

SEPTEMBER 2009



REVIEW OF

# Gulf Power Company's Quality Assurance Process for Distribution Construction

By Authority of  
The State of Florida  
Public Service Commission  
Division of Regulatory Compliance  
Bureau of Performance Analysis

*Review of*  
**Gulf Power Company's  
Quality Assurance Process  
for  
Distribution Construction**

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**By Authority of  
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Bureau of Performance Analysis**

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# 1.0 Executive Summary

## 1.1 Objectives

At the request of the Florida Public Service Commission's (FPSC) Division of Service, Safety and Consumer Assistance, the Division of Regulatory Compliance conducted a review of Gulf Power Company's (Gulf) quality control processes for its distribution construction projects. The objective of the review was to document and assess how Gulf monitors and evaluates its distribution construction project quality control and safety inspection.

The primary objectives of this review were to determine whether:

- ◆ Adequate operating policies and procedures are in place to limit the risks associated with constructing distribution facilities that are not in compliance;<sup>1</sup>
- ◆ Adequate monitoring of the electric distribution construction processes exists to verify compliance.

## 1.2 Scope

FPSC audit staff's review examines Gulf's current policies, procedures, practices, and operational controls for monitoring its electric distribution construction processes to ensure compliance. The review involved gaining an understanding of Gulf's quality control and safety inspection procedures for its own personnel and contractors and evaluating the effectiveness and adherence to such procedures.

The sections of FPSC audit staff's review are focused on the following:

- ◆ Company goals and objectives
- ◆ Company practices and procedures
- ◆ Company controls and monitoring

Within these areas, FPSC audit staff evaluated the company's practices for both its own construction personnel and its contractors.

## 1.3 Methodology

FPSC audit staff prepared its review based upon an analysis of Gulf's responses to document requests, on-site interviews, and telephone conversations with key personnel. Specific

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<sup>1</sup> Unless otherwise specified, the use of "compliance" throughout this review means that the distribution facilities are constructed in accordance with all applicable requirements, federal, state, local regulations, National Electric Safety Code (NESC), and other industry standards.



information reviewed included Gulf's organizational charts, position descriptions and responsibilities, distribution construction quality assurance (QA) policies and procedures, distribution construction QA-related documents, distribution bulletins, internal/external audit reports, contracts, training programs and manuals, design specifications and standards, National Electric Safety Code (NESC), and other industry standards.

## 1.4 Background and Perspective

Pursuant to Section 366.04(6), F.S., the FPSC has exclusive jurisdiction over prescribing and enforcing safety standards for distribution and transmission facilities of Florida's public electric utilities, including municipal and cooperative utilities. FPSC Rule 25-6.0345(2), F.A.C., requires that each electric investor-owned utility, municipal utility, and electric cooperative file with the FPSC a listing of each completed construction work order completed by the company each quarter.

The FPSC's Bureau of Safety periodically selects a sample of these work orders for an on-site inspection of the completed work. FPSC engineers inspect these distribution facilities and verify that they are constructed in accordance with all applicable requirements, federal, state, and local regulations, NESC, and other industry standards. If a variance is identified by the safety inspectors, the FPSC will notify the utility for corrective action. A follow-up inspection may be conducted to ensure compliance.

Gulf uses a combination of its own personnel and outside contractors to perform and complete its distribution construction projects. From August 2007 through August 2008, the company estimates that it completed 5,800 distribution construction projects: 3,525 (61 percent) were performed by Gulf personnel and 2,275 (39 percent) by contractors. In terms of construction man hours, Gulf states that its crews perform approximately 59 percent of the total work while its contractors perform approximately 41 percent of the total work.

Gulf's distribution construction QA program primarily includes a Distribution System Work Order (DSO) Process Audit to monitor completed work orders for compliance with all applicable engineering and construction requirements. Gulf's DSO Process Audit is conducted two times per year. For each audit, Gulf selects a statistically valid sample of qualifying DSOs consisting of at least one DSO per local office area within each district. Gulf engineers review the completed DSOs, which are outside of their respective areas, and perform on-site inspections using a standard checklist. The checklist includes both engineering and construction components.

While the majority of its distribution construction projects are completed by company personnel, Gulf places great emphasis on monitoring and oversight of its contractors. Gulf evaluates distribution construction QA for its contractors through the use of its Contract Services Construction Coordinators (CSCCs).

The company's current distribution construction QA monitoring and oversight of construction work performed by Gulf personnel is encompassed within the normal management activities of the Planning and Construction Team Leaders, Construction Supervisors, and others



responsible for distribution construction. Gulf places emphasis on its experienced and knowledgeable personnel through Gulf's specialized training and certification programs to ensure that all of its employees that design or construct its distribution construction facilities have the proficiency to do so within compliance.

## 1.5 Overall Opinion

The data analyzed by FPSC audit staff shows that Gulf has a well-defined QA process for distribution construction performed by its contractors and Gulf's own personnel. Audit staff, however, has identified some areas for improvement based on its review:

### Gulf's Contractor Oversight

- ◆ Gulf's procedures should require retention of field review results necessary to:<sup>2</sup>
  - ◆ Monitor the number and frequency upon which each CSCC inspects distribution construction projects;
  - ◆ Verify the accuracy of the project completion performance evaluation summaries for distribution construction projects;
- ◆ CSCCs and Contract Services supervisory personnel should adhere to all of Gulf's performance evaluation summary completion procedures. Specifically, a number of the performance evaluation summaries are signed by the preparer, but the job title, location, and date are not shown on the form.

