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Office of Inspector General
Office of Audit Services

Audit Report

Continuity of Operations at Bonneville Power Administration

DOE/IG-0781

November 2007



Department of Energy

Washington, DC 20585

November 6, 2007

MEMORANDUM FOR THE ADMINISTRATOR, BONNEVILLE POWER
ADMINISTRATION

FROM: *Greg Friedman*
Gregory H. Friedman
Inspector General

SUBJECT: INFORMATION: Audit Report on "Continuity of Operations
at Bonneville Power Administration"

BACKGROUND

The Bonneville Power Administration (Bonneville) markets and delivers wholesale hydroelectric power. Currently, Bonneville provides about 40 percent of the power sold in the Pacific Northwest region of the U.S. and it operates over three-fourths of the region's high-voltage transmission facilities.

In the event of a major disruption to its normal operations, Bonneville must be prepared to continue its essential functions, particularly its power scheduling, transmission scheduling, and system operations. In this regard, Bonneville is required to follow Federal Preparedness Circular 65 (FPC 65), as prescribed by the Department of Homeland Security's Federal Emergency Management Agency. Under FPC 65, agencies are to develop viable contingency plans. The Circular also provides a number of key steps that agencies should take for continuity of operations. Specifically, it recommends that each agency: (1) prepare alternate operating facilities; (2) establish a devolution plan to be implemented if it is incapable of performing essential functions from either its primary or alternate facility; and (3) test the capabilities of its continuity of operations program. The objective of the audit was to determine whether Bonneville had a viable continuity of operations capability for its essential functions.

RESULTS OF AUDIT

We concluded that Bonneville's continuity of operations capability was not fully compliant with FPC 65 for all of its essential functions. Specifically:

- Bonneville's primary and alternate facilities for power scheduling were interdependent as well as in close proximity and, therefore, were subject to the same hazards; and,
- Bonneville's plan to recover transmission scheduling from disruptions to its primary automated system relied in part on a manual process, rather than a fully automated system as required by FPC 65.



Although initiatives were underway to reduce the possibility of power and transmission scheduling interruptions, additional actions are needed by Bonneville to improve continuity of operations planning. In addition, Bonneville did not have specific devolution plans for power scheduling, transmission scheduling, and system operations in the event that both primary and alternate facilities became inoperable. Finally, Bonneville could not provide us with sufficient evidence that the capabilities of its continuity of operations were periodically and fully tested or that lessons learned were identified and implemented.

Bonneville did not have a consistent and sustained continuity of operations planning process. Since 2002, Bonneville has attempted at least three continuity of operations planning efforts. In July 2007, under its most recent initiative, Bonneville established a charter for its Business Resilience Project that combined continuity of operations planning with emergency management, crisis management, and asset management planning. The charter for this project indicated that Bonneville will revise its approach and timeline for continuity of operations planning and have continuity of operations plans in place for selected functions by March 2008. The recommendations in the attached report were provided to assist Bonneville in this and related efforts.

MANAGEMENT REACTION

Management concurred with the recommendations and indicated that it is either currently implementing or will soon implement the report's recommendations. Management emphasized that its current critical continuity of operations capability is operational, but improvements are needed. Management's comments are included in their entirety in Appendix 3.

Attachment

cc: Deputy Secretary
Under Secretary of Energy
Chief of Staff
Team Leader, Audit Liaison Team, CF-1.2
Bonneville Power Administration Liaison Office
Audit Liaison, Bonneville Power Administration

REPORT ON CONTINUITY OF OPERATIONS AT BONNEVILLE POWER ADMINISTRATION

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CONTINUITY OF OPERATIONS AT BONNEVILLE POWER ADMINISTRATION

Continuity of Operations

Bonneville Power Administration (Bonneville) does not have a viable continuity of operations (COOP) capability as defined by Federal Preparedness Circular 65 (FPC 65) for all of its essential functions. Specifically, Bonneville:

- Needed to improve its alternate operating capabilities for power scheduling and transmission scheduling;
- Did not have specific devolution plans for power scheduling, transmission scheduling, and system operations; and,
- Could not always provide evidence that its COOP capabilities were periodically tested or that lessons learned were identified and implemented.

