

# Reclamation Manual

Directives and Standards

*TEMPORARY RELEASE*

*(Expires 07/27/2009)*

<b>Subject:</b>	Power Operation and Maintenance Incident Evaluation and Reporting
<b>Purpose:</b>	Establish the minimum requirements for Incident evaluation and reporting practices at Bureau of Reclamation power facilities. The benefits of establishing Incident evaluation and reporting practices are identifying lessons learned and correcting the causes of the incident.
<b>Authority:</b>	The Reclamation 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. 1361, 34 Stat. 116), Federal Power Act of 1920 (Act of June 10, 1920, ch. 285, 41 Stat. 1063), Reclamation Project Act of 1939 (Act of August 4, 1939, ch. 418, 53 Stat. 1187), Energy Policy Act of 1992 (Act of October 24, 1992, 106 Stat. 2776), Energy Policy Act of 2005 (Act of August 8, 2005, 119 Stat. 594), and acts relating to individual projects.
<b>Approving Official:</b>	Director, Technical Resources
<b>Contact:</b>	Power Resources Office, 86-61600

## 1. Introduction.

- A. Reclamation has historically conducted a formal program of evaluation and reporting of Incidents affecting power operation and maintenance (O&M). Reporting of major incidents was required under Reclamation Instructions, Part 252.3.3, which were sunset in the early 1990s. Various reporting requirements were originally established in Power O&M Bulletins, which later became the Facilities Instructions, Standards, and Techniques (FIST) volumes.
- B. In May 1996, following several Incidents of concern in the power program, the Commissioner established a Power O&M Team to review the power program for effectiveness and make recommendations to address any problems found. One recommendation from this team was to “reinvent” the Power O&M Incident Evaluation and Reporting (Power Incident Evaluation) process providing more authority and structure which is the purpose of this Directive and Standard (D&S).

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2. **Scope.** This D&S applies to Reclamation Reserved Works power facilities or power facilities operated and/or maintained by Reclamation for other agencies. This D&S also applies to existing power facilities undergoing construction activities.
3. **Goals and Objectives.** The goals and objectives of this D&S are:
  - A. to evaluate each power facility incident to determine the root causes of the Incident to improve operation, maintenance, construction, and management practices, and to emphasize enhanced security, safety and health in Reclamations' power facilities;
  - B. to prevent future occurrences of similar Incidents through the communication of information, lessons learned, and remedies throughout Reclamation;
  - C. to coordinate the evaluation of a power facility Incident which requires an accident investigation in accordance with Reclamation Manual D&S, *Occupational Safety and Health - Accident/Incident Investigation and Reporting* (SAF 01-02); and
  - D. to document power facility Incidents for purposes of power program review, evaluation, and/or statistical analyses.
4. **Definitions.**
  - A. **Incident Level.** 'Incident' is defined in Paragraph 4.B., and includes the following levels.
    - (1) **Level 1.** Level 1 Incidents have the following characteristics:
      - (a) causes a major violation of the North American Electric Reliability Corporation (NERC) reliability standards;
      - (b) causes equipment or system damage that results in a long-term inability to deliver water or power;
      - (c) causes a violation of a power-related law, regulation or executive order; or
      - (d) results in death or hospitalization of any person.

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- (2) **Level 2.** Level 2 Incidents have the following characteristics:
    - (a) causes a non-major violation of NERC reliability standards;
    - (b) causes a substantial equipment or system damage/failure;
    - (c) causes a short-term inability to deliver water or power; or
    - (d) causes a lost-time injury, which does not require hospitalization.
  - (3) **Level 3.** Level 3 Incidents have the following characteristics:
    - (a) causes moderate equipment or system damage/failure;
    - (b) causes a momentary inability to deliver water or power; or
    - (c) causes a minor violation, having the potential to escalate in severity, of a standing operating procedure.
- B. **Power Incident<sup>1</sup> (Incident).** An unexpected or undesirable event occurring at a power facility which may result in:
- (1) a dangerous operating condition;
  - (2) a loss of equipment function that impacts the project's or facility's capability to deliver or control water or power;
  - (3) a substantive adverse impact on a construction or maintenance outage of equipment;
  - (4) are-dispatching or rescheduling of generation or water orders/deliveries;
  - (5) any event that violates any power-related laws, regulations, or executive orders;
  - (6) a pattern of occurrences at a single facility or across facilities that have a common mode or causal factor;

