



Memorandum from the Office of the Inspector General

September 14, 2017

Laura A. Green, BR 5A-C
A. Douglas Perry, MR 3K-C
David W. Sorrick, LP 3K-C

**REQUEST FOR FINAL ACTION – EVALUATION 2017-15469 – TVA COAL PLANT
SURPLUS MATERIALS**

Attached is the subject final report for your review and final action. Your written comments, which addressed your management decision and actions planned or taken, have been incorporated into this report. Please notify us when final action is complete. 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 Meghan H. Petty, Senior Auditor, at (423) 785-4812 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)
ET 3C-K

MHP:FAJ
Attachment
cc (Attachment):

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OIG File No. 2017-15469



Office of the Inspector General

Evaluation Report

To the Vice President, Supply Chain;
Vice President, Financial Operations and
Performance; and
Senior Vice President, Power Operations

TVA COAL PLANT SURPLUS MATERIALS

Evaluation Team
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Evaluation 2017-15469
September 14, 2017

ABBREVIATIONS

AUP	Average Unit Price
Colbert	Colbert Fossil Plant
Cumberland	Cumberland Fossil Plant
FERC	Federal Energy Regulatory Commission
FY	Fiscal Year
Gallatin	Gallatin Fossil Plant
Hartsville	Hartsville Distribution Center
IR	Investment Recovery Group
IRA	Investment Recovery Association
Kingston	Kingston Fossil Plant
Paradise	Paradise Fossil Plant
POCs	Points of Contact
SPP	Standard Programs and Processes
TVA	Tennessee Valley Authority
Widows Creek	Widows Creek Fossil Plant

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MEMORANDUM DATED AUGUST 30, 2017, FROM DAVID W. SORRICK,
A. DOUGLAS PERRY, AND LAURA GREEN TO DAVID P. WHEELER.



Evaluation 2017-15469 – TVA Coal Plant Surplus Materials

EXECUTIVE SUMMARY

Why the OIG Did This Evaluation

The Tennessee Valley Authority (TVA) Standard Programs and Processes (SPP) 04.021, TVA Inventory Management Process, defines “surplus” as material that is not expected to be used within the next 3 years by TVA. Due to the risk of disposing of needed materials, and as a result of employee concerns shared during organizational effectiveness reviews at Cumberlandⁱ and Kingstonⁱⁱ Fossil Plants in 2015, we initiated an evaluation of TVA’s coal plant surplus materials process. The objective of our evaluation was to determine if coal plant materials designated for surplus were appropriate. The scope of our evaluation was materials surplused between October 1, 2013, and March 31, 2017.

What the OIG Found

We found that materials designated as surplus at active and transitionalⁱⁱⁱ plants were generally appropriate. Of the \$49.7 million of surplused materials from October 1, 2013, to March 31, 2017, less than 1 percent was repurchased by coal plants.

However, retired plant materials may have been surplused unnecessarily resulting in missed opportunities to redeploy materials, including inventory and noninventory,^{iv} within the fleet. Based on our review of TVA SPPs and best practices, we identified opportunities for TVA to improve its redeployment of both inventory and noninventory materials in future plant retirements.^v In addition, we identified conflicting criteria related to the time frame used in designating materials as surplus.

ⁱ Evaluation 2015-15296, Cumberland Fossil Plant Organizational Effectiveness, November 4, 2015.

ⁱⁱ Evaluation 2015-15329, Kingston Fossil Plant Organizational Effectiveness, March 10, 2016.

ⁱⁱⁱ Three of TVA’s coal plants have recently closed and additional coal plants are planned for closure in the coming years. Plants planned for closure are referred to as “transitional” plants within this report.

^{iv} Inventory is managed by Supply Chain personnel in partnership with plant management. It includes items such as spare parts, consumables, and bulk commodities. Noninventory would encompass all other assets, to include plant-managed equipment, tools, and supplies.

^v At the end of March 2017, Allen Fossil Plant held \$5.8 million; Johnsonville Fossil Plant held \$8.8 million; and Paradise Fossil Plant held \$36.6 million in inventory. Supply Chain management estimates about half of the inventory currently held at Paradise Fossil Plant will be reduced as part of Units 1-2 retirements.



Evaluation 2017-15469 – TVA Coal Plant Surplus Materials

EXECUTIVE SUMMARY

What the OIG Recommends

We recommend management improve communications around availability of inventory, set expectations for redeployment, provide allowances for increased inventory levels, reevaluate installation periods, formalize the “harvesting” process,^{vi} and align TVA SPPs. Our detailed recommendations are listed in the body of this report.

TVA Management’s Comments

In response to our draft report, TVA management agreed to implement seven of our eight specific recommendations, but stated they believe TVA’s current installation period as defined by the harvesting policy is appropriate. See the Appendix for TVA management’s complete response.

Auditor’s Response

We concur with TVA management’s comments and planned actions for seven of the eight recommendations. However, it is our opinion that the time frame established by TVA for harvested equipment to be installed is unnecessarily restrictive and impairs TVA’s ability to use assets from retired plants.

^{vi} Harvesting is an informal process for redeploying materials from retiring coal plants.

