

# RECLAMATION

*Managing Water in the West*

**Facilities Instructions, Standards, and Techniques**  
**Volume 6-5**

## **POWER REVIEW OF OPERATIONS AND MAINTENANCE PROGRAM**



**U.S. Department of the Interior**  
**Bureau of Reclamation**  
**Denver, Colorado**

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**Facilities, Instructions, Standards, and Techniques  
Volume 6-5**

**POWER REVIEW OF OPERATIONS AND  
MAINTENANCE PROGRAM**

**Power Resources Office**



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Bureau of Reclamation  
Denver, Colorado**

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## Acronyms and Abbreviations

AFR	Annual Facility Review
CARMA	Capital Asset and Resource Management Application
CFR	Comprehensive Facility Review
D&S	Reclamation Manual Directive and Standard
FIST	Facilities Instructions, Standards, and Techniques
GPRA	Government Performance and Results Act
HECP	Hazardous Energy Control Program
ICS	Industrial Control Systems
JHA	job hazard analysis
O&M	Operation and Maintenance
PEB	Power Equipment Bulletin
PFR	Periodic Facility Review
PM	preventive maintenance
PPS	Power Program Services
PRCS	permit-required confined spaces
PRIS	Power Review Information System
PRO	Power Resources Office
PRO&M	Power Review of O&M
RE	Report Editor
Reclamation	Bureau of Reclamation
RTL	Review Team Lead
RTM	Review Team Member
SCADA	Supervisory Control and Data Acquisition
SL	Specialty Lead
SRC	Site Review Coordinator
TSC	Technical Service Center



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# **1. Introduction**

## **1.1 Purpose**

The Power Review of Operations and Maintenance (PRO&M) Program provides periodic assessment of each power facility and its associated facilities to evaluate the application and effectiveness of power operations and maintenance (O&M). The Bureau of Reclamation (Reclamation) benefits from this program through its evaluation of local O&M performance and accomplishments in accordance with Facilities Instructions, Standards, and Techniques (FIST) volumes and industry standards to ensure consistency and accountability throughout the power program.

This document provides practical guidance to Reclamation staff who are preparing for, conducting, and following up on reviews under the PRO&M. This FIST is to be used by personnel in area and regional offices and the Denver Office<sup>1</sup> to conduct the various levels of reviews.

## **1.2 Background**

In May 1996, after several incidents of concern, the Commissioner established a “Power O&M Team” to review Reclamation’s Power O&M Program for effectiveness and to make recommendations to address any problems found. One recommendation from this study was to “reinvent” the PRO&M review and to provide more authority to and emphasis on the PRO&M. A working group was later established, and the result was Directive and Standard FAC 04-01, Power Review of Operation and Maintenance Program, the authorizing document for the new PRO&M Program.

## **1.3 Reclamation Standard Practices**

Refer to the Reclamation Manual Directive and Standard (D&S) FAC 04-14 for more details concerning Reclamation Standard Practices.

## **1.4 Effect of Section Headings**

Section headings or titles appearing in this document are inserted for convenience only and must not be construed as interpretations of text or a standard practice.

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<sup>1</sup> For purposes of this document, the term “Denver Office” includes the Power Resources Office and the Technical Service Center.

## **1.5 Responsibilities**

A successful PRO&M process requires active participation at every level of the power organization. In addition to the specific responsibilities listed under “Review Process” below, the responsibilities of respective offices are:

### **1.5.1 Area Office/Facility**

- **[Conduct Annual Facility Review (AFR) per section 4 of this FIST volume and track completion in Capital Asset and Resource Management Application (CARMA).**
- **Provide logistical, technical, and management assistance for Periodic and Comprehensive Facility Reviews (CFR).**
- **Resolve or complete all recommendations resulting from all levels of review.**
- **Track review recommendations and ensure they are entered into the Power Resources Information System (PRIS)**
- **Report the status of the PRO&M report findings and recommendations to the regional director and regional power office.**
- **Fund Comprehensive and Periodic Facility Reviews (PFR).**
- **Provide management, operations, supervisory control and data acquisition (SCADA), electrical, and mechanical reviewers as requested in support of the PRO&M Program.]**

### **1.5.2 Power Manager/Regional Office**

- **[Maintain a comprehensive inventory of the region’s power facilities**
- **Schedule and conduct PFR:**
  - **Establish the PFR teams.**
  - **Establish cost estimates for PFR.**
  - **Transmit 120-day memorandum to area office, including data request.**
  - **Lead the PFR team during the review process.**
  - **Coordinate, publish, and distribute PFR reports in accordance with Reclamation standards.**

- **Track completion of the PFR in CARMA.**
- **Assist the Power Resources Office (PRO) in scheduling and conducting CFRs.**
- **Track review recommendations and ensure they are entered into the PRIS.**
- **Provide review and oversight of completed recommendations from area office.**
- **Ensure the recommendation status is updated in PRIS at least twice a year by October 15 and April 15.**
- **Update the regional resource list in conjunction with the Regional Steering Committee members.]**