### Gulf's Personnel Oversight

- ◆ Gulf should use independent personnel for real-time monitoring and documenting of distribution construction projects.

### DSO Process Audits

- ◆ Gulf should include a formal process to document deficiency correction dates and follow-up inspection dates.
- ◆ Gulf should have a ranking system for deficiencies.

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<sup>2</sup> FPSC audit staff notes Contract Services has drafted the *Gulf Power Company Power Delivery Contract Services Process* which addresses all of the process details such as the data retention requirements of the field notes, observations, and performance evaluation summary forms. This draft process was presented to all Contract Services employees at the departmental meeting in August 2009. Audit staff also encourages Gulf to consider having the data input into a database (similar to how the DSO Process Audit data is inputted) for tracking purposes.

## **2.0 Construction Quality Assurance Process**

### **Which work groups are responsible for distribution construction quality assurance, and how does the company organize this function?**

Quality assurance (QA) is the responsibility of multiple work groups within Gulf's organization, including Power Delivery Distribution, Training and Development, and Corporate Services. Risk Management is a unit of Corporate Services. Contract Services also supports Power Delivery. Gulf's Contract Services department employs Contract Services Construction Coordinators (CSCCs) who are responsible for performing distribution construction QA. The CSCCs are highly experienced design construction personnel whose job responsibilities are dedicated to monitoring and oversight of distribution construction work performed by contractors to ensure compliance. The monitoring and oversight of work performed by Gulf's own employees, on the other hand, is handled through the normal management activities of the Planning and Construction Team Leaders, Construction Supervisors, and others responsible for distribution construction QA. Brief descriptions of the employees responsible for distribution construction QA are as follows:

#### **Corporate Oversight**

- ◆ Power Delivery General Manager – provides leadership and guidance for the engineering, construction, operation, and maintenance of the Company's overhead and underground distribution system and the transmission system in the Pensacola, Ft. Walton and Panama City Districts.
- ◆ Power Delivery Services Manager – manages and guides activities associated with developing and maintaining policies and procedures for the engineering, design, construction, operation, and maintenance of the distribution system.

#### **Gulf Personnel Oversight**

- ◆ District Operations Manager – provides leadership in safety and fosters teamwork within the district management team, as well as with other Power Delivery, Gulf, and Southern Company teams.
- ◆ District Engineering Supervisor – reports directly to the District Operations Manager, leads the district's engineering employees, and uses Gulf's Target Zero safety approach to ensure quality engineering, job management, and customer satisfaction by working with the appropriate Construction Supervisor.
- ◆ District Construction Supervisor – reports directly to the District Operations Manager, leads the district's construction employees, and uses Gulf's Target Zero safety approach to ensure quality construction, high reliability, and customer satisfaction by working closely with the appropriate Engineering Supervisor in the district.



- ◆ Planning and Construction Team Leader – reports directly to the Construction Supervisor, leads crews responsible for service orders in addition to line construction and maintenance, and uses Gulf’s Target Zero safety approach to ensure customer satisfaction, quality construction, and high reliability.

### **Gulf Contractor Oversight**

- ◆ Contract Services Manager – manages the daily activities for all contractor services to ensure company-wide program consistency and effectiveness of Gulf’s distribution contractors.
- ◆ Project Manager – provides centralized oversight, coordination, and management of designated distribution construction projects to ensure timely, efficient, and cost-effective completion of all projects and that appropriate processes and controls are implemented.

Other employees responsible for distribution construction QA activities include:

### **Corporate Oversight**

- ◆ Line Equipment Service Center Supervisor
- ◆ Technical Services Manager
- ◆ OH Material & Specifications – Senior Engineer
- ◆ URD Material & Specifications – Senior Engineer
- ◆ Corporate Services General Manager
- ◆ Risk Management Manager
- ◆ Training and Development Manager
- ◆ Engineering Skills Development Supervisor
- ◆ Construction Skills Development Supervisor

### **Gulf Contractor Oversight**

- ◆ Distribution Underground Contract Team Leader
- ◆ Underground Construction Coordinator
- ◆ Overhead Construction Coordinator
- ◆ Lighting Construction Coordinator

## **Has the company established goals and objectives for its quality assurance programs for distribution construction projects?**

Gulf states that it does not have separate goals and objectives related to a specific distribution construction QA program. Gulf believes it integrates QA principles into the daily activities associated with distribution construction projects. Gulf states that QA is an integral part of its organizational responsibilities and systems to ensure that distribution facilities are constructed in compliance with NESC and Gulf procedures. Gulf further states that its organizational structure, together with its work order QA processes, illustrates Gulf’s

commitment to QA of its distribution construction. Gulf's integrated distribution construction goals and objectives are focused on ensuring that projects are completed on time, within budget, and in compliance to allow for safe, reliable, and efficient distribution construction operations resulting in lower costs to ratepayers.

FPSC audit staff reviewed excerpts from Gulf's 2009 Performance Plan. This plan refers to Gulf's individual performance evaluations of company employees and covers areas of written individual goals and objectives relating to distribution construction QA employees.

### **How does Gulf work to achieve quality assurance?**

The main process that supports distribution construction QA efforts is Gulf's DSO Process Audits. The audits sample DSOs completed by Gulf's personnel and its contractors to monitor both engineering and construction compliance. Additionally, Gulf uses CSCCs with job responsibilities dedicated to inspecting construction work as it is completed by Gulf's contractors. Construction work performed by Gulf employees is inspected by Planning and Construction Team Leaders and Construction Supervisors as part of their normal management activities. Gulf also depends on external reviews, such as the FPSC's electric safety inspection results, and AEGIS risk assessments.