BACKGROUND

Supply Chain personnel manage inventory at Tennessee Valley Authority (TVA) coal plants in partnership with plant management. According to TVA Standard Programs and Processes (SPP) 04.021, TVA Inventory Management Process, inventory levels will be maintained for items that are (1) critical to the safe and reliable operation of the power system and (2) not readily available within acceptable time frames. Convenience items (i.e., items readily available from suppliers outside of TVA that are not needed for immediate use and can be procured as needed) may not be maintained in inventory. Inventory is valued at average unit price (AUP)¹ and may include the following types of materials:

- Spare Parts – Components, which include repair parts and replacement parts, whose function is required in structures, systems, equipment, etc., to ensure plant operation.
- Consumables – Items generally consumed over a period of time and readily available (such as electric lamps, chains, wires, rope, and cleaning supplies).
- Bulk Commodities – Items that become part of the plant/facility and are generally readily available (such as pipe, conduit, fittings, and steel).

Surplus Process

Inventory and noninventory² materials that are no longer needed within TVA are eligible to be designated as surplus. TVA-SPP-04.021, TVA Inventory Management Process, defines “surplus” as material not expected to be used within the next 3 years by TVA. Supply Chain personnel located at coal plants are responsible for determining whether a need exists within TVA prior to surplus.

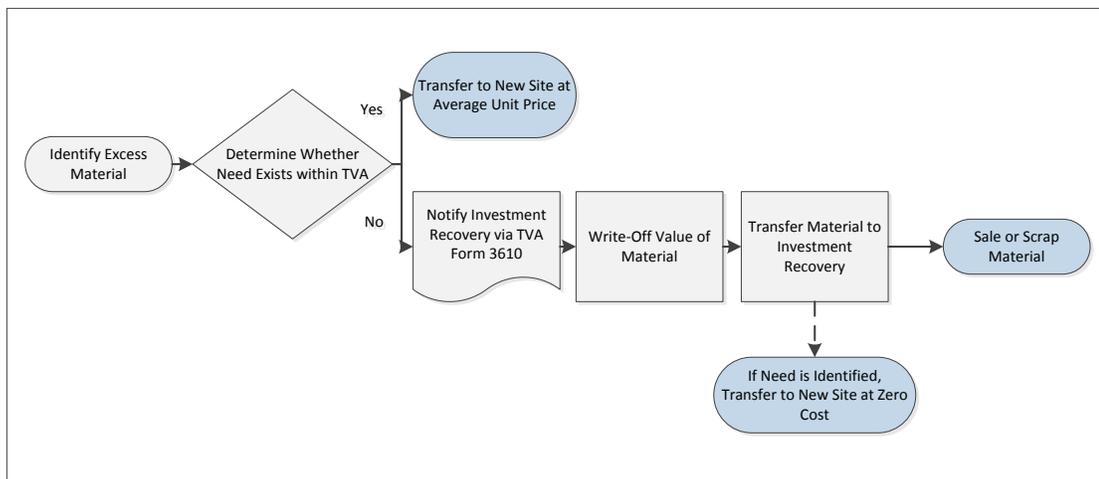


Figure 1

¹ Inventory is priced on the basis of average prices paid for materials, weighted according to the quantity purchased at each price, and recalculated after each inventory event.

² Noninventory includes plant-managed equipment, tools, and supplies.

As shown in Figure 1 on the previous page, when surplus is identified, organizations notify the Investment Recovery group (IR). According to TVA-SPP-04.0, TVA Management of Supply Chain Process, investment recovery is “a systematic, centralized organizational effort to manage surplus material, obsolete equipment, and scrap recovery activities in a manner that recovers as much of the original capital investment as possible.” IR awards sales contracts, maintains records of sales, and determines the location and method of sale in order to optimize TVA’s revenues.

Alternate Process for Noninventory Materials from Transitioning and Retired Plants

According to TVA, changing technology, increased environmental regulations and economics have shifted the importance of coal in its overall power generation portfolio. As a result, three coal plants recently closed. The current operational status of TVA coal plants is shown in Table 1 below.

Operational Status of TVA Coal Plants

Plant Status	TVA Coal Plants	Closure Dates
Active	Bull Run Cumberland Gallatin Kingston Paradise Unit 3 Shawnee	Not Applicable
Transitioning	Allen Johnsonville Paradise Units 1-2	2018 2017 2017
Retired	Colbert John Sevier Widows Creek	2016 2012 2015

Table 1

In 2015, TVA developed an informal process for redeploying materials from retiring coal plants after experiencing difficulties in tracking items removed from John Sevier Fossil Plant. The process, referred to as “harvesting,” provides guidance for the accounting and tracking of inventory and equipment removals based on TVA accounting policy. Any materials left onsite when the plant is transferred to a demolition contractor, will be sold to the contractor as scrap.

Typically, inventory transfers from the retired storeroom to an active or transitioning plant storeroom follow standard processes and are performed at AUP. As shown in Figure 2 on the following page, the disposition of noninventory materials (also referred to as harvested assets) depends on whether the item (1) was installed at the retired site, (2) is a capital spare,³ and (3) will be installed immediately at the new site. TVA’s process considers installation within 60 days (or 90 days if an outage is needed) as “immediate” for accounting purposes.

³ According to TVA-SPP-13.008, Accounting for Materials and Supplies Inventories, capital spare parts consist of spare items kept on hand as emergency backups to parts deemed vital to ensuring uninterrupted service of power-producing assets.