#### **1.5.3 Manager, Power Resources Office**

- **[Provide oversight of both Reclamation power O&M practices and the PRO&M.**
- **Coordinate the design and needs of PRIS with the appropriate office.**
- **Prepare and transmit an annual summary report.]**

#### **1.5.4 Power Review of O&M Program Manager**

- **[Transmit memorandum informing area offices of upcoming comprehensive reviews.**
- **Schedule and conduct CFR:**
  - **Establish the CFR teams.**
  - **Establish cost estimates for the CFR.**
  - **Transmit 120-day memorandum to area office, including data request.**
  - **Assist the CFR team through the review process.**
  - **Coordinate, publish, and distribute CFR reports in accordance with Reclamation standards.**
- **Track completion of the CFR in CARMA.**

- **Maintain the review checksheet templates in conjunction with Technical Service Center (TSC) technical experts**
- **Maintain review program documents, including CFR/PFR report templates.**
- **Assist regional and area offices in conducting Periodic and Annual Facility Reviews.**
- **Manage PRIS.**
- **Inform the Deputy Commissioner, Operations of the status of PRO&Ms and recommendations through the annual regional directors' meetings.**
- **Maintain the PRO&M Program information and documents on the intranet.**
- **Develop and facilitate training on the PRO&M Program.**
- **Facilitate the PRO&M Steering Committee.**
- **Update the master resource list in conjunction with the Regional Steering Committee members.**
- **Annually update cost estimates and checksheets in conjunction with the Steering Committee.**
- **Resolve or complete all recommendations made to the PRO.**
- **Maintain the Periodic and Comprehensive Facility Review schedule as necessary.**
- **Coordinate dispute resolution.]**

#### **1.5.5 Power Review of O&M Steering Committee**

**[The Steering Committee is responsible for ensuring that the PRO&M remains an effective process. The committee consists of nine members—two from PRO, a representative from each region, and two members from the Technical Service Center. For more information on the Steering Committee, go to the PRO intranet site. Responsibilities include:**

- **Communicate information back to each respective regional, area, and field office.**
- **Provide feedback to and coordinate with the Senior Advisor, Hydropower, and the power managers.**

- **Develop and facilitate training for reviewers.**
- **Review, develop, and initiate revision to existing documentation—for example, the PRO&M guiding documentation.**
- **Track and monitor the costs associated with conducting reviews.**
- **Look at emerging issues and track systemic/key issues.**
- **Collect feedback on the PRO&M Program and revise the program based on that feedback.**
- **Coordinate the PRO&M Program with associated Reclamation programs.**
- **Provide coaching, mentoring, advice, and feedback for reviewers.**
- **Provide advice and solutions regarding the PRO&M Program.**
- **Interface with the power managers and senior management to resolve issues.**
- **Work to continually improve the PRO&M Program.]**

#### **1.5.5 Review Team Lead (RTL)**

One of the team members is designated as the Team Lead. This individual leads the Review Team through all phases of the review, including acquiring and distributing drawings, checksheets, and other data. In the case of the CFR, the Power Resources Office Program Manager assists the RTL in organizing, planning and following up after the review. For a PFR, the Team Lead organizes and coordinates the review. The RTL plays an active role to ensure that the Review Team understands the desired report format and that the report is progressing to completion. The RTL and Site Review Coordinator must work together to develop the agenda and ensure that the onsite visit meets the needs of the Review Team and facility staff.

#### **1.5.6 Review Team Member (RTM)**

Periodic and Comprehensive Facility Reviews are conducted by a PRO&M Review Team (Review Team). The Review Team generally is composed of one specialist in each of the four review areas (electrical maintenance, mechanical maintenance, operations, and management), also known as a “Specialty Lead.” Other specialty areas may include SCADA and structural as deemed necessary by Power Resources and regional staff. The Review Team Members conduct the review in their specialty area and provide material for the review report, including recommendations. Reviews

at large facilities may require more than one specialist in a review area. Reviews at small facilities may have fewer Review Team Members.

### **1.5.7 Report Editor (RE)**

The CFR Team Lead will coordinate with REs from the TSC to edit the CFR report, whereas the PFR Team Lead, or a delegated person, performs this activity for the PFR report.

### **1.5.8 Site Review Coordinator (SRC)**

The area office/facility appoints one individual to be the SRC to help facilitate the Periodic and Comprehensive Facility Reviews. The SRC works with the Review Team Lead and PRO, as necessary, to coordinate logistics and ensure that all aspects of the review are accomplished including collecting and transmitting drawings, checksheets, job hazard analysis (JHA), and other needed data to the Team Lead. The SRC must ensure that all union considerations are addressed.