Additionally, Gulf works toward achieving distribution construction QA through the following activities:

- ◆ Gulf promotes a "Target Zero" work environment in regard to safety.
- ◆ Gulf conducts extensive training on design, engineering, and construction standards for overhead and underground distribution facilities.
- ◆ Gulf employs subject matter experts for the construction design process to ensure the design meets or exceeds all distribution construction QA standards.

In recent years, Gulf has used improvement initiatives to strengthen quality oversight programs. These have included the following:

- ◆ 2005 – Management created a new department, Contract Services, to provide consistent management of contractor work on Gulf's distribution system. The DSO Process Audit procedures were developed and implemented as a pilot program. The initial primary focus of the DSO Process Audit was on engineering design compliance and providing input to the engineering groups. It was then expanded to also include the review of construction items and to provide feedback to the construction groups. At that time, it was left up to the individual supervisors and managers to address any corrections based on inspection results of engineering and construction checklist performance items.
- ◆ 2006 – Contract Services management identified the need to create a contractor evaluation process. Also, the Management Response and Corrective Action Plan



were added to the DSO Process Audit to give more validity to the process. This change was made based on a recommendation from an informal review by an internal auditor.

- ◆ 2007 – Contract Services implemented the contractor evaluation process.
- ◆ 2008 – Contract Services reviewed the contractor evaluation process, which was refined to include forms that Gulf began using in early 2009 to provide a consistent approach to documenting field inspections. Management also created two new positions, the Project Manager and Lighting Construction Coordinator, responsible for developing project management processes and the daily monitoring of lighting for construction activities to ensure contractors perform work timely, efficiently, and cost-effectively in compliance with Gulf's specifications and standards.
- ◆ 2009 – Gulf developed a new *Contract Services Quality Assurance Observation* form (a.k.a. the *Field Observation Form*) along with new *Project Performance Summary* and *Quarterly Performance Summary* forms. In addition, Contract Services drafted the *Gulf Power Company Power Delivery Contract Services Process* which addresses all of the process details such as the data retention requirements of the field notes, observations, and performance evaluation summary forms.<sup>3</sup>

## 2.1 Contractor Oversight

### Does the company employ outside contractors to complete distribution construction projects?

Gulf employs outside contractors to complete a portion of its distribution construction projects. For the 13-month period August 2007 through August 2008, Gulf contractors completed 2,275 construction projects. This number represents 39 percent of total distribution construction work completed by Gulf. Currently, the company has six active construction vendors under contract. Gulf's philosophy is to use contractors to handle peak, short-term projects that exceed Gulf's in-house capabilities. Such projects may involve specialized equipment or resources that Gulf does not possess. Gulf selects contractors through a request for proposal process. Sole-source contracts are used only in emergency conditions or for customer reimbursed projects which must be completed very quickly.

In order to be considered for eligibility, a contractor must register with Supply Chain Management and have an Experience Modification Rate (Workers' Compensation) of less than 1.0, carry appropriate insurance, have a formal drug and alcohol testing program in place, and agree to submit its personnel to background checks. If approved at this level, Supply Chain will obtain the contractor's signature on a Master Service Agreement which includes standard terms and conditions such as indemnification. Once the contractor passes screening by Supply Chain, the contractor's information is forwarded to Power Delivery Contract Services for qualifying.

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<sup>3</sup> This draft process was presented to all Contract Services employees at the departmental meeting in August 2009.



Contract Services contacts the contractor and requests copies of the following:

- ◆ Contractor's safety manual
- ◆ List of available equipment and resources
- ◆ List of capabilities
- ◆ Utility references

Contract Services reviews this material and contacts the references provided by the contractor. If all information is deemed acceptable, the contractor is declared eligible and may be allowed to bid on future projects.

When a project is bid out, Contract Services prepares bid specifications, known as Supplemental Terms and Conditions, specific to the project. The contractor sends a sealed bid to Supply Chain which examines the bid. The bid results are then sent to Contract Services, which evaluates the bid and recommends a bid award. Supply Chain reviews the evaluation information to ensure the analysis and documentation are in order and finally awards the contract to the successful bidder.

### **How does the company document the construction quality and compliance of projects completed by its outside contractors?**

Gulf's Contract Services employs CSCCs who are responsible for the monitoring of contractor performance and quality of construction on a daily basis. CSCCs evaluate contractor performance on the ability to complete a project safely and in compliance with appropriate distribution specification plates and construction drawings. Gulf provides the plates and construction drawings to contractors on an as-needed basis. The plates and drawings are designed by Gulf or Southern Company engineers, and any project built in accordance with the plates and drawings should be in compliance with all applicable requirements, federal, state, and local regulations, NESC, and other industry standards.

Gulf's CSCCs field inspect contractor work to ensure the work is in compliance with the appropriate distribution specification plate. The level of field inspection varies by project. Complex projects may have a field inspector on-site for an extended period each day, while simple projects may be spot checked.

At the close of each project, the contractor foreman signs the Construction Complete section of the work order and returns a copy of the construction drawing to the CSCC. Any changes in construction material or method are noted on the drawing and reviewed by the CSCC to ensure compliance with appropriate standards. The CSCC responsible for the project then makes these changes on the final work order when reconciling the project. If the engineer has concerns about any changes not in compliance, he contacts the CSCC to require the contractor to take corrective action. The construction drawings are then filed with the work order and maintained in accordance with Gulf's retention schedule which requires retention for the life of the company.



