



Serial: NPD-NRC-2008-005

March 3, 2008

ATTN: Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

**Subject: Response to Quality Assurance Audit Report for Shearon Harris  
Nuclear Power Plant Units 2 and 3  
NRC Project Number 738**

Gentlemen:

Progress Energy – Carolinas (PEC) has received the report, dated February 15, 2008, of the quality assurance audit conducted by the NRC during the period between October 29, 2007, and November 2, 2007. The audit reviewed the implementation of selected portions of the quality assurance programs of PEC and its contractors related to the development of a combined license application (COLA) for potential new plant construction at the Shearon Harris Nuclear Power Plant (Harris) site.

The NRC audit report identified several issues that were combined into an audit response request (ARR-001). The enclosures to this letter provide PEC's response to ARR-001. Enclosure 1 hereto provides a description of the overall issue and a summary of PEC's position with respect to it. Enclosure 2 addresses in detail each of the deficiencies identified in the NRC audit report. The information also includes, with respect to each deficiency, a description of PEC's basis for concluding that, notwithstanding the deficiency, the work performed by CH2MHILL in support of the Harris COLA was adequately controlled and of sufficient quality for the safety-related activities that rely on such work.

If you have any questions, or need additional information, please contact Bob Kitchen at (919) 546-6992, or me at (919) 546-6107.

Sincerely,

Garry Miller, General Manager  
Nuclear Plant Development

Enclosures:

1. Description and Summary of Quality Assurance Issues
2. Discussion of Deficiencies

DO84  
NRO

cc (w/enclosures): U.S. NRC Director, Office of New Reactors/NRLPO  
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## **Enclosure 1 -- Description and Summary of Quality Assurance Issues**

During the NRC audit of the Harris COLA, the audit team identified the following deficiencies regarding the implementation of the CH2MHILL Quality Assurance (QA) program supporting the COLA development. These deficiencies include the failure to:

- 1) Develop adequate design control procedures reflective of the organizational structure of CH2MHILL;
- 2) Adequately control the administrative preparation of geological/boring data;
- 3) Adequately control document revision status related to site field work procedures;
- 4) Programmatically specify what documents are to be controlled as QA records; and
- 5) Develop adequate qualification documentation and training records for specific disciplines involved in site work activities.

Except as specifically addressed otherwise, PEC acknowledges the identified deficiencies, which are further discussed in Enclosure 2.

As discussed in the NRC audit report, Progress Energy conducted an audit of CH2MHILL in March 2007 and identified significant programmatic issues with the CH2MHILL QA program. The audit did not include field activities. These problems resulted in the issuance of a Stop Work Order on March 12, 2007. At that time, CH2MHILL had not completed any deliverables in support of the Harris COLA project. Immediate corrective actions were taken to address the programmatic deficiencies and interim corrective actions were established to ensure that design deliverables issued by CH2MHILL met applicable quality standards.

The Stop Work Order was lifted by PEC on May 1, 2007 based on its assessment of the corrective actions completed by CH2MHILL that addressed the issues identified during the audit. These corrective actions included:

- Revisions to the Nuclear Business Group (NBG) Quality Assurance Manual
- Revisions to the NBG Quality Assurance implementing procedures
- Revision of the Quality Assurance Project Plan
- Revisions to and development of new Project Instructions specific to Progress Energy's COLA project work
- Retraining of NBG corporate and project staff on the appropriate Quality Assurance requirements.

In addition, the following compensatory measures were implemented by CH2MHILL:

- 1) Require an independent review of all deliverables by the CH2MHILL Recovery Manager
- 2) Require a readiness review of the deliverables by the CH2MHILL Management Review Board prior to issue.

The actions taken focused on ensuring that programs and processes were in place and properly implemented to ensure that CH2MHILL final deliverables in support of the Harris COLA product met required technical and quality standards. A subsequent audit by PEC in October 2007 confirmed completion of required corrective actions and determined that improvements in the CH2MHILL QA program were evident. However, neither CH2MHILL nor PEC reviewed at the time the documentation of the Harris site characterization activities that provided the inputs required to support development of the Harris COLA deliverables.

