



Memorandum from the Office of the Inspector General

December 10, 2020

Robert M. Deacy, Sr.
Jacinda B. Woodward

**REQUEST FOR MANAGEMENT DECISION – EVALUATION 2019-15684 – TURNOVER
OF PROJECTS TO POWER OPERATIONS**

Attached is the subject final report for your review and management decision. You are responsible for determining the necessary actions to take in response to our findings. Please advise us of your management decision within 60 days from the date of this report. In accordance with the Inspector General Act of 1978, as amended, the Office of the Inspector General is required to report to Congress semiannually regarding evaluations that remain unresolved after 6 months from the date of report issuance.

If you have any questions or wish to discuss our findings, please contact J. Lauren Pionke, Senior Auditor, at (865) 633-7381 or E. David Willis, Director, Evaluations, at (865) 633-7376. We appreciate the courtesy and cooperation received from your staff during the evaluation.

David P. Wheeler
Assistant Inspector General
(Audits and Evaluations)

JLP:FAJ

Attachment

cc (Attachment):

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OIG File No. 2019-15684



Office of the Inspector General

Evaluation Report

To the Senior Vice
President, Generation
Projects and Fleet Services,
and the Senior Vice
President, Power Operations

TURNOVER OF PROJECTS TO POWER OPERATIONS

Evaluation Auditor
J. Lauren Pionke
Christopher E. Sheets

Evaluation 2019-15684
December 10, 2020

ABBREVIATIONS

DCN	Design Change Notice
EPMO	Enterprise Project Management Office
GP	Generation Projects
ISD	In-Service Date
PO	Power Operations
RTO	Return to Operation
SPP	Standard Programs and Processes
TVA	Tennessee Valley Authority
UNID	Unique Identifier

TABLE OF CONTENTS

EXECUTIVE SUMMARY	i
BACKGROUND.....	1
OBJECTIVE, SCOPE, AND METHODOLOGY	3
FINDINGS AND RECOMMENDATIONS	5
TURNOVER PROCESSES WERE NOT ALIGNED.....	5
INCONSISTENCIES LED TO PROJECT ISSUES.....	6
OPPORTUNITIES FOR IMPROVEMENT	11

APPENDIX

MEMORANDUM DATED DECEMBER 4, 2020, FROM ROBERT M. DEACY, SR., AND JACINDA B. WOODWARD TO DAVID P. WHEELER



Evaluation 2019-15684 – Turnover of Projects to Power Operations

EXECUTIVE SUMMARY

Why the OIG Did This Evaluation

The Tennessee Valley Authority's (TVA) Generation Projects and Fleet Services organization supports the execution of TVA's strategic asset plan and outage plans through projects and services, including capital projects for the Power Operations (PO) organization in order to support equipment reliability at TVA's coal, gas, and hydro plants. As of October 1, 2019, there were 543 capital projects for PO documented in TVA's fixed asset enterprise tool with project costs totaling \$1.41 billion.ⁱ

TVA Standard Programs and Processes (SPP) 34.000, *Project Management*, provides a framework for the management of projects. TVA-SPP-34.000 also outlines the project management process, including implementation and closure activities related to the turnover of projects and gives the project manager overall responsibility for the process. In addition, the SPP states project turnover and acceptance involves following TVA processes and applicable business unit turnover processes, including the design change notice (DCN) process.

Due to the importance of effective project management to TVA's mission and potential issues identified during Organizational Effectiveness evaluations, we scheduled an evaluation of project turnover to PO. The objective of our evaluation was to determine if TVA is effectively managing the turnover of projects to PO.

What the OIG Found

We determined TVA is not effectively managing the turnover of projects to PO because the project turnover processes were not aligned, and the inconsistencies led to project issues related to (1) turnover and customer acceptance, (2) completion of the DCN, and (3) project closure. In addition, we identified opportunities for improvement related to (1) time frames for completion of the DCN process and (2) project ownership.

What the OIG Recommends

We made 13 recommendations regarding the project turnover processes including (1) turnover and customer acceptance, (2) completion of the DCN, (3) project closure, and (4) other opportunities for improvement. Our detailed recommendations are listed in the body of this report.