### **1.5.9 Shadows**

Shadowing is an effective means of training personnel new to the review process, increasing the number of qualified reviewers, and improving the overall quality of the program. A shadow must attend the training and be recommended by an experienced reviewer. A shadow works with the experienced reviewer and functions in that capacity by accepting assignments such as writing a portion of the review report, presenting final recommendations, interviewing personnel, or other duties as assigned by the reviewer. Shadows should be knowledgeable in the specialty area of O&M they are reviewing (e.g., electrical maintenance).

Shadow reviewers should participate fully in the review, under the direction of the Specialty Lead (SL) reviewers.

## **2. Power Review of O&M Program**

### **2.1 Content**

The PRO&M is intended to be a comprehensive assessment of the power O&M practices at each Reclamation power facility. The PRO&M addresses specific areas or specialties of: (1) electrical maintenance, (2) mechanical maintenance, (3) operations, and (4) management. A SCADA review occurs during CFRs, only at Control Centers, and is reviewed by operations and electrical reviewers. In some regions, structural aspects also are addressed.

The PRO&M is primarily a processed-based review. A comprehensive equipment condition assessment is beyond the limited time and resources of the Review Team.

Safety, to the degree that it is directly applicable to power O&M, is addressed; but the PRO&M is not intended to be a comprehensive safety review.

#### **2.1.1 Systemic Issues**

Systemic issues are those identified as a problem due to issues inherent in the overall system, rather than due to a specific, individual, or isolated factor. These may be inherent within a region, area office (multiple facilities), or Reclamation as a whole.

The PRO&M Steering Committee identifies these issues annually and will discuss these at the annual regional director's meeting. Existing systemic issues will be listed in the 120-day memorandum and the CFR/PFR report template.

### **2.2 Schedules**

Each region must schedule and ensure completion of the review in a timely manner. Periodic and Comprehensive Facility Reviews may refer to information gathered during AFRs.

A CFR of Reclamation power facilities must take place once every 6 years. A PFR also must take place once every 6 years, alternating with the CFR to ensure that an outside review takes place once every 3 years. Comprehensive and Periodic Facility Reviews are scheduled several years in advance in cooperation with area and regional offices. The schedule can be found at the PRO Intranet site.

Timely submittal of review data is essential for Review Team preparation. The CFR or PFR may be rescheduled if the data is not submitted by the area office/facility at least 3 weeks before the onsite review date, and the regional Power Manager, Area Manager, and Regional Director will be notified by the Power Resources Office of the reason for the delay.

## 2.3 Funding

**[Funding for Comprehensive, Periodic, and Annual Facility Reviews is the responsibility of area office/facility.]** Funding for Denver Office costs is accomplished by a combination of the following methods:

### 2.3.1 Power Program Services (PPS)

**[Core support service costs that cannot be allocated to specific facilities are funded through PPS via the Power Resources Office. This includes PRIS management, training development, and maintaining the schedule, this FIST, the PRO Intranet site, etc.]**

### 2.3.2 Review Costs

Review costs applicable to specific facilities (i.e., previsit preparation, onsite visits, travel, per diem, and report preparation) are funded by a direct charge process so that a facility only pays for a review in the year that it is conducted. For example, the TSC will establish a service agreement with the area office/facility for TSC costs associated with a Comprehensive or Periodic Facility Review. Direct charging was approved by the power managers as the best way to identify to customers the actual cost of O&M.

### 2.3.3 Shadow Costs

Labor costs of shadow reviewers are absorbed by the shadow reviewer's home office. Non-labor costs are included in the direct charge costs to the facility being reviewed. This funding method for shadow reviewers was approved by the power managers. Costs of shadows from other agencies are borne entirely by those agencies.

Sometimes, shadows from other agencies attend the reviews with permission of the Review Team Lead and site management.

### 2.3.4 Estimated Costs

Estimated costs of reviews vary according to the size of facilities being reviewed. For size category definitions, classification of specific reviews by size, and estimated costs, see the PRO Intranet site.

## 2.4 Staffing

Staffing for reviews is arranged by the office responsible for scheduling and conducting the review as described in section 1.5. Generally, each review includes team members covering the four specialty areas of electrical maintenance, mechanical maintenance, operations, and management. For smaller facilities, some areas may be combined to be more efficient (e.g., one Review Team Member covering both operations and management). In the case where a

region wants to include powerplant structural aspects in the review, the region provides the appropriate staff. SLs in each of the four review areas lead their part of the review, prepare any recommendations, and draft their report section. A SL usually works individually as a Review Team Member but also may have other specialists working with them on large reviews. The RTM may have shadows accompany them; in addition, they also could be Team Leads. The term “lead” is used to denote this function.

