

Reflections: Impact of an IG

2003

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2005

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2007

2008

2009

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2012

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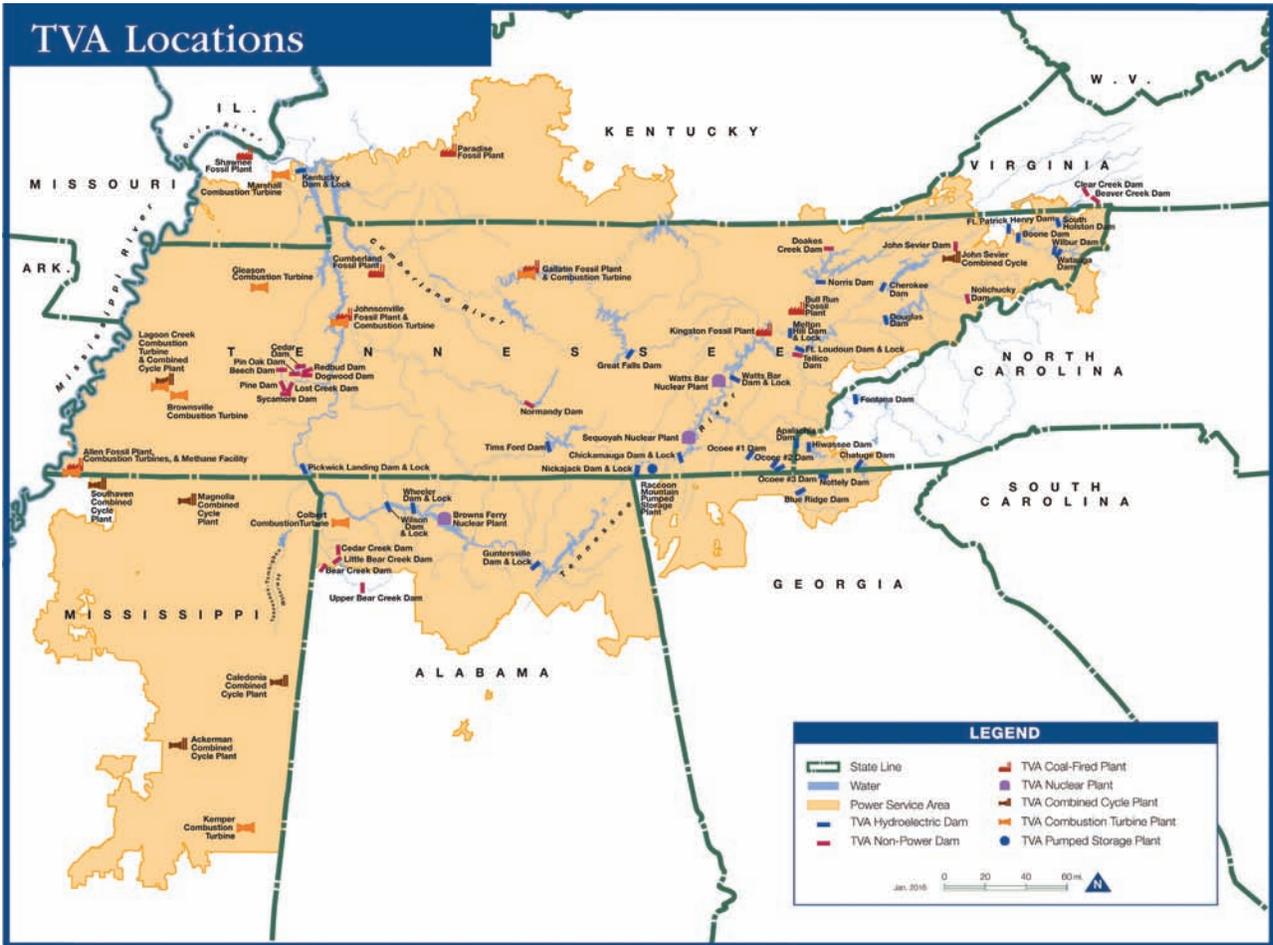
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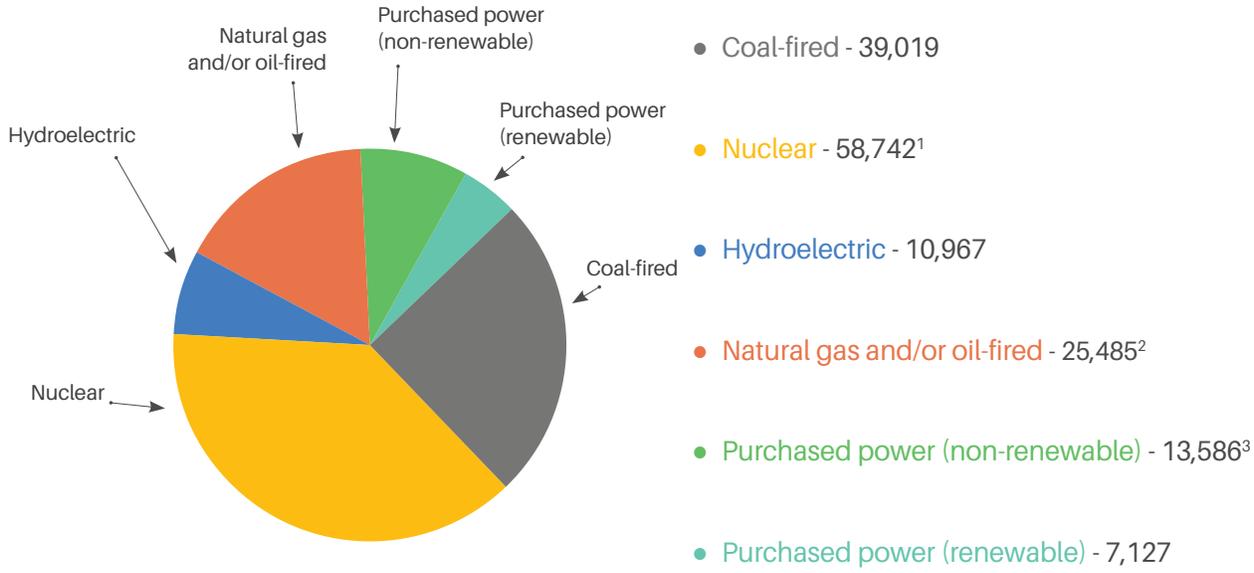
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Office of the Inspector General
TENNESSEE VALLEY AUTHORITY
Semiannual Report
April 1, 2017 - September 30, 2017





TVA Power Generation and Purchased Power Twelve Months Ended September 30, 2017 (in millions of kilowatt hours)



¹ Nuclear generation includes approximately 495 million kWh of pre-commercial generation at Watts Bar Nuclear Plant Unit 2.

² Natural gas and/or oil-fired generation includes approximately 362 million kWh of pre-commercial generation at Paradise and Allen Combined Cycle Plants.

³ Purchased power (non-renewable) includes generation of 4,276 million kWh from Caledonia Combined Cycle Plant, which is currently a leased facility operated by TVA.

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MESSAGE FROM THE ACTING INSPECTOR GENERAL

I am pleased to present our report for the period April 1, 2017, to September 30, 2017. In late September 2017, Richard W. Moore resigned as the Inspector General (IG) to become the United States (U.S.) Attorney for the Southern District of Alabama. IG Moore was our first presidentially-appointed IG at Tennessee Valley Authority (TVA) and served for more than 14 years. In this semiannual report, you will find a final message from him as well as a look back on his tenure with our office. We appreciate IG Moore's dedicated service and leadership to our office and the IG community and his passion for striving to make TVA better for the people of the Tennessee Valley. His contributions to our office, the IG community, and TVA will be felt for years to come.

In this semiannual period, our audit, evaluation, and investigative activities identified approximately \$26.8 million in funds TVA could put to better use, questioned costs, recoveries and savings, as well as opportunities for TVA to improve its programs and operations. Below are highlights of our work this period.

- A special project performed by a consultant (1) assessed whether TVA's analyses of its April 22, 2016, response to the Nuclear Regulatory Commission Chilled Work Environment Letter were thorough and adequate and (2) reviewed the history of nuclear safety culture issues at TVA for the past several years. The consultant identified concerns with the analyses and long-term sustainability of TVA's planned corrective actions.
- An evaluation of the calculation for recovery of TVA's largest expense—fuel and purchased power costs—determined TVA did not calculate part of the adjustment in accordance with the TVA Board of Directors (Board)-approved methodology.
- An evaluation of TVA's transmission system preventive maintenance program could not determine if preventive maintenance had been performed in accordance with established schedules because of data inaccuracies.
- Two preaward contract examinations of cost proposals submitted by companies to provide civil projects and coal combustion residual program management services identified \$17.7 million in potential savings opportunities for TVA.
- Two compliance audits of contracts with expenditures totaling \$43.5 million identified potential overbillings of \$4.7 million.
- An audit of contracts for wind power found TVA's decision to enter into wind generation contracts has not proven to be in TVA's economic interest.
- An audit of TVA's Internet-accessible Web sites identified opportunities to improve security.
- Organizational effectiveness evaluations of seven TVA business units identified strengths such as organizational alignment and management support and risks such as management behaviors and performance management, and four follow-up reviews found TVA was generally taking actions to address risks identified in previous evaluations.
- An investigation led to the federal conviction of an individual for conspiring with others to engage in the development or production of special nuclear material in the People's Republic of China without permission from the U.S. Secretary of Energy.

- An investigation led to the supervisor of a local utility pleading guilty to embezzlement exceeding \$2.9 million.

By the end of this congressional session, two of TVA's Board members, V. Lynn Evans and Dr. Marilyn Brown, will end their distinguished service to TVA. Director Evans has served on the TVA Board since 2013 in various capacities including Chair of the Audit, Risk, and Regulation Committee and as the Chair of the TVA Board. Dr. Brown has been appointed twice to the Board, once in 2010 and in 2013. She has served almost continually on the Nuclear Oversight Committee since it was chartered, serving as

the Chair for the last several years. On behalf of the OIG, I want to extend our appreciation for their support of the OIG and service to the people of the Tennessee Valley.

On a personal note, I appreciate the opportunity to serve as the Acting Inspector General, and our office looks forward to continuing our work to provide an independent perspective on risks and improvement opportunities at TVA.



Jill M. Matthews

Acting Inspector General





MESSAGE FROM THE FORMER INSPECTOR GENERAL

After more than 14 years serving as the TVA IG, this is my last semiannual report. On September 21, 2017, I became the U.S. Attorney for the Southern District of Alabama after appointment by President Donald J. Trump and confirmation by the U.S. Senate. During these 14 years, many changes came to TVA including altering the governance structure from a three-member full-time Board of Directors to a part-time nine-member Board. The Office of the Inspector General's (OIG) body of work, which includes 29 semiannual reports under my tenure, chronicle many of the successes and failures of a storied government institution challenged to improve the lives of those who reside in the Tennessee Valley.

As the first TVA IG to be appointed by the President of the United States, I bore witness to the need at TVA for the IG to have the authority and independence to issue tough but fair and objective reports. The Inspector General Act envisioned a natural tension between agency officials and the IG appointed to publicly report on fraud, waste, and abuse affecting the respective agency. The challenge for every IG is to maintain a healthy working relationship with agency officials in the middle of very sensitive audits, evaluations, and investigations that may ultimately expose inefficiencies in programs and sometimes criminal acts of agency employees and contractors. A measure of good faith and civility was essential for both those of us in the OIG and agency officials at TVA as we have pursued our mutual purpose of making TVA better. Working in this challenging environment with the many dedicated public servants at TVA has been the highlight of my professional career.

Our experience with both TVA management and the TVA Board members over the last 14 years was mostly positive and cordial. I have had the good fortune of interacting with TVA management professionals who are dedicated public servants, rarely seen or publicly acknowledged,

but who are the backbone of an effective and productive TVA. Board members from all walks of life—bankers, businessmen and businesswomen, professors, clergy—have each in their own way contributed to a better TVA by their Board service. The opportunity to “rub shoulders” with them has been a rare professional privilege which I will continue to cherish.

As I leave, TVA is awaiting nomination or confirmation of five new Board members. TVA management and the Board took many difficult steps in recent years to improve its future financial and operational position. There remains a risk that I hope the Board and TVA management will work to address—the risk of organizational culture breakdowns. In my opinion, not recognizing and addressing these breakdowns early present a major risk to TVA's ability to efficiently and effectively continue to meet its mission.

As I transition, I do so with mixed emotions. While I am eager to return to both my hometown of Mobile, Alabama, and to my first professional calling as a lawyer, I leave behind in the OIG what has been nationally recognized as a “Best Place to Work”⁴ in the federal government and that

⁴ Best Places to Work in the Federal Government's Web site is at www.bestplacetowork.org.

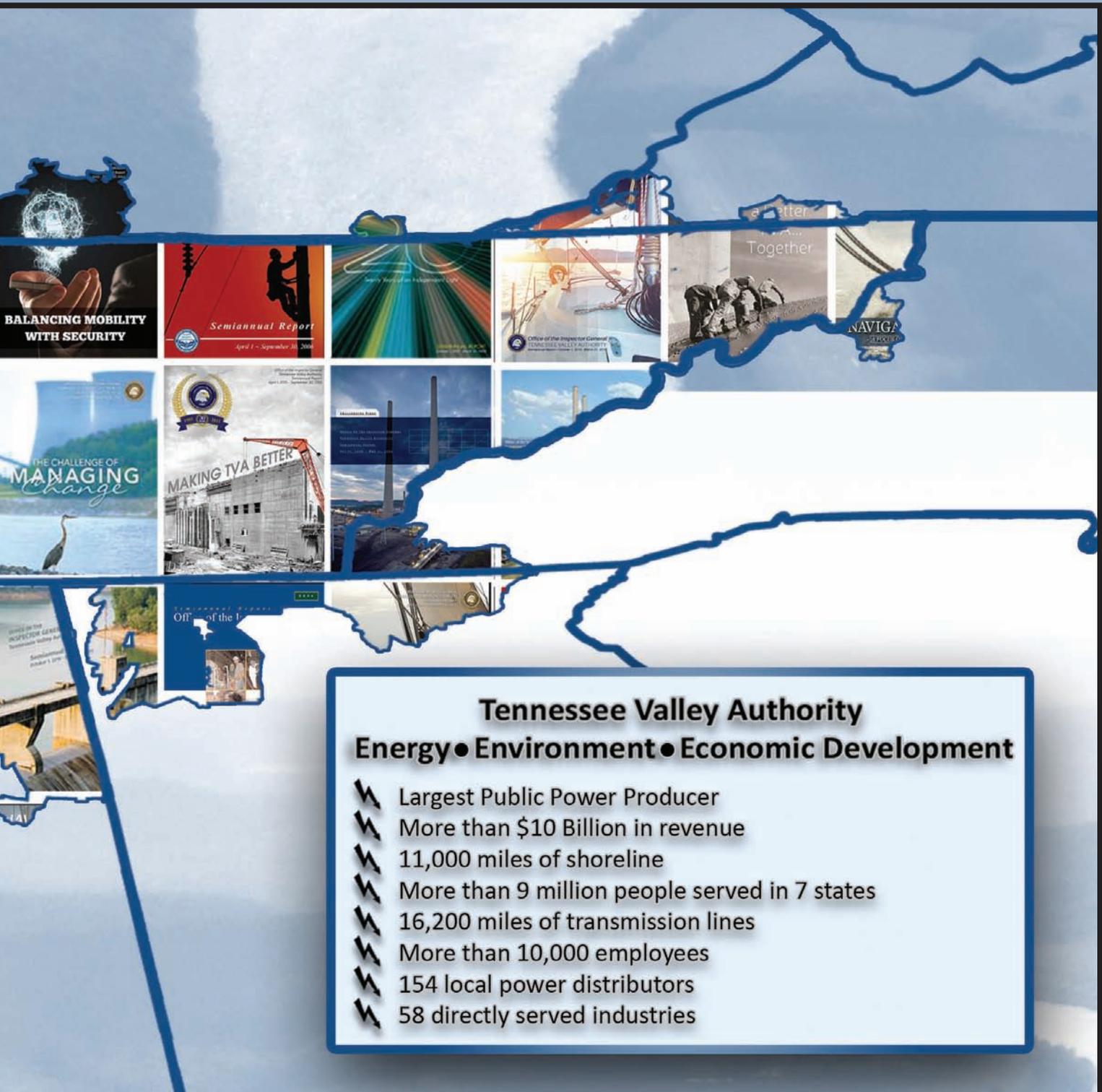


has translated into an engaged workforce that does highly professional work. Even in a small office of 103 people such as ours, it is often difficult to be one team. Our employees chose to become one team many years ago and found it changed their perspective on work. They are called to a mission to make TVA better, and they give discretionary effort every day that is beyond the call of duty. I continue to be in awe of them.

It has been an honor and a privilege to serve the people of the Tennessee Valley alongside an OIG team of dedicated public servants who are focused on results that matter for the American people, and particularly, for the residents

of the Tennessee Valley. In pursuit of making TVA better, I have no doubt the people of the OIG will continue their more than 32 years of exceptional work to diligently identify risks, promote economy and efficiency of TVA operations, and shine a light on fraud, waste, and abuse.