ⁱ The capital project summary report pulled from TVA's fixed asset enterprise tool did not provide a time period for when projects were opened or closed, but TVA implemented the tool in March 2011.



Evaluation 2019-15684 – Turnover of Projects to Power Operations

EXECUTIVE SUMMARY

TVA Management's Comments

In response to our draft report, TVA management agreed with 12 of our recommendations as written, but took exception with one regarding project closure. For that recommendation management provided an alternative method for tracking project closure. See the Appendix for TVA management's complete response.

Auditor's Response

We concur with TVA management's alternative method for tracking project closure.

BACKGROUND

The Tennessee Valley Authority's (TVA) Generation Projects and Fleet Services organization supports the execution of TVA's strategic asset plan and outage plans through projects and services, including capital projects for the Power Operations (PO) organization to support equipment reliability at TVA's coal, gas, and hydro plants. As of October 1, 2019, there were 543 capital projects for PO documented in TVA's fixed asset enterprise tool with project costs totaling \$1.41 billion.¹ See Table 1.

Project Status	Total Number of Projects	Total Project Costs (in millions)
Open	208	\$260
In Service (asset is in service, but project closure has not occurred)	95	\$281
Completed/Closed	240	\$873

Table 1

TVA Standard Programs and Processes (SPP) 34.000, *Project Management*, provides a framework for the management of projects. TVA-SPP-34.000 outlines the project management process, including implementation and closure activities related to the turnover of projects, and gives the project manager overall responsibility for the process.

Implementation

Project implementation addresses (1) scope implementation, (2) turnover and acceptance, and (3) in-service dates (ISD).

Scope Implementation

Project scope implementation includes (1) completing project deliverables, (2) complying with safety and environmental objectives, (3) monitoring and controlling implementation/construction activities,² and (4) processing any scope, cost, and schedule changes as they arise.

Turnover and Acceptance

Project turnover and acceptance is completed by following TVA and applicable business unit turnover processes, including the (1) design change process and (2) conduct of engineering process.

- Design Change Process – PO-SPP-09.002, *Design Change Control*, establishes the design change notice (DCN) process for PO assets. The process is designed to include all affected organizations and ensure impacts to safety, construction, operation, maintenance, and/or the environment are addressed.

¹ The capital project summary report pulled from TVA's fixed asset enterprise tool did not provide a time period for when projects were opened or closed, but TVA implemented the tool in March 2011.

² According to the procedure, the project manager retains total project accountability; however, execution responsibilities may transition from the project manager to an implementation manager or construction manager as a project progresses from design to implementation.

The process also provides information related to (1) modification impact reviews, (2) return to operation (RTO), and (3) closure.

- *Modification Impact Reviews* – Modification impact reviews are used to document the impact a change has on an affected organization's area of responsibility. The reviews are separated into three parts: (1) evaluation of impacts that must be identified and described before issuance of the DCN, (2) actions that must be completed prior to RTO, and (3) actions that must be completed prior to DCN closure.
- *RTO* – The concept of RTO is that all design and construction activities associated with the demolition, installation, and/or modification of all affected structures, systems, or components have been completed to the extent necessary to ensure they may be operated safely and reliably. The documentation transmittal sheet details what activities must be addressed before the equipment is returned to operations, including:
 - o All modifications covered by the scope of the turnover should be completed or identified on the punch list. The responsible engineer³ should (1) verify fieldwork required for the modification is complete and (2) notify TVA's Configuration Management and Document Control group to update the affected plant drawings.
 - o Modification impact reviews should be signed by all affected disciplines to indicate RTO actions required for the scope of the turnover were completed or identified on the punch list. Such actions include all procedures, training, testing, walk downs, and/or other checkouts.Once complete, RTO of the equipment affected by the DCN is approved by the responsible engineer and operations manager.⁴
- *DCN Closure* – Modification impact reviews should be signed by all affected disciplines to indicate DCN closure actions are complete. Once complete, DCN closure is approved by the responsible engineer and operations manager (if a punch list is used) indicating all DCN requirements and commitments remaining open after RTO, including drawings and other design output documents, punch list items, etc., have been issued or completed.
- *Conduct of Engineering Process* – PO-SPP-09.000, *Conduct of Engineering*, requires the engineering and technical programs staff to provide oversight of design change projects. The SPP also outlines configuration management and document control for projects.