Since expertise in these specialties is sometimes not available locally, Reclamation shares resources as needed. PFR may be staffed from other area offices within the region or from staff from other regions. In some cases, it may be necessary to acquire PFR team members from PRO, TSC, or the United States Army Corps of Engineers.

CFRs are staffed by reviewers outside of the region being reviewed.

The Power Resources Office is responsible for maintaining a resource list of personnel available for PRO&Ms. Changes to the list must be coordinated with the PRO. Each regional office will send revisions to the resource list to the PRO as requested. The resource list is posted at the PRO Intranet site.

At times, “shadow” reviewers accompany Review Team Members for training.

The RTL will coordinate with and obtain concurrence from the facility and area office regarding the number of shadows. Shadows should be limited to a reasonable number to keep costs down and not overwhelm the site with a large Review Team. This is especially important for small facilities.

Review Team Members from outside Reclamation should be approved by the RTL, in coordination with the regional PFR coordinator or PRO&M Program manager.

Representatives from the regional power office or the Power Resources Office may attend the review in a facilitating or support capacity but are not officially part of the CFR Review Team.

Customers will be given the opportunity to participate in the PRO&M reviews at their own expense. These individuals may participate in team meetings and discussions to develop recommendations.

## **2.5 Coordination with Other Activities**

PRO&Ms should be coordinated with other review and inspection activities to reduce the impact on field staff who must participate. Schedules for all PRO&Ms must be coordinated with regional/area office/facility personnel who are most cognizant of potential conflicts. However, coordination with other activities should not be allowed to dilute or delay the PRO&M.

## **3. Checksheets and Templates**

### **3.1 Checksheets**

It is important that completed, site-specific checksheets and other requested data be furnished in a timely manner to the Periodic and Comprehensive Facility Review Teams so that adequate review can take place before the site visit. Review checksheets are the most important review tool and form the foundation of the PRO&M. Checksheets are used during the Annual, Periodic, and Comprehensive Facility Reviews; however, AFR checksheets vary in form and content from those used for Periodic and Comprehensive Facility Reviews.

Checksheets are grouped into four main categories along with a SCADA checksheet for Control Centers:

- Electrical maintenance
- Mechanical maintenance
- Operations
- Management
- Industrial Control Systems (ICS) and SCADA

### **3.2 Templates**

#### **3.2.1 Periodic and Comprehensive Facility Review Checksheets**

Electronic checksheets for electrical and mechanical checksheets are generated within CARMA. Electronic versions of the checksheet templates for management, operations, and SCADA can be downloaded from the PRO Intranet site.

#### **3.2.2 Annual Facility Review Checksheets**

AFR checksheets are more streamlined than PFR and CFR checksheets; they address the highest priority issues that must be confirmed annually. Their abbreviated nature should expedite the Annual Facility Review and minimize paperwork. AFR checksheets are self-explanatory and may be requested by Periodic and Comprehensive Facility Review Teams to prepare for those reviews. An electronic version of the checksheet template can be downloaded from the PRO Intranet site.

### **3.3 Preparation**

Preparing checksheets for the review can be very time consuming, so adequate time and personnel should be allotted for the task. CARMA reports are used to expedite data collection to fill in the checksheets.

### 3.3.1 Electrical and Mechanical Maintenance Checksheets

See CARMA Checksheet Desktop Reference.

#### (1) Preventive Maintenance (PM) Task or Test

This field identifies the action(s) required to adequately maintain or test the equipment according to Reclamation's established standards. PM indicates Preventive Maintenance.

- **“Test”** on the electrical checksheets generally indicates a “maintenance test” used on a periodic or routine basis to determine equipment condition resulting from normal operation. Maintenance testing may or may not be scheduled as a PM and could be scheduled to coincide with an equipment outage.

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**Note:** Electrical checksheets may not include all “diagnostic tests” that are used to determine equipment condition after unusual operating conditions (e.g., fault or overspeed).

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For diagnostic tests, other references must be consulted. CARMA job plans are a good source of information for identifying PM tasks or tests performed locally.

#### (2) Date Last Performed

A date must be entered into this field representing the last time the maintenance action or test was actually performed. The date entered must be supported with adequate documentation from a CARMA work order or similar recordkeeping system.

#### (3) Job Plan/Work Order

This field identifies the CARMA job plan and work order numbers that document the date last performed and the actual work accomplished. Where CARMA is not used, a reference to similar supporting documentation is to be entered.

#### (4) Recommended Interval

This field indicates the Reclamation accepted standard or policy interval for performing the requirement. The interval is based on practices accepted in the industry and in Reclamation as documented in the “Reference” field.

**(5) Reference**

This field identifies the technical standards, policies, or established business practices from which the maintenance action, recommended intervals, or requirements are derived.

**(6) Met/Not Met**

This field denotes whether the requirement has been met (i.e., that work performed met the PM or maintenance test and whether the date last performed meets the recommended interval or an acceptable site interval). This field also should contain the word “variance” if one applies to this PM task or test.

