

# Reclamation Manual

## Directives and Standards

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<b>Subject:</b>	Power Review of Operation and Maintenance (PRO&M) Program
<b>Purpose:</b>	Provides periodic assessment of each power facility and/or associated facilities to evaluate the application and effectiveness of power operations and maintenance (O&M). The Bureau of Reclamation benefits from this Directive and Standard (D&S) through its evaluation of local O&M performance and accomplishments which ensures consistency and accountability throughout the power program.
<b>Authority:</b>	Reclamation Project Act of 1902 (Act of June 17, 1902, 32 Stat. 388); the Town Sites and Power Development Act of 1906 (Act of April 16, 1906, ch. 1631, 34 Stat. 116); Reclamation Project Act of 1939 (Act of August 4, 1939, ch.418, 53 Stat. 887); the Flood Control Act of 1944 (Act of December 22, 1944, ch.665, 58 Stat. 887); the Department of Energy Act of 1977 (Act of August 4, 1977, Pub. L. 95-91; 91 Stat. 565); Energy Policy Act of 2005 (Act of August 8, 2005, 119 Stat. 594); and acts relating to individual dams or projects.
<b>Approving Official:</b>	Director, Technical Resources
<b>Contact:</b>	Power Resources Office (PRO), 86-61600

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1. **Introduction.** In May 1996, after several incidents of concern with respect to Reclamation's power facilities, the Commissioner established a team to review Reclamation's Power O&M Program for effectiveness and make recommendations to address any problems. The result of the review was the Commissioner's Power O&M Team Report published in August 1997. One recommendation was to redesign and implement the power review activity and to provide increased authority and emphasis on O&M activities. This D&S is the authorizing document for the PRO&M Program.
2. **Applicability.** This D&S applies to all Reclamation owned or operated powerplants and personnel within Reclamation.
3. **Definitions.**
  - A. **Annual Facility Review (AFR).** A review of management, operations, and mechanical and electrical maintenance performed by local facility personnel.
  - B. **Category 1.** Recommendations involving the correction of severe deficiencies where immediate and responsive action is required to ensure:
    - (1) Structural integrity (soundness of the facility structure and operating equipment necessary to prevent catastrophic failure).

# Reclamation Manual

## Directives and Standards

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- (2) Compliance with legal or regulatory requirements mandated by:
    - (a) state or Federal agencies (where harm to persons or damage to equipment are imminent), or
    - (b) entities regulating power system reliability/stability (i.e., North American Electric Reliability Corporation/Western Electricity Coordinating Council).
  - (3) Power related safety practices (necessary to protect the life or health of employees, visitors, or the public).
- C. **Category 2.** Recommendations that cover a wide range of important matters where action is needed to:
- (1) prevent or reduce further damage;
  - (2) preclude possible structural failure or operational disruption; or
  - (3) meet mandatory safety, management, operational, maintenance, or Reclamation Facilities Instructions, Standards, and Techniques (i.e., FIST), local practice, and industry standards.
- D. **Category 3.** Recommendations covering matters that are believed to be sound and beneficial suggestions to improve or enhance the O&M.
- E. **Comprehensive Facility Review (CFR).** A review of management, operations, Supervisory Control and Data Acquisition (SCADA), and mechanical and electrical maintenance performed by personnel external to the region.
- F. **Periodic Facility Review (PFR).** A review of management, operations, and mechanical and electrical maintenance performed by personnel internal to the region.
- G. **Power Resources Information System (PRIS).** System where recommendations from power AFRs, PFRs, and CFRs are tracked. Additionally, recommendations from incidents and other special exams and reports can be included.
- H. **Recommendation.** Advises facilities where Reclamation O&M practices or local practices are not met, or identifies where improvements can be made.
4. **Responsibilities.**
- A. **Deputy Commissioner, Operations.** The Deputy Commissioner, Operations sponsors the PRO&M Program.