In addition, TVA-SPP-34.000, *Project Management*, project turnover and acceptance requires the project manager to ensure (1) all punch list items requiring disposition are identified and (2) the final project turnover work plan is completed and PO's acceptance of the deliverables is documented.

³ The responsible engineer is responsible for the engineering oversight and coordination and completion of all activities related to the DCN. The role was typically filled by contract employees/engineering partners.

⁴ For generating facilities that do not have an operations manager, the plant manager assumes these responsibilities.

ISD

For capital projects, an ISD is an indication the asset installed, replaced, and/or retired is ready for its intended use and depreciation can begin on the asset. According to TVA-SPP-34.000, *Project Management*, the project shall be placed in service on the same date the last work order was placed in service which must be updated within 5 days of the completion of the asset or sooner.

Project Closure Activities

TVA-SPP-34.000, *Project Management*, requires the project manager to ensure completion of 13 project closure requirements, including closure of punch list items and DCNs. The SPP states once placed in service, projects should be closed within 6 months.

Due to the importance of effective project management to TVA's mission and potential issues identified during Organizational Effectiveness evaluations, we performed an evaluation of project turnover to PO.

OBJECTIVE, SCOPE, AND METHODOLOGY

The objective of our evaluation was to determine if TVA is effectively managing the turnover of projects to PO. The scope of our evaluation included capital projects for PO's generation assets managed by the Generation Projects (GP) group within Generation Projects and Fleet Services.⁵ We limited our evaluation to the implementation and closure activities related to the turnover of those projects to PO.

To achieve our objectives, we:

- Reviewed several processes to gain an understanding of the project management process, including:
 - TVA-SPP-34.000 – *Project Management*
 - TVA-SPP-13.014 – *Accounting for Pre-commercial Operations of Generation Units Under Construction*
 - PO-SPP-09.000 – *Conduct of Engineering*
 - PO-SPP-09.002 – *Design Change Control*
 - PO-SPP-09.003 – *Unique Identification of Structures, Systems, and Components*
 - PO Standard Departmental Procedure 09.016 – *Drawing Control*
 - Projects SPP-34.002 – *Construction Management*
- Interviewed pertinent personnel to gain an understanding of the project management process, turnover, acceptance, closure requirements, and potential areas for improvement.

⁵ During our fieldwork, GP was in the Generation Projects and Fleet Services organization. A recent reorganization in June 2020 moved GP to the PO organization.

- Conducted interviews and a survey to gauge project turnover experiences and identify potential areas for improvement. Interviews were conducted with plant/site managers and the survey gathered responses from personnel within Generation Projects and Fleet Services and PO.
- Reviewed a summary of TVA's capital projects to identify a listing of capital projects for PO's generation assets.
- Selected a judgmental sample of 9 projects managed by GP out of 543 capital projects for PO's generation assets. We selected the items based on survey responses, PO project recommendations, plant type, total cost, ISD/status, and proximity to other sites to assess project implementation and closure. Our sample was comprised of 1 project from 9 different sites (3 coal, 3 hydro, and 3 gas), including:
 - Caledonia Combined Cycle Plant Unit 3, control system upgrade
 - Johnsonville Combustion Turbine Plant Units 17 and 18, equipment replacement
 - Ackerman Combined Cycle Plant, software system upgrade
 - Cumberland Fossil Plant, equipment rebuild
 - Gallatin Fossil Plant Unit 3, equipment upgrade
 - Bull Run Fossil Plant, equipment refurbishment
 - Douglas Hydro Plant, system upgrade
 - Wilson Hydro Plant Unit 20, equipment replacement
 - South Holston Hydro Plant, system upgrades
- For each project in our sample, we:
 - Reviewed relevant project documentation to assess project implementation and closure.
 - Conducted interviews with key project personnel⁶ to assess project implementation and closure.
 - Reviewed the DCNs to identify all requirements and ensure those requirements were completed prior to RTO and/or closure.
 - Selected judgmental samples of 10 drawings for each project to ensure drawings were updated as a result of the project and available in TVA's content management system as required.⁷