Richard W. Moore
Former Inspector General



Tennessee Valley Authority Energy • Environment • Economic Development

- ⚡ Largest Public Power Producer
- ⚡ More than \$10 Billion in revenue
- ⚡ 11,000 miles of shoreline
- ⚡ More than 9 million people served in 7 states
- ⚡ 16,200 miles of transmission lines
- ⚡ More than 10,000 employees
- ⚡ 154 local power distributors
- ⚡ 58 directly served industries



SPECIAL FEATURE

REFLECTIONS: IMPACT OF AN IG

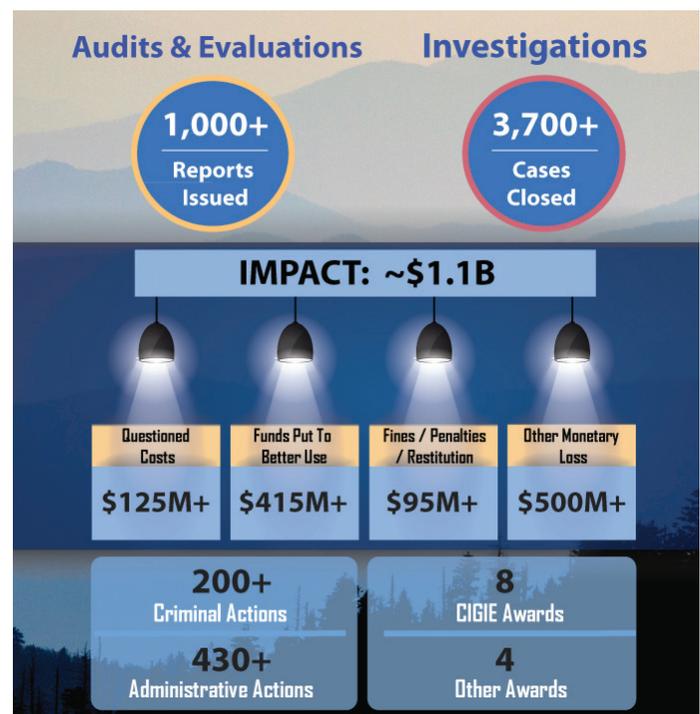
Of the many observers of TVA through the years—Congress, the public, the TVA Board, and the media—none have the institutional perspective of being part of TVA while simultaneously being independent of TVA. Only the OIG has that perspective and has had it for almost 32 years. A large portion of the OIG’s work occurred under the leadership of TVA’s first presidentially-appointed IG, Richard W. Moore, who served in that role for more than 14 years. As the longest serving TVA IG, Moore witnessed many significant changes in TVA and in the IG community.

While his leadership style evolved over time, his unwavering focus was that the OIG’s work was to make TVA better for the residents of the Tennessee Valley. His emphasis on operational excellence and strong organizational health produced impressive results. From May 2003 to September 2017, the OIG identified more than \$1.1 billion in questioned costs, recoveries, fines, savings, funds TVA could put to better use, and other monetary losses. This was in addition to finding countless opportunities for TVA to improve its programs and operations. Moore challenged himself and OIG staff to continuously find ways to improve our operations and strengthen our own culture so that we would be better positioned to deliver the greatest impact for TVA.

In taking a look back at IG Moore’s tenure, we reflect on his journey to become the first presidentially-appointed IG at TVA, changes in TVA and our office, and discuss some of the notable audits, evaluations, and investigations during that time.

THE JOURNEY

Moore’s tenure as the first presidentially-appointed IG was set in motion because of events in 1999 that would call into question whether a former Board Chairman was trying to impede the independence of the IG which, at that time, was a Board-appointed position. The U.S. General Accounting Office, now known as the



Government Accountability Office (GAO), investigated allegations against the former TVA Board Chairman as well as allegations the Chairman made against the IG related to misuse of a TVA credit card. GAO⁵ found (1) the Chairman’s actions “...could be viewed as an attempt to undermine the independence of the IG” and (2) “... no evidence of TVA credit card misuse by the IG.” As a result of this event, the late Senator Fred Thompson successfully sponsored a bill to make the TVA IG a presidentially-appointed position. On November 1,

⁵ U.S. GAO, *TVA: Facts Surrounding Allegations Raised Against the Chairman and the IG*, September 15, 1999, <http://www.gao.gov/products/OSI-99-20>.

2000, President Bill Clinton signed Public Law 106-422 designating the position of TVA IG as presidentially appointed. After nomination by President George W. Bush and confirmation by the Senate, Moore became TVA's IG on May 9, 2003.

CHANGES AT TVA

As an organization charged with oversight, it is imperative we stay abreast of changes in the operating environment and understand the challenges the agency faces. During IG Moore's tenure, there were significant changes in the governance structure of TVA and shifts in its operating environment. These changes impacted TVA's financial and operational risks and presented significant challenges to the agency's mission.

TVA's governance structure changed significantly when as a part of the Consolidated Appropriations Act 2005, the TVA Act was amended to restructure the TVA Board from three full-time members to nine presidentially-appointed part-time members that serve five-year terms. Since the restructure in 2006, TVA's day-to-day operations have been led by a Chief Executive Officer.

TVA's operating environment in 2003 was quite different than today. In 2003, TVA faced possible deregulation, some distributors giving termination notices, increasing environmental regulations, changing financial reporting requirements, high debt, and growing demand. While environmental regulations were enacted and the debt remained a concern, the challenges facing TVA shifted later to concerns about privatization, falling demand

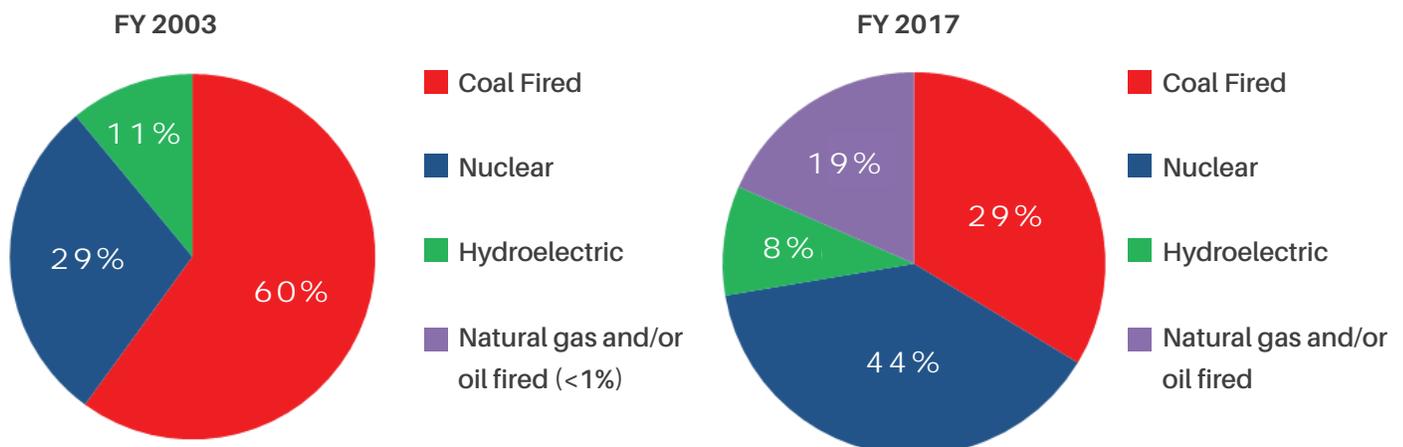
forecasts, costly maintenance of an aging infrastructure, cleaning up the Kingston ash spill, an underfunded pension plan, and expenses that were outgrowing revenues.

As the environment shifted, so did the risks and strategies to better position TVA for long-term success. One major shift during this time was a reassessment of its optimal generating portfolio. In 2003, TVA's generating portfolio was 60 percent coal, 29 percent nuclear, 11 percent hydro, and less than 1 percent gas and renewables. Today, TVA's generating portfolio relies more on nuclear and gas and less on coal.

TVA also reassessed its work and its workforce to better focus on the mission of TVA, find more efficient ways to operate, and live within its means. TVA found ways to cut more than \$500 million from its operating and maintenance costs which caused a reduction of the workforce by more than 2,500 people. These cuts were simultaneous with an increase in capital expenditures to replace aging coal plants with production facilities for nuclear, natural gas, and renewable power.

CHANGES AFFECTING TVA IG AND IG COMMUNITY

IG Moore also presided over an important change in the OIG's investigative authority. The OIG Investigations department did not have direct law enforcement authority when IG Moore took office, but that changed with an amendment to the Inspector General Act. With that amendment, the TVA OIG became one of 25 federal OIGs



vested with direct law enforcement authority. In 2004, OIG agents were sworn in as federal law enforcement officers. The additional authority enhanced the OIG's ability to investigate cases and further professionalized the Investigations department as they met the standards of the Attorney General's Guidelines for Law Enforcement.

The Inspector General Empowerment Act signed into law in December 2016 provided the OIG with additional flexibility while concurrently promoting transparency of agency programs and processes. Some key provisions included an exemption from the Computer Matching Act and the Paperwork Reduction Act, a requirement to post most OIG reports on its Web page within three days, an obligation to provide copies of reports with recommendations to supervising congressional committees, and a requirement to report to Congress any agency resistance to oversight.

OIG

Over the course of IG Moore's tenure, his focus was on ensuring the results of the OIG's work made TVA better.

As the operating environment and risks changed for TVA, it was imperative that the office possess the agility to shift its focus areas and continually find ways to perform our work better. IG Moore believed that operational excellence and strong organizational health would combine for strong results. Below is a look at the OIG from organizational health and operational perspectives.

OIG ORGANIZATIONAL HEALTH

First and foremost to the success of the office was the working environment created by our leaders and staff. Research shows that engaged employees get better results. Under IG Moore's leadership, the TVA OIG transitioned from a traditional "top down" and somewhat autocratic organization to a collaborative leadership organization that produced a highly aligned and motivated team. IG Moore led the transformation by demonstrably changing his leadership approach. In addition, he invested in people and technology which resulted in a more flexible, innovative organization with a work environment that is conducive to people performing their work at a high level.

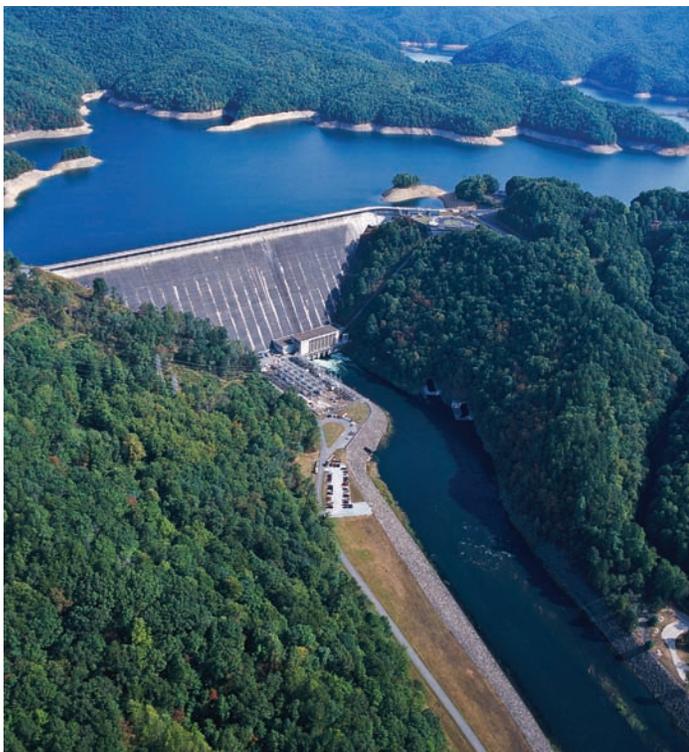


Bull Run Fossil Plant

The OIG team was recognized in 2015 and 2016 as one of the “Best Places to Work” in the federal government. Also, in 2014, American University in conjunction with the Council of the Inspectors General on Integrity and Efficiency (CIGIE) initiated a case study of the leadership principles that fostered such a healthy culture at the TVA OIG. The case study highlighted the benefits of creating a healthy work environment that frees up employees to give their best to each other and the organization. Sustaining that positive change requires empowering employees to invest in a healthy culture that is ultimately better for them and recognized as such by them. This mutual investment and commitment of both OIG leadership and OIG employees has led to better audits, evaluations, investigations, and interactions with TVA.

OPERATIONAL

Through our audits, evaluations, and investigations, the OIG provides an independent assessment of TVA operations and makes recommendations with the intent to help TVA become better. To carry out our mandate and utilize resources in an efficient and effective way, it is imperative that resources are directed to the areas of high risk and strategic importance to TVA. As the operating environment changes for TVA, the OIG must realign its resources to address high-risk areas. In some cases,



Fontana Dam

this has resulted in developing new work products or methodologies to better address a risk area. In IG Moore’s tenure, more than 1,000 audits and evaluations and more than 3,700 investigative cases were completed. These reviews shined the light on needed improvements in TVA programs and processes, identified fraud, waste, and abuse, and served as a deterrent to fraud and misconduct. Discussed below are some highlights of our work during IG Moore’s tenure.

- **Information Technology (IT)** – The OIG maintains a continuous presence because of the ever-changing technology that constantly increases the risk of cyberattacks and regulatory landscape that increases the risk of fines and penalties due to noncompliance. A main focus of the OIG has been to provide some level of assurance testing around the critical infrastructure of TVA assets as well as the protection of personal data of employees and contractors to ensure these systems and data are being adequately protected. Another focus area has been the overall effectiveness of the IT organization and programs. The OIG has performed substantial reviews of the overall IT organizational effectiveness at three different points in time: 2008, 2011, and 2015. Ever-evolving technology, major personnel changes, and other technological challenges continue to pose a level of risk that requires the attention of both TVA management and the OIG.
- **Supply Chain** – Our contract compliance audits and preaward contract examinations have, on average, resulted in the identification of about \$30 million in annual questioned costs and funds to be put to better use. Additionally, many program improvement recommendations have been made, including increased emphasis on employee training and development, quality assurance, and data analysis in supply chain areas of (1) contract administration, (2) contract awards, and (3) invoice review and approvals. With TVA spending more than \$3 billion annually on Supply Chain contracts, this remains a high-risk area for TVA and OIG.
- **Enterprise Risk Management** – The test for an OIG is whether its audits, evaluations, and investigations



Shawnee Fossil Plant

reduce the level of risks for a federal agency that could otherwise impede the accomplishment of the agency's mission. That starts with an assessment of the effectiveness of the Enterprise Risk Management program (ERM) of TVA. The OIG, through its audits, evaluations, and investigations, has encouraged TVA to develop a more robust enterprise risk program.

TVA's ERM has evolved over the years. In 1999, the OIG recommended TVA establish an ERM and create a Chief Risk Officer position. Since then, the OIG has reviewed the program in 2003, 2008, and most recently, 2014. In 2008, the OIG review found the program needed to assess risks at lower levels in TVA rather than focus on risks at the corporate level. Three months later, the Kingston ash spill demonstrated this need. The Kingston disaster serves as an example of the importance of a properly designed ERM program supported by a healthy culture. The OIG

report on Kingston pointed to significant risks that were associated with ash management and known internally as early as 1987, but that information was not captured in any risk matrix. The 2014 review found TVA had significantly improved its ERM program; however, several areas for improvement were identified based on best practices that if not addressed could prevent TVA from having a sustainable, viable, and effective ERM program.

- **Fraud Risk Assessments** - In 2004, the OIG began conducting fraud risk assessments throughout TVA, i.e., a process for business process owners to identify and analyze fraud risk factors that may be common to general business practices and also specific to the organization and its operations. With the strong support of TVA management, fraud risk assessments have been successful in identifying potential risk areas and mitigation strategies for a number of TVA

organizations. Working collaboratively with TVA management, the OIG assisted in identifying a number of areas where risks could be mitigated through improved internal controls. TVA management subsequently developed remediation plans for identified areas.

- **Kinder Morgan Case and \$25 Million Settlement** – A joint investigation and audit team investigated whether TVA was defrauded by three Kinder Morgan limited partnerships (collectively “Kinder Morgan”) that provided coal and other energy transportation and distribution services at two coal terminals. After receiving a tip about how Kinder Morgan was defrauding TVA, the Federal Bureau of Investigation referred the case to the OIG due to OIG expertise in both coal handling and TVA contracts. In this case, coal belonging to TVA and other companies was shipped by rail to terminals, where it was offloaded, stored, and eventually loaded onto barges for delivery. Kinder Morgan discovered the weighing methods between receipts and shipments yielded

a variance they claimed as “excess” coal. Kinder Morgan claimed they owned the excess coal under contractual provisions, sold it (sometimes to TVA), and kept the profit. The OIG investigation led to a 2007 civil settlement between Kinder Morgan, TVA, and other companies that shipped coal to Kinder Morgan facilities. The total settlement was in excess of \$25 million with TVA’s share being about \$8 million.

- **Contractor Lies About the Number of Injuries on TVA Nuclear Sites** – In 2009, TVA contractor Stone & Webster Construction, Inc. (SWCI), agreed to pay \$6.2 million to resolve a contract fraud investigation. SWCI, one of TVA’s largest contractors during the period under review, provided maintenance and modification work at TVA’s nuclear power plants. SWCI records understated the number and severity of work-related injuries during the years 2004 through 2006. SWCI presented false or fraudulent claims to TVA for reimbursement for certain performance fee bonuses SWCI claimed for meeting safety goals at the three TVA nuclear plants located in



Paradise Fossil Plant

Alabama and Tennessee, totaling nearly \$3.1 million. The settlement provided that SWCI would pay the U.S. \$6.2 million, the equivalent of double damages. In addition to the \$6.2 million payment, SWCI entered into a comprehensive two-year Corporate Integrity and Monitoring Agreement with the OIG to ensure that SWCI implemented a Compliance and Ethics Program applicable to all work or service provided to TVA and that SWCI fully complied with TVA's policies and directives related to its contracts. This was the first Corporate Integrity and Monitoring Agreement in TVA history between the OIG and a TVA contractor.