# Reclamation Manual

## Directives and Standards

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- B. Regional Directors.** Regional directors are responsible for:
- (1) ensuring that all power facilities receive an annual review or PFR;
  - (2) conducting an annual power O&M meeting with area managers responsible for power facilities and the Deputy Commissioner, Operations or designee;
  - (3) providing an annual update on the status of recommendations within their region during the annual power meeting;
  - (4) entering and tracking PRO&M recommendations in the PRIS system;
  - (5) completing all PRO&M recommendations;
  - (6) ensuring facilities are reviewed per the standards as set forth in the Temporary Reclamation Manual Release (TRMR) D&S, *Power Facilities Technical Documents* (FAC TRMR-32); and
  - (7) providing electrical, mechanical, operations, SCADA, and management reviewers for the PRO&M Program.
- C. Director, Technical Resources.** The Director, Technical Resources, or as delegated, is responsible for administration of the PRO&M Program.
- D. Senior Advisor, Hydropower.** The Senior Advisor, Hydropower is responsible for communicating and resolving any PRO&M issues with the regional directors.
- E. Area Managers.** Area managers are responsible for:
- (1) coordinating and directing AFRs;
  - (2) preparing and submitting documentation prior to a CFR or PFR;
  - (3) planning, scheduling, and completing recommendations in a timely manner or as directed;
  - (4) updating the status of recommendations according to regional office practices (at a minimum, an update of the status is to occur twice a year, by October 15 and April 15);
  - (5) preparing an annual power O&M report and submitting the report according to regional office practices; and
  - (6) presenting and discussing power O&M issues, activities, and accomplishments.

# Reclamation Manual

## Directives and Standards

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- F. **Manager, PRO.** The PRO Manager is responsible for:
- (1) developing and administering the overall PRO&M Program;
  - (2) coordinating the design and needs of PRIS with the appropriate office;
  - (3) coordinating and performing CFRs in accordance with Reclamation standards;  
and
  - (4) preparing and transmitting an annual summary report.
- G. **Regional Power Managers.** The regional power managers are responsible for:
- (1) maintaining a comprehensive inventory of the power facilities within their jurisdiction;
  - (2) determining which facilities receive CFRs, PFRs, and AFRs;
  - (3) coordinating and performing PFRs in accordance with Reclamation standards;
  - (4) ensuring processes are in place to track recommendations and update PRIS; and
  - (5) ensuring customers are extended an invitation to participate in reviews.
- H. **Chief, Infrastructure Services Division, Technical Service Center (TSC).** The TSC, Chief, Infrastructure Services Division will be the primary provider for team leads that also serve as SCADA, electrical, and, mechanical reviewers for the CFRs. The PRO will provide the TSC the yearly CFR schedule and budget requirements by October 1 for the following fiscal year.
5. **PRO&M Program Goals.** To provide oversight of Reclamation power facilities and assist in improving their O&M programs to:
- A. meet Reclamation and applicable industry standards to protect the Federal investment;
  - B. keep power infrastructure in good working order to provide reliable service; and
  - C. identify risks to the safety of plant personnel, public safety, property, the environment, or cultural resources.
6. **Coordination with Other Reviews.** Whenever possible, the reviews associated with this D&S will be coordinated with other reviews to avoid scheduling conflicts and overlapping recommendations. Such programs include, but are not limited to, the Review of O&M Program Examination of Associated Facilities and the Review/Examination Program for High- and Significant-Hazard Dams.

# Reclamation Manual

## Directives and Standards

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### 7. **Funding.**

- A. PRO&Ms will be funded by each facility with costs distributed in the same manner as other O&M costs.
- B. Costs incurred by the PRO and the TSC in maintaining the core program, conducting training, and meeting reporting requirements which cannot be allocated to individual facilities will be funded via Power Program Services' funding distribution.