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<sup>1</sup>Any event involving an injury or death must be reported in compliance with other applicable Reclamation Safety and Health Programs. Injury or death events shall be reported under the Power Incident Evaluation only if they occur in conjunction with, or because of, an event that satisfies the definition of an incident and one of the incident level definitions.

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- (7) having to report as required by NERC Standard EOP-004-1 or CIP-001-1 (the current version of these standards can be found at the NERC website, <http://www.nerc.com/>);
  - (8) damage to or failure of equipment or systems; or
  - (9) a violation of a rule, standard practice, or standing operating procedure.
- C. **Regional Power Manager.** The manager designated by the regional director as the individual to address regional power issues and represent the region in Reclamation-wide forums, and work with Western Area Power Administration, Bonneville Power Administration, and other power utilities.
- D. **Reserved Works.** Facilities that are Reclamation-owned or are part of an authorized Reclamation project for which the O&M is performed by Reclamation personnel on a daily basis, or under any other arrangement that does not meet the definition of Transferred Works. This could include contracts or agreements with non-Federal entities to perform entire project facility O&M or specific O&M activities or tasks in exchange for payment for services rendered.
- E. **Responsible Official.** The individual who has the responsibility to ensure that an incident evaluation team is appointed, the incident is properly evaluated and documented and coordinated with other programs.
- F. **Root Cause Analysis.** A method of analysis used to determine the cause(s) of an incident that, if corrected, would prevent recurrence of this and similar occurrences. For further information on root cause analysis, see the technical reference in Paragraph 14.
- G. **Systemic Incidents.** A pattern of Incidents at a single facility or across facilities that appear to have a common factor; have facility, area, regional, or Reclamation-wide implications; or take on any of the characteristics and definitions of the three levels of incidents defined above.
- H. **Transferred Works.** Are facilities that are Reclamation-owned or are part of an authorized Reclamation project for which the O&M is performed by a non-Federal entity on a daily basis under a formal O&M transfer agreement. This arrangement generally includes the transfer of day-to-day responsibility for O&M of the project facilities. However, under the terms of the formal O&M

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transfer agreement, the project beneficiary performing the day-to-day O&M is accountable to Reclamation for proper performance of the O&M. The long-term oversight of the Federal projects still resides with Reclamation.

#### 5. Responsibilities.

- A. **Deputy Commissioner, Operations.** The Deputy Commissioner, Operations, is responsible for oversight of the Power Incident Evaluation.
- B. **Director, Technical Resources.** Administration of the Power Incident Evaluation is assigned to Director, Technical Resources.
- C. **Regional Directors.** Regional directors are responsible for implementation of the Power Incident Evaluation in their region. In addition, each regional director shall:
  - (1) report Level 1 Incidents to the Deputy Commissioner, Operations within 12 hours of notification of the incident;
  - (2) ensure an evaluation team is appointed and the incident is properly evaluated and documented for Level 1 Incidents;
  - (3) provide plans for accomplishment, including the scheduled completion date of any Category 1 recommendation. See Paragraph 11.B.(1); and
  - (4) hold an annual meeting with their area managers to assess the status of the Power Incident Evaluation at their facilities.
- D. **Power Resources Office.** The Power Resources Office is responsible for:
  - (1) administering the Power Incident Evaluation Reclamation-wide for the Director, Technical Resources;
  - (2) identifying Systemic Incidents that have Reclamation-wide implications;
  - (3) assisting managers within Reclamation to identify Systemic Incidents at their facilities;
  - (4) assuring that all Reclamation-wide recommendations are completed, entered into the Power Review Information System (PRIS) tracking system in a timely manner, and updated at least twice a year;

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- (5) preparing an annual Reclamation-wide report on the status of the Power Incident Evaluation;
- (6) analyzing Reclamation-wide statistics and trends on the Power Incident Evaluation;
- (7) identifying lessons learned from Level 1 and 2 Incident reports so that the necessary information can be sent to regional, area, and facility offices. See Paragraph 9.D.; and
- (8) working with the associated Regional Power Manager to identify an equitable solution for any disputes related to recommendations. See Paragraph 12.