- **TVA's Maintain and Gain Lakeshore Management Program** - In August 2008, numerous newspaper articles questioned the fairness of a TVA Maintain and Gain application for docking rights on Watts Bar Lake for The Cove at Blackberry Ridge, LLC (Blackberry)—a 4,200-acre water-lined resort development. A significant investor in Blackberry was a congressman who served on the U.S. House Transportation Committee's Subcommittee on Water Resources and the Environment. This Subcommittee provided formal oversight over TVA. TVA's Maintain and Gain Lakeshore Management (M&G) program was designed to allow consideration of proposals to obtain lake access rights at the landowner's property by swapping access rights already available at other properties the landowner possessed. Questions were raised about whether the congressman used his position to influence TVA's decision to grant Blackberry's request for water access. Because doubt was cast on the fairness of a TVA process, the TVA OIG conducted an investigation of the allegation and an inspection of the overall M&G program. We found the property was purchased by two investors after being told, erroneously, by TVA that the property had docking rights; that the congressman became an investor well after the purchase and application under the M&G program; and that there was no evidence of pressure exerted by the congressman on TVA to approve the application.

As a result of the inspection of the M&G program, TVA and TVA's Board developed the "Obtaining Things of Value from TVA Protocol" to ensure that when

something of value is being sought from TVA, the decision-making process is "fair, impartial, transparent, and evenhanded, both in fact and in appearance."

- **Kingston Ash Spill Reviews** - In 2009, TVA was continuing to deal with the financial consequences brought about by the December 2008 Kingston ash spill as it cleaned and restored the community to its pre-spill state. That year, the OIG issued two significant reports in regard to the cause of the spill and how TVA was responding to the cleanup.
 - An initial OIG review of TVA's response to the Kingston ash spill found (1) TVA had not properly implemented the National Incident Management System, which hampered communications and delayed certain emergency response actions following the spill; (2) TVA's quick response to the media and public inquiry resulted in the release of inaccurate and inconsistent information, which resulted in criticism of TVA and caused reputational harm to the company; and (3) while TVA responded effectively to victims affected, failure to timely communicate TVA's claims policy and decisions increased settlement expectations for some.
 - Our second review of the Kingston ash spill focused on a root cause study performed by a firm contracted by TVA for that purpose. The contract with TVA's experts limited the examination to exclude TVA's management of coal ash. We found (1) the root cause analysis was handled by TVA in a manner that avoided full transparency and accountability and was done to preserve TVA's litigation strategy; (2) "red flags" raised over a long period signaled the need for safety modifications to the ash ponds which, if addressed, could possibly have prevented the spill; (3) factors other than a faulty "slimes" layer identified by TVA's expert as the trigger for the spill may have been of equal or greater significance; (4) despite internal knowledge of risks associated with the ash ponds and discussions of placing the ponds under TVA's Dam Safety Program, thereby subjecting the ponds to more rigorous inspections and



engineering, TVA's risk management program failed to identify ash management as a risk; and (5) attitudes and conditions that emanated from a legacy culture resulted in ash being relegated to the status of garbage at a landfill rather than treated as a potential hazard to the public and the environment. TVA management generally agreed with OIG recommendations to address these findings.

- **First Debarment in TVA History** - An OIG investigation found that a TVA technical contract manager received money from a TVA contractor. Criminal proceedings were taken against the former TVA technical contract manager. In addition, a report of administrative inquiry was issued to TVA management regarding the actions of the contractor, Holtec International, Inc. (Holtec), a company that supplied casks for spent nuclear fuel. In response to the report, TVA created the position of Suspension and Debarment Officer. Based on the OIG investigation, TVA's Suspension and Debarment Officer issued the first debarment action in TVA history. Holtec received a 60-day debarment

in 2010 and agreed to pay a \$2 million administrative fee to TVA. Holtec was also required to appoint a Corporate Governance Officer and an independent monitor (at the contractor's expense) to gauge what progress in business ethics the company was making, if any.

- **Review of Watts Bar Nuclear (WBN) Unit 2 - Cost and Schedule** - In August 2007, the TVA Board approved the completion of WBN Unit 2, at a cost of \$2.5 billion to be completed in 60 months. The TVA OIG, through joint audits and investigations, determined TVA's WBN construction was significantly behind schedule and grossly over budget, despite information released by TVA senior management to the contrary.⁶ We reported that employees and contractors who knew the information being sent to the Chief Executive Officer and to the Board was erroneous were silenced by TVA executives at WBN. Perhaps equally critical to the resolution of the WBN problem was whether TVA would take responsibility. The Kingston experience had demonstrated how a public institution can lose the trust of its stakeholders by not being transparent

⁶ In April 2012, the TVA Board approved a revised cost estimate and schedule for completion of WBN Unit 2. The revised estimate was between \$4.0 billion and \$4.5 billion and was forecasted to come on line by December 2015 according to 2012 reports filed by TVA with the Securities and Exchange Commission.



about a significant event. TVA ultimately held a press conference in April of 2012 and said that TVA had essentially miscalculated the costs and accepted responsibility for the error. This demonstrated a new effort by TVA management to be transparent and accountable with its stakeholders. As a result, TVA replaced senior management on the project, performed a comprehensive review of the project, and publicly reported the revised schedule and budget numbers.

- **Browns Ferry Nuclear Plant Extended Power Uprate** – In 2011, at the request of TVA management, the OIG reviewed the causes of the delays in the Browns Ferry Extended Power Uprate (EPU) project to increase generation capacity at Browns Ferry Nuclear Plant. The project began in 2001 and was expected to be completed in two to four years based on industry-wide experience; however, the project remains ongoing with the third of three units scheduled for completion in the spring of 2019.

The OIG concluded TVA senior management’s decisions early in the EPU project were the most significant factor in the lack of progress in the project. Specifically, in 2001, senior management directed

staff to keep the EPU proposal within a certain cost, requiring the staff to report an artificially optimistic scope and ultimately, leading a contractor to propose use of a methodology that was not approved by the Nuclear Regulatory Commission (NRC). Additionally, senior management ignored concerns of TVA engineering staff related to the feasibility and safety of the proposed methodology.

TVA spent about \$97 million on direct EPU costs and \$26.5 million on incremental fuel costs since 2001. Additionally, TVA’s marginal costs for replacement power ranged from \$373 million to \$448 million as a result of not achieving the EPU by the targeted dates. TVA executive management acknowledged cultural issues contributed to the problem and stated they were committed to improving the culture of TVA through transformation initiatives and other actions including creating and maintaining an environment where all employees feel comfortable raising concerns to management or through any of the available avenues.

- **Organizational Effectiveness Reviews** – Culture and its impact on organizational effectiveness is a relatively new concept in the auditing arena.

Typically, the focus of an audit or evaluation is on the structural and/or operational aspects of a program or process, whereas organizational effectiveness considers the human element associated with goal achievement. The behaviors and actions of the workforce, which comprise the organizational culture, are just as necessary as the structural and operational elements to achieve an organization's mission. Cultural breakdowns have been a factor in several costly TVA failures in the recent past. To address the risk presented by cultural breakdowns that could affect an organization's effectiveness, it became necessary for us to develop our own methodology for evaluating organizational effectiveness.

Our objective for these reviews is to assess TVA business units both operationally and culturally in order to identify strengths and risks to individual business units' organizational effectiveness. Ultimately, we report on the strengths and risks related to organizational alignment, the achievement of the organizational mission and objectives, and behaviors related to increasing the performance of leaders and employees. To date, we have identified strengths

in various business units such as positive working relationships with other organizations, management support of employees, and engaged employees who take pride in their work. We have also identified risks related to alignment, execution, and engagement.

- **Sharing of Prohibited Nuclear Information With China** – Ching Ning Guey, former TVA Senior Manager, Probabilistic Risk Assessment, pled guilty to one count of conspiracy to unlawfully engage and participate in the production and development of special nuclear material outside the U.S. Mr. Guey's guilty plea was accepted by the court on May 4, 2015. In it, he acknowledged providing prohibited Electric Power Research Institute, Inc., documentation, certified as containing information related to the development and use of technology associated with light and heavy water reactors, to the People's Republic of China. Mr. Guey obtained this Electric Power Research Institute, Inc., material by authority of his official TVA duties, despite receiving warnings and guidance on the restrictions and controls pertaining to prohibitions against sharing this information with restricted countries.



Nickajack Dam

A related case involving Szuhsiun (Allen) Ho, followed Mr. Guey's conviction. Mr. Ho was a nuclear engineer and senior advisor employed by China General Nuclear Power Company (CGNPC), the largest nuclear power company in the People's Republic of China. CGNPC is the owner and president of ETI (a Delaware-based corporation). An April 5, 2016, indictment alleged Mr. Ho arranged Mr. Guey's illegal activity, and Mr. Ho solicited similar activity from five other persons as well. Mr. Ho was charged with identifying, recruiting, and causing payments to be made to six U.S.-based individuals (including Guey) to provide information related to the development and production of special nuclear material to CGNPC without authorization. Mr. Ho was also charged with conspiracy to illegally act as an unregistered agent of a foreign government. Mr. Ho pled guilty in federal district court to one count of conspiracy to unlawfully engage or participate in the production or development of special nuclear material outside the U.S. Additionally, the indictment charged Mr. Ho, CGNPC, and ETI with conspiracy to unlawfully engage and participate in the production and development of special nuclear material outside the U.S. On September 1, 2017, Mr. Ho was sentenced to serve two years in prison followed by one year of supervised release, and fined \$20,000. These cases were investigated by TVA OIG, the Federal Bureau of Investigation, the U.S. Department of Energy National Nuclear Security Administration, and the U.S. Immigration and Customs Enforcement Homeland Security Investigations, with additional assistance from other agencies.

- **WBN Chilled Work Environment** – The OIG received an EmPowerline complaint on January 4, 2016, alleging a chilled/hostile working environment in Operations at WBN plant. The OIG investigated the allegation and communicated information related to the chilled work environment to the NRC. On March 23, 2016, the NRC issued to TVA a chilled work environment letter (CWEL) and required TVA to conduct a root cause analysis and take other actions.

Due to the technical nature of the issues, the OIG engaged a consulting firm with expertise in the nuclear power industry, NTD Consulting Group, LLC (NTD), to (1) assess whether TVA's analyses of its April 22, 2016, response to the NRC CWEL were thorough and adequate and (2) review the history of nuclear safety culture issues at TVA for the past several years. In summary, NTD found:

- TVA's two analyses and response to the NRC CWEL were incomplete and inadequate.
- TVA's planned corrective actions to address the chilled work environment are unlikely to have long-term effectiveness or sustainability and the probability of success will remain low until an independent and critical evaluation is conducted and the associated changes are embraced throughout the organization.

The precursors of the chilled work environment went unrecognized by management and internal and external oversight groups. Additionally, TVA barrier programs and processes such as the Corrective Action Program, the Employee Concerns Program, Quality Assurance, Nuclear Safety Culture Monitoring Panel, and the Nuclear Safety Review Board, which are the programmatic barriers, failed to detect such signs. Documentation, data, and interview results indicated TVA management had inappropriately influenced the outcome of causal analyses and independent investigations pertaining to nuclear safety culture/safety conscious work environment issues at WBN.

In response to NTD's report, TVA management generally agreed with the recommendations and noted that a number of corrective actions were taken or are underway since the first draft of the report was issued. Additionally, TVA management reiterated that they "previously stated to the OIG and, more importantly, to the NRC, its belief that there is a chilled work environment at WBN 1. Moreover, TVA has expressly acknowledged management's role in creating the condition and its responsibility for correcting it."



NOTEWORTHY EVENTS

In this Semiannual period, there were three noteworthy events. Described below are events related to (1) three CIGIE awards, (2) CIGIE's launch of [Oversight.gov](https://www.oversight.gov), and (3) the naming of a new OIG Whistleblower Coordinator.

TVA OIG RECEIVES 3 CIGIE AWARDS

Each year, CIGIE selects, recognizes, and celebrates exceptional work performed by the 73 federal OIGs. Our office submitted seven work products for the Council's consideration and three of those were selected for CIGIE's Awards of Excellence.

Summary of CIGIE Award Recipients and Awards

- Senior Auditor John Barrow was recognized for his work on a contract audit where a vendor agreed to reimburse overcharges within one week of the final report, correct nine years of incorrect charges, reduce rates 10 to 22 percent, and potentially save TVA \$10 million in costs.
- Senior Special Agents Kyle Cox and Greg Schultz were recognized for their work in investigating subcontractor relocation fraud, resulting in a false claims conviction and \$116,493 in restitution. Other team members on this project included Special Agent Laura Slatton with the U.S. Department of Energy OIG and Assistant U.S. Attorney Bart Slabbekorn.
- Organizational Effectiveness Evaluations team was recognized for its unique work performing organizational effectiveness reviews of TVA that assess operational as well as behavioral components impacting a TVA business unit's capacity to achieve its objectives. They were also recognized for designing a model on performing these reviews and

providing training across the CIGIE community on how to conduct these one-of-a-kind assessments. OIG staff recognized for leading this effort were Deputy Assistant Inspector General of Evaluations Greg Stinson; Director of Organizational Effectiveness Evaluations Lisa Hammer; Evaluations Manager Amy Rush; and Senior Auditors Lindsay Denny, Noel Kawado, Jessica Monroe, Lauren Pionke, and Jamie Wykle.

In selecting OIG projects for the Awards of Excellence, CIGIE looks for work products that "are so unusual or distinguished as to be at the forefront of the community." "The CIGIE awards are a testament to the hard work and innovation our staff employs every day in our mission to make TVA better," said Acting Inspector General Jill Matthews.

The awards were presented at an annual CIGIE awards ceremony in Washington, D.C., Thursday, October 19, 2017.

CIGIE AWARD WINNERS



Organizational Effectiveness Team



Senior Special Agent Kyle Cox



Senior Auditor John Barrow

CIGIE LAUNCHES



On October 1, 2017, CIGIE announced the official launch of Oversight.gov. This new Web site provides a “one-stop shop” to follow the ongoing oversight work of all OIGs that publicly post reports.



The TVA OIG, like the other OIGs, will continue to post reports to its own Web site. But with the launch of Oversight.gov, users can now sort, search, and filter the site’s database of public reports from all of CIGIE’s member IGs to find reports of interest. In addition, the site features a user-friendly map to find reports based on geographic location, and contact information for each IG’s whistleblower hotline. Users can receive notifications when new reports are added to the site by following CIGIE’s new Twitter account, @OversightGov.

JEFF MCKENZIE NAMED AS TVA OIG WHISTLEBLOWER COORDINATOR



Jeff McKenzie has assumed the role of Whistleblower Coordinator, formerly Whistleblower Ombudsman, in the TVA OIG.

Jeff replaces Charles Kandt who retired and served

in this role since it was established legislatively by the Whistleblower Protection Enhancement Act of 2012.

Prior to joining TVA OIG as legal counsel, Jeff served in various capacities at TVA for 16 years.

The Whistleblower Coordinator responsibilities include:

- Providing a comprehensive awareness and training program to TVA employees on whistleblower rights and protections.
- Ensuring whistleblower complaints are reviewed and addressed by the OIG in a prompt and thorough manner.
- Communicating with whistleblowers about the status and resolution by the OIG of those complaints.
- Monitoring investigations of retaliation claims that are within the jurisdiction of the OIG.
- Serving as the OIG liaison to other U.S. agencies with whistleblower responsibilities, such as the Office of the Special Counsel and to nongovernmental whistleblower organizations and advocacy groups.

As he steps into the new role, McKenzie explained why whistleblowers must be encouraged and protected. “The best and most effective way for any entity to learn about problems or wrongdoing is from its own employees,” he said. “Government employees have a special obligation to promote the public’s interest, particularly the identification of unethical or illegal behavior. Whistleblowing often requires courage, and in this role, we want to encourage people to understand their rights and step forward. TVA and the public at large are the ultimate beneficiaries.”



EXECUTIVE OVERVIEW

The TVA OIG has a one-of-a-kind perspective of TVA, in being part of yet independent of the agency. This seeming paradox has created its fair amount of challenges in the tenure of TVA's first presidentially-appointed, longest-running, and most recent IG, Richard W. Moore. This semiannual report to Congress takes a walk through the past 14 years of Moore's time as IG and highlights the many milestones and accomplishments of his lasting legacy, while the Executive Overview focuses on the office's more current work over the last six months. Our audits, evaluations, and investigations are based on prioritizing TVA's evolving risks in achieving its multi-pronged mission to provide economic development, environmental stewardship, and reliable power at affordable rates to the 9 million people of the Tennessee Valley.

AUDITS

Our audit organization includes three departments that focus on contract audits, financial and operational audits, and IT audits. During this reporting period, these teams completed 10 audit and examination engagements. This work identified \$4.7 million in questioned costs for TVA to recover and identified \$17.7 million in funds the company could put to better use. We also identified several opportunities for TVA to improve the effectiveness and efficiency of its programs and operations.

Contract Audits

To support TVA management in negotiating procurement actions, we completed two preaward examinations of cost proposals submitted by companies to provide civil projects and coal combustion residual program management services. Our examinations identified \$17.7 million of potential savings opportunities for TVA to negotiate. The savings opportunities were primarily related to overstated cost proposals, indirect cost recovery rates, and profit rates. We also completed two compliance audits of contracts with expenditures totaling \$43.5 million and identified potential overbillings of \$4.7 million. The Contract Audits section begins on page 35 of this report.

Financial and Operational Audits

With a focus on financial reporting, compliance with applicable laws and regulations, and TVA operations, we completed audits this period of wind power contracts and

non-competed contracts. In addition to our audit work, we performed work to assist TVA's external auditor. The Financial and Operational Audits section begins on page 36 of this report.

