in the Boraflex degradation issue since the last fact finding review in November, 1999 (Reference 6.).

4.0 CONCLUSIONS

4.1 Overall, the PNAC/NSOC meeting was well-planned, well organized and attended, and PNAC/NSOC appears to have fulfilled their required duties. There was an exchange of observations, opinions, and suggestions at the PNAC/NSOC meeting and good participation by the outside Members. It also appears to be very beneficial to have the joint PNAC/NSOC meetings, since each committee covers much of the same agenda. DCISC should continue to monitor the PNAC and NSOC meetings to observe their review of plant safety issues.

4.2 The overall condition of the intake structure and the CWCs is classified as good. It appears that the aggressive surveillance and repair program implemented by DCPP has ensured that the design basis is maintained.

4.3 PG&E was able to reduce the dose during 1R10 such that 1R10 was the lowest of any Unit 1 refueling outages. PG&E also believes that DCPP needs to focus on being a top industry performer in this area and that planning and scheduling of work needs to be improved. DCISC will continue to follow this area.

4.4 It appears that PG&E has completed a very through investigation of the reactor trip that resulted from a lightning strike in the switchyard, and has taken appropriate action. When completed, the changes should prevent similar relay action.

4.5 PG&E is taking action to keep informed of the primary coolant piping cracks and investigation at V.C. Summer. They have also performed visual inspection around the reactor vessel of the primary piping to nozzle weld joint regions.

4.6 It appears that SG tube plugging does not any impact on the safety or generation of the plant at this time and should not have any impact for approximately 10 years. It is recommended that DCISC continue to review SG tube inspections and results after each refueling outage.

4.7 It appears that PG&E is taking appropriate action to design and license on-site spent fuel storage facilities in a timely manner to accommodate all plant generated spent fuel. They are also informing the Government Officials and the Public in a timely manner.

4.8 PG&E appears to be taking appropriate actions dealing with the top nozzle spring screw failure and has prepared an Operability Evaluation addressing the issue.

4.9 PG&E appears to be taking appropriate actions to deal with the fuel pellet gap re-opening problems and has resolved the issue on Unit 1. This issue should be resolved in Unit 2 when a new fuel design in installed in 2R10. The DCISC should review the status of gap re-opening in 2001 when Westinghouse has resolved the issue.

4.10 The DCISC should review fuel cycle length again in late 2001 if PG&E has changed their plans.

5.0 RECOMMENDATIONS

There are no recommendations for PG&E in this report.

6.0 REFERENCES

6.1 DCPP Plant Procedure TS1.ID4, "Saltwater Systems Aging Management System Program"

6.2 "Diablo Canyon Independent Safety Committee Tenth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 1999 - June 30, 2000" Approved September 14, 2000, Exhibit D.5, Section 3.3.

6.3 NRC Information Notice 2000-17: "Crack in Weld Area of Reactor Coolant System Hot Leg Piping at V.C. Summer", issued October 18, 2000.

6.4 Operability Evaluation 99-04,R2; "Operability of DCPP Units 1 and 2 Utilizing Westinghouse Fuel Assemblies with Potentially Fractured Top Nozzle Spring Screws"; October 25, 2000.

6.5 Operability Evaluation 97-06,R9; "Operability Evaluation for Fuel with Pellet-Clad Gap Re-Opening and Clad Oxidation Concern", October 19, 2000.

6.6 "Diablo Canyon Independent Safety Committee Tenth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 1999 - June 30. 2000", approved September 14, 2000, Exhibit D.9, Section 3.6.

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE REPORT

Report on Fact Finding Meeting to DCPP On December 13-14, 2000

By

Phil Clark, Member and Hyla Cass M.D., Consultant

1.0 SUMMARY

The results of the December 13-14, 2000 fact-finding trip to DCPP are presented. The subjects addressed were the following:

- PG&E's Response to the DCISC Annual Report Recommendations July 1-July 30, 2000
- Management View of Human Performance
- Maintenance Human Performance
- Human Performance Measures for Engineering (Latent Errors)
- Informal Meeting with Supervisors to Discuss HP Issues
- Incentives for Increased Physical Fitness, Attention Enhancement, and Stress Management
- Employee Concerns Program/Differing Professional Opinions
- New Behavior Based Safety Program
- DCPP Five Year Plan
- Medical Center Visit on Operator Fitness
- Safety Class on Cardiac Health

The conclusions and recommendations are summarized in Sections 4 and 5, respectively.

2.0 INTRODUCTION

This fact finding trip to the DCPP was made to evaluate specific safety matters for the DCISC, focusing on Human Performance. The objective of the safety matter review was to determine if PG&E's performance in this area is appropriate and if any specific aspect warrants further review, follow-up, or presentation at a public meeting. These safety matters include follow-up and/or continuing review efforts by the Committee as well as those identified as a result of reviews of various safety related documents.

3.0 DISCUSSION

3.1 Review of PGE's response to DCISC annual report, July 1-July 30, 2000

There was a review and clarification of issues covered in PG&E's response to DCISC annual report, to be completed at the February 7-8, 2001 Public Meeting.

3.2 Management View of Human Performance (HP)

The HP coordinator presented an overview of the Human Performance (HP) program. This subject was previously reviewed by the DCISC in the July 6, 2000 fact-finding; July 2000 annual report; and July 1999 annual report (References 6.1 and 6.2). HP has grown to have the full support of plant management, with a steering committee of senior managers, and working committees representing the various departments -- Operations, Engineering, Work Control, and Maintenance. Until error rates stabilize and decline, the steering committee will continue to meet monthly to review plant HP and systems for error prevention

The purpose of the Human Performance Steering Committee (HPSC) HPSC is to review and analyze performance data collected from various Committees, performance indicators, and events to ensure actions are taken with a focus on good human performance behaviors (Reference 6.3).

Recent trainings included:

- A 2 -day INPO training for all managers, directors, and asset team leaders in September 2000

- A 5-hour HP course for Maintenance service craft
- Operations HP training as part of their requalification program.

The purpose of the training was to:

- Generate understanding of HP terminology, and to have it be consistent and uniform throughout the plant
- Help see precursors to errors
- Analyze risk factors and anticipate errors
- Facilitate dialogue for good tail board discussions
- Provide a tool for Operations and Maintenance in observation performance in the field
- Teach the 3 key behaviors: effective tailboards, 3-way communication, and self- verification.

Error rate - there have been some recent innovations, as follows:

- During the last outage, the first page of the POD (Plan of the Day) focused on safety and HP, stating "we want you to do it right the first time."
- HP is defining errors more precisely than in the past.
- The HP course emphasizes organizational as well as individual responsibility for errors.
- HP does its own evaluation, and determines which organization is responsible.
- "Event-free days" is being used as another indicator of HP.

Error rate is measured per 10,000 work-hours, in 90-day increments. While there is a downward trend since the October outage, continuing through January, there was an increase in error rate in 2000, especially during outages, This last may be due to a number of factors:

- There is increased opportunity for errors, with more activity per hour per person (2.5-3 times normal)
- Activity is less routine i.e. with more novelty than usual
- Less predictability than during on-line time.
- Committee member inquired regarding errors by employees vs contractors. A review of this done a few outages ago indicated there was no difference between the two groups.

NPG'S error rate goal has been reduced by 25%, to not exceed 12 events per year. Significant events were by down by half,

particularly since the previous outage. A report on outage errors will be made available to the Committee.

Conclusion: The plant-wide Human Performance Programs have gained the full support of management. Although error rate appears to have increased, recent plans to reduce it seem promising. DCISC follow-up should include attention to maintenance issues as described in next section.

3.3 Maintenance Human Performance

Problem: of the increasing error rate trend, 40-50% occurred in Maintenance. To remedy this, an improved Management Observation Program (MOP) was introduced in August, 2000, with less focus on results, and more on behavior that can lead to errors.

A significant error occurred in August when a motor was removed from the wrong ventilation fan. Since personnel were working on uncleared equipment, the fan could have started at any time during the procedure with risk of serious injury.

Causal factors contributing to this incident (and similar ones) revealed the following:

- Poor communication, with lack of attention both to tailboards and to the STAR self-verification system
- "Social loafing," defined as a tendency during team-based activities to follow others rather than taking individual responsibility to clarify details.
- The workers have distracting issues, such as steam plant divestiture and the STARS initiative. These tend to increase both distrust of management, and job insecurity.
- Aging of workers: While still able to perform their job adequately, specific aging-related issues affect their performance and safety. Factors include declining reaction time and fitness, plus weight gain, which increase injury-proneness, compounded by a longer recovery time.

Solutions:

- A plant-wide HP program steering committee was created, with department sub-committees. In a critique for the year 2000, the department concluded that it has made progress, with more cooperation among the upper levels (managers,

supervisors, directors) but that it had not yet trickled down to craft.

- An objective for 2001 is that HP enroll the bargaining unit leadership and integrate craft into the "we culture." The People/Performance Center of Excellence will take over this function.
- Craft leadership attended a newly developed training plus INPO training, which will then given to the online workers.
- Encourage use of 3-way communication, self-verification, and good tailboards.
- Re tailboards: They have been inconsistent in addressing personnel safety issues, with some tailboards not mentioning safety at all. The recommendation is that all departments continue to use the tailboard checklist that has already been developed, which includes safety issues, being very specific about potential hazards with every job.
- Culpability policy: Accountability is both individual and organization-based. Rather than "blameless error", each individual is responsible and accountable, with a continuum of responsibility. There is a corresponding escalation of positive discipline, beginning with a coaching and counseling discussion with the supervisor. An incident is documented, then remains in the record for 6 months. In certain instances, individuals may be asked to take a day off "to think about the situation."

<u>Conclusion</u>: It appears that PG&E is adequately addressing the issue of increased error rate in Maintenance.

The DCISC should follow up on the following questions regarding error rate in Maintenance:

- **Could the increase in error rate during outages also reflect increased overtime?**
- **Are there figures to correlate the two factors?**
- **What is the comparative error rate of employees vs contractors? One recent review of this issue indicated that there was no difference.**
- **Is PG&E addressing issues of maintenance worker fitness?**

The DCISC should request specific data regarding outage error rate of employees versus contractors.

3.4 Human Performance Measures for Engineering (Latent Errors)

There is a separate Engineering HP Committee, with 10 sub-process owners. It meets twice a year and reports on performance including evaluating event trend records (ETR's). Engineering has a built-in self-verification program, but still is in need of a specific HP training process, since the INPO course has been geared to Operations and Maintenance. To address this industry-wide issue, Palo Verde was about to host a one-day meeting, with 15-20 participating plants.

The following issues reflect the need to address error prevention in engineering:

- A problem with misplaced diodes involved electrical drawings that were transferred from the other unit without checking specific differences.
- A forced outage in May while testing the RHR system was due to an incorrect adjustment.
- Design issues and ergonomics in the control room have not been addressed since 1988. While no specific errors can be attributed to this, innovations in this area would be helpful.

Some remedial measures have already been taken such as:

- The STAR simulator, used to test and train the timed individual response in emergency situations, was used by engineers who write surveillance tests, in order to see how human factors affect performance.
- A higher level of coordination among engineering, operations, and vendors, required for optimal results, is demonstrated in the following. Engineering built an inverter panel with indicator lights, and asked Operations, who owns labeling, for design input. They also requested a mock-up of the new digital feed pump controls from the vendor before approving it.

Conclusion: Engineering appears to be addressing its HP issues appropriately.

The DCISC should have a fact-finding meeting that address issues of control room design and ergonomics.

3.5 Informal Meeting With Supervisors to Discuss HP Issues

An informal meeting was held with 16 supervisors from various departments including Engineering, NQS, Chemistry, Radiation Protection, Operations, Security, and Maintenance. The following topics were discussed;

Chemistry/environmental has been downsized, with a resulting increase in individual work load, and less outside help than before. This leads to some resistance to HP as "just another thing to do."

Safety group:

- Due to efforts of engineering and maintenance, AR's are now handled on average within 130 days, as opposed to the previous average of 600 days.
- Documented ETRs (event trend records), trended accurately by code, increased from 30% to 75%. Seven self- assessments were done in engineering in 2000, and then used to identify processes to observe next year.

Maintenance:

- The move to a team structure initially created fear of increased lay-offs. These fears have not materialized, and craft is now more cooperative, doing write-ups, etc. The jobs have been broadened, with fewer work planners from management, and more union -based construction planners.
- Successful implementation of the "we culture" was reflected during the outage, when a safety railing was built by ironworkers on the polar crane around the upper edge of the fuel pool room, to prevent a 90-ft fall. An exacting and risky job, it required interdepartmental cooperation between operations and maintenance for its success. Overall, this outage was easier, shorter, and showed more interdepartmental cooperation than in the past, with fewer complaints about having to go to another department to do a job.
- Craft felt heard and supported in Outage Control Center meetings. More buy-in is still needed, with reassurance that the shared responsibility of the "we culture," is to be taken seriously, and not simply a "flavor of the month."

When asked about how to handle the increase in error rate during outages, the overall response was as follows:

- Craft wanted feedback about how data is being used, and what is being done as a result, even if it's used only for trending.
- More important than the actual data collected is the presence of the supervisors in the field, allowing face-time with foreman.
- Operations appear to have the opposite experience. Being more independent, they resent feeling under scrutiny. To improve the situation, critiques should be oriented toward "acknowledgment for a job well-done rather" than "judgment (i.e. pointing out errors only)".
- Behavioral observation class in Operations has an accompanying video which works well as a teaching tool. The training department plans on a similar one for Maintenance.
- Department-specific observation cards were instituted by HP.

Conclusion: The supervisors seemed very open in their discussion of HP. Issues have been recognized and are being acted upon.

3.6 Incentives for Increased Physical Fitness, Attention Enhancement, and Stress Management

The DCISC FF team met with the new Director of Operations, to discuss incentives for increased physical fitness, attention enhancement, and stress management, previously reviewed in the Annual Report, 2000 (Reference 6.1) and July 6, 2000 fact finding report (Reference 6.2). The Ops director had previously been a shift manager, shift foreman, and engineer at the plant. This gives him both a good working knowledge of control room conditions, and added respect from the operators.

Operators are required to have 7.14 mets, a measure of aerobic fitness, with the ultimate decision left to the discretion of the supervising physician. Licensed operators who fail are designated as "no-solo." Since there are 4 licensees in the control room at all times, this is unlikely to be an important problem. (See report below on medical center visit)

As part of the regular training, there has been scheduled a one-hour health class. However, it is often superceded by other more pressing matters. A more general issue is how to enroll the operators in a fitness program. Incentives for fitness were previously discussed relative to the security

officers' program. However, after an initial rush on the gym, there has been less activity, since all the security officers passed.

When the current director of operations was a shift leader, he led team building athletic activities such as softball, volleyball, climbing, and hiking, as part of the (every-5-week) training program. He also encouraged operators to use the gym during breaks, to enhance alertness as well as fitness. We discussed the issue of breaks: duration, frequency, and whether or not sufficient time is given for exercise. Timing and structure of breaks are foreman-dependent.

Issues of Operations HP were addressed. All the actions discussed in maintenance have been implemented in operations, as well.

Control Room Changes:
Policy A-21 was introduced in late November to increase formality in the control room, enhance the level of professionalism, and reduce distractions. Changes will reduce traffic, with only the actual shift workers in the room. Non-essential activities such as the shift change meeting have been moved to areas outside of the operations control area. The social center, including eating area, will be in the Operations ready room. The re-arrangement requires more break -time, to accommodate activities that had been taking place in the control room.

Conclusion: Operator fitness continues to be an issue. The current director's appreciation for its importance, and his background as an operator are both positive influences in this area. HP issues are being addressed appropriately as well.

The control room changes appear to be a positive move toward decreasing distractions and enhancing professionalism.

3.7 Employee Concerns Program/Differing Professional Opinions

A representative of the ECP program provided an update. Prior update can be found on last annual report (Reference 6.4). The number of formal concerns are lower than in previous years. There are few technical issues, with a good corrective action program to identify and correct problems. Employees also talk to ECP regarding non-technical, mostly

interpersonal, problems. All ECP contacts are documented in a log. Rather than a formal EC investigation, most are handled informally with discussion, intervention or mediation. One good preventive measure is supervisors and managers having a greater presence in the field.

It was reported to the DCISC that the number of concerns being taken to the NRC has increased recently. Data show that the number at DCPP is twice the average in the NRC region. Allegations to NRC are higher: 11 (7 external, 4 internal) versus 4 in 1999, from all sources.

The latest Synergy survey was just ending, with a return to date of 700, representing more than 50% of the organization, with an anticipated 900-1000 returns total. Results will be available by mid- to late January.

Conclusion: The Employee Concerns Program appears satisfactory.

The DCISC should have a future fact-finding meeting to review the increase in employee concerns. The Committee should also review the specifics of how PG&E documents contacts described as "being handled informally." The committee should review a copy of the Synergy survey report when available, have it addressed at a fact-finding meeting, and have it presented at the next public meeting.

3.8 New Behavioral Observation Based Safety Process (BOBS)

In response to a high injury rate, DCPP instituted a new program to track incidents, identify barriers to working safely and institute continuous improvement in work processes and practices. Called BOBS (Behavioral Observation Based Safety Process), it involves many levels of the organization: the steering committee, observers, employees, supervisors, management, and the safety department. Focus is on all components: person, conditions, behavior, and their relationship.

A team of 25 trained craft people observe workers in the field, using a check list specific to DCPP (Reference 6.5). The individual evaluates a job in progress for 15-20 minutes, then immediately gives feedback, with emphasis on safe and at-risk behaviors in a number of categories. With ensuing dialogue, both sides look for any barriers to job safety. This

sets up a good system for correction without resentment. There is now a core steering committee, and more workers will train, with 20-25 workers per quarter in rotation.

In the short term, BOBS is going system-wide in maintenance, training 10 workers at a time. This program will expand plant-wide, to include Operations, radiation protection, building services, etc., as at Comanche Peak, which is a flagship for the program. Craft people were sent there to benchmark and learn the program.

One of the earliest successes: Ladder use had the highest number of at-risk behaviors. Part of the barrier was an insufficient number of ladders in the turbine building, which has been remedied by an increased number in a variety of sizes of ladders.

Summary of BOBS:

- Steering committee looks for barriers
- Peer observation of work by craft
- Immediate feedback
- Implementation of solutions

STARS Self-Assessment Programs:

Starting in late 1999, the STARS (Joint Utility Venture) self-assessment programs were created to support continuous improvement and self -identification of issues in the various STARS plants, with results shared among the member facilities. A personnel safety self-assessment was completed recently. One of the recommendations was that Industrial Safety review should be given to all workers either periodically, or on an as-needed basis.

Conclusion: The Behavior Observation-Based Safety Process is a useful addition to the safety program, with plans for additional Industrial Safety review courses.

3.9 DCPP Five Year Plan

The on-going five year plan breaks down plant performance into 5 key areas, tracked from the 1999 programs and data, to 2003 and beyond (Reference 6.6). More detail will be presented at the February 2001 Public meeting. Goals included:

- Safety: improve status; Objectives; industrial safety
- Generation Performance: < 30 day outage, 95 - 100% capacity
- Industry leadership: define excellence and strive to meet the standard
- Financial Performance: maintain at 2 cents per KWH, middle of pack, or top (best) third, and not to go up. This includes corporate overhead. Others are lower, by increasing generation, or with shorter outages.
- People:
    - Safety culture survey every 2 years.
    - Cultural transformation: Supervisors are to set high expectations, go for these goals, and enforce it in others.
    - Operations now has leadership development classes.
    - Hiring: looking to hire engineers- 10 per year; 12 operators every other year; maintenance personnel.

Conclusion: This is a work-in-progress. More detail will be presented by PG&E at the 2/01 Public meeting.

3.10 Medical Center Visit re Operator Fitness

A meeting was held with the medical director Dr Georghiou, who is concerned, as has been the committee, about Operators' health and fitness, previously presented to the DCISC (Reference 6.7) He discussed the American National Standards Institute (ANSI) requirements for Aerobic Fitness. Their medical form has a "no solo" category for licensed operators who do not meet the required 7.14 mets. The ultimate decision is left to the discretion of the supervising physician.

There are a number of "no-solo" operators, who are restricted because of poor health or fitness. There is no penalty to the operator for the classification, which can be due to a temporary condition such as post knee surgery, or in the first 2 years after a heart attack. The no-solo restriction stems from the old power plants that had only one operator at a time. Since there are 4 licensees in the control room at all times, this is unlikely to be an important problem.

This is less of a problem with the larger number of operators on a shift. However, the issue arises as to how many "no-solos" can one have at a time on a shift. Can they become a casualty during an emergency?

Most of the no-solos are simply out of shape. There is an upward trend in weight gain, which is a marker of lifestyle. The doctor sees sound health as every bit as important as a physically sound plant. When he finds abnormal lab tests or other measures, he calls in and counsels the operator. The fact is, the medical center is already going beyond their basic level of responsibility, but there is no one else to do the job. When asked about the results of his counseling, the doctor noted that very few make any changes.

Old statistics on non-solos, from '94-98, indicate that 20% were under 7.2.mets. Updated statistics will be available after chart review in preparation for an NRC audit in April.

Conclusion: The medical center continues to work diligently at screening, treating, and counseling employees. The lack of specific incentives makes their job more difficult in terms of compliance.

The DCISC should review the updated statistics on medically designated non-solos when available.

Recommendations:

- **Incentives for fitness would likely provide more motivation, as it did in security.**
- **Management should undertake to reinforce the medical recommendations to employees**

3.11 Safety Class On Cardiac Health

Dr. Georghiou taught a one-hour class on cardiac health part of a series, previously discussed by the DCISC (References 6.8 and 6.9). It credits employee with one Safety meeting.

He explained new diagnostic tests, treatments, preventive measures, and risk factors. These factors increase with age, and include smoking, lack of exercise, poor diet, high cholesterol, and high blood pressure. He described the various screening procedures including: blood tests to measure levels of cholesterol, C-reactive protein (which reflect inflammation) and homocysteine levels; electrocardiagram including a treadmill test; ECHO cardiogram; EBCT to screen for arteriosclerosis.

He described the symptoms of a heart attack (myocardial infarction, or MI)-- tightness and/or pain in the chest often radiating down the left arm and shortness of breath. While this may only be a case of indigestion, it is better to check it out (and be wrong) than miss a life-threatening emergency.

He reviewed post-MI lifestyle changes and medications.

Conclusion: The safety class on cardiac health was well-attended, with an enthusiastic, involved audience. Covering complex material in an understandable way, the class made an excellent contribution to the health of employees and their families.

It was apparent that the employees have a close and trusting relationship with medical center personnel, with many staying afterwards to ask questions or otherwise touch base with the doctor.

Recommendation: It is recommended that the operators have the safety class on cardiac health as part of their training program, on video if not live (which is preferable).

4.0 CONCLUSIONS

4.1 The plant-wide Human Performance Programs have gained the full support of management. Although error rate appears to have increased, recent plans to reduce it seem promising.

4.2 It appears that PG&E is adequately addressing the issue of increased error rate in Maintenance.

The DCISC should follow up on the following questions regarding error rate in Maintenance:

- **Could the increase in error rate during outages also reflect increased overtime?**
- **Are there figures to correlate the two factors?**
- **What is the comparative error rate of employees vs contractors? One recent review of this issue indicated that there was no difference.**
- **Is PG&E addressing issues of maintenance worker fitness?**

The DCISC should request specific data regarding outage error rate of employees versus contractors.

4.3 Engineering appears to be addressing its HP issues appropriately.

4.4 The supervisors seemed very open in their discussion of HP. Issues have been recognized and are being acted upon.

4.5 Operator fitness continues to be an issue. The current director's appreciation for its importance, and his background as an operator may be a positive influence in this area. HP is being addressed appropriately as well. The control room changes appear to be a positive move toward enhancing professionalism and decreasing distractions.

4.6 The Employee Concerns Program appears satisfactory. The DCISC should have a future fact-finding meeting to review the increase in employee concerns. The Committee should also review the specifics of how PG&E documents contacts described as "being handled informally." The committee should review a copy of the Synergy survey report when available, have it addressed at a fact-finding meeting, and have it presented at the next public meeting.

4.7 The Behavior Observation-Based Safety Process is a useful addition to the safety program, with plans for additional Industrial Safety review courses.

4.8 The five year plan is a work-in-progress. More detail will be presented by PG&E at the 2/01 Public meeting.

4.9 The medical center continues to work diligently at screening, treating, and counseling employees. The lack of specific incentives makes their job more difficult in terms of compliance.

The DCISC should review the updated statistics on medically designated non-solos when available.

4.10 The safety class on cardiac health was well-attended, with an enthusiastic, involved audience. Covering complex material in an understandable way, the class made an excellent contribution to the health of employees and their families.

It was apparent that the employees have a close and trusting relationship with medical center personnel, with many staying afterwards to ask questions or otherwise touch base with the doctor.

5.0 RECOMMENDATIONS

5.1 Incentives for fitness would likely provide more motivation, as it did in security.

5.2 Management should undertake to reinforce the medical recommendations to employees

5.3 It is recommended that the operators have the safety class on cardiac health as part of their training program, on video if not live (which is preferable).

6.0 REFERENCES

6.1 "Diablo Canyon Independent Safety Committee Ninth Annual Report On The Safety Of Diablo Canyon Nuclear Power Plant Operations, July 1, 1999 - June 30, 2000", Approved September 14, 2000, Volume I, Section 4.9,

6.2 "Diablo Canyon Independent Safety Committee Ninth Annual Report On The Safety Of Diablo Canyon Nuclear Power Plant Operations, July 1, 1998 - June 30, 1999", Approved September 16, 1999, Exhibit D.1, Section 5.3, 5.4

6.3 Human Performance Steering Committee Charter

6.4 "Diablo Canyon Independent Safety Committee Ninth Annual Report On The Safety Of Diablo Canyon Nuclear Power Plant Operations, July 1, 1999 - June 30, 2000", Approved September 14, 2000, Vol. I, section 4.17 (Safety Conscious Work Environment)

6.5 DCPP Behavior Based Safety Program (BOBS)

6.6 Five Year Plan

6.7 "Diablo Canyon Independent Safety Committee Ninth Annual Report On The Safety Of Diablo Canyon Nuclear Power Plant Operations, July 1, 1999 - June 30, 2000", Approved September 14, 2000, Volume I, Section 4.9.

6.8 Ibid., Volume II, Exhibit D.11, Section 3.16 and 4.9.2;

6.9 Class: D.1 July 6, 2000, Fact-Finding Report

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE REPORT

Trip Report on Fact Finding Meeting at DCPP on December 14, 2000

by

Philip R. Clark, Member and J.E. Booker, Consultant

1.0 SUMMARY

The results of the December 14, 2000 fact finding trip to the Diablo Canyon Power Plant in Avila Beach are presented. The subjects addressed and summarized in Section 3 include:

- Transition Program to Prepare for Competition
- Engineering Work Load Performance Indicator Recommendation
- Alternate Source Terms
- Joint Utility Venture Status (STARS)
- Top Ten Quality Problems
- Security System Computer Performance and Long Term Plan
- Self-Assessment Program Update
- Asset Team Update

The conclusions and recommendations for each subject are summarized in Sections 4 and 5.

2.0 INTRODUCTION

This fact finding trip to the DCPP was made to evaluate specific safety matters for the DCISC. The objective of the safety matter review was to determine if PG&E_s performance in these areas is appropriate and if any of these are important enough to warrant further review, follow-up, or presentation at a public meeting. These safety matters include follow-up and/or continuing review efforts by the Committee as well as those identified as a result of reviews of various safety related documents.

3.0 DISCUSSION

3.1 Transition Program to Prepare for Competition

PG&E reviewed the status of the Transition Program for the year 2000. The Transition Program has been discussed at previous fact finding meetings and Public Meetings and the purpose of this discussion was to review the status of the program.

The Transition Plan has been incorporated into DCPP Performance Plan or Center of Excellence (COE) Plan. The Performance Incentive Plan (PIP) and Performance is based on functional process. Budgeting is based on the four Core Processes and COE. The four Core Processes are:

1. Production - running the power plant
2. Manage Plant Assets - all things to maintain plant, long term plans and system support
3. Supply Chain - all things necessary to support plant
4. Revenue Realization

The six Centers of Excellence are:

1. Engineering
2. People Performance
3. Business Support
4. Loss Prevention - fire protection/security
5. Information Management
6. Maintain License

All personnel are in COE and then loaned out to the Processes. The budget for the year 2000 was also reviewed as was the overall status of the DCPP Transition Plan. The statuses of each of the elements of the Transition Plan were discussed. These were:

A. Transition Plan
   - A-1 Disengagement Plan - Complete

B. Cultural Enhancement Projects
   - B-1 Cultural Transformation - Plan complete, in 2001 will move out to individual contributors
   - B-2 Line of Sight/Performance Management - complete

C. Cost Reduction/Process Improvements

C-1 Work Control - transfer to process owners, complete
C-2 Secure the Plant - almost all complete
C-3 Corporate Support Project - every year they will review G & A costs and they are pushing back corporate charges
C-4 Firewatch Strategy - partially complete, will complete after 1R10 - May 2001
C-5 Consolidate Record Management Systems - on hold, doing research

D. Develop Competitive Business Processes
D-1 Process Cost Management - complete
D-2 Maximize Revenue - Plant Mods (includes Unit 1 uprate Decisions) - complete
D-3 Post-CTC Corporate DCPP Strategy -strategies change
D-4 Energy Marketing Process - PG&E did complete report and analysis
D-5 STARS (Strategic Teaming and Resource Sharing) - still looking at different paths, sometime in 2001
D-6 Business Understanding - part of culture transformation, complete and into implementation

Original plans had some assumptions that are no longer valid and will be revisited. Staffing at DCPP is currently at 1257. Over all, the Transition Plan is largely complete.

The Business Support Group was also discussed. Upon questions from the DCISC Member about participation in the Human Performance area, the Manager of the Group stated that his group did not make any efforts in particular in the Human Performance area. They are aware of the overall plant efforts in the human performance area and when they support the plant during fuel outages, they get training in human performance.

Conclusion: It appears that DCPP has completed their efforts with the Transition Program and has the implementation well under way.