The deficiencies noted by the NRC related to problems with site characterization activities. These problems should have been identified and corrected by CH2MHILL and PEC. However, the existence of these problems do not indicate that programmatic issues currently exist with the CH2MHILL QA program that would bring into question the acceptability of the data that was generated through CH2MHILL's site investigations. As identified in the PEC October 2007 audit of CH2MHILL, noticeable improvements in CH2MHILL's quality program were evident due to CH2MHILL's addition or revision of procedures, implementation of a rigorous corrective action program, addition of experienced management staff, and increased personnel training.

PEC has conducted or directed the performance of extensive reviews of the work performed by CH2MHILL and its subcontractors in support of the Harris COLA. These reviews included:

1. PEC established a Joint Venture Independent QA Team that included QA and Geotechnical experts from Sargent & Lundy and Worley Parsons, to perform an independent assessment of the Harris site characterization field work. The team was to propose and verify implementation of effective corrective actions to resolve identified issues and to ensure that any impacts to the accuracy and completeness of the Harris COLA have been identified. The results of this review are documented in the Joint Venture Independent Assessment Report dated February 21, 2008.
2. CH2MHILL established a formal procedure (NBG-QA-16-03) and formed a Rapid Response Team to identify, compile, and evaluate the data and documentation for the Harris COLA project field work activities performed between 2006 and early 2007. The data collection and evaluation were done according to existing Quality Assurance

Program procedures with stringent controls and checklists developed specifically for this evaluation activity. The review resulted in the determination that the field data were "qualified" for their intended use. Results are documented in the "Data Qualification Report for the Progress Energy Harris COLA Project" (338884-RPT-011).

3. CH2MHILL also performed a detailed "crosswalk" of the applicable requirements from NQA1 (1994), Subpart 2.20, "Quality Assurance Requirements for Subsurface Investigations for Nuclear Power Plants," against the Quality Assurance Program implemented by CH2MHILL in its site work. The crosswalk was developed to demonstrate that, to the extent that differences existed between the Quality Assurance Program and Subpart 2.20, the differences did not result in non-conforming work activities, or if non-conforming work activities resulted, the non-conformances have been identified and corrected. The results of this review are documented in CH2MHILL Data Qualification Report (338884-RPT-011).
4. An outside consultant, experienced in similar site characterization field work, conducted a review of the approach taken by PEC and the Joint Venture Team members, including CH2MHILL, to address the NRC- identified concerns. The consultant reviewed the deficiencies identified and corrective actions implemented and was able to confirm that appropriate actions were taken to resolve the identified concerns.

Identified issues arising from these reviews were captured in the CH2MHILL corrective action program and collectively reviewed to assess the overall impact to the Harris COLA through CH2MHILL Corrective Action Report 338884-CR-008-08.

The various review activities conducted by PEC, CH2MHILL and Joint Venture teams led to the following conclusions:

1. The subsurface investigation field activities performed by CH2MHILL and its subcontractors at the Harris site produced technically acceptable results with appropriate controls adequately implemented.
2. After application of CH2MHILL's corrective action program, the site characterization activities conducted at the Harris site meet the intent of the Basic and Supplementary requirements of ASME NQA-1 (1994).

Through these efforts, PEC has determined that the corrective actions taken are appropriate and result in comprehensive resolution of the deficiencies identified by the NRC. In addition,

PEC has reviewed identified deficiencies and the corrective actions and reports provided by CH2MHILL, the Joint Venture Team and an outside consultant and concluded that the work performed by CH2MHILL in support of the Harris COLA was adequately controlled and of sufficient quality for safety-related activities.

The NRC audit report requested a detailed discussion that describes the actions taken to correct the deficiencies, including the methods used to evaluate the adequacy of corrective actions implemented by CH2MHILL and their impact on the accuracy and completeness of the Harris COLA. Enclosure 2 addresses in detail each of the deficiencies identified in the NRC audit report. The information also includes, with respect to each deficiency, a description of the basis relied on by PEC for concluding that, notwithstanding the deficiency, the work performed by CH2MHILL in support of the Harris COLA was adequately controlled and of sufficient quality for the safety-related activities that rely on such work.