IT Audits

We completed audits of patch management for high risk end-user desktops and laptops, logical remote access to TVA's gas-fired plants, TVA Internet-accessible Web site vulnerabilities, and the surplus and disposal of IT equipment. The IT Audits section begins on page 38 of this report.

EVALUATIONS

Our Evaluations organization includes two groups, one of which focuses on organizational effectiveness reviews. During this reporting period, our teams completed 13 evaluations and organizational effectiveness reviews which identified a number of opportunities for improvement. In addition, we completed four follow-up reviews to previous organizational effectiveness reviews.

Evaluations

The Evaluations group completed six evaluations during this semiannual period. These included evaluation of TVA's fuel-cost adjustment calculation, gas plant preventive maintenance, transmission system preventive maintenance, actions to address issues identified in assessments of Nuclear Quality Assurance, Transmission and Power Supply (TPS) direct-charge materials, and coal

plant surplus materials. The Evaluations section begins on page 41 of this report.

Organizational Effectiveness

This group evaluated seven business units within TVA, including (1) five business units in TVA’s Chief Human Resources Office, (2) Supply Chain – Materials Management, and (3) Safety Performance and Improvement. In addition, the team conducted follow-up reviews to previous organizational effectiveness reviews of Bull Run Fossil Plant, Kingston Fossil Plant, Coal and Gas Services, and Environmental Permitting and Compliance.

The Organizational Effectiveness section begins on page 44 of this report.

INVESTIGATIONS

This reporting period, we opened 95 cases and closed 92. Our investigative results include four convictions, eight criminal Informations filed, and more than \$4.4 million in costs avoided, fines/fees, and recoveries/restitution. The Investigations section begins on page 49 of this report.

STATISTICAL HIGHLIGHTS

April 1, 2017 – September 30, 2017

Audit Reports Issued	10
Evaluations Completed	17
Questioned Costs	\$4,672,265
Questioned Costs Agreed to by TVA	\$5,079,842
Questioned Costs Recovered by TVA	\$427,968
Funds to be Put to Better Use	\$17,680,299
Savings Realized by TVA	\$4,478,600
Investigations Opened	95
Investigations Closed	92
Recoveries/Projected Savings/Fines/Fees	\$4,431,214
Other Monetary Loss	\$0
Criminal Actions	13
Administrative Actions (Number of Subjects)	6



Jill M. Matthews
Acting Inspector General

LEGAL COUNSEL

W. David Winstead
Legal Counsel

Jeffrey T. McKenzie
Senior Attorney/
Whistleblower Coordinator

INVESTIGATIONS

Paul B. Houston
Assistant Inspector General,
Investigations

Nancy J. Holloway
Special Agent in Charge

James E. Hunter
Special Agent in Charge

L. Suzanne Allin
Manager,
Investigative Services Staff

AUDITS & EVALUATIONS

David P. Wheeler
Assistant Inspector General, Audits & Evaluations

Curtis C. Hudson
Deputy Assistant Inspector
General, Audits

Chad B. Bube
Director,
Contract Audits

Scott A. Marler
Acting Director,
IT Audits

Rick C. Underwood
Director, Financial &
Operational Audits

Gregory R. Stinson
Deputy Assistant Inspector
General, Evaluations

Lisa H. Hammer
Director,
Organizational Effectiveness

E. David Willis
Director,
Evaluations

ADMINISTRATION

Terri Beatty
Manager,
Organizational Effectiveness

Phyllis R. Bryan
Deputy Assistant Inspector
General, IT Services

Kathy H. Kirkham
Manager, Human Resources
& Resource Management

Louise B. Beck
Manager,
Audit Quality

David S. Shields
Manager,
Audit and Evaluation Quality

ORGANIZATION

Since 1985, the OIG has worked to help TVA become better which is the OIG's vision. Through our audits, evaluations, and investigations, we provide TVA management, the TVA Board, and Congress with an independent look at the economy, efficiency, and effectiveness of TVA programs and help prevent and detect fraud, waste, and abuse. Over the years, the OIG has helped TVA save or recover millions of dollars and recommended numerous program improvements. We credit our success to the efforts of our hardworking and talented staff and the professional responsiveness of TVA management to our recommendations.

TVA OIG OFFICE LOCATIONS

The OIG has a work philosophy of being in the right place at the right time to do the best work possible. We support that philosophy by encouraging our OIG employees to work where they can be most effective whether that is in one of our physical offices, in the field, or in one of our virtual offices that enable our employees to telework from home or while traveling.

The OIG has strategically located its offices near all major TVA offices throughout the Tennessee Valley. We are headquartered in TVA's East Tower, opposite TVA's corporate offices, overlooking downtown Knoxville.

The OIG has field offices in Chattanooga, Tennessee, where members of the Evaluations and Financial and Operational Audits departments and several special agents are located. Additionally, special agents are located in Nashville, Tennessee, and Huntsville, Alabama. We also have office locations at Watts Bar Nuclear Plant in Spring City, Tennessee, and Sequoyah Nuclear Plant in Soddy Daisy, Tennessee. Staff work in these locations as needed. As of September 30, 2017, the OIG had a total staff of 103.

ADMINISTRATION

The Administration team works closely with the IG, Deputy IG, and Assistant IGs to address the day-to-day operations of the OIG and to develop policies and procedures designed to drive and enhance productivity, quality, and compliance, and achieve office goals.

Responsibilities include personnel administration, internal assessments, budget and financial management, purchasing and contract services, facilities coordination, training event planning, communications facilitation, and IT support.

AUDITS AND EVALUATIONS

The Audits and Evaluations teams perform a wide variety of engagements designed to promote positive change and provide assurance to TVA stakeholders. Based upon the results of these engagements, the Audits and Evaluations organizations make recommendations to enhance the effectiveness and efficiency of TVA programs and operations.

The organizations use an impact- and risk-based approach to develop an annual work plan. In developing the plan, the OIG considers TVA's strategic plans, major management challenges, TVA's enterprise risk management process, and other input from TVA management. This planning model also evaluates each potential engagement from the standpoint of materiality (i.e., costs or value of assets), potential impact, sensitivity (including public and congressional interest), and the likelihood it will result in recommendations for cost savings, recovery of dollars, or process improvements. The result of the OIG Audits and Evaluations planning process is a focus on the issues of highest impact and risk to TVA.

These issues vary depending on the objectives of the project. The graphic shows some representative examples

TYPES OF AUDIT & EVALUATION ISSUES

Financial and Operational Audits

- Program Inefficiencies/Ineffectiveness
- Legal/Regulatory Compliance
- Policy Noncompliance
- Internal Control Deficiencies
- Fraud

Contract Audits

- Inflated Proposals
- Contract Overpayments
- Inferior Performance
- Fraud

IT Audits

- Internal Control Deficiencies
- Policy Noncompliance
- Integrity of Data and Assets
- Cyber Security
- Fraud

Evaluations

- Operational Inefficiency
- Policy Noncompliance
- Legal/Regulatory Noncompliance
- Fraud

Organizational Effectiveness

- Operational Ineffectiveness
- Cultural Areas for Improvement
- Unmitigated Risks
- Fraud

of issues our audit and evaluation projects are commonly designed to identify.

The Audits team generates and oversees comprehensive financial and performance audits of TVA programs and operations, providing an inclusive picture of TVA's overall fiscal and operational health. The organization is made up of three departments—Contract Audits, Financial and Operational Audits, and IT Audits. The Audits organization performs its work in accordance with *Government Auditing Standards*.

- Contract Audits has lead responsibility for contract compliance audits and preaward examinations. In addition, this department performs audits of TVA contracting processes and provides claims assistance as well as litigation support.
- Financial and Operational Audits is responsible for performing audit work mandated by legislation, agreed-upon procedures, as well as risk-based audits associated with TVA financial and operational activities. The work stems largely from mandated activities, review of TVA's business-risk environment, consideration of emerging issues, and requests. This department also provides oversight of TVA's external auditor's compliance with professional standards.

- IT Audits has lead responsibility for audits relating to the security of TVA's IT infrastructure, application controls, and general controls associated with TVA systems. This department also performs operational audits of the effectiveness of IT-related functions.

The Evaluations team assesses both operational and cultural aspects of programs and departments throughout TVA to ensure objectives and operational functions are achieved effectively and efficiently. This organization is made up of two departments—Evaluations and Organizational Effectiveness.

This organization performs its work in accordance with *Quality Standards for Inspection and Evaluation* as prescribed by CIGIE.

- Evaluations performs both comprehensive reviews and more limited-scope policy and program reviews to monitor compliance, measure performance, and assess the efficiency and effectiveness of operations.
- Organizational Effectiveness performs risk-based reviews to assess operational and cultural areas, including strengths and risks that could impact an organization's ability to achieve its mission and goals.

INVESTIGATIONS

The **Investigations team** proactively and reactively uncovers activity related to fraud, waste, and abuse in TVA programs and operations. This organization performs its investigations in accordance with the *Quality Standards for Investigations* as prescribed by CIGIE, applicable U.S. Attorney General Guidelines, and other guiding documents. OIG special agents maintain liaisons with federal and state prosecutors and notify the U.S. Department of Justice whenever the OIG has reason to believe there has been a violation of federal criminal law. Special agents partner with other investigative agencies and organizations on special projects and assignments, including interagency law enforcement task forces on terrorism, the environment, health care, and public

corruption, as well as securities fraud. The graphic shows the major categories of investigations.

LEGAL

The **OIG Legal Counsel team** monitors existing and proposed legislation and regulations that relate to the mandate, operations, and programs of the OIG and TVA. Additionally, this team provides legal advice as needed for administrative, audit, evaluation, and investigative projects. OIG attorneys also serve as ethics officials, providing OIG employees guidance on government ethics and standards of conduct. Additionally, the TVA Whistleblower Coordinator is a part of this team and provides information regarding the statutory protections against retaliation for all TVA employees.

MAJOR CATEGORIES OF INVESTIGATIONS

Contract Fraud
Defrauding TVA through its procurement of goods and services including fraud schemes such as misrepresenting costs, overbilling, product substitution, and falsification of work certifications

Theft of Government Property and Services
Theft of TVA property such as material, tools, equipment, or resources

Environmental Crime
Violations of environmental criminal law pertaining to the Tennessee River system and its watershed, along with violations relating to TVA land and facilities

Health Care Fraud
Intentional misrepresentation of health-care services, expenses, billings, needs, or coverage that results in unauthorized payments or other benefits

Unauthorized Access Into TVA Computer Systems
Accessing a TVA computer without authorization or exceeding authorized access

Workers' Compensation Fraud
Falsification of documents to receive payments by employees, former employees, or health-care providers

Employee Misconduct
Misuse of TVA-furnished equipment, travel voucher fraud, a multitude of miscellaneous matters of abuse, conflict of interest, and violations of code of conduct

Special Projects
Management requests, data mining and predictive analysis, congressional and TVA Board requests, and fraud risk assessments



SUMMARY OF

REPRESENTATIVE AUDITS

During this semiannual reporting period, the TVA OIG Audit organization completed 10 audit and examination engagements. This work identified \$4.7 million in questioned costs for TVA to recover and identified \$17.7 million in funds the company could put to better use. We also identified several opportunities for TVA to improve the effectiveness and efficiency of its programs and operations.

CONTRACT AUDITS

Preaward Contract Examinations

To support TVA management in negotiating procurement actions, we completed two preaward examinations of cost proposals submitted by companies proposing to provide civil projects and coal combustion residual program management services. Our examinations identified \$17.7 million of potential savings opportunities for TVA to negotiate. The savings opportunities were primarily related to overstated cost proposals, indirect cost recovery rates, and profit rates.

Contract Compliance Audits

During this semiannual period, we completed two compliance audits of contracts with expenditures totaling \$43.5 million and identified potential overbillings of \$4.7 million. Highlights of our completed compliance audits follow.

- We audited \$23.9 million in costs billed by a contractor for facilities maintenance services and technical support services for Bellefonte Nuclear Plant. We determined the contractor overbilled TVA \$2,595,222, including (1) \$1,560,515 in labor costs billed using labor classifications and billing rates not provided for in the contract; (2) \$654,852 in other ineligible labor and related costs; (3) \$246,304 in unapproved subcontractor costs; and (4) \$133,551 due to ineligible and unsupported temporary living allowances and travel costs, excessive fees, discounts



Bull Run Fossil Plant

that were not provided to TVA, and ineligible materials, supplies, and fitness-for-duty costs. In addition, the contractor acknowledged the 2015 payroll tax adjustment required by the contract had not been completed.

- We audited \$19.6 million in costs billed to TVA by a contractor under three contracts for consulting services that included, but were not limited to, financial management and business management services. Our audit objectives were to determine if (1) the costs billed to TVA by the contractor were in compliance with the contracts' terms and (2) task authorizations awarded under the contracts were in compliance with TVA policies, processes, and procedures. We determined the contractor billed TVA (1) \$2,077,043 for work that was performed prior to authorization and (2) \$273,890 for labor categories that were erroneously excluded from the contracts' pricing schedules. In addition, although the contractor had a higher percentage of sole-source awarded tasks than its competitors, we determined Supply Chain was following its intended competitive model for the blanket contracts to obtain the best value for TVA.

FINANCIAL AND OPERATIONAL AUDITS

During this semiannual period, Financial and Operational Audits completed audits of (1) wind power contracts and (2) non-competed contracts. In addition, the department performed work to assist TVA's external auditor.

Wind Power Contracts

We audited contracts TVA entered into with wind farms between October 9, 2009, and September 13, 2011, for approximately 1,700 megawatts (MW) of energy. Two of the nine contracts have since been terminated, and as of August 2017, TVA had 1,215 MW of energy under long-term (20 year) contracts with the seven remaining wind farms. TVA paid the wind farm contractors

approximately \$1.6 billion from fiscal years 2010 through 2016. We scheduled an audit of TVA's long-term wind power contracts after noting TVA paid about \$37.7 million to four wind farm contractors for energy it did not receive between November 1, 2012, and January 3, 2017. Our audit objectives were to determine if (1) TVA's decision to enter into long-term wind power contracts was in TVA's economic interest and (2) the \$37.7 million in energy curtailment payments were in TVA's economic interest.

We found TVA's decision to enter into long-term wind power contracts has not proven to be in TVA's economic interest. The decision to enter into the wind power contracts was primarily due to TVA management's assumptions that (1) TVA and other utilities could be required to provide a greater portion of the electricity they sell by using renewable resources, (2) early approval of the wind power contracts would allow TVA to proactively obtain cost-effective renewable and clean generation agreements prior to enactment of renewable energy standard legislation, and (3) the wind power contracts were competitive with forecasted market electricity prices. However, the assumptions TVA used in its decision-making process proved to be inaccurate. Specifically, TVA accepted a significant amount of risk by locking into level fixed prices over 20-year contract terms. TVA relied on net present value (NPV)⁷ analyses based in part on long-term forecasts of electricity prices over a 20-year time horizon. TVA's NPV analyses showed most of the contracts to have only a small positive NPV and a significant probability that the NPV would be negative. In addition, TVA's own analyses showed it would only begin to receive value, if any, in the last 10 years of the contracts' 20-year terms. As of TVA's most recent NPV calculation performed in March 2016, the total NPV of these contracts was a negative \$1.4 billion. If TVA had issued one initial contract for 200 MW instead of contracting with nine wind farms for approximately 1,700 MW all at once, TVA management could have learned valuable insights into wind power contracting and the related risks.

⁷ NPV is used in capital budgeting to analyze the profitability of a projected investment or project.

With regard to the \$37.7 million in energy curtailment payments TVA made between November 1, 2012, and January 3, 2017, we determined these payments were in TVA's economic interest at the time the decisions were made. We recommended TVA management (1) take a measured approach for large projects in areas TVA does not have familiarity or that are new to TVA and (2) provide for positive financial value earlier in future power purchase contract terms by negotiating terms that do not set a level fixed price over the contract term. TVA management agreed with our recommendations and has taken action to address them.

Non-Competed Contracts

The TVA Act of 1933 and TVA's Supply Chain process require that any contract action in excess of \$25,000 be competed unless the contract action on a noncompetitive basis is properly justified and approved. To ensure

compliance with these requirements, we scheduled an audit to determine if TVA's non-competed contracts are (1) identified in TVA systems and (2) executed in accordance with TVA policies and procedures. Our audit included contracts that were active and stand-alone purchase orders that were approved during the period June 1, 2014, through May 31, 2016, in TVA's contract management system, Maximo.

We determined that the non-competed contracts are executed in accordance with TVA policies and procedures. However, we found identification and classification of non-competed contracts in TVA's Maximo system could be improved. We also noted improvements could be made in the maintenance and retention of contract file documents. TVA management agreed with our recommendations to address the deficiencies and provided planned corrective action.



Fort Patrick Henry Dam

IT AUDITS

During this semiannual period, IT Audits completed four audits in the IT environment regarding (1) patch management for high risk end-user desktops and laptops, (2) logical remote access to TVA's gas-fired plants, (3) TVA Internet-accessible Web site vulnerabilities, and (4) the surplus and disposal of IT equipment.

Cyber Security Patch Management of High Risk Desktops and Laptops Could be Improved

We audited TVA's patch-management process for high risk end-user desktops and laptops, as these are most vulnerable to spear phishing, a very common tactic used

in today's environment to infiltrate computer networks and spread malware. We found (1) the patching status was unknown for 12 percent of the desktops and laptops we sampled and tested, due to the desktops and laptops not being managed in patch management tools, thereby, putting TVA at potential risk for compromise; (2) one of 162 desktops and laptops tested had a missing patch which could lead to remote code execution where a public exploit is available; and (3) the patching process for Mac desktops and laptops is not formally documented. TVA was notified of the missing patch and remediated the issue during our audit.