**E. Regional Power Managers.** The Regional Power Managers are responsible for:

- (1) administering the Power Incident Evaluation within their regions;
- (2) reporting Level 1 and 2 Incidents to the Manager, Power Resources Office within 12 hours of notification of the incident;
- (3) identifying Systemic Incidents within their region and ensuring an evaluation team is appointed;
- (4) scheduling Level 1 Incident evaluations in coordination with other regulatory and reporting programs;
- (5) ensuring that all recommendations are completed, entered in PRIS, and updated at least twice a year; and
- (6) working with the Power Resources Office to identify an equitable solution for any disputes related to recommendations. See Paragraph 12.

**F. Area Managers.** Area managers are responsible for:

- (1) ensuring that all Incidents at power facilities within their areas are reported and evaluated in accordance with the requirements;
- (2) advising the regional director and Regional Power Manager of the occurrence of Level 1 and 2 Incidents within 12 hours of notification of the Incident;

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- (3) ensuring an evaluation team is appointed and the Incident is properly evaluated and documented for Level 2 or 3 Incidents;
  - (4) identifying Systemic Incidents within their area office and ensuring an evaluation team is appointed;
  - (5) scheduling Level 2 Incident evaluations in coordination with other regulatory and reporting programs;
  - (6) ensuring that all recommendations are entered into the PRIS tracking system in a timely manner and updated at least twice a year. See Paragraph 11.D.;
  - (7) preparing an annual report on the status of the Power Incident Evaluation at their facilities for the annual meeting with the regional director. See Paragraph 5.C.(4); and
  - (8) ensuring all Power Incident Evaluation recommendations are implemented in a timely manner.
- G. Facility Managers.** For Reclamation facilities operated by contractors, the Reclamation Contracting Officer's Representative will accomplish the facility manager's responsibilities. Facility managers are responsible for:
- (1) ensuring that all Incidents at their power facilities are reported and evaluated in accordance with the requirements;
  - (2) advising the area manager and regional power manager of the occurrence of all Incidents within 12 hours of notification of the incident;
  - (3) identifying Systemic Incidents within their facilities and ensuring an evaluation team is appointed;
  - (4) ensuring employees and supervisors are fully aware of the Power Incident Evaluation requirements; and
  - (5) implementing all Power Incident Evaluation recommendations for their facilities in a timely manner.

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- H. **Power O&M Staff, Supervisors and Contractors.** Power O&M staff, supervisors, and contractors are responsible for:
- (1) reporting to their supervisor Incidents, they believe to be covered by the Power Incident Evaluation;
  - (2) where a contractor maintains Reclamation Reserved Works power facilities:
    - (a) the contractor's staff and supervisors are responsible for preparing the written incident report(s). This report will be transmitted/forwarded to the Reclamation Contracting Officer's Representative; and
    - (b) the Reclamation Contracting Officer's Representative reviews the nature and category of the Incident and forwards the report to their supervisor.
- I. **Evaluation Team Members.** Evaluation team members are responsible for:
- (1) evaluating the Incident in an objective, fair, and unbiased fashion and performing a Root Cause Analysis;
  - (2) assessing further requirements, competencies, and skills required to complete the evaluation and request additional resources as necessary from the Responsible Official; and
  - (3) completing incident reports within the required time or as determined by the Responsible Official.
6. **Power Incident Evaluation Implementation.**
- A. **Funding.**
- (1) Incident evaluations will be funded by the associated facility.
  - (2) Annual costs incurred by Technical Resources for maintaining the core program and meeting reporting requirements which cannot be direct charged to specific facilities will be funded via the Power Program Services budget.