The CSCC completes a project completion performance evaluation summary at the close of each major project assigned to Contract Services for construction. The performance of hourly or unit-priced contractors performing minor maintenance or construction projects is documented on a quarterly basis.

### **Does the company employ adequate management controls and resources to ensure that its contractors are in compliance with all applicable construction standards?**

Gulf's Contract Services ensures that contractor performance is properly managed and routinely monitored. CSCCs, who are experienced and knowledgeable of Gulf's design and construction practices and distribution specification plates, are responsible for monitoring contractor work. Gulf's least experienced CSCC has over 18 years of experience in the actual construction of projects in compliance with appropriate distribution specification plates.

The CSCCs conduct field reviews to ensure compliance with the appropriate distribution specification plate. The CSCCs, along with Contract Services supervision, complete a performance evaluation summary on each contractor at the close of each major project and quarterly for contractors performing hourly or unit-priced work on minor maintenance or construction projects.

Gulf has six CSCCs: one for monitoring overhead construction; one for monitoring lighting construction activities; and four for monitoring underground construction. All CSCCs are responsible for ensuring that the distribution construction work by contractors is performed timely and in compliance with all applicable requirements.

Gulf also documents its distribution construction QA of its contractors through the use of its DSO Process Audits. This internal control is further discussed in Section 2.3.

### **Does the company have an adequate process to monitor the construction practices of its outside distribution contractors?**

#### **CSCC Quality Assurance Observations**

The Contract Services Manager (CSM) is responsible for managing the daily activities for all contractor services to ensure company-wide program consistency and effectiveness of Gulf's distribution contractors. The CSM monitors and oversees the work performed by its CSCCs across all three districts in monitoring and documenting whether contractors are performing their work timely and in accordance with all applicable Gulf specifications and procedures, including federal, state, and local regulations, NESC, and other industry standards.

CSCCs monitor activities of contractor work and may field inspect complex projects for an extended period each day, while simple projects may be spot checked. The CSCCs document findings during each worksite visit using a field review form. Gulf states that all completed work which is built to the appropriate distribution specification plate is in compliance with



industry standards. Field review results are used to produce a performance evaluation summary for the contractor.

An additional layer of distribution construction QA is performed by the Underground Contract Team Leader (UG-TL). The UG-TL reviews the QA documentation of some work orders completed by each UG-CSCC to ensure that each UG-CSCC adequately assessed whether the completed work by the contractor is in compliance. The UG-TL reviews the QA documentation completed by each UG-CSCC to ensure that the documented findings are consistent with the actual observations at the worksite. The UG-TL records notes on a *Contract Services Quality Assurance Observations* form (referred to by Gulf employees as the field observation form) for each major project inspected by UG-CSCCs.

### **CSCC Contractor Performance Evaluations**

CSCCs use field notes to produce project completion performance evaluation summaries. Gulf also requires the CSCC to complete a summary on a contractor at the close of each major project, and a quarterly summary of a contractor based on all of the minor projects the contractor completed during the three-month period.

### **Major Project Evaluations**

Gulf states that the large and complex work orders (major projects) completed by contractors are low in number and easy to track without the necessity of an electronic database. Gulf completed seven major projects during the 13-month audit period, August 2007 through August 2008. A copy of the completed performance evaluation summaries for each was provided to FPSC audit staff.

Gulf's prior policy did not require retention of field review data. Therefore, assuming that the completed summaries accurately reflect what was recorded in the field review results for the 13-month audit period, FPSC audit staff found that 98 percent of the ratings were either "excellent" or "good".

### **Minor Project Evaluations**

Gulf estimates that there were 2,268 minor projects completed by contractors during the 13-month audit period, August 2007 through August 2008. Gulf provided FPSC audit staff with 28 completed performance evaluation summary forms<sup>4</sup> for all of its contractors some of which had multiple contracts.

FPSC audit staff's review of the 28 quarterly performance evaluation summaries reveals that 11 (39 percent) did not include the preparer's job title, location, and date, as Gulf's procedures require.

FPSC audit staff notes that Gulf could not provide supporting documentation listing all of the completed DSO numbers associated with each performance evaluation summary because Gulf does not have a policy in place to retain such data. Therefore, audit staff could not verify that all performance evaluation summaries were completed pursuant to Gulf's procedures.

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<sup>4</sup> Gulf originally provided 24 completed performance evaluation summary forms on March 26, 2009. On June 4, 2009, Gulf supplemented its response with four additional forms.



Assuming that the completed summaries accurately reflect what was recorded in the field review results for the 13-month audit period, FPSC audit staff found that 99 percent of the ratings were either “excellent” or “good”.

FPSC audit staff notes that Gulf has drafted a *Power Delivery Contract Services Process* which proposes a three-year data retention requirement for field notes, observations, and evaluation forms. Gulf presented this new process at its Contract Services departmental meeting in early August 2009. FPSC audit staff believes this proposal is appropriate. Audit staff also encourages Gulf to consider having the data input into an online database, as it does with its DSO Process Audit data. This database would establish a link between the field inspection observation data, DSO Process Audit data, and the performance evaluation summary results for data analysis, tracking, and comparison purposes.

## 2.2 Gulf Personnel Oversight

### **Does the company employ adequately trained and certified distribution construction personnel?**

Gulf’s engineering and construction employees are expected to complete the following training:

- ◆ *Level 1 and Level 2 Certification Training* through courses within the Distribution Field Engineering Certification program with certain courses taught one-on-one for new engineering personnel.
- ◆ *On-the-Job Training (OJT)* modules for the construction personnel that are specifically designed for employees with certain levels of experience on the job.
- ◆ *Earned Progression Training (EPT)* programs with OJT task sheets for distribution line construction. Gulf requires its employees to complete EPT programs by scoring a passing grade on written/hands-on skills tests with structured time of completion intervals. All tests must be passed with an 80 percent pass rate for the employees to be allowed to continue in the program. An employee can earn “Journeyman” status after 84 months of training.