Surplus Process for Equipment Redeployment

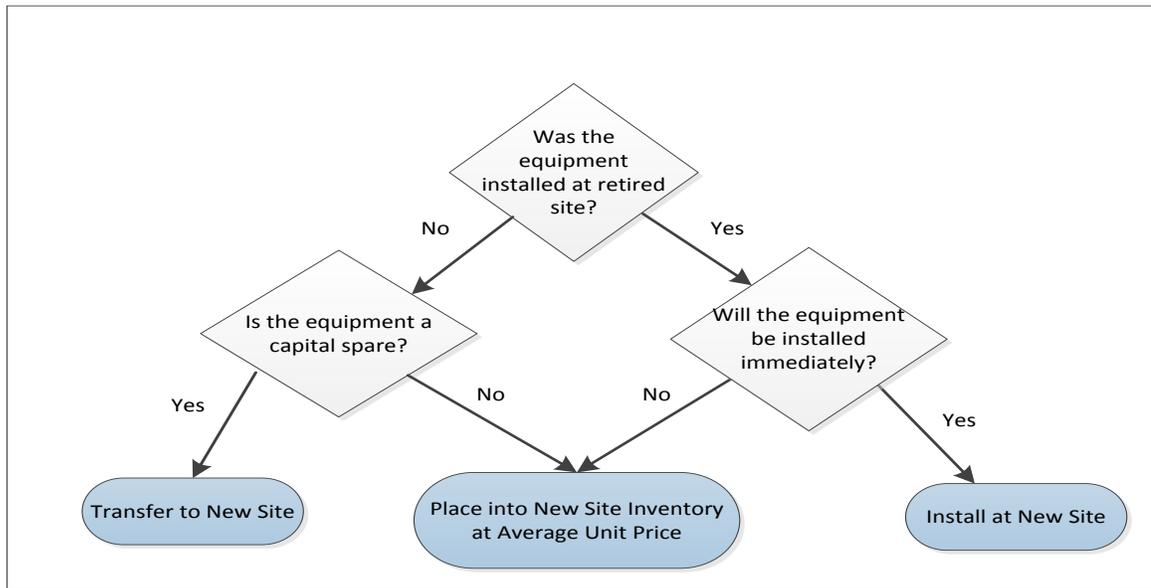


Figure 2

Equipment that was previously installed at a retired plant and is installed within 60 or 90 days, will have operations and maintenance costs expensed by the receiving plant for (1) removal and (2) transport. In contrast, equipment that was previously installed at a retired plant and cannot be installed within 60 or 90 days will have operations and maintenance costs expensed by the receiving plant related to (1) removal, (2) transport, and (3) purchase from inventory at AUP at the time of installation that can make the cost greater to the plant than the purchase of new equipment.

Due to the risk of disposing needed materials, and as a result of employee concerns shared during organizational effectiveness reviews at Cumberland⁴ and Kingston⁵ Fossil Plants, we initiated an evaluation of TVA's coal plant surplus materials process.

OBJECTIVE, SCOPE, AND METHODOLOGY

The objective of our evaluation was to determine if coal plant materials designated for surplus were appropriate. The scope of our evaluation was materials surplus between October 1, 2013, and March 31, 2017. We evaluated surplus materials at active, transitioning, and retired coal plants. As a part of this evaluation, we did not review materials that were disposed of in alternative methods such as scrap metal or trash. To achieve our objective, we:

⁴ Evaluation 2015-15296, Cumberland Fossil Plant Organizational Effectiveness, November 4, 2015.

⁵ Evaluation 2015-15329, Kingston Fossil Plant Organizational Effectiveness, March 10, 2016.

- Reviewed pertinent SPPs to gain an understanding of TVA’s surplus process, including:
 - TVA-SPP-04.0, Management of the TVA Supply Chain Process.
 - TVA-SPP-04.021, TVA Inventory Management Process.
 - TVA-SPP-04.050, Investment Recovery.
 - TVA-SPP-13.008, Accounting for Materials and Supplies Inventories.
- Reviewed industry guidance from the Investment Recovery Association (IRA),⁶ a professional organization for managers of surplus and idle assets, to identify best practices.
- Interviewed managers and employees in Corporate Accounting, Financial Operations and Performance, Generation Projects, Power Operations, and Supply Chain to gain an understanding of surplus processes and practices.
- Interviewed coal plant and Supply Chain personnel at active and retired plants to determine if coal plant materials were appropriately designated for surplus from active and retired plants. Cumberland, Gallatin Fossil Plant, and Kingston were judgmentally selected from active plants based on the amount of write-offs and requested materials from retired plants. Colbert and Widows Creek Fossil Plants were judgmentally selected to represent retired coal plants because the plants were dispositioning materials during the course of our fieldwork.
- Compared inventory write-offs⁷ (surplus) to purchase data in Maximo⁸ to determine whether materials were repurchased within 3 years after being surplused.
- Obtained inventory levels for the end of each fiscal year (FY) and as of March 31, 2017, for coal plants. We compared this data to write-off data to identify the portion of inventory that was being used versus the portion that was being written off.
- Obtained and analyzed Generation Engineering’s database of assets requested from retired plants for redeployment within the fleet (i.e., “harvesting data”). There were limitations to the use of this data due to deletion⁹ of the data by its owner. We determined TVA cost estimates for removal, transport, value if placed in inventory, and cost if new were unreliable. However, lacking other data sources, we used cost if new information to illustrate the potential materiality of equipment requests and redeployments. Figures cited in this report using the database will be reported as minimum levels due to the incompleteness of the data.

⁶ As of 2013, 40 percent of the IRA’s membership was within utilities sector. Current membership includes several large electric utilities, including TVA.