Alternate Operating Strategies

Bonneville needed to improve its alternate operating capabilities for power scheduling and transmission scheduling. For example, its primary and alternate facilities for power scheduling were interdependent and in close proximity. Specifically, the interdependent computer servers that support the power scheduling function's automated systems at the alternate power scheduling facility were dispersed between the primary and alternate facilities. Therefore, if an emergency rendered either of the facilities inoperable, power scheduling may be unable to continue operations. Further, its alternate operating facility was in close proximity and subject to some of the same hazards as the primary facility. For example, Bonneville personnel indicated that a major earthquake is one of its most significant risks that could impact both facilities.

Additionally, Bonneville's COOP approach for recovering transmission scheduling relied in part on a manual process if the use of its primary automated system was disrupted during an emergency situation. Bonneville pointed out that the tools it currently has in place provide the basic continuity of operations for critical functions. However, we noted the use of a fully automated alternate operating system would increase its ability to continue transmission scheduling operations. Further, the manual part of the process did not meet the standard of FPC 65 that alternate operating facilities must provide computer equipment, software, and other automated data processing equipment necessary to carry out essential functions.

Bonneville noted that it has a number of information technology initiatives underway that will reduce the possibility of power and transmission scheduling interruptions. Specifically, for power scheduling Bonneville has two information technology projects planned that, once implemented, would reduce the risk of both primary and alternate facilities being rendered inoperable. Bonneville personnel indicated that the projects should be advanced enough by January 2008 to be able to rely on them in an emergency, although the estimated completion date for one of the projects is not until January 2009. Also, Bonneville is in the process of modernizing its transmission scheduling system to an Internet-based application that would allow transmission scheduling from any location with Internet access and eliminate reliance on a manual backup. Although the anticipated date of completion was November 2007, transmission officials have said that two schedule slippages that have occurred will postpone the completion date. Moreover, once the information technology initiatives are completed, Bonneville will need to update its COOP procedures to address the new capabilities to ensure that employees know the logistics of what to do and where to go if an emergency situation renders the primary facility unavailable.

Devolution Plans

Further, Bonneville's power scheduling, transmission scheduling, and system operations functions have not developed specific plans for devolving operations to another site in the event that both the primary and alternate facilities are rendered inoperable. Although Bonneville management stated that it does have current devolution plans, our review showed that these are beginning strategies rather than specific plans for devolution. For example, FPC 65 requires that devolution plans contain specific information such as a roster identifying the fully equipped and trained personnel at the designated devolution site that would have authority to perform essential functions and activities. However, the beginning strategies did not contain such information. Bonneville management acknowledged that these plans need to be improved to comply with FPC 65. Completing specific devolutions plans is especially important given the current situation in which primary and alternate facilities for power scheduling remain interdependent.

Periodic Testing

Bonneville could not always provide evidence that COOP capabilities for power scheduling and transmission scheduling were periodically tested, deficiencies identified and lessons learned implemented. According to FPC 65, agencies must plan, conduct, and document periodic tests and identify deficiencies. Deficiencies and actions taken to correct them must also be documented. Formal testing procedures would ensure that tests are conducted on a regular basis, weaknesses are identified, corrective actions are taken, and lessons learned are retained for the future. Although power and transmission scheduling personnel stated that their alternate operating strategies are tested, they could not always provide us with sufficient documentation to verify the existence or effectiveness of such tests. We judgmentally selected a number of transmission schedulers and contacted them to confirm that tests were conducted and were effective. However, three of the eight transmission schedulers who responded indicated that they had not participated in any of the tests and three others had not participated for several years. Bonneville provided documentation of power scheduling employees participating in testing of the alternative facility, but was unable to document similar attendance by transmission scheduling employees.

Process for COOP Planning

After five years of effort, Bonneville had not developed a consistent process for COOP planning. Since 2002, Bonneville has attempted at least three separate COOP planning efforts.

