

# RECLAMATION

*Managing Water in the West*

## **Power Review of O&M**

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Bureau of Reclamation

## **Overview**

- **Brief History of Reviews**
- **Goals / Objectives**
- **Structure of Review Process**
- **Experience in Reclamation**
- **Experience with COE Plants**
- **Lessons Learned**
- **Resources**

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## History

Prior to 1996, the Review Program Was Relatively Weak

- Standards Were Lacking
- Funding Was Inconsistent
- Not All Areas Were Covered
- Reviews Were Fragmented (not combined)
- Reviewers Were Not Trained
- Recommendations Were Not Tracked

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## History

- Several Incidents of Concern Occurred at BOR Powerplants Prompted Action
- Commissioner Established the Power O&M Team in 1996 to Find Ways to Improve the Power Program
- Review “Reinvention” Team Was Formed
- Representatives from All 5 Regions, the TSC, and the Power Resources Office

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## History

- Directive and Standard FAC 04-01 Was Established
- Review Program Tools Were Developed
  - Guidebook
  - Checksheet Templates
  - Power Review Information System (PRIS)
  - Schedule and Resource List
  - Available on the intranet under “Power O&M”
  - Training
- Technical Standards Completed – FIST Manuals

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## Goals

Operate facilities effectively, economically, and commensurate with standards

Promote corporate knowledge transfer in a time of workforce change

Provide optimal value to customers and stakeholders

Protect the Federal investment

Provide reliable services

Adherence with safety, environmental requirements

Compliance with legal and contractual provisions

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## Objectives

- “Provides a periodic assessment of each power facility to evaluate the application and effectiveness of the Power O&M Program...”
- “...evaluates the local O&M program performance and accomplishments against measurable program goals and performance standards.”

FAC 04-01

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## Beneficiaries

- Facility and O&M Managers
- Area Managers, Regional Power Managers, & Regional Directors
- Director of Operations and Commissioner
- Power Customers, PMAs, and the Public

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## Structure

- Covers Four Areas of Power O&M:
  - **Electrical Maintenance** (FIST Vol. 4-1B)
  - **Mechanical Maintenance** (FIST Vol. 4-1A)
  - **Power Operations** (FIST Vols. 1-11 & 1-12)
  - **Power Management** (FIST Vols. 6-1 & 6-2)

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## Checksheets

- Generic or Template Checksheets
- Summarize all FIST Requirements
- Task, Interval, Reference, Job Plans & Work Orders, Date Last Completed
- Completed by Site Personnel
- Use MAXIMO Data
- Can be Automated
- Basic Data for Reviewers
- Supplemented by Site Interviews, Inspections, Site Documents

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## Frequency

- **Annual** Review – Conducted Locally / Self Assessment - Every Year Except Periodic and Comprehensive Years

Annual Review Checksheets Reflect Emerging Issues

- **Periodic** Review (PFR) – Regionally Led – Every 6 Years Alternating with Comprehensive Reviews\*
- **Comprehensive** Review (CFR) – Denver Led - Every 6 Years Alternating with Periodic Reviews\*

\* Either a Periodic or Comprehensive Review Takes Place Every 3 Years

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## CFR / PFR

- Review Team is Formed and a Site Coordinator Assigned
- Review Checksheets and Other Documentation Prepared and Submitted by the Area Office
- Team Reviews the Documentation
- Site Visit Including Inspections and Interviews
- Outbriefing Highlights Salient Issues

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## Outputs

- Periodic and Comprehensive Reviews Result in Written Reports
- Recommendations are Tracked in the Power Review Information System – PRIS
- Recommendations Become MAXIMO Work Orders
- Annual Report by the Area Manager to the Regional Director
- Annual Report by the Power Resources Office to Upper Management

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## Recommendations

- **Category 1** – Involving severe deficiencies where immediate and responsive action is required to ensure structural, safety, and operational integrity.
- **Category 2** – Important matters where action is needed to prevent or reduce further damage or preclude operational failure.
- **Category 3** – Sound and beneficial suggestions to improve or enhance the O&M of the facility.

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## Recommendations

- Five Recommendation Areas
  - E – Electrical Maintenance
  - M – Mechanical Maintenance
  - O – Operations
  - G – Management
  - S – Structural
- Three Recommendation Statuses
  - Incomplete, Deleted, Complete

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## Structure

- Variances
  - Variance from Standard Practice is Allowed Under Limited Conditions Provided that it is Documented and Approved by Area Manager
- Training Workshops
  - Reviewers
  - Facility Managers and Staff
- Shadowing
  - Assist Lead Reviewer
  - Help Draft Report

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## Guidebook

- Program In Detail
- Roles and Responsibilities
- Reviewer Qualifications
- Template Timeline
- Other Resources
- Helpful Pointers
- Examples, Sample Reports and JHA, Case Study

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## Reclamation Experience

- Started in 2001
- CFRs at 40 Plants (out of 58)
- Includes Control Centers
- 30-50 Recommendations per CFR
- Very Few Category 1 Recommendations
- Generally Well Accepted
- Recommendations Appreciated

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## Reclamation Experience

- Specialized & Relay Testing is Up to Standards
- LOTO is Generally Followed
- Preventive Maintenance Sometimes Preempted by Special Projects
- MAXIMO Use Varies but Rarely Optimal
- Drawings in Fair to Excellent Condition

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## Reclamation Experience

- Improvements in Progress
  - Lockout / Protection Circuit Functional Testing
  - Emergency Lighting & Fire Detection
  - Penstock Inspection
  - Pressure Vessel Testing
  - IR Scanning and Analysis
  - 5-year Cycle on Relay Settings, Equipment Ratings, AVR & Governor Alignments
  - Standing Operating Procedures

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## COE Experience

- CFRs at Three Powerplants (Spring 04)
  - The Dalles
  - Chief Joseph
  - McNary
- Attended Workshop in February 2004
- COE Staff Shadowed BOR Reviewers
- PMA Participation

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## COE Experience

- Great Cooperation and Open to Improvement
- Wealth of Experience and Expertise
- Specialized Testing is Taken Seriously
- Some Serious Safety Concerns

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## COE Experience

- Ratio of Corrective to Preventive Maintenance is High
- Plant PM Superseded by Navigation & Fish
- PM Superseded by Special Projects
- MAXIMO Use Can be Improved
- Drawings Need Significant Improvement
- Lack of Standards & Expectations
- Strong Desire to Improve

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## Lessons Learned

- BOR & COE Share Similar Challenges
- Reviews are Proactive / Defensible
- Written Standards Essential
- Peer Review Invaluable
- Shadowing is Excellent Training
- Valuable Exchange of New Ideas
- Recommendations Provide Focus
- O&M Is Improved
- Knowledge Transfer is Improved
- Management Much Better Informed

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## Recognition

- Hydro Review Magazine
  - Most Useful Article
- Department of the Interior
  - Facilities and Asset Management Award
- Multiple Requests for Information and Presentations

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## Resources

- FIST – Facilities Instructions, Standards, and Techniques
  - Index Handout
  - Internet
    - [www.usbr.gov](http://www.usbr.gov) , Programs and Activities, Power Program, Reports and Data, FIST Manuals
  - Google “FIST Manuals”

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## Resources

### Reclamation Power Review of O&M

- CD of Guidebook and Directive & Standard
- Mitch Samuelian, Power Resources Office  
[msamuelian@do.usbr.gov](mailto:msamuelian@do.usbr.gov)  
303-445-3712
- Power Resources Office 303-445-2923

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## Thank You

Questions or Comments ?

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