⁶ Key project personnel included project managers, construction managers, discipline managers, plant managers, operations managers, maintenance managers, outage managers, plant personnel, and/or engineering personnel (corporate, site, and contract employees/engineering partners).

⁷ According to PO's Standard Departmental Procedure 09.016, *Drawing Control*, drawings should be issued within 15-90 days after fieldwork is complete or before RTO.

- Reviewed the entire unique identifier (UNID)⁸ population or selected a judgmental sample of 10 UNIDs if applicable for each project to ensure labels were installed on plant assets as required.⁹

This evaluation was performed in accordance with the Council of the Inspectors General on Integrity and Efficiency's *Quality Standards for Inspection and Evaluation*.

FINDINGS AND RECOMMENDATIONS

We determined TVA is not effectively managing the turnover of projects to PO because the project turnover processes were not aligned and the inconsistencies led to project issues related to (1) turnover and customer acceptance, (2) completion of the DCN, and (3) project closure. In addition, we identified opportunities for improvement related to (1) time frames for completion of the DCN process and (2) project ownership.

TURNOVER PROCESSES WERE NOT ALIGNED

We determined the project turnover processes were not aligned. This resulted in GP and PO personnel having different understandings of when turnover should occur and what is required for turnover.

For GP personnel, TVA-SPP-34.000, *Project Management*, was the guiding document. The SPP states the project manager shall ensure the final project turnover work plan is completed and the customer's acceptance of the deliverables is documented. However, the SPP does not define requirements for the final project turnover work plan or how customer acceptance of the deliverables should be documented. We determined there was no consistent approach related to turnover, including what documentation was used and who signed off as the customer. For example, we identified documents such as, buy-off sheets, certificates of completion, system test and turnover administrative documents, and startup and testing plans were used to document vendors' completion of construction, the outage, or testing and commissioning results. Signatures indicating customer acceptance were given by outage management, construction management, engineering partners, and/or plant management. According to GP personnel, turnover and customer acceptance should occur at the end of construction when the equipment is returned to service.

For PO personnel, PO-SPP-09.002, *Design Change Control*, was the guiding document. The SPP states plant management (either the operations manager or plant manager) is the plant owner and customer of the DCN process and is directly

⁸ A UNID provides a unique file name for an asset to which information such as equipment, clearances, vendor information, drawings, and criticality can be applied. PO-SPP-09.003, *Unique Identification of Structures, Systems, and Components*, states operations is responsible for installing UNID labels and verifying proper installation.

⁹ We conducted three site visits prior to COVID-19 restrictions. Labels at the remaining sites were verified through correspondence with plant personnel and pictures.

responsible for supporting the process from inception (identification of projects, drawing revisions, design review meeting participation) through execution to completion (RTO and configuration control). While the SPP does not explicitly define turnover, customer acceptance, or ISDs, it states RTO is considered a “hold point” for the responsible engineer, requiring operations management approval, in order to ensure all the appropriate checks have been performed so equipment is not placed back in service prematurely. However, based on interviews with plant personnel, it seems they do not want to accept the project at RTO if all of the DCN requirements and sign offs are not complete at that time.

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It appears GP views turnover and customer acceptance at the point when construction of the project deliverables is complete, whereas PO views turnover and customer acceptance at the point when all requirements of the DCN are complete. According to GP management, a turnover acceptance form with a punch list was instituted by GP about 3 years ago, to give plant management an opportunity to acknowledge the asset is constructed and ready for operation; but some work may still need to be completed. GP management said the form was initiated due to inconsistencies in implementing turnover across groups; however, it has not been holistically accepted and ingrained across PO. We determined the turnover acceptance form has not been incorporated into either process and could be a contributor to why turnover and acceptance is not viewed consistently across both organizations.