We recommended TVA management (1) identify and remediate any desktops and laptops not currently managed in patch management tools, (2) implement a



Appalachia Dam

process to ensure all corporate desktops and laptops are being managed in patch management tools, and (3) formally document the process used to manage Mac software patches in accordance with TVA policies. TVA management agreed with our recommendations and is taking corrective action to address the issues.

Logical Controls for the Gas Secure Rooms Could be Strengthened

We audited cyber security controls of TVA's gas secure rooms which provide remote logical access to all TVA gas-fired plants. We found the architecture, current standard programs and processes, and draft standard operating procedures contain appropriate information as suggested by best practices. However, we found the logical controls for the gas secure rooms could be strengthened. Specifically, we found issues with the (1) network devices at the gas secure rooms and a sample of combined cycle and combustion turbine plants and (2) workstations and servers at the gas secure rooms. Additionally, the gas secure rooms were each originally intended to be a secure room where TVA engineers could log into a workstation and access the gas plants via secure remote access connections. However, the engineers can now access gas plants using secure remote access connections outside the gas secure rooms, and as a result, the rooms may no longer be needed.

We made seven specific recommendations to TVA management to help strengthen the logical controls related to the gas secure rooms, including reevaluating the need for the physical gas secure rooms. TVA management agreed with our recommendations and is taking corrective action to address the issues.

TVA Internet-Accessible Web Sites Vulnerable to Compromise

We audited TVA's Internet-accessible Web sites to identify cyber security weaknesses through penetration testing. In summary, 37 Internet-accessible Web sites were tested, and seven high-risk vulnerabilities were identified. Two of the high-risk vulnerabilities that were identified required additional testing by TVA's IT organization for confirmation. We recommended TVA management ensure the identified vulnerabilities were tested and remediated as appropriate. TVA management agreed with our findings and recommendations and is taking corrective action to address the issues.

Surplus and Disposal of Information Technology Equipment

We audited TVA's process to surplus and dispose of IT equipment. We found weaknesses with TVA's policies, procedures, and processes to surplus and dispose of IT equipment, including (1) surplus IT equipment with capability to store data was not properly sanitized, tracked, and processed; (2) physical access reviews of areas holding surplus IT equipment were not being performed as required; and (3) processes for the surplus and disposal of cathode ray tubes did not address environmental regulations to prevent the release of lead into the environment. We made specific recommendations to TVA management to address our audit findings. TVA management agreed with our recommendations and is taking corrective action to address the issues.





SUMMARY OF

REPRESENTATIVE EVALUATIONS

Our Evaluations organization includes two departments, one of which focuses on organizational effectiveness reviews. During this reporting period, our teams completed 13 evaluations and organizational effectiveness reviews which identified a number of opportunities for improvement. In addition, we completed four follow-up reviews to previous organizational effectiveness reviews.

EVALUATIONS

The Evaluations department completed evaluations of (1) TVA's fuel cost adjustment calculation, (2) gas plant preventive maintenance, (3) transmission system preventive maintenance, (4) actions to address issues identified in assessments of Nuclear Quality Assurance, (5) TPS direct charge materials, and (6) coal plant surplus materials.

Fuel Cost Adjustment Calculation

TVA's largest single expense, fuel and purchased power cost, fluctuates significantly with changes in weather and shifts in global supply and demand. TVA recovers these variable costs through a monthly fuel cost adjustment (FCA) which includes (1) the direct cost of fuel used in TVA's generating plants, (2) certain variable fuel-related costs, and (3) the energy cost of purchased power. Due to the importance of the FCA, we performed an evaluation to determine whether the FCA was correctly calculated in accordance with TVA's "Board-approved formula."

The Board-approved formula is intended to include the formula, methods, and instructions.

Based on our independent recalculation of the January 2017 FCA, we determined all but one calculation within the FCA was in accordance with the Board-approved formula. The exception was a resource cost allocation (RCA) component that was not in agreement with the approved methodology because TVA did not appropriately categorize some direct-served, federal, and interdivisional customers based on their contract

demand. These misallocated costs approximated \$450,000 of \$4 billion in eligible FCA expenses incurred since TVA implemented the RCA in October 2015. Even though the misallocated amount was a small fraction of the total, it was enough to impact the January 2017 FCA. As such, it underscores the importance of ensuring the RCA component of the FCA calculation is correct each month. We recommended and TVA management agreed to implement controls to ensure proper categorization of customers during the RCA calculation.

Gas Plant Preventive Maintenance

TVA operates 16 natural gas-fired plants throughout the Tennessee Valley. Due to the ability of gas units to quickly start up and shut down as needed, gas plants are utilized by TVA to provide reliability to the region, quickly meet peak power demand, reduce the need to purchase higher-priced power from external sources, and control costs while reliably meeting energy demands. TVA performs preventive maintenance (PM), which consists of servicing and data collection activities carried out at predetermined intervals, to reduce the likelihood of equipment failures. Some PM performed by TVA is regulated by the North American Electric Reliability Corporation's (NERC) Protection and Control Standard PRC-005-6. NERC established this standard to implement a program for the maintenance of certain systems affecting the reliability of the Bulk Electric System so that they are kept in working order.

Due to the importance of PM to the reliable operation of TVA's generating assets, we initiated an evaluation of TVA's gas plant PM to determine if PM had been performed in accordance with established schedules, and if not, what effect the deviations had. We determined PM identified as NERC-related had been performed in accordance with TVA's established schedules. However, we were unable to determine if non-NERC PM had been performed in accordance with established schedules due to unreliable dates and a lack of documentation in TVA's work management system. We also determined that inadequate PM contributed to 11 equipment failures; nine of these failures resulted in forced outages.

We made a number of recommendations related to (1) predictive maintenance, (2) implementation support for new PM programs, (3) training in the use of TVA's work management system, and (4) defining PM roles and responsibilities. TVA management agreed with our

findings and provided planned actions to implement our recommendations.

Transmission and Power Supply Preventive Maintenance

TVA's transmission system is one of the largest in North America, with more than 100,000 transmission structures across an 80,000 square mile region and has delivered 99.999 percent reliability since the year 2000. However, TVA acknowledges aging assets are putting reliability at risk and are a top contributor to frequency of customer interruptions. The purpose of TVA's PM program is to maintain a balance of maintenance activities to ensure the safe, reliable, and long-term operation of transmission system assets. PM is conducted on a predetermined interval to reduce the likelihood of a failure. Due to the importance of PM on the reliable operation of assets, we performed an evaluation of TVA's transmission system PM during fiscal years 2015 and 2016 to determine if the PM



was performed in accordance with established schedules, and if not, the effects of the deviations.

We could not determine if transmission PM had been performed in accordance with established schedules because (1) work completion dates in TVA's work management system, Maximo, did not consistently match the date the PM was completed, and (2) TVA did not require supporting documentation evidencing work completion dates to be maintained. Additionally, our review of documentation related to equipment failures did not identify any failures or interruption in service attributed to TPS PM practices.

Actions to Address Issues Identified in Assessments of Nuclear Quality Assurance

TVA's Nuclear Quality Assurance (QA) provides monitoring and assessment of plant activities to ensure they are conducted in a quality manner. To determine if TVA's Nuclear Oversight organization (which includes QA) is effective in performing independent oversight activities, Nuclear Industry Evaluation Program audits/evaluations are conducted periodically. Nuclear Industry Evaluation Program is an industry subcommittee established to provide for the development of an independent peer assessment process of oversight practices associated with nuclear utilities. Additionally, QA personnel perform self-assessments and missed-opportunity reviews to identify lessons learned and improvement opportunities and/or actions.

Due to the importance of QA's role in monitoring and assessing nuclear plant activities, we initiated an evaluation to determine if QA has taken actions to address issues identified during internal and external reviews of its program. The objective of the review was to determine if QA had taken actions to address issues identified during program assessments and evaluations (collectively referred to as reviews) performed during fiscal year 2016.

We determined QA generally took actions to address the issues identified in reviews of QA during fiscal year 2016. However, we determined better documentation was needed when actions are not deemed necessary to

address an issue. Doing so would provide insight into similar situations in the future. TVA management agreed and plans to require justifications be documented.

Transmission and Power Supply Direct Charge Materials

Due to concerns identified during a previous OIG evaluation related to the length of time TPS direct charge materials had been stored at the Muscle Shoals Distribution Center (MSDC), we initiated an evaluation to determine if TPS direct charge materials were being managed appropriately. The scope of this evaluation was limited to TPS direct charge materials located at MSDC between September 2016 and March 2017.

We determined TPS direct charge materials were not being managed appropriately because (1) direct charge materials were not purchased in accordance with TVA policy; (2) TPS does not keep track of direct charge materials stored at MSDC; and (3) direct charge materials are being stored at MSDC, even though the work orders for which they were purchased have closed. We made recommendations to TVA management to improve the tracking process for TPS direct charge materials, and management agreed to implement our recommendations.

TVA Coal Plant Surplus Materials

TVA's Inventory Management Process defines "surplus" as material not expected to be used within the next three years by TVA. Supply Chain personnel located at coal plants are responsible for determining whether a need exists within TVA prior to designating material as surplus. 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.

Due to the risk of disposing of needed materials, we initiated an evaluation of TVA's coal plant surplus materials process. The objective of this evaluation was to

determine if coal plant materials designated for surplus were appropriate. The scope of the evaluation was materials designated as surplus between October 1, 2013, and March 31, 2017. We evaluated surplus materials at active, transitioning, and retired coal plants.

We found materials designated as surplus at active and transitioning plants were generally appropriate. However, retired plant materials may have been unnecessarily designated as surplus, resulting in missed opportunities to redeploy materials, including inventory and noninventory, within the fleet. Based on our review of TVA Standard Programs and Processes and best practices, we identified several opportunities to improve redeployment of surplus materials from retired plants. In addition, we identified conflicting criteria in TVA policies related to the time frame used in designating materials as surplus. TVA management agreed with our findings and provided planned actions to implement most of our recommendations.

ORGANIZATIONAL EFFECTIVENESS

During this semiannual reporting period, the Organizational Effectiveness department evaluated seven business units within TVA, including (1) five business units in TVA's Chief Human Resources Office (CHRO), (2) Supply Chain - Materials Management, and (3) Safety Performance and Improvement. In addition, the group conducted follow-up reviews to previous organizational effectiveness reviews of Bull Run Fossil Plant, Kingston Fossil Plant, Coal and Gas Services, and Environmental Permitting and Compliance.

Chief Human Resources Office

TVA's CHRO is responsible for "fostering an environment that enables all employees to contribute at optimum levels through connections to each other and to TVA's mission." The CHRO is comprised of five organizational units, including (1) Human Resources Business Office and Ombudsman (HRBO), (2) Learning, Growth and Management (LG&M), (3) Talent Acquisition and Diversity (TAD), (4) Compensation and Benefits (C&B), and (5) Human Resources (HR). We completed assessments

of the strengths and risks that could impact each unit's organizational effectiveness.

- **Human Resources Business Office and Ombudsman** - The HRBO unit assists with workforce optimization, furthers fostering of an engaged workforce, and leverages human resources technologies for employee efficiencies through activities conducted by its departments. In addition to serving as the ombudsman for TVA, the HRBO consists of four departments, including HR Support Programs and Services, Employee Concerns, Equal Opportunity Compliance (EOC), and HR Business Operations and Systems.

Our assessment of the strengths and risks that could impact HRBO's organizational effectiveness identified strengths related to (1) organizational alignment, (2) leadership from the director, (3) teamwork/collaboration, (4) direct management support, including effective communication and inspiring trust and engagement, and (5) relationships with customers in TVA. However, we also identified risks related to (1) noncompliance with Equal Employment Opportunity Commission regulations regarding the placement and reporting structure of the EOC department and (2) employee engagement.

- **Learning, Growth and Management** - The LG&M unit assists with workforce optimization, furthers fostering of an engaged workforce, supports the building of capabilities, and leverages HR technologies for employee efficiencies through activities conducted by its three departments: Leadership Programs and Assessments, Leadership and Organizational Development, and Workforce Planning and Analytics.

Our assessment of the strengths and risks that could impact LG&M's organizational effectiveness identified strengths related to (1) organizational alignment, (2) collaboration within the departments, (3) LG&M management support, and (4) positive relationships with other TVA organizations. However, we also identified employee engagement risks related to management communication, morale, and fatigue that if left unaddressed, could stifle the maturity of



Fontana Dam

LG&M programs and negatively affect the ability of LG&M to contribute to the CHRO mission.

- **Talent Acquisition and Diversity** – The TAD organization assists with workforce optimization and furthers fostering an engaged workforce through activities conducted by its Talent Acquisition and TAD Programs departments. The Talent Acquisition department is responsible for generating a diverse pipeline of talent, recruiting qualified candidates, and filling jobs within TVA based on merit and efficiency. The TAD Programs department is responsible for implementing (1) talent acquisition programs and (2) governance and programs to build and maintain an inclusive workforce. In addition, the department provides training courses pertaining to diversity and inclusion.

Our assessment of the strengths and risks that could impact TAD’s organizational effectiveness identified strengths related to (1) organizational alignment, (2) collaboration, (3) support from TAD management, and (4) department morale and ethics. However, we also identified potential risks that could negatively affect the achievement of the mission. These included

(1) the potential for increased noncompliance risk due to (a) the use of social media in the recruitment process and (b) no documentation requirements for hiring interns, (2) talent acquisition process inefficiencies, and (3) the potential for ineffective inclusion metrics and programs.

- **Compensation and Benefits** – C&B leads the design and implementation of competitive, market- and employee-driven total reward benefits that support TVA’s pay-for-performance culture and business strategy. C&B supports the CHRO fiscal year 2017 initiative of “fostering a work environment where employees are fully engaged through developing and implementing improved compensation, benefits, and retirement delivery strategies.” C&B consists of three departments: Employee Benefits, Compensation, and Retirement Services.

Our assessment of the strengths and risks that could impact C&B’s organizational effectiveness identified strengths related to (1) organizational alignment, (2) teamwork, (3) direct management support, (4) knowledge and experience, and (5) customer service. However, we also identified an employee

engagement risk related to a relationship issue with one manager.

- **Human Resources** – The HR organization assists with workforce optimization, furthers fostering an engaged workforce, and builds capabilities through activities conducted by its departments. HR consists of three departments. The HR Business Partnerships department is responsible for developing and implementing HR business solutions for business units across TVA; consulting and supporting management and employees on all HR- and people-related issues; and providing governance tools and consultation to the HR community, managers, and employees. The Employee Health department is responsible for assessing the health status of each employee to determine their suitability to work safely and meet regulatory standards as a condition of TVA employment. The Labor Relations department has governance and oversight responsibilities for TVA's Labor Relations strategy, contract negotiations, dispute resolution, and relationships between the unions and TVA management.

Our assessment of the strengths and risks that could impact HR's organizational effectiveness identified strengths related to (1) organizational alignment, (2) collaboration within the departments, and (3) management support. However, we also identified risks related to (1) management responsibilities and behaviors, including (a) performance reviews, (b) providing opportunities for advancement, (c) training and resources, and (d) relationship issues with three managers; (2) execution of HR strategy and programs; (3) perceptions by some of unethical practices; and (4) potential for noninclusive behaviors that could negatively affect the ability of HR to contribute to the CHRO mission and to the success of TVA.

In response to our individual reports to the CHRO business units, TVA management generally agreed with our findings and recommendations and provided actions taken or planned to address our recommendations. However, TVA management did not agree with our recommendation related to expanding the diversity and

inclusion metrics to assess program effectiveness because they believe collaborative monitoring is occurring with other TVA organizations.

Supply Chain - Materials Management

The responsibility of TVA's Supply Chain is to "provide materials and services to strategic business units at lowest total cost of ownership and manage and optimize sourcing, procurement, freight, inventory, material distribution, and TVA fleet to ensure reliable operation." Within Supply Chain, Materials and Transportation Management (M&TM) performs the freight, inventory, material distribution, and fleet components of Supply Chain's mission. The objective of M&TM is "to effectively manage TVA's warehousing and investment recovery operations to provide customer support, optimize inventory, conserve working capital, and add value to TVA." M&TM is comprised of Materials Management, Nuclear Materials Management, and Investment Recovery and Distribution.

Our assessment of the strengths and risks that could impact M&TM's organizational effectiveness identified strengths related to (1) employee teamwork, (2) customer service, and (3) management's support of employees. However, we also identified issues that, if left unresolved, could increase the risk of M&TM not meeting its mission. These issues included (1) three managers' behaviors and teamwork at one location, (2) process inefficiencies in completing purchasing requests and inventory review processes, (3) warehouse layout at one nuclear site, (4) communication concerns related to communication of procedures and sharing of information across groups in Supply Chain, (5) incomplete performance management documentation, and (6) cross-functional risks between M&TM, Sourcing, and the plant. TVA management agreed with our findings and recommendations and provided actions taken or planned to address our recommendations.

Safety Performance and Improvement

Safety, one of TVA's core values, is described as sharing "a professional and personal commitment to protect the

safety of our employees, our contractors, our customers, and those in the communities that we serve.” TVA’s Safety and Performance Improvement (SPI) mission is to (1) provide the resources to ensure employees have the latest SPI information and (2) work to create an environment where every TVA employee can come to work without fear of injury and illness. Ultimately, SPI provides safety oversight for all of TVA.

Our assessment of the strengths and risks that could impact SPI’s organizational effectiveness identified strengths related to (1) organizational alignment, (2) customer focus, (3) management support of employees, (4) employee teamwork and collaboration, and (5) proactive identification of safety risk behaviors. However, we also identified risks that could impact the effectiveness of SPI in meeting its mission. These included (1) mixed messaging on the importance of safety, including the (a) use of a recordable injury rate in TVA’s Winning Performance Program, (b) placement of the Designated Agency Safety and Health Official within TVA’s organizational structure, and (c) frequent movement and reorganization of the safety function; and (2) nuclear safety consultants reporting structure. TVA management agreed with our findings and recommendations.