**(7) Notes**

This field is used to denote any unusual or mitigating factors that apply to the review. Included here are the rationale for deviation from the recommended interval or requirement, justification for the site interval, and reference made to the variance that authorizes the deviation.

**3.3.2 Power Operations and Management Checksheets**

It is the responsibility of the area office to ensure that site-specific PFR and CFR checksheets accurately reflect operations and management in the facilities. Checksheet fields, including information local staff must enter into power operations and management checksheets, are explained below. When editing templates to make site-specific checksheets, items (rows) that do not apply (i.e., Control Center Only) should be marked in the “Notes” column as “N/A” or “Not Applicable,” and new types should be added for items not covered.

Footnotes have been added to provide additional information or define terms. In some cases, internet addresses have been provided.

**(1) Item**

This identifies major categories and subcategories of operations and management to be addressed during these reviews. It is the responsibility of the area office to ensure that the site-specific checksheets accurately reflect operations and management tools and techniques used locally.

**(2) Requirement**

This field indicates the Reclamation accepted standard, requirement, or business practice for minimally accomplishing the item in question. The requirement is based on practices accepted in the industry and Reclamation as documented in the “Reference” field.

**(3) Reference**

This field identifies the technical standards, policies, established business practices, or recommended practice from which the operation or management requirements or recommended intervals are derived.

**(4) Frequency**

This field indicates the Reclamation accepted standard or policy interval for performing the requirement. The interval is based on practices accepted in the industry and in Reclamation as documented in the “Reference” field.

**(5) Met/Not Met**

Information must be entered into this field indicating whether the site has met the requirement and recommended frequency as evidenced by the actual performance (enter “Yes” or “No”). This field also should contain the word “variance” if one applies to this item.

**(6) Notes**

This field is used to denote any unusual or mitigating factors that apply to the review. Included here is the rationale for deviation from the recommended interval or requirement, if applicable, and a reference made to the variance that authorizes the deviation.

**3.3.3 Supporting Documentation**

Documentation including site-specific checksheets must be substantiated with references to supporting documentation. All documentation must be maintained by the Team Lead or submitted to the Power Resources Office (CFR)/regional power office (PFR). Supporting documentation references for the respective activities are listed as follows.

**(1) Maintenance**

Completed CARMA work orders, PM masters, job plans, or summary reports from CARMA verifying that the work was done and when; training records; and test results are supporting documentation.

**(2) Operations**

Training records verifying that training was provided, current Standing Operating Procedures, Emergency Action Plans, operator logs, logsheets or round sheets, shift change sheets, completed work orders, PM masters, job plans, or summary reports from CARMA verifying that the work was done and when, clearance logs, power O&M forms, Western Electricity Coordinating Council compliance requirements, JHAs, Hazardous Energy

Control Program documentation, and work permits are supporting documentation.

**(3) Management**

Training records (e.g., facility manager training), CARMA planning and cost records, financial records, Power O&M 59s, power statistics, evidence of compliance with associated programs, Individual Development Plans, regulatory compliance, Government Performance Results Act (GPRA), and drawing management policies.

**(4) Industrial Control Systems (SCADA)**

Business cases and maintenance plans, operational configuration, testing, training, functional testing, procedures, and a formal configuration management plan.

**(5) Variance**

Documentation of approved variances will be available for reviewer inspection. The appropriate review checksheet also must be marked, properly referencing the variance.

## **4. Review Process**

### **4.1 Annual Facility Review**

#### **4.1.1 Scope**

The intent of the AFR is to ensure that facilities meet minimum standards of power O&M practices through review by the local operating office. Specific topics, including systemic issues, are identified in the Annual Facility Review checksheet templates.

#### **4.1.2 Frequency**

**[AFRs are conducted on an annual basis, excluding years when a PFR or CFR are performed.]**

#### **4.1.3 Responsibility**

AFRs are coordinated and directed by the area manager/power manager. The area manager/power manager generally delegates the responsibility for planning, scheduling, and conducting an AFR to staff directly involved in local power O&M.

#### **4.1.4 Personnel**

AFRs are conducted by the local operating office or other entity as determined by the area manager. Review personnel should be selected for their qualifications and ability to accomplish the review in a timely and professional manner. The area manager may request outside participation.

#### **4.1.5 Reviewer Qualifications**

Personnel involved in the AFR must have an understanding of maintenance, operation, and management of power facilities.

#### **4.1.6 Briefings**

Upon completion of the AFR, the area manager/power manager must be briefed on results of the review and any recommendations.