3.2 Engineering Work Load Performance Indicator Recommendation

This item has been discussed at previous fact finding meetings and Public Meetings and the purpose of this

discussion was to review the systems they are using to measure performance and the status of the current indicators. The Manager - Engineering Services presented their workload and the indicators they use to monitor their performance. They track Engineering Services (ES) Action Requests (ARs) and Action Evaluations (AEs) by:

- ES Overdue Workload by Work Type
- ES In/Out by Work Type
- ES Total Workload by Work Type

They also track Engineering Services by:

- ES Overdue Goal
- ES In/Out Trending Plot
- ES Workload

Their goal for total ARs and AEs is to be down to 2000. In 2000 they trended down to less than 2000 and then up to about 2300 to 2400 and are now down to about 2000. Design Engineering spends about 80 -90 % of their time on ARs and AEs. Not all Engineers are doing things that can be tracked. PG&E was asked how can DCPP look at total Engineering work load and how much manpower they have to get the work done. It also appears that PG&E does not have the ability to track all the work that is not covered by ARs and AEs and do not know that DCPP is doing everything that needs to be done.

DCPP stated that they would rather measure how System Engineers are doing by how they are performing system walkdowns. In Design Engineering, they do not have enough manpower to do all the work that needs to be performed and some work has to be sent out to contractors (outsourcing). The Engineering Group did meet their deadline to get all the design packages to the outage group to support 2R10 refueling outage. There were 75 design packages for 2R10.
They also have a process to screen design changes to prioritize them.

The DCISC Member suggested that DCPP should have some method to identify the entire Engineering WorkLoad to determine if they have enough resources to perform the work without getting behind.

<u>Conclusion</u>: It appears that DCPP has methods to track performance and work load of ARs and AEs and looks at the

performance of System Engineers. However, they do not appear to have a method for tracking everything that is not covered by either ARs or AEs. They also do not have a method to identify entire the Engineering Workload to determine if they have enough resources to perform the work without getting behind.

Recommendation: It is recommended that DCPP investigate a method to identify the entire Engineering Workload so they can determine if they have enough resources to perform all the necessary work without getting behind.

3.3 Alternate Source Terms

PG&E reviewed the NRC alternative radiological source terms (AST), potential benefits and DCPP position on using AST. AST is a new source term which is different than the current source term based on technical information document (TID) 14844 for radiological dose consequence calculations for nuclear power plant design basis accidents and is an NRC accepted alternative to TID 14844. AST is based on significant improvements in understanding the timing, magnitude, and chemical form of fission product releases from severe nuclear power plant accidents since the publication of TID-24844. The results of design basis accident analyses using TID are conservative and bound AST.

The NRC issued draft RG-1081 in December 1999 for public comment, and subsequently issued Reg. Guide 1.1183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors", in July 2000. The assumptions of AST vs. TID-14844 were also discussed. NRC Reg. Guide 1.183 provides the guidance to nuclear power plant licensees on implementation of AST and NRC Standard Review Plan 15.0.1 provides guidance on review of radiological consequence analyses using AST.

NRC defines full implementation as a modification of the facility design basis that addresses all characteristics of the AST, that is, composition and magnitude of the radioactive material, its chemical and physical form, and the timing of its release. Full implementation establishes the plant licensing basis to Total Effective Dose Equivalent (TEDE) dose as the new acceptance criteria. Also full implementation replaces the previous accident source term used in all design basis radiological analyses. Once approved, all subsequent new

or update analyses would be based on the approved AST and TEDE criteria.

NRC defines selective implementation as a modification of the facility design basis that (1) is based on one or more of the characteristics of the SAT or (2) entails re-evaluation of a limited subset of the design basis radiological analysis. Use of other characteristics of an AST or use of TEDE criteria that are not part of the approved design basis, and changes to previous approved AST characteristics, would require prior NRC staff approval. A selective implementation of an AST should ensure that all (radiological and non-radiological) significant potential impacts have been identified and evaluated for the proposed plant modifications in the context of AST.

The AST implementation acceptance criteria was also reviewed. The potential benefits in implementing the AST are:

- Increase in allowable containment leak rates.
- Simplify the control room filtration system by changing the number and/or types of filters.
- Increase in allowable valve stroke times for containment isolation valves
- Increase post-LOCA recirculation leakage.
- Relax equipment qualification requirements by reducing EQ concerns for the equipment required to be operable in the short-term.
- Relax containment isolation requirements
- Eliminate or limit containment spray additives, or improve operating margin for containment pressure.
- Update plant accident atmospheric dispersion factors(x/Q) using current meteorological data.

DCPP status on using AST is:

- Currently DCPP has sufficient margin in all of the design basis accidents except SGTR, which is being reanalyzed by Westinghouse using TID.
- There are no immediate needs for reanalysis using AST at this time.
- The cost and benefit for reanalysis using AST are uncertain.
- PG&E will continue to monitor other utilities_ progress in their implementations of the AST.

In summary, utilities can stay with TID instead of converting to AST. To implement AST, utility would have to totally redo all calculations. Some utilities are using AST to reanalyze design basis accidents for SGTR, while others are looking at redoing all accident analysis using AST.

The NRC Reg. Guide 1.183 states that the AST is not representative of the wide spectrum of possible events that make up the planning basis of emergency preparedness. Therefore, the AST is insufficient by itself as a basis for requesting relief from the emergency preparedness requirements of 10 CFR 50.47 and Appendix E to 10 CFR Part 50. The guideline does not, however, preclude the appropriate use of the insights of the AST in establishing emergency response procedures such as those associated with emergency dose projections, protective measures, and severe accident management guides.

Conclusion: It appears that PG&E has taken appropriate action in reviewing the AST and monitoring other utilities_ progress in the implementation of the AST. If at some time in the future PG&E decides to implement any portion of the AST, DCISC should review this again.

3.4 Joint Utility Venture Status (STARS)

This Joint Utility Venture (STARS) has been discussed at previous Fact Finding meetings and at Public Meetings. The purpose of this meeting was to review the status of the program. The purpose of STARS was to evaluate to what extent the five facilities could effectively and jointly participate in the following areas: 1) outage coordination, 2) supply chain management, and 3) regulatory affairs. They developed an overall strategic plan for sharing services and benefits. After obtaining owner/corporate buy in to proceed in February 2000, STARS was officially launched with signing of "Governance and Management Model Agreement". The five Chief Nuclear Officers set a clear vision for STARS:

1. Maintain safe, dependable performance
2. Leverage contracts and resources
3. Minimize cost
4. Maximize influence in the industry provide additional employee opportunities/challenges

5. Provide a learning environment for potential future arrangements

The overall purpose is to realize benefits through joint cooperative arrangements that may not be obtainable as individual facilities. Their plans for 2001 include consideration of options for conducting a Joint Nuclear Operating Company or a Generation Company (JNOC/GENCO) feasibility study. They will continue with additional initiatives and have formed implementation teams for certain areas. The teams are made up of employees from each plant and STARS has two full time employees.

The three phases for 2001 are: 1) determine what the value is for each utility, 2) once there is a value, develop business plan, and 3) develop implementation plan. This should be completed by end of 2001. The only negative effect they can see is taking resources away from plant activities, but the positive effect of this is developing communications between utility groups or networks. STARS is also trying to monitor any effect of alignment on performance.

Conclusion: PG&E appears to be taking appropriate steps to evaluate the benefit of participation in STARS from both safety and economics. There appears to be many advantages in joining with the other utilities in the operation of their nuclear plants. DCISC should continue to monitor this program as it proceeds.

3.5 Top Ten Quality Problems

The DCPP NQS Supervisor discussed the NQS Quality Problem Action List for Aging Quality Problems. The list contains Nonconformance Reports (NCR), Quality Evaluations (QE), and "A" Type Action Requests. The list identifies the oldest quality problems in each of the QP reporting methods. It includes the title of the problem, the remaining actions, and responsibility for resolution of those actions along with the required completion dates. Quality problems on the list may not necessarily be old, but may need attention by the line organization. He also reviewed NCRs and QEs, which they felt, were the most important quality problems. These were:

- NCR - N0002101 - Seismic adequacy of non-bearing walls in EDG rooms. This NCR is scheduled to be completed by 12-31-01. The NQS committee that reviews these is concerned

that this particular seismic adequacy was not identified by their programs because they have had previous seismic problems and programs to correct them.

- NCR - N0002110 - Develop aging management strategy - should be completed by end of 2000.
- NCR - N0002114 - Failure to properly implement the DCPP Lubrication Program - NCR ECD 2/01/01
- QE - Q0012175 - Untimely/ineffective resolution of valve liner problems - Should be completed by 6/15/01
- QE - Q0012200 - Breakdown in jobsite contamination control - Should be completed by 2/15/01

The Corrective Action Program (CAP)/ Human Performance (HP) programmatic upgrade action plan (current - 3 year plan) was also discussed. This included: 1) Cause analysis process improvements, 2) ETR process improvements, 3) Generic CAP improvements, and 4) Human Performance improvements.

Conclusion: It appears that the NQS group is doing a good job in monitoring the top quality problems and bringing them to the attention of line management.

3.6 Security System Computer Performance and Long Term Plan

The Director of Security Services reviewed the security computer performance and other security activities in 2000. DCPP replaced the main frame security computer in January 2000. They did have some startup problems with the new computer (like most startup problems with a new computer) that they have been working on to resolve. They currently have 3 problems that they are working on. Even though they are still having problems, they believe the overall system is OK. Their goal is to resolve all the security equipment problems fixed by the end of the year. At first, they were not generating ARs for the problems, but as recommended by NQS, they are now generating ARs to track the resolution of them. They had a program to trend security equipment problems but they are not implementing it properly. They presently do not have a long term plan for security equipment, but intend to develop one.

The NRC inspection of security in February 2000 was discussed, as well as the NRC observation of the security drill.

Security has performed four self-assessments this year to identify issues and correct them. They have implemented a supervisor observation program for each supervisor to perform

once each month. Security Services has not formalized a Human Performance Program like the other departments have. The Director is on the DCPP Human Performance Steering Committee. He also stated that Security should consider doing more in improving human performance. They have started trending information on how security personnel impact security events.

Conclusion: It appears that the performance of the security computer has improved during the year, but they still need to complete the correction of the problems. DCPP also needs to develop long term plans for the security equipment.

Recommendations: It is recommended that the DCPP Security Services develop Long Term Plans for the Security Equipment.

It is recommended that DCPP Security Services develop a program for improving human performance.

3.7 Self-Assessment Program Update

A formal self-assessment program was implemented at DCPP in November 1999. The program structure included a defined owner, a program guide, management oversight, and designated department self-assessment coordinators. The self-assessment program has been discussed at previous fact finding meetings and Public Meetings the purpose of this meeting was to review the status of the program for this year.

They have completed 18 self-assessments in the 3rd. quarter and 43 for the year 2000. Each department is setting goals for how many self-assessments they will do each quarter and the numbers are being trended as part of the performance assessment.

NSOC commented 1½ years ago that DCPP was behind the industry in self-assessments. They now say that DCPP has improved, but they can still make improvements in this area. PG&E thinks they are above average, though some departments can still improve. The numbers of self-assessments made each year is about 50, which is above the standard 40 to 50 reports, is about the right number.

DCPP does not need to do more self-assessments, but self-assessments and reports need to be improved. Critiques are performed for every assessment and the results provided back to the team leader and the Self-Assessment Advisory Board. The

critiques provide a performance measurement for the team leaders and may lead to continual improvement in report quality, schedule adherence, and team composition. Each assessment is graded and the average score for the 3rd quarter was 85.8 out of 100.

Areas for improvement are:

1. The self-assessment program guide needs to be revised to capture a few elements:

- Program evaluation
- Critiques
- Ongoing assessment activities
- Standard format for plans and reports

2. Increase management participation on self-assessments teams. Participation on a self-assessment team allows management personnel to develop evaluation skills that benefit them in all aspects of performance measurement.

3. Program performance indicators were limited. Continue with development of the performance indicators evaluating effectiveness of the program.

Conclusion: PG&E appears to have made much improvement in their Self-Assessment Program. They continue to evaluate the program and have identified areas to make improvements.

3.8 Asset Team Update

The asset team leader for the Turbine Team presented the overall update for all the Asset Teams. The Asset Teams complete about 190 ARs per month and if they can keep rework to under 10 per month, that is OK. In the Human Performance area, they had a big push in midsummer for supervisors to talk to workers tailboards and reverse (feedback) tailboards about human performance issues. The Team Leader sits on a tailboard every day to observe human performance.

They recently had four events involving work on the wrong piece of equipment or wrong unit. He feels part of the cause for these events is stress on the workers from PG&E workers moving in from other plants and alignment with other utilities. DCPP management talks to employees explaining that keeping focused on doing work safely is more important than

worrying about outside events. Color coded work packages may also be part of the problem. The work may be put on the wrong color package.

The Team Leader discussed Industrial Safety vs. 1R10 schedule. In 1R10 PG&E made a big effort (all meetings) to employees that safety was the focus. They had a short outage schedule, but that safety was first. There was also a big push on ALARA in 1R10. Asset Teams said they had to focus on each job. They did not meet the goal, but they did better than any other outage for Unit 1.

The corrective maintenance (CM) backlog and schedule adherence for the year was reviewed. The present CM backlog is 556 with a goal of 425. Operations and Maintenance are doing very well in prioritizing the jobs that need to be worked on schedule.

The issues facing the Assistant Team Leaders (ATL) were described. DCPP needs to make the ATL jobs easier as DCPP has added more work to the ATL, which is one of the hardest jobs on site. The ATL are not able to do everything that they are expected to do. The NSSS Team is changing the way they use the ATL. They have one ART direct the work one week while the other ATL is planning work for the next week when he will be directing the jobs. The Team Leader feels that the Asset Teams have been successful. Work is getting done more effectively and workers are sharing work better. This is building a lot of ownership into the work force, though it can still be improved.

When asked how the other departments would view Asset Teams performance, he stated that he thought that Operations and System Engineers would say that Asset Teams are doing well.

The foremen were given tests in all disciplines to determine if they needed cross discipline training and system training. If so, the training has been ongoing and will be completed in January 2001. Training on performance review and giving employee feedback has being ongoing and will continue. Training on safety issues has also been continuing.

<u>Conclusion</u>: It appears that the Asset Teams have been making progress in improving overall performance of the group. They have made improvements in industrial safety and ALARA in 1R10. They have also determined the training necessary for the Foremen in each of the disciplines and the training should be complete in January 2001.

4.0 CONCLUSIONS

4.1 It appears that DCPP has completed their efforts with the Transition Program and has the implementation well under way.

4.2 It appears that DCPP has methods to track performance and workload of ARs and AEs and looks at the performance of System Engineers. However, they do not appear to have a method for tracking everything that is not covered by either ARs or AEs. They also do not have a method to identify the entire Engineering Workload to determine if they have enough resources to perform the work without getting behind.

4.3 It appears that PG&E has taken appropriate action in reviewing the AST and monitoring other utilities_ progress in the implementation of the AST. If at some time in the future PG&E decides to implement any portion of the AST, DCISC should review this again.

4.4 PG&E appears to be taking appropriate steps to evaluate the benefit of participation in STARS from both safety and economics. There appears to be many advantages in joining with the other utilities in the operation of their nuclear plants. DCISC should continue to monitor this program as it proceeds.

4.5 It appears that the NQS group is doing a good job in monitoring the top quality problems and bringing them to the attention of line management.

4.6 It appears that the performance of the security computer has improved during the year, but they still need to complete the correction of the problems. DCPP also needs to develop long term plans for the security equipment.

4.7 PG&E appears to have made much improvement in their Self-Assessment Program. They continue to evaluate the program and have identified areas to make improvements.

4.8 It appears that the Asset Teams have been making progress in improving overall performance of the group. They have made improvements in industrial safety and ALARA in 1R10. They have also determined the training necessary for the Foremen in each of the disciplines and the training should be complete in January 2001.

5.0 RECOMMENDATIONS

5.1 It is recommended that DCPP investigate a method to identify the entire Engineering Workload so they can determine if they have enough resources to perform all the necessary work without getting behind.

5.2 It is recommended that the DCPP Security Services develop Long Term Plans for the Security Equipment.

5.3 It is recommended that the DCPP Security Services develop a program for improving human performance.

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE REPORT

Report on Fact Finding Meeting at DCPP On March 14-16, 2001

by

P.R. Clark, Member, and R.F. Wardell, Consultant

1.0 SUMMARY

The results of the March 14-16, 2001 fact-finding trip to the Diablo Canyon Power Plant in Avila Beach are presented. The subjects addressed and summarized in Section 3 include:

- DCISC Performance Indicators
- Meeting with New NRC Resident Inspector
- NRC Report on Refueling Outage Risk
- On-line Maintenance
- Corrective Action Program
- Winter Storm Experience/Procedures
- Year 2000 Environmental Performance
- RCS Hot Leg Flow Measurement
- Amount of Time PG&E Corporate Officers Devote to DCPP with Recent Changes in Generation Organization
- Auxiliary Saltwater System Review & Tour with System Engineer
- Configuration Management Program
- Equipment Qualification Program
- Reportable Items in Outage 1R10
- Performance Plans
- Control Room Tour
- Observe Shift Technical Advisor Training Class
- Observe Brown Bag Management Discussion
- Observe Multi-Facility Table Top Emergency Exercise

The conclusions and recommendations for each subject are summarized in Sections 4 and 5.

2.0 INTRODUCTION

This fact finding trip to the DCPP was made to evaluate specific safety matters for the DCISC. The objective of the safety matter review was to determine if PG&E's performance in these areas is appropriate and if any of these areas revealed observations which are important enough to warrant further review, follow-up, or presentation at a public meeting. These safety matters include follow-up and/or continuing review efforts by the Committee as well as those identified as a result of reviews of various safety related documents.

3.0 DISCUSSION

3.1 DCISC Performance Indicators

The DCISC Fact-finding Team met with Stan Ketelsen to review the DCISC Performance Indicators (PIs) to determine if some indicators could be eliminated to reduce duplication with NRC or INPO indicators as was requested at the February 7-8, 2001 Public Meeting. A previous DCISC fact-finding review was made in July 2000 in which two indicators (No. 4, Maintenance Services Rework Event Trend Records [not significantly meaningful to DCISC] and No. 5, System Health Indicator [not fully developed]) were eliminated (Reference 6.1). The DCISC PIs are shown in Attachment 1 and are derived from PG&E's comprehensive indicators.

The Fact-finding Team reviewed each of the DCISC PIs as compared to the NRC (Nuclear Regulatory Commission) PIs (Attachment 2) and the INPO (Institute of Nuclear Power Operations) Performance Indicator Index. The criteria used to eliminate particular DCISC indicators were as follows:

1. The indicator exists in other available measures, and
2. The indicator can regularly be made visible to the public by the DCISC, or
3. The indicator is not significant to DCISC.

The following recommendations resulted from the review:

DCISC Performance Indicator	Recommendation	Reason
1. Radiation Exposure	Replace	Use NRC, INPO PIs & outage results reports
2. Personnel Contamination Incidents	Replace	Use outage results reports & fact-finding meetings
3. Meeting Corrective Action Due Dates	Eliminate	Results included in No. 8; review in annual CAP review
4. Maintenance Services Rework ETRs	Eliminate	Not significant
5. System Health Indicator	Replace - need meaningful system health indicator	Not fully developed (DCISC will monitor this measure in Fact-finding meetings and make reports in PMs)
6. Non-Outage Corrective Maintenance Backlog	Replace with higher-level alternate	Substitute System Health indicator (above) or Maintenance Rule measure
7. Operating Experience Assessment Backlog	Replace	Review & report regularly in fact-finding meetings
8. Quality Problem Completion	Replace	Review & report regularly in fact-finding meetings
9. Event Free Days	Replace	Review & report regularly in fact-finding meetings
10. Industrial Safety	Replace	Use INPO PIs
11. Unplanned Automatic Reactor Trips	Replace	Use NRC PIs
12. Unplanned Safety System Actuations	Replace	Use NRC PIs
13a. Operating Capacity Factor - Unit 1	Replace	Use INPO PIs
13b. Operating Capacity Factor - Unit 2	Replace	Use INPO PIs
14. Refueling Outage Duration - Unit 1	Replace	Review outage results reports in FFs and PMs
15. Refueling Outage Duration - Unit 2	Replace	Review outage results reports in FFs and PMs
16. Unplanned Reportable Releases	Replace	Use NRC PIs
17a. System Chemistry - Primary - Unit 1	Replace	Use INPO PIs
17b. System Chemistry - Primary - Unit 2	Replace	Use INPO PIs
18a. System Chemistry - Secondary - Unit 1	Replace	Use INPO PIs
18b. System Chemistry - Secondary - Unit 2	Replace	Use INPO PIs
19. Human Factor Security Events (Confidential)	Replace	Use NRC PIs
20. Vital Area Events (Confidential)	Replace	Use NRC PIs

Indicators which are to be replaced with reviews/reports in DCISC fact-finding reports will be added to the DCISC Open Items List for assurance of continued monitoring and reporting. By virtue of these indicators being reported in fact-finding reports, they will be reported at public meetings and in the DCISC annual report such that the public will be kept advised.

The DCISC should request that PG&E regularly report on the following indicators at DCISC public meetings:

1. DCPP Performance Plan (see Section 3.15 below)
2. NRC Performance Indicators
3. Maintenance Rule Quarterly Report to Management
4. Refueling Outage Results
5. DCPP Performance Indicators

INPO indicators will be reviewed by the DCISC in fact-finding meetings.

Conclusion: The existing set of DCISC performance indicators can largely be replaced with other existing indicators contained in PG&E, NRC and INPO reports. Other indicators not included in these reports will continue to be reviewed in DCISC fact-finding reports and reported in public meetings.

The DCISC should request that PG&E regularly report on the following items at DCISC public meetings: (1) DCPP Performance Plan, (2) NRC Performance Indicators, (3) Maintenance Rule Quarterly Report to Management, and (4) Refueling Outage Results.

The DCISC should consider process-based measures as DCPP moves to a process-centered arrangement.

3.2 Meeting with New NRC Resident Inspector

The DCISC Team met with Terry Jackson, a new NRC inspector in residence at DCPP, added to support the Senior Resident Inspector, David Proulx. DCISC Member Rossin and Consultant Wardell met with Mr. Proulx at the October 25-26, 2000 fact-finding meeting (Reference 6.2).

DCISC Member Clark described the history, function, organization and activities of the DCISC, including fact-

finding meetings, public meetings and the DCISC annual report. Mr. Jackson, recently arrived from NRC Headquarters, reported on a recent NRC Inspection Report item on an inadvertent isolation of a startup transformer of the wrong unit. This was a potential violation of the NRC Maintenance Rule due to a work process computer system problem. He also described an NRC inspection of the Radiation Protection Program in which a high radiation dose had been received during resin line sluicing due to the possible improper posting of a high radiation area. This will be covered in the NRC report of the inspection.

The participants discussed the upcoming NRC inspection schedule and the risk significant determination process. Mr. Clark invited Mr. Jackson to a DCISC public meeting.

3.3 NRC Report on Refueling Outage Risk

The DCISC Team met with Brad Hinds, Outage Director, and Ken Bych, Supervisor of the Probabilistic Risk Assessment Group, to discuss a recent NRC report on outage safety (Reference 6.3).

The NRC report analyzed data from 19 refueling outages, including 16 pressurized water reactors (PWRs) and 3 boiling water reactors (BWRs). The PWR list included DCPP-1 and -2. The purpose of the study was for NRC to gain an understanding of the overall risk of each refueling from two perspectives: plant configuration risk and modification impact risk. The NRC reported that each owner had performed an outage risk assessment for each outage; 3 were qualitative and 16 were quantitative. All followed guidance in NUMARC 91-06, "Guidelines for Industry Actions to Assess Shutdown Management."

The report showed the expected and actual total risk estimates for each outage and identified the peak risk per hour. The report identified major modifications and maintenance activities, which could significantly add to outage risk. Human errors and other operational issues contributing to risk were listed. The operational issues were of particular interest because they included events, which could cause loss of core cooling and potential core damage. The events included loss of offsite power, loss of shutdown cooling, inadvertent isolation of service water, improper alignment of spent fuel cooling, etc. The NRC looked specifically at mid-loop operations as a relatively high contributor to risk but also

concluded that it received increased attention and awareness which lessened its impact. Additionally, generic risk profiles were generated for PWRs and BWRs.

The NRC noted, as did the DCISC, that there was a wide range of risk values observed in the estimates of both the cumulative outage risk and peak risk. This was attributed to differences in modeling and other related data issues as opposed to actual differences in risk.

DCPP personnel were familiar with the study and had performed a full plant-specific, operational risk assessment as well as a generic industry modeling of shutdown risk. DCPP has begun a formal, comprehensive, plant-specific shutdown risk analysis, which it expects to complete in 2002. They currently estimate outage risk at about 10-20% of total plant risk. Upon completion of the full shutdown analysis, DCPP will be able to compare risks in it and the operational assessment to better determine when or whether to perform on-line maintenance.

Conclusion: The wide range of NRC-reported industry plant shutdown risk values was attributed to differences in modeling rather than differences in actual risk. DCPP has begun a comprehensive, plant-specific shutdown risk analysis to be completed in 2002. The DCISC should follow up at that time.

3.4 On-Line Maintenance

The DCISC Team met with Brad Hines, Outage Director and Ken Bych, Supervisor of the Probabilistic Risk Assessment (PRA) Group to discuss the status of DCPP on-line maintenance (OLM). The last review of this subject by the DCISC was in December 1999 (Reference 6.4). That review concluded that DCPP was using OLM more often to reduce outage scope and was developing and updating its risk assessment tools to appropriately control the resultant risk of removing components from service during operation.

It was reported that NRC Regulation 10CFR50.65, "Maintenance Rule" Paragraph (a)(4) had become mandatory in November 2000 in that the risk assessment requirement "shoulds" were changed to "shalls". Also, NRC Regulatory Guide 1.182 "Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants", which embraces NUMARC 93-01 "Industry Guidelines for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants", is more closely focused on managing the calculated

risk associated with maintenance. DCPP had revised its maintenance program to implement the new requirements.

A self-assessment was performed in September 2000 to determine the readiness of DCPP to implement the new requirements. The team consisted of several DCPP personnel and a Maintenance Rule representative from Callaway Nuclear Plant, a STARS member. The results showed that many of the necessary elements were in place in the existing PRA and On-Line Maintenance Programs, but the following recommendations were made:

- Provide more guidance to operators.
- Provide more procedural guidance to planners in the use of ORAM, a risk assessment tool.
- Review abnormal operating procedures for risk-significant systems, structures and components (SSCs) that apply to Modes 4, 5 & 6 and review the Outage Safety Schedule for risk-significant configurations.
- Strengthen the basis for not performing risk assessments associated with the SSCs scoped in the plant PRA.

DCPP made these changes prior to the November 28, 2000 implementation date. The primary procedural change involved DCPP's on-line maintenance procedure, Procedure AD7.DC6, which was renamed "On-Line Maintenance Risk Assessment" (Reference 6.5). This procedure builds on the existing trip risk assessment actions of Procedure MA1.DC10, "Troubleshooting and Risk Level Assessment" and Procedure MA1.DC11, "Risk Assessment of Non-Routine Work". Changes to Procedure AD7.DC6 included the following additions:

- Managing Risk in the Maintenance Planning Phase
- Managing Risk in the Maintenance Execution Phase
- Plant Trip Risk Assessment

These additions require the Operations Work Week Managers to ensure that risk management actions are completed for planned work. This includes expected plant conditions and expected external conditions due to seasonal effects. Guidance and worksheets are provided for decision-making in taking components out of service for maintenance. The Shift Foremen are required to evaluate and manage risk of all activities or conditions based on the current plant state prior to implementation of maintenance activities. The procedure also

requires an assessment of the plant trip risk with a checklist for both pre-planned and emergent activities.

Formal classroom training (Reference 6.6) has been provided to Maintenance and Operations personnel on the new requirements. Additionally, just-in-time (JIT) tailboards are provided prior to performance of maintenance activities. The training and JIT tailboards are meant to provide a higher awareness of risk in the Control Room.

Additionally, with the move to Standard Technical Specifications, the On-Line Maintenance Program (OLM) (used to assess risk), can take advantage of the 7-day component-outage-window rather than the previous 72-hour window.

An NRC inspection was performed in February 2001 of various plant activities, including maintenance risk assessment. The NRC inspectors concluded that DCPP had exhibited good use of the Maintenance Rule and provided good, effective compensatory measures when two risk-significant components were inoperable during California Grid Stage 3 alert conditions (i.e., possible increased electrical grid stability). A special risk management guidance statement had been developed at DCPP identifying additional reactor trip risk classifications for the 500 kV electrical system and the 230 kV start-up power system during Grid Stage 3 alerts.

The California electricity supply shortage and increasing grid alerts have caused DCPP to defer some equipment maintenance during these periods to reduce the risk of plant trips. The DCISC inquired as to the effect on reliability. DCPP's practice was to move the equipment to a later maintenance window but they did not believe reliability would be affected; however, possible effects could be larger scope outages and a shift in focus from summer to winter. DCPP noted that the capital budget had been lowered due to PG&E's debt problems and that revised plans for spending were under development. The DCISC believed it should follow up this item due to concerns of long-term reliability if spending is significantly lowered or delayed.

Reference was made to a new initiative, Passive Device Aging Management Investigation, which was begun in late 2000. Completion is expected in June 2001. The DCISC should review the program results subsequent to June.

Conclusion: The DCPP On-Line Maintenance Program appears to be functioning appropriately and designed to meet NRC Maintenance Rule requirements. Effective involvement by the Probabilistic Risk Assessment Group has resulted in effective risk considerations and controls for taking components out of service for maintenance during operation. The DCISC should follow up on the possible effects of lowered/delayed plant capital spending on long-term reliability and on the results of the Passive Device Management Investigation when available.

3.5 Corrective Action Program

The DCISC Team met with Bruce Terrell, Supervisor of the Corrective Action Program Group to review the status and performance of the Corrective Action Program (CAP). The DCISC last reviewed this program in December 1999 (Reference 6.7). A result of that review was the DCISC recommendation that DCPP benchmark other plants with strong CAP effectiveness processes, which DCPP had responded that it was planning to do.

Mr. Terrell had been in this position about 1½ years. The Group consists of eight individuals, and it reports, along with the Human Performance Group, to the "Maintain License" Center of Excellence. The CAP Group determines the root causes of Nonconformance Reports (NCRs) and inputs the results into the Integrated Management Report. The line organization determines root causes of events up to and including Quality Evaluations. The CAP Group trains and qualifies the line organization in analyzing events and determining root causes and corrective action.