## Enclosure 2 – Discussion of Deficiencies

### Deficiency #1

Failure to develop adequate design control procedures reflective of the organizational structure of CH2M

#### **NRC Issue:**

*NBG-QA-03-01 provides further and specific guidance to CH2M's engineering calculation package preparers on the process for design control. This procedure was revised in response to significant programmatic deficiencies identified during PE's audit of CH2M. The details of this audit are discussed in more detail in Section 3.11 of this report. However, the NRC audit team observed that the context of this revision included text directly from NQA-1-1994 without proper consideration of the organizational structure of CH2M. Specifically, the revised procedure referenced a "Design Manager," "Project Assistant" and "Project CADD Coordinator" which are positions that do not exist within the CH2M organization. Therefore, the guidance described in NBG-QA-03-01 cannot be implemented as written and is a programmatic deficiency of the CH2M QA program. This is identified as an example of the programmatic deficiencies identified in ARR-001 discussed in Section 1.1 of this report. [NRC Audit Report PROJ0740-2007-001, Section 3.2.b.1]*

#### **PEC Response:**

While the condition identified by the NRC Staff in this deficiency is correctly stated based on the information reviewed by the NRC during the audit, it does not result in a shortcoming of the design control process as it was applied by the CH2MHILL QA program for the Harris work, because there were project-specific standards that defined the design control process for that project. Accordingly, this deficiency does not have a direct impact on the work performed by CH2MHILL for the Harris COLA Project.

The following information is provided to clarify the scope and intent of CH2MHILL's corporate design control procedure NBG-QA-03-01. Procedure Section 3.4, Design Team Organization, states, "The Project Design Team typically consists of four roles." It also adds, "The design project is typically organized according to Figure 2" (emphasis added). CH2MHILL developed the procedure to allow flexibility of organizational structure based on the Scope of Work, size and complexity of various CH2MHILL corporate projects. As allowed in Section 4.1 of NBG-QA-03-01, CH2MHILL elected to

have the Project Manager serve as the Design Manager for the Harris COLA Project. The CH2MHILL Quality Assurance Project Plan for Progress Energy "Combined License" Applications, which is the project document that defines how the CH2MHILL quality assurance program is implemented for the Harris COLA project, has been revised to specifically clarify and define who performs the roles and responsibilities of the Design Manager for the Harris COLA Project.

CH2MHILL does not currently have any nuclear projects where a "Project Assistant" or a "Project CADD Coordinator" are assigned, because the project activities do not warrant their assignment. No such assignments were made for the Harris COLA project.

Based on the information presented above, PEC believes that the condition described in Deficiency # 1 had no impact on the appropriateness of the design or field work activities performed by CH2MHILL for the Harris COLA project.



Deficiency #2

Failure to adequately control the administrative preparation of geological/boring data

**NRC Issue:**

*Examples of administrative deficiencies, such as incomplete, unclear, and inconsistent information were identified by the NRC audit team during the review of geological/boring data and were brought to the attention of PE project personnel. These administrative deficiencies were entered into the corrective action program as corrective action reports (CARs) 338884-CR-007-07, 338884-CR-009-07, and 338884-CR-012-07. At the conclusion of the NRC audit, these CAR items remained open. The failure of PE and CH2M to adequately control the preparation of geological/boring data is considered an example of the programmatic deficiency identified in ARR-001 discussed in Section 1.1 of this report. [NRC Audit Report PROJ0740-2007-001, Section 3.4.b.2]*

**PEC Response:**

In addition to the CRs noted in the NRC deficiency, CH2MHILL initiated Condition Report CR-338884-CR-037-07 to identify and disposition administrative and technical deficiencies in the geological and boring data developed by CH2MHILL and its subcontractors. The CR tabulated each deficiency by identifying the deficiency, the affected document and page number, the correct information that should be shown in the affected document, the basis for the correction, and the disposition in the form of the corrective action completion. Additionally, each deficiency was evaluated for its impact to the technical adequacy of the work product, and the engineering justification for the impact conclusion was provided.

The CH2MHILL Data Qualification Report was prepared by a Rapid Response Team that was charged by CH2MHILL senior management to identify, compile, and evaluate the data and documentation for the Harris COLA project field work activities performed between 2006 and early 2007. The purpose was to determine whether the data developed by CH2MHILL and its subcontractors in support of the Harris COLA Project were "qualified for submittal," in accordance with CH2MHILL's procedure NBG-QA-15-02, "Data Qualification and Evaluation Process". It was the intent of this data qualification process, as documented in the report, to demonstrate that the Harris field data were obtained, developed, and processed in compliance with applicable quality assurance requirements. The Data Qualification Process is designed to provide assurance that the data are acceptable for use in downstream documents, such as the

Final Safety Analysis Report and the design calculations and analyses that rely on those data.

