

**ATTACHMENT 1**

**The Radiological Monitoring  
And Controls Programs (RMCP)  
(CY2 Revision 2)**

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TITLE: RADIOLOGICAL MONITORING AND CONTROLS PROGRAM

APPROVED: [Signature] 4/3/96 4/5/96  
 DATE EFFECTIVE DATE

SPONSORING ORGANIZATION: CHEMISTRY AND ENVIRONMENTAL OPERATIONS  
 CLASSIFICATION: QUALITY RELATED

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1. PROGRAM OVERVIEW

It is the policy of Nuclear Power Generation (NPG) that the release of radioactive materials to the environment be in compliance with Federal regulations and be "As Low As Reasonably Achievable" (ALARA). The overall objectives are to protect the health and safety of the public from undue radiation exposure and to minimize the amount of radioactive effluents resulting from the operation of the Diablo Canyon Power Plant.

This PD defines the overall policies and general requirements related to the Radiological Monitoring and Controls Program (RMCP). This includes the Radiological Environmental Monitoring Program, and the Radioactive Effluent Controls Program.

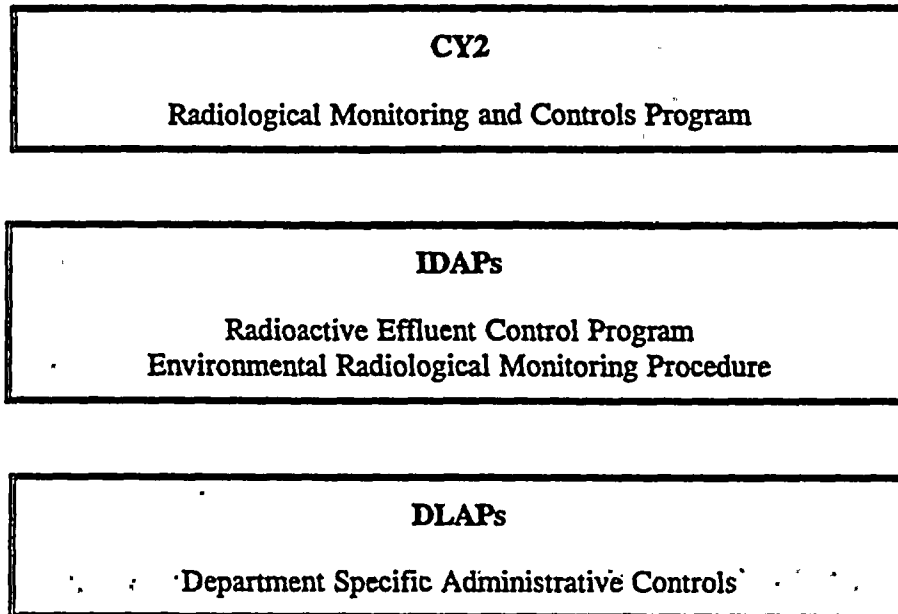
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The scope of this PD is focused on the control of releases of radioactive material to the environment, and minimizing radiological impact on the general public. Radiation protection of plant workers and visitors within the restricted area of the plant is within the scope of RP1, "Radiation Protection."

Figure 1 illustrates the hierarchy of procedures associated with this PD.

**FIGURE 1**  
**CY2**  
**Hierarchy of Procedures**



- 1.1 This procedure has effectively been rewritten. For this reason other revision bars are not included herein.

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2. APPLICABILITY

This PD is applicable to all persons involved in radioactive effluent control, monitoring, and management activities. This includes all NPG personnel, personnel matrixed to NPG from other PG&E organizations, personnel in other PG&E organizations that are engaged in activities in support of NPG, and contractor personnel that are working under NPG supervision.

3. DEFINITIONS

3.1 ALARA (acronym for "as low as reasonably achievable") - A term that means making every reasonable effort to maintain exposures to radiation as far below the dose limits of 10 CFR 20 as is practical consistent with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in relation to state of technology, the economics of improvements in relation to benefits to the public health and safety, and in relation to utilization of nuclear energy and licensed materials in the public interest. The specific objectives of achieving ALARA effluents are based on those described in 10 CFR 50, Appendix I.