### 8. **Recommendations.**

- A. **Tracking.** All recommendations will be tracked to completion in PRIS. An update of the recommendation status, in PRIS, will occur twice a year, by October 15 and April 15.
- B. **Status.** All recommendations will be designated as complete, deleted, or incomplete.
- C. **Deleting.** Prior to deleting a recommendation, one of the following must occur:
  - (1) discussion between the PRO Manager, the area office manager, the regional power manager, and, if possible, the reviewer that made the recommendation to determine if it is appropriate to delete;
  - (2) a subsequent review team recommends deletion based on sound technical judgment or changes in conditions or requirements;
  - (3) original reviewer rescinds the recommendation; or
  - (4) administrative errors in initial entries.
- D. **Timeliness.**
  - (1) **Category 1.** Based on the severity of the deficiency and condition at the time of the review, the review team may prescribe an appropriate timeframe for completing the recommendation. Suggested remedial measures are discussed at the exit briefing and included in the review report. Within 30 days following receipt of the recommendation(s), the regional director will provide plans for accomplishing Category 1 recommendations, including the scheduled completion date, to the following:
    - (a) Deputy Commissioner, Operations;
    - (b) Director, Technical Resources;
    - (c) Senior Advisor, Hydropower; and

# Reclamation Manual

## Directives and Standards

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(d) Manager, PRO.

(2) **Category 2.**

(a) Recommendations are to be acted upon as soon as practical following receipt of the review report. It is desirable that those recommendations that can be included, scheduled, and accomplished as part of the normal O&M program be undertaken as soon as operation conditions allow. Some recommendations require a longer time to accomplish because of the need to complete designs or secure equipment, materials, or personnel. In such cases, the related planning and budgeting is to be initiated in a timely manner.

(b) Those recommendations that require special funding and cannot be accomplished within the existing O&M budget shall be included in the next budget formulation cycle. Any Category 2 recommendation remaining incomplete at the time of the following review is addressed during that review and within the corresponding review report.

(c) Where circumstances require, reviewers may suggest timeframes for completion on current or incomplete recommendations.

(3) **Category 3.** Recommendations are to be acted upon prior to the next CFR or PFR.

E. **Transmittal.** Category 1 recommendations will be transmitted to the appropriate regional director via formal memorandum immediately following the review. All recommendations will be transmitted via the review report.

## 9. Annual Summary Report.

### A. Scope.

(1) Provides an overview of effectiveness in accomplishing Category 1, 2, and 3 recommendations related to the power facilities.

(2) Highlights Reclamation power O&M issues, successes, status of recommendations, and recommendations appropriate for Reclamation management action.

### B. Transmittal.

(1) The annual summary report will be sent from the Director, Technical Resources to the Deputy Commissioner, Operations, and the regional directors.

# Reclamation Manual

## Directives and Standards

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### 10. Annual Report.

- A. **Scope.** Annual reporting requirements are intended to promote the collection of factual input to assess the effectiveness of area office power O&M, including accomplishments, goals, and compliance with technical standards; O&M business practices; other reviews; power improvement program; and safety, security, environmental, and associated programs.
- B. **Content.** The area office and regional office annual power O&M reports will focus on four primary areas:
- (1) **Accomplishments.** The report will include replacements; major repairs; enhancements; production/consumption; benchmarking against Reclamation and industry standards; performance measures; and status of previous recommendations from reviews, incidents, travel reports, or other sources.
  - (2) **Goals.** The report will be used to help facilitate goals including development of performance measures, upcoming repairs, plant rehabilitation or modernization, any unique or difficult issues, and operational anomalies or constraints.
  - (3) **Evaluation of Existing Power O&M Practices.** The report will include any unique or challenging issues, effectiveness of the PRO&M, power incident reviews, adequacy of business practices, and adequacy of technical standards and procedures.
  - (4) **Recommendations.** Any recommendations developed from or agreed to at the meeting will be documented as Category 1, 2, or 3 recommendations and tracked to completion as described below.