⁷ Surplus material removed from inventory accounts is expensed to a write-off account.

⁸ Maximo is TVA’s supply chain and work management system. For materials and supplies, it supports contracting, ordering, inventory management, receiving, and payments.

⁹ According to Generation Engineering, the list is updated to reflect changes in requests due to plant needs or budget considerations.

- Visited Colbert and Widows Creek (retired coal plants); Cumberland, Gallatin, and Kingston (active coal plants); and Hartsville Distribution Center to observe surplus activities.

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 found materials designated as surplus at active and transitioning plants were generally appropriate. However, retired plant materials may have been surplused unnecessarily resulting in missed opportunities to redeploy materials, including inventory and noninventory, within the fleet. Based on our review of TVA SPPs and best practices, we identified several opportunities to improve redeployment of surplus materials from retired plants. In addition, we identified conflicting criteria in TVA SPPs related to the time frame used in designating materials as surplus.

MATERIALS DESIGNATED AS SURPLUS AT ACTIVE AND TRANSITIONING PLANTS WERE GENERALLY APPROPRIATE

We found that materials designated as surplus at active and transitioning plants were generally appropriate. According to TVA-SPP-04.050, Investment Recovery, Supply Chain personnel are to determine no need exists within TVA before reporting materials to IR for disposition. Of the \$49.7 million of surplus materials from coal plants from October 1, 2013, to March 31, 2017, we identified \$300,000 in subsequently repurchased materials. While the \$300,000 could be potentially avoidable costs, these repurchases represented less than 1 percent of surplus materials from coal plants.

We contacted TVA personnel to understand the circumstances surrounding the repurchase of materials with potential avoided costs greater than \$5,000. According to TVA personnel, reasons for repurchasing surplus materials included the (1) item was not stocked in inventory at the purchasing plant at the time the materials were surplus, (2) site had sufficient stock at the time of surplus, and (3) site desired another manufacturer's product.

RETIRED PLANT MATERIALS UNNECESSARILY DESIGNATED AS SURPLUS

We were unable to confirm whether materials designated as surplus at retired plants were appropriate due to the limited data maintained by TVA. However, there were indications that retired plant materials were unnecessarily designated as surplus and could be, or could have been, redeployed within TVA's fleet. The majority of maintenance employees we interviewed at retired sites (9 of 12) and several employees at active sites (6 of 20) held a perception of wasteful practices surrounding disposition of inventory and noninventory at retired plants. According to the IRA, the highest value companies can receive from surplus equipment is to reuse internally which reduces capital, depreciation, taxes, and insurance costs.¹⁰ Based on our review of TVA SPPs and best practices, we identified opportunities for TVA to improve its redeployment of both inventory and noninventory materials in future plant retirements.¹¹

Inventory

Inventory at coal plants includes consumable, bulk commodity, and spare parts that may be common to multiple sites. After plant closure, TVA considers storeroom inventory at retired sites as surplus, writing off the majority of the inventory and selling the materials through IR. In order to be considered surplus, TVA personnel should determine that materials are no longer needed within TVA. We were unable to confirm whether inventory designated as surplus from retired plants was appropriate because TVA's inventory database does not store information on the number of items on hand at a given date in the past. Without that information, there was no way to recreate and examine the circumstances at the time retired plant materials were designated as surplus. However, there were indications that written off inventory could have been redeployed. According to TVA-SPP-13.008, Accounting for Materials and Supplies Inventories, surplus material is removed from inventory accounts when the material is sold or other disposition is finalized. From October 1, 2014, through March 31, 2017, inventory write-offs totaled \$10.3 and \$20.4 million for Colbert and Widows Creek, respectively. As shown in Figure 3 on the following page, the majority of the inventory decreases at Colbert and Widows Creek can be explained by these write-offs. In total, we calculated 92 percent of inventory was written off at the two sites. According to Supply Chain management, materials not written off were likely either used at the site or redeployed within the fleet. This suggests only about 8 percent of the inventory from Colbert and Widows Creek was used at those or other TVA locations.

¹⁰ *The 7 R's Every IR Professional Should Know: Simplifying the Decision Tree*. Investment Recovery Handbook, Investment Recovery Association, 2015.

¹¹ At the end of March 2017, Allen Fossil Plant held \$5.8 million; Johnsonville Fossil Plant held \$8.8 million; and Paradise Fossil Plant held \$36.6 million in inventory. Supply Chain management estimates about half of the inventory currently held at Paradise will be reduced as part of Units 1-2 retirements.

Inventory Decreases and Write-Offs From Retired Plants¹²

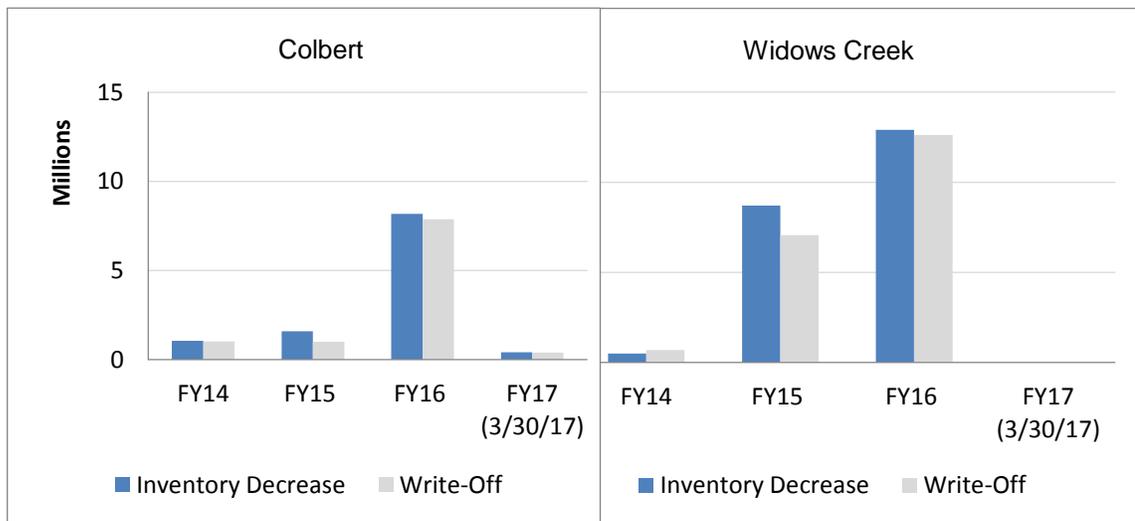


Figure 3

We identified the following indicators that written off inventory could have been redeployed:

- In 2013 and 2014, Widows Creek transferred materials that could not be used by other plants to Hartsville. Items considered surplus, but not specific to Widows Creek, were placed into a separate storeroom at Widows Creek for the purpose of redeployment. According to Supply Chain personnel, the redeployment storeroom held \$6.4 million of inventory in FY2014. In FY2015, the Widows Creek redeployment storeroom wrote off \$6.1 million of inventory. In this case, less than 5 percent of materials deemed as potentially useful to other sites was redeployed.
- We were informed of an instance in FY2016 where a plant should have accepted inventory from Widows Creek's main storeroom valued at \$15,000 but likely did not due to the item's potential impact on inventory reduction goals.
- We were informed of an instance in FY2015 where a plant chose to purchase a new item valued at \$8,000 rather than accept a Widows Creek item because it had been repaired. The plant preferred new items since the item would be expensed to the plant at the same AUP.

As noted above, redeployment within the company would produce the best return on investment. Based on a review of TVA SPPs and best practices from IRA, we identified the following potential opportunities to improve redeployment of retired plant inventory:

- Retaining inventory if usage indicates a need arising within the next 3 years – According to Supply Chain, storerooms that currently have adequate stock

¹² As shown in Figure 3, in FY2014 write-offs exceeded inventory decreases at Widows Creek. According to TVA Supply Chain personnel, write-offs were due to retirement of Units 1-6, but Units 7 and 8 continued to generate and receive inventory throughout the FY.

levels may, or may not, accept transfer of materials from retired plants even if the materials could be needed within 3 years (TVA's baseline period for declaring materials surplus). This could result in selling the materials for salvage value instead of redeploying them to another TVA site.

- Improving communications regarding the availability of retired plant inventory – The IRA recommends an advertising program including an up-to-date database available via the intranet and e-mail blasts to engineering and maintenance personnel to communicate surplus materials. We reviewed e-mails from Supply Chain regarding availability of the materials and found none that included engineering and maintenance personnel. According to Supply Chain management, decisions regarding overstock at plants would be made by the plant manager. However, two of three plant managers we visited either did not have, or were unable to recall, conversations with their site materials managers regarding available inventory from the retired plants storerooms.
- Relieving active coal plant inventory growth control targets – According to TVA-SPP 04.021, TVA Inventory Management Process, Supply Chain personnel are responsible for identifying inventory optimization strategies and developing inventory plans to achieve established inventory targets. TVA-SPP-04.021 also provides direction on processes to control inventory growth. Inventory growth control targets were mentioned as a factor in deciding whether to accept retired plant inventory at two active coal plants. In addition, Supply Chain management indicated that they have personal financial incentives tied to controlling such growth.
- Retaining common inventory in a central location – Based on a review of TVA-SPP-04.50, Investment Recovery, Hartsville has an Industrial Store for new items that have not been used. However, discussions with Supply Chain indicate that Hartsville is not commonly used for storage of retired plant inventory, but rather for long-term auxiliary storage and surplus warehousing prior to sale. We were informed redeployment is not a function of IR and once materials were sent to Hartsville, IR's goal was to optimize revenues. According to TVA-SPP-13.008, Accounting for Materials and Supplies Inventories, inventory may be redeployed to plants from Hartsville at zero cost after materials have been written off. While TVA may not wish to retain spare parts for a single plant, it may be cost effective to retain certain spare parts used by multiple sites, consumables, and bulk commodities from retiring plants for redistribution.

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In summary, TVA's current approach of considering retired plant inventory as surplus and writing off the majority of inventory in retired plant storerooms may not be the highest value or best use of the assets TVA already owns.

Recommendations

We recommend the Vice President, Supply Chain:

- Improve communications regarding the availability of retired plant inventory.

TVA Management's Comments – TVA management agreed to expand communications to include other individuals within Plant Operations including Maintenance and Engineering to ensure they are aware of the material available.

Auditor's Response – We concur with management's planned actions.

- Communicate an expectation to redeploy inventory where justified by anticipated plant usage within 3 years.

TVA Management's Comments – TVA management agreed to include guidance within communications to Site Material Managers, Inventory Analysts, and Plant Operations Personnel to consider their plant needs over the next 3 years.

Auditor's Response – We concur with management's planned actions.

- Provide allowances for inventory increases related to retired plant inventory.

TVA Management's Comments – TVA management indicated that it has been past practice to allow inventory increases, where justified, to transfer material already procured by TVA. Management agreed to reiterate that guidance as part of their communication plan and allow for inventory growth if the material can be utilized within a 3-year period at the receiving plant.

Auditor's Response – We concur with management's planned actions.

- Consider retaining retired plant inventory using Hartsville as a distribution center for consumable, bulk commodity, and spare parts common to several sites.

TVA Management's Comments – TVA management agreed to review surplus material and consider Hartsville for a limited amount of material if it is cost effective. However, management noted Hartsville is not staffed as a full service warehouse and increased costs of handling and transportation may make it costlier than procuring items directly from a vendor.

Auditor's Response – We concur with management's planned actions.

Noninventory (i.e., Harvested Assets)

We were unable to determine whether noninventory materials designated as surplus at retired plants were appropriate due to deletion of harvesting requests and unreliability of cost estimates within data maintained by Generation Engineering. Without accurate cost estimates, a cost-benefit analysis of whether equipment should have been redeployed was not possible. However, there were indications that additional materials could be redeployed if TVA could remove certain barriers by leveraging best practices for harvesting assets.

As previously described, TVA developed an informal process to guide redeployments from retired plants. The process was illustrated by a flowchart and cost allocation table explaining accounting treatment when assets were redeployed. Generation Engineering tracks requests for harvested assets in a database, referred to as “harvesting data.” Generation Engineering also vets and facilitates equipment transfers.

As late as spring 2015, TVA expected a significant amount of equipment at retired plants would be available for future use and it would attempt to use existing assets, when possible. According to harvesting data, TVA facilities had requested at least \$7.9 million and \$15.9 million¹³ in materials be redeployed from Colbert and Widows Creek, respectively. As of March 2017, TVA had redeployed at least \$3.7 million and \$10.2 million¹⁴ in equipment from Colbert and Widows Creek. Plant personnel provided examples where using the harvesting process provided needed equipment that improved the condition of active plants. Figures 4 and 5 on the following page show equipment successfully redeployed at Kingston and Cumberland.

¹³ Valuation estimates are based on cost if new information stored in the harvesting data. As noted above, these estimates are unreliable. However, we used cost if new information to illustrate the potential materiality of equipment requests and redeployments.

¹⁴ Of the \$10.2 million, \$7.6 million related to two main transformers from Widows Creek Unit 7 moved to Gallatin. Power Operations wanted to use both as capital spares; however, because one had previously been in service at Widows Creek, it was placed into inventory.



Figure 4
Harvested Low Pressure Controllers
Installed at Kingston



Figure 5
Harvested Control Air Compressor Installed at
Cumberland

Harvesting data shows at least \$4.3 million and \$5.7 million of initially requested materials remain at Colbert and Widows Creek, respectively. Of the \$4.3 million remaining at Colbert, \$2.2 million related to a transformer not recommended by engineering for redeployment. Of the \$5.7 million remaining at Widows Creek, \$2.5 million related to equipment that was requested by Kingston but would not work for their planned application. This suggests approximately \$5.3 million in equipment that could be redeployed remains at the two sites.

The IRA identified at least four common challenges to redeployments: (1) desire for new materials; (2) an element of risk associated with used items—items may not be a perfect fit or in less than perfect condition; (3) in some cases, the cost of removal, refurbishment, and transportation may make redeployment impractical; and (4) financial issues (e.g., accounting and budget constraints).¹⁵ In addition, we identified barriers that may be unique to the TVA environment. We interviewed points of contact (POCs) for harvesting at active plants to determine why equipment was not received. All POCs interviewed cited barriers within the harvesting process that contributed to equipment not being used by other plants. The primary barriers cited by plant personnel were installation within 60 days (or 90 days if an outage is needed) and the cost effectiveness of using materials after the 60- or 90-day installation time frame.

Barriers Within Harvesting Process

Equipment that was previously installed at a retired plant and is installed within 60 or 90 days at a different plant will have operations and maintenance costs expensed by the receiving plant for (1) removal and (2) transport. Equipment that was previously installed at a retired plant and cannot be installed within 60 or 90 days will have operations and maintenance costs expensed by the receiving plant related to (1) removal, (2) transport, and (3) purchase from inventory at

¹⁵ Brooks, Ron, et al., *Overcoming the Surplus Asset Challenge*, Investment Recovery Association Website, www.invrecovery.org. Reprinted from ASSET 2.0, the Investment Recovery Business Journal, Vol. 2, 2008.

AUP at the time of installation (as mandated by the Federal Energy Regulatory Commission [FERC]).¹⁶ We were unable to identify a legal or regulatory requirement to adhere to a 60- or 90-day time frame; TVA personnel indicated it was a time frame agreed upon by Power Operations and Corporate Accounting. The IRA recommends allowing a year for use of noncapital items, and indicates redeployments should be limited to approved projects, but it does not provide a recommended time frame for capital items.

All POCs for harvesting (6 of 6) we spoke with indicated the 60- or 90-day installation time frame is a barrier to redeploying equipment. We were told the installation deadline diminished requests for redeployment. Two POCs for harvesting indicated that while the redeployment of harvested equipment is in the best interest of the ratepayer, it is a costly process to the plants. Due to TVA's cost allocation for redeploying equipment, new items in inventory or purchased from the market can be less costly to the plant's budget. As a result, plants and other business units may not make the most economical choice for TVA and its ratepayers. For example, Paradise initially requested several items such as breakers and vibration monitors (estimated to be worth \$110,000 combined) from Widows Creek. Paradise withdrew their request because they could not install the equipment within the time frame; therefore, they would be required to purchase the equipment at AUP. As of March 2017, the items were slated for scrap.

We were informed of examples where sites initially requested and received fan drives (also referred to as "Beck" drives), but were unable to install them within the time frame. Gallatin requested an estimated \$340,000 of drives, but could not install them within the time frame and subsequently sent the drives to Hartsville as surplus. Figure 6 below shows harvested drives stored at Hartsville. Cumberland requested an estimated \$96,000 of drives, which were sent back to Colbert because they could not be installed within the time frame. If not transferred, these items will remain at Colbert and will be sold to the demolition contractor as scrap.

Figure 6
Harvested Drives in Scrap Yard
Hartsville



We were also informed of a turbine rotor available for harvesting from Colbert Unit 4 that could be used to replace a cracked rotor in Kingston Unit 8.

¹⁶ FERC is an independent agency that regulates the interstate transmission of natural gas, oil, and electricity. Electric public utilities within FERC jurisdiction are required to maintain their books and records in accordance with its Uniform System of Accounts.

Generation Engineering recommended replacing the Kingston rotor by 2019. The rotor had been removed from Colbert Unit 4 as of July 2017; however, the final disposition of the rotor is pending an upcoming Project Review Board decision. The rotor is circa 1980s and, according to TVA, is the best in the fleet. If TVA purchased a new rotor from the manufacturer, TVA estimated it would cost \$1.7 million. However, it has little value on the open market—an estimated \$2,300 in scrap value.

Due to FERC's valuation requirements, if TVA were to place the rotor into inventory, the cost for Kingston to buy it from inventory would be approximately \$546,000. TVA accounting personnel informed Power Operations the turbine rotor would also need to be repaired prior to placing it into inventory. Adding the asset cost of \$546,000 and incurring repair costs of an estimated \$300,000 for the rotor caused Power Operations to hesitate on the decision to harvest the rotor. While harvesting the rotor would increase Kingston's inventory levels in the near term, and the plant would incur \$300,000 in immediate expenses, TVA ratepayers would still avoid an estimated \$1.4 million (\$1.7 million less \$300,000)¹⁷ in future costs by redeploying the asset.

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In summary, TVA has instituted an informal process to guide the transfer of millions of dollars of equipment that could maintain and improve its active coal plants and avoid future costs. However, the process placed prohibitive time constraints that are barriers to plants redeploying the assets. In addition, plant budgets are penalized when they cannot meet the time frame, potentially deterring them from making the right choice for TVA ratepayers. Reevaluating the installation period, formalizing the harvesting process, and senior executive reinforcement that reuse of materials is in the best interest of TVA as a whole could improve practices around redeployment.

Recommendations

We recommend the Vice President, Financial Operations and Performance:

- Reevaluate the installation period for noninventory materials harvested from retired plants.

TVA Management's Comments – Financial Services management reviewed the language and believes the installation period as defined by the harvesting policy is appropriate. The time period is consistent with the inventory management policy of returning material for outages and other operations and maintenance projects within 60 days of the completion of work. Sites are given a list of items that will be available from an idled unit more than a year before the retirement date. This gives the site management time to decide what equipment they can use and is needed at the site.

¹⁷ TVA would not incur \$546,000 for the items, but would hold that amount on the books as the value of the asset. Therefore, we excluded the value of the asset in determining the avoided costs from redeployment of the assets.

Auditor's Response – The time frame adopted in the informal harvesting process is similar to that established in TVA-SPP-13.008, Accounting for Materials and Supplies Inventories, however it differs in that the harvesting process requires completion of projects within 60 days of receiving the materials, which is more restrictive than the inventory management policy. In addition, TVA-SPP-13.008, provides a longer time frame for capital project returns (180 days). Certain items on the harvesting list would have resulted in a capital project for installation; however, based on the harvesting policy, the assets need to be installed within 60 days. It is our opinion that the time frame as established by TVA is unnecessarily restrictive and impairs its ability to make use of harvested assets from retired plants which can ultimately increase TVA's costs.

- Formalize the harvesting process in an SPP, in conjunction with Power Operations and Supply Chain, to ensure operational staff is provided flexibility where accounting rules can allow.

TVA Management's Comments – Power Operations management agreed to formalize the harvesting process in an Engineering Guidance Document for retiring site assets by Generation Services. Power Operations management will also work with the Power Operations Transition team to develop processes for harvesting tools, shop equipment, and consumables. The processes will be developed in conjunction with Financial Operations and Performance and Supply Chain.

Auditor's Response – We concur with management's planned actions.

We recommend the Senior Vice President, Power Operations:

- Reinforce the expectation to use available retired equipment where it is in the best interests of TVA and its ratepayers.

TVA Management's Comments – TVA management agreed to communicate appropriate expectations with the change management plan associated with the recommendation to formalize the harvesting process.

Auditor's Response – We concur with management's planned actions.

SPPS CONFLICT ON TIME FRAME USED IN DESIGNATING MATERIAL AS SURPLUS

Currently, TVA's SPPs conflict as to the forecast usage period that is considered before materials are designated for surplus. TVA-SPP-04.050, Investment Recovery, has a requirement of a 5-year usage consideration. However, TVA-SPP-04.021, TVA Inventory Management Process has a 3-year usage consideration. In its June 2015 revision of TVA-SPP-04.021, TVA changed the period for reuse from 5 years to 3 years at the direction of the Materials and Transportation Management group within Supply Chain. According to the Director of Materials and Transportation, the change was made to align with a 3-year business planning cycle.

Recommendation

We recommend the Vice President, Supply Chain:

- Determine which of the usage forecast periods provide the greatest benefit to TVA and revise the Inventory Management and Investment Recovery SPPs to align.

TVA Management's Comments – TVA management agrees and will review the SPPs in question, determine the appropriate forecast period, and align the SPPs.

Auditor's Response – We concur with management's planned actions.



Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402

August 30, 2017

David P. Wheeler, ET 3C-K

RESPONSE TO REQUEST FOR COMMENTS – DRAFT AUDIT 2017-15469 – TVA COAL
PLANT SURPLUS MATERIALS

Our response to your request for comments regarding the findings of the subject draft report is attached. Please let us know if your staff has any concerns with TVA's comments.

We would like to thank Meghan Petty, and the audit team for their professionalism and cooperation in conducting this audit. If you have any questions, please contact Joe Buckley at 865-632-2165, Stacey Parrott at 423-751-6420, or Gary Mazo at 423-751-7531.

Handwritten signature of David W. Sorrick in blue ink.

David W. Sorrick
Sr. Vice President
Power Operations
LP 3K-C

Handwritten signature of A. Douglas Perry in black ink.

A. Douglas Perry
Vice President
Financial Op. & Performance
MR 3K-C

Handwritten signature of Laura Green in black ink.

Laura Green
Vice President
Supply Chain
BR5A-C

cc (Attachment):

Joseph V. Buckley, WT 3A-K
Allen A. Clare, LP 3K-C
Robertson D. Dickens, WT 9C-K
Kris G. Edmondson, LP 1S-C
Joseph P. Grimes, LP 6A-C
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OIG File No. 2017-15469

AUDIT 2017-15469
TVA Coal Plant Surplus Materials
Response to Request for Comments

ATTACHMENT A
Page 1 of 2

	Recommendation	Risk	Management Comments
1	Improve communications regarding the availability of retired plant inventory.	Low	Our past practice was to communicate available material to Site Material Managers and Inventory Analysts within Supply Chain. With future closures (PAF Units 1, 2 and ALF), Supply Chain management agrees to expand our communication to include other individuals within Plant Operations including Maintenance and Engineering to ensure they are aware of the material available. This practice will start with PAF.
2	Communicate an expectation to redeploy inventory where justified by anticipated plant usage within 3 years.	Low	As part of our communication to Site Material Managers, Inventory Analysts and Plant Operation personnel, Supply Chain management agrees to include guidance to consider their plant needs over the next 3 years.
3	Provide allowances for inventory increases related to retired plant inventory	Low	It has been past practice to allow inventory increases where justified to transfer material already procured by TVA. Supply Chain management agrees to reiterate this guidance as part of our communication plan and allow for inventory growth if the material can be utilized within a 3 year period at the receiving plant.
4	Consider retaining retired plant inventory using Hartsville as a distribution center for consumable, bulk commodity, and spare parts common to several sites.	Low	Hartsville is not staffed to act as a full service warehouse. In addition, the increased cost of handling and transportation may make it more costly than procuring items directly from a vendor. Supply Chain management agrees to review the surplus material and consider Hartsville for a limited amount of material if it is cost effective.

AUDIT 2017-15469
TVA Coal Plant Surplus Materials
Response to Request for Comments

ATTACHMENT A
Page 2 of 2

	Recommendation	Risk	Management Comments
5	Reevaluate the installation period for non-inventory material harvested from retired plants.	Low	Financial Services management reviewed the language and respectfully believes the installation period as defined by the harvesting policy is appropriate. The time period is consistent with the inventory management policy of returning material for outages and other O&M projects within 60 days of the completion of work. Per current Power Operations process, the sites are given a list of items that will be available from an idled unit more than a year before the retirement date. This gives the site management time to decide which equipment they can use and is needed at the site - including checking the equipment for size, performance, capabilities, etc. We recommend that Power Operations continue to emphasize that the ongoing sites carefully check the listing of equipment available and have it either installed or put into inventory if it is the right financial decision for TVA.
6	Formalize the harvesting process in an SPP, in conjunction with Power Operations and Supply Chain, to ensure operational staff is provided flexibility where accounting rules can allow.	Low	Power Operations management proposes to formalize the Harvesting process into an Engineering Guidance Document (EGD) for retiring site assets by Generation Services. Power Operations management will work with the Power Operations Transition team to develop processes for harvesting tools, shop equipment, & consumables. These processes will be developed in conjunction with FO&P and Supply Chain.
7	Reinforce the expectation to use available retired equipment where it is in the best interests of TVA and its ratepayers.	Low	Power Operations management agrees, appropriate expectations will be communicated with the change management plan associated with Recommendation 6.
8	Determine which of the usage forecast periods provide the greatest benefit to TVA and revise the Inventory Management and Investment Recovery SPPs to align.	Low	Supply Chain management agrees and will review the SPP's in question, determine the appropriate forecast period's and align the SPP's.