For example:

- In 2004, Bonneville directed its business functions, such as power and transmission scheduling, to develop COOP plans which Bonneville told us were based on templates provided by the Department of Homeland Security and the Federal Emergency Management Agency. Most business functions completed draft COOP plans by September 2005; however, Bonneville management did not adopt these plans because they found the individual plans were inconsistent in quality and lacked standardization that precluded integration of the plans into a Bonneville-wide plan.
- In early 2006, senior executives re-energized the COOP process for the purpose of creating comprehensive COOP plans. Although the 2006 effort focused on meeting the

requirements of FPC 65 and included a project plan with a milestone for completing plans by September 2007, executive management believed that the effort did not support its vision of a broader Pacific Northwest regional approach to COOP planning.

- Between December 2006 and March 2007, Bonneville initiated a Business Resilience Project that combined COOP planning with emergency management, crisis management, and asset management planning into what Bonneville told us will be a fully integrated planning process. However, Bonneville did not approve a charter for its Business Resilience Project until July 2007. Regarding COOP planning, the charter indicated that based on the results of a business impact analysis, Bonneville will revise its approach and timeline for COOP planning in October 2007 and have COOP plans for selected functions by March 2008.

These planning efforts underscore the need for Bonneville to develop a more consistent planning process for consistency of operations.

Need for Preparedness

By taking further actions to achieve a viable COOP capability, Bonneville would improve its ability to continue all essential operations after an emergency that results in a significant disruption to its operations. Although it pointed out that the loss of certain functions does not mean the loss of its ability to service customers, we concluded that continuation of essential operations is important since Bonneville provides a significant amount of electric power to the Pacific Northwest region. In fact, a Bonneville official told us that it is likely that a large scale emergency would affect other regional utilities as well as Bonneville. The possibility of a region-wide impact underscores the importance of Bonneville being prepared to take a leadership role in restoring power and transmission services and in minimizing disruption to the region.

RECOMMENDATIONS

In order for Bonneville to have assurance that it can continue all essential operations after an emergency, we recommend that the Bonneville Administrator ensure that Bonneville:

1. Finalizes an approach to COOP planning that includes milestones for developing and approving a Bonneville-wide COOP plan.

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2. Develops and maintains viable business function COOP plans in accordance with FPC 65 that include:
 - a) Strategies that ensure independent alternate operating facilities which are not subject to the same hazards as the primary facilities;
 - b) Devolution plans to ensure COOP in the event that both the primary and alternate facilities are rendered inoperable; and,
 - c) Formal testing of the alternate operating facilities and devolution plans, including documenting the results and implementing corrective actions when necessary.
 3. Integrates the business function COOP plans into a Bonneville-wide COOP plan that meets FPC 65 requirements.
 4. Ensures timely completion of its information technology initiatives for power and transmission scheduling systems and that the new capabilities are reflected in business function COOP plans.

MANAGEMENT REACTION

Management concurred with the recommendations and indicated that it is either currently implementing or will soon implement the recommendations to ensure a viable COOP capability for critical functions at Bonneville. Bonneville pointed out that it currently has workable elements of COOP measures. However, Bonneville acknowledged that improvements are needed in its COOP measures. Bonneville management also indicated that it has a number of statutory and regulatory obligations, and if a conflict arose between those obligations and FPC 65, Bonneville would comply with its statutory and regulatory obligations. Additionally, Bonneville wanted to emphasize that its current critical functions COOP capability is operational, but needs to be improved.

To develop an integrated and comprehensive set of COOP measures to address the deficiencies and implement the recommendations in the report, Bonneville has initiated a strategic approach to COOP planning called the Business Resilience Program, which has been final since July 2007. Bonneville stated that by October 2007, it will update implementation details for its

approach. Bonneville has started its COOP planning for its most critical functions and COOP planning for its lower priority functions will follow. Specifically, COOP plans for its most critical functions will be completed by the end of fiscal year 2008 and lower priority functions COOP plans will be completed in fiscal year 2009. These plans will be integrated into an industry standard COOP planning database. In addition, information technology initiatives for transmission scheduling and power scheduling are underway and will be completed at the end of fiscal year 2008 and January 2009, respectively.