#### **4.1.7 Documentation**

AFRs are documented by completing the facility-specific AFR checksheets. The checksheets may be accompanied by a short summary report, if needed. The AFR should identify any new recommendations and provide the status of any outstanding Annual, Periodic, or Comprehensive Facility Review and Unexpected Event Report recommendations. Completed AFR checksheets are to be maintained at the facility and area office, and a copy sent to the regional power manager and the Power Resources Office. It is recommended that the AFR is tracked in CARMA and the checksheets are scanned or attached to the completed work order.

## **4.2 Periodic and Comprehensive Facility Review**

### **4.2.1 Scope**

The PFR/CFR expands on the scope of AFRs to be an extensive power O&M review of power facilities. The PFR/CFR provides a corporate perspective on the PRO&M, including liaison to upper management that highlights systemic problems and successes. The PFR/CFR is an additional forum for facility and area office staff to express issues of special concern.

### **4.2.2 Frequency**

**[CFRs are conducted at each facility every 6 years, alternating with the PFR so that either a PFR or CFR takes place every 3 years.]**

### **4.2.3 Responsibility**

PFRs are coordinated and directed by the regional director who is responsible for ensuring that all power facilities receive Annual and Periodic Facility Reviews. The regional director generally delegates responsibility for accomplishing the PFR to the regional power manager.

CFRs are sponsored by the Deputy Commissioner, Operations, coordinated, and directed by the Power Resources Office. The Power Resources Office may contract with the TSC to conduct portions of the review.

### **4.2.4 Content**

As a minimum, the PFR/CFR encompasses the items listed below.

- Systemic issues
- Evaluation of the PRO&M checksheets to ensure that they meet the specific needs of the facility
- Identification of problem areas
- Review of selected test results and records
- Review of job plans
- Status of unexpected event corrective action plans
- Visual inspection of facility and equipment
- Interviews with selected facility and area office staff
- Formal documentation of review findings and recommendations
- Evaluation of management practices
- Review of rehabilitation work items and schedules
- Confirmation of completion of associated program inspections and reviews

- Evaluation of maintenance practices and records to verify compliance with Reclamation and industry standards
- Confirmation of completion of the Facility Rating Review
- Confirmation of dependable and sustainable service to authorized project beneficiaries
- Recognition of exceptional or innovative practices and approaches or both
- Review of maintenance management practices
- Review of forced outages rates and individual outage records
- Review of unit availability rates
- Review of GPRA and the Program Assessment and Rating Tool requirements
- Issues of special concern to facility and area office staff

#### **4.2.5 Personnel**

PFRs are conducted by staff designated by the regional power office and should be at least one office removed from the area office.

CFRs are conducted by a team designated by the Power Resources Office, with concurrence of the area office. The team may include staff from Reclamation's TSC, Power Resources Office, regional offices (other than the region the facility is in), area offices, field offices, and non-Reclamation entities.

The Review Team should consist of individuals who are qualified to perform the review based on their discipline and/or expertise.

#### **4.2.6 Reviewer Qualifications**

PFR/CFR Team Members are required to have a thorough knowledge of maintenance, operation, and management of power facilities and specific skills and abilities in the area of the power review they are conducting. Reviewers must have requisite safety and occupational health training to carry out their duties, e.g. if entering permit-required confined spaces (PRCS), they must have PRCS training. Comprehensive reviewers must have the following additional qualifications:

- Attended a Power Review of O&M Training Workshop

**AND**

- Shadowed a qualified reviewer.

#### **4.2.7 Coordination**

Approximately 120 days before the onsite PFR (CFR), the regional power office (PRO&M Program Manager) will transmit to the area office a memorandum containing the following:

- Plant(s) to be reviewed
- Systemic issues
- Dates of the review
- Estimated cost of the review
- Request for the site coordinator's name
- Names and organizations of the Review Team Members
- Request for data to be submitted at least 5 weeks before the onsite visit, as follows:
  - Cost authority number(s)
  - Draft agenda of site visit
  - Local hotel information
  - List of information needed onsite
  - Drawings and data described in "Data Submittal" below

A month before the onsite PFR (CFR), the RTL (PRO&M Program Manager) will conduct a conference call between the Review Team, the SRC, and other interested parties to discuss onsite visit logistics and any outstanding items.

#### **4.2.8 Data Submittal**

The Review Team must receive requested drawings and data at least 3 weeks prior to the site visit to have adequate time to study them. The data to be requested in the "120-Day" memorandum includes:

- HydroAMP condition assessment data for all major pieces of equipment.
- Switching diagram, main plant single-line diagram, and station service single-line diagram.
- Completed, site-specific checksheets.
- Job plans that support the data on the checksheets and grouped with the associated checksheet.
- Current organization chart.
- Status of incomplete PRO&M recommendations.

- Variances
- Other drawings and data may be requested subsequent to the initial submittal, before or during the onsite visit.

#### **4.2.9 Briefings**

The Review Team will conduct an in-briefing upon arrival to orient the team and site personnel. The review agenda and JHA will be discussed at this time. The JHA must address all elements of the review.