3.2 The Radiological Monitoring and Controls Program (RMCP) - Contains the Radioactive Effluent Controls and Radiological Environmental Monitoring Programs required by Technical Specification 6.8.4 and descriptions of the information that should be included in the Annual Radiological Environmental Operating and Annual Radioactive Effluent Release Reports required by Technical Specifications 6.9.1.5 and 6.9.1.6.

3.3 Offsite Dose Calculation Procedure (ODCP) - Contains the methodology and parameters used in the calculation of offsite doses due to radioactive gaseous and liquid effluents and in the calculation of gaseous and liquid effluent monitoring Alarm/Trip Setpoints.

3.4 Environmental Radiological Monitoring Procedure (ERMP) - Contains a description of sample locations, types of sample locations, methods and frequency of analysis, and reporting requirements.

4. PROGRAM OBJECTIVES AND REQUIREMENTS

4.1 Program Objectives

The NPG Radiological Monitoring and Controls Program is established to meet the following objectives:

4.1.1 Ensure that systems, methods, and controls are established to meet applicable regulatory requirements and objectives for release of radioactive effluents.

Liquid and gaseous radioactive waste processing systems provide the means for controlling radioactive releases. It is also important to establish administrative controls with clear delineation of responsibilities to ensure that monitoring, measurement, and release activities are properly sequenced, authorized, and controlled.

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4.2 Program Requirements

The basic requirement for the Radiological Monitoring and Controls Program shall be to maintain radioactive releases to the unrestricted areas surrounding the plant in conformance with applicable Federal regulations and ALARA. The following sections provide additional requirements for various elements of the program.

4.2.1 Changes to the RMCP (including ODCP, ERMP and RECP) shall be processed in accordance with the requirements of DCPD Technical Specification Section 6.14.2.

4.2.2 Radiological Environmental Monitoring Program

a. A Radiological Environmental Monitoring Program (REMP) shall be established and maintained to comply with the DCPD Technical Specification 6.8.4.h, Radiological Environmental Monitoring Program requirements. The program shall be provided to monitor the radiation and radionuclides in the environs of the plant, and shall address the following:

1. Monitoring, sampling, analysis, and reporting of radiation and radionuclides in the environment in accordance with the methodology and parameters in the Environmental Radiological Monitoring Procedure (ERMP),
2. A Land Use Census to ensure that changes in the use of areas at and beyond the SITE BOUNDARY are identified and that modifications to the monitoring program are made if required by the results of this census, and
3. Participation in an Interlaboratory Comparison Program to ensure that independent checks on the precision and accuracy of the measurements of radioactive materials in the environmental sample matrices are performed as part of the quality assurance program for environmental monitoring.

4.2.3 Radioactive Effluent Control Program

a. Monitoring requirements shall be established and maintained for all major and potentially significant paths for release of radioactive material during normal plant operation, including anticipated operational occurrences, to comply with Regulatory Guide 1.21, Revision 1, June 1974, requirements.

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- b. Procedures shall be established and maintained to define the methods and requirements for control of liquid and gaseous radioactive discharges within the limits of DCCP Technical Specification Sections 6.8.4.g. These procedures shall address the following:
1. Limitations on the operability of radioactive liquid and gaseous monitoring instrumentation including surveillance requirements, and setpoint determination in accordance with methodology in the Off-site Dose Calculation Procedure, (ODCP).
  2. Limitations on the concentrations of radioactive material released in liquid effluents to UNRESTRICTED AREAS conforming to 10 CFR Part 20, Appendix B, Table 2, Column 2,
  3. Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCP,
  4. Limitations on the annual and quarterly doses or dose commitment to a MEMBER OF THE PUBLIC from radioactive materials in liquid effluents released from each unit to UNRESTRICTED AREAS conforming to Appendix I to 10 CFR Part 50,
  5. Determination of cumulative and projected dose contributions from radioactive effluents for the current calendar quarter and current calendar year in accordance with the methodology and parameters in the ODCP at least every 31 days,
  6. Limitations on the operability and use of the liquid and gaseous effluent treatment systems to ensure that the appropriate portions of these systems are used to reduce releases of radioactivity when the projected doses in a 31-day period would exceed 2 percent of the guidelines for the annual dose or dose commitment conforming to Appendix I to 10 CFR Part 50,
  7. Limitations on the dose rate resulting from radioactive material released in gaseous effluents from the site to areas at or beyond the SITE BOUNDARY shall be limited to the following:
    - a) For noble gases: Less than or equal to a dose rate of 500 mrem/yr to the whole body and less than or equal to a dose rate of 3000 mrem/yr to the skin, and
    - b) For Iodine-131, for Iodine-133, for tritium, and for all radionuclides in particulate form with half-lives greater than 8 days: Less than or equal to a dose rate of 1500 mrem/yr to any organ.