Mr. Terrell reported on several external reviews/assessments of DCPP CAP. These were

- NEI Benchmarking, which found that (1) the DCPP Plant Information Management System (PIMS) is usable but not up to industry best practices and (2) DCPP is just beginning to develop leading indicators of the effectiveness of its CAP.
- INPO reviews found that (1) DCPP was not reporting or learning enough from low-level Action Requests (ARs) and (2) the AR Review Team was a strength.

An NRC annual CAP inspection was scheduled to begin in about two weeks. The previous CAP self-assessment was performed in

January 2000 and the next one was planned for Fall of 2001. The DCISC Team reviewed the current three-year plan (CAP/HP Programmatic Upgrade Action Plan) which included results from the following:

- January 2000 self-assessment
- NSOC reviews
- 2000 NRC inspections
- Various ARs written on the CAP
- 2000 NCV self-assessment
- 2000 NEI Benchmarking effort
- Reviews of other Plant CAPs

The plan appeared comprehensive, and most actions had been completed. The remaining items were to be completed by early 2002.

Mr. Terrell reported that one member of his Group was assigned as "Cause Mentor" to critique cause code analysis for consistency and improvement. He believes DCPP has solved the cause code assignment problems. The DCISC was interested in reviewing results of NCR cause code assignment analysis and requested information on that subject. The DCISC reviewed the Cause Code Critique, a document providing guidance for review of cause code analysis and assignment. The document included a critique form, directions, areas to be reviewed, a grading scale, space for comment, expectations for cause analysis documentation, and process documentation for the user. The guidance appeared satisfactory. The grading scale was numbered from 1 to 5, with 1-2 being "requires improvement", 3 "adequate", and 4-5 "excellent". There was no opportunity for review of actual critiques because the process had just been developed.

NSOC has been reviewing the CAP and is carrying it as an open item. NSOC has established a CAP Subcommittee, which will begin to review CAP following Outage 2R10. The DCISC should review this at the May 2 NSOC Meeting.

The CAP Group performs a mandatory effectiveness review of each NCR corrective action following closeout as directed by the Technical Review Group. An adverse trend analysis is beginning to be developed quarterly with a newly installed computer program. CAP is developing leading and lagging CAP effectiveness indicators.

The DCISC reviewed the lagging and leading indicators developed to date. Lagging indicators had been formulated for the following areas:

- Problem identification (trend of numbers of ARs initiated)
- Problem review (six measures of timeliness of reviews and numbers of QEs and NCRs)
- Problem analysis (four measures, including cause analysis average age, NCR rejection rate, and quality grade of QEs and NCRs)
- Timeliness of corrective actions (seven measures, including various corrective action document average ages, actions overdue, etc.)
- Effectiveness of corrective actions (three indicators: percent NCRs and QEs evaluated as effective and number of recurring events in last year from previous QEs and NCRs)

The DCISC believes these are appropriate measures, the most important being the evaluations of corrective action effectiveness and number of recurring events.

Leading indicators included:

- Numbers of Event Trend Records (ETRs) generated
- Trends of management observations
- Adverse trend identification
- Proactive culture acknowledged (e.g., "good catches")

The leading indicators were still in stages of early development.

The DCISC Team discussed the human side of corrective action. It appeared that human skills play an important role in analyzing for root causes and developing effective corrective action. It was not apparent that the Human Performance Program and the CAP were closely tied at DCPP. This would seem prudent given that human error is the most prevalent event cause code. Training of personnel in corrective action processes should include such skills as effective interviewing in that much of the information utilized is obtained from personnel involved in the event. Personnel analyzing events, which are primarily caused by human error, should be knowledgeable in human cause characteristics in addition to the traditional system and equipment cause characteristics.

Conclusion: **The DCPP Corrective Action Program appeared to have been improved as a result of self-assessments, external evaluations and reviews of other plant CAPs. Measures of program effectiveness were just being developed and appeared headed in the right direction. The DCISC should review the CAP in early 2002, following completion of improvement action items and the next self-assessment.**

Recommendation: **Because the predominant cause of events is human error, DCPP should more closely coordinate the Corrective Action and Human Performance Programs and utilize training in human characteristics and skills (e.g., interviewing skills, human error characteristics) for personnel preparing root cause analyses and corrective actions.**

3.6 Winter Storm Experience/Procedures

The DCISC Team met with Paul Roller, Director of Operations Services to obtain an update on DCPP's experience with winter storms during the 2000-2001 winter storm season and to review any changes in storm response procedure. The DCISC last reviewed this subject in May 2000 (Reference 6.8). In that review, DCPP's policy was to maintain the plant in a safe condition while maintaining a low reactor power level. It appeared that DCPP had developed an effective tool and process for responding to winter storms without having to shut down the plant.

The plant storm response had been based on the "P9" plant protection level of 15% power for the most severe storms. In this case PG&E could take the plant down to approximately 15% power (with a turbine trip but without need for the condenser circulating pumps, the component most affected by the storm) and ride out the storm without having to scram the reactor. DCPP had raised the limit of the P9 protection level from 15% to 50% along with the new Standard Technical Specifications; however, procedurally DCPP would now normally run back to 20% (maximum limit of 25%). This decision (and a decision to shut down) is made with the aid of a prepared storm evaluation chart and a plant simulator run. The evaluation sheet includes such parameters as swell strength, wind direction and strength, kelp loading, etc. If a storm is severe enough, the plant will be fully shut down.

Regarding storm experience, in the December 22, 2000 storm the plant was taken to 50% power, but lost a circulating pump due to a high kelp loading and was taken to 20% to ride out the storm. It then returned to full power upon return of the second circulating pump. A January 2001 storm was very severe but with low kelp loading, and the plant rode it out at 20% power for two days before returning to full power. DCPP analyzes each storm for improvement of both procedures and equipment.

Upgrades were being considered to the components most affected by storms, e.g., the intake traveling screens. Larger motors are planned for installation during outage 2R10, and a new bar rack cleaning device is being evaluated.

Conclusion: DCPP appears to have satisfactory plans and equipment for responding to winter storms with the ability to maintain the plant in a safe condition.

3.7 Year 2000 Environmental Performance

The DCISC Fact-finding Team met with Drew Squyres, Supervisor of the Environmental Group to review DCPP environmental performance during 2000. The DCISC last reviewed DCPP environmental performance in July 2000 (Reference 6.9) at which time it determined the program met requirements.

During 2000, there were two agency inspections. The San Luis Obispo County Air Control District (SLOACD) reviewed operation of the Emergency Diesel Generators (EDGs), the package boiler and volatile organic compounds. No violations or issues were identified. The California Department of Toxic Substances Control (DTSC) inspection of hazardous waste resulted in one minor issue on the separation distance between storage pallets and control methods for satellite accumulation areas. Corrective action is planned, and neither is expected to be a problem.

There was one minor spill during the year. This was the loss of about one ounce of hydraulic fluid into the intake bay from a kelp harvester. Although trivial in severity, the event was reportable because it produced a sheen on the water. The spill was cleaned up quickly.

The land conservancy program, which involves leased farmland and ranchland around DCPP, is continuing without problem.

Ninety environmental reports were completed on schedule during 2000.

An entrainment study report was submitted in March 2000 to the Regional Water Quality Control Board. The Board had issued a draft report, and PG&E was resolving outstanding issues. The primary resolution to settle impingement and thermal effects issues was to set aside land for conservation. This was not expected to affect plant systems or operation.

DCPP will submit its Annual Non-Radiological Environmental Report by the end of May 2001, and copies will be sent to the DCISC.

Conclusion: DCPP 2000 environmental performance appeared satisfactory.

3.8 RCS Hot Leg Flow Measurement

The Fact-finding Team met with Bill Bojdhi, an engineer in the Reactor Engineering Group for an update on Reactor Coolant System (RCS) flow measurement. This topic involved the development of a new analytical model for the existing flow instrumentation to permit increased operating margins, specifically full power operation with the Technical Specification 15% steam generator tube plugging limit. The DCISC last reviewed this topic in May 2000 (Reference 6.10). At that time several other nuclear plants had obtained NRC approval to use the new methodology, and DCPP was preparing a new submittal to NRC. NRC had not approved a previous DCPP submittal because of hot leg thermal streaming, which could adversely affect the readings.

DCPP is sending operating data to Westinghouse for the development and substantiation of a DCPP model; however, there was no money budgeted for 2001 for the development. Revised analysis and a Westinghouse topical report are planned for 2002.

Other plants have made submittals to NRC and have received approval. Sequoyah utilized 10CFR50.59 for the change, but NRC is not accepting this approach any longer. South Texas Plant received approval but is not using the model. McGuire Nuclear Station uses an approved methodology but from a different model. DCPP had considered an ultrasonic flow detector, but it is expensive and requires more extensive calibration.

Apparently, DCPP will not take any actions on the new RCS flow measurement methodology until 2002, due to budget considerations.

Conclusion: DCPP is proceeding slowly on using the new Reactor Coolant System hot leg flow measurement methodology due to budget considerations; however, there is no adverse safety impact and no urgency until steam generator plugging gets close to the 15% limit. With the long time, which has passed since this program was started, and the mixed results with similar projects in the industry, PG&E may wish to re-examine its plans.

3.9 Amount of Time PG&E Corporate Officers Devote to DCPP with Recent Changes in Generation Organization

The DCISC Team met with Larry Womack, Vice President of Engineering to discuss recent changes in Nuclear Power Generation management about which the DCISC had concerns. The concerns were that with additional non-DCPP duties, Mr. Womack and Greg Rueger, Senior Vice President, Nuclear Power Generation, would not be able to devote their full time to DCPP.

Mr. Womack described recent organizational changes at DCPP. A license amendment request had been approved by NRC for Jim Becker to become Station Director. This position would be responsible for the day-to-day operation of the station and include the operations, maintenance, radiation protection, and chemistry and environmental operations functions. Because the PG&E hydroelectric plants had not been sold, in February Mr. Womack had been assigned back at the station full-time as Vice President, Engineering with responsibility for engineering, supply chain management, major asset strategic planning, and dry cask spent fuel storage. (This resolved the DCISC concern that Mr. Womack was only spending part-time at DCPP). Greg Rueger still had responsibilities for other non-DCPP PG&E matters such as hydro system operation and overall PG&E generation, thus was spending only part-time on DCPP. Dave Oatley, Vice President, Plant Operations was still full-time on DCPP.

The DCISC was interested in the possibility of the effect on plant reliability of lower capital spending due to the California energy crisis and debt load PG&E was carrying. Mr.

Womack reported that at the current 3.5 cents per kilowatt-hour DCPP was earning the necessary revenues for planned capital spending to continue. This was already part of the cost reduction plan, which had been approved several years ago. The company was evaluating a lower return model, but Mr. Womack had no information on it.

Conclusion: It appeared that two of the three DCPP officers were continuing full-time on plant responsibilities. The third, Greg Rueger, Senior Vice President and Chief Nuclear Officer, still had other corporate duties, although he was spending a substantial amount of time on DCPP. This appeared acceptable to the DCISC, which, however, will remain alert to detect any future reduction in plant safety.

3.10 Auxiliary Saltwater System Review & Tour with System Engineer

The DCISC fact-finding team met with Joe Anastasio, System Engineer for the Auxiliary Salt Water System (ASW), to review the system and perform a system walkdown. This was the first DCISC review of ASW. The ASW System supplies cooling water to the Component Cooling Water heat exchangers from the ultimate heat sink (Pacific Ocean) in order to reject heat from primary plant systems.

The review started with a description of the system and its design bases using basic flow diagrams. Each major component was described. The only significant active components are the redundant Auxiliary Salt Water Pumps located in the Intake Structure. There are two ASW Pumps for each of the two redundant trains of the system. Each pump is located in a watertight compartment to prevent water damage to the motor as a result of flooding or tsunami. Watertight doors assure that flooding of one compartment does not affect the opposite train operability, thus maintaining safe shutdown capability. Mr. Anastasio reported that an ASW Pump could be replaced on-line, if necessary, in about 60 hours as compared to the 72-hour Technical Specification allowed outage time.

The discussion included ASW system long-term plans. These are plans developed by each system engineer for system improvements, upgrades, modifications or major repairs/maintenance to assure long-term reliability. The plans for ASW appeared satisfactory.

The DCISC team reviewed ASW system health, i.e., performance indicators, which were based on the Maintenance Rule Program. One component, a CCW heat exchanger, was in Alert status due to having a higher rate of fouling than others. Also, some ASW vacuum breakers had been sticking but had been repaired. Several years ago, ASW underground piping near the intake structure had experienced severe corrosion and was replaced. The DCISC had monitored this replacement at the time and had found it satisfactory. All indicators showed that ASW had been operating satisfactorily.

Two Licensee Event Reports had been written related to the ASW System in 2000. The first was an automatic load-shed of the only operating Unit 1 ASW Pump during a Unit 1 outage when the reactor was defueled in October 2000. The action was caused by a faulty load shed relay failing to reset. ASW was aligned from Unit 2 until Unit 1 ASW was restored, and there were no adverse safety consequences. The event was determined to not be a quality-related event, and the relay was replaced. The second instance in October 2000 was the failure of an ASW Pump to auto-start on a first-level undervoltage relay actuation during a performance test. The cause was a design error: the improper specification of a blocking diode placement. The error was corrected, and there was no loss of safety function because the Engineered Safety Function was not inhibited. This event was determined to be not reportable.

Mr. Anastasio led the DCISC Team on a tour of the accessible portions of the ASW System both at the intake structure and in the plant. He pointed out features, which he inspected during his monthly walkdown and inspection. The system appeared in good order, and the plant appeared in good materiel condition.

Conclusion: The Auxiliary Salt Water System, DCPP's connection to its Ultimate Heat Sink (the Pacific Ocean), appeared to be in good operating and readiness condition. The System Engineer appeared to be knowledgeable and up-to-date on the system design, performance and health.

3.11 Configuration Management Program

The DCISC Team met with Don Shelby, Configuration Management Program (CMP) Manager for an update on Configuration Control. The DCISC last reviewed this program in November 1997 (Reference 6.11). At that time, the program had been revised substantially as the result of several reviews

and self-assessments. The DCISC had decided to continue to monitor the program performance.

The purpose of Configuration Management is to assure consistency between design requirements, physical configuration and facility configuration information (i.e., as-built documents, including procedures). Mr. Shelby described the current CMP referring to the controlling directive (Reference 6.12) and described recent program changes. CM is implemented through more than 200 plant procedures, which conform to the controlling directive. Changes consisted primarily of augmenting the implementing procedures to include CM guidance and a checklist and better instructions for assuring that the impact of any change is reflected in all related documents. The program meets the requirements of the applicable industry standard (Reference 6.13).

Effectiveness of CM is measured by the CM Index, which measures the following five areas related to CM:

1. Corrections and changes to controlled drawings are processed in a timely manner.
2. The Component Data Base (CDB)is updated in a timely manner.
3. Design Criteria Memoranda (DCM) are maintained accurate by processing changes in a timely manner.
4. Drawings are revised in a timely manner and are legible and accurate.
5. Temporary configuration changes to the plant are minimized and removed in a timely manner.

The only adverse trend has been related to the maintenance of the Component Data Base where an NCR had just been cleared with corrective actions to improve the consistency of updating the database. Self-assessments are being used to determine whether the issue has been resolved. The program manager searched the last two years of quality problems, and except for the aforementioned NCR, there were no significant problems, just small administrative matters. There have been no NRC Notices of Violation of CM in the last two years. The next self-assessment of CM is planned for July 31 - August 10, 2001 and will include personnel from other (STARS) plants.

A Generation Vulnerability Investigation Team has been initiated to identify probable future generation losses by evaluating the preventive maintenance, aging management, and

decision making process against current DCPP internal and industry expert states-of-knowledge. This report is planned to be complete by June 30, 2001 and recommendations implemented by year-end. Configuration Management will be included in this investigation.

Conclusion: The Configuration Management Program at DCPP appeared satisfactory with measures in place to gauge the ongoing program effectiveness, which the DCISC should review annually. The DCISC should also review the results of the Generation Vulnerability Investigation Team report following its release in June 2001.

3.12 Equipment Qualification Program

The DCISC Team met with Thacker Narang, head of the Equipment Qualification Program (EQP) to obtain the status of the program. The DCISC last reviewed this program in August 1999 (Reference 6.14). At that time the DCISC determined that DCPP had appropriately corrected problems in the program.

In the last several years the only problem in the EQP had been a 1998 NCR for a valve that had been tentatively identified as unqualified, and which had been resolved. The valve had been properly qualified, but the qualification documentation had been misinterpreted. There had been no other problems. Currently, the only major EQP group initiative was updating its records, from handwritten files into a computer database.

There had been no NRC inspections within the last two years. NQS has performed audits every two years, and one was underway at the time of the DCISC visit. A self-assessment was performed in 2000 by a contractor using a "vertical slice" approach; there were five EQ files needing category changes but no significant findings.

The DCISC inquired into the documentation and updating of accident environmental conditions. These are controlled as design basis information and updated as necessary, although there had been no changes recently.

Conclusion: The Equipment Qualification Program appeared to be functioning well with no significant outstanding issues.

(The DCISC Team reviewed several engineering programs at this fact-finding meeting as discussed above and decided to try to

review all engineering programs together in a single fact-finding meeting in the future. This plan will be included in the DCISC Open Items List.)

3.13 Reportable Items in Outage 1R10

The DCISC Team met with Roger Russell to review NRC License Event Reports (LERs) from Outage 1R10. The last review of Outage 1R10 was in mid-outage in October 2000 (Reference 6.15) in which three LERs were reviewed. Since then, as reported in the DCISC Public Meeting in February 2001, five LERs were added for an outage total of eight. Four were caused by personnel error, and the remainder by equipment failure (3) and poor contractor culture (1). Overall, for year 2000, 16 LERs have been submitted, nine of which were caused by personnel error.

The discussion centered on personnel errors and plans to improve human performance. Human error rates have been increasing with the rate at the end of 2000 at 1.25 errors per 10,000 work-hours. The rate had been as low as 0.75 in mid-1999 and 0.9 in mid-2000. An analysis of Operations significant error precursors in outage 1R10 had shown that there were 40 known significant and less significant errors. Lack of attention to detail was the overwhelming cause of these errors. The predominant outage-related precursors were

- High workload
- Unfamiliarity with the task (or first-time task performance)

The predominant individual (human) precursors were

- Distractions/interruptions
- Complacency/overconfidence (eight-of-the-ten significant errors involved operators with seven or more years experience)
- Night shift or recent shift change (80% of the significant errors occurred on night shift)
- Identical and adjacent displays or controls
- Imprecise communication habits

None of the errors was considered system-induced. PG&E determined that the majority of these errors were preventable through the use of good self-verification, concurrent

independent verification and the practice of STAR (Stop, Think, Act & Review).

DCPP has been implementing programs to improve HP. One program is called "Good Catches" which is a strategy for proactively identifying positive behaviors. Supervisors were trained to look for (and recognize in feedback) examples of exemplary performance, application of key behaviors, use of internal/external operating experience, and safe work practices. A number of good catches have been identified across the plant's organizations, mostly in Maintenance and Operations.

The Human Performance Steering Committee has been formed. Key objectives include (1) development of a common philosophy and strategy for HP improvement ensuring the objectives are linked to NPG's overall operational plan and (2) to champion HP improvement within NPG, the industry, and with the regulators. Members include the Plant Manager and his direct reports (the plant Directors) and the Managers of NPG Learning Services, Corrective Action Group, and Generation HR. The HPSC typically reviews the following:

- Current leading and lagging HP indicators
- Self-Assessment summaries (for HP-related issues
- Industrial Safety Summary
- Human Performance Review Committee Minutes
- Current status of long-term strategic plan
- Emerging issues (DCPP-specific and industry)

HP Fundamentals Training will be provided to all Operations, Maintenance and Engineering personnel with initial training to be completed by the end of 2001. Continuing training is also planned.

The instructor's guide for HP refresher continuing training for Operations (dated December 2000) was reviewed. The lesson plan covered the following items:

- Definitions of performance, human error, knowledge-based performance, error precursors, error-likely situations, and error management
- Two types of error: active and latent
- Error modes: skill-based, rule-based, and knowledge-based errors
- How humans process information

- Task characteristics: task demands, individual capabilities, work environment and human nature
- Error-likely situations
- Anatomy of an event

This type of training, the basics of how, why and when humans cause errors, appeared useful in getting the Operations front-line workers to understand human information processing and error causes.

A DCISC fact-finding team plans to review human performance and the HPSC in June 2001.

Conclusion: DCPP appeared to take a reasonable approach to the analysis of causes of reportable events during Outage 1R10. The predominant cause was human error, and they are taking additional steps to improve human performance with new programs and organization and training focused more on human behavior. The DCISC should continue to follow the DCPP human performance programs.

3.14 Performance Plans

The Fact-finding Team met with Terrell McKnight of the DCPP Business Support Group to follow up on an item from the February 2001 DCISC Public Meeting on DCPP performance plans (Reference 6.16). PG&E covered the high level strategic plan at the public meeting, and the DCISC was interested in the lower level implementing plans and the DCPP Performance Plan.

The overall DCPP Performance Plan contained results achieved in 2000 and those to be achieved in 2001 - 2004 (and beyond). The major areas of focus were as follows:

- Safety - be the best operating nuclear plant in the western US measured by number of personnel injuries, amount of collective radiation dose, number of event-free days, no environmental protection program violations, green NRC emergency planning window and no cited violations, effective corrective action program implementation, and safety culture survey action implementation.

- Industry Leadership - be the best operating nuclear plant in the western US measured by all green NRC ratings for

Performance Indicators, DCPP self-assessment program recognized as industry leader with a defined minimum number of assessments completed, INPO # 1 rating, INPO composite performance indicator in top quartile, no significant INPO findings, and cost-effective improvements to DCPP appearance.

- Generation Performance - provide reliability/ predictability of production measured by amount of generation, outage time and cost, operating capacity factor, hourly generation level, unplanned capability loss, and submission of LAR for Used Fuel Storage Installation.

- Financial Performance - be a cost-competitive facility measured by a revenue target, operating cost, capital cost, nuclear fuel expenditure reduction, making a decision on the future of STARS, budget and performance aligned and managed by process, utilizing the Long Term Planning Process, and STARS savings exceed expenditures for the year.

- People
  - Performance as measured by compensation/ incentives/rewards clearly linked to results and performance, management performance assessments on trimester basis, and annual Bargaining Unit Employee performance assessments.
  - Development as measured by supervisory skills assessments, technical skills development, effective/ accredited operator programs, effective/accredited maintenance/technical programs, 100% successful initial license classes, and implementation of a continuous Human Performance training program.
  - Sustain An Excellent Workforce as measured by long-term staffing plans, an effective Affirmative Acton Plan, and effective hiring while maintaining overall NPG headcount.
  - Learning Organization as measured by expectations established for individual contributors to model desired behaviors, effective supervisory leadership skills, individual contributors participating in new culture, employees accept STARS, systems and infrastructure in-place to sustain new culture, and benefits are realized from process centering.

The overall DCPP Performance Plan was broken down into the following process-based and Center-of-Excellence-based Performance Plans. This is a new breakdown for DCPP and a departure from the previous functional organization.

- Production
- Manage the Plant Asset
- Manage Supply Chain
- Engineering Center of Excellence
- Maintain the License
- People Performance Center of Excellence
- Information Management
- Business Support
- Loss Prevention

These process plans contained process-specific actions and numerical measures for the period 2001-2004 in the categories of Safety, Industry Leadership, Generation Performance, Financial Performance and People. These strategies, measures and goals are aligned with the higher-level DCPP goals. Individual manager and contributor performance plans will be aligned with these goals. Thus, each employee should have a "line of sight" from his/her individual and team plans to the DCPP plan.

Nuclear safety was included in these plans in the following measures/goals:

- A maximum total collective radiation dose
- Effective Corrective Action Program
- Green NRC Emergency Preparedness Indicators and no cited NOVs
- Improvements in Safety Culture Survey
- All green NRC performance indicators
- Effective self-assessment program
- INPO #1 rating, top-quartile composite plant performance indicators and no significant findings
- A minimum operating capacity factor

These were further specified in the process-based plan actions and measures.

<u>Conclusion</u>: Based on a presentation and review, the DCISC Fact-finding Team believed the hierarchy of DCPP performance plans represented an effective method of disseminating

management expectations to the whole organization. Nuclear safety was appropriately addressed. The DCISC should follow up periodically to asses how effectively the plans are being implemented.

3.15 Control Room Tour

The DCISC Team met with Paul Roller, Manager of Operations Services, for a tour of the recently re-configured Control Room. DCPP had implemented a new Control Room formality policy and had re-arranged the Control Room complex to provide fewer distractions to the operators. Access to the room was restricted solely to Control Room operators with permission required for anyone else to enter. Colors were changed and information displays were upgraded to space-saving flat monitors. All non-control-room-operator personnel (e.g., clerks and Shift Technical Advisor) were moved outside to adjoining offices. A new, adjacent briefing room was provided such that briefings would not interfere with on going operator duties. A safety priority sign provided a reminder that safety comes first, before generation, cost or schedule.

Conclusion: The updated Control Room and access policy appeared to provide a quieter, less distracting atmosphere for the control operators than before.

3.16 Observe Shift Technical Advisor Training Class

Consultant Wardell attended and observed Shift Technical Advisor (STA) training on Friday March 16, 2001. The purpose of the training was to present the knowledge necessary for STA-qualified individuals to perform Plant Engineering Procedure PEP M-98A (Reference 6.17) used to calculate the feedwater nozzle-fouling factor and maximum expected electrical generation. The training lasted two hours for the five STAs (one per operating shift). The procedure had previously been implemented by Engineering Services during their normal day schedule but was being assigned to the STAs because of their 24-hour presence at the plant.

The session introduction included the course objectives, materials and handouts. The technical basis for performing the procedure was explained. This was feedwater nozzle fouling (scale) that takes place during operation. The fouling causes the nozzle venturi reading to become inaccurate, thus causing the heat balance to be inaccurate, resulting in lower actual

feedwater flow and lost generation. Another possible effect is reactor overpower which occurred at the Salem Nuclear Station where licensed power was exceeded in 1994.

The lesson included the following:

- Technical basis for performing the procedure
- Review of the Salem Nuclear Station event (INPO SER 11-94)
- Frequency of performance
- Theory of ultrasonic flow measurement
- Performing Procedure PEP M-98A
- Review of the lesson with questions and answers

A student handout was provided which included pertinent drawings, theory and equations, equipment set-up, and other technical and procedural information. The instructor distributed photographs of clean and fouled nozzles. The instructor maintained good interaction with the class by asking questions and stimulating discussion. Following the classroom session, the STAs went into the plant and actually performed the procedure (not observed).

Conclusion: The Shift Technical Advisor qualification training in performance of the DCPP procedure for setting final feedwater nozzle venturi readings by ultrasonic crossflow appeared appropriate and effective. The instructor exhibited good knowledge of the subject and interacted well with the students.

3.17 Observe Brown Bag Management Discussion

Consultant Wardell attended and observed a weekly Friday management/employee discussion called the "Brown Bag Management Discussion". The meeting is open to any employee and is held in the plant auditorium. The subject of this discussion was the recent Institute of Nuclear Power Operations (INPO) evaluation of DCPP. Attendance was moderate.

Operations Director Jim Becker described the high-level findings of the INPO evaluation.

The group asked some questions, and Mr. Becker provided additional details of the evaluation and possible actions to

be taken by DCPP. Although open for other questions, no additional questions were asked.

Conclusion: The "Brown Bag" discussion of the recent INPO evaluation by management for employees appeared to be a good communication tool for DCPP.

3.18 Observe Multi-Facility Table Top Emergency Exercise

Consultant Wardell observed two "table top" emergency drills of two emergency organizations on Friday March 16, 2001. The Technical Support Center (TSC) and the Emergency Offsite Facility (EOF) [and associated Unified Dose Assessment Center (UDAC)] were exercised independently with participants playing their roles around tables in their respective facilities without outside participation, hence the term "table top". Each organization participated in two separate predetermined scenarios. Each scenario included objectives for evaluation. The overall purpose of the drill was to enhance the Emergency Response Organization (ERO) knowledge and performance. In general, the high-level objectives were as follows:

- Timely and accurate classification of events
- Timely and accurate notification of offsite governmental authorities
- Timely and accurate development of protective action recommendations for offsite authorities

Technical Support Center (TSC)

Consultant Wardell observed Scenario #1 in the TSC. The facility had been rearranged since the last DCISC visit and exhibited improved utilization of space, thus benefiting communications. The initial events were typical, i.e., loss of essential equipment, in this case, Auxiliary Salt Water (ASW) Pumps (during a winter ocean storm) and additional equipment such as Auxiliary Feedwater Pumps. The scenario proceeded through all emergency action levels (EALs) to a General Emergency (GE).

The TSC was staffed in a timely manner and proceeded to establish communications and plant status information flow. Support teams represented were engineering, radiological assessment, and government liaisons. Status and prioritized action boards were maintained. Regular status reports were

made. EALs were decided and announced in an accurate and timely manner. The demeanor in the TSC appeared to be organized and professional. There was good use of three-way communication.

The critique received good participation, and it appeared to be on target. There were no major problems, and areas for improvement included improved information flow and shorter tailboards. The participants and monitors agreed that all objectives were met.

Emergency Offsite Facility (EOF)

Scenario #2 was observed at the EOF. The EOF was partially staffed with representatives from engineering, radiological assessment/monitoring, ERO management, and government liaisons. This scenario was initiated by an earthquake resulting in loss of all offsite power and a small steam leak from a steam generator in containment. An emergency diesel generator failed to start, and auxiliary feedwater pumps tripped, resulting in loss of the ability to maintain hot shutdown conditions. The players recognized the conditions and proceeded to General Emergency. Protective actions and notifications appeared accurate and timely. Radiological monitoring teams were controlled appropriately and provided good input. Three-way communication was apparent. Radiological assessment by UDAC appeared to provide timely and accurate assessments.

The EOF critique appeared productive. Emergency action levels were done correctly, as were protective action recommendations. Status briefs were short and to the point. Engineering was effective, and government notifications were done well. UDAC performed well (in what was considered a particularly challenging scenario). One area for improvement was to use fewer acronyms and less jargon, particularly with the county. The monitors and participants concluded that all objectives were met.

Conclusion: Both the Technical Support Center and Emergency Offsite Facility (including UDAC radiological assessment) appeared to perform and critique themselves effectively in the two emergency drills.

4.0 CONCLUSIONS

4.1 The existing set of DCISC performance indicators can largely be replaced with other existing indicators contained in PG&E, NRC and INPO reports. Other indicators not included in these reports will continue to be reviewed in DCISC fact-finding reports and reported in public meetings.