Recommendations:

We recommend the Senior Vice President, PO:

- In conjunction with the Senior Vice President, Generation Projects and Fleet Services, align the project management and DCN processes related to project turnover, including requirements for turnover and customer acceptance, and how and when they should be documented.
- Communicate expectations for turnover and ensure alignment between GP and PO personnel.

TVA Management’s Comments – TVA management agreed with our recommendations. See the Appendix for TVA management’s complete response.

INCONSISTENCIES LED TO PROJECT ISSUES

We determined the inconsistencies related to turnover led to project issues, including (1) assets placed in service prematurely, (2) DCN requirements not being completed or not being completed in a timely manner, and (3) projects not being closed in a timely manner.

Assets Were Returned to Service Prematurely

We determined assets were returned to service prematurely, resulting in the plant operating equipment before plant management approval and, in some cases, before work was complete. Specifically, we determined assets were returned to service before plant management approved RTO for all 9 projects we reviewed. See Table 2.

Project	ISD	RTO Date	Difference (in days)
Caledonia	06/22/2018	06/30/2018	8
Wilson	03/22/2018	04/02/2018	11
Cumberland	11/24/2017	03/21/2018	117
Ackerman	04/18/2019	09/10/2019	145
Johnsonville	06/18/2018	11/28/2018	163
Gallatin	05/08/2019	04/06/2020	334
Douglas	03/01/2018	11/18/2019	627
South Holston	01/26/2019	*	N/A
Bull Run	07/06/2018**	*	N/A
* As of September 30, 2020, plant management still had not approved RTO.			
** This was the date the responsible engineer verified field work was complete. As of September 30, 2020, an ISD had not been documented.			

Table 2

In addition, for 3 projects (Bull Run, Cumberland, and South Holston), we determined assets were returned to service before all work was complete.

- Bull Run – We determined all of the project deliverables were not complete when the equipment was returned to service in July 2018. As a result, plant management was not willing to approve RTO or sign the turnover acceptance form. According to project personnel, one of the deliverables that remains involves further construction and testing of the equipment and is needed to make operation of the equipment easier. Project personnel stated they attempted to work with the plant to approve RTO prior to returning the equipment to service. However, according to the responsible engineer, plant personnel were not willing to sign the DCN for RTO until many of the items required for DCN closure were completed. As of September 30, 2020, deliverables remain incomplete and plant management still has not approved RTO.
- Cumberland – According to plant and project personnel, the vendor did not complete the deliverables on time. The equipment was returned to service in November 2017, but the vendor had to come back months later to complete construction. The construction manager and outage manager did not sign the vendor's buy-off sheet until after construction was completed in January and February 2018 respectively, but plant management did not approve RTO until a month later.
- South Holston – We determined work was not complete when the equipment was returned to service. The responsible engineer verified fieldwork completion on the DCN in January 2019 and the equipment was returned to service.

However, according to project personnel, the equipment was experiencing leaks due to a project design issue. Plant personnel monitored the equipment on a daily basis amid operation until the repair occurred and the equipment was returned to service again in June 2019. As of September 30, 2020, plant management still had not approved RTO.

As stated above, RTO is in place to ensure all design and construction activities associated with the demolition, installation, and/or modification of affected structures, systems, or components have been completed to the extent necessary to ensure they may be operated safely and reliably. However, in all 9 projects we reviewed, equipment was started before RTO was approved, increasing the risk to plant assets and employee safety.

Recommendations:

We recommend the Senior Vice President, PO:

- Reinforce the requirement for RTO approval by plant management to ensure it occurs before the equipment is returned to service.
- Implement a control to ensure deliverables are complete when the unit is returned to service.
- Evaluate projects returned to service where RTO has not been signed to determine if the equipment can be operated safely and reliably.

TVA Management's Comments – TVA management agreed with our recommendations. See the Appendix for TVA management's complete response.