Upon completion of the onsite review, an exit briefing must be conducted with appropriate facility and area office managers and staff to discuss the PFR/CFR findings and also should include a summary of the preliminary recommendations that may change as the team collaborates writing the report.

#### **4.2.10 Documentation**

A formal report must be prepared detailing the findings, conclusions, and incomplete recommendations of the PFR/CFR. The report will include the status of incomplete recommendations and status of any recommendations from unexpected event report evaluations, details and reasoning for new recommendations, a narrative describing the conditions found, and representative photographs or illustrations that document conditions. The draft report should be peer reviewed as required by the offices involved in the review.

Some reviewers find it advantageous to draft the report while onsite, even if it means staying an extra day, rather than trying to find time back in the home office.

The PFR/CFR conclude with a published report to the appropriate local operating office/facility manager, area manager, power manager, regional director, Deputy Commissioner, Operations, Maintenance Services Office within Policy and Administration, Power Resources Office, Review Team Members, and the TSC. The report is to be completed, published, and distributed no later than 120 days following the actual review date.

The PFR report is published by the regional power office and is signed by program oversight personnel and the Review Team Members.

The CFR report is published by the Power Resource Office and is signed by the PRO&M Program Manager and the Review Team Members.

Signatures of team members may be accomplished by electronic facsimile of signatures and confirmation by email rather than actual physical signature.

#### **4.2.11 Regional Representative**

A power office representative from the region where the reviewed plant is located is welcome to attend the CFR in a facilitating role. The regional representative is not officially part of the Review Team and should be conscientious not to influence reviewers or the report.

### **4.3 Transferred Powerplant O&M and PRO&M**

#### **4.3.1 Transferred Works**

Transferred works<sup>2</sup> are facilities where the responsibility for O&M of constructed facilities has been transferred to water users or other legally authorized organizations.

Reclamation maintains ownership of the facility and retains an oversight role, periodically inspecting the facilities and reviewing the water users' maintenance practices and operating procedures to ensure protection of the Federal investment and interests. When equipment is transferred to a water user organization, replacement is the responsibility of that organization, unless otherwise stated under an O&M Transfer Agreement. For transferred projects and project components, the water users perform all routine O&M work and directly pay ongoing O&M expenses.

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<sup>2</sup> Those facilities owned by Reclamation where Reclamation has turned over all or partial responsibility for carrying out operation and maintenance activities to a customer pursuant to a contract with such customer. See CMP 10-04 – Collaboration with Customers Regarding Technical Services Required for Work on Existing Bureau of Reclamation Facilities.

## 5. Recommendations

Recommendations resulting from a PFR or CFR are included in the respective Power Review Report. **[All Category 1, Category 2, and Category 3 recommendations resulting from a PRO&M must be entered into PRIS.]**

Prior to making a recommendation, the Review Team should be in ongoing discussions with the facility regarding the proposed recommendation. The respective facility may have information that was not available to the reviewer. Recommendations cannot be made concerning facility staffing.

Recommendations should be clear, concise, limited to one item or deficiency, and able to be completed. Bundling items or deficiencies under one recommendation should be avoided.

Recommendations are made based upon observations made during the snapshot of time the review team is onsite. Any references used in the recommendation are to follow standards that are in effect during the time of the review.

### 5.1 Categorizing

Recommendations resulting from a review fall into one of the following categories.

#### 5.1.1 Category 1

**[Category 1 recommendations involve 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).**
- (2) Compliance with legal or regulatory requirements:**
  - (a) Power-related safety practices (necessary to protect the life or health of employees, visitors, or the public).**
  - (b) Entities regulating power system reliability/stability (i.e., North American Electric Reliability Corporation/Western Electricity Coordinating Council).**

**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:**

- (1) Deputy Commissioner, Operations;**
- (2) Director, Technical Resources; and**
- (3) Senior Advisor, Hydropower**

**Potential Category 1 recommendations must be discussed and consensus reached by the Review Team to ensure consistency with the definition. The Power Resources Office, regional program coordinator, area/regional power manager, and facility manager must be advised of the potential for issuing a Category 1 recommendation.]**

### **5.1.2 Category 2**

**[Category 2 recommendations 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**
- (3) Meet mandatory safety, management, operational, maintenance, or Reclamation FIST, and industry standards**

**Recommendations are to be acted upon as soon as practical following receipt of the review report. 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 are to be initiated in a timely manner.]**

### **5.1.3 Category 3**

**[Category 3 recommendations cover matters that are believed to be sound and beneficial suggestions to improve or enhance the O&M.**

**Recommendations are to be considered prior to the next CFR or PFR.]**

## **5.2 Numbering**

A unique identifying number must be assigned to each recommendation resulting from a PFR or CFR. The identifying number defines the calendar year of the review producing the recommendation, the area of recommendation, the category of the recommendation, and the unique, sequential identifier (e.g., A, B, C, etc.).