The DCISC should request that PG&E regularly report on the following items at DCISC public meetings: (1) DCPP Performance Plan, (2) NRC Performance Indicators, (3) Maintenance Rule Quarterly Report to Management, and (4) Refueling Outage Results.

The DCISC should consider process-based measures as DCPP moves to a process-centered arrangement.

4.2 The wide range of NRC-reported industry plant shutdown risk values was attributed to differences in modeling rather than differences in actual risk. DCPP has begun a comprehensive, plant-specific shutdown risk analysis to be completed in 2002. The DCISC should follow up at that time.

4.3 The DCPP On-Line Maintenance Program appears to be functioning appropriately and designed to meet NRC Maintenance Rule requirements. Effective involvement by the Probabilistic Risk Assessment Group has resulted in effective risk considerations and controls for taking components out of service for maintenance during operation. The DCISC should follow up on the possible effects of lowered/delayed plant capital spending on long-term reliability and on the results of the Passive Device Management Investigation when available.

4.4 The DCPP Corrective Action Program appeared to have been improved as a result of self-assessments, external evaluations and reviews of other plant CAPs. Measures of program effectiveness were just being developed and appeared headed in the right direction. The DCISC should review the CAP in early 2002, following completion of improvement action items and the next self-assessment.

4.5 DCPP appears to have satisfactory plans and equipment for responding to winter storms with the ability to maintain the plant in a safe condition.

4.6 DCPP 2000 environmental performance appeared satisfactory.

4.7 DCPP is proceeding slowly on using the new Reactor Coolant System hot leg flow measurement methodology due to budget considerations; however, there is no adverse safety impact and no urgency until steam generator plugging gets close to the 15% limit. With the long time, which has passed since this program was started, and the mixed results with similar projects in the industry, PG&E may wish to re-examine its plans.

4.8 It appeared that two of the three DCPP officers were continuing full-time on plant responsibilities. The third, Greg Rueger, Senior Vice President and Chief Nuclear Officer, still had other corporate duties, although he was spending a substantial amount of time on DCPP. This appeared acceptable to the DCISC, assuming no reduction in plant safety was indicated.

4.9 The Auxiliary Salt Water System, DCPP's connection to its Ultimate Heat Sink (the Pacific Ocean), appeared to be in good operating and readiness condition. The System Engineer appeared to be knowledgeable and up-to-date on the system design, performance and health.

4.10 The Configuration Management Program at DCPP appeared satisfactory with measures in place to gauge the ongoing program effectiveness, which the DCISC should review annually. The DCISC should also review the results of the Generation Vulnerability Investigation Team report following its release in June 2001.

4.11 The Equipment Qualification Program appeared to be functioning well with no significant outstanding issues.

The DCISC Team reviewed several engineering programs at this fact-finding meeting as discussed above and decided to try to review all engineering programs together in a single fact-finding meeting in the future. This plan will be included in the DCISC Open Items List.

4.12 DCPP appeared to take a reasonable approach to the analysis of causes of reportable events during Outage 1R10. The predominant cause was human error, and they are taking additional steps to improve human performance with new programs and organization and training focused more on human behavior. The DCISC should continue to follow the DCPP human performance programs.

4.13 Based on a presentation and review, the DCISC Fact-finding Team believed the hierarchy of DCPP performance plans represented an effective method of disseminating management expectations to the whole organization. Nuclear safety was appropriately addressed. The DCISC should follow up periodically to assess how effectively the plans are being implemented.

4.14 The updated Control Room and access policy appeared to provide a quieter, less distracting atmosphere for the control operators than before.

4.15 The Shift Technical Advisor qualification training in performance of the DCPP procedure for setting final feedwater nozzle venturi readings by ultrasonic crossflow appeared appropriate and effective. The instructor exhibited good knowledge of the subject and interacted well with the students.

4.16 The "Brown Bag" discussion of the recent INPO evaluation by management for employees appeared to be a good communication tool for DCPP.

4.17 Both the Technical Support Center and Emergency Offsite Facility (including UDAC radiological assessment) appeared to perform and critique themselves effectively in the two emergency drills.

5.0 RECOMMENDATIONS

Because the predominant cause of events is human error, DCPP should more closely coordinate the Corrective Action and Human Performance Programs and utilize training in human characteristics and skills (e.g., interviewing skills, human error characteristics) for personnel preparing root cause analyses and corrective actions.

6.0 REFERENCES

6.1 "Diablo Canyon Independent Safety Committee Eleventh Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2000 - June 30, 2001", Approved October 17, 2001, Exhibit D.1, Section 3.7.

6.2 Ibid., Exhibit D.2, Section 3.5.

6.3 U.S. Nuclear Regulatory Commission, NRC Information Notice 2000-13, "Review of Refueling Outage Risk", September 27, 2000, (Attachment: "Refueling Outage Risk - An Operational Perspective by J.L. Shackelford and W.B. Jones).

6.4 "Diablo Canyon Independent Safety Committee Eleventh Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 1999 - June 30, 2000", Approved September 14, Exhibit D.8, Section 3.1.

6.5 Pacific Gas & Electric, Nuclear Power Generation, Diablo Canyon Power Plant, Administrative Procedure AD7.DC6, On-Line Maintenance Risk Management, November 20, 2000.

6.6 Nuclear Power Generation, Diablo Canyon Power Plant, Instructor Lesson Guide, Course 00 Continuing Training, Topic Session 0-4, Lesson: On-Line Maintenance Risk Assessment, November 10, 2000.

6.7 "Diablo Canyon Independent Safety Committee Eleventh Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 1999 - June 30, 2000", Approved September 14, 2000, Exhibit D.6, Section 3.5.

6.8 Ibid., Exhibit D.11, Section 3.14.

6.9 "Diablo Canyon Independent Safety Committee Eleventh Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2000 - June 30, 2001", Approved October 17, 2001, Exhibit D.1, Section 3.4.

6.10 "Diablo Canyon Independent Safety Committee Eleventh Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 1999 - June 30, 2000", Approved September 14, 2000, Exhibit D.11, Section 3.10.

6.11 "Diablo Canyon Independent Safety Committee Eleventh Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 1997 - June 30, 1998", Approved September 24, 1998, Exhibit D.6, Section 3.11.

6.12 PG&E, Nuclear Power Generation, Program Directive CF1, "Configuration Management", September 26, 2000.

6.13 ANSI/NIRMA CM 1.0-2000, "Guidelines for Configuration Management of Nuclear Facilities", 2000.

6.14 "Diablo Canyon Independent Safety Committee Eleventh Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 1999 - June 30, 2000", Approved September 14, 2000, Exhibit D.4, Section 3.6.

6.15 "Diablo Canyon Independent Safety Committee Eleventh Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2000 - June 30, 2001", Approved October 17, 2001, Exhibit D.2, Section 3.3.

6.16 Ibid., Exhibit B.6.

6.17 Pacific Gas & Electric Company, Nuclear Power Generation, Diablo Canyon Power plant, Plant Engineering Procedure PEP M-98A, "Setting Final Feedwater Flow Nozzles be "AMG" Crossflow", Effective date: November 17, 2000.

Exhibit D.7

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE REPORT

Report on Fact Finding Meeting at DCPP on April 18 & 19, 2001

by

A.D. Rossin, Member and J.E. Booker, Consultant

1.0 SUMMARY

The results of the April 18 & 19, 2001 fact finding trip to the Diablo Canyon Power Plant in Avila Beach are presented. The subjects addressed and summarized in Section 3 include:

- DCPP Communications Update
- Results of December 2000 Culture Survey
- Results of INPO Evaluation
- Tracking Data Concerning the Accredited Training and Instructor Training Programs
- Update on Self-Assessments
- Company Status after Declaring Bankruptcy
- Status and Plan for Dry Cask Storage of Spent Fuel
- Probabilistic Risk Assessment Program
- Generation Vulnerability Identification Team
- Establishment of Priorities for Operators
- Security Response to QA Security Audit
- Component Cooling Water - System Review
- Discussions with Manager, Radiation Protection
- NQS - Status of Improvements from last Biennial Audit and NQS Self-Assessment

The conclusions and recommendations for each subject are summarized in Sections 4 and 5.

2.0 INTRODUCTION

This fact finding trip to the DCPP was made to evaluate specific safety matters for the DCISC. The objective of the safety matter review was to determine if PG&E's performance in these areas is appropriate and if any of these are important enough to warrant further review, follow-up, or presentation at a public meeting. These safety matters include follow-up and/or continuing review efforts by the Committee, as well as those identified as a result of reviews of various safety related documents.

3.0 DISCUSSION

3.1 DCPP Communications Update

The DCISC Fact-Finding Team met with Jeff Lewis, DCPP Public Relations, to discuss recent communications with the public. The NRC recently had a public news conference in San Luis Obispo to address the possibility of safety issues as a result of PG&E's financial problems. Mr. Lewis stated that the NRC told the public that PG&E continues to allocate enough money to run Diablo Canyon properly and has shown no sign of compromising safety. The NRC said that they have had more NRC staff visits to the plant, in addition to the regular on site inspectors. There were two TV stations, one newspaper and two radio reporters, but few members of the public, at the news conference.

PG&E participated in a public meeting hosted by the County Supervisor to discuss the Dry Cask Storage Facility for DCPP spent fuel. There was a large public turnout for this meeting. PG&E continues to meet with the public to keep them informed about the Dry Cask Storage Project.

PG&E had a TV station out to Diablo Canyon to cover the new fuel shipment and handling for 2R10. Mr. Lewis stated that the San Luis Obispo Mothers For Peace have said that Diablo Canyon is necessary because of the California energy situation.

Most of the Public information about the PG&E bankruptcy has been handled out of PG&E San Francisco office.

Conclusion: It appears that PG&E is doing a good job of keeping the public informed about Diablo Canyon and PG&E items of interest.

3.2 Results of December 2000 Culture Survey

The DCISC Fact-Finding Team met with Rich Cheney, Supervisor of Employee Concerns Program (ECP), to review the results of the 2000 Comprehensive Cultural Assessment (CCA) that was conducted in November/December, 2000 on the plant-wide safety culture. The assessment included 40 employee interviews. The survey was designed to provide a comparison to the previous survey, which had been conducted in 1998.

The first plant-wide safety culture survey was conducted in 1998, and was reviewed by DCISC at Fact-Finding Meetings and at a Public Meeting. In 1999, a limited survey was conducted for selected organizations within the plant and was reviewed by the DCISC at a Fact-Finding Meeting. The response to the 2000 survey by the employees improved over the 1998 survey (80.4 % Vs 62%).

SYNERGY, the company that designed and analyzed the survey, also compared the results of the DCPP survey to 12 other nuclear plants in their database to provide an industry ranking. (The ratings given below are directly from the SYNERGY Report and the ranges are a comparison to the other plants surveyed by SYNERGY).

The summary of results is as follows:

- Nuclear Safety Culture (NSC) was rated as "good to very good" range and was perceived as having "improved notably" (+ 6%) since the 1998 survey. Within the NSC area:

    - Nuclear Safety Values (NSV), Behaviors and Practices are rated in the "good to very good" range and are perceived to have "improved notably" (+ 5%).

    - The Safety Conscious Work Environment (SCWE) was rated in the "very good to excellent" range and was perceived to have "improved notably" (+ 7%).

    - The Employee Concerns Program (ECP) was rated in the "adequate to good" range and was perceived to have "improved moderately" (+ 4%).

NSC had four areas of relative strength. These were:

- Safety Conscious Work Environment

- Nuclear Safety Priorities
- Operational Nuclear Safety - Conduct of Activities:
  - In accordance with Licensing and Design Bases.
  - Thorough Safety Analyses.
  - Anticipation of Operational Risks/Taking Precautions.
  - Adherence to Procedural Requirements.
- Corrective Action Process (ARs) - Problem Identification

NSC had three areas of relative weakness:

- Employee confidence in decisions on allocation of resources (adequate staffing, experience, and qualifications) to assure nuclear safety is maintained.
- Confidence in & Effectiveness of the ECP
- Timeliness and Overall Effectiveness of the AR Process.

The summary of results for the SCWE showed that employee willingness to take appropriate action at DCPP is in the "very good to excellent" range, and that the environment at DCPP for raising potential nuclear safety issues or quality concerns is "very good".

SCWE "Indicators & Precursors" rating for Management and Supervision improved by 12% and 8% respectively for the DCPP site composite. For the four individual organizations with the relatively lowest SCWE rating in 1998, the average rating of SCWE "Indicators & Precursors" for Management and Supervision in 2000 improved by 25% and 14% respectively. The organization with the lowest SCWE rating in 1998 and 2000, showed improvement in SCWE "Indicators & Precursors" ratings for Management and Supervision of 12% and 3% respectively.

The summary of results of the progress on effectiveness of the ECP is as follows:

- The DCPP site composite rating of the overall effectiveness of the ECP improved by 4%.
- For the five individual organizations with relatively lowest ECP ratings in 1998, three showed improvement (+ 7% to + 26%), one showed no change and one declined (- 6%).
- Rating in Chemistry also declined (- 11%).

The effectiveness of the ECP was rated lower than NSC and SCWE and given the lowest rating of all by Operations.

The summary of results on "clearing the air on removal from duty of the Shift Foreman" showed that it appears that most Operations personnel have put this matter behind them. There remains a small but vocal minority who apparently has not. It appears that most of the lingering bad feelings are directed at off-site senior management as opposed to on-site management.

The progress of the 1998 targeted organizations showed that of the 8 organizations with trending information available for 1998-2000, 7 showed improvement in the NSC Composite Cultural Indicator (CCI) and 1 had no change. Only 2 of the 8 will continue to be targeted based on the 2000 CCA NSC results. There are a total of 4 organizations designated as "Targeted Organizations" based upon the 2000 CCA NSC results. These are Shift Operations, ACRE Maintenance, NSSS Maintenance, and Procedure Services.

The General Culture & Work Environment (GCWE) is rated as "adequate to good" and is perceived to be on a notable improving trend (+ 7%) since the 1998 CCA. Eleven of the thirteen GCWE topical areas showed improvement (from 5% to 15%), one area which showed significant improvement (+ 19%) and only one which showed notable decline (- 6%).

Leadership, Management & Supervision (LMS) is rated as "adequate" and is perceived to be on a notable improving trend (+ 6%) since the 1998 CCA. Eleven of the fifteen LMS topical areas showed improvement (from 5% to 10%), one showed the most significant improvement (+ 15%) and only one area showed notable decline (- 8%). Of the eight "1998 Targeted" Division-level organizations with trending information available for 1998-2000, 6 showed improvement, 1 showed no change and 1 showed decline.

The results of the survey have been communicated to all department managers and then to all employees in small meetings. DCPP is developing an action plan to address areas that need improvement. PG&E has discussed future surveys but has not made a decision on this. They may want to perform a survey of just the targeted groups.

<u>Conclusion</u>: The results of the 2000 Synergy Safety Culture Survey appear to have been positive for DCPP with improvements in all but a few areas. PG&E has communicated the results of the survey to all employees and is developing an action plan

to address areas that need improvement. The DCISC should review the action plan and monitor its implementation.

Recommendation: PG&E should identify and take action to improve the employees' perception of the Employee Concerns Program.

3.3 Results of INPO Evaluation

PG&E reviewed the results of the recent INPO evaluation. This was the eighth INPO evaluation of DCPP. DCISC has reviewed these evaluations at previous Fact-Finding meetings. INPO identified 10 strengths and 11 areas for improvement, with no repeat areas for improvement.

DCPP had performed a pre-INPO self-assessment and identified most of the same areas for improvement. They let INPO review this self-assessment.

INPO also reviewed 6 operator training programs for accreditation. PG&E will meet with the INPO accreditation board in June, 2001 to get the results of these programs. INPO will review the other 6 training programs with the next DCPP evaluation.

The detailed results of the INPO evaluation were reviewed but are not presented here, as they are proprietary between INPO and the Utility.

Conclusion: The results of the recent INPO evaluation of DCPP appear to be very favorable. DCPP continues to receive very good reports from INPO.

3.4 Tracking Data Concerning the Accredited Training & Instructor Training Programs

M. Peraky, Maintenance Training Instructor and R. Snyder, Chemistry/Radiation Training Instructor discussed the various means that are used to track data concerning the accredited training and instructor training programs. There is a Senior Management Oversight Training Committee and each group has an oversight training committee. These committees meet quarterly or more often if necessary to review the status of performance, problems and actions taken for each of the accredited training programs.

A Performance Plan Review Report is prepared monthly for the accredited programs and quarterly for the instructor training program. The information for the Performance Plan Review Report is gathered by the instructors and sent to the director of the line organization for approval. The report has an executive summary that lists 1) summary of the month's training, 2) the top 5 training program issues and 3) areas for improvement (and work in progress).

The report also includes a list of 10 questions (each question is worth a total of 10 points) on the overall performance of the training program for that period. Operations training programs must have a passing grade of 80% and the other training programs a passing grade of 70%. The 10 questions are:

1. The time-in-months since line and training last met to discuss training.
2. The types of training that have occurred for the month. For training conducted, indicate whether or not line management observed training.
3. For training (classroom, OJT, ect.) conducted this month, was feedback evaluated and acted on responsibly?
4. For training conducted this month, give at least one specific example of an operating experience at DCPP that was used during the delivery of training.
   For training conducted this month, give at least one specific example of an industry or other site experience that was used during the delivery of training.
5. For continuing training cycles completed this month, what percentage of job incumbents is current on continuing training?
6. List the department or site adverse trends or improvement initiatives related to human performance.
7. Trainee performance indicator
8. Management of training improvement proposals and action requests.
9. In regard to change management, review the areas of people, processes and plant and determine whether or not there have been any significant changes. Was training conducted prior to implementing the change?
10. Has a periodic self-assessment (i.e. self,

Westrain, NQS, etc.) of your training program (process, programs or requirements) been conducted within the last 12 months?
Have line managers/supervisors participated in periodic self-assessment of training, INPO training accreditation visit, training assist visit or INPO simulator visit within last 12 months? Type of participation is defined as assessor or peer evaluator.

The performance plans were reviewed for the Instructor Training Program, Technical Maintenance, Mechanical Maintenance and Chemistry/Radiation Protection.

Conclusion: It appears that the method DCPP has for tracking the performance of the accredited training & instructor training programs is effective and involves both the training and line organizations. The DCISC should review the Performance Plan Review for the remaining accredited training programs in the fall of 2001 and all of the Performance Plan Reviews in 2002 to determine the status of the improvements that DCPP identifies.

3.5 Update on Self-Assessments

S. Hiett, Self-Assessment coordinator, presented an update on the DCPP self-assessment program. DCISC has reviewed this program at previous fact finding meetings and Public Meetings.

The current Self-Assessment Program was started at DCPP in late 1999. They stated that the program is doing very well, but still can be improved. The program should reach maturity by the end of 2001. The managers are continually encouraged to improve on their self-assessments. DCPP performed 55 self-assessments during 2000. They have set a goal of about 40 self-assessments per year by the line organizations and have met or exceeded these goals. Overall, they have produced a large number of quality reports.

DCPP asked INPO to provide report writing assistance. DCPP has generated 15 reports in the first quarter of 2001, but it is felt that the quality of some of the reports has declined. They are working with other STARS plants on self-assessments to perform round-robin assessments between plants and share resources.

DCPP now has a new grading process for self-assessments, which they believe will improve the quality of the self-assessments. They have established a core group of 12-14 employees that meet monthly to review the reports. Mr. Hiett reported that Operations continues to do self-assessments very well and Engineering has improved on theirs. They still need for self-assessments to address generic items. Each self-assessment report result goes into the corrective action program. On the average, a self-assessment, including the report, requires about 1½ person-weeks of work.

DCPP plans on performing some self-assessments during 2R10. They also believe that their self-assessments are above industry average.

Conclusion: It appears that DCPP has the self-assessment program well implemented and are producing about the right number of assessments to meet their goal. They are also taking action to improve the quality of the assessments, including the reports. They expect to have the program fully implemented by the end of 2001. It is recommended that DCISC continue to review the program and some of the self-assessment reports at a fact-finding meeting in second quarter of 2002.

3.6 Company Status After Declaring Bankruptcy

Larry Womack, Vice President Generation & Nuclear Services discussed the financial status of DCPP after PG&E declared bankruptcy. He stated that some suppliers were worried that their payments might get tied up during the bankruptcy proceedings. But actually, the bankruptcy filing made the assurance that all obligations incurred after April 6, 2001 will be paid. They are not having any problems with contractors or suppliers for DCPP. It also has not had any impact on 2R10.

He stated that the NRC is spending more time at DCPP and over the phone with DCPP personnel about DCPP safety and financial ability.

Conclusion: There do not appear to be any indications that the bankruptcy filing by PG&E has had any adverse impact on safety or operations at DCPP.

3.7 Status & Plan for Dry Cask Storage of Spent Fuel

The spent fuel storage facility for DCPP was reviewed at the DCISC fact-finding meeting on November 14 & 15, 2000. The purpose of this discussion was to an update on the project. J. Strickland, Project Manager of the Used Fuel Storage Project, presented the overall status of the project.

PG&E believes the project is going very well. They are close to making the goal for filing the license application on April 13, 2001 but have not filed yet. However, the NRC Project Manager wants assurance that the License Application includes all information needed by the NRC for review, including the calculations that PG&E was going to submit 30 days later. DCPP will now submit the application around June 1, 2001. Holtec International (dry cask storage system vendor) is also in the process of revising their license. The NRC will review the site submittal first and then review PG&E calculations when Holtec submits their information.

PG&E described the detailed design of the storage facility and the location at the site. The PG&E presentation at the DCISC June, 2001 Public Meeting and the presentation to DCPP Plant Safety Review Committee (PSRC) was also discussed. The presentation to the DCPP PSRC included:

- Overview
- Application Scope
- NRC Regulatory Guidance
- Other Utility Submittals
- License Approach
- Review Process
- Safety Analysis Report
- Accidents Analyzed
- Fires and Explosions
- Tower Collapse
- Transmission Line Strike
- Engineering Status
- Conclusions (No significant hazards considerations)

There will be a final PSRC review before the license application is filed with the NRC. PG&E will have future public meetings to answer any questions.

Conclusion: **It appears that PG&E is making appropriate**

progress with the design, licensing and review of the onsite spent fuel storage facility. It is recommended that PG&E present the status of the Spent Fuel Storage Facility at the DCISC June, 2001 Public Meeting.

3.8 Probabilistic Risk Assessment Program

The DCPP Probabilistic Risk Assessment (PRA) Program has been reviewed by the DCISC at previous fact finding meetings and Public Meetings. The purpose of this review was for PG&E to present the status of the PRA Program. Ken Bych, PRA Supervisor, gave the DCISC team a summary of the DCPP PRA Group.

The PRA Group continues to progress in the new NRC risk informed era. The group presently has three full-time qualified engineers and a supervisor. Their routine support activities are model configuration control, risk assessments for Operations, the Maintenance Rule for Engineering, and risk-informed applications for management.

Progress that has been made is as follows:

1. They are in the process of completing their second model update in two years
2. The PRA Group has undergone Westinghouse Owners Group (WOG) peer certification with a successful outcome
3. DCPP has an integrated model for seismic, fire and internal events including flooding
4. The PRA Group received high scores on the Cultural Survey
5. DCPP submitted RI-ISI (risk informed - in service inspection of piping) to the NRC in December, 2000 and January, 2001, and expects approval in late 2001
6. They have developed a risk-ranking tool for reliability improvement projects
7. They have submitted a PRA AOT (allowed outage time) for CCP 2-1 to the NRC and received approval
8. They are presently developing the next generation of ORAM-SENTINEL
9. DCPP was the first plant to undertake NRC benchmarking on SDP (Significant Determination Process) Phase II

PG&E reported that the NRC said that DCPP had one of the best PRA Groups in the industry. The NRC reported this after their benchmarking. DCPP PRA Group presently does not need to use ALTRAN Corp., a PRA consultant, for support of PRA activities.

They use PL&G, another PRA consultant, to assist with any questions involving the PRA model. Their future plans call for evaluating the priority of the next PRA-AOT application for the second half of 2001 (diesel generators or one ECCS SSC). The development of a Shutdown & Transition model has been deferred to 2002.

Conclusion: It appears that DCPP has been successful in staffing and developing the PRA Group at the site. The PRA Group is also supportive of daily plant activities and has prepared themselves to work in the new NRC risk-informed era.

3.9 Generation Vulnerability Identification Team

Aging Management has been a topic of discussion at many fact-finding meetings and Public Meetings. The program has not been progressing as PG&E had originally planned. Ken Bych, PRA Supervisor, discussed with the DCISC team what DCPP is doing in the area of aging management.

DCPP has had seven or eight aging related failures of equipment in the last year that impacted outages, generation or forced outages. All were caused by balance of plant equipment. The Integrated Problem Response Team (IPRT) approach was sanctioned by the DCPP Management Team to address the lost generation. DCPP established a Generation Vulnerability Identification Team (GVIT) in late 2000 consisting of 12 members and sponsored by the Director of Engineering and Maintenance. The original scope of the work was:

- Focused on identifying potential generation losses from equipment failures that can exceed one full day of generation, or a greater than 10% derate for more than one day.
- Enhance/create a process for longer-term reliability or aging management issues that merit funding.
- Provide recommendations and solutions to management on resources, tools, and process changes.

This will be phase one. They will make a decision about aging management after completion of recommendations based on phase one.

The majority of the work has been completed, and the final report will be out by June 30, 2001.

Conclusion: It appears that DCPP is taking a positive approach in addressing their problems on loss of generation from aging equipment. DCISC should review the final Generation Vulnerability Identification Team (GVIT) report after it is issued.

3.10 Establishment of Priorities for Operators

The DCPP Operations Manager, Paul Roller, and G. Anderson, Day Shift Supervisor, discussed with the DCISC Team the establishment of priorities for the operators. Operations management has been meeting with the operating crews since August, 2000 to present these priorities.

Nuclear and personnel safety is the most important priority for the plant and this is being stressed to all employees in Operations. The Operations Manager has visited other plant control rooms to observe professionalism of the operations crews. The Shift Manager has also taken some of the operating crew to other plants to observe operations. Operations management is working with the operating crews to improve professionalism in the control room including improvement the dress of the employees. The Operations Section Policy on "Expectations for Nuclear Operator Watchstanders" was also discussed. All Shift Managers have agreed to sign off on this policy.

The scheduling of work was reviewed. The Asset Teams and Operations have been working well together to prioritize the work. Maintenance has been meeting schedule about 90% of the time. The rolling 12-week schedule for STPs has also been working well.

Operations tries to make schedules within reasonable cost. Shift Manager and Shift Supervisors make the decision whether work can be deferred.

The last storm season led to bringing both units down to 20% power. The decision to bring the units down was based on what was best for plant safety, not what State power load was, energy needs, cost or anything else.

DCPP stated that the PG&E bankruptcy has not had any impact on employees. They continue to communicate all information to the employees on PG&E financial status. They also feel that morale

in the Operations and the leadership team has improved in the last year.

Conclusion: By making nuclear safety the highest priority, it appears that DCPP continues to stress the proper priorities to the operating crews and is working on improving professionalism in the control room.

3.11 Security Response/Reaction to QA Security Audit

Ron Todaro, Security Services Manager, reviewed with the DCISC Team the Security response to the NQS audit of Security. NQS recommends that Security use the Plant Quality Program to identify and correct problems.

Security has agreed to two other NQS-recommended changes:

1. Issues dealing with Equipment Problems - Security will now write ARs on all equipment problems and use a trending program.

2. Issues dealing with people, process & procedures - Security has not been using root cause analysis on all of the low-level events. Security will set certain threshold levels at which they will write ARs, but will not write them for every logged event. They will do trending on all the logged events.

NQS recommends that Security eliminate the Security Review Group process and utilize plant corrective action programs with NCRs and QEs as applicable. Security is working with NQS on this matter, but has not agreed to it at this time.

The Security Manager also discussed NRC developments in the Security Area. The Utility Security Working Group is working with NEI to resolve these issues with the NRC.

Conclusion: It appears that Security has been responsive to most of Nuclear Quality Service's (NQS) audit recommendations and is working with NQS to settle the final remaining issue. DCISC will follow up on these issues at a future fact-finding meeting.

3.12 System Review - Component Cooling Water (CCW)

The DCISC Team has reviewed various systems at previous Fact-Finding meetings and at Public Meetings. This discussion was a continuation of the system reviews. D. Hromyak, System Engineer, reviewed the status of the Component Cooling Water system. He first reviewed the System Health Report for the first quarter of 2001. The System Health Report lists information on:

- Performance Indicators
- Performance Indicators Discussion
- SSC's in Maintenance Rule (MR) a(1) Status
- Scheduled Major Maintenance or Modifications
- System Long Term Plan's (LTP's) Requested or Approved for Current Year
- NRC Issues/Self-Assessments/Engineering Analysis

PG&E reported that the overall condition of CCW system is good, based on the System Health Report.

All System Engineers are to have a System Health Report ready for each system before start of 2R10 (May, 2001). The System Engineer will then show these reports to Operations Department to get them to use it. The System Engineer reported that the System Health Reports are presently being used by the Engineering Department but do not get much use by the other Departments.

The System Notebooks were also discussed. These books document the monthly formal system walk downs, the weekly tour (looking at the plant) and the LTP. The System Engineer reviewed the LTP for this system. The plan consists of:

1) LTP Summary which lists the item number, budget year, approximate cost, item description, status and date of status.
2) Appendix A - Detailed information on each item.
3) Appendix B - Excluded/Declined/Completed LTP Items

Conclusion: It appears that the System Health Reports and the Long Term Plans are useful in determining the condition of the system and planning long term maintenance or modification on the system. From information reviewed on the System Health Report, the Component Cooling Water System appears to be in good condition.

Recommendation: It is recommended that DCPP System Engineering develop a plan for how these reports should be utilized by Operations and Maintenance.

3.13 Discussion with Manager, Radiation Protection

The DCISC Team met with Bob Hite, Manager Radiation Protection, for an informal discussion of the activities of the Radiation Protection Group. Mr. Hite reviewed the performance of the Radiation Protection program before, during and after 1R10. The staff of the Radiation Protection Dept. works with the outage planners and persons responsible for detailed planning of tasks prior to the outage.

The DCISC Fact-Finding Team was favorably impressed with Mr. Hite's discussions. The meeting was during an informal lunch, and the discussions were very open and relaxed. Mr. Hite has years of experience working with ALARA and understands how it can be a useful tool. He recognizes that good planning and scheduling are important in achieving low collective doses. Careful review of task plans provides assurance that individuals are not subjected to exposures that approach regulatory limits.