### 11. AFR.

- A. **Scope.** The intent of the AFR is to ensure that facilities are meeting the minimum standards of power O&M practices through review by the local operating office. The AFR covers the same areas as PFR and CFR (i.e., electrical maintenance, mechanical maintenance, power operations, and power management). Specific topics in these areas are identified in the AFR checksheet templates provided by PRO, 86-61600, and made site-specific by each area office.
- B. **Frequency.** AFRs will be conducted on an annual basis and may exclude years when PFRs or CFRs are performed.
- C. **Content.** The review content will be documented specifically for each plant being reviewed.

# Reclamation Manual

## Directives and Standards

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- D. **Personnel.** AFRs will be conducted by staff of the facility operating office or other entity, as determined by the area manager.
- E. **Reviewer Qualifications.** Personnel involved in AFRs must have an understanding of O&M of power facilities.
- F. **Documentation.** AFRs are documented by completing the facility-specific AFR checksheets or completed CFR/PFR checksheets. The checksheets may be accompanied by a short summary report. AFRs identify new recommendations and provide the status of any outstanding AFR, PFR, or CFR recommendations and any power incident evaluation recommendations. Completed AFR checksheets are to be made available upon request. A copy of the AFR checksheets shall be sent to the regional power manager. Upon completion of the AFR, the area manager must be briefed on the results of the review and any recommendations.

### 12. PFR.

- A. **Scope.** The intent of a PFR is to ensure that facilities are meeting required standards of power O&M practices. PFRs are broader in scope, broader in review team composition, and more detailed in content than the AFR. In addition to reviewing checksheets, PFRs will include interviews with plant personnel, visual inspections of equipment, and reviewing O&M records to identify compliance with standards. The PFR will cover the full scope of facility power O&M including, but not limited to, O&M management practices; facility operations; equipment condition assessment; electrical, mechanical, structural (optional) and civil maintenance (optional); an overview of safety; public safety; and status and schedule of rehabilitation, life extension, and/or modernization work.
- B. **Frequency.** PFRs will be conducted at each facility every 6 years and will be scheduled to alternate with the CFRs so that either a PFR or CFR takes place once every 3 years.
- C. **Content.** As a minimum, the review will encompass the following items:
  - (1) evaluation of the AFR and PFR checksheets;
  - (2) identification of problem areas;
  - (3) review of selected test results and O&M records;
  - (4) status of review or incident recommendations;
  - (5) visual inspection of facility and equipment;
  - (6) interviews with selected facility staff;



# Reclamation Manual

## Directives and Standards

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- (7) formal documentation of review findings and recommendations;
  - (8) review of rehabilitation work items and schedules;
  - (9) review of the job hazard analysis (i.e., JHA) records and the Hazardous Energy Control Program;
  - (10) confirmation of completion of Safety and Health Evaluation and Inspection;
  - (11) evaluation of O&M and management practices and records to verify compliance with Reclamation and industry standards to protect the Federal investment;
  - (12) confirmation of completion of associated programs;
  - (13) recognition of exceptional and/or innovative practices and approaches;
  - (14) review of computerized maintenance management system (i.e., CMMS) practices; and
  - (15) evaluation of equipment condition assessment practices and results.
- D. **Personnel.** PFRs will be conducted by a team designated by the regional director and at least one office removed from the area office where the PFR is occurring. The review team normally consists of specialists as determined by the regional power manager and the needs of the facility.
- E. **Reviewers' Qualifications.** PFR reviewers are required to have a thorough knowledge of O&M and safety of power facilities. The PRO, in conjunction with the regional power manager, is responsible for providing training and shadow opportunities. Team members will have a strong background in power O&M or have specialized expertise as required by the needs of the facility and Reclamation.
- F. **Documentation.**
- (1) Prior to the review, checksheets will be submitted by the facility to the review team as requested in the memorandum announcing the review. If the checksheets are not completed in the timeframe requested, the review team, in conjunction with the area office and regional power manager may cancel the review and reschedule the review date.
  - (2) A formal report will be prepared detailing the findings and recommendations of the PFR. The report will include a summary of new recommendations, discussion of recommendations from incident evaluations, and details and reasoning for new recommendations.