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8. Limitations on the annual and quarterly air doses resulting from noble gases released in gaseous effluents from each unit to areas beyond the SITE BOUNDARY conforming to Appendix I to 10 CFR Part 50,
  9. Limitations on the annual and quarterly doses to MEMBERS OF THE PUBLIC from Iodine-131, Iodine-133, tritium, and all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents released from each unit to areas beyond the SITE BOUNDARY conforming to Appendix I to 10 CFR Part 50, and
  10. Limitations on the annual dose or dose commitment to any MEMBER OF THE PUBLIC due to releases of radioactivity and to radiation from uranium fuel cycle sources conforming to 40 CFR Part 190.
- c. Sampling and analysis methods associated with effluent monitoring activities shall be controlled in accordance with CY1.DC4, "Control of Material and Equipment Used For Analysis for Chemistry and Radiochemistry Program."
  - d. Systems that are known pathways for radioactive releases shall be explicitly addressed. Periodic sampling of systems with the potential of becoming radioactively contaminated should also be addressed.
  - e. An onsite meteorological program shall be established and maintained in accordance with the requirements of Regulatory Guide 1.23, February 1972, to provide sufficient data for the performance of dose assessments.
  - f. The collection and processing of technical data required to support the Annual Radioactive Effluent Release Report and non-routine reports to the NRC to comply with DCCP Technical Specifications Sections 6.9.1.6 shall be defined as part of this program. The processing of these reports shall be performed in accordance with XI1, "Regulatory Interface."

**4.2.4 Offsite Dose Calculation Procedures**

- a. Offsite Dose Calculation Procedures (ODCP) shall be established and maintained to define and control the methods for determining offsite doses. NRC Regulatory Guide 1.109, Revision 1, October 1977, as well as its interpretation through NUREG 0133, should be used as guidance for establishing acceptable methods. These procedures shall address the following:
  1. Methods for determining monitoring instrumentation alarm setpoints are addressed in accordance with a Department-Level Administrative Procedure (DLAP) under CY2.



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2. Methods for determining effluent concentrations.
  3. Methods for calculating doses to persons in unrestricted areas surrounding the plant from all exposure pathways.
  - b. Changes to the ODCP shall be processed in accordance with the requirements of CF4, "Modification Control."
- 4.2.5 Environmental Radiological Monitoring Procedure
- a. An Environmental Radiological Monitoring Procedure (ERMP) shall be established and shall contain a description of sample locations, types of sample locations, methods and frequency of analysis, and reporting requirements.
- 4.2.6 Radwaste Treatment Systems
- a. Radwaste Treatment Systems shall be provided to control the processing and release of radioactive materials in gaseous and liquid effluent in compliance with Technical Specification requirements. The design of these systems shall be controlled in accordance with CF3, "Design Control," and the requirements of Regulatory Guide 1.143, October 1979.
  - b. Approval of changes to the Radwaste Treatment Systems shall be processed in accordance with the requirements of CF4, "Modification Control."
- 4.2.7 Quality Assurance Requirements
- In addition to requirements specified in earlier sections and those requirements utilizing procedures in the section 6.2 of this PD, the Control Program shall be subject to the Quality Assurance requirements specified in CY1, "Chemistry/Radiochemistry."

5. RESPONSIBILITIES

- 5.1 The Senior Vice President and General Manager, NPG - is responsible for establishing the policy and general requirements for the Radiological Monitoring and Controls Program, for providing management support and guidance for the program's implementation, and ensuring compliance with all regulatory requirements is maintained.
- 5.2 The Vice President, Diablo Canyon Operations and Plant Manger (VP-DCO&PM) - is responsible for the overall development, implementation, and maintenance of the Radiological Monitoring and Controls Program in accordance with the requirements of this PD.