**AUDITOR
COMMENTS**

Management comments are generally responsive to our recommendations and its planned corrective actions, when fully implemented, will help Bonneville strengthen its COOP planning. While the July 2007 charter was a positive step in COOP planning and identified the approach that Bonneville will take, it did not contain specific and measurable activities and milestones to ensure the program's success.

Appendix 1

OBJECTIVE

The objective of this audit was to determine whether the Bonneville Power Administration (Bonneville) has a viable continuity of operations (COOP) capability for its essential functions.

SCOPE

The audit was performed from November 2006 to August 2007. The scope of the audit included COOP efforts for Bonneville's power scheduling, transmission scheduling, and system operations functions.

METHODOLOGY

To accomplish the audit objective, we:

- Reviewed Bonneville's COOP planning efforts;
- Reviewed laws, regulations, policies, and procedures for COOP;
- Interviewed personnel responsible for COOP; and,
- Reviewed prior Office of Inspector General and Government Accountability Office reports, and other related reports.

We conducted this performance audit in accordance with generally accepted Government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. The audit included tests of controls and compliance with laws and regulations related to Bonneville's COOP. Because our review was limited, it would not necessarily have disclosed all internal control deficiencies that may have existed at the time of our audit. Also, we examined the establishment of performance measures in accordance with the Government Performance and Results Act of 1993, as it related to the audit objective. We concluded that Bonneville had not established specific performance measures to ensure COOP in an emergency. However, our recommendations, when fully implemented, will assist Bonneville in ensuring the continuation of essential functions in emergency situations. Finally, we did not rely on computer processed data; therefore, we did not conduct reliability assessments on the data.

We held an exit conference with Bonneville officials on October 10, 2007.

PRIOR AUDIT REPORTS

- *The Department of Energy's Use of the Strategic Petroleum Reserve in Response to Hurricanes Katrina and Rita (DOE/IG-0747, December 2006)*. The report identified an opportunity to provide greater assurance that Strategic Petroleum Reserve (Reserve) operations could continue in future emergency situations. Specifically, the audit report stated that as a result of hurricanes Katrina and Rita, the Reserve's business recovery capabilities were impaired when mission-essential computer networks at both the primary and alternate sites were rendered inoperable. The Reserve's primary and secondary sites are located within 55 miles of each other. Katrina's far-reaching impact proved that the proximity of the alternate site to the primary facilities was less than optimal. The report also noted that the Reserve had not performed an all-hazards risk assessment when trying to determine the location of its alternate operating facility, as required by Federal Preparedness Circular 65.
- *The Department's Continuity Planning and Emergency Preparedness (DOE/IG-0657, August 2004)*. The report found that five sites did not develop comprehensive plans to continue essential functions during an emergency and had not corrected a number of weaknesses identified during prior emergency preparedness exercises. Specifically, the sites had not fully identified essential functions or alternate operating facilities in case of an emergency. Additionally, the Department of Energy (Department) did not have specific requirements for sites to validate the effectiveness of corrective actions addressing recognized preparedness weaknesses or to share complex-wide lessons learned about common problems. The Department had recently created the Corrective Action Management Program as a means to validate corrective actions identified during emergency preparedness testing. Also, the Department had recently developed the Society for Effective Lessons Learned Sharing to centrally track and share lessons learned from emergency preparedness test exercises. As a result of these findings, the Department may face increased risks to operations, employees, and surrounding communities during an emergency situation.

United States Government

Department of Energy

Bonneville Power Administration

memorandum

DATE: September 21, 2007

REPLY TO:
ATTN OF: IG-32 (A07DN057)

SUBJECT: Bonneville Power Administration Comments on the IG Discussion Draft Report on the "Audit of Continuity of Operations at Bonneville Power Administration" dated August 20, 2007

to: George Collard, Assistant Inspector General for Performance Audits
Office of the Inspector General

Thank you for allowing the Bonneville Power Administration (BPA or Bonneville) to comment on your audit of BPA's Continuity of Operations Planning (COOP). BPA accepts the IG's recommendations. BPA is either currently implementing or will soon implement the IG recommendations to ensure a viable COOP capability for critical functions at BPA.