Human Resources documents all completed training and required informational meetings and on-line reviews in SHIPS (human resource management system). Engineering employees are tracked by the training analysts as to completion of the Engineering Skills certification levels. Engineering supervisors have the overall responsibility to track employees who report to them, through the SHIPS system. The Engineering Skills certification courses include tests which must be passed in order to receive credit in SHIPS. The work order audits performed twice a year also provide information regarding the level of understanding each field engineering employee has of material that is taught.



On an annual basis each employee is given a proficiency assessment to determine any needs related to their ability to complete their job responsibilities from a technical and a safety perspective. Construction employees' training is tracked by the training analysts and this information is also stored in SHIPS.

### **Does the company have a detailed process to monitor the construction practices of Gulf's own distribution construction personnel?**

Gulf's current distribution construction QA monitoring and oversight of its own personnel is encompassed within the normal management activities of the Planning and Construction Team Leader, Construction Supervisor, and others responsible for distribution construction QA oversight. Gulf states that it handles distribution construction QA activities through teamwork and management oversight. Gulf places emphasis on its experienced and knowledgeable personnel through Gulf's specialized training and certification programs to ensure that all of its employees that design or construct its distribution construction facilities have the proficiency to do so within compliance.

FPSC audit staff recognizes that Gulf's distribution construction employees are highly experienced with extensive design and construction knowledge. Audit staff generally encourages Gulf's informal process whereby it employs a "team concept" type of distribution construction QA monitoring and oversight. Gulf, however, may want to consider using inspectors who are independent of the operation being examined to avoid any partiality or bias.<sup>5</sup>

Audit staff also notes that the contractor QA evaluation process is more developed than the QA process for Gulf's own personnel.

### **How does the company document the construction quality and compliance of the projects completed by employees?**

Gulf's Planning and Construction Team Leader signs off on the Construction Complete section of the work order and returns a marked copy of the construction drawing showing any changes in construction method or materials to the appropriate Gulf employee. The Gulf employee responsible for the project then makes these changes on the final work order when reconciling the project. If the engineer has concerns that any changes are not in compliance with NESC or other applicable rules and regulations, the Team Leader is contacted and is required to take corrective action. These construction drawings are filed with the work order and maintained in accordance with Gulf's retention schedule which is presently retained for the life of the company.

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<sup>5</sup> The Institute of Internal Auditors Standards for the Professional Practices of Internal Auditing, Standard 100.01 states "Internal auditors should be independent to the activities they audit...Independence permits internal auditors to render the impartial and unbiased judgments essential to proper conduct of audits."



Gulf also documents its construction quality and compliance of projects completed by its own personnel through the use of its DSO Process Audit results and the FPSC safety inspection results of completed work orders which will be discussed in more detail in the next two sections.

### **Does the company employ adequate management controls and resources to ensure that its staff is in compliance with all applicable construction standards?**

Gulf states that its organizational structure ensures employee performance is properly managed and routinely monitored. Gulf believes its employees associated with distribution construction QA activities are knowledgeable of Gulf's construction practices and specifications. Gulf employees, within their normal work activities, perform distribution construction QA monitoring and oversight of company work in the field on a real-time basis. Additionally, Gulf conducts periodic auditing of construction project work orders to ensure compliance.

FPSC audit staff's review of excerpts from Gulf's 2009 Performance Plan reveals that the Construction Supervisors are expected to perform field inspections on work completed by Gulf's own employees. Engineering or Administrative assistants that work for each Gulf Construction Supervisor randomly select two DSOs per month to field inspect. The random selections result in DSO inspections ranging from very small simple overhead jobs to very large or complex overhead or underground jobs. Specifically, the Construction Supervisors are expected to perform field inspections on two completed work orders by the seventh of each month to verify whether the construction is in compliance. They are also to maintain a log containing all of the inspection results.

Gulf's specialized engineering and construction training programs ensure that its employees possess the technical expertise necessary to complete distribution construction projects in compliance with all applicable requirements, regulations, NESC, and other industry standards. Furthermore, its employees operate under a "team concept" QA process through engineering excellence meetings and out-in-the-field teamwork to ensure that distribution facilities are constructed in compliance. While FPSC audit staff sees possible benefits of such a team concept, Gulf may want to consider using independent inspectors with job responsibilities dedicated to real-time QA monitoring to ensure that its employees complete distribution construction projects in compliance.

## **2.3 DSO Process Audit**

### **What is the DSO Process Audit?**

Another layer of distribution construction QA monitoring involves the DSO Process Audit. This process audit is used to determine the design and construction compliance level of work completed by Gulf's own personnel and its contractors.



Gulf conducts the process audit two times per year. For each audit, Gulf selects a statistically valid sample<sup>6</sup> of qualifying DSOs. The sample consists of at least one DSO per local office area engineer within each district. Gulf engineers serve as peer inspectors, but they may only perform field inspections of DSOs outside of their respective districts to remove any conflicts of interest. Audit checklists are used during the inspections and the results are entered into a database. A Final Audit Summary Report is produced for each audit which gives management an overall view of the results, indicating the primary deficiencies.