DCN Requirements Were Not Completed or Completed Timely

In order to ensure the equipment can be operated safely and reliably, certain requirements of the DCN must be completed. However, it appears the completion of DCN requirements is not prioritized. We found DCNs were not always closed in a timely manner after equipment was returned to service. In addition, we reviewed DCN requirements for the remaining 7 projects and determined DCN requirements, including (1) UNID labels and (2) drawings, were not always completed prior to DCN closure or completed timely.

DCN Remains Open

We determined the DCN remains open approximately 1 to 2 years after the equipment was returned to service for 2 projects – Bull Run and South Holston.

- Bull Run – The DCN remains open approximately 2 years after the equipment was returned to service and a few DCN requirements had not been completed for the Bull Run project, including the installation of all UNID labels and formal training for maintenance personnel.
- South Holston – The DCN remains open approximately 1 year after the equipment was returned to service and multiple DCN requirements had not

been completed for the South Holston project, including the installation of all UNID labels, training, and preventive maintenance schedule revisions. Project and plant personnel confirmed these actions remain outstanding, but stated over 95 percent of UNID labels have been installed (approximately 300 of 316).

We also obtained the vendor's startup plan, which according to the project manager was used to document post-modification testing. We examined 74 test forms and identified 15 forms lacked completion signatures by either the plant manager or outage manager. Additionally, procedure or test results were (1) not documented on 8 forms and (2) only partially documented on 17 forms. Plant management stated they will not approve and sign the DCN until preventive maintenance items are complete and scrap material has been removed from the site.

UNID Labels

We reviewed UNID labels for 6 of the 7 remaining projects¹⁰ and determined they were not installed or completely installed prior to DCN closure on 2 of the 6 projects. According to a project manager, UNIDs are the plant's responsibility, but if plant personnel are unavailable, engineering partners may install the UNID labels. At Gallatin and Johnsonville, operations personnel verified completion of all DCN requirements and the DCN was closed; however, UNID labels had not been installed on the equipment as required. The project manager estimated about 30 percent of the time, UNID labels are found at the site uninstalled after operations verified installation.

- Gallatin – According to Gallatin's operations management, UNID labels had been created in TVA's system and were at the site, but the labels had not been installed on the equipment. During the course of our evaluation, Gallatin plant personnel installed most of the UNID labels associated with the project. According to plant management, the remaining UNID labels associated with the project could not be installed due to limited space to attach the labels.
- Johnsonville – During our visit to Johnsonville, we determined 8 of 12 total UNID labels associated with the project had not been installed. Plant personnel attributed the cause to minimal staffing, especially with bigger projects, and believed this could be improved throughout TVA. The site later provided visual evidence the remaining UNID labels had been installed.

UNID labels should be installed on the equipment to properly tag the equipment and issue clearances.¹¹ As a result, if UNID labels are not installed on the equipment, employee safety could be at risk.

Drawings

According to PO Standard Departmental Procedure 09.016, *Drawing Control*, drawings should be issued within 15 to 90 days after fieldwork is complete or before RTO. However, we determined affected drawings were not updated and issued in

¹⁰ One project did not require the installation of UNID labels.

¹¹ Clearances, when placed in issued status, indicate all energy sources of a component, such as electrical, mechanical, or hydraulic, have been isolated and tagged in order to allow work to be safely performed.

accordance with the required timelines for 6 of the 7 remaining projects.¹² For example, on the Douglas project, affected drawings were not updated and issued until 154 days after RTO. Furthermore, for Bull Run and South Holston, as of August 26, 2020, the majority of the affected drawings we reviewed had not been updated and issued, even though the equipment was returned to service approximately 1 to 2 years ago. One of the Bull Run affected drawings has since been revised twice for other projects without this project's revisions ever being incorporated. According to project personnel, when active plant drawings are not available, it increases the risk a plant may not be able to operate or troubleshoot effectively.