Follow-Up to Previously Completed Organizational Effectiveness Reviews

We performed four follow-up reviews to previous organizational effectiveness reviews of (1) Bull Run Fossil Plant (Bull Run), (2) Kingston Fossil Plant (Kingston), (3) Coal and Gas Services, and (4) Environmental Permitting and Compliance. The objectives of our follow-up evaluations were to assess actions taken by management to address the areas for improvement from our initial evaluations.

- **Bull Run Fossil Plant Organizational Effectiveness Follow-Up** - In March 2016, we issued a report on operational and cultural strengths and areas for improvement that could impact Bull Run’s organizational effectiveness. Our follow-up review determined the actions taken by Bull Run appear to address most areas for improvement, and for

the most part, individuals reported seeing positive changes. Some concerns remain related to specific areas in the work management process, including planning of work and communication of work order and condition report statuses. However, resolution of these concerns relies on funding decisions that are generally outside of Bull Run’s control.

- **Kingston Fossil Plant Organizational Effectiveness Follow-Up** - In March 2016, we issued a report on operational and cultural strengths and areas for improvement that could impact Kingston’s organizational effectiveness. Our follow-up review determined the actions taken by Kingston appear to address most areas for improvement identified during our initial organizational effectiveness evaluation. Some concerns remain related to the administration of discipline and unresolved conflict in one group. However, in general, individuals reported seeing positive changes at Kingston.
- **Coal and Gas Services Organizational Effectiveness Follow-Up** - In August 2016, we issued a report on strengths and risks that could impact Coal and Gas Services’ organizational effectiveness. Our follow-up review determined actions taken by Coal and Gas Services appear to address the risks identified during our initial organizational effectiveness evaluation. In addition, employees felt management’s actions taken to date have resulted in positive changes.
- **Environmental Permitting and Compliance Organizational Effectiveness Follow-Up** - In September 2016, we issued a report on strengths and risks that could impact Environmental Permitting and Compliance’s organizational effectiveness. Our follow-up review determined Environmental Permitting and Compliance has taken actions to address most of the risks identified in our original evaluation. However, concerns with two managers’ behaviors remain unresolved. In addition, employees expressed continued concerns related to the process and database used to request environmental reviews of projects and accountability.



SUMMARY OF

REPRESENTATIVE INVESTIGATIONS

This reporting period, we opened 95 cases and closed 92. Our investigative results include four convictions, eight criminal Informations filed, and more than \$4.4 million in costs avoided, fines/fees, and recoveries/restitution. Highlights follow.

NUCLEAR ENGINEER SENTENCED UNDER ATOMIC ENERGY ACT

As previously reported, Szuhsiung (Allen) Ho pled guilty in federal district court to one count of conspiracy to unlawfully engage or participate in the production or development of special nuclear material outside the U.S. The court determined the offense did not involve espionage, treason, or sabotage. On September 1, Mr. Ho was sentenced. He was fined \$20,000 and ordered to serve two years in prison followed by one year of supervised release.

Beginning in 1997 and continuing through April 2016, Mr. Ho conspired with others to engage in the development or production of special nuclear material in the People's Republic of China without specific authorization to do so from the U.S. Secretary of Energy, as required by law. His plea agreement stipulated he was aware of this requirement and had sought approval from the U.S. Department of Energy in the past, but at no time did he obtain specific authorization of the Secretary of Energy for the conduct described in the indictment. Mr. Ho assisted the China General Nuclear Power Company by procuring U.S.-based nuclear engineers—one of whom was Ching Ning Guey, former TVA Senior Manager, Probabilistic Risk Assessment.

Mr. Guey subsequently pled guilty to one count of conspiracy to unlawfully engage or participate in the production or development of special nuclear material

outside the U.S. Mr. Guey awaits sentencing. The investigations of Mr. Ho and Mr. Guey were conducted by the TVA OIG, the Federal Bureau of Investigation, U.S. Department of Energy National Nuclear Security Administration, and U.S. Immigration and Customs Enforcement Homeland Security Investigations, with additional assistance from other agencies.

UTILITY SUPERVISOR PLEADS GUILTY TO EMBEZZLEMENT EXCEEDING \$2.9 MILLION

On August 11, the U.S. Attorney's Office, Northern District of Alabama, filed an Information charging that John Pearson Willis, III, former Members Services Supervisor of Arab (Alabama) Electric Cooperative, did steal, embezzle, and intentionally misapply in excess of \$5,000 under the care, custody, and control of the Arab Electric Cooperative.

On September 25, Mr. Willis pled guilty to the Information. His plea stipulates that from 1999 until February 2017, he removed large amounts of cash from utility customers' payments and manipulated the computer-based accounting system, in which he maintained complete autonomy, to conceal the thefts. Mr. Willis was the primary fiduciary officer of Arab Electric Cooperative from 1988 until February 2017. In that role, he not only had sole access to the accounting system but to daily cash deposits as well. The federal government and Mr. Willis have agreed the amount he embezzled over the period of the scheme is \$2,988,385. He awaits sentencing.



TVA is the sole source of power for Arab Electric Cooperative. Arab Electric Cooperative is in long-term contract with TVA for the purchase of this power, which is subsequently distributed to cooperative members in the Arab service area. This case was investigated by TVA OIG, the U.S. Secret Service, and the Alabama Bureau of Investigation.

TVA TO RECEIVE MORE THAN \$3 MILLION IN FEDERAL CIVIL SETTLEMENT

U.S. Immigration and Customs Enforcement Homeland Security Investigations - Philadelphia conducted an extensive audit and investigation of Asplundh Tree Experts, Co. (Asplundh). Their work resulted in Asplundh pleading guilty to unlawfully employing illegal aliens, in connection with a scheme in which the highest levels of Asplundh management remained willfully blind while lower level managers hired and rehired employees they knew to be ineligible to work in the U.S.

Pursuant to a related civil settlement agreement entered into September 19, Asplundh will pay \$15,000,000 to satisfy civil claims arising out of its failure to comply with immigration law. TVA OIG Investigations was requested to determine TVA's total exposure in this matter so a pro-rated award could be assessed. TVA received a civil settlement of \$3,634,933 (less 3 percent to the U.S. Department of Justice).

FORMER NUCLEAR CONTRACTOR CHARGED WITH TEMPORARY LIVING ALLOWANCE FRAUD

On September 12, in the Eastern District of Tennessee, Craig A. Causer, former Bechtel Power Corporation Field Supervisor at WBN plant, was charged by one-count Information with making false, fictitious or fraudulent claims, for an approximate three-year period.

The Information charges Mr. Causer with submitting claims to receive temporary living allowance to which he was not entitled by attesting he maintained a permanent residence outside Tennessee, when he had moved his permanent residence to Tennessee prior to submitting the claims.

CHARGES FILED IN ENVIRONMENTAL INVESTIGATION

On September 11, Phillip Michael Huddleston and John Thomas Hatfield were each charged by one-count federal Information with violating the Resource Conservation and Recovery Act in the Eastern District of Tennessee. The charges revolve around Protech Metal Finishing, LLC (Protech), an electroplating, anodizing, and painting company, located in Vonore, Tennessee.

Mr. Huddleston was co-owner and controlled the business operations of Protech. He is charged with knowingly storing, and causing to be stored, corrosive and toxic hazardous wastes without Environmental Protection Agency or Tennessee Department of Environment and Conservation permits as required by law.

Mr. Hatfield served as Protech's production manager and is charged with concealing his knowledge of Protech labeling omissions that were intended to prevent discovery of Protech's Resource Conservation and Recovery Act violations.

Investigation began with an allegation of chemical dumping into the Tennessee River Watershed, possibly by Protech. Shortly after the investigation began, a search warrant was executed at Protech's plant and offices. Following the search warrant's execution, there has been no further indication continued dumping has occurred.

Agencies involved in this investigation additionally included the Federal Bureau of Investigation, Internal Revenue Service Criminal Investigation Division, U.S. Army Criminal Investigation Division, U.S. Department of Energy OIG, and the Defense Criminal Investigative Service.

TWO PLEAD GUILTY IN FRAUD INVESTIGATION

On August 29, Patrick Dale Brown, former TVA Business Services Representative, pled guilty to embezzlement in the Northern District of Alabama. Mr. Brown, a long-term TVA employee tasked with purchasing for his work group, admittedly used TVA resources available to him in this position for the personal benefit of himself and his family. He pled guilty to obtaining more than \$70,000 by fraudulent means between February 12, 2016, and January 20, 2017.

Mr. Brown acknowledged he utilized TVA purchasing cards, his own and a coworker's, on numerous occasions, to make personal purchases worth more than \$63,000. These purchases included power tools, home decorations, cleaning supplies, drones, cell phone bills of family members, brand-name sporting goods, family hunting apparel, an Apple watch, children's toys, and a trailer. Approximately \$11,500 of the embezzled amount was used to purchase prepaid Visa cards. Mr. Brown additionally admitted using his TVA travel card to obtain a rental car and hotel rooms for personal use.

Approximately \$38,000 of Mr. Brown's purchases consisted of heating, ventilation, and air-conditioning (HVAC) equipment. Mr. Brown admitted that he and his brother-in-law, Joel Patrick Moore, installed the HVAC units into private residences and businesses for profit. He indicated his clients were unaware the units were illegally obtained.

On September 25, Mr. Moore pled guilty to making false statements. During the course of our investigation, TVA OIG special agents questioned him about his knowledge of Mr. Brown's fraudulent scheme and his own participation. Mr. Moore denied knowing the HVAC units were fraudulently obtained and denied his involvement in the scheme. His guilty plea stipulates his statements to TVA OIG agents, which were material to the investigation, were false and were known by Mr. Moore to be false at the time he made them. Both men await sentencing.

Additionally, based on our findings, Mr. Brown's former TVA management participated with TVA OIG in a fraud risk assessment and completed a review of TVA purchase card training to include new cardholder agreements.

This investigation was led by the TVA OIG with assistance from TVA Police and Emergency Management.

ONE-COUNT INFORMATION FILED AGAINST LIGHTING COMPANY OWNER AND ASSOCIATE

On September 18, in the Middle District of Tennessee, a one-count Information was filed against Jamesha Hunter and Nicholas Tuggle. The Information charges they did knowingly and willfully embezzle, steal, purloin, and convert to their own use money or a thing of value in excess of \$1,000 from TVA, namely, EnergyRight Solutions for Business and Industry Program payments to which they knew they were not entitled and having a value of approximately \$53,506.

OVERBILLING FINDINGS RESULT IN \$680,000 COSTS AVOIDED BY TVA

Based on our investigation into potential contract-related misconduct, TVA Supply Chain management identified overbilling and subsequently issued a demand letter to the contractor company that billed the agency. As a result, the company offered to resolve the issue by not invoicing TVA for \$380,000 in labor costs and agreeing not to challenge TVA's rejection of the company's request for TVA to pay \$300,000 for other questioned charges, creating a \$680,000 cost avoided by TVA.

Supply Chain additionally advised that the contractor company agreed to improve its invoices and related processes to avoid similar issues in the future. TVA OIG Audits provided investigative assistance in this case.



ILLEGAL LOGGING PROSECUTED

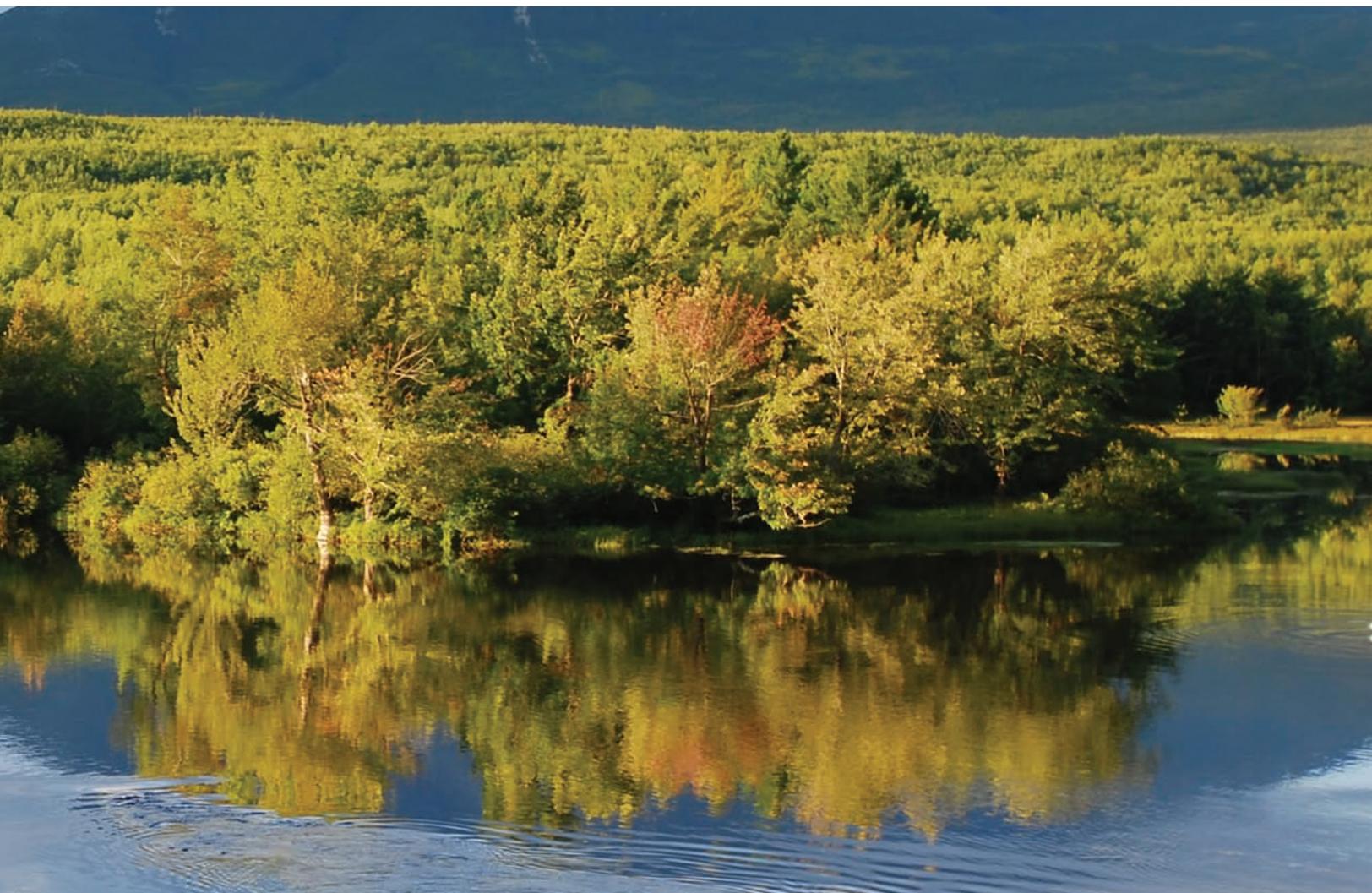
On May 25, Clifford Paul Greer, a member of the general public, pled guilty to one state count of theft of property based on his illegal logging of black walnut trees, which have a high resale value, on public land. The allegation was received by TVA OIG, which identified the subject and conducted the investigation. Since the logging occurred on property deeded to the Tennessee Wildlife Resources Agency (TWRA) by TVA, the case was referred to TWRA, which pursued prosecution. Mr. Greer was sentenced to pay \$302 restitution to TWRA and \$378 in court costs. He is on supervised probation until all payments are complete.

FORMER EMPLOYEE ACCEPTS PRETRIAL DIVERSION

A former TVA employee entered into a pretrial diversion agreement on April 3 based on theft of government property. In conjunction with the diversion, the

individual's "Statement of Admission" stipulated he stole TVA property—while on-duty and receiving overtime pay—and intentionally exited a TVA plant through an unstaffed exit to avoid detection. He proceeded to sell the property, which included aluminum light poles and iron piping, for \$1,023 to a general-public scrap dealer. To facilitate the sale, he falsified a TVA property removal form, characterizing the stolen material as "scrap." In addition to these activities, he acknowledged providing false statements to the OIG during multiple interviews.

The diversion period is to last 12 months, and the former employee is to pay TVA \$1,023 restitution and perform 80 hours of community service. The individual is restricted from future TVA employment.





SPECIAL PROJECT

Assessment of TVA's Evaluation of the Chilled Work Environment at Watts Bar Nuclear Plant

The OIG received an EmPowerline complaint on January 4, 2016, alleging a chilled/hostile working environment in Operations at WBN plant. The OIG investigated the allegation and communicated information related to the chilled work environment to the NRC. On March 23, 2016, the NRC issued TVA a Chilled Work Environment Letter (CWEL) and required TVA to conduct a root cause analysis and take other actions.

Due to the technical nature of the issues, the OIG engaged a consulting firm with expertise in the nuclear power industry, NTD, to (1) assess whether TVA's analyses of its April 22, 2016, response to the NRC CWEL were thorough and adequate and (2) review the history of nuclear safety culture issues at TVA for the past several years. In summary, NTD found:

- TVA's two analyses were incomplete and inadequate, as was TVA's April 22, 2016, response to the NRC CWEL.
- TVA's planned corrective actions to address the chilled work environment are unlikely to have long-term effectiveness or sustainability and the probability of success will remain low until an independent and critical evaluation is conducted and the associated changes are embraced throughout the organization.
- The precursors of the chilled work environment went unrecognized by management, internal and external oversight groups, and TVA barrier programs and processes such as the Corrective Action Program, the Employee Concerns Program, Quality Assurance, Nuclear Safety Culture Monitoring Panel, and the Nuclear Safety Review Board which are the programmatic barriers put in place to detect such precursors.
- Documentation, data, and interview results indicate TVA management has inappropriately influenced the outcome of causal analyses and independent

investigations pertaining to nuclear safety culture/safety conscious work environment issues at WBN.