Upon review, the District Operations Managers and District Engineering Supervisors provide a Management Response and Corrective Action Plan. The appropriate District Operations Manager and District Engineering Supervisor are responsible for ensuring that all deficiencies are properly addressed. Input from Engineering Skills and Construction Skills Development departments is provided when a training deficiency is indicated, and Construction Supervisors are also provided copies to review for their input.

FPSC audit staff notes that Gulf currently does not document the deficiency correction/follow-up inspection dates associated with the *Management Response and Corrective Action Plan*. Gulf concedes that it does not have a formal process in place to document the deficiency corrections/follow-up inspection dates. Therefore, audit staff encourages Gulf to address deficiency correction and follow-up inspection date documentation procedures.

## **What DSOs are reviewed?**

### **Qualifying DSOs**

A qualifying DSO is one that has been completed and signed-off by the appropriate district area engineer/engineering representative. An ACCESS program is used to query the Job Estimating Tracking System (JETS) database<sup>7</sup> and compile the list of qualifying DSOs.

### **Non-Qualifying DSOs**

Non-qualifying DSOs are those prepared by Special Projects, Technical Services, and anyone not in the district area engineering group, and signed-off by the Special Projects Engineers or the Technical Services Engineers. For the 13-month audit period, approximately 1,504 large and complex DSOs (major projects) were excluded from the DSO Process Audit analysis.

Gulf does not maintain a compliance summary document for large and complex DSOs. These projects are monitored by Gulf personnel during the construction phase to ensure the job is being completed according to construction specifications. Upon completion, each major project

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<sup>6</sup> Gulf uses a sampling method similar to the one at <http://www.raosoft.com/samplesize.html>, with a 95 percent confidence level, a confidence interval of +/-15 percent or less, and a 50 percent distribution response to ensure the largest representative sample.

<sup>7</sup> JETS serves as an internal control for estimating the cost of each project. All DSOs, whether assigned to contractors or Gulf's employees, are subject to compliance with Gulf's Management Procedure 110-010. This procedure outlines the management levels needed for approval which is based on the costs associated with the DSOs. Also, prior to the actual construction phase of new projects, appropriate distribution specification plates are provided to, and reviewed with, the contractors to ensure they are fully aware of Gulf's expectations.



managed by Contract Services is evaluated using an evaluation form to formally document the contractor's construction performance. Gulf further states that these large and complex DSOs are few in number and easy to track without the necessity of an electronic database.

### Other Non-Qualifying DSOs

The other non-qualifying work orders are those that are produced by District Operations Supervision, their Engineering Assistants, and Corporate Departments such as Project Services and Technical Services. The work orders include both minor and major projects and blanket orders. Blanket orders are designed to provide an efficient way to charge and accumulate charges on frequently replaced, installed or removed items, such as services, grounds, cutouts and arrestors, etc. These types of work orders are not subject to the DSO Process Audit outlined in Distribution Bulletin 40. Gulf states, however, that over 90 percent of the non-qualifying work orders are either subject to inspection by Contract Services employees or generated by or under direct supervision of Company management.

Additionally, Gulf states that nearly 50 percent of all non-qualifying work orders were generated by Company management or under their direct supervision. Gulf also states that it does not subject work orders generated by Company management to the same level of scrutiny as those prepared by staff level engineers and engineering representatives due to the higher level of skill, knowledge, and expertise expected to be possessed by management.

### What is FPSC audit staff's analysis of the DSO Process Audit results for the study period?

FPSC audit staff reviewed DSO Process Audit data covering the 13-month period, August 2007 through August 2008. The results are summarized in the two exhibits below. Exhibit 1 shows the number of qualifying work orders by district with the number of inspections completed. In the far right column, the compliance percentage is listed by district based on the criteria set forth in Distribution Bulletin 40.

Work Order (DSO) Process Analysis – Quality Inspections/Audits August 2007 through August 2008					
District	Number of Auditors	Qualifying DSOs	Inspections Completed	Sampling Rate** Conf Level/Conf Interval	% Inspections completed (1 per area eng per audit for compliance)
Eastern	2*	966	17	n/a	100%
Central	2*	828	21	n/a	100%
Western	2*	2,502	34	n/a	100%
Total Company	6*	4,296	72	95%/+11.45%	100%

\* Indicates minimum number of auditors per district per audit period.  
 \*\* Sampling Rate indices and validity is based on Total Company sample and is not relevant to individual districts, with a goal of 95% confidence level and better than  $\pm 15\%$  confidence interval.

#### EXHIBIT 1

Source: Supplemental DR-1.1f



Exhibit 2 shows the number of audits performed and the respective level of compliance with procedures listed in Distribution Bulletin 40 for each audit period by local office.

Periodic Quality Inspections/Audits on Completed DSOs August 2007 through August 2008				
Local Office	Last Period 2007* No. Audits	1st Period 2008 No. Audits	2nd Period 2008 No. Audits	Qualifying DSOs
<b>Eastern District</b>				
Chipley	0	2	2	287
Panama City	0	2	4	382
Panama City Beach	1	5	1	297
<b>Total</b>	<b>1</b>	<b>9</b>	<b>7</b>	<b>966</b>
<b>Central District</b>				
Crestview	3	2	3	215
Defuniak Springs	0	1	0	96
Destin	1	4	1	172
Ft Walton	1	2	2	256
Niceville	0	1	0	89
<b>Total</b>	<b>5</b>	<b>10</b>	<b>6</b>	<b>828</b>
<b>Western District</b>				
Gulf Breeze	1	2	3	517
Milton	3	4	3	592
Pine Forest	1	5	5	1,082
Wright Street	1	4	2	311
<b>Total</b>	<b>6</b>	<b>15</b>	<b>13</b>	<b>2,502</b>
<b>Grand Total:</b>	<b>12</b>	<b>34</b>	<b>26</b>	<b>4,296</b>
*Note the Last Period 2007 column and 2 <sup>nd</sup> Period 2008 column do not contain the entire period of the actual audit which did not correspond with the dates of the FPSC's audit staff's requested audit period.				