The area designators are used to sort data (e.g., for deferred maintenance reporting). The areas of recommendation are:

- |   |   |                        |
|---|---|------------------------|
| E | = | Electrical Maintenance |
| M | = | Mechanical Maintenance |

O	=	Operations
G	=	Management
S	=	Structural
SC	=	SCADA (ICS)

For example, the identifying number, for the first Category 2 mechanical maintenance recommendation resulting from a PFR or CFR conducted in calendar year 2005, is 2005-M-2-A.

The second Category 2 mechanical maintenance recommendation from this same review would be 2005-M-2-B, and so on. It is not necessary to identify the region or area office in the identifying number because PRIS segregates recommendations by facility (including those directed to the Power Resources Office or a Control Center) when they are entered.

Powerplant structural recommendations (S) are sometimes made by structural reviewers during the PRO&M and may be included in the PRO&M Report. Recommendations may be acquired from sources outside of the PRO&M Program such as a Power Equipment Bulletin (PEB) or Power Reliability Compliance Bulletins and are entered into PRIS outside of the PRO&M Program.

Some recommendations are directed to the Power Resources Office for resolution. These usually are systemic in nature, affect more than one facility, and require technical investigations or policy decisions. Recommendations for the Power Resources Office do not have a letter identifier. They are entered into PRIS with a “facility” identifier of “Power Resources Office.” Recommendations to the Power Resources Office are included in the Power Review Report.

### **5.3 Standard References**

Category 1 recommendations must have a reference to a standard that supports the requirement. Category 2 recommendations must have a reference to a standard except in rare occasions. Category 3 recommendations should refer to a standard when one is applicable. The standard(s) reference should provide as much detail as reasonable to allow the specific requirement(s) to be located.

### **5.4 Status**

The status of the recommendation in PRIS is identified by one of the following:

- INCOMPLETE
- DELETED
- COMPLETE

The INCOMPLETE status includes those recommendations that have not been started or are in progress.

Prior to deleting a recommendation, one of the following must occur:

- (1) Discussion between the PRO&M Program Manager, the area office, the regional power review coordinator, 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.
- (4) Administrative errors in initial entries.

Deleted recommendations will include in PRIS:

- (1) The parties involved in the decision
- (2) Explanation
- (3) Person who updated the recommendation

The COMPLETE status includes those recommendations for which all work has been accomplished to rectify the deficiency found during the review.

## **5.5 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 Senior Advisor, Hydropower, must be consulted to identify an equitable solution. If this is not successful, the disagreement must be documented in writing by the respective regional director within 30 days of the review report publication and submitted to the Senior Advisor, Hydropower, who must seek a resolution and make a determination.]**

## **6. Training and Shadowing**

PRO&M Workshop attendance and one subsequent shadowing experience are required to qualify a reviewer to conduct a PFR or CFR review. This workshop is presented by the PRO&M Steering Committee members or expert instructors.

## **7. Collective Bargaining Agreements**

The rights and responsibilities of collective bargaining units (unions) must be observed and respected while conducting PRO&Ms. Since collective bargaining agreements vary from location to location, it is the responsibility of the area office Site Review Coordinator to ensure that all union considerations are addressed. All Review Team Members must abide by local agreements.

## **8. 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.

## **9. References**

Policy FAC P04, Hydroelectric Power, establishes the policy for hydroelectric power at Reclamation projects. That policy is implemented through a number of means, one of which is related to Operations and Maintenance. It states “Power facilities will be operated and maintained to protect the Federal investment; provide reliable, cost-effective service; and adhere to applicable safety, security, and industry standards. In addition, Reclamation’s FIST Manuals and PEBs establish technical standards and procedures that will be used to promote adequate operation and maintenance practices.” As such, the PRO&M falls under this section of the policy.

Directive and Standard FAC 04-01, Power Review of Operation and Maintenance Program, is the authorizing document and must be followed for PRO&M.

The Policy and the Directive and Standard may be found on the Reclamation Intranet site under “Reclamation Manual.”



## **Appendix A – Standardized Forms**

Standardized Forms (available from the Power Resources Office):

1. Comprehensive Facility Review/Periodic Facility Review Report (single and multiple facilities)
2. 120-Day Memorandum
3. Agenda
4. Job Hazard Analysis
5. Annual Checksheet
6. Transferred Powerplant Checksheet
7. Electrical Review Outline
8. Mechanical Review Outline
9. Operations Review Outline
10. Management Review Outline
11. Considerations and Tools
12. Management Checksheet
13. Operations Checksheet
14. Supervisory Control And Data Acquisition (SCADA) Checksheet
15. Electrical Questions
16. Mechanical Questions
17. Roles and Responsibilities
18. Procedural Checklist
19. Recommendations
20. Process Table