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- B. Coordination with Other Programs.** The Responsible Official shall determine when there is a need to coordinate an incident evaluation with other programs.
- (1) Power Incident Evaluations must be coordinated with the regional and area offices and conducted in cooperation with other authorized Reclamation evaluation and reporting programs to reduce the impact on facility and staff affected by the incident and reduce the time and resources needed to conduct a common evaluation.
  - (2) Other Reclamation programs with which the Power Incident Evaluations must coordinate include but are not limited to:
    - (a) Security;
    - (b) Safety;
    - (c) Law Enforcement, and
    - (d) Hazardous Materials.
  - (3) In the event that an Incident involves construction personnel or contractor personnel, the evaluation of the Incident will be coordinated with the responsible construction office.
  - (4) Evaluation of Level 1 Incidents related to the Reclamation safety program shall be coordinated with the Deputy Commissioner for Policy, Administration and Budget, who serves as the Designated Safety and Health Official (DASHO) with participation by the appropriate power office. Power office participation assures that technical expertise is involved with the evaluation. In the event of a death or serious injury, the DASHO will assume the lead in coordinating and conducting joint safety and Incident evaluations for the benefit of both programs.
  - (5) Evaluation of Incidents related to security or law enforcement (e.g. terrorism, sabotage, vandalism) must be fully coordinated with the Director of Security, Safety, and Law Enforcement and any security and/or law enforcement agency having jurisdiction. In this case, the scene and evidence is not to be disturbed until authorized by the security and/or law enforcement investigators.

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#### 7. **Evaluation Team.**

A. **Appointment.** The Responsible Official will ensure that an evaluation team is appointed and the Incident is properly evaluated and documented. A Level 1 Incident evaluation team will consist of three to five people. A Level 2 Incident evaluation team will consist of two to four people. A Level 3 Incident evaluation team will consist of one to two people. However, the size of the team can be larger at the discretion of the Responsible Official. At least one team member on a Level 1 Incident evaluation team must be external to the region and consideration will be given to a member external to Reclamation. One team member on a Level 2 Incident evaluation team being external to the region or Reclamation must be considered.

#### B. **Formalizing.**

- (1) The Responsible Official will formalize an evaluation team by memorandum. The memorandum will establish the team members, designate the team lead, briefly describe the Incident including location and date, provide instructions on cost accounting, provide a schedule, and, if necessary, provide special conditions/expectations of the team.
- (2) The memorandum formally establishing the team will also include instructions to the team concerning to whom the final report is to be sent, how many copies, and the preferred method of transmittal.
- (3) An entrance interview must be arranged with facility personnel and the evaluation team upon arrival on-site to discuss the evaluation action plan; identify key personnel to support the team throughout the evaluation; and address job hazard analysis and safety issues.
- (4) An out briefing between the evaluation team members and area office/facility personnel will be scheduled upon conclusion of the on-site evaluation.

#### C. **Qualifications of the Evaluation Team Members.**

- (1) Team members must have technical, management, or operational knowledge to accurately assess the Incident, determine the root cause(s), and make appropriate recommendations.

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(2) For Level 1 and 2 Incidents, team members shall be independent of the Incident being evaluated. For Level 3 Incidents, the Responsible Official will determine the need for independence on a case-by-case basis. Measures of independence for team members include:

- (a) not involved in the Incident;
- (b) not an observer of the Incident;
- (c) not a direct supervisor or team leader of the individuals involved in
- (d) not involved in any job plans, job hazard analysis, switching orders, clearances, etc., associated with the Incident.