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- 5.3 The Vice President, Nuclear Technical Services, NPG - is responsible for ensuring that support from reporting departments is provided for the Radiological Monitoring and Controls Program.
- 5.4 The Manager - DCP Operations Services - is responsible for the direct implementation of the Radiological Monitoring and Controls Program with the exception of the design of radwaste treatment and effluent monitoring systems.
- 5.5 The Manager - Engineering Services and the Manager, Regulatory and Design Services (R&DS) - are responsible for maintaining the design bases for installed plant radwaste treatment and effluent monitoring systems, structures, and components and providing technical support to the plant for the operation and maintenance of these systems.
- 5.6 The Manager - Technical and Ecological Services (TES) - is responsible for performing radiological laboratory analysis for the Radiological Environmental Monitoring Program and preparing and reviewing the Annual Radiological Environmental Operating Report.
- 5.7 Other PG&E Departments - called upon to support NPG activities associated with the Radioactive Effluent Control program are responsible for performing their activities in accordance with the requirements of this PD.
- 5.8 The Manager - Nuclear Quality Services (NOS) - is responsible for auditing the Radiological Monitoring and Controls Program at least once every 12 months.
- 5.9 The Manager - Maintenance Services - is responsible for maintaining the radiation monitoring systems and the hardware and software for the Rad Effluent program.

**6. KEY IMPLEMENTING DOCUMENTS**

**6.1 Inter-Departmental Administrative Procedures (IDAPs)**

Inter-Department Administrative Procedures shall be developed to address the following aspects of the Radiological Monitoring and Controls Program:

- 6.1.1 An IDAP shall be developed to define the requirements and responsibilities associated with the Radioactive Effluent Control Program.
- 6.1.2 An IDAP shall be developed to define the requirements and responsibilities associated with the Environmental Radiological Monitoring Procedure.

**6.2 Department-Level Administrative Procedures (DLAPs)**

Departments responsible for performing activities related to the Radioactive Effluent Control program shall develop DLAPs as appropriate to control program activities.

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7. CLOSELY RELATED PROGRAMS

7.1 Interfaces

This section describes each of the principal interfaces and boundaries between this Program Directive and other management processes.

7.1.1 AD10, "Records"

"Records" provides for the retention of Radiological Monitoring and Controls Program records.

7.1.2 CF3, "Design Control"

"Design Control" addresses the implementation of design activities for installed radwaste treatment and effluent monitoring systems in accordance with the requirements of NRC Regulatory Guide 1.143.

7.1.3 CF4, "Modification Control"

"Modification Control" addresses the implementation of modification activities for installed effluent monitoring systems.

7.1.4 CY1, "Chemistry/Radiochemistry"

"Chemistry/Radiochemistry" addresses the methods for chemistry/radiochemistry sampling and analysis of liquid and gaseous radioactive effluents in support of this PD.

7.1.5 OM7, "Problem Resolution"

"Problem Resolution" addresses deficiencies identified during the implementation of the radioactive effluent control program. OM7 also addresses evaluating nonconformances for reportability in accordance with Technical Specifications.

7.1.6 TQ1, "Personnel Training and Qualification"

"Personnel Training and Qualification" identifies training and qualification requirements for personnel.

7.1.7 XI1, "Regulatory Interface"

"Regulatory Interface" addresses the process for required reporting and communication with outside agencies.

7.1.8 CY2.ID1, "Radioactive Effluent Controls Program"

"Radioactive Effluent Controls Program" contains the general program requirements to ensure the requirements of 10 CFR Part 20 and 10 CFR Part 50, Appendix I, are met.