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According to plant personnel, even though the items on the DCN are required to get the unit fully ready for operation they may not be fully funded by the project or the timeline for completion is rushed. Plant personnel noted limited project budgets, rushed timelines for completion, and minimal staffing that could also impact completion of the DCN requirements. In addition, we identified multiple issues on projects that delayed completion of DCNs such as (1) a vendor providing inaccurate drawings or not providing the drawings in a timely manner, (2) TVA corporate groups not updating related drawings and UNID labels timely, (3) the DCN process being bypassed, and (4) project personnel not collaborating to identify and incorporate spare part or preventive maintenance changes in a timely manner. As a result, DCN requirements are not being met, and, therefore, employee safety and plant operations could be at risk.

Recommendations:

We recommend the Senior Vice President, PO:

- Prioritize completion of the DCN process.
- Implement a control to ensure all DCN requirements are completed for on-going projects.
- Address issues identified that delayed completion of DCNs, including (1) vendors providing inaccurate drawings or not providing drawings timely, (2) TVA corporate groups not updating related drawings and UNID labels timely, (3) the DCN process being bypassed, and (4) project personnel not collaborating to identify and incorporate spare part or preventive maintenance changes timely, and implement any lessons learned for ongoing and future projects.
- Evaluate funding, timelines for completion, and staffing to ensure plant personnel have the resources to complete their role as project owner.

TVA Management's Comments – TVA management agreed with our recommendations. See the Appendix for TVA management's complete response.

¹² The timeline was not applicable for 1 project due to the type of drawings.

Projects Were Not Closed Timely

TVA-SPP-34.000, *Project Management*, states the project manager shall ensure completion of all project closure requirements, including closure of punch list items and DCNs. Another requirement is that projects should be closed within 6 months of the ISD. However, none of the projects we reviewed were closed within this time frame. Six of the 9 projects remained open over a year after the ISD (ranging from 442 to 923 days). Also, according to the SPP, the Enterprise Project Management Office (EPMO) should be provided an explanation of cause if a project is not closed within 1 year. EPMO personnel stated project managers are typically notified of projects coming due or past due by a system that collects responses regarding project closure. However, the system used does not store historical responses, so we were unable to confirm if EPMO was provided an explanation of cause for the projects open more than 1 year.

Furthermore, specific to the Bull Run project, as of September 30, 2020, an ISD had not yet been documented in TVA's fixed asset enterprise tool even though it was returned to service more than 2 years ago according to project and plant personnel. As a result, the project is not being tracked by EPMO as past due for closure.

Recommendations:

We recommend the Senior Vice President, PO:

- In conjunction with the Senior Vice President, Generation Projects and Fleet Services, modify processes to ensure projects are closed timely.
- In conjunction with the General Manager, EPMO, close the gap so the EPMO tracks equipment when it is returned to service.

TVA Management's Comments – TVA management agreed with our recommendation to modify processes to ensure projects are closed timely. However, regarding tracking equipment return to service, TVA management stated EPMO will track project-in-service dates and closures, which occur when all components of the project scope of work is completed, rather than tracking to the individual pieces of equipment. Specific to the Bull Run project, TVA management stated some pieces of equipment were placed in service, but the project scope of work is not yet complete, so the project is still being tracked as an open project. See the Appendix for TVA management's complete response.

Auditor's Response – We concur with TVA management's plan to track project-in-service dates and closures.

OPPORTUNITIES FOR IMPROVEMENT

We identified opportunities for improvement related to (1) time frames for completion of the DCN process and (2) project ownership.

No Time Frame for Completion of the DCN Process

PO-SPP-09.002, *Design Change Control*, does not incorporate a time frame for completion of the DCN process. We determined DCNs were not closed until well after the ISD, ranging from 88 to 665 days later, for the 7 projects closed.

Therefore, the lack of a time frame could be a barrier to completion of the DCN process and as a result, project closure.

Project Ownership

The role of the system owner engineer in the DCN process may be filled by various employees in the organization, such as the plant engineer assigned to the facility or region or a field services engineer. In addition, other corporate groups, such as asset support and configuration management and document control, play a role in the DCN process; however, the process only places direct ownership on the plant. Plant personnel believe these groups should also share an ownership role in the DCN process.