Several steps have been taken to reduce personnel exposure. Meetings or discussions that do not need to be in containment are scheduled to be held outside containment. Plans are reviewed to minimize the number of changes of protective clothing. This reduces risks of contamination and can reduce costs. The chemical treatment of cooling water that the plant has adopted again demonstrated that background radiation can be reduced in the plant.

The DCISC Team Member inquired about the way collective dose numbers are now used as a Performance Indicator. This follows up on earlier discussions. Based on this Fact-Finding Meeting, the DCISC recommends that we schedule a future discussion of the use of collective dose as one of the major nuclear power plant performance indicators.

Conclusion: It appears that the DCPP Radiation Protection Group is performing very well with the ALARA Program to plan and schedule work to obtain low radiation dose. The DCISC should schedule some time for a future discussion of the use of collective dose as one of the major nuclear power plant

performance indicators.

3.14 Nuclear Quality Services (NQS) - Status of Improvements from last Biennial Audit and NQS Self-Assessment

Every two years, NQS performs a Self-Assessment of key NQS activities. Dave Taggart, Manager - NQS Engineering. Procurement & Maintenance, presented the status of improvements from the 1999 NQS Biennial Audit and the results of the 2000/2001 NQS Self-Assessment.

The corrective action for the three audit findings and the ten recommendations from the 1999 NQS Biennial Audit have been completed.

The year 2000 assessment was begun in December 2000 and completed in April 2001. The scope of the Self-Assessment was:

- Internal Audit Performance
- Audit Scheduling
- Personnel Qualifications
- QA Program

The summary of the preliminary report results were:

1. Internal audit process and implementation meet and in some cases exceed Regulatory Requirements, and overall performance is rated as good and very effective.
2. Oversight qualifications meet requirements.

The three findings were:

1. Not all audit reports include a section on past findings.
2. Need to revise FSAR Chapter 17 for receipt inspection via 10CFR50.54(a).
3. Need to improve master audit schedule for subject and terminology consistency with DCPP QA Program (Chapter 17) and clarity with frequency requirements for continuous audits.

There were nine recommendations and four strengths included in the report. NQS stated that the three findings were not significant ones. The report also noted that 1) audits were probing, performance-based, technically oriented, and monitored significant emergent issues and program changes, 2) audits contributed to plant performance by identifying significant issues and influenced improved performance of

audited organizations, and 3) audit scopes were comprehensive and covered regulatory requirements.

The role of the NSOC in selecting the scope of the NQS independent audit was also discussed. NSOC reviews the scope of these audits after NQS determines the scope, but has had little input into the process. The DCISC stated that they thought that NSOC should take a more active role in determining the scope of the annual audit of NQS to give the audit more independence.

Conclusion: It appears that NQS is performing Self-Assessments in a timely manner and the scope of the audits seems to be satisfactory.

Recommendation: It is recommended that NSOC take a more active role in determining the scope of the audit of NQS to give the audit more independence.

4.0 CONCLUSIONS

4.1 It appears that PG&E is doing a good job of keeping the public informed about Diablo Canyon and PG&E items of interest.

4.2 The results of the 2000 Synergy Safety Culture Survey appear to have been positive for DCPP with improvements in all but a few areas. PG&E has communicated the results of the survey to all employees and is developing an action plan to address areas that need improvement. The DCISC should review the action plan and monitor its implementation.

4.3 The results of the recent INPO evaluation of DCPP appear to be very favorable. DCPP continues to receive very good reports from INPO.

4.4 It appears that the method DCPP has for tracking the performance of the accredited training & instructor training programs is effective and involves both the training and line organizations. The DCISC should review the Performance Plan Review for the remaining accredited training programs in the fall of 2001 and all of the Performance Plan Reviews in 2002 to determine the status of the improvements that DCPP identifies.

4.5 It appears that DCPP has the self-assessment program well

implemented and are producing about the right number of assessments to meet their goal. They are also taking action to improve the quality of the assessments, including the reports. They expect to have the program fully implemented by the end of 2001. It is recommended that DCISC continue to review the program and some of the self-assessment reports at a fact finding meeting in second quarter of 2002.

4.6 There do not appear to be any indications that the bankruptcy filing by PG&E has had any adverse impact on safety or operations at DCPP.

4.7 It appears that PG&E is making appropriate progress with the design, licensing and review of the onsite spent fuel storage facility. It is recommended that PG&E present the status of the Spent Fuel Storage Facility at the DCISC June 2001 Public Meeting.

4.8 It appears that DCPP has been successful in staffing and developing the PRA Group at the site. The PRA group is also supportive of daily plant activities and has prepared themselves to work in the new NRC risk-informed era.

4.9 It appears that DCPP is taking a positive approach in addressing their problems on loss of generation from aging equipment. DCISC should review the final Generation Vulnerability Identification Team (GVIT) report after it is issued.

4.10 By making nuclear safety the highest priority, it appears that DCPP continues to stress the proper priorities to the operating crews and is working on improving professionalism in the control room.

4.11 It appears that Security has been responsive to most of Nuclear Quality Service's (NQS) audit recommendations and is working with NQS to settle the final remaining issue. DCISC will follow up on these issues at a future fact-finding meeting.

4.12 It appears that the System Health Reports and the Long Term Plans are useful in determining the condition of the system and planning long-term maintenance or modification on the system. From information reviewed on the System Health Report, the Component Cooling Water System appears to be in good condition.

4.13 It appears that the DCPP Radiation Protection Group is performing very well with the ALARA Program to plan and schedule work to obtain low radiation dose. The DCISC should schedule some time for a future discussion of the use of collective dose as one of the major nuclear power plant performance indicators.

4.14 It appears that NQS is performing Self-Assessments in a timely manner and the scope of the audits seems to be satisfactory

5.0 RECOMMENDATIONS

5.1 PG&E should identify and take action to improve the employees' perception of the Employee Concerns Program.

5.2 It is recommended that System Engineering develop a plan for how these reports should be utilized by Operations and Maintenance.

5.3 It is recommended that NSOC take a more active role in determining the scope of the audit of NQS to give the audit more independence.

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE REPORT

Report on Fact Finding Meeting at DCPP On May 1-2, 2001

by

E. G. de Planque, Member, and R.F. Wardell, Consultant

1.0 SUMMARY

The results of the May 1-2, 2001 fact-finding trip to the Diablo Canyon Power Plant in Avila Beach are presented. The subjects addressed and summarized in Section 3 include:

- Changes in Radiation Protection Philosophy and Organization
- Radiation Protection Preparations for Outage 2R10
- Radiation Control Area Tour
- Emergency Preparedness Radiological Processes & Tools
- Communicating Radiological Information to the Public
- STARS Update
- 2000 Synergy Comprehensive Cultural Assessment Results
- Nuclear Safety Oversight Committee Meeting

The conclusions and recommendations for each subject are summarized in Sections 4 and 5.

2.0 INTRODUCTION

This fact finding trip to the DCPP was made to evaluate specific safety matters for the DCISC. The objective of the safety matter review was to determine if PG&E's performance in these areas is appropriate and if any of these areas revealed observations which are important enough to warrant further review, follow-up, or presentation at a public meeting. These safety matters include follow-up and/or continuing review efforts by the Committee as well as those identified as a result of reviews of various safety related documents.

3.0 DISCUSSION

3.1 Changes in Radiation Protection Philosophy and Organization

The DCISC Fact-finding Team met with Bob Hite, Manager of Radiation Protection. The DCISC first met with Mr. Hite in October 2000 (Reference 6.1), shortly after he joined PG&E at DCPP. The purpose of this discussion was to review changes to the DCPP Radiation Protection (RP) philosophy and organization which Mr. Hite had made.

Mr. Hite reported the following current organizational structure issues:

- Diffuse supervisory accountability - there were too many direct reports to some supervisors (e.g., the General Foreman)
- Rad Engineers (individual contributors) report directly to the Manager of RP
- Rad Engineers not organizationally tied to plant process teams and production goals
- High Impact Teams had been set up to follow processes but cross supervisory boundaries

These issues and loosely defined program roles were leading to overlaps and knowledge disconnects between personnel in field implementation.

Future structure goals include:

- Process-based organization aligned with Operations and Maintenance organizations
- Supervisory accountability for process ownership
- Clearly-defined, non-overlapping roles and responsibilities tied to Asset Teams such as
  - Radwaste/Decon
  - Maintenance Asset Team Support
  - Operations Support
  - RP Programs Support
- Improved RP planning, e.g., Maintenance planning model and a full-time outage RP planner to help reduce dependency on contractors.
- Implement new structure following Outage 2R10

The desired structure would include improved supervisory development with rotations into Quality Assurance (QA), Shift Technical Advisor (STA) rotation for Rad Engineers, possible RP Training rotation, and RP supervisor rotation. The improvements would also include a better performance evaluation system for individual contributor and supervisor advancement. Mr. Hite planned to implement these changes following Outage 2R10.

The DCISC Team was interested in reviewing the personnel radiation dose distributions for 1R9 and 1R10 and to discuss how DCPP planed to reduce individual doses; however, the data were not available. Mr. Hite will have the information sent to the DCISC.

Conclusion: DCPP has had what appeared to the DCISC in the past to be an acceptable Radiation Protection (RP) Program, although cumulative radiation doses have been higher than industry averages. This was partly due to abnormally-high radiation levels in Outage 1R9. The planned programmatic and organizational changes appear promising in improving RP at the station. The DCISC will continue to follow DCPP RP results.

3.2 Radiation Protection Planning for Outage 2R10

The DCISC Team discussed RP plans for upcoming Outage 2R10 with Mr. Hite. In addition to the normal plans, there were the following changes:

- Simplified Radiological Posting - previous signs identifying High Radiation Areas (HRAs) were too confusing because the layout was not standardized and contained many different instructions and labels. The revised signage (Attachment 1) consisted of three easy-to-comprehend pieces of information, always in the same order:

  1. Contamination levels (C)
  2. Airborne radiation levels (A)
  3. Radiation dose rates (R)

  Each of these "C.A.R." labels is color-coded for quick identification and understanding. The color-coding scheme is as follows:

  - Green: no significant radiation hazard exists

- Yellow: the area has radiation levels, which require special clothing, or instructions - check these or contact RP.
- Red: the area has radiation levels requiring RP support.

- Work briefings moved outside of Containment - previous in-Containment briefings were adding to doses, and moving them to low-dose areas will help to lower doses.
- Hot Particle Control emphasis changed - the previous high emphasis on Hot Particle Control was changed to overall Contamination Control, which includes all radioactive contamination.
- Improvements in protective clothing footwear - a change from the integral nylon/rubber bootie to a separate nylon bootie and rubber overshoe will be safer on slippery surfaces and will help reduce contaminations.

Conclusion: In addition to the normal Radiation protection planning for Outage 2R10, DCPP has made what appear to be simple, logical and effective changes to radiological postings, lower-dose work planning locations, contamination control, and protective clothing.

3.3 Radiation Control Area Tour

The DCISC Team toured portions of the DCPP Radiation Control Area (RCA) with Mr. Bob Hite. The purpose of the tour was to observe existing and improved radiation area controls. The tour included the following areas:

- Steam Generator (SG) Outage Primary Telemetry & Remote Dose Monitoring Facility - a mobile office with equipment to remotely monitor SG inspection activities and related radiation fields.
- 140-foot elevation Unit 2 Containment RCA Access Control - main access control point for ingress and egress to the Containment.
- 85-foot elevation RCA Auxiliary Building Access Control Point - main access control point for ingress and egress to the Auxiliary building. The group was processed in and out of the RCA here, including logging into the RCA access control system, receiving

RP instructions, receiving alarming dosimeters, and receiving hand and foot radiological screening upon exiting. DCPP had added dosimetry-system-controlled turnstiles to prevent personnel from entering the RCA without properly logging into the system.

- 85-foot elevation Unit 2 Containment Penetration Room
- Several equipment rooms

The DCISC Team observed numerous examples of (and explanations of) the new radiological posting system, remote radiation monitoring and ALARA cold areas (low dose rate waiting areas). All aspects of RP controls observed in the RCA appeared satisfactory and effective.

Conclusion: It appeared to the DCISC team touring the DCPP Radiation Control Area that effective use was being made of radiological posting, monitoring, and controls.

3.4 Emergency Preparedness Radiological Processes & Tools

The DCISC Team met with Mark Lempke, Supervisor of Emergency Preparedness at DCPP to review DCPP dose projection calculation methods and assessments used in emergency planning. The DCISC last reviewed an emergency exercise in March 2001 (Reference 6.2) in which the Radiological Assessment Group (UDAC) was successfully exercised.

Because of less-than-desired performance in 2000 as documented in a Non-conformance Report (NCR), the UDAC Group membership had been replaced with more knowledgeable and skilled personnel and given improved training. On-site and off-site dose assessment capability had also been moved out of the Technical Support Center (TSC) and into the Emergency Offsite Facility (EOF) to consolidate the function and place where it was most needed.

DCPP utilizes two computer programs to perform its dose projections: EARS (Emergency Assessment and Response System) and MIDAS (Meteorological Information and Dose Assessment System). EARS is supplied radiological data by the Radiation Monitoring System comprised of 80 radiation monitors surrounding the plant. It uses these data to calculate time-dependent release rates, which are input to MIDAS, along with meteorological data from the Meteorological Data Acquisition System. MIDAS is a terrain-specific atmospheric dispersion model which calculates resultant downwind dose rates and doses

at onsite and offsite locations within a 50-mile radius of DCPP.

These programs have been adapted to the unusually complex terrain surrounding DCPP, e.g., ocean, land and mountains. The programs have been verified by dye tests and have performed well in emergency exercises. The results of the calculations in the programs are used to recommend protective action levels (PALs) to San Luis Obispo County to advise the public regarding sheltering and/or evacuation following a plant event. DCPP has been pleased with the performance of EARS and MIDAS. Lempke reported that EARS and MIDAS are being upgraded to a Windows format for more ease of use. DCPP is also adding an off-line version to be used in training.

Conclusion: DCPP is satisfied with the programs for calculating dose projections during emergency situations and is upgrading them for more ease of use.

3.5 Communicating Radiological Information to the Public

Mr. Lempke reviewed improvements to communications with the public concerning radiological information. DCPP had some problems with conveying accurate information to the public during its May 2000 unusual event (Reference 6.3) and during the May 10, 2000 emergency exercise (Reference 6.4).

The unusual event included a fire which caused the plant to shut down, utilizing its main steam safety relief valves to relieve steam pressure. The NRC had made a news statement that radioactive steam had been released, resulting in confusion about what constituted a radiological "release" above and beyond normal approved releases.

The problems in the emergency exercise occurred at the mock public/news media briefing at the Joint Media Center. The county and PG&E plant spokespersons did not provide readily understandable radiological information for the public regarding calculated/actual dose levels and their effects and information on sheltering.

Mr. Lempke stated that DCPP was working on the definition of a radiological "release" specifically attributable to an event. NRC is also working on their definition. DCPP is selecting the appropriately skilled persons with radiological knowledge to be added in the EOF. Such a person will hear first-hand plant

and radiological conditions resulting from an event and will be the DCPP spokesperson to the news media and public. Specialized speaker training will be provided. It is anticipated the improvements will be completed by the end of 2001.

Conclusion: DCPP continues to work to improve its radiological communications with the news media and public. The DCISC should follow-up on the results at the end of 2001.

3.6 STARS Update

The DCISC Team met with Rod Curb, Executive Director of the Strategic Teaming and Resource Sharing (STARS), for an update on progress and upcoming decision points. STARS is an effort to consolidate the resources of five similar nuclear stations to achieve economies of scale and greater reduction of risk. The stations are Diablo Canyon, South Texas, Comanche Peak, Callaway and Wolf Creek. The DCISC last reviewed STARS at its December 14, 2000 fact-finding meeting (Reference 6.5).

The primary objectives of STARS are as follows:

- Strengthen Industry Leadership with greater regulatory influence and common focus on nuclear issues.
- Increase Market Value by having a positive impact on corporate market valuations and a platform for future revenue growth.
- Achieve Risk Reduction by sharing of technical and management best practices, a common approach to risk initiatives, increasing technical depth, and a team response to emergent member issues.
- Improve Organizational Performance with greater management and technical skill bench strength, improved staff retention via expanded career options, and improved ability to attract talent.
- Enhance Economic Performance with core process improvements, procurement and contract savings and establishing centers of excellence.

Governance has been established, consisting of a Steering Committee made up of the five station Chief Nuclear Officers. Reporting to the Steering Committee is a Management Council of five station management representatives and an Executive Director (DCPP's Rod Curb). Project and functional teams,

reporting to the Executive Director, carry out projects approved by the Steering Committee. STARS functional and special teams have been established in the following areas:

- Outage Coordination
- Supply Chain
- Regulatory Affairs
- Strategic Planning
- Engineering Programs
- Fuels Services
- Financial Controls
- Information Technology
- Communications
- Legal interface
- Human Resources
- Self-Assessments

Work in progress includes the following:

1. Labor-Sharing Oversight - develop a formal, structured process to share utility employees and an annual labor-sharing plan.
2. Digital Control Systems Upgrades - utilize a common digital control systems vendor and jointly supporting DCS upgrades, including sharing costs of development, engineering and implementation.
3. Refueling Services - evaluate common contracts for refueling services and reactor vessel head work by implementing a joint refueling team "center of excellence".
4. Fuel Services - examine opportunities of reducing fuel costs by joint nuclear fuel procurement, inventory and cash flow management, core design and high-level waste disposal.
5. Common In-Processing - establish a common access and badging system utilizing member best practices to reduce total time of processing and permit the efficient sharing of outage workers from one site to another.
6. Control Room Habitability - determine the best method of cost effectively meeting the control room emergency zone design basis, incorporating risk-informed elements where practicable, and actively participating with the Nuclear Energy Institute (NEI) and NRC. Participate in a test with Palo Verde Nuclear Station.
7. Risk-Informed ISI Project - develop a common, risk-informed Inservice Inspection (ISI) Program to reduce the number of inspections to save cost and worker radiation exposure.

8. Common Event Reporting Program - develop a common approach to NRC event reporting by creating a best set of programmatic controls for ensuring that event reporting is performed in a consistent manner at the five stations.
9. 10CFR50.59 Project - establish standard and consistent licensing processes, procedures and training at the five stations for the new NRC 10CFR50.59 rule.

The five Chief Nuclear Officers met on April 27 and agreed on a collaborative document for moving forward with STARS. The venture has heard that both INPO and NRC are interested in considering dealing with the five stations "as one" to the degree possible. Mr. Curb believed that all the shared initiatives were going well. In the financial area, use of common contracts appeared to be saving 7-10%; however, some vendors were wary due to existing separate contracts (e.g., turbine maintenance). To date the STARS initiative has exceeded its cost savings goals (i.e., over $5 million at the end of 2000) mostly in the supply chain area. There has not been much opportunity for labor sharing during outages because of the similarity of schedules.

STARS stations will be looking more at operating, generation and service companies in 2001. A study will be performed to determine what value exists in this approach. In any event, STARS will continue as an alliance looking to share strengths. The participants will begin looking at pilot programs to determine how they can get the most out of intangibles.

The PG&E bankruptcy has had little or no effect on PG&E's participation in STARS because of the potential for cost reduction; however, there could be an impact on the long-term situation, e.g., development of an operating company. Dave Oatley will be the PG&E STARS Steering Committee Member because Greg Rueger is spending full time on the PG&E bankruptcy.

Conclusion: The DCPP participation in the Strategic Teaming and Resource Sharing (STARS) appears to be continuing as planned, and there has been cost savings as expected. There does not appear to be any adverse impact on nuclear safety.

3.7 2000 Synergy Comprehensive Cultural Assessment Results

The DCISC Fact-finding Team met with Rich Cheney, Supervisor of the Employee Concerns Group, to learn about the

results of the plant-wide safety culture assessment. An earlier DCISC fact-finding team conducted a more in-depth review in April 2001 (Reference 6.6).

The first plant-wide culture survey was conducted in 1998, and the DCISC reviewed its results at its January 21-22, 1999 Fact-finding meeting (Reference 6.7) and its January 28-29, 1999 Public Meeting (Reference 6.8). In 1999 selected organizations were surveyed.

The 2000 survey response rate was improved over the 1998 survey (80.4% vs. 62%). Synergy, the company designing and analyzing the results, compared the results to 12 other plants' surveys to provide an industry ranking.

The following overall results were reported:

- Overall, the DCPP nuclear safety culture (NSC) was rated "good to very good" and was perceived as having improved (+6%) since the 1998 survey.
- The safety conscious work environment was rated "very good to excellent" and was perceived to have improved notably (+7%).
- The Employee Concerns Program (ECP) was rated "adequate to good" and was perceived to have improved moderately (+4%).

It was noted that seven of the eight previous "targeted organizations" (Fire, Safety & Health; NSSS Maintenance; Radiation Protection; NSSS System Engineering; Security Services; General Services; and Technical Support Engineering) showed significant (>10%) or notable (>5%) improvement. One of the eight, Shift Operations, remained steady, except for a decline in the Employee Concerns Program rating. The decline was likely due to lingering concerns about the Operations Shift Foreman who was removed from service in 1998, specifically due to issues related to his employee concerns and to the related Department of Labor report.

More detailed results (i.e., for specific functional organizations and more specific areas of review) were reported; however, these have been reported in the previous DCISC fact-finding report (Reference 6.6).

PG&E's action plans following the survey are as follows:

- Develop an action plan and communications schedule with the Culture Steering Team and management

- Communicate the results and action plans to plant management
- Communicate the results and action plans to employees via e-mail and site-wide meetings
- Following Outage 2R10, Managers will hold section-wide meetings to discuss results and section action plans

The DCISC fact-finding team asked if there were a correlation between Synergy plant culture survey results and INPO ratings. Although both sets of information are confidential, Mr. Cheney agreed to see if Synergy could make such a determination.

Conclusion: The 2000 Synergy Culture Survey results appeared positive for DCPP with perceived improvements in all but a few areas. PG&E is developing an action and communications plan to address results and issues. The DCISC should continue to monitor the implementation of this plan.

3.8 Nuclear Safety Oversight Committee

The Fact-finding Team attended the DCPP Nuclear Safety Oversight Committee (NSOC) at one of its regular meetings. The agenda is included as Attachment 2. The DCISC last observed an NSOC meeting in November 2000 (Reference 6.9) at which time it concluded that NSOC was satisfactorily meeting its commitments.

All NSOC Members were present, except Greg Rueger, who was on a full-time assignment to direct the PG&E bankruptcy. Larry Womack, Vice-President of Engineering, chaired the meeting. There were three outside members: continuing Member Jack Martin (nuclear consultant), and new Members Mike Blevins (Vice-President of the Comanche Peak Station) and Clay Warren (Vice-President of Wolf Creek Station).

Following a welcome and introduction by Larry Womack, the following topics were discussed:

1. INPO Results - Chuck Belmont handed INPO evaluation reports to the NSOC Members and provided a summary of the evaluation results. A description of corrective actions was presented. The NSOC will discuss this item at its next meeting. DCPP will also augment its self-assessment program in the areas of the findings.

2. Bankruptcy Impact - DCPP considers the bankruptcy "business as usual" regarding plant operations and management. The plant has its full 2001 authorized budget and expects the same in 2002. The only issue has been a potential short supply of some supplies, such as nitrogen gas. Management provides daily and weekly communications within the plant to keep employees current. There are weekly updates for the NRC, and there have been no adverse safety effects. There had been pressure from the Governor's office to not reduce power during ocean storms; however, PG&E will follow their procedures to reduce power when necessary to maintain plant safety. DCPP has analyzed the 230kV offsite emergency power source and believes it is adequate.

3. NSOC Re-organization - Larry Womack discussed potential re-organization of NSOC. They were reviewing whether to continue the Humboldt Bay Subcommittee due to the nuclear fuel being removed and stored in dry cask storage but have not reached a decision. The Oversight and Corrective Action Subcommittee would remain. Human Performance and Equipment Performance are up for consideration and discussion.

   Most significantly, STARS will have a Nuclear Safety Review Board initiative team which Mr. Womack will lead. The STARS Team will review the regulatory compliance requirements to attempt to eliminate the requirement for the Presidenmt's Nuclear Advisory Committee (PNAC) and NSOC but retain the function and combine resources for STARS plants. The retained function would include human performance, corrective action, operational reliability/review, etc. He would hope to shift emphasis away from reviews of 10CFR50.59 documents, NRC inspection reports, etc. to more operational improvements. Mr. Womack anticipates having a proposal for the STARS Chief Nuclear Officers in about six months but maintain the status quo for one year. (The DCISC Team decided to ask Mr. Womack to discuss these plans in the upcoming June Public Meeting).

4. Corrective Action Oversight and Assessment Subcommittee - Jack Martin and Jim Tompkins reviewed the following items for this new NSOC subcommittee:

   A. NQS Audits and Assessments - the first quarter 2001 work products were reviewed. Two audits were considered particularly good: Audits of Operations Activities Outside the Control Room and Audit of Maintenance and Construction Activities. The design and installation of

the containment sump modification was considered excellent. NSOC observations were (1) audit findings and their significance were not always summarized well, (2) exit interviews were frequently poorly attended, (3) emphasis should be given to using peers from excellent plants when reviewing basic standards and work processes, and (4) due to a number of audit findings, Maintenance and Engineering management should consider increasing engineering involvement in problem resolutions and plant activities. NSOC made assignments for action on these items.

B. Self-Assessment - the subcommittee reviewed the self-assessments for the last two quarters. Although the self-assessment program was being widely implemented, it was not evident that the assessments were being used for effectively determining the extent of problems and fixing them. The subcommittee believed that there should be more focus and integration with management observations, human performance and the Corrective Action Program.

C. Corrective Action - the CAP appeared sound and appropriate, especially with updates being implemented to improve trend analysis. Compared to other plants, the CAP process is more complex and is lagging the industry in use of technology.

D. Subcommittee Summary - The subcommittee believed and recommended that self-assessment, corrective action, management observations, ETR (Event Trend Records) trends, and human performance be considered as an integrated whole. Also recommended was the addition of heads of the functional plant areas (Operations, Maintenance, and Engineering) as NSOC Members. Mr. Womack will develop an approach to these recommendations for discussion at the next meeting. (The DCISC believed this subcommittee action was well-researched and a good model for other NSOC actions. The DCISC should continue follow this item).

5. NSOC Summary Reports

A. Plant Performance Indicators - plant performance indicators were presented. The following were of most significance:

- Unit 1 low pressure turbine experienced a vibration following 1R10 and was balanced. It had potentially thrown a blade.

- Unit 2 electrical generator hydrogen leakage through a cracked weld was repaired in December.
- Both units were reduced to 20% full power during ocean swells.
- NRC indicators were all green.
- The human performance trend was flat and barely making INPO top quartile. Event-free days were at 33, below the goal of 60 days.

An outside Member stated that the plant needed to lower human errors through trending, cause-code analysis and benchmarking. Mr. Womack agreed, stating that more focus is needed on low-level errors, which can lead to significant errors. (The DCISC should follow this item).

B. Plant Staff Review Committee Summary

There was nothing significant to report.

C. Safety Evaluations

There were no significant problems. Safety evaluation reviews indicated that the quality of some Licensing Basis Impact Evaluations (LBIEs) had degraded in that they needed amplifying/clarifying comments as a basis for answers. This will be emphasized along with the change to the new 10CFR50.59 rule implementation on August 1, 2001.

D. Humboldt Bay Power Plant (HBPP) & DCISC Status

- HBPP was stable and planning for dry cask spent fuel storage.
- There was nothing significant to report on the DCISC
- PG&E expects to submit the License Amendment Request (LAR) under NRC Regulation 10CFR72 for DCPP dry cask storage mid-2001. There should be no problem meeting the 2006 current loss-of-storage date. Re-racking of the existing pools is the conceptual back-up plan.

6. License Amendment Request - PASS Elimination

A request was presented for the elimination of the Post-Accident Sample System (PASS). The system had been added following the Three Mile Island accident. It was no longer needed because other on-line instrumentation is available to monitor core damage in real time rather than after the

fact. NRC had already approved a similar request for Wolf Creek and Callaway plants. NSOC approved the request. (The DCISC should request a presentation of this request at its next public meeting).

7. Synergy Survey Results

Results of the 2000 Synergy Comprehensive Cultural Assessment were presented. (These results were essentially the same as reported above in Section 3.7). Discussion consisted mainly of questions for clarification.

8. Integrated Assessment Report

Dave Oatley, Vice-President & Manager of DCPP presented the results of the Integrated Assessment Report (IAP). Key performance areas were as follows:

- Human performance error rate had increased
- Personal safety practices had improved
- Equipment failures had increased
- Plant standards and management expectations had not been consistently met or enforced

Areas being monitored were:

- Low-level events (improvement was warranted)
- Emergency response organization and exercises (improving)
- Maintenance training issues - augmented and consistent enforcement of management expectations needed
- High radiation area violations have been occurring
- Pre-outage milestones have not been consistently met
- Non-outage ALARA and Operations workarounds have come off the watch list

Positive Performance Areas were:

- Action Request Review Team (ARRT) effectiveness
- Operations and Control Room formality
- Management communications during the California energy/financial crisis
- Housekeeping and materiel condition

NSOC Members asked questions for clarification and provided helpful suggestions about methods to improve and about other plants which have good programs.

9. Human Performance

Jim Becker, Station Manager, provided an update on human performance. Based on analysis of error causes, the Human Performance Steering Committee (HPSC) believed that there were three key behaviors, which would have prevented many human errors at DCPP. These were (1) 3-way communication, (2) effective tailboards, and (3) self-verification. This was substantiated by INPO.

Human performance error rate showed improvement in early 2000 but has degraded beginning in third quarter 2000. There have been four recent Event-Free Day "clock resets" due to a more frequent error rate. Lack of proper self-verification has been the primary cause of human error.

A self-assessment was conducted in March 2001 with an interdisciplinary team and an industry expert. Recommendations included the following:

- Strengthen management observations
- Standardize/define behaviors (typically the 3 behaviors: 3-way communication, effective tailboards, and self-verification.
- Reinforce the Personnel Accountability Model
- Stay the course

The HPSC established a one-year plan with the following aspects:

- Augmented human performance training for Operations, Maintenance, Radiation Protection and Engineering
- Goal-setting
- Self-assessment
- Communications
- Observations
- Rewards for successful Event-Free Days

NSOC agreed that these were the correct actions, and they were high priority.