# Reclamation Manual

## Directives and Standards

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- (3) The formal report will be transmitted to the regional director; Senior Advisor, Hydropower; area manager; facility manager; and the PRO Manager.
- (4) At the onset of the review, an in-briefing will be conducted with the appropriate staff to discuss the goals, scope, and process for the review.
- (5) Upon completion of the onsite review, an exit briefing will be conducted with appropriate staff to review the findings and proposed recommendations.

### 13. CFR.

- A. **Scope.** The CFR expands the scope of the AFR and PFR to an extensive O&M audit of the power facilities. CFRs provide an agency perspective on power facility O&M, with liaison to upper management, and highlights successes and problems.
- B. **Frequency.** CFRs will be conducted at each facility every 6 years and will be scheduled to alternate with the PFRs so that either a PFR or CFR takes place once every 3 years.
- C. **Content.** Specific technical content of CFRs is the same as the PFR; however, CFRs will focus on two aspects:
  - (1) **Corporate Perspective.** Provides local managers a corporate perspective on facility power O&M and is concerned with application of technical standards and practices. Participation facilitates:
    - (a) a high-level audit of the implementation of local power O&M according to Reclamation and industry standards;
    - (b) achievement of the local power O&M goals as they relate to Reclamation goals; and
    - (c) an exchange of information derived from the corporate perspective that can directly improve local power O&M.
  - (2) **Management Liaison.** Provides upper-level Reclamation managers information to facilitate understanding of problems and successes that will result in improvements in Reclamation power O&M.
- D. **Personnel.** CFRs will be conducted by a team designated by the PRO with concurrence by the Team Lead. Participants may include TSC staff; PRO staff; regional office power specialists; area office and facility staff; and non-Reclamation entities.

# Reclamation Manual

## Directives and Standards

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- E. **Reviewer Qualifications.** CFR reviewers are required to have a thorough knowledge of O&M and safety of power facilities. The PRO, in conjunction with the regional power manager, is responsible for providing training and shadow opportunities. Team members will have a strong background in power O&M or have specialized expertise as required by the needs of the facility and Reclamation.
- F. **Documentation.**
- (1) CFRs will result in a published report to the appropriate regional director; Deputy Commissioner, Operations; Senior Advisor, Hydropower; PRO Manager; regional power manager; area manager; review team; and other appropriate personnel.
  - (2) Prior to the review, checksheets will be submitted by the facility to the review team as requested in the memorandum announcing the review. If this is not completed in the timeframe requested, the review team, in conjunction with the area office and PRO Manager, may cancel the review and reschedule the review date.
  - (3) The report will contain all official recommendations prioritized by category. All reviewers will develop recommendations mutually.
  - (4) The report will be signed by the PRO Manager, the program manager, and co-signed by the team members and published by the PRO.
  - (5) At the onset of the review, an in-brief will be conducted with the appropriate staff to discuss the goals, scope, and process for the review.
  - (6) Upon completion of the onsite review, an exit briefing will be conducted with appropriate staff to review the findings and proposed recommendations.
14. **Dispute Resolution.** Every effort will be made to resolve disagreements regarding report findings or recommendations informally between the review team and site managers. Where disputes cannot be resolved at this level, the regional power manager, in partnership with the PRO Manager, shall be consulted in order to identify an equitable solution. If this is not successful, the disagreement must be documented in writing by the regional director within 30 days of the review report publication and submitted to the Senior Advisor, Hydropower who shall seek a resolution and make a determination.
15. **Customer Participation.** Customers will be given the opportunity to participate in the PRO&M reviews at their own expense. These individuals will participate in team meetings and discussions in the development of recommendations. The team lead will have the final decision regarding final recommendations.

# Reclamation Manual

## Directives and Standards

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16. **Records Retention.** PRO&M Program related records shall be retained as follows:

- A. Annual Summary Report – permanently;
- B. Annual Report – permanently;
- C. AFR – local office reference and destroy after 6 years;`
- D. PFR - local office reference and destroy after 25 years; and
- E. CFR - local office reference and destroy after 25 years.