Recommendations:

We recommend the Senior Vice President, PO:

- Implement time frames for completion of the DCN process.
- Consider updating the DCN process to assign system owner engineers and other corporate groups' an ownership role in the DCN process along with the plant.

TVA Management's Comments – TVA management agreed with our recommendations. See the Appendix for TVA management's complete response.

December 4, 2020

David P. Wheeler, WT 2C-K

REQUEST FOR COMMENTS – DRAFT EVALUATION 2019-15684 – TURNOVER
OF PROJECTS TO POWER OPERATIONS

This is in response to your memorandum dated November 10, 2020. After review of the draft audit, please see the following response for turnover of projects to Power Operations.

We would like to thank Lauren Pionke and Christopher Sheets for their diligence and support to identify improvement opportunities to more effectively manage the turnover of projects to Power Operations.

Recommendations

We recommend the Senior Vice President, Power Operations:

1. In conjunction with the Senior Vice President, Generation Projects and Fleet Services, align the project management and DCN processes related to project turnover, including requirements for turnover and customer acceptance, and how and when they should be documented.

Response

Power Operations agrees with this recommendation.

2. Communicate expectations for turnover and ensure alignment between GP and PO personnel.

Response

Power Operations agrees with this recommendation.

3. Reinforce the requirement for RTO approval by plant management to ensure it occurs before the equipment is returned to service.

Response

Power Operations agrees with this recommendation.

4. Implement a control to ensure deliverables are complete when the unit is returned to service.

Response

Power Operations agrees with this recommendation.

David P. Wheeler
Page 2
December 4, 2020

5. Evaluate projects returned to service where RTO has not been signed to determine if the equipment can be operated safely and reliably.

Response

Power Operations agrees with this recommendation.

6. Prioritize completion of the DCN process.

Response

Power Operations agrees with this recommendation.

7. Implement a control to ensure all DCN requirements are completed for ongoing projects.

Response

Power Operations agrees with this recommendation.

8. Address issues identified that delayed completion of DCNs, including (1) vendors providing inaccurate drawings or not providing drawings timely, (2) TVA corporate groups not updating related drawings and UNID labels timely, (3) the DCN process being bypassed, and (4) project personnel not collaborating to identify and incorporate spare part or preventive maintenance changes timely, and implement any lessons learned for ongoing and future projects.

Response

Power Operations agrees with this recommendation.

9. Evaluate funding, timelines for completion, and staffing to ensure plant personnel have the resources to complete their role as project owner.

Response

Power Operations agrees with this recommendation.

10. In conjunction with the Senior Vice President, Generation Projects and Fleet Services, modify processes to ensure projects are closed timely.

Response

Power Operations agrees with this recommendation.

David P. Wheeler
Page 3
December 4, 2020

11. In conjunction with the General Manager, EPMO, close the gap so the EPMO tracks equipment when it is returned to service.

Response

Power Operations disagrees with the recommendation as written with regard to tracking equipment return to service. The EPMO will track project-in-service dates (ISD) and closures, which occur when all components of the project scope of work is completed, rather than tracking to the level of granularity for the individual pieces of equipment. A project may include one or more pieces of equipment and may also include other components of non-capitalized work. Additionally, individual pieces of equipment may be installed through job orders, other means, that are not within the scope of TVA's project management processes.

Specific to the BRF U1 Aux Boiler Upgrade Project that is referenced within the report, some pieces of equipment were placed in service, while some components of the project scope of work are not yet completed. Because the project has ongoing work, it is still being tracked within open project reporting and monitoring processes (PRB reporting, Health Review Processes, Project Management Dashboards, etc.).

12. Implement time frames for completion of the DCN process.

Response

Power Operations agrees with this recommendation.

13. Consider updating the DCN process to assign system owner engineers and other corporate groups an ownership role in the DCN process along with the plant.

Response

Power Operations agrees with this recommendation.

Thank you for allowing us to provide these comments. Please contact us if you have any questions.



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LP 5D-C



Jacinda B. Woodward
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RMD:JBW:EGV
cc: See page 4

David P. Wheeler
Page 4
December 4, 2020

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