10. 2R10 Outage Plans

Jim Becker presented DCPP's plans for Outage 2R10, which had just begun. The motto for the outage was "Rising Above the Sea of Uncertainty". High-level goals for the outage were as follows:

- ALARA Goal - 109 person-Rem
- Safety Goal - no disabling injuries
- Duration Goal - 25 days, 19 hours
- Cost Goal - $29.1 million

Major items to be accomplished in the outage were

- Low pressure turbine rotor replacement
- Main generator inspection
- CT demount
- Feedwater pipe replacement
- Reactor coolant pump cable replacement
- Control rod drive mechanism cable replacement
- Containment recirculation sump screen modification
- Intake traveling screen power upgrade
- 12kV bus work

Outage challenges included the following:

- Dose rates
- High radiation area control
- Vacuum refill/reactor vessel level instrumentation
- Containment access
- Fuel work
- Operations personnel scheduling
- Bankruptcy implications

There were no significant NSOC questions or comments.

The DCISC Team observed discussion around each agenda item. Much of it appeared to be questioning for information/ education and helpful suggestions for benchmarking or improvement. With few exceptions from one outside Member, there was little in the way of challenges to current thinking and processes. This could have been due to the newness of two outside Members. An example of good investigation, analysis and expectation by NSOC was the new Corrective Action

Oversight and Assessment Subcommittee (Item 4 above). The DCISC should continue to follow NSOC activities and monitor the planned changes over the next year.

Conclusion: The May 2, 2001 Nuclear Safety Oversight Committee (NSOC) meeting included discussion on significant plant issues, in particular the integration of human performance, corrective action, self-assessments, and management observations to effectively solve chronic plant problems. Discussion was straightforward, actions were assigned, and many suggestions were helpful; however, there were limited challenges to existing thinking and processes. The DCISC should continue to follow NSOC activities and monitor the planned changes over the next year.

Recommendation: The DCISC should recommend to PG&E that both internal and external Nuclear Safety Oversight Committee members express higher expectations of DCPP and take a more aggressive stance in challenging problem-solving and the status quo.

4.0 CONCLUSIONS

4.1 DCPP has had what appeared to the DCISC in the past to be an acceptable Radiation Protection (RP) Program, although cumulative radiation doses have been higher than industry averages. This was partly due to abnormally high radiation levels in Outage 1R9. The planned programmatic and organizational changes appear promising in improving RP at the station. The DCISC will continue to follow DCPP RP results.

4.2 In addition to the normal Radiation protection planning for Outage 2R10, DCPP has made what appear to be simple, logical and effective changes to radiological postings, lower-dose work planning locations, contamination control, and protective clothing.

4.3 It appeared to the DCISC team touring the DCPP Radiation Control Area that effective use was being made of radiological posting, monitoring, and controls.

4.4 DCPP is satisfied with the programs for calculating dose projections during emergency situations and is upgrading them for more ease of use.

4.5 DCPP continues to work to improve its radiological communications with the news media and public. The DCISC should follow-up on the results at the end of 2001.

4.6 The DCPP participation in the Strategic Teaming and Resource Sharing (STARS) appears to be continuing as planned, and there has been cost savings as expected. There does not appear to be any adverse impact on nuclear safety.

4.7 The 2000 Synergy Culture Survey results appeared positive for DCPP with perceived improvements in all but a few areas. PG&E is developing an action and communications plan to address results and issues. The DCISC should continue to monitor the implementation of this plan.

4.8 The May 2, 2001 Nuclear Safety Oversight Committee (NSOC) meeting included discussion on significant plant issues, in particular the integration of human performance, corrective action, self-assessments, and management observations to effectively solve chronic plant problems. Discussion was straightforward, actions were assigned, and many suggestions were helpful; however, there were limited challenges to existing thinking and processes. The DCISC should continue to follow NSOC activities and monitor the planned changes over the next year.

5.0 RECOMMENDATION

The DCISC should recommend to PG&E that both internal and external Nuclear Safety Oversight Committee members express higher expectations of DCPP and take a more aggressive stance in challenging problem solving and the status quo.

6.0 REFERENCES

6.1 "Diablo Canyon Independent Safety Committee Eleventh Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2000 - June 30, 2001", Approved October 17, 2001, Exhibit D.2, Section 3.16.

6.2 Ibid., Exhibit D.6, Section 3.17.

6.3 Ibid., Exhibit D.1, Section 3.9.

6.4 "Diablo Canyon Independent Safety Committee Eleventh Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 1999 - June 30, 2000", Approved September 14, Exhibit D.11, Section 3.1.

6.5 "Diablo Canyon Independent Safety Committee Eleventh Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2000 - June 30, 2001", Approved October 17, 2001, Exhibit D.5, Section 3.4.

6.6 Ibid., Exhibit D.7, Section 3.9.

6.7 "Diablo Canyon Independent Safety Committee Eleventh Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 1999 - June 30, 2000", Approved September 14, 2000, Exhibit D.8, Sections 3.3 and 3.4.

6.8 Ibid., Exhibit B.9.

6.9 "Diablo Canyon Independent Safety Committee Eleventh Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2000 - June 30, 2001", Approved October 17, 2001, Exhibit D.3, Section 3.1.

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE REPORT

Report on Fact Finding Meeting at DCPP
On June 19, 2001

by

E. G. de Planque, Member, and H.Cass, Consultant

1.0 SUMMARY

The results of the June 19, 2001 fact-finding trip to the Diablo Canyon Power Plant in Avila Beach are presented. The subjects addressed and summarized in Section 3 include:

- Human Performance Update
- Behavioral Observation Based Safety Process
- Work Processes
- Employee Assistance Program
- Medical Center Update

The conclusions and recommendations for each subject are summarized in Sections 4 and 5.

2.0 INTRODUCTION

This fact finding trip to the DCPP was made to evaluate specific safety matters for the DCISC. The objective of the safety matter review was to determine if PG&E's performance in these areas is appropriate and if any of these areas revealed observations which are important enough to warrant further review, follow-up, or presentation at a public meeting. These safety matters include follow-up and/or continuing review efforts by the Committee as well as those identified as a result of reviews of various safety related documents.

3.0 DISCUSSION

3.1 Human Performance Update

The DSISC team met with Al Jorgenson and Lance Sawyer of the HP department, following up on the visit in December 2000 (Reference 6.1).

The error rate trend was downward, with the highest levels appearing in the middle in both outages. This higher rate is a common trend in other plants, as well, because of the type of work during outages. Operations' rate was highest, because their activity rate goes up by 5-10 times in an outage, with additional equipment in use and the increased number of clearances. Also, because of licensing requirements, operations cannot augment their number with contractors.

"Unknown" errors are attributed to Operations. Investigation and review of procedures is then carried out, but without focus on individual culpability and discipline. The engineering error rate appears relatively low, since latent errors from outages show up only later. At that time, they are re-attributed to their actual date.

During the May 2R10 outage, the overall error rate was 0.9 errors per 100,000 work-hours, which is the desired 12 month average. The cumulative error count was lower than that of the last 2 outages, likely due to more lab simulations being performed in advance. This included classroom work with maintenance mock-ups, providing an opportunity to practice and become familiar with equipment and procedures, and to anticipate possible error situations.

The overall HP plan includes establishment of a program looking at human factors that may be affecting performance.

The Safety Committee had received an inquiry from an operator at another plant regarding DCPP's policy on operators' taking naps during a shift.

When asked about this, the HP presenters responded that PG&E policy "OP1.DC12, Conduct of Routine Operations," recognizes the need for activities that enhance alertness, such as a nutrition or exercise breaks, a rest period, or taking a shower. Two thirty-minute breaks per 12 hr shift are allowed, as long as there is adequate coverage while the operator is

relieved from duty, and s/he must then be available by phone, pager, or radio.

HP referred to a program that they had seen at a conference to deal with the issue of operator alertness. It is referred to as the Sleep, Activity, Fatigue, and Task Effectiveness (SAFTE) model. A questionnaire-based computer program, The Fatigue Avoidance Scheduling Tool (FAST) calculates an individual's pattern of alertness/fatigue, and allows team scheduling based on the individual findings. It was developed to provide a means for predicting cognitive performance effectiveness associated with various work/rest schedules. Based on the timing and amount of sleep an individual or team receives prior to and during the period, effectiveness predictions provided by FAST enable planners to optimize work/rest schedules for up to 3 weeks. It is being considered for use in the plant.

Conclusion: The Human Performance Program is doing an adequate job of error trending, evaluating the data, and working toward increasing performance and enhancing safety.

3.2 Behavioral Observation Based Safety (BOBS) Process Update

The fact-finding team met with representatives of the BOBS program formed about 6 months ago in response to a high injury rate in maintenance. DCPP instituted a Behavioral Observation Based Safety Process (BOBS) to track incidents, identify barriers to working safely and institute continuous improvement in work processes and practices (Reference 6.1). It is also referred to as "BOBSCATZ" ("Observation Based Safety Cuts Accidents to Zero").

The program is currently in use in Maintenance, with plans to expand plant-wide, to include Operations, Radiation Protection, Building Services and others.

With a core volunteer steering committee of twelve, 20-25 workers per quarter are training in rotation. The lead trainer is a craftsman, a former high school teacher with a Master's degree in behavioral psychology. While the program has taken longer to create (1.5 years) than a turnkey program, the use of in-house personnel has eliminated the need for an outside consultant at estimated cost of $750,000. By being in-house, employees and craft-led, there is already a basis for mutual trust, an understanding of issues specific to the plant, and

an opportunity for the program to be better tailored to both the needs of the workers, and of the plant as a whole.

Each 20-minute observation utilizes the observation checklist, which looks at the following in terms of safety vs at-risk behaviors:

1. Work Control Area
2. Protective equipment
3. Ergonomics
4. Tools and equipment
5. Safety at heights

Then direct feedback is given, one-on-one, in a non-blaming manner, including the specific safety concern and how it could be remedied.

Results:

1. Increase in personal protective equipment use, due to increased enforcement and greater availability, especially for those needing to be tailored to individual requirements, as with prescription safety glasses, or with flash suits and booties, now available in a full array of sizes.

2. With the aging work force, increased vulnerability to injury becomes an issue, with risk factors that include slower reaction time, decreased flexibility, and longer healing time for injuries. As a result, precautionary measures have been implemented. For example, emphasis is placed on body positioning, and on flex-and-stretch exercises for employees before crawling into cramped areas.

3. During the recent outage, the safety report data correlated well with minor injury reports (pink slips) produced by BOBS. As a result, they are now working on refining the process and reinforcing it.

4. Motivation is high, with the workers actually gaining a passion for safety, with resulting increased savings and efficiency. There is an increased sense of control and empowerment, contributing to increased individual and "community" responsibility, and an increase in morale.

5. The program has helped increase safety awareness at all levels, and is supported by the overall culture. Rather than being left to the supervisor, the safety culture is pushed

down to the individual contributor level. It affects not only first line supervisors, and crafts workers, but contractors as well.

Conclusion: The Behavioral Observation Based Safety Process appears to provide a major cultural change, and provides a positive force in increasing work safety. Moreover, even though its focus is on safety, it is teaching craft many of the concepts and skills involved in the "We culture", with resulting impact in other areas such as communication. It is an excellent way of enrolling craft in the "We Culture" not just from the top down but from the bottom up.

3.3 Work Process Review

The purpose of this fact finding was to compare old "Functional" to new "Process" way of operating, and look for any gaps in nuclear safety. There are currently 4 work processes and 7 centers of excellence.

One innovation in the work process is a Maintenance Services Observation card that sets standards for tailboard discussions. The observer fills it out on a specific tailboard review, and the resulting data is tabulated and reviewed for shaping future work procedures in terms of tailboard use.

Since the plant is in the middle of the transition to Process, we were given a general overview rather than details of a specific work process.

Conclusion: The transition to "Process" instead of "Function" is progressing. A specific work process review should be done in a future fact finding.

3.4 Employee Assistance Program Update

The DSISC team met with one of the Employee Assistance Program (EAP) counselors, Drew Washer, for an update on the program. EAP duties are shared by two part- time counselors, for an average total of 15 hours each per week. The office was moved to the administration building, allowing easier access and more privacy. With some flexibility as needed, hours are from 8:30 AM to 3 PM except during outages, when they are from 2 PM to 9 PM. EAP counselors are available by phone 24/7 for emergencies. The EAP staff also attends Fitness for Duty

meetings, and trainings in San Francisco. Despite the energy crisis, overall morale is stable.

Their job duties include:

1. Teaching the monthly behavior observation class

2. Monitoring the Fitness for Duty (FFD) program with referrals and follow-up. This consists of follow-up on positive testing and alcohol DUIs. Drug detection is trending down, and the vast majority of cases are alcohol related. FFD statistics for 2001 were not available.

3. Counseling for job-related issues, referring for other problems to local therapists and psychiatrists. They can immediately authorize up to 10 visits without having to go through other channels of authority, a boon to the employees, who are then able to get help without delay.

4. EAP plans on doing more team counseling for co-workers and teams to prevent or mediate conflicts, and enhance communication. They would also like to offer more classes with specific focus, and sponsor affinity groups (e.g., aging parents, parents of teenagers) allowing the employees to share information and resources.

EAP supplies two quarterly publications, published under contract by Value Options, one for the entire plant and one geared to supervisors. The current issue had two lengthy and thorough articles "How to Handle Workplace Bullies" and "Sleepless Nights - Wasted Days." The former describes bullying behavior, tips on coping, and suggestions for further reading.

The sleep article addressed the importance of adequate sleep for maintaining alertness, productivity, mood, and overall health, and the vicious cycle of stress and insomnia. It describes symptoms of sleep deprivation, and gives remedial techniques to deal with insomnia. One useful quote is "inadequate sleep even as little as one or two hours less than usual, can greatly exaggerate the tendency for error during the vulnerable time periods," that is, between 2 p.m. and 5 p.m. and between 2 a.m. and 5 a.m.

The article describes the association between poor eating habits and daytime drowsiness, and gives suggestions for

proper diet to maintain alertness. There is a suggested reading list as well.

The separate newsletter for managers, supervisors, and human resources professionals contained articles entitled, "Teambuilding for High Performance," "Managers As Mentors and Motivators," and "Communication Is Critical For Teams." There were case examples, quotes from professionals in the field, and a recommended reading list, all reflecting the current desired direction of the plant.

Conclusion: EAP appears to be well-utilized, and is carrying out its responsibilities appropriately. The DCISC should follow up on statistics in a future fact-finding meeting.

3.5 Medical Center Update

The fact-finding team met with Ken Romans, P.A., from the medical center for an update. Operators' fitness continues to be an issue, with an average age of around 50 years. This problem led to a change in the fire brigade from using Operators to having five 24 hour-a-day professional fire-fighters, in shifts. The security department dealt successfully with their issues of declining fitness with an incentive program, granting a $1200 bonus to those who passed a specified fitness test. There are no plans yet for a similar one in Operations. This issue has been discussed in previous fact-finding reviews, in July 2000 (Reference 6.3) and December 2000(Reference 6.4).

Each operator's health and fitness level is evaluated annually, and statistics compiled. In addition, the medical center has requested that, twice a year, Operations send them records of sick time taken, with total allowance being 50 hours annually, in addition to 1 month per year vacation time If an operator is on sick leave over 3 days, they need to see medical center personnel for clearance. This is then noted in their chart, and is part of the information used for NRC audits. Sick-time taken will also reflect emotional or stress related issues.

Conclusion: Operator fitness continues to be an issue of concern, and the DCISC should continue to track the issue.

4.0 CONCLUSIONS

4.1 The Human Performance Program is doing an adequate job of error trending, evaluating the data, and working toward increasing performance and enhancing safety.

4.2 The Behavioral Observation Based Safety Process appears to provide a major cultural change, and provides a positive force in increasing work safety. Moreover, even though its focus is on safety, it is teaching craft many of the concepts and skills involved in the "We culture", with resulting impact in other areas such as communication. It is an excellent way of enrolling craft in the "We Culture" not just from the top down but from the bottom up.

4.3 The transition to "Process" instead of "Function" is progressing. A specific work process review should be done in a future fact finding.

4.4 EAP appears to be well-utilized, and is carrying out its responsibilities appropriately. The DCISC should follow up on statistics in a future fact-finding meeting.

4.5 Operator fitness continues to be an issue of concern, and the DCISC should continue to track the issue.

5.0 RECOMMENDATIONS

There are no recommendations for PG&E in this report.

6.0 REFERENCES

6.1 "Diablo Canyon Independent Safety Committee Ninth Annual Report On The Safety Of Diablo Canyon Nuclear Power Plant Operations, July 1, 2000 - June 30, 2001, Exhibit D.4, Section 3.2.

6.2 Ibid., Exhibit D4, Section 3.8

6.3 Ibid., Exhibit D.1 section 3.11

6.4 Ibid., Exhibit D.4 section 3.7

Table 1

Record of DCISC Tours of DCPP (Through June, 2001)

Area No.	Location	System/Area	Tour No(s). (See Table 2) (Bold = Public Tour)
TB-1	TB - Buttress Area	Condensate Polishing System	*, 97-6
TB-2	TB - El 73 NH/SH (U1&2)	Condensate Pumps Condensate Cooler	*, 97-6, **98-2, 01-3**
TB-3	TB El 85 NH	Oily Water Separator Room	
TB-4	TB - El 85 NH/SH (U1&2)	Condensate Booster Pumps Letdown Storage Tanks Main Feedwater Pumps Condenser Water Box Plant Air Compressors Service Water HX Lube Oil Storage Tanks Component Cool. Water HX	90-2, **95-1, 96-1, 97-2, 98-2** 97-6, **01-3** 94-3, **98-2, 00-1, 01-3** *, **98-2, 99-1, 00-1, 01-3** 94-3,97-6, 99-3, 01-4
TB-5	TB El 85 (U1&2)	Emergency Diesel Generators	90-1, 90-2, 92-1, 92-5, **93-2**, 94-3, 94-6, **96-1**, 97-5, 00-2
TB-6	TB El 85 (U1&2)	4 kV & 12kV Non-vital Switchgear	**96-1**, 97-5,97-6
TB-7	TB Buttress El 104 (U2)	Technical Support Center	90-1, 90-2, 90-4, 95-3, 95-6, 97-3, 97-6, 00-3
TB-8	TB El 104 (U1&2)	4 kV Vital Cable Spread. Rms. Isophase Bus Cooling System	*, 97-6, 98-8 97-6
TB-9	TB El 104 (U1&2)	Main Lube Oil Resvr./Cooler Feedwater Heaters Mid-condenser & Hoods Seawater Evaporators Steam Jet Air Ejectors	 *, **98-2, 00-1, 01-3** **96-1, 97-2, 00-1, 01-3** 99-6
TB-10	TB El 119 (U1&2)	4 kV Vital Switchgear Switchgear Ventilation Fans	**93-2**, 94-3, **95-1**, 97-6, **98-2**, 98-8
TB-11	TB El 119 (U1&2)	Isophase Busses LP Cond. Exhaust Hoods Moisture Septrs./Reheaters Tech. Maintenance Shop	*, 97-6 *,99-6 *, **98-2, 99-1**, 99-6, **00-1** **01-3**
TB-12	TB El 140 (Turbine Deck) (U1&2)	Main Turbines, Generators & Steam Leads & Valves	90-1, 90-2, 92-4, 92-5, **93-2**, **94-1**, 94-3, 94-5, **95-1**, **96-1**, **97-2**, 97-5, **98-2**, **99-1**, 99-2, 99-6, **00-1**, **01-3**
TB-13	TB El 140 NH	Outage Coordination Center	92-4, 92-5, 92-6, 94-5, **95-1**, **97-2**, 01-2

Area No.	Location	System/Area	Tour No(s). (See Table 2) (Bold = Public Tour)
TB-14	U1 TB 140 NH	Operations Support Center	*, 00-3
AB-1	AB El 55	Pipe Tunnel Area	*
AB-2	AB El 64 (U1&2)	Boron Injection Tanks Residual Heat Removal Pmps. Gas Decay Tanks & Cmprsrs. Radwaste Monitor Tanks Liquid Radwaste Stor. Tks.	 90-1, 90-2, 92-5, 94-5, 98-3 98-4 98-4 98-4
AB-3	AB El 73 (U1&2)	Residual Heat Removal HXs Compnt. Cool. Water Pumps Charging Pumps Containment Spray Pumps Boron Injection Tanks	90-1, 90-2, 92-4, 94-5, 98-3 *, 99-3 * *, 98-3 *
AB-4	AB El 85 (U1&2)	Penetration Area Post-LOCA Sampling Station Waste Gas Analyzer	01-5
AB-5	AB EL 85 (U1&2)	Safety Injection Pumps Boric Acid Evap. Aux. Control Board Letdown & Seal Return HX	90-1, 90-2, 94-5
AB-6	AB EL 85	Chemistry Offices & Labs RP Offices & Labs RCA Access Control Hot Showers & Laundry	 90-1, 90-2, 94-5, 97-4, 97-5, 98-4, 01-5
AB-7	AB El 85	Auxiliary Boiler	
AB-8	AB El 100 (U1&2)	Penetration Area	
AB-9	AB El 100 (U1&2)	Aux. Feedwater Pumps Volume Control Tank Demineralizers Boric Acid Transfer Pumps	90-1, 90-2, 92-4, 92-5, 94-3, 95-3
AB-10	AB El 100 (U1&2)	480 V Vital Bus Hot Shutdown Panel	98-8 **94-1**
AB-11	AB El 115 (U1&2)	Penetration Area-MS & FDW Radwaste Processing Area Ion Exchangers	 94-3, 98-4 98-4
AB-12	AB El 115 (U1&2)	Vital Batteries, Chargers & Inverters Rod Control Cabinets	94-1, 98-8
AB-13	AB El 115 (U1&2)	Plant Ventilation System	01-1, 01-5
AB-14	AB El 128 (U1&2)	Cable Spreading Room	90-1, 90-2, 92-4, **93-2**, 97-6
AB-15	AB El 140 (U1&2)	Control Room Area	90-1, 90-2, 90-3, 90-4, 92-4,

Area No.	Location	System/Area	Tour No(s). (See Table 2) (Bold = Public Tour)
			92-5, 94-3, 95-4, 98-1, 98-7, 98-9, 99-1, 99-2, **00-1**, 01-1, 01-2, 01-4
AB-16	AB El 140 (U1&2)	SG Blowdown Tank Containment Equipment & Personnel Hatches	92-5 97-4, 97-5, 01-5
FH-1	FH El 85 (U1&2)	Fuel Handling Supply Fans & Radiation Monitoring	
FH-2	FH El 100 (U1&2)	Spent Fuel Pool Pumps/HXs Spent Fuel Ventilation Sys.	99-3
FH-3	FH El 140 (U1&2)	Spent Fuel Pool Cask Decon (El 115) New Fuel Storage Firewater Pumps (El 115)	90-1, 90-2, 91-2, 92-5, 94-3, 97-4, 97-5, 99-2, 99-3 92-3, 94-3
FH-4	FH El 140 NH/SH	Hot Machine Shop Hot Tool Room	
C-1	Containment (U1&2)	Containment Area Reactor Coolant System Accumulators Pressurizer Relief Tank Cont. Sump/Screen Refueling Canal Containment Fan Coolers	90-1, 92-4, 92-6, 97-4, 97-5, 99-2, 01-2 * * * 91-2, 97-5, 01-2 * 92-5, 92-6, 97-5, 01-2
A-1	Admin. Bldg. El 128	Communications Rooms Computer Center	
T-1	Training Building	Training Building Simulator	90-1, 90-2, 90-3, 90-4, 91-1, 93-1, **93-2**, **94-1**, 94-5, **95-1**, 95-2, 95-6, **96-1**, **97-2**, **98-2**, **99-1**, **00-1**, 00-3, **01-3**
T-2		Maintenance Training Facility	91-1, **93-2**, **94-1**, **95-1**, **99-1**
I-1	Intake Structure Area (U1&2)	General Area Traveling Screens Circulating Water Pumps Auxiliary Saltwater Pumps	**93-2**, 94-5, **95-1**, **96-1**, **99-1**, 99-5, **00-1**, 01-2, 01-4 **97-2**, 97-5, 98-5, 01-2, 01-4 **97-5**, 01-2, 01-4 94-3, 98-5, 98-10, 99-5, 01-4
O-1	Outside TB El 85 (U1&2)	Main & Auxiliary Transformers	92-5, **93-2**, **94-1**, **95-1**, 95-5, **96-1**, **97-2**, **98-2**, **00-1**, **01-3**
O-2	Outside FH @ Yard (U1&2)	Condensate Storage Tank, Primary Water Storage Tank,	* *

Area No.	Location	System/Area	Tour No(s). (See Table 2) (Bold = Public Tour)
		Refueling Water Storage Tank	*
O-3	Outside TB (east side)	Diesel Fuel Oil Storage Tank (buried)	6-2, **97-2**
O-4	Warehouse Area	Main Warehouse Warehouses A & B	90-1, 91-1, **94-1**, 94-5
O-5	Outside (U1&2)	Cold Machine Shop	90-1, 90-2
O-6	Outside, Radwaste Area	Radwaste Storage Facility Radwaste Storage Tanks Laundry Facility	94-3, 98-4 98-4
O-7	Plant Overlook Area	Waste Water Holding & Treatment System Facilities Polymetrics Sys./Reservoir	**96-1, 98-2, 00-1, 01-3**
O-8	"Patton Flats" Area	Hydronautics System Biology Lab Hazardous Waste Stor. Bldg Fire Protection System Plant Sewage Treatment Fac. Paint Facility	**94-1**, 98-1
O-9	500 kV Switch yard	500 kV Switchyard & Control Building	**96-1, 98-2, 99-1, 01-3** 98-1, **98-2**, 98-6, **00-1**
O-10	230 kV Switchyard	230 kV Switchyard & Control Building	**96-1**, 98-6, **99-1, 00-1, 01-3**
O-11	Discharge Structure	Discharge Structure	97-6
OS-1	Offsite	Emergency Operations Facility	90-4, 94-4, 95-6,97-6, 00-3
Other		Other Specific Areas:	
	AB	Masonry Walls	92-1, 92-2, 92-3, 94-6,97-6
	AB	Penetration Fire Seals	94-2
	AB	Thermolag Installations	92-6, 94-3, **95-1**
	AB	Valve FCV-95	92-3
		Materials Testing Lab	94-4
		Medical Center	97-1
		2nd Sample & Tribology	97-6
		Labs	98-6
		Asset Team Work Area	98-7
		Elect. Asset Team Work Area	99-3
		Fire Pumps,Piping,	99-4
		Equipment	
		Security System Components	99-7
		& SAS	99-7
		Seismic Gap Modifications	99-7
		Expansion Joint Failures	

Area No.	Location	System/Area	Tour No(s). (See Table 2) (Bold = Public Tour)
		Temporary Jumpers	

* Systems/areas marked with "*" have also been visited on many tours due to their location along routes frequently traveled.