#### **8. Incident Evaluation Documentation.**

- A. All Incidents will be documented by completing Form POM-171, *Power O&M Unexpected Event Report (Unexpected Event Report Form)*.
- B. An additional written report is required for Level 1 and 2 Incidents and is optional for Level 3 Incidents depending on the complexity of the incident. The report will detail the findings and recommendations of the evaluation.
- C. The resulting report shall contain all pertinent information necessary to understand the Incident, such as, conditions prior to the Incident, description of the sequence of events, impacts of the Incident, the teams' analysis, the teams' determination of the initiating event(s), the teams' findings, the teams' observations and the teams' recommendations for improvements or corrective actions. The report will also indicate any generic implications that might apply to other facilities with similar equipment or processes that may be vulnerable to an incident. Level 1 Incident reports also require a Root Cause Analysis.
- D. For Level 1 Incidents, the report must be drafted by the evaluation team within 60 calendar days of the date of the Incident, and completed within 90 calendar days or as determined by the Responsible Official.
- E. For Level 2 Incidents, the report shall be drafted by the evaluation team within 60 calendar days of the date of the Incident, and shall be completed within 90 calendar days or as determined by the Responsible Official.

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- F. For Level 3 Incidents, the report shall be drafted by the evaluation team within 10 calendar days of the date of the Incident, and shall be completed within 20 calendar days or as determined by the Responsible Official.
  - G. The report will be signed by the evaluating team.
  - H. The team will brief the Responsible Official.
9. **Distribution.** The following distributions are the minimum requirement. Additional distributions will be made when appropriate. Where the local construction office or contractor personnel were involved in an incident, a copy of the report must be sent to the local construction office. Report recommendations will be distributed to other facilities as “lessons learned.” The Power Resources Office will modify the report so that the necessary information can be shared with other regional, area, and facility offices.
- A. Level 1 reports will be transmitted to the regional director with copies to the Deputy Commissioner, Operations; the Manager, Power Resources Office; the Regional Power Manager; the area manager; the facility manager; and to all evaluation team members.
  - B. Level 2 reports will be transmitted to the area manager with copies to the regional director; the regional power manager; the facility manager; the Manager, Power Resources Office; and to all evaluation team members.
  - C. Level 3 reports will be transmitted to the area manager with copies to the Regional Power Manager; the facility manager; and all evaluation team members.
  - D. Systemic Incident Evaluations reports will be transmitted based on the Incidents being covered by the evaluation, the facilities and offices that need to be aware of the “lessons learned,” and the Responsible Official.
10. **Retention.**
- A. All evaluation reports and POM-171s will be retained for 10 years and then transferred to permanent archives.
  - B. Any evaluation report or POM-171 that is specifically associated with a piece of equipment will be disposed of when that equipment is replaced, retired or removed from Government ownership.

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## 11. Categorizing and Tracking Recommendations.

### A. Recommendations.

- (1) Recommendations resulting from the Incident evaluation will be included in the evaluation report.
- (2) Recommendations and their status will be the subject of reviews conducted under the Power Review of O&M.

### B. Categorizing. Recommendations will be of the following categories:

#### (1) Category 1.

- (a) Recommendations involve correction of severe deficiencies where immediate and responsive action is required to ensure:
  - (i) structural integrity includes soundness of the facility structure and equipment necessary to prevent catastrophic failure;
  - (ii) compliance with legal or regulatory requirements are those mandated by state or Federal agencies or by entities regulating power system reliability/stability; and
  - (iii) safety and security which includes those items necessary to protect the life and health of employees, visitors, or the public.
- (b) Within 30 days following formal notification of the recommendations, the responsible regional director will provide plans for accomplishing Category 1 Recommendations, including the scheduled completion date, to the Deputy Commissioner, Operations (96-00000), and the Manager, Power Resources Office (86-61600). In the event that the recommendation involves safety and/or security related issues, the Director, Security, Safety, and Law Enforcement (84-40000) will be included in the distribution of the plans.