## EXHIBIT 2

Source: Supplemental DR-1.If

### Quality Inspection Deficiencies

FPSC audit staff examined the number and type of deficiencies resulting from the DSO Process Audit for DSOs completed in the 13-month period, August 2007 through August 2008. Exhibit 3 details the type and number of deficiencies identified by district.

### EXHIBIT 3

As Exhibit 3 shows, [REDACTED] during the 72 quality inspections performed in the period. FPSC audit staff notes that of these, [REDACTED] Gulf does not rank deficiencies by level of severity stating that if it were to rank deficiencies by severity, those ranked as minor could get less attention.

## QUALITY ASSURANCE



## What are FPSC audit staff's concerns regarding the DSO Process Audit results?

Below are audit staff's concerns in regard to the results of Gulf's DSO Process Audit for the 13-month period, August 2007 through August 2008:

### Overall Summary

- ◆ Of 72 DSOs sampled from 4,296 total qualifying DSOs, [REDACTED] of the 72 DSOs inspected [REDACTED]  
[REDACTED]
- ◆ The deficiency correction and follow-up inspection dates are not documented.
- ◆ Gulf is unable to query its DSO database to determine the breakdown of contractor versus Gulf employee-completed qualifying DSOs for each district. Consequently, audit staff could not determine whether Gulf is using a statistically valid sample of contractor versus Gulf employee-completed DSOs for each district.

### Contractor-completed DSO Results

- ◆ Of 72 total inspections, 16 (22 percent) involved contractor-completed DSOs. [REDACTED]  
[REDACTED]

### Gulf employee-completed DSO Results

- ◆ Of 72 total inspections, 56 (78 percent) involved Gulf employee-completed DSOs.  
[REDACTED]
- ◆ [REDACTED] in the Western district were Gulf employee-completed DSOs.
- ◆ Of the [REDACTED] Gulf employee-completed DSOs in the Western and Eastern districts, 10 and 6, respectively.

## 2.4 Independent Audit Oversight

### Does Gulf's Internal Audit Department periodically examine its distribution quality control assessment processes?


The DSO audits and the direct oversight by line supervisors and managers provide the internal assessment efforts for Gulf. Traditional internal audits have not been performed in this area. Gulf identifies and evaluates risks through the combined efforts of its Power Delivery, Risk Management, and Safety and Health Departments. The inherent review processes involved in evaluating new materials, new specifications, and construction practices require a coordinated effort of various subject matter experts to determine risks involved and the actions required to mitigate them. In addition, risks are identified and evaluated through the following activities:

- ◆ Gulf's DSO Process Audit.
- ◆ Best practices learned through Gulf's involvement in professional organizations and various industry groups, such as the Edison Electric Institute and Southeastern Electric Exchange.
- ◆ Evaluation of accident and claims investigations occurring on Gulf's distribution system.

### Has Gulf's distribution construction quality control processes been reviewed by outside audit organizations?

#### AEGIS Review

Gulf has not had any formal risk analysis studies or evaluations completed during the last 36 months. Gulf did, however, provide distribution construction QA-related portions of its 2005 *Underwriting Risk Assessment* report conducted by AEGIS, an independent audit company. While Gulf does not have an external quality control review conducted by an independent reviewer at least once every three years as reflected in generally accepted government auditing standards,<sup>8</sup> Gulf has a five-year AEGIS review process in place. Specifically, the AEGIS review service is provided by the insurance underwriter to facilitate Gulf's understanding of potential exposure to certain areas of risk from an insurance perspective. Gulf considers the findings and suggestions and determines what, if any, action is needed to address the findings.



<sup>8</sup> GAO Government Auditing Standard 3.50, Quality Control and Assurance states that each audit organization performing audits or attestation engagements in accordance with generally accepted government auditing standards must: a) establish a system of quality control that is designed to provide the audit organization with reasonable assurance that the organization and its personnel comply with professional standards and applicable legal and regulatory requirements; and, b) have an external peer review at least once every 3 years.

<http://www.gao.gov/govaud/govaudhtml/d07731g-5.html#pgfld-1034319>



◆ [REDACTED]

[REDACTED]

◆ [REDACTED]

[REDACTED]

◆ [REDACTED]

[REDACTED]

◆ [REDACTED]

[REDACTED]

◆ [REDACTED]

[REDACTED]

### **FPSC Bureau of Safety Reviews**

Gulf states that the FPSC's inspection results of completed work orders provide additional distribution quality control feedback. For the period August 1, 2007 through August 31, 2008, the safety engineers field-inspected 40 work orders containing a total of 595 possible inspection variance points on projects completed by either contractors or Gulf personnel. Of the 595 points, the safety engineers found a total of 13 inspection variance points. Seven were electrical-related and six were communications-related due to other utilities. Therefore, Gulf's variance points were approximately one percent of the total possible inspection variance points. The electrical-related variances included ground wires not secured properly to poles, guy wires not grounded properly, guy wires without protective guards, and guy wires not tightened properly.