Legend:

AB = Auxiliary Building
FH = Fuel Handling Building
TB = Turbine Building
NH = North Half
SH = South Half

HX = Heat Exchanger
El = Elevation
HVAC = Heating, Ventilation & Air Cond.
U1&2 = Units 1 and 2 have separate facilities/equipment

Table 2

Chronological Record of Past DCISC DCPP Tours (Through June 2001)

Tour No.	Date(s)	Participants	Locations/Components Observed
90-1	4/20/90	WEK	Simulator, Turbine Deck, Control Room, Cable Spreading Room, Electrical Rooms, RCA Access Control, RHR Pumps, Containment Spray Pumps, Charging Pumps, CCW Pumps, FDW Pumps, SI Pumps, AFW Pumps, SFP, Containment, EDGs, TSC, I&C Mnt. Bldg., Cold Machine Shop, Warehouse
90-2	5/4/90	WHO	Trng. Bldg., Turbine Deck, Control Room, Cable Spreading Room, Electrical Room, FDW Pumps, EDGs, Cold Machine Shop, TSC, I&C Mnt. Bldg., RCA Access Control, RHR Pumps, Containment Spray Pumps, Charging Pumps, CCW Pumps, SI Pumps, AFW Pumps, SFP
90-3	9/10-11/90	HC, WEK	Training Bldg., Simulator, Control Room
90-4	10/3/90	WEK	TSC, Control Room Simulator, Emerg. Operating Center (offsite)
91-1	5/14/91	HHW	Warehouse, Operator Training Facilities, Mnt. Training Facilities
91-2	10/11/91	WEK, RTL	Intake Structure, Traveling Screens, ASW Pumps, CW Pumps, Containment Sump/Screen, Fuel Handling Building, SFP
92-1	2/7/92	WEK, RTL	EDGs, Masonry Walls
92-2	3/17/92	WEK, RTL	Masonry Walls
92-3	6/26/92	WEK, RTL	Masonry Walls, FCV-95, New Fuel Storage
92-4	10/8/92	HHW	Turbine Deck, Control Room, SG Mnt. Control Point, Containment (SGs, Fdw. Piping, Reactor Upper Internals), Cable Spreading Room, Outage Control Center, RHR Valves, AFW Valve
92-5	10/9/92	WHO, RFW	Turbine Deck, SG Blowdown, EDG, SFP, Transfrmr. Yard, Control Room, RHR Pumps, AFW pumps, CFCUs, Outage Control Center
92-6	10/9/92	WEK, RTL	Containment, SGs, CFCUs, Thermolag, Outage Control Center
92-7	11/18/92	HC	Fields Farm Training Center (onsite)
93-1	1/21/93	WEK, RTL	Simulator SPDS
93-2	2/3/93	Public Tour	Turbine Deck, Cable Spreading Room, EGD, Vital Switchgear, Main Transformer, Intake Structure, Mnt. Trng. Shop, Simulator

Tour No.	Date(s)	Participants	Locations/Components Observed
94-1	2/9/94	Public Tour	Turbine Deck, Vital Batteries & Inverters, Hot Shutdown Panel, Main Transformers, Warehouse, Mnt. Trng. Shop, Simulator, Patton Flats Biology Lab
94-2	5/26-27/94	WEK, RTL	Penetration Fire Seals
94-3	6/9/94	JEB, RFW, HHW	EDG, EDG Vital Switchgear, Thermolag, CCW HX, Radwaste Processing, New Fuel Receiving, Radwaste Storage Bldg., U2 SFP, AFW & MFW Pumps, Control Room, Turbine Deck, ASW Intake
94-4	8/18-19/94	JEB, WEK, RTL	Materials Testing Lab, Emergency Operations Center (offsite)
94-5	10/13/94	PRC	Intake, Warehouse, Training Bldg., Turbine Bldg., Auxiliary Bldg., Outage Coordination Center
94-6	10/27-28/94	JEB, WEK, RTL	Masonry Walls, Steam Traps, Leaking Small Bore Piping, EDG Cooling Air Flow Exhaust
95-1	2/2/95	Public Tour	Plant Simulator, Mnt. Trng. Shop, Turbine Deck, Outage Coord. Center, Condenser, EDG Corridor (Thermolag installations), Vital Switchgear, Main Transformers, Intake, CW Pumps
95-2	2/23-24/95	JEB, HC, WEK, RTL	Control Room Simulator
95-3	4/18-19/95	JEB, WEK, RTL, RFW	TSC, AFW System Walkdown
95-4	8/25/95	JEB, HC, WEK, RTL, RFW	Control Room
95-5	10/26-27/95	JEB, HC, WEK, RTL, RFW	Aux. Transformer
95-6	11/28-29/95	JEB, RTL	Simulator, TSC, Emergency Operations Center, Joint Media Center
96-1	1/31/96	Public Tour	500 kV & 230 kV Switchyards & Control Centers, Turbine Deck, Main Steam Piping, Condenser, FDW Heaters, Condensate /Condensate Booster/FDW Pumps, Main 4 kV & 12 kV Breakers, Aux. Transformers, Intake Structure, Traveling Screens, Simulator
96-2	4/25-26/96	JEB, HC, WEK, RTL, RFW	Diesel Fuel Oil Tank
97-1	1/16/97	HC	Medical Center
97-2	2/5/97	Public Tour	Turbine Deck, Condenser, OCC, Aux. Transformer, DFO Tank, Simulator, Intake Structure (new ASW piping)

Tour No.	Date(s)	Participants	Locations/Components Observed
97-3	3/19-21/97	WEK, RTL	TSC (SPDS)
97-4	4/30-5/1/97	WEK, RTL	Containment (SGs), Spent Fuel Pool
97-5	5/6-7/97	PRC, JEB	Containment (RV, SG, RCP/motor, CFCU, RHR Sump Screen, ICI Seal Table); AB (SFP, RCA); Intake Structure (ASW Piping, Trav. Screens, CWP/motor); Main Power Block (SU Trans. 1-1, TB Siding, 4kV Breaker, Main Gen., LP Turbine)
97-6	7/31/97	HC,WEK,RFW	Condensate Polisher & Control Room, Secondary Sample & Tribology Labs, 4kV & 12kV Non-vital Switchgear Rooms, 4kV & 12kV Cable Spreading Rooms, 4kV Vital Switchgear Room, Isophase Bus Cooling Room, Condensate/Condensate Booster/Feedwater Pumps, CCW HX, Discharge Structure
98-1	1/15/98	HHW, JEB	Biolab, Control Room, Switchyard Control Building
98-2	1/21/98	Public Tour	Plant Overlook, 500kV Switchyard & Control Bldg., Simulator & Hot Shutdown Panel, Turbine Deck, Main FW Pumps & Heaters, Condenser, Condensate & Condensate Booster Pumps, Vital Bus/Batteries/Inverters, Transformer Area
98-3	2/20/98	WEK, RFW	Containment Spray & Residual Heat Removal Systems
98-4	4/8/98	WEK, RFW	Liquid, Gaseous & Solid Radioactive Waste Systems
98-5	5/1/98	WEK, JEB	Intake Area & Structure, Auxiliary Saltwater (ASW) System
98-6	7/30/98	WEK, JEB	Asset Team Work Area, Switchyard Control Room
98-7	10/22/98	WEK, JEB	Control Room, Electrical Asset Team Work Area
98-8	11/19/98	WEK, RFW	Emergency Electrical Power System: 4kV Vital Switchgear, Battery/Charger/Inverter Rooms, DC Distribution Panels/Inverters, 480V Vital Switchgear/Buses, Non-vital Switchgear, Reactor Trip Breakers, Control Rod Drive Breakers; Turbine Building Seismic Gaps
98-9	12/10/98	WEK, JEB, RFW	Control Room
98-10	12/15/98	PRC, JEB	Intake Structure
99-1	1/28/99	Public Tour	Spare Main & Auxiliary Transformers, Plant Overlook, 230kV & 500kV Switchyards, Plant Water Discharge, Turbine Deck, Moisture Separator Reheaters, Control Room, Condenser, Simulator,

Tour No.	Date(s)	Participants	Locations/Components Observed
			Intake Overlook, Maintenance Training Facility
99-2	2-18-99	WEK, JEB	Refueling Building, Containment, Seismic Gaps, Control Room, Turbine
99-3	3-11-99	WEK, RFW	CCW Pump; Fire Water System Piping, Pumps, Hose Reels, Valves, Sprinklers, Deluge Systems, Corrosion Monitors, Reservoirs, Tanks, and Hydrants; Spent Fuel Pool, Cooling System Pumps, Heat Exchanger, and Associated Valves and Controls
99-4	5-20-99	WEK, RFW	Security System Secondary Alarm Station, Card Alarms, Microwave Alarms, Door Alarms, CCTV System, Video Capture System, Hand Geometry Recognition System
99-5	7-22-99	WEK, JEB	Intake Structure, ASW Pumps
99-6	11-18-99	WEK, RFW	Main Steam System Walkdown
99-7	12-16-99	WEK, RFW	Seismic Gap Modifications, Expansion Joint Failures, Jumpers
00-1	1-19-00	Public Tour	Plant Overlook, 230kV & 500kV Switchyards, Plant Water Discharge, Turbine Deck, Moisture Separator Reheaters, Control Room (view), Condenser, Control Room Simulator, Intake Overlook
00-2	3-23-00	PRC, RFW	Emergency Diesel Generators 2-1 & 2-2
00-3	5-10-00	RFW	CR Simulator, TSC, OSC, EOF
01-1	7-6-00	WEK, RFW	Control Room Ventilation System
01-2	10-25-00	ADR, RFW	Containment, Control Room, Intake, Site
01-3	2-7-01	Public Tour	Plant Overlook, 230kV & 500kV Switchyards, Turbine Deck, Moisture Separator Reheaters, Control Room (view), Condenser, Control Room Simulator, Intake Overlook
01-4	3-14-01	PRC, RFW	Auxiliary Saltwater System, Intake, Turbine Bldg.
01-5	5-1-01	EGP, RFW	Unit 2 Containment RCA Access, 85' Auxiliary BLdg. RCA Access, 85' Containment Penetration Room

Legend:

AFW = Auxiliary Feedwater
CCW = Component Cooling Water
CFCU = Containment Fan Cooler unit
CW = Circulating Water (condenser)
DFO = Diesel Fuel Oil
EDG = Emergency Diesel Generator

JEB = Jim Booker
HC = Hyla Cass
PRC = Phil Clark
WEK = Bill Kastenberg
RTL = Bob Lancet
WHO = Warren Owen

EOF = Emergency Operations Center
FCV = Flow Control Valve
FDW = Feedwater
OCC = Outage Coordination Center
RCA = Radiation Control Area
RHR = Residual Heat Removal
SFP = Spent Fuel Pool
SG = Steam Generator
SI = Safety Injection

EGP= Gail dePlanque
RFW = Ferman Wardell
HHW = Herb Woodson
ADR = David Rossin

SPDS = Safety Parameter Display System
TSC = Technical Support Center

Diablo Canyon Independent Safety Committee Open Items List

Open Item Types: M= Monitor F = Follow-up I = Issue **Items in *Italics* are new**

ITEM NO.	TYPE	OPEN ITEM CATEGORY/DESCRIPTION	Last Actions	Next Action
		Aging Management (AM)		
AM-2	M	Aging Management/Life Cycle Program Status: Update – annually. March 2000 FF showed some weaknesses (DCISC recommendation) – review in 6 months. Review aging management directions and management expectations in the gap analysis after it is approved (October 2000 FF, 3.15).	2/01 PM 4/01 FF	*Awaiting 4/01 FF report*
AM-3	*F*	*Review PG&E's comprehensive revision to AM Program, including management's vision & role of the system long-term plans & maintenance rule. Assign an AMP Manager in first quarter 2001. (PG&E response to Rec. R00-3). Review Integrated Problem Resolution Team (IPRT) initiated in Nov. 2000 to acquire industry "state of knowledge" for Aging Management Program. (Response to Rec. R00-6).*	*99-00 AR R00-3 & R00-6 4/01 FF*	*Awaiting 4/01 FF report*
AM-4	*F*	*Review the results of the Passive Device Management Investigation when completed in June 2001.*	*3/01 FF*	*3Q01 FF*
		Conduct of Maintenance (CM)		
CM-7	I	Review PG&E's progress in complying with the amendment to 10CFR50.55a which provides the requirements for ISI of containment structures (degradation) (10/30-31/97 FF, Section 3.19) (nothing happening in 1999). Satisfactory at 3/00 FF. Review concrete inspections following 2R10.	2/99 FF 3/00 FF	7/01 FF
CM-10	M	On-line Maintenance: review the implementation of on-line maintenance annually, including the 12-week Rolling Maint. Schedule to keep informed about how well it is working & impacting risk. (98-99 AR, 4.2.2).	12/16/99 FF 3/01 FF	6/01 PM
CM-13	M	Asset Team Development & Performance – review annually and assess how well the performance indicators reflect the Asset Team performance.(98-99 AR, 4.2.2).	8/99 FF 12/00 FF	4Q01 FF
		Conduct of Operations (CO)		
CO-5	M	Clearance Process Performance & Improvements – review following each outage.	11/00 FF	6/01 PM
CO-6	*F*	*Review the performance of Technical Specification adherence reportable events. (DCPP had no reportable events in first 6 months following implementation of Improved TS). (PG&E response to Rec. R00-1)*	*99-00 AR R00-1*	*4Q01 FF*
		Emergency Preparedness (EP)		
EP-2	M	Attend and observe DCPP emergency drills and exercises annually, paying special attention to UDAC performance.	12/10/99 FF 5/10/00 FF	8/01 FF
		Engineering Program (EN)		
EN-16	F	DCPP Systems – review a system (or structure or component), system health, long-term plan, Maint. Rule performance & walkdown with System Engineer at regular FFs.	12/16/99 FF	Each FF, as appropriate
EN-17	F	Review the Configuration Management Program including: 2000 CMI measures, update on incorporating CM in OPS & MNT, resolution of 3 NCRs & self-assessment of jumpers & the component database (3/00FF, 3.6)	3/00 FF 3/01 FF	1Q02 FF

6/20/01 PM

ITEM NO.	TYPE	OPEN ITEM CATEGORY/DESCRIPTION	Last Actions	Next Action
EN-18	F	DCPP to continue & expand system health indicators and system long term plans. Follow up. *PG&E plans to roll the remainder of the plant systems into the long term planning process in 2001. (Response to Rec. R00-3). Also, PG&E plans to implement an Intranet-based system for the creation & utilization of System Health Reports (Response to Rec. R00-12).*	1/00 PM 99-00 AR R00-3 R00-12	7/01 FF
EN-19	*F*	*Consolidate DCISC review of all Engineering Programs into one item and review periodically in a single FF.*	*3/01 FF*	*10/01 PM*
		Environmental (EV)		
EV-1	M	Environmental Program - review annually in first quarter. (AR 98-99, 4.8.30).	7/00 FF 3/01 FF	1Q02 FF
		Event/Problem Analysis and Corrective Action (EA)		
EA-6	I	Vessel Head Penetrations: Review the status of inspections & plans for cracks in the vessel head penetrations. Has PG&E volunteered Unit 2 for vessel head inspections? (3/98 FF). Review the results of the 2R10 head inspection penetrations for cracks (12/99 FF and annual report 4.19.2).	12/16/99 FF 12/99 FF	7/01 FF (following 2R10)
EA-12	M	Monitor all reactor trips – automatic and manual (96 AR) (2/99 FF: 12/98 trip review) (review LERs @ PMs)	11/99 FF	Post-trips
EA-13	M	Corrective Action Program: review the effectiveness of the CAP annually and NQS internal assessments (1/98 FF, Section 3.8). Schedule following NQS and NRC reviews. *Check NEI guidance – see EA-22. Review the CAP following completion of improvement action items and the next self-assessment.*	12/3/99 FF 3/01 FF	1Q02 FF
EA-15	M	Review DCPP storm response experience and strategy every 12 months (11/99 FF, 3.4 & 12/99 FF). Review during or after annual winter storm season (5/00 FF).	5/00 FF 3/01 FF	1Q02 FF
EA-17	F	Review final DCPP review of OEA review of INPO SER 2-99 on spurious containment spray (12/99 FF)	12/99 FF	7/01 FF
EA-18	F	Follow up on degraded control board lamp socket corrective action (4/00 FF & annual report 4.19.2)	4/00 FF	7/01 FF (after 2R10)
EA-20	F	Follow up on the three reportable events which occurred during Outage 1R10 (October 2000 FF, 3.3). *Satisfactorily completed at 3/01 FF. Close.*	10/00 FF 3/01 FF	*Close*
EA-21	F	Follow up on the effectiveness of the Integrated Problem Resolution Team (October 2000 FF, 3.15). *Close – included in Item AM-3.*	10/00 FF	*Close*
EA-22	*F*	*Review the new DCPP CAP Upgrade Action Plan to incorporate many of the lessons learned from a benchmarking effort (NEI project) (Response to Rec. R00-5). See EA-13. Close – duplicate with EA-13.*	*99-00 AR* *R00-5*	*Close*
EA-23	*F*	*ADR would like to re-visit PG&E response to Annual Report Rec. R00-9 – emphasis on priorities for operators.*	*99-00 AR* *R00-9* *4/01 FF*	*Awaiting 4/01 FF report*
EA-24	*F*	*Review the results of the Generation Vulnerability Investigation Team when completed in June 2001.*	*3/01 FF*	*3Q01 FF*

ITEM NO.	TYPE	OPEN ITEM CATEGORY/DESCRIPTION	Last Actions	Next Action
		Fire Protection (FP)		
		Human Performance (HP)		
HP-1	M	Review human performance items *semi-annually* (including error reduction programs, HP performance indicators, aberrant behavior statistics, EAP, FFD, stress reduction programs, aging of operators, Centers of Excellence, Org. Development)	12/00 FF 2/01 PM	6/01 FF
HP-16	F	Review the new Behavior-based Safety Program (3/00 FF, 3.14)	12/00 FF	6/01 FF
HP-17	F	Review new human performance goals for (mostly latent) Engineering problems. (Was 1/00 PM #19).	12/00 FF	7/01 FF
HP-18	F	HC: in future FF look at DCPP incentives for increased physical fitness, attention enhancement & stress management. PRC: explore further the incentives for operator focus and fitness. (Was 6/00 PM #6).	6/00 PM 12/00 FF	6/01 FF
HP-19	F	Follow up on the use of the Personnel Accountability Policy. (July 2000 FF, 3.2).	7/00 FF	3Q01 FF
HP-20	*F*	*Review recently-established Human Performance Steering Committee (HPSC) which was established to "provide executive management oversight of the NPG HP improvement effort. (Response to Rec. R00-7).*	*99-00 AR R00-7*	*6/01 FF*
HP-21	*F*	*DCISC (Hyla Cass) "will provide examples of available electronic tools for developing and maintaining mental alertness for consideration by PG&E". (Response to Rec. R00-8)*	*99-00 AR R00-8*	*Check 6/01 FF?*
		Nuclear Fuel Performance/Fuel Cycles/Storage (NF)		
NF-9	I	Nuclear Fuel Issues (review annually): NRC approval of + DCPP Moderator Temperature Coefficient, Fuel Gap Reopening (review through 2R10), extended fuel cycles, spent fuel storage, Boraflex spent fuel poison)	11/99 FF 11/00 FF	4Q01 FF
NF-15	I	Review fuel inspection results following outages, especially for effects of baffle jetting and loose fuel assembly top nozzle leaf springs. (11/99 FF report & 99-00 Annual Report, 4.10.2).	11/99 FF 11/00 FF	6/01 PM
		Nuclear Regulatory Commission Items (NR)		
NR-3	M	Monitor the Non-Cited Violation Tracking & Trending Program annually at the Jan/Feb Public Meetings.	9/00 PM 2/01 PM	2/02 PM
		Nuclear Safety Oversight and Review (NS)		
NS-5	M	Monitor PSRC, PNAC, NSOC meetings twice/year to observe their processes and their review of nuclear safety issues. Review inside/outside membership & possible conflicts of additional NSOC member "consultants" duties. Observe 50.59 activities.	5/01 FF	8/01 FF or 11/01 FF
NS-6	F	Follow-up on DCPP taking a re-look at NSOC membership (7/6-7/99 FF report, Section 3.3, Item 7). DCISC will monitor at NSOC meetings.	5/01 NSOC mtg.	Monitor at PM & NSOC
		Outage Management (OM)		
OM-3	M	During outages, monitor Outage Coordination Center, Control Room, etc. (96 AR, p. 4-62) and containment walkdown/inspection (end of outage). Review outage turbine work (October 2000 FF, 3.9).	10/00FF(1R10)	1R11
OM-4	M	Mr. Ketelsen agreed to provide copies of the Plan of the Day for the outage-related activities during 2R9 on a weekly basis during the duration of the outage (9/99 PM minutes, p. 33). 1/00 PM: continue for future outages.	9/99 PM 1/00 PM	Each outage

ITEM NO.	TYPE	OPEN ITEM CATEGORY/DESCRIPTION	Last Actions	Next Action
OM-5	M	Review ECCS voids following each refueling outage (1/00 PM)	11/00 FF	6/01 PM
		Overtime Control (OT)		
		Quality Programs (QP)		
QP-3	M	NQS Audits: conduct FF meetings to review the activities and results of NQS audits as well as PG&E's approach to JUMA (97/98 AR, 4.15.3). Review annually – include 4th quarter QPAR with yearly results.	2/01 PM 4/01 FF	*Awaiting 4/01 FF report*
QP-4	F	Look into the timeliness of corrective actions, NQS self-assessment and NRC inspection of the Top Ten quality problems list (7/6-7/99 FF report, Section 3.1, Item 7). Review semi-annually.	7/99 FF 12/00 FF	3Q01 FF
QP-5	F	Review the Integrated Assessment Process (integration of quality assessments/audit reports and performance measures into a high-level report) annually at PM.	9/00 PM 2/01 PM	*2/02 PM*
QP-6	F	NQS reported problems with the quality of self-assessments. Review standards, training, etc. for self-assessments (1/00 PM). Good implementation found in 5/00 FF. Review in 6 months.	9/00 PM 4/01 FF	*Awaiting 4/01 FF report*
QP-7	*F*	*NQS will include problems affecting offsite power in its October 2001 audit of Corrective Action Program. (PG&E response to Rec. R00-2).*	*99-00 AR R00-2*	*4Q01 FF*
		Radiation Protection (RP)		
RP-3	M	Regularly review RP performance following outages. Include entries into high radiation areas and respirator issuance performance (May 10-11, 2000 FF).	12/9/99 FF 12/00 FF	6/01 PM (2R10)
RP-9	F	Closely follow the changes in management, organization and progress in RP (October 2000 FF, 3.16).	10/00 FF 5/01 FF	2Q02 FF
RP-10	F	Dr. de Planque suggested, and Mr. Rueger agreed, that PG&E may want to discuss these issues concerning improving communication with the public and the NRC in the future. Reviewed in July 2000 FF, 3.9 & *May 2001 FF.*	9/00 PM 5/01 FF	12/01 FF
		Risk Assessment and Management (RA)		
RA-5	F	Review overall PRA program annually. Program found satisfactory in 5/00 FF. Look at the impact on resources of new NRC requests for risk information (7/20-21/99 FF).	5/00 FF 4/01 FF	*Awaiting 4/01 FF report* 2Q02 FF
RA-6	*F*	*Review the DCPP comprehensive, plant-specific shutdown risk analysis when completed in 2002.*	*3/01 FF*	*2Q02 FF*
		Safety Conscious Work Environment (Employee Concerns Program, Safety Culture, etc.) (EC)		
SC-1	M	Employee Concerns Program – review semi-annually. (Was EC-6).	4/00 FF 12/00 FF	7/01 FF
SC-2	M	Differing Professional Opinion Program - review with ECP. No new activity as of 5/00. (Was EC-7).	6/99 PM 12/00 FF	7/01 FF
SC-3	M	PG&E has an action plan to address reluctance of employees to bring issues to management identified in cultural survey. DCISC will monitor. (98-99 AR, 4.5.3). Comprehensive cultural survey in Dec. 2000. (Was EC-8).	7/6/99 FF 5/00 FF 4/01 FF	6/01 PM

ITEM NO.	TYPE	OPEN ITEM CATEGORY/DESCRIPTION	Last Actions	Next Action
		Steam Generator Performance (SG)		
SG-3	I	Review the effects of zinc in the RCS in reducing SG SSC & other effects following its addition in 1&2R9 and 1R10 and 2R10.	11/99 FF 11/00 FF 2/01 PM	6/01 PM or 7/01 FF (2R10)
SG-6	M	Steam Generator tube inspection results and PG&E mitigation activities following each outage as well as management plans for long-term life.	11/99 FF 11/00 FF 2/01 PM	6/01 PM or 7/01 FF (2R10)
		System and Equipment Performance & Problems (SE)		
SE-3	I	RCS Flow Measurement: Review the hot leg flow measurement concerns as a result of the hot leg flow streaming. Discuss current measurements and the use of elbow taps and status of NRC approval. (NRC letter 5/1/97 to PG&E). 5/00 FF: PG&E will submit analysis to NRC Fall 2000.	7/98 FF 5/00 FF 3/01 FF	2Q02 FF
SE-13	I	Intake Structure: hold FF to review PG&E's program to identify and repair delaminated concrete in a timely manner – review annually. Review the intake structure inspection report after each outage (7/22/99 FF, 3.4). *Follow up on specifics of PG&E response to Annual Report Rec. R00-13.*	11/00 FF 99-00 AR, R00-13	6/01 PM or 7/01 FF (2R10)
SE-21	F	Review the (NRC GL-96-05) Joint Owner Group valve testing program about annually (7/22/99 FF, 3.10).	7/99 FF	3Q01 FF
SE-22	F	Review the performance of the new Security computer system and long-term plan. (3/00 FF, 3.11)	12/00 FF	*Close*
SE-23	F	Review the status of the Equipment Qualification Program in 1Q01 (annual report 4.19.2, 8/99 FF).	8/99 FF 3/01 FF	2Q02 FF
SE-24	F	Observe operator re-qualification classes periodically (5/00 FF & annual report 4.20.2).	5/00 FF	Periodic FFs
SE-25	F	The DCISC should receive a briefing on pressure vessel compliance status after the next set of surveillance samples is analyzed & effective lifetime projections are updated. (October 2000 FF, 3.14).	10/00 FF	Check – bi-annually
		Training Programs (TP)		
TP-3	M	Review Training Programs at least annually.	9/00 PM	3Q01 FF/PM
TP-4	*F*	*DCPP will complete training of Asset Team foremen (i.e., Asset Team Leaders) by the first quarter of 2001. (Response to Rec. R00-4)*	*99-00 AR* *R00-4*	*7/01 FF*
		Transition Program to Prepare for Competition (TR)		
TR-6	F	Review Five Year Business Plan each year after development (7/22/99 FF, 3.5). (Was O-14).	2/01 PM 3/01 FF	2/02 PM
TR-7	F	Review a work process (organization design) and see how it is changed and whether there are gaps that impact safety. The DCISC should meet with the process owner and speak with Jim Becker and Dave Oatley to evaluate the program and get future plans. (July 2000 FF, 3.5).	7/00 FF	6/01 FF
TR-8	F	Review the 2001 Culture Transition Strategies at the December 2000 FF or February 2001 PM. *Completed – close.*	10/00 FF 2/01 PM	*Close*
TR-9	F	Review the status of the Joint Utility Venture (now called STARS – Strategic Teaming and Resource Sharing Initiative) (12/99 FF, AR 4.21.2).	12/99 FF 4/01 FF 5/01 FF	4Q01 FF

ITEM NO.	TYPE	OPEN ITEM CATEGORY/DESCRIPTION	Last Actions	Next Action
		Other Items (O)		
O-4	F	DCISC consultants should review the plant systems to recommend to DCISC those that DCISC may have an interest in receiving a comprehensive topical review during the next year. (WEK request @ 6/97 PM, 97 AR B.12-35). JEB/RFW look at system measures. *Review system health measures, etc. at 7/01 FF & include list of systems to be reviewed in FF report.*	8/99 FF	7/01 FF
O-8	M	Perform periodic reviews of staffing by department or function, when reviewing FF (PRC) . Take a comprehensive look at staffing (6/99 PM). Review annually. PRC: Look at PG&E planning for future needs at future FF and PM.	11/99 FF 12/16/99 FF 10/00 FF	6/01 FF
O-13	F	Members approved the scheduling of a regular visit by the DCISC Chair and such CPUC Commissioners as might be available to deliver the Committee's latest Annual Report and to update the CPUC on the DCISC's activities (9/99 PM minutes, p. 7).	9/99 PM	As appropriate
O-16	F	During FFs, cross-reference topics with NRC and NQS determinations. (Was 6/00 PM #4).	6/00 PM	All FFs
O-17	F	Fact-finding reports should be made available for Committee review by end of the month following the fact-finding meeting and all pending reports be closed out prior to or during the next PM.	9/00 PM	On-going
O-18	F	Public meeting transcripts should be made available within 45 days of the meeting and sent to PG&E for their optional review and comment. Public meeting minutes should be available for review by Members at least two weeks prior to the next scheduled public meeting..	9/00 PM	On-going
O-19	*F*	*Review DCISC measures with respect to NRC, INPO, etc. measures to avoid duplication. Reviewed in March 2001 FF. Recommendation made to utilize NRC, INPO measures (and review others in FF meetings) instead of having DCISC measures based on DCPP measures. Review the following items periodically in FF meetings: (1) radiation exposure, (2) personnel contamination incidents, (3) OEA backlog, (4) Quality Problem completion, (5) Event-Free Days, (6) refueling outage duration, and (7) INPO performance index.*	*3/01 FF*	*On-going*
O-20	*F*	*PG&E should report on the following measures at each public meeting: (1) DCPP Performance Plan, (2) NRC Performance Indicators, (3) Maintenance Rule Quarterly Report, and (4) Refueling Outage Results.*	*3/01 FF*	*Ongoing*
O-21	*F*	*DCISC should consider process-based measures as DCPP moves to a process-centered arrangement.*	*3/01 FF*	*Ongoiing*
		Public Meeting Items (PM) (Reference: Public Meeting Minutes Pages)		
1/00 PM	13	PG&E Legal Dept. reviewing meaning of "advocate" in Employee Advocate Program.	1/00 PM 9/00 PM	Awaiting PG&E response
6/00 PM	1	Review Personnel Replacement Issues in future fact-finding.	6/00 PM	6/01 FF
	8	PRC requested from PG&E NCR on 5/15/00 Unusual Event for DCISC review when closed out. *Completed. Close.*	6/00 PM	*Close*
	9	PRC: DCISC should review PG&E plans for modifying plant configuration for dumping steam for reducing power to "back down" when competitive market is over-supplied. *No longer applicable – close.*	6/00 PM	*Close*

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ITEM NO.	TYPE	OPEN ITEM CATEGORY/DESCRIPTION	Last Actions	Next Action
	10	PRC: DCISC should focus attention on amount of time PG&E corporate officers would devote to DCPP with recent changes in generation organization. *Reviewed at 3/01 FF. Womack back at DCPP full time. Rueger is full time on corporate bankruptcy. No safety problems currently. DCISC should stay alert.*	6/00 PM 3/01 FF	*Ongoing*
	14	DCISC requested PG&E present the results of the comprehensive culture survey at the February 7-8, 2001 PM and have copies available prior to the meeting. Not ready for 2/01 PM.	6/00 PM 4/01 FF 5/01 FF	6/01 PM, *Awaiting 4/01 FF rpt.*
	15	PRC requested the DCISC be provided with ITRF reports and recommendations on a quarterly basis. Completed?	6/00 PM	Check
9/00 PM	7	Mr. Clark requested that the DCISC be provided with a copy of the integrated schedule for the Self-Assessment Program and a copy of the most recent quarterly report for the Program. *Completed?*	9/00 PM	Check
	8	Mr. Clark stated that the Committee would like to review the tracking data concerning the accredited training and instructor training programs at DCPP on an annual basis and he suggested PG&E may want to review something similar to the Performance Plan Review format to monitor the non-accredited training program as well.	9/00 PM 4/01 FF	*Awaiting 4/01 FF rpt.*
	13	Improvements were necessary in the areas addressed from the last JUMA and 1998 NQS Self-Assessment (Taggert, 9/00 PM)	9/00 PM 4/01 FF	*Awaiting 4/01 FF rpt.*
2/01 PM	*1*	*DCISC to continue to follow up on PG&E's performance concerning adherence to TS. (Rec R2000-1)*	*2/01 PM*	*7/01 FF*
	2	*Review LERs and Corrective Action effectiveness on problems affecting offsite power. (Rec. R2000-2)*	*2/01 PM*	*3Q01 FF*
	3	*PG&E to provide a list of the systems which will and will not be covered by long-term Aging Management planning process. (Rec. R2000-3)*	*2/01 PM* *4/01 FF*	*Awaiting 4/01 FF rpt.*
	4	*Review NEI Corrective Action Benchmarking Project report & PG&E's implementation of lessons identified. (Rec. R2000-5). Reviewed at 3/01 FF. Action satisfactory. Close.*	*2/01 PM* *3/01 FF*	*Close*
	5	*Follow up on Operators' priorities in FF. (Rec. R2000-9)*	*2/01 PM* *4/01 FF*	*Awaiting 4/01 FF rpt.*
	6	*PG&E to provide a comprehensive list of DCPP systems for which System Summary Health Reports will be implemented. (Rec. R2000-12)*	*2/01 PM*	*7/01 FF*
	7	*Follow up on the specific reasons for not inspecting certain Intake Structure areas during past refueling outages (Rec. R2000-13)*	*2/01 PM*	*7/01 FF*
	8	*Consider meeting on regular basis with NRC Resident Inspector during Fact-finding meetings.*	*2/01 PM*	*On-going*
	9	*FF reports should clearly indicate whether a comment is attributed to a PG&E person or the FF report writer.*	*2/01 PM*	*On-going*
	10	*Take a broader look at Security and the response/reaction to the QA audit (see 12/14/00 FF report).*	*2/01 PM* *4/01 FF*	*Awaiting 4/01 FF rpt.*
	11	*Review Culture Survey results at June 2001 Public Meeting*	*2/01 PM* *4/01 FF* *5/01 FF*	*6/01 PM,* *Awaiting 4/01 FF rpt.*

6/20/01 PM

ITEM NO.	TYPE	OPEN ITEM CATEGORY/DESCRIPTION	Last Actions	Next Action
	12	*Review metrics developed for measuring the benefits from the cultural transformation effort when established.*	*2/01 PM*	*4Q01 FF*
	13	*Ms. Jolley will provide information used internally to develop and assess progress on the cultural transformation and which is used to review and assess the impact of communication with the workforce. Also, PG&E will keep DCISC informed of efforts to incorporate involvement of individual contributors.*	*2/01 PM*	*Ongoing, 4Q01 FF*
	12	*Review new NRC reportability rules and 50.59 rules (Tompkins).*	*2/01 PM*	*3Q01 FF*
	13	*Review DCISC Performance Indicators to see if duplicate with DCPP, NRC or INPO indicators. Reviewed 3/01 FF & recommendation made. Close.*	*2/01 PM 3/01 FF*	*Close*
	15	*PG&E to notify DCISC of any significant layoffs, personnel actions.*	*2/01 PM*	*On-going*
	16	*Look at any deferrals, reductions in DCPP plans, expenditures, etc., which would impact DCPP operations, resources or staffing.*	*2/01 PM 3/01 FF*	*6/01 PM*
	17	*Continue to monitor the California energy situation for impact on DCPP safe operation.*	*2/01 PM*	*6/01 PM*
	18	*EGP: look at dose distributions for 1R10 & 1R9 (jobs, personnel, groups) – what can be done to reduce dose?*	*2/01 PM*	*8/01 FF*
	19	*PRC: NRC Region 4 report on differences in outage safety (factor of 10?). Review with DCPP. Found satisfactory in 3/01 FF. Close.*	*2/01 PM 3/01 FF*	*Close*
	20	*PG&E will provide a "set" of plans for DCISC to review in FF & present at 6/01 PM.*	*2/01 PM 3/01 FF*	*6/01 PM*

Legend: FF = Fact-finding Meeting PM = Public Meeting Q = Quarter

0952

TABLE 1 - DCISC Recommendations from Last Reporting Period

Item No.	DCISC Recommendation	Recommendation Reference	PG&E Response/Action	PG&E Response/Action Reference	Status
142	It is recommended that PG&E put more emphasis on assuring that employees, especially Operations, improve Technical Specification (TS) adherence. The implementation of Improved TS will itself require special emphasis to assure complete understanding and adherence and it also may be a good opportunity to accomplish improved compliance. (3.1.5)	R00-1	PG&E management recognizes the importance of compliance with plant Technical Specifications (TS). The importance of TS compliance is stressed in initial Reactor Operator (RO) and Senior Reactor Operator (SRO) training and reinforced in the Operator Continuing Training program. In most cases, when incidents occur in which the TS are misinterpreted, training on the specific incident is conducted and/or information is disseminated among Operations personnel so that other operating crews will not make the same mistake. Implementation of the Improved Technical Specifications (ITS) has provided the opportunity to focus attention on TS compliance. All operating crews received approximately 40 hours of training on the ITS as part of the Operator Continuing Training program. We have had six months of experience with the ITS, including use of the ITS during a refueling outage, and no reportable events have occurred as a result of improper implementation of ITS. This record is a testament to the effectiveness of this training. In addition, the entire Engineering Support Personnel (ESP) staff received mandatory orientation training on the ITS as part of ESP Continuing Training.	1999/2000 DCISC Annual Report, Section 8.0, PG&E Response to DCISC Recommendations February 2001 DCISC Public Meeting (Exhibit B.6)	Response found acceptable, however, the DCISC will continue to follow-up on PG&E's performance concerning adherence to TS in the future.
143	It appears that a number of LERs involve problems affecting offsite power. It is recommended that PG&E include these errors in their Corrective Action Program effectiveness review and report the results to the DCISC in a future fact-finding or public meeting. (3.1.5)	R00-2	PG&E agrees with the recommendation. Nuclear Quality Services (NQS) will include this subject within the scope of the 2001 Corrective Action Audit scheduled for October 2001. The results will be communicated to the DCISC.	1999/2000 AR, Section 8.0, PG&E 1999/2000 DCISC Annual Report, Section 8.0, PG&E Response to DCISC Recommendations February 2001 DCISC Public Meeting (Exhibit B.6)	Response found acceptable.