However, BPA, by statutory directive, must provide power and transmission services to its customers in a business-like manner while implementing a number of organic statutes (including the Bonneville Project Act, the Federal Columbia River Transmission System Act, and the Pacific Northwest Electric Power Planning and Conservation Act), regulatory guidance (FERC, NERC, and WECC regulations), international treaties, regional operations agreements, and prudent utility practice. In the event of a conflict between FPC 65 and the Administrator's statutory responsibilities, BPA will comply with its statutory and regulatory obligations.

More specifically, BPA's current critical function COOP capability is operational, but needs to be improved. BPA has initiated the Business Resilience Program to develop an integrated and comprehensive set of COOP measures, as well as related emergency, crisis, and asset management plans to address those deficiencies and implement the IG recommendations. BPA has started with the most critical functions, all of which are related to sustaining safe, reliable, and adequate transmission and generation. COOP planning for lower priority functions will follow in FY 2008 and FY 2009. In this process, BPA will identify any aspects of business resilience that need to be strengthened and schedule the projects.

Comments on IG Recommendations

BPA agrees with the IG Report recommendations. We have added some clarifications and timelines for a more complete understanding of the BPA approach to COOP planning.

Recommendation 1. Finalize an approach to COOP planning that includes milestones for developing and approving a Bonneville-wide COOP plan.

BPA's strategic "approach" to COOP planning has been final since July 2007. BPA has consolidated COOP planning with emergency management, crisis management, and asset management planning. This overall approach is called Business Resilience and is intended to produce an integrated and comprehensive set of plans, enhancements, and skills to allow BPA to effectively respond to disruptive events affecting BPA, its customers and stakeholders in the Pacific Northwest region. Implementation details will be updated in October 2007, following our Business Impact Analysis

(BIA) which has identified BPA's "core outputs," the highest priority products and services the agency must sustain during and following an emergency, all of which are related to sustaining safe, reliable, and adequate transmission and generation. As part of the BIA, BPA will identify the critical functions that sustain these core outputs. COOP plans for these highest priority-critical functions will be completed by the end of FY 2008, with second priority function COOP plans to follow during FY 2009.

Recommendation 2. Develop and maintain viable business function COOP plans in accordance with FPC 65 that include:

- (a) Strategies that ensure independent alternate operating facilities which are not subject to the same hazards as the primary facilities;**
- (b) Devolution plans to ensure COOP in the event that both the primary and alternate facilities are rendered inoperable; and**
- (c) Formal testing of the alternate operating facilities and devolution plans, including documenting the results and implementing corrective actions when necessary.**

BPA intends to have viable business function COOP plans in accordance with (a) and (b) above by the end of FY 2008 for its most critical functions, with others to follow. Additional changes in systems and processes, including formal testing described in (c) above, will be implemented over a few months to several years, depending on agency priorities, implementation time and costs.

As pointed out in the comments in the Appendix, and in the IG report findings, BPA does currently have workable elements of (a), (b), and (c) above, but acknowledges that improvements are needed.

Recommendation 3. Integrates the business function COOP plans into a Bonneville-wide COOP plan that meets FPC 65 requirements.

Bonneville's COOP plans will be integrated to ensure that its priority "core outputs" are resilient. BPA has procured LDRPS (Living Disaster Recovery Planning System), an industry standard COOP planning tool to assist in this integration. All business function COOP plans will be integrated and lodged in the LDRPS data base which is expected to fully meet FPC 65 requirements by the end of FY 2008.

Recommendation 4. Ensures timely completion of its information technology initiatives for power and transmission scheduling systems and that the new capabilities are reflected in business function COOP plans.

Information technology initiatives for Power Scheduling and Transmission Scheduling Systems are under way. The remote site internet scheduling capability, located in Minneapolis, MN, will be operational by the end of FY 2008. The remote alternate facilities site for critical support functions, including forecasting and scheduling at the Munro Control Center (MCC) in Spokane, WA, is expected to be finished by January 2009.

BPA's response, the Appendix, and other documentation can be found on the BPA website at http://www.bpa.gov/corporate/about_bpa/audits.



Sonya L. Baskerville
National Relations Manager

3 Attachments

cc:
Mark Mickelsen – DOE, Office of Inspector General

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