The data qualification inputs were selected and evaluated, as shown in the Data Qualification Report, to ensure that there was a 100 percent evaluation of the Harris COLA's field work data (e.g., 83 boreholes, hydrological monitoring wells, and surface geophysical work activities).

The Harris COLA field data (e.g., Soil Boring Logs, Rock Coring Logs, Field Log Books, Daily Inspection Diaries, and Tailgate Meeting Forms) underwent a series of internal and external reviews. The Rapid Response Team and CH2MHILL's Chief Geotechnical engineer performed two internal, independent reviews on these data. The Team performed the detailed quality assurance/quality control review of the data and identified deficiencies for input into the Corrective Action Program. The team focused on two elements: Field Record Production and Issue Resolution. Issues identified during the data review were dispositioned through CH2MHILL's Corrective Action Program.

The review resulted in the determination that the field data were "qualified" for their intended use. In addition, CH2MHILL revised the final field borehole gINT log records, Engineering Design File-018, based on the Corrective Action Program discrepancy dispositions. All 83 of the borehole gINT logs were reviewed and corrective actions implemented, as appropriate, to ensure that the data met required quality standards.

In addition to the actions taken by CH2MHILL, a Joint Venture (JV) assessment team was established to perform an independent examination and assessment of CH2MHILL site characterization field activities to determine if the CH2MHILL field activities and supporting documentation were acceptable. Members of this team included geotechnical and QA experts from JV members other than CH2MHILL. The assessment team evaluated the CH2MHILL site activities to confirm full compliance with regulatory and Code (ASME NQA-1) requirements. The sampling and testing of soil (overburden) materials was not considered as part of this review, since this site consists of minimal soil cover that will not impact the safety-related foundation design of the power plants. Thus, the review of data for the existing 83 borings was focused on the materials encountered below the bedrock surface, or top of rock.

The objective of this evaluation was to ascertain the technical and quality acceptability of the CH2MHILL data by:

1. Evaluation of applicable CH2MHILL QA programs, procedures and processes for compliance with the requirements of ASME NQA-1 and supplement/revise said documents as necessary to achieve full compliance;
2. Development of a model Site Investigation Work Plan (SIWP) in accordance with the new QA processes (developed in step 1. above) for performing rock boring, site testing and laboratory testing of rock core samples to establish acceptance criteria for evaluating past activities;
3. Development of a model SIWP in accordance with the required QA processes for performing groundwater monitoring of selected wells to establish acceptance criteria for evaluating past activities;
4. Review and comparison of historic CH2MHILL field documentation (prior to NRC audit) to the acceptance criteria requirements established in the above described model SIWPs;
5. Identification of differences (gaps) between the historic field documentation and the model SIWPs developed by the Assessment Team (see 2 and 3 above);
6. Review of CH2MHILL's corrective action system to assure that identified differences were properly identified and resolved;
7. Summarization of the results of the independent assessment in a report that assesses the acceptability of previous CH2MHILL site activities.

The Independent Assessment team performed an evaluation of the following areas:

1. Surveying Activities
2. Exploratory Rock Coring
3. Geophysical Testing, including:
  - a. Downhole testing
  - b. Pressuremeter tests
4. Groundwater Monitoring, including:
  - a. Well location
  - b. Well installation
  - c. Water levels
  - d. Well purging
  - e. Well slug testing
  - f. Field data
5. Laboratory Examination

The Independent Assessment Team's evaluation of the five areas noted above identified 22 issues and sub-issues related to the NRC-identified deficiencies. These

additional items were entered into the CH2MHILL corrective action program, and the necessary corrective actions have been completed.

Based on the information presented above, PEC has concluded that, notwithstanding the administrative deficiencies identified by the NRC and other reviewing organizations, that resolution of these deficiencies through the corrective action program resulted in data of sufficient quality for the safety-related activities for the Harris COLA project.