144	It is recommended that PG&E assure during the review of the Aging Management Program, that (1) adequate program controls and functions are maintained to prevent problems and (2) any revised program be designed and resourced to be at least as strong and effective as the previous one, properly-implemented. (4.1.3)	R00-3	DCPP has completed a comprehensive review and revision to the Plant Aging Management Program administrative procedure. This revision specifically addressed the programmatic deficiencies identified In the 1999 third quarter NQS assessment. The procedural changes also describe management's current vision of this program including the role of system Long Term Plans (LTPs) and the interactions with the Maintenance Rule. The system long term planning process was implemented for the majority of the plant systems in 2000. The purpose of the system LTPs is to: 1) plan for long term system reliability; 2) plan for future workload and resource needs; and 3) serve as a collective input of Operations, Maintenance, and Engineering to plant management on issues affecting long term reliability of the various systems. System LTPs address many categories of potential problems, including those related to equipment aging and obsolescence. These LTPs were used by plant management to determine the capital and O&M expenditures for 2001. We plan to roll the remainder of the plant systems into the long term planning process in 2001. In addition to the long term planning process, many programs currently exist which are effectively "aging management programs." These programs include: Environmental Qualification, Erosion/Corrosion, Civil Maintenance Rule, Circulating Water System Discharge Tunnel Monitoring, Steam Generator Protection Plan, Reactor Vessel Embrittlement Management, Reactor Coolant System Cyclic Fatigue Monitoring, and our Preventive Maintenance program. Engineering management is currently in the process of identifying an individual to take over the position of Aging Management Program Manager who can commit the amount of time necessary to ensure proper ownership and direction to this very important program. It is expected that this individual will be selected in the first quarter 2001.	1999/2000 DCISC Annual Report, Section 8.0, PG&E Response to DCISC Recommendations February 2001 DCISC Public Meeting (Exhibit B.6)	Response found acceptable, subject to PG&E providing a list of the systems which will and will not be covered by the long-term Aging Management planning process.

145	It is recommended that PG&E continue the training of foremen for all the Asset Teams in areas where they lack experience. (4.2.3)	R00-4	PG&E agrees with the recommendation. A comprehensive training program has been developed and is currently being implemented to address the concerns related to Asset Team Foremen, i.e., Assistant Team Leaders (ATL5), supervising multidiscipline work groups. The training program has been developed specifically for those permanent and temporary ATLs who supervise multidiscipline work groups. This program includes significant plant systems training and cross-discipline technical training. Both training elements were developed using INPO's Systematic Approach to Training to assure the areas needing attention were fully addressed, based on an assessment of the knowledge and existing skills of the ATLs. Program implementation started in early 2000. Plant Systems classes and the first phase of the 3-phase cross-discipline technical training are complete. The two remaining phases will be completed by the first quarter of 2001. Following the specific training program described above, routine continuing/refresher training will be implemented in accordance with the established Maintenance Supervisor Training (MST) Program. The MST Steering Committee (composed of the Manager, Maintenance Services, an Asset Team Leader, ATLs and Learning Services) will continue to address any new training issues identified for the ATLS. In addition to the discipline technical training described above, ATLs are required to complete management development courses. In 2000, the course topics included conducting a Collaborative Performance Review and Correcting Performance Problems. Topics being planned for the upcoming year include Coaching, Giving and Receiving Feedback, and Building Trust.	1999/2000 DCISC Annual Report, Section 8.0, PG&E Response to DCISC Recommendations February 2001 DCISC Public Meeting (Exhibit B.6)	Response found acceptable.

146	It is recommended that PG&E visit other utilities that have strong programs in-place to monitor and measure the effectiveness of their Corrective Action Program to help in further developing methods at DCPP. (4.6.3)	R00-5	PG&E agrees with the recommendation to benchmark other utilities that have strong programs in place to monitor and measure the effectiveness of their Corrective Action Program (CAP). To this end, the CAP supervisor has been a member of the NEI Corrective Action Process Benchmarking Project This NEI project brought together CAP supervisors from 13 different utilities, INPO, EPRI, and Westinghouse to capture the best corrective action processes from the nation's utilities. The team met three times in Washington D.C., and sent four-person teams to the six utilities that rated highest (and agreed to a visit) on a survey sent out to the 28 utilities suggested by INPO. The DCPP CAP supervisor was a member of three of those site visits, acting as the team leader for one visit. Plants visited by PG&E representatives in this effort were San Onofre, Calvert Cliffs, and Millstone. The other three sites visited by the team were McGuire, Braidwood and Palo Verde. The NEI team's report will be issued as "NEI Industry wide Corrective Action Process Benchmarking Report LP-002." DCPP has established a CAP Upgrade Action Plan to incorporate many of the lessons learned from this benchmarking effort. In this specific area, the plan includes the following: • creation and Implementation of human factors cause coding • purchase and implementation of the an industry state of the art trending program • grading of completed cause analyses • implementation of post-closure effectiveness reviews of nonconformance reports (NCR5) and Quality Evaluations (QEs) PG&E's participation In the NEI benchmarking project, which resulted in actions captured in the CAP Upgrade Action Plan, directly addresses the DCISC recommendation.	1999/2000 DCISC Annual Report, Section 8.0, PG&E Response to DCISC Recommendations February 2001 DCISC Public Meeting (Exhibit B.6)	Response found acceptable, subject to DCISC review of the Nuclear Energy Institute(NEI)Corrective Action Benchmarking Project report and PG&E's implementation of the lessons identified in that report.

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147	It is recommended that PG&E (1) perform a comprehensive review to assure that all materials subject to aging or requiring periodic replacement are included in aging/replacement management programs and (2) address any other areas where manufacturer guidance is not being followed. (4.6.3)	R00-6	DCPP plant management has requested the formation of an Integrated Problem Resolution Team (IPRT) as a result of the recent string of forced outages and aging-related events. Those events include the Unit 2 extraction steam bellows failure, the Unit 1 12 kV auxiliary bus failure, the Unit 1 auxiliary feedwater pump recirculation line blockage due to butterfly valve seat degradation, and the saltwater system rubber expansion joint failures. The focus of the IPRT will be to acquire industry "state of knowledge" with respect to aging management and the use of industry and in-house operating experience, as well as vendor preventative maintenance and service life recommendations. The IPRT was initiated in November of this year.	1999/2000 DCISC Annual Report, Section 8.0, PG&E Response to DCISC Recommendations February 2001 DCISC Public Meeting (Exhibit B.6)	Response found acceptable.
148	It is recommended that PG&E coordinate the various Human Performance Programs to keep each department informed of what other departments are doing in this area. (4.9.3)	R00-7	A Human Performance Steering Committee (HPSC) has recently been established to provide executive management oversight of the Nuclear Power Generation (NPG) human performance improvement effort. Members of the steering committee include the Plant Manager and his direct reports (department managers). This steering committee has mandated that departmental committees be established which report to the steering committee on a regular basis. One of the key objectives of the HPSC is the development of a common philosophy and strategy for human performance improvement ensuring the objectives are linked to NPG's overall operational plan. The formation of an executive steering committee will ensure the various initiatives undertaken by individual organizations within NPG will be well coordinated and adhere to a common philosophy while striving for common goals and values.	1999/2000 DCISC Annual Report, Section 8.0, PG&E Response to DCISC Recommendations February 2001 DCISC Public Meeting (Exhibit B.6)	Response found acceptable.

149	It is recommended that PG&E augment its programs for operator health and aging to consider such areas as operator "aging management", physical fitness, and mental alertness on shift to further improve operator human performance. (4.9.3)	R00-8	Safety, Health and Emergency Services provides classes on a number of health-related topics through its Health Enhancement Series program. Although these classes are made available to the entire plant staff, due to their irregular schedule, it is often difficult for the operating crews to attend. To ensure that this valuable information is provided to the operators, classes from this program tailored to shift work will also be presented to the operating crews in one-hour sessions every other five-week training cycle. To enhance physical fitness and mental alertness on-shift, several actions are being considered, including providing additional break time for on watch-licensed operators and encouraging use of the fitness facility during breaks. The DCPP medical staff is also further evaluating its operator fitness levels. Based on discussions In the December 2000 fact-finding meeting, the DCISC will provide examples of available electronic tools for developing and maintaining mental alertness for consideration by PG&E.	1999/2000 DCISC Annual Report, Section 8.0, PG&E Response to DCISC Recommendations February 2001 DCISC Public Meeting (Exhibit B.6)	Response found acceptable.
150	It is recommended that PG&E place more emphasis on teaching operators to recognize the priorities of tasks themselves rather than relying largely on procedures prioritized by relative safety importance. (4.11.3)	R00-9	The basis for this recommendation is the actions taken in conjunction with the December 1998 Unit 2 trip that resulted from traveling screen debris buildup during extreme swell conditions. During this event, imp roper adjustment of the potentiometer setting for the atmospheric dump valves coupled with a low lift setting of a main steam safety valve (MSSV) resulted in the unnecessary opening of the MSSV. Although the crew immediately noted the indications of increased steam flow and aggressively pursued determination that an MSSV had lifted, they performed several activities, including shift turnover, prior to taking actions to reseat the valve. The following actions were taken to address this issue: • Simulator Instructors are now emphasizing the importance of proper prioritization of emergency action in tailboards and critiques. The Operations Superintendent has personally observed and reinforced crew	1999/2000 DCISC Annual Report, Section 8.0, PG&E Response to DCISC Recommendations February 2001 DCISC Public Meeting (Exhibit B.6)	Response found acceptable. The issue may be followed -up during a future fact-finding.

			awareness of this issue. • Emergency Procedure E-0, "Safety Injection or Reactor Trip Response," was revised to allow for quicker completion of high priority diagnostic steps. This change, which allows lower priority equipment checks to be done in parallel with the diagnostics section of the procedure, results In earlier diagnosis of events. • A special simulator training scenario was developed as an exercise to reinforce operator understanding of emergency operating procedure (EOP) bases. In this scenario, the operating crew responds to an event without the use of the associated EOP procedure set. The scenario requires that operators use their knowledge of EOP bases to set priorities without the aid of procedures. Similar training scenarios at other nuclear stations have been shown to improve operators' understanding of procedure bases and, thus, the associated procedure priorities. In addition to the above, the importance of discussing priorities during event response tailboards (Including the Identification of the highest priority) has been emphasized to the operating crews. Since the December 1998 Unit 2 reactor trip, no cases have been noted in which operators pursued lower priority activities during event responses at the expense of monitoring and controlling critical plant parameters.		
151	It is recommended that NQS involve NSOC in selecting the scope of the Biennial Audit/Self-Assessment to be sure of its independence of the NQS Department. (4.14.3)	R00-10	PG&E agrees with the recommendation. All scheduled audits, including the Biennial Audit/Self-Assessment, are already reviewed by the Nuclear Safety Oversight Committee (NSOC) as part of the Audit Schedule review. At the NSOC meeting, members are presented an opportunity to provide input to any of the audit scopes. In addition, NQS will provide a draft of the audit plan for the Biennial Audit/Self-Assessment to NSOC members for additional comment/input.	1999/2000 DCISC Annual Report, Section 8.0, PG&E Response to DCISC Recommendations February 2001 DCISC Public Meeting (Exhibit B.6)	Response found acceptable.

152	It is recommended that PG&E initiate a high level review to determine if any design basis requirements, particularly in the Civil Engineering area, have not been met illustrated by the seismic gap problem, the Emergency Diesel Generator seismic wall problem and the previously corrected masonry wall seismic inadequacies. (4.19.3)	R00-11	PG&E has reasonable confidence that the design and installed configuration of Civil Engineering structures and structural systems at DCPP satisfy their design basis requirements. The Implementation of the design basis requirements has been the subject of several design and construction review efforts over the years, including the following: • Independent Design Verification Program and related Internal Technical Program • Long Term Seismic Program • Development of Enhanced Design Criteria Memoranda • Design Basis Configuration Management Affirmation Project (per 10CFR50.54(f)) • Civil Maintenance Rule Monitoring Program (per 10CFR50.65) • Implementation of several major civil/structural design changes Based on the comprehensive design reviews performed in conjunction with the above efforts, PG&E has reasonable confidence that the design and installed configuration of Civil Engineering structures and structural systems at DCPP satisfy their design basis requirements. It is noted that each of the problems alluded to by the DCISC were self-identified through the above review activities and programs. The DCPP problem identification and resolution process requires that all problems identified during the normal course of business, including design issues, be documented and resolved in accordance with the CAP. Although an additional Civil Engineering design review is not considered warranted, PG&E will ensure that any design problems that are identified are appropriately addressed in our CAP, including the consideration of potential generic implications.	1999/2000 DCISC Annual Report, Section 8.0, PG&E Response to DCISC Recommendations February 2001 DCISC Public Meeting (Exhibit B.6)	Response found acceptable.

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153	It is recommended that PG&E continue to develop the System Summary Health Report for all systems and share this information with Operations, Maintenance and Engineering. PG&E should also continue to develop the long-term plans for systems. (4.19.3)	R00-12	PG&E concurs with the recommendation and has continued to develop the system LTPs throughout the year 2000. LTPs have been developed for the majority of the major plant systems. The focus is currently on developing the administrative programs to allow the LTPs to be used in the plant budgeting process to ensure that resources are properly allocated to maintain the long-term health of the systems. An intranet-based system is being finalized to allow the LTPs to be available to plant personnel involved in the planning and resource allocation process. The process involves a joint review and approval of funding by personnel from the Maintenance, Operations and Engineering departments. During the first half of 2001, PG&E plans to implement an intranet-based system for the creation and utilization of System Health Reports within the organization. The System Health Reports will be maintained by the System Engineers and will allow plant personnel in various organizations direct access to information relating to the health of the plant systems.	1999/2000 DCISC Annual Report, Section 8.0, PG&E Response to DCISC Recommendations February 2001 DCISC Public Meeting (Exhibit B.6)	Response found acceptable, subject to receipt of a comprehensive listing of DCPP systems for which System Summary Health Reports will be implemented.
154	It is recommended that PG&E review the intake structure concrete inspection plan for each outage to assure that the entire inspection plan is conducted and repairs made to the structures. (4.19.3)	R00-13	The basis for this recommendation cites intake concrete inspections, which were deleted from the scope of the Unit 1 ninth refueling outage (1R9). The specific areas of concern Identified by the committee involve the traveling screen penetrations (TSP) 1-1 through 1-5, which were not inspected during the outage due to limited accessibility. However, each of these penetrations had been inspected or repaired in recent outages (TSP 1-1 repaired 1R8; TSP 1-2 repaired 1R7; TSP 1-3 repaired 1R7/1R8; TSP 1-4 inspected 1R7; TSP 1-5 inspected IRS). Due to the aggressive surveillance and repair programs, the quantity of delaminations and degraded concrete at the Intake structure and circulating water conduits (CWCs) have decreased significantly since the inception of the programs in 1991. The Inspection and repair programs have effectively mitigated the effects of the harsh coastal environment and	1999/2000 DCISC Annual Report, Section 8.0, PG&E Response to DCISC Recommendations February 2001 DCISC Public Meeting (Exhibit B.6)	Response found acceptable, however, DCISC will follow-up concerning the specific reasons for not inspecting these structures during certain past refueling

			have allowed the structures to adequately perform their intended functions. The intake structure and CWCs are currently in good condition and are classified as (a)(2) status under the Maintenance Rule Program. The system team, made up of stakeholders in operating *and* maintaining the intake structure and associated plant equipment *for* the saltwater system, is responsible for implementing and coordinating the inspection activities. As a result of the intake structure/CWCs being restored to an acceptable condition, the system team is concentrating its resources on monitoring areas of structural significance. Currently, areas of minimal structural magnitude and/or nonstructural components (such as the TSPs) are monitored at greater intervals (e.g., none of the TSPs were inspected in 1RIO). This is evident when inspections of nonessential areas that have limited accessibility or inspection windows are deferred. However, prior to deferral of a given inspection scope, recent trending data is reviewed by the system team to ensure the appropriateness of this action.		refuelin g outages.

Exhibit I

DCISC Informational Brochure

The DCISC informational brochure will go here.

GLOSSARY OF TERMS AND DEFINITIONS

Aging Management is a program for monitoring and dispositioning materials and components whose characteristics change with time or use. PG&E defines aging management as "Engineering, operations, and maintenance activities to control age-related degradation and to mitigate failures of systems, structures, or components (SSC) that are due to aging mechanisms."

As Low As reasonably Achievable (ALARA) refers to maintaining offsite radioactive releases and occupational radiation exposures as low as achievable in a reasonable, cost-effective manner.

Capacity Factor is the fraction of power actually produced compared to the maximum which could be produced by operating at full power during a period of time (expressed in percent).

Civil Penalty is a penalty in the form of a monetary fine levied by the Nuclear Regulatory Commission for a significant violation of its regulations.

Control Rods are long slender metal-clad rods which move into or out-of nuclear fuel assemblies in the reactor core to control the rate of the nuclear fission process. The rods contain a neutron absorbing material which, when inserted into the fuel, absorb neutrons, slowing down the fission rate and thus the heat generation rate and reducing the power level of the reactor.

Design Basis are the current features and criteria upon which the nuclear plant is designed and are also the bases for Nuclear Regulatory Commission review and approval.

Diesel Generator (DG) is a standby source of emergency electrical power needed to power pumps and valves to provide cooling water to the fuel in the reactor to prevent its overheating and possible melting. The diesel generator is designed to start up and provide power automatically if normal power is lost.

Emergency Operations Center (EOC) is the facility away from the immediate vicinity of the plant which is used to direct the operations for mitigation of and recovery from an accident.

Emergency Preparedness (EP) is the assurance that the plant and its personnel are practiced and prepared for postulated

emergencies to be able to mitigate them and recover with a minimum of damage and health effects.

Engineered Safety Features (ESF) are the features (systems and equipment) engineered into the plant to mitigate the effects of anticipated and postulated accidents.

Erosion/Corrosion is a phenomenon which takes place in carbon steel power plant water systems. The inside metal pipe will continually corrode due to galvanic action, forming a magnetite coating as erosion (due to high water velocity and/or changes in flow direction) continually wears away the magnetite layer, permitting the corrosion layer to reform, etc. The continual combination of effects wears away and thins the pipe wall.

Escalated Enforcement Action is action taken by NRC beyond a notice of violation of its requirements for a single severe violation or recurring violations. Examples include a civil penalty, suspension of operations, and modification or revocation of a license to operate a nuclear plant.

Final Safety Analysis Report (FSAR) is the document which describes the plant design, safety analysis, and operations for Nuclear Regulatory Commission review and approval for licensing for plant operation.

Fitness for Duty (FFD) describes the state of an employee (cleared to access the nuclear plant) being in sound enough physical and mental condition to adequately and safely carry out his or her duties without adverse effects.

High Impact Team (HIT) is a term denoting a multi-disciplinary or multi-functional team of people put together to focus on solving a particular problem or perform a particular task. The disciplines included are those necessary to effectively accomplish the task.

High Level Waste (HLW) is highly radioactive waste, usually in the form of spent fuel (or fuel which has been discharged from the reactor as waste) containing a high level (as defined by NRC regulations) of radioactive fission products. HLW is handled remotely, using water or a thick container as a radiation shield.

Individual Plant Examination (IPE) is a level 2 Probabilistic Risk Assessment (PRA) analysis of plant accident sequences. The analysis includes core damage progression through the release of radioactive material to the containment and the subsequent containment failure but stops short of determining potential

impact on the public or property. The NRC requested all nuclear plants be analyzed in this way to get a better understanding of severe accident behavior. An **IPEEE** is an IPE which is initiated by External Events to the plant.

INPO, the Institute of Nuclear Power Operators is a nuclear industry group formed after the Three Mile Island accident to help improve nuclear plant operations through regular assessments of each nuclear plant, evaluations, best practices, and nuclear operator training accreditation.

Inservice Inspection (ISI) and Inservice Testing (IST) are the practices of inspecting and testing certain selected components periodically during their service lives to determine degradation patterns and to repair, if necessary, any degradation beyond acceptable limits.

Licensee Event Reports (LERs) are reports from the plant operator to the Nuclear Regulatory Commission describing off-normal events or conditions outside established limits at a nuclear plant.

Loss of Offsite Power (LOOP) is an occurrence whereby the normal supply of electrical power from offsite is interrupted. Nuclear reactors need power from offsite when shutdown for spent fuel cooling and residual heat removal. There are usually several sources of offsite power; however, loss of all sources would result in the automatic start-up of the diesel generators to supply power.

Low Level Waste (LLW) is waste containing a low level of radioactivity as defined by NRC regulations. LLW is usually in the form of scrap paper, plastic, tape, tubing, filters, scrap parts, dewatered resins, etc. LLW requires packaging to prevent the spread of contamination but little radiation shielding.

Maintenance Rule is the NRC proposed rule which requires that nuclear power plant licensees monitor the performance or condition, or provide effective preventative maintenance of certain structures, systems and components against licensee-established goals. The Rule becomes effective July 10, 1996.

Microbiologically-Influenced (or Induced) Corrosion (MIC) is cor-rosion, usually in the form of pitting, on steel piping systems containing stagnant or low-flow water conditions. The corrosion is caused by surface-attached microbe-produced chemicals which attack the piping surface. Depending on

severity, MIC is controlled by mechanical and chemical cleaning combined with biocides.

Motor-Operated Valves are valves opened or closed by remotely- or locally-operated integral electric motors. The valves are used in power plant piping systems to divert, block or control the flow of steam or water.

Nuclear Excellence Team (NET) is a organization of several well-qualified senior people whose mission is "To improve plant performance through the use of performance-based self-assessments within the NPG (Nuclear Power Generation) organization." The Team is augmented by at least one other PG&E and one outside individual with expertise appropriate to the particular investigation.

Nuclear Regulatory Commission (NRC) is the Federal agency which regulates and licenses the peaceful uses of domestic nuclear and radioactive applications such as nuclear power plants, experimental nuclear reactors, medical and industrial radioisotope applications, radioactive waste, etc.

Nuclear Steam Supply System (NSSS) is the nuclear reactor and its closely associated heat removal systems which produce steam for the turbine. The NSSS usually includes the nuclear reactor, nuclear fuel, reactor coolant pumps, pressurizer, steam generators, and connected piping.

Operational Capacity Factor is the capacity factor as measured between, but not including, refueling outages.

Probabilistic Risk Assessment (PRA) is a formal process for quantifying the frequencies and consequences of accidents to predict public health risk.

Protected Area is the outermost area of the nuclear plant which is protected by physical means, a security system, and security force to prevent unauthorized entry (see also Vital Area).

Quality Assurance (QA) comprises all those planned and systematic actions necessary to provide confidence that a structure, system or component will perform satisfactorily is service.

Reactor Coolant System (RCS) is the collection of piping, reactor vessel, steam generators, pumps, pressurizer, and associated valves which function to circulate water through the reactor to remove heat.

Refueling Outage is a normal shutdown of a nuclear power unit to permit refueling of the reactor, along with maintenance, inspections and modifications. Typical DCPP refueling outages occur about every 18 months and last for about two months. The outages are numbered by unit number (1 or 2), "R", and the consecutive outage number. For example, "1R5" is the fifth refueling outage for Unit 1 since start-up.

Reliability Centered Maintenance (RCM) is the practice of maintaining equipment on the basis of the logical application of reliability data and expert knowledge of the equipment, i.e., a systems approach. Normal preventive maintenance (PM) is performed on the basis of time, i.e., maintenance operations are performed on a schedule to prevent poor performance or failure.

Residual Heat Removal (RHR) is the removal of the residual heat generated in the reactor fuel after reactor shutdown to prevent the fuel overheating and possibly melting. The heat removal is performed by a set of pumps, piping, valves and heat exchange equipment circulating water by the fuel while the reactor is shut down.

Safety System Functional Audit and Review (SSFAR) is an investigation of a single plant safety system from all perspectives such as design basis, operations, maintenance, engineering, testing, materials, problems and resolutions, quality control, etc. The review is performed by a multi-functional team and can last several months.

Simulator is a simulated nuclear power reactor control room with gauges, instruments and controls connected to a computer. The computer is programmed to behave like a nuclear reactor and respond to operator actions and commands. The simulator is used in training nuclear operators in controlling the reactor and responding to simulated transients and accidents.

Spent Fuel Pool (SFP) is an in-plant stainless-steel-lined concrete pool of water into which highly radioactive spent nuclear fuel is stored when it has been discharged from the reactor. The spent fuel is maintained in the pool until its ultimate disposal is determined.

Steam Dump Valve is a device to discharge (dump) steam from the power plant piping to lower its pressure and reduce the energy in the line. This is done to permit faster shutdowns.

Steam Generator is a large, vertical, inverted-U-tube-and-shell heat exchanger with hot reactor coolant on its tube side

transferring heat to and boiling the non-nuclear feedwater to form steam on the shell side. Besides transferring heat, the steam generator is important as a barrier between the nuclear and non-nuclear coolants.

Surveillance is the process of testing, inspecting, or calibrating components and systems to assure that the necessary quality is maintained, operation is within safety limits, and operation will be maintained within limiting conditions.

Technical Specifications (TS) are the rules and limitations by which the plant is operated. They consist of safety limits, limiting safety system and control settings, limiting conditions for operation, surveillance requirements, description of important design features, administrative controls, and required periodic and special notifications and reports.

Technical Support Center (TSC) is the in-plant facility which directs plant activities in mitigating accidents and minimizing their effects.

Trip (or scram) is the shutting down of the nuclear reactor by inserting control rods which shut down the nuclear fission process. An automatic trip is initiated by plant monitoring systems when one or more parameters differ from preset limits. A manual trip is initiated by plant operators in an off-normal event to prevent preset limits from being exceeded or as a backup to the automatic system.

Vital Area is an area inside the plant within the Protected Area which contains equipment vital for safe operation.

CERTIFICATE OF SERVICE

I hereby certify that in accordance with the Commission's regulation at 10 CFR 2.1313, I have this day caused the foregoing document be served upon the following parties by mailing by first-class mail a copy thereof properly addressed to each such party:

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Dated at San Francisco, California, this 5th day of February, 2002.

Laurence G. Chaset

Laurence G. Chaset