In response to NTD's report, TVA management generally agreed with the recommendations and noted that a number of corrective actions were taken or are underway since the first draft of the report was issued. Additionally, TVA management reiterated that they "previously stated to the OIG and, more importantly, to the NRC, its belief that there is a chilled work environment at WBN 1. Moreover, TVA has expressly acknowledged management's role in creating the condition and its responsibility for correcting it."



Watts Bar Nuclear Plant



LEGISLATION AND REGULATIONS

Section 4(a) of the Inspector General Act of 1978, as amended, provides that the Inspector General shall review existing and proposed legislation and regulations relating to programs and operations of such establishment and make recommendations in the semiannual reports...concerning the impact of such legislation or regulations on the economy and efficiency in the administration of such programs and operations administered or financed by such establishment or the prevention and detection of fraud and abuse in such programs and operations.

In this section of our Semiannual Report, it is our intent to address only current and pending legislation which relates to the economy or efficiency of TVA operations when we have recommendations or comments to make to Congress regarding the legislation. At times, we may direct recommendations to general positions and issues, particularly when there are multiple bills dealing with the issue. At other times, we anticipate making recommendations relating to particular statutes and bills and their particular wording.

During this reporting period, we are not making any recommendations to Congress regarding current or pending legislation.



APPENDICES



INDEX OF REPORTING REQUIREMENTS UNDER THE INSPECTOR GENERAL ACT

REPORTING	REQUIREMENT	PAGE OR APPENDIX
Section 4(a)(2)	Review of legislation and regulations	57
Section 5(a)(1)	Significant problems, abuses, and deficiencies	35-55
Section 5(a)(2)	Recommendations with respect to significant problems, abuses, and deficiencies	35-55
Section 5(a)(3)	Recommendations described in previous semiannual reports on which corrective action has not been completed	Appendix 4
Section 5(a)(4)	Matters referred to prosecutive authorities and the prosecutions and convictions that have resulted	Appendix 5
Section 5(a)(5) and 6(b)(2)	Summary of instances where information was refused	None
Section 5(a)(6)	Listing of audit and evaluation reports	Appendix 2
Section 5(a)(7)	Summary of particularly significant reports	35-55
Section 5(a)(8)	Status of management decisions for audit and evaluation reports containing questioned costs	Appendix 3
Section 5(a)(9)	Status of management decisions for audit and evaluation reports containing recommendations that funds be put to better use	Appendix 3
Section 5(a)(10)	Summary of audit and evaluation reports issued prior to the beginning of the reporting period for which (a) no management decision had been made; (b) no management comment was received within 60 days of issuing the draft report; and (c) there were any unimplemented recommendations, including the aggregate potential cost savings of those recommendations, at the end of the reporting period ¹	None
Section 5(a)(11)	Significant revised management decisions	None
Section 5(a)(12)	Significant management decisions with which the inspector general disagreed	None
Section 5(a)(13)	Information under Federal Financial Management Improvement Act of 1996	Not Applicable
Section 5(a)(14)	Results of any peer review conducted by another Office of the Inspector General during the reporting period and if none, a statement of the date of the last peer review	Appendix 9
Section 5(a)(15)	List of outstanding recommendations from any peer review conducted by another Office of the Inspector General, including a statement describing the status of the implementation and why implementation is not complete	None

¹ We had no open audit or evaluation reports that met all of these requirements. However, Appendix 4 includes a list of all audits issued in previous semiannual periods on which corrective action has not been completed.

Appendix 1

INDEX OF REPORTING REQUIREMENTS UNDER THE INSPECTOR GENERAL ACT (CONTINUED)

REPORTING	REQUIREMENT	PAGE OR APPENDIX
Section 5(a)(16)	List of any peer reviews conducted of another Office of the Inspector General during the reporting period, including a list of any outstanding recommendations made from any previous peer review that remain outstanding or have not been fully implemented	None
Section 5(a)(17)	Statistical table showing the total number during the reporting period of (a) investigative reports issued, (b) persons referred to the Department of Justice for criminal prosecution, (c) persons referred to state and local prosecuting authorities for criminal prosecution, and (d) indictments and criminal informations resulting from any prior referral to prosecuting authorities	Appendix 5
Section 5(a)(18)	Metrics used to develop the data in the statistical table pursuant to Section 5(a)(17)	Appendix 5
Section 5(a)(19)	Investigations in which allegations of misconduct involving a senior government employee ² were substantiated	None
Section 5(a)(20)	Instances of whistleblower retaliation, information about the official found to have engaged in retaliation, and consequences imposed, if any, to hold the official accountable	None
Section 5(a)(21)	Attempts to interfere with the independence of the Office of the Inspector General	None
Section 5(a)(22)(A)	Audit or evaluation that was closed and not disclosed to the public	None
Section 5(a)(22)(B)	Investigation involving a senior government employee that was closed and not disclosed to the public	Appendix 6



² Pursuant to Section 5(b)(7)(A) of the IG Act, as amended, senior government employee is defined as an officer or employee whose rate of basic pay is equal to or greater than 120 percent of the minimum rate of basic pay payable for GS-15 of the General Schedule. This equates to a rate of basic pay for calendar year 2017 equal to or greater than \$124,406.

OIG AUDIT REPORTS • Issued During the Six-Month Period Ended September 30, 2017

Report Number and Date	Title	Questioned Costs	Unsupported Costs	Funds Put To Better Use
CONTRACT AUDITS				
2016-15441 06/12/2017	ScottMadden, Inc.	\$2,077,043	\$0	\$0
2015-15343-02 08/28/2017	Williams Plant Services, LLC	2,595,222	50,473	0
2017-15492 09/11/2017	Proposal for Coal Combustion Residual Program Management	0	0	11,111,000
2017-15494 09/29/2017	Proposal for Coal Combustion Residual Program Management	0	0	6,569,299
FINANCIAL AND OPERATIONAL AUDITS				
2016-15408 05/23/2017	Audit of Non-Competed Contracts	\$0	\$0	\$0
2017-15471 09/26/2017	Wind Power Contracts	0	0	0
INFORMATION TECHNOLOGY AUDITS				
2016-15369 07/19/2017	Cyber Security Patch Management of High Risk Desktops and Laptops	\$0	\$0	\$0
2017-15450 08/16/2017	TVA Internet-Accessible Web Sites	0	0	0
2017-15452 08/28/2017	Gas Secure Room Cyber Security	0	0	0
2017-15455 09/19/2017	Surplus and Disposal of Information Technology Equipment	0	0	0
TOTAL AUDITS (10)		\$4,672,265	\$50,473	\$17,680,299



Appendix 2

OIG Evaluation REPORTS • Issued During the Six-Month Period Ended September 30, 2017 (CONTINUED)

Report Number and Date	Title	Questioned Costs	Unsupported Costs	Funds Put To Better Use
EVALUATIONS				
2017-15463 06/13/2017	Fuel Cost Adjustment Calculation	\$0	\$0	\$0
2016-15391 06/29/2017	Gas Plant Preventive Maintenance	0	0	0
2016-15431 07/11/2017	Transmission and Power Supply Preventive Maintenance	0	0	0
2017-15466 08/31/2017	Actions to Address Issues Identified in Assessments of Nuclear Quality Assurance	0	0	0
2016-15435 09/07/2017	Transmission and Power Supply Direct Charge Materials	0	0	0
2017-15469 09/14/2017	TVA Coal Plant Surplus Materials	0	0	0
ORGANIZATIONAL EFFECTIVENESS				
2017-15482 05/12/2017	Kingston Fossil Plant Organizational Effectiveness Follow-Up	\$0	\$0	\$0
2016-15445-01 05/18/2017	Organizational Effectiveness - Human Resources: Business Office	0	0	0
2016-15445-02 05/18/2017	Organizational Effectiveness - Human Resources: Learning, Growth & Management	0	0	0
2017-15486 06/21/2017	Coal and Gas Services Organizational Effectiveness Follow-Up	0	0	0
2016-15445-04 06/29/2017	Organizational Effectiveness - Human Resources: Compensation & Benefits	0	0	0
2016-15386 07/27/2017	Organizational Effectiveness - Supply Chain: Materials Management	0	0	0
2017-15483 08/11/2017	Bull Run Fossil Plant Organizational Effectiveness Follow-Up	0	0	0
2016-15445-03 08/23/2017	Organizational Effectiveness - Human Resources: Talent Acquisition & Diversity	0	0	0
2016-15444 09/07/2017	Organizational Effectiveness - Safety Performance and Improvement	0	0	0
2016-15445-05 09/26/2017	Organizational Effectiveness - Human Resources: Human Resources	0	0	0
2017-15497 09/28/2017	Environmental Permitting and Compliance Organizational Effectiveness Follow-Up	0	0	0
TOTAL EVALUATIONS (17)		\$0	\$0	\$0

Note: A summary of or link to the full report may be found on the OIG's Web site at www.oig.tva.gov.

TABLE I • TOTAL QUESTIONED AND UNSUPPORTED COSTS • AUDITS

Audit Reports	Number of Reports	Questioned Costs	Unsupported Costs
A. For which no management decision has been made by the commencement of the period	1	\$2,484,620	\$0
B. Which were issued during the reporting period	2	\$4,672,265	\$50,473
Subtotal (A+B)	3	\$7,156,885	\$50,473
C. For which a management decision was made during the reporting period	3	\$7,156,885	\$50,473
1. Dollar value of disallowed costs	2	\$5,079,842	\$50,743
2. Dollar value of costs not disallowed	1	\$2,077,043	\$0
D. For which no management decision has been made by the end of the reporting period	0	\$0	\$0

TABLE I • TOTAL QUESTIONED AND UNSUPPORTED COSTS • EVALUATIONS

Evaluation Reports	Number of Reports	Questioned Costs	Unsupported Costs
A. For which no management decision has been made by the commencement of the period	0	\$0	\$0
B. Which were issued during the reporting period	0	\$0	\$0
Subtotal (A+B)	0	\$0	\$0
C. For which a management decision was made during the reporting period	0	\$0	\$0
1. Dollar value of disallowed costs	0	\$0	\$0
2. Dollar value of costs not disallowed	0	\$0	\$0
D. For which no management decision has been made by the end of the reporting period	0	\$0	\$0

Appendix 3

TABLE II • FUNDS TO BE PUT TO BETTER USE • AUDITS (CONTINUED)

Audit Reports	Number of Reports	Funds To Be Put To Better Use
A. For which no management decision has been made by the commencement of the period	1	\$8,934,000
B. Which were issued during the reporting period	2	\$17,680,299
Subtotal (A+B)	3	\$26,614,299
C. For which a management decision was made during the reporting period	1	\$8,934,000
1. Dollar value of recommendations agreed to by management	1	\$8,934,000
2. Dollar value of recommendations not agreed to by management	0	\$0
D. For which no management decision has been made by the end of the reporting period	2	\$17,680,299

TABLE II • FUNDS TO BE PUT TO BETTER USE • EVALUATIONS

Evaluation Reports	Number of Reports	Funds To Be Put To Better Use
A. For which no management decision has been made by the commencement of the period	0	\$0
B. Which were issued during the reporting period	0	\$0
Subtotal (A+B)	0	\$0
C. For which a management decision was made during the reporting period	0	\$0
1. Dollar value of recommendations agreed to by management	0	\$0
2. Dollar value of recommendations not agreed to by management	0	\$0
D. For which no management decision has been made by the end of the reporting period	0	\$0

RECOMMENDATIONS INCLUDED IN A PREVIOUS SEMIANNUAL REPORT AND AWAITING IMPLEMENTATION

At the end of the semiannual period, final corrective action was not complete on 41 recommendations associated with 12 audit and 6 evaluation reports issued in a prior period. Presented below for each audit and evaluation are the report number, date, and title, along with a brief description of action management agreed to take to resolve the open recommendation, including the date management expects to complete final action.

Audit Report Number and Date	Report Title and Actions Agreed to by Management to Resolve Recommendations on Which Final Action was Not Complete at End of Period
2013-14959 08/07/2014	<p>Tennessee Valley Authority (TVA) Environmental Risk Management</p> <p>TVA agreed to update TVA's Environmental Management System to better describe environmental review processes and responsibilities. TVA expects to complete final action by September 28, 2018.</p>
2014-15031 06/23/2015	<p>Adequacy of the Invoice Approval Process</p> <p>TVA agreed to update the Standard Programs and Processes (SPP) and field invoice approver training modules to include more specific language/instruction and identify opportunities to standardize invoice formats and look at technology options to improve the invoice approval process. TVA expects to complete final action by February 28, 2018.</p>
2014-15024 09/09/2015	<p>TVA Employee Overtime</p> <p>TVA agreed to develop a methodology for overtime review on a quarterly basis with trigger points for assessing if safety or productivity is being challenged. TVA expects to complete final action by December 29, 2017.</p>
2014-15062 09/10/2015	<p>Maximo 7.5 Upgrade</p> <p>TVA agreed to engage the business units to ensure ownership of stranded documents and establish a process to place documents in appropriate folders within the published Enterprise Content Management system during content migration. TVA expects to complete final action by June 29, 2018.</p>
2014-15224 09/30/2015	<p>Obtaining Things of Value</p> <p>TVA agreed to provide detailed and robust annual training to all employees; collaborate with affected TVA business units to incorporate the protocol into all related SPPs and processes associated with requests for all TVA benefits identified as "things of value"; disseminate the protocol annually to TVA business units with employees who could be affected by the requirements; and post the "Obtaining Things of Value" protocol on the appropriate TVA Web sites. TVA expects to complete final action by November 1, 2017.</p>
2014-15063-06 02/25/2016	<p>Information Technology Organizational Effectiveness - Enterprise Solutions Delivery</p> <p>TVA agreed to continue Enterprise Data Warehouse as part of IT's 1,000 Days to Success efforts that include completing architectural framework, processes, and standards; updating roadmaps and implementing prioritized initiatives; implementing enterprise metadata framework; and ensuring data quality through continued incorporation of data quality tools. TVA expects to complete final action by September 20, 2018.</p>
2016-15393 09/30/2016	<p>Wireless Local Area Network Deployment</p> <p>TVA agreed to review current design and identify a method to extend the network isolation of non-TVA devices to the Internet. TVA expects to complete final action by November 3, 2017.</p>
2016-15362 12/02/2016	<p>Proposal for Engineering and Management Services</p> <p>TVA management agreed to directly purchase as many materials as practicable, cap affiliate subcontractor costs at the rates allowed by the contract, and revise the contract terms to remove conflicting compensation terms and incorporate a wage rate schedule into the contract. TVA expects to complete final action by December 2, 2017.</p>
2016-15381 12/20/2016	<p>TVA Vendor Management System Data Security and Integrity Controls</p> <p>TVA agreed to implement an inventory system for information technology assets, update information security policies, create standard configuration guides for Windows systems, and monitor for deviations from baseline configuration settings. TVA expects to complete final action by December 1, 2017.</p>

Appendix 4

RECOMMENDATIONS INCLUDED IN A PREVIOUS SEMIANNUAL REPORT AND AWAITING IMPLEMENTATION (CONTINUED)

Audit Report Number and Date	Report Title and Actions Agreed to by Management to Resolve Recommendations on Which Final Action was Not Complete at End of Period
2016-15401 01/06/2017	Proposal for Non-Nuclear Modification and Supplemental Maintenance TVA agreed to negotiate a fixed payroll tax rate for nonmanual positions and a fringe benefit rate that reflects the actual data provided by the contractor. TVA expects to complete final action by January 6, 2018.
2016-15407 01/11/2017	2016 Federal Information Security Management Act TVA agreed to perform program assessments using a risk-based strategy, use results to review elevated risk associated with the Federal Information Security Management Act program, and remediate accordingly. TVA expects to complete final action by December 1, 2017.
2016-15372 03/29/2017	Proposal for Coal Combustion Product Handling and Maintenance TVA agreed to negotiate reductions to the fixed unit rates, craft and noncraft labor rates, and equipment rates proposed; negotiate the elimination of proposed markup rates on subcontract, material, and third party equipment rental costs; and seek recovery of all overbilled costs. TVA expects to complete final action by March 29, 2018.