Deficiency #3

Failure to adequately control document revision status related to site field work procedures

**NRC Issue:**

*The NRC audit team noted that different procedure revisions were identified in the final report than what was prescribed in the Harris COLA Site Investigation Work Plan. The OYO P-S Suspension Seismic Velocity Logging procedure was revision 1.31 in the final report and revision 1.2 in the work plan. The Down-hole Seismic Velocity Logging Procedure was Revision 1.1 in the final report and revision 1.0 in the work plan. At the time of the NRC audit, neither PE nor CH2M were aware of this discrepancy. This issue was immediately entered into PE's corrective action program as CAR 338884-CR-011-07. At the conclusion of the NRC audit, this CAR item remained open. The failure of PE and CH2M to adequately control document revision status is considered an example of the programmatic deficiency identified in ARR-001 described in Section 1.1 of this report.*

*The NRC audit team also determined that there was no formal QA review completed of the Harris COLA Site Investigation Work Plan. Additionally, it was noted that technical procedures used by two subcontractors, for rock pressure meter testing and suspension logging, did not clearly specify training and qualification requirements for the test operators. These deficiencies were entered into PE's corrective action program as CAR 338884-CR-010-07. At the conclusion of the NRC audit, this CAR item remained open. The failure of PE and CH2M to perform a formal QA review of the completed Harris COLA Site Investigation Work Plan is considered an example of the programmatic deficiency identified in ARR-001 described in Section 1.1 of this report. [NRC Audit Report PROJ0740-2007-001, Section 3.6.b.2]*

**PEC Response:**

This deficiency asserts three different issues. Each is addressed separately below.

**1. Vendor Procedure Revisions**

The Site Investigation Work Plan (SIWP), Revision 3, pursuant to which CH2MHILL performed its field work at the Harris site, includes as attachments GEOvision procedures OYO P-S Suspension Seismic Velocity Logging Procedure (Attachment B-6), and The Down-hole Seismic Velocity Logging Procedure (Attachment B-11).

GEOvision has acknowledged that its final report incorrectly referenced Revision 1.31 of the OYO P-S Suspension Seismic Velocity Logging procedure, whereas it should have referenced Revision 1.2, which was the one used in conducting the work and was in accordance with the work plan. Therefore, this deficiency was in the nature of an administrative error without substantive significance. This deficiency and corrective action was addressed in Condition Report 338884-CR-011-07.

GEOvision has also confirmed that the final report correctly referenced Revision 1.1 of the Downhole Seismic Velocity Logging procedure as the procedure used to perform the work at the Harris site, as opposed to Revision 1.0 which was identified in the SIWP. Condition Report 338884-CR-11-07 addressed this deficiency and corrective action. The corrective action involved a step-by-step review of the two revisions of the procedure to identify changes, and an evaluation of the changes to determine their impact on the quality and technical adequacy of the work performed. CH2MHILL concluded, based on an evaluation of the changes, that the use of Revision 1.1 of the procedure did not impact the technical adequacy or the quality of this work activity. The investigation for Condition Report 338884-CR-011-07 identified additional work activities performed per procedures outside the SIWP. Each instance was reviewed and an engineering evaluation determined that these discrepancies did not impact the technical adequacy of the work product.

## **2. QA Review of SIWP**

This deficiency was addressed in CH2MHILL Condition Report 338884-CR-010-07. Investigation of this deficiency confirmed the NRC finding that a QA review of the SIWP was not conducted prior to issuing Revisions 1, 2, or 3 of the SIWP. As part of the corrective action, a QA review of each revision of the SIWP was conducted. The investigation concluded that the SIWP revisions, though lacking some quality attributes, were adequate to ensure that the site investigations conducted were complete and would provide data with sufficient technical content and quality attributes to support the Harris COLA.

The JV Independent Assessment team confirmed through its evaluation of the SIWP that the appropriate testing requirements (field instructions/procedures) were referenced and attached to the plan, and that the lack of a QA review of the work plan had no discernable adverse effect on the acceptability of the subsurface investigation results.

PEC concluded from these reviews that the Harris COLA activities performed under the SIWP were adequately controlled and met quality requirements for safety-related activities.

### **3. Training and Qualification Requirements**

This deficiency was addressed in CH2MHILL Condition Report CR 338884-CR-10-07. The condition report confirmed that the training and qualification requirements were not specifically identified in the test procedures for rock pressure meter testing and suspension logging. CH2MHILL corrective actions included contacting the subcontractors to determine the qualification requirements for personnel conducting these tests, reviewing the information provided and verifying the qualification for these personnel. CH2MHILL evaluated the qualification documentation and verified the personnel performing the testing activities were appropriately qualified and trained to perform this work at the Harris Site.

PEC reviewed the actions taken by CH2