8. RECORDS

None

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9. APPENDICES

- 9.1 Graded Quality Assurance Requirements for Radiological Monitoring and Controls Program

10. ATTACHMENTS

None

11. REFERENCES

- 11.1 Title 10, Code of Federal Regulations,  
11.1.1 Part 20, "Standards for Protection Against Radiation"  
11.1.2 Part 50, Appendix I,  
11.1.3 Part 50, Appendix A, GDC 60, 64,  
11.2 Title 40, Code of Federal Regulations, "Environmental Radiation Protection Standards for Nuclear Power Operations."  
11.3 Regulatory Guide 1.109, Revision 1, October 1977, "Calculation of Annual Doses to Man From Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50 Appendix I."  
11.4 Regulatory Guide 1.143, October 1979, "Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water-Cooled Nuclear Power Plants."  
11.5 Regulatory Guide 1.21, Revision 1, June 1974, "Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluent from Light-Water-Cooled Nuclear Power Plants."  
11.6 Regulatory Guide 1.23, February 1972, "Onsite Meteorological Programs."  
11.7 Regulatory Guide 4.15, Revision 1, February 1979, "Quality Assurance For Radiological Monitoring Programs (Normal Operations) - Effluent Streams and the Environment."  
11.8 Regulatory Guide 4.1, Revision 1, April 1975, "Programs for Monitoring Radioactivity in the Environs of Nuclear Power Plants."  
11.9 Diablo Canyon Nuclear Power Plant Facility Operating Licenses (Unit 1, Unit 2)

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APPENDIX 9.1

GRADED QA REQUIREMENTS  
FOR RADIOLOGICAL MONITORING AND CONTROLS PROGRAM

The basis for these Graded QA requirements is to comply with the regulations of 10 CFR 20, 10 CFR 50, 40 CFR 190, the Technical Specifications and Regulatory Guides 1.21, and 4.15.

1. GRADED ITEMS

Radioactive Effluent monitoring instruments are classified as Category 2 or Category 3 items per Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident." These instruments are used for detection and assessment of releases and possibly detection of containment breach with accomplishment of mitigation of the breach. These items fall under Graded QA requirements.

2. GRADED ACTIVITIES

- 2.1 Installed radiation monitors required per the Technical Specifications 3/4.3.3.6, and 6.8.4.b for monitoring radioactive effluents during plant operations or accidents shall be calibrated at prescribed intervals.
- 2.2 Sampling and analysis of liquid and gaseous effluents shall be performed in accordance with CY1, "Chemistry/Radiochemistry."
- 2.3 Calculations, computer programs, and procedures for evaluating the dose associated with radioactive effluents shall be performed in accordance with approved quality related procedures.

3. GRADED REQUIREMENTS

- 3.1 Effluent releases shall be maintained ALARA and shall be performed in accordance with the requirements of this Program Directive (CY2) to limit the concentrations, doses and doserates as specified in DCPD Technical Specifications 6.8.4, NRC regulations 10 CFR 20, 10 CFR 50 Appendix I, and EPA regulation 40 CFR 190.
- 3.2 The Annual Radiological Environmental Operating Report shall be developed in accordance with Technical Specification 6.9.1.5.
- 3.3 The Annual Radioactive Effluent Release Report shall be developed in accordance with Technical Specification 6.9.1.6.
- 3.4 Records that support and document radioactive effluent releases and dose evaluations shall be controlled in accordance with AD10, "Records."
- 3.5 Personnel involved in direct implementation of Chemistry/Radiochemistry, Operations, or Radiation Protection activities in support of the Radiological Monitoring and Controls Program are qualified in accordance with the requirements of TQ1, "Personnel Training and Qualification."

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APPENDIX 9.1 (Continued)

- 3.6 Notifications and reports to and correspondence with regulatory agencies shall be done in accordance with XII, "Regulatory Interface."
- 3.7 Written plans, procedures and instructions for implementing Radiological Monitoring and Controls Program shall be prepared, processed, and controlled in accordance with AD1, "Administrative Control Program."
- 3.8 Procurement of quality-related equipment or services shall be in accordance with written procedures. Applicable regulatory requirements, design bases, and any other requirements necessary to assure adequate quality shall be included in or invoked by reference in documents for procurement of items or services. Test or acceptance requirements and documentation to be submitted by the supplier shall be identified in the procurement documents. Receipt inspection requirements, if required, shall be identified in the procurement documents.
- 3.9 Deficiencies identified during implementation of this program shall be documented and controlled in accordance with OM7, "Problem Resolution."
- 3.10 Periodic assessments shall be performed at least annually to review the content and implementation of the Radiological Monitoring and Controls Program.