## **2.5 Conclusion**

The data analyzed by FPSC audit staff shows that Gulf has a well-defined QA process for distribution construction performed by its contractors and Gulf's own personnel. Audit staff, however, has identified some areas for improvement based on its review:

### **Gulf's Contractor Oversight**

- ◆ Gulf's procedures should require retention of field review results necessary to:<sup>9</sup>
  - ◆ Monitor the number and frequency upon which each CSCC inspects distribution construction projects;
  - ◆ Verify the accuracy of the project completion performance evaluation summaries for distribution construction projects;
- ◆ CSCCs and Contract Services supervisory personnel should adhere to all of Gulf's performance evaluation summary completion procedures. Specifically, a number of the performance evaluation summaries are signed by the preparer, but the job title, location, and date are not shown on the form.

### **Gulf's Personnel Oversight**

- ◆ Gulf should use independent personnel for real-time monitoring and documenting of distribution construction projects.

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<sup>9</sup> FPSC audit staff notes Contract Services has drafted the *Gulf Power Company Power Delivery Contract Services Process* which addresses all of the process details such as the data retention requirements of the field notes, observations, and performance evaluation summary forms. This draft process was presented to all Contract Services employees at the departmental meeting in August 2009. Audit staff also encourages Gulf to consider having the data input into a database (similar to how the DSO Process Audit data is inputted) for tracking purposes.



### **DSO Process Audits**

- ◆ Gulf should include a formal process to document deficiency correction dates and follow-up inspection dates.
- ◆ Gulf should have a ranking system for deficiencies.

## 3.0 Company Comments

The following comments are provided by Gulf and are included in their entirety.

### 3.1 Gulf Power Company

#### **GULF COMMENTS - FPSC REVIEW OF GULF's QUALITY ASSURANCE PROCESS FOR DISTRIBUTION CONSTRUCTION**

##### **General**

Gulf relies upon results from its DSO Audit Process, variances discovered by FPSC inspectors and feedback from accident and claims investigations to determine if any systematic safety issues exist within its distribution system. As noted in section 2.4 of this report, only one percent of the inspection points reviewed by FPSC safety inspectors in the review period revealed a variance. A pass rate of 99% is a respectable measure that Gulf believes demonstrates its QA processes are operating properly.

Gulf does not agree with audit staff's assertion that all NESC violations have the potential of exposing the public to hazardous conditions. However, Gulf management is currently refining its DSO Audit Process to address issues raised by audit staff in this report.

##### **Gulf Contractor Oversight**

Gulf agrees with audit staff's recommendation of improving the retention of documents associated with its field review results. As noted in this report, Gulf has since implemented a revised procedure with details of how Contract Services employees shall retain field review documentation. Specifically, performance evaluations and supporting field observation notes shall be retained for a period of not less than three years. Contract Services management is responsible for ensuring compliance with the revised procedure including accurate completion of performance evaluation summaries. The revised procedure was formally implemented by Contract Services employees on August 5<sup>th</sup>, 2009.

Gulf believes its current contractor review processes effectively monitor the construction activities performed by contract crews. The construction coordinators (CSCCs) monitor contract crew performance in real-time and address identified construction issues on-site. The low number of contractors on Gulf's distribution system, the scope of projects completed by contractors, and Gulf's presence at the job sites do not justify the cost that would be incurred to allocate the resources necessary to develop and maintain a contractor performance evaluation database. The updated retention schedule will make three years of evaluations and supporting documentation available for inspection.



Gulf believes the enhancements made to the former procedure address the audit staff's concerns regarding both the retention and accurate completion of performance evaluation summaries and field observation forms.

### **Gulf Personnel Oversight**

Gulf believes the use of independent personnel with the appropriate technical expertise for real-time monitoring and documenting of distribution construction projects would not be a cost effective solution. Gulf recognizes the value of independence in any audit process and has structured its process to maximize the level of independent review while maintaining an acceptable level of efficiency. Gulf's personnel are highly trained employees capable of ensuring all construction projects are completed in accordance with NESC codes and Gulf's design and construction specifications.

Gulf believes oversight of this process by a department outside of District Operations removes any potential for a conflict of interest to exist while utilizing employees possessing the technical abilities and institutional knowledge to appropriately inspect the work orders. The five year risk assessment conducted by AEGIS in conjunction with this Commission's safety reviews provides an adequate level of independent review from external parties.

While Gulf appreciates the references to Standard 100.01 and GAO Government Accounting Standard 3.50, fully cited in footnotes 5 and 8 respectively, it does not believe the practice of inspecting electrical distribution construction for quality control constitutes an internal audit nor does it believe electric utilities are governmental agencies subject to such standard. Further, Gulf's use of the DSO Process Audit utilizes an independent department (internal to Gulf, but external to District Operations) to oversee, review and inspect work orders identified in the statistical sample of work orders across Gulf's service area.

### **DSO Process Audit**

Gulf agrees improving the existing process to include implementation of capturing the date of correction and follow-up inspection would prove beneficial in demonstrating discovered deficiencies were corrected and followed-up on in a timely manner. Gulf management is currently refining its process to include language that will require any NESC violations or safety issues to be corrected, reviewed by a follow-up inspection and appropriately documented.

Gulf does not derive significant benefit in ranking the severity of deficiencies since all deficiencies are addressed. Creating a multi-level ranking hierarchy will unnecessarily complicate an otherwise simple concept that Gulf believes is effective. Gulf concedes that separating NESC violations or safety deficiencies and non-NESC deficiencies is a good concept and agrees to implement language in its process that requires Gulf to document the dates in which NESC/Safety deficiencies are corrected and reviewed by a follow-up inspection. Gulf will correct non-NESC violations as it currently does but does not propose to document the actions taken with respect to the non-NESC deficiencies.