#### (2) Category 2.

- (a) Recommendations that cover a wide range of matters where action is needed to:
  - (i) prevent or reduce further damage;

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- (ii) preclude possible structural failure or operational disruption; or
  - (iii) meet security, safety, management, operational, or maintenance standards/practices.
- (b) Recommendations are to be acted upon following receipt of the report. Recommendations that can be included, scheduled, and accomplished as part of the normal O&M program must be undertaken as soon as weather or water/power conditions allow. Some recommendations require a longer time to accomplish because of the need to budget funds, complete designs, or secure equipment, materials, or personnel. In such cases, the related planning and budgeting will be initiated in a prompt manner. 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.
- (c) Any Category 2 Recommendation remaining incomplete at the time of the next Comprehensive or Periodic Power Operations and Maintenance Review (PRO&M) will be addressed during that review and within the corresponding review report. See Power Review of Operation and Maintenance (PRO&M) Program (FAC 04-01). A summary of recommendations remaining incomplete will be addressed separately from those of the PRO&Ms.
- (3) **Category 3.**
- (a) These are recommendations covering matters that are believed to be sound and beneficial suggestions to improve or enhance the O&M of the facility or area office.
  - (b) Any Category 3 Recommendation remaining incomplete at the time of the next Comprehensive or Periodic PRO&M will be addressed during that examination and included within the corresponding examination report. (See FAC 04-01). A summary of recommendations remaining incomplete will be addressed separately from those of the PRO&Ms.

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## C. Numbering of Recommendations.

- (1) A unique identifying number must be assigned to each recommendation resulting from an incident evaluation. The recommendation identifying number includes:
  - (a) the year of the incident evaluation;
  - (b) a sequence number for the level of incident;
  - (c) the level of incident – PI1, PI2 or PI3;
  - (d) the category of the recommendation – 1, 2, or 3; and
  - (e) a unique, sequential identifier - A, B, C, etc.
- (2) An example of identifying number for the first Category 2 recommendation resulting from the fourth Level 2 Power Incident evaluation that occurred in the year 2007 would be 2007-4-PI2-2-A. The second Category 2 recommendation from this same Incident would be 2007-4-PI2-2-B.

D. **Reporting and Tracking Incident Recommendations.** All Level 1 and 2 recommendations from the Power Incident Evaluation process will be tracked. Area or regional office staff is responsible for entering all recommendations into the PRIS tracking system in a timely manner. The area or regional office is responsible for updating the progress of all recommendations at least twice each year. Data from the recommendation tracking system is used by managers at all levels and for generating the Annual Summary Report.

E. **Annual Summary Report.** The Power Resources Office is responsible for preparing the Annual Summary Report providing an indication of effectiveness in accomplishing all Level 1 and 2 recommendations related to the power facilities. The summary report will highlight Reclamation Power O&M Program problems and successes, status of recommendations, and recommendations appropriate for Reclamation management action. The report will be transmitted through the Director, Technical Resources, for the signature of the Deputy Commissioner, Operations.

12. **Dispute Resolution.** Every effort shall be made to resolve disagreements regarding report findings or recommendations between the incident evaluation team and the facility or area manager. Where disputes cannot be resolved at this level, the

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Regional Power Manager, in partnership with the Power Resources Office will be consulted in order to identify an appropriate solution. If this does not succeed, disagreement must be documented in writing by the regional director to the Deputy Commissioner, Operations within 30 days of publication of the Incident Evaluation Report. The Deputy Commissioner, Operations shall seek a resolution and make a determination.

13. **Waivers.** Procedures for requesting a waiver from any requirement in this D&S are provided in Reclamation Manual D&S, *Request for Waiver from a Reclamation Manual Requirement and Approval or Disapproval of the Request*, RCD 03-03.
14. **Technical Reference.** Power Operation and Maintenance Incident Evaluation and Reporting, FIST Volume 6-3, provides discretionary guidance for the execution of this D&S. Discretionary Guidance for Root Cause Analysis can be found in DOE-NE-STD-1004-92 *DOE Guideline Root Cause Analysis Guidance Document* February 1992, Office of Nuclear Safety Policy and Standards.