Browns Ferry Nuclear Plant

RECOMMENDATIONS INCLUDED IN A PREVIOUS SEMIANNUAL REPORT AND AWAITING IMPLEMENTATION (CONTINUED)

Evaluation Report Number and Date	Report Title and Actions Agreed to by Management to Resolve Recommendations on Which Final Action was Not Complete at End of Period
	Follow-Up Review of Coal Fire Protection
2014-15216 09/29/2014	TVA agreed to revise FPG-SPP-18.123, Fire Protection Assessment Procedure, to include a new rating calculation and process for sharing assessment data with Power Operations senior leadership. TVA expects to complete final action by January 31, 2018.
	Nuclear Outage Performance
2015-15273 07/24/2015	TVA agreed to drive the TVA Nuclear Fleet to top quartile performance in duration, dose, and dollars using "FY2016-FY2020 Nuclear Operations Support Business Plan-Outage Execution," which contains the initiatives the Nuclear Executive Team has developed to achieve industry top quartile outage performance in the TVA Nuclear Fleet. TVA will monitor/analyze budget performance and seek other cost saving initiatives and continue to drive outage performance and achieve top quartile outage rating in all categories. TVA expects to complete final action by January 12, 2018.
	Hydro Generation Fire Protection
2015-15294 07/24/2015	TVA agreed to develop an SPP to provide guidance for reporting and maintain a historical record of fire protection system impairments in Hydro Generation, as well as Coal and Gas; develop an SPP for providing guidance and implementing code-required activities; perform annual facility walk downs to verify compliance with housekeeping; supersede an SPP with site specific emergency response plans; develop property risk improvement prioritization methodology to qualify and prioritize property loss control recommendations across the organization; and employ a modifier to capture the criticality of the affected plant or unit to TVA's load strategy. TVA expects to complete final action by December 31, 2017.
	Environmental Permitting and Compliance Organizational Effectiveness
2016-15366 09/28/2016	TVA agreed to create a metric for the Environmental Services Coordination System planning tool and establish employee engagement expectation initiatives. TVA expects to complete final action by September 28, 2018.
	Ammonia Staffing and Training at Coal Plants
2015-15345 02/09/2017	TVA agreed to update the training matrix for each site; update required training in the Learning Management System; incorporate table-top or system walk-through drills into plant training plans; and initiate a surplus-to-fill exercise to fill vacancies with surplus employees which will increase staffing levels. TVA expects to complete final action by February 9, 2018.
	Proposed Sale of Bellefonte Nuclear Plant Site
2016-15376-01 02/28/2017	TVA agreed to replace TVA-SPP-16.07, Land Disposal, with TVA-SPP-37.002, Disposal and License of TVA Real Property, and review the land disposal process and flowchart. TVA expects to complete final action by October 16, 2017.

Appendix 5

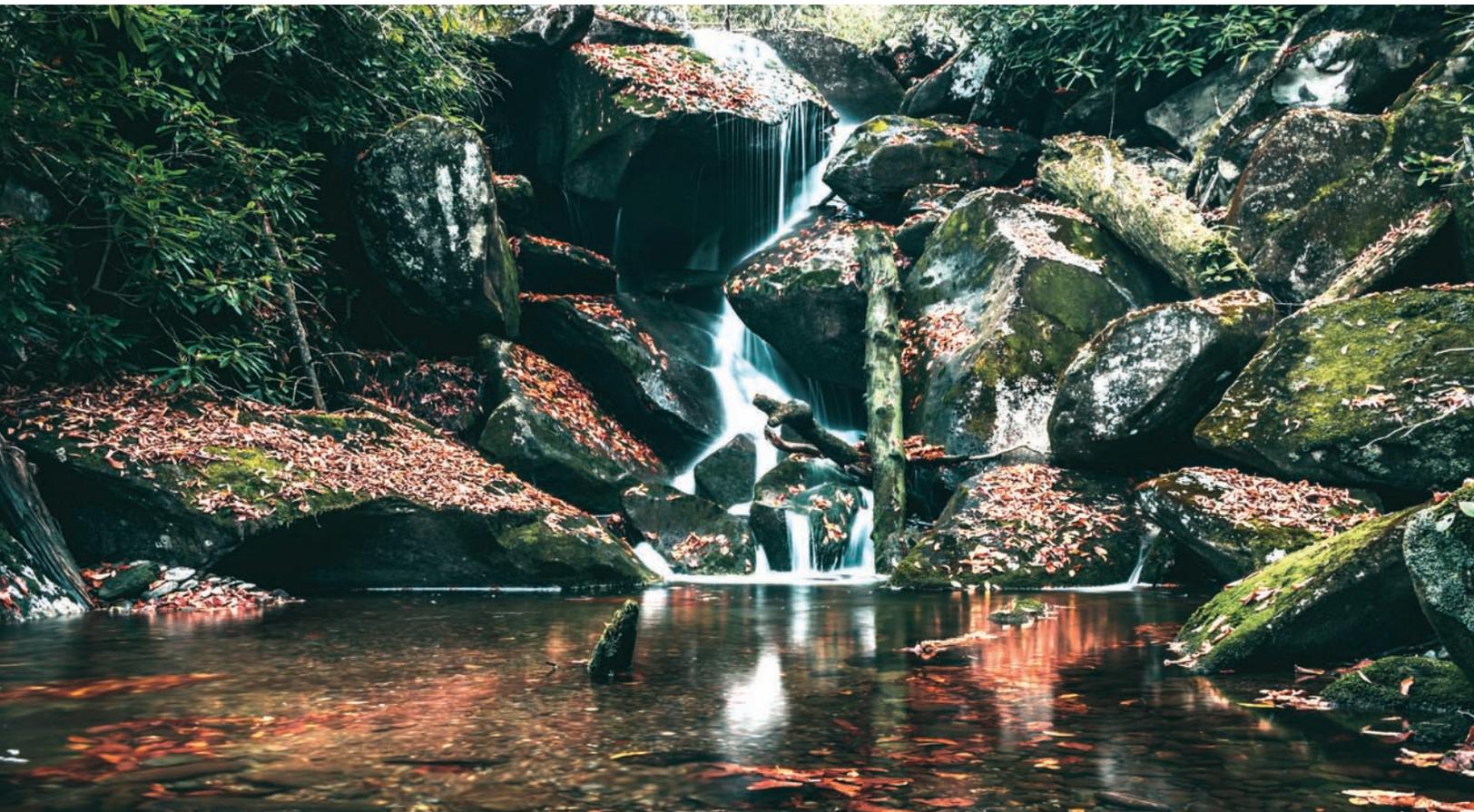
INVESTIGATIVE REFERRALS AND PROSECUTIVE RESULTS

Referrals	
Reports Issued to Tennessee Valley Authority (TVA) Management	8
Subjects Referred to U.S. Attorneys	6
Subjects Referred to State/Local Authorities	1
Results	
Subjects Indicted/Informations Filed	8
Subjects Convicted	4
Pretrial Diversion	1
Federal Referrals Declined	8
State/Local Referral Declined	1

Metrics: Reports Issued to TVA Management are comprised of formal written reports and, when appropriate, e-mailed summaries conveying the findings of a completed investigation.

The number of indictments does not include sealed indictments or superseding indictments of the same individual already reported in this or a prior semiannual report.

These numbers include task force activities and joint investigations with other agencies.



PREVIOUSLY UNDISCLOSED INVESTIGATIONS INVOLVING SENIOR AGENCY OFFICIALS

Case No.	Summary and Disposition
01D16705	The manager of a Tennessee Valley Authority (TVA) installation allegedly provided career opportunities, unavailable to others, to a contractor employee based on friendship and personal favors. Unsubstantiated.
01H16994	A supervisor allegedly created a hostile work environment for a subordinate employee. Unsubstantiated.
13E16681	A senior manager allegedly allowed two contractor employees to engage in fraudulent billing practices. Unsubstantiated.
13E16909	A senior manager allegedly improperly used a TVA contractor company to perform work at his home. The allegation was unsubstantiated; however, an appearance issue existed. The concern was relayed via TVA Office of the Inspector General report to management, and the issue was resolved.
14D16246	Senior managers allegedly were involved in bid-rigging, kickbacks, and other unethical behavior with a company contracted to their TVA facility. Unsubstantiated.
15D16321	A manager allegedly engaged in financial crimes. Unsubstantiated and federal prosecution declined.
19A17029	A senior manager allegedly bypassed federal law to expedite completion of a TVA project. Unsubstantiated.

Metrics: This appendix describes any closed investigations, not disclosed to the public, involving subjects specified by the Inspector General Empowerment Act (salaried at 120 percent of GS-15 Level One). TVA does not operate on the GS scale, so all persons in this salary range, though included here, are not necessarily executive-level employees. Corollary to this, not all persons with substantial managerial duties are included here, based on their salaries.

Appendix 7

STATISTICAL HIGHLIGHTS

	SEPT 30, 2017	MAR 31, 2017	SEPT 30, 2016	MAR 31, 2016	SEPT 30, 2015
AUDITS					
AUDIT STATISTICS					
Carried Forward	15	22	22	26	28
Started	14	7	15	15	21
Canceled	(1)	(0)	(1)	(4)	(1)
Completed	(10)	(14)	(14)	(15)	(22)
In Progress at End of Reporting Period	18	15	22	22	26
AUDIT RESULTS (Thousands)					
Questioned Costs	\$4,672	\$10,531	\$3,271	\$9,039	\$7,599
Disallowed by TVA	\$5,080	\$8,046	\$3,271	\$2,411	\$2,156
Recovered by TVA	\$428	\$9,214	\$1,725	\$268	\$2,981
Funds to Be Put to Better Use	\$17,680	\$28,248	\$8,901	\$15,447	\$2,106
Agreed to by TVA	\$8,934	\$21,341	\$13,664	\$10,491	\$1,067
Realized by TVA	\$4,479	\$1,586	\$0	\$792	\$142
OTHER AUDIT-RELATED PROJECTS					
Completed	7	2	9	3	7
Cost Savings Identified/Realized (Thousands)	\$0	\$0	\$0	\$0	\$0
EVALUATIONS					
Completed	17	4	13	5	6
Cost Savings Identified/Realized (Thousands)	\$0	\$0	\$0	\$0	\$0
INVESTIGATIONS¹					
INVESTIGATION CASELOAD					
Opened	95	97	108	100	126
Closed	92	84	104	103	142
In Progress at End of Reporting Period	147	146	136	131	134
INVESTIGATIVE RESULTS (Thousands)					
Recoveries	\$3,730.7	\$225.3	\$2,805.8 ²	\$615.2	\$1,064.0
Projected Savings	\$680	\$404.8	\$4.5	\$0	\$1,897.1
Fines/Penalties/Fees	\$20.5	\$0.2	\$0	\$0.1	\$64.1
Other Monetary Loss	\$0	\$1,291.4	\$0	\$1,418.8	\$0
MANAGEMENT ACTIONS					
Disciplinary Actions Taken (Number of Subjects)	6	8	17	11	14
Counseling/Management Techniques Employed (Number of Cases)	9	10	8	18	9
Debarment	0	0	0	0	3
PROSECUTIVE ACTIVITIES (Number of Subjects)					
Referred to U.S. Attorneys	6	7	10	14	18
Referred to State/Local Authorities	1	0	1	0	2
Indicted/Information Filed	8	1	5	1	1
Convicted	4	1	3	1	1
Pretrial Diversion	1	0	0	0	0

¹ These numbers include task force activities and joint investigations with other agencies.

² Amount includes \$1,547,434, also included in AUDIT RESULTS—Recovered by TVA in the September 30, 2016, semiannual period, which was recovered in a qui tam settlement agreement negotiated by the U.S. Attorney's office with Bartlett Holdings, Inc.

GOVERNMENT CONTRACTOR AUDIT FINDINGS

The National Defense Authorization Act for Fiscal Year 2008, P.L. 110-181, requires each Inspector General appointed under the Inspector General Act of 1978 to submit an appendix on final, completed contract audit reports issued to the contracting activity that contain significant audit findings—unsupported, questioned, or disallowed costs in an amount in excess of \$10 million, or other significant findings—as part of the Semiannual Report to Congress. During this reporting period, the Office of the Inspector General issued no contract review reports under this requirement.

PEER REVIEWS OF THE TVA OIG

Audits Peer Review

Inspector General audit organizations are required to undergo an external peer review of their system of quality control at least once every three years, based on requirements in the *Government Auditing Standards*. Federal audit organizations can receive a rating of pass, pass with deficiencies, or fail. The Tennessee Valley Authority (TVA) Office of the Inspector General (OIG) underwent its most recent peer review of its audit organization for the period ended September 30, 2016. This review was performed by the Federal Deposit Insurance Corporation OIG. The Federal Deposit Insurance Corporation OIG issued its report, dated May 16, 2017, in which it concluded the system of quality control for the audit organization of TVA OIG in effect for the year ended September 30, 2016, has been suitably designed and complied with to provide the TVA OIG with reasonable assurance of performing and reporting in conformity with applicable professional auditing standards in all material respects. Accordingly, the TVA OIG received a rating of pass. The peer review report is posted on our Web site at http://oig.tva.gov/peer_reports.html.

Investigations Peer Review

Investigative Operations undergoes an external peer review, Quality Assessment Review, at least once every three years. The U.S. Railroad Retirement Board OIG completed a Quality Assessment Review of TVA OIG Investigative Operations on May 23, 2016. The U.S. Railroad Retirement Board found the “. . . system of internal safeguards and management procedures for the investigative function of the TVA OIG in affect [sic] through April 1, 2016 is compliant with the quality standards established by the CIGIE and the Attorney General Guidelines. . . .” This confirmation is posted on our Web site at http://oig.tva.gov/peer_reports.html.



GLOSSARY

DISALLOWED COST

A questioned cost that management, in a management decision, has sustained or agreed should not be charged to the agency.

FINAL ACTION

The completion of all management actions, as described in a management decision, with respect to audit findings and recommendations. When management concludes no action is necessary, final action occurs when a management decision is made.

FUNDS PUT TO BETTER USE

Funds which the OIG has disclosed in an audit report that could be used more efficiently by reducing outlays, deobligating program or operational funds, avoiding unnecessary expenditures, or taking other efficiency measures.

IMPROPER PAYMENT

Any payment that should not have been made or was made in an incorrect amount under statutory, contractual, administrative, or other legally applicable requirements, as defined in the Improper Payment Information Act.

INFORMATION

A formal accusation of a crime made by a prosecuting officer as distinguished from an indictment presented by a grand jury.

MANAGEMENT DECISION

Evaluation by management of the audit findings and recommendations and the issuance of a final decision by management concerning its response to such findings and recommendations.

QUESTIONED COST

A cost the Inspector General questions because (1) of an alleged violation of a law, regulation, contract, cooperative agreement, or other document governing the expenditure of funds; (2) such cost is not supported by adequate documentation; or (3) the expenditure of funds for the intended purposes was unnecessary or unreasonable.

UNSUPPORTED COSTS

A cost that is questioned because of the lack of adequate documentation at the time of the audit.

ABBREVIATIONS & ACRONYMS

The following are acronyms and abbreviations widely used in this report.

Asplundh.....	Asplundh Tree Experts, Co.
Blackberry.....	The Cove at Blackberry Ridge, LLC
Board	TVA Board of Directors
Bull Run.....	Bull Run Fossil Plant
C&B.....	Compensation and Benefits
CGNPC.....	China General Nuclear Power Company
CHRO.....	Chief Human Resources Office
CIGIE.....	Council of the Inspectors General on Integrity and Efficiency
CWEL.....	Chilled Work Environment Letter
EOC.....	Equal Opportunity Compliance
EPU.....	Extended Power Uprate
ERM.....	Enterprise Risk Management
FCA.....	Fuel Cost Adjustment
GAO.....	Government Accountability Office
Holtec.....	Holtec International, Inc.
HR.....	Human Resources
HRBO.....	Human Resources Business Office Ombudsman
HVAC.....	Heating, Ventilation, and Air Conditioning
IG.....	Inspector General
IT.....	Information Technology
Kingston.....	Kingston Fossil Plant
LG&M.....	Learning, Growth and Management
M&G.....	Maintain and Gain Lakeshore Management Program
M&TM.....	Materials and Transportation Management
MSDC.....	Muscle Shoals Distribution Center
MW.....	Megawatts
NERC.....	North America Electric Reliability Corporation
NPV.....	Net Present Value
NRC.....	Nuclear Regulatory Commission
NTD.....	NTD Consulting Group, LLC
OIG.....	Office of the Inspector General
PM.....	Preventive Maintenance
Protech.....	Protech Metal Finishing, LLC
QA.....	Quality Assurance
RCA.....	Resource Cost Allocation
SPI.....	Safety and Performance Improvement
SPP.....	Standard Programs and Processes
SWCI.....	Stone & Webster Construction, Inc.
TAD.....	Talent Acquisition and Diversity
TPS.....	Transmission and Power Supply
TVA.....	Tennessee Valley Authority
TWRA.....	Tennessee Wildlife Resources Agency
U.S.....	United States
WBN.....	Watts Bar Nuclear



TENNESSEE VALLEY AUTHORITY
Office of the Inspector General
400 West Summit Hill Drive
Knoxville, Tennessee 37902

The OIG is an independent organization charged with conducting audits, evaluations, and investigations relating to TVA programs and operations, while keeping the TVA Board and Congress fully and currently informed about problems and deficiencies relating to the administration of such programs and operations.

The OIG focuses on (1) making TVA's programs and operations more effective and efficient; (2) preventing, identifying, and eliminating waste, fraud, and abuse and violations of laws, rules, or regulations; and (3) promoting integrity in financial reporting.

If you would like to report to the OIG any concerns about fraud, waste, or abuse involving TVA programs or violations of TVA's Code of Conduct, you should contact the OIG EmPowerline system. The EmPowerline can be reached 24 hours a day, seven days a week, either by a toll-free phone call (1-855-882-8585) or over the Web (www.oigempowerline.com). A third-party contractor will take your call or online concern and immediately forward it to OIG personnel. You may report your concerns anonymously or you may request confidentiality.

Report Concerns to the OIG EmPowerline

**WATCH, LEARN AND BE
EMPOWERED**

If you see or suspect wrongdoing and report it, TVA could recover money and you could receive a cash reward from the TVA Office of the Inspector General. Learn how by watching this revealing video. To watch this video now, simply scan the QR symbol at the lower right with your smart phone to be taken directly to the video. QR Code scan app required.

You can report wrongdoing to the Office of the Inspector General by visiting our EmPowerline® website at www.oigempowerline.com or by calling toll-free at 855-882-8585. See the EmPowerline® website for details on the cash reward process and other important information.

We are a high performing work team that achieves OIG strategic objectives through operational excellence and modeling our values and behaviors every day.



*Office of the Inspector General
Tennessee Valley Authority
Semiannual Report
April 1, 2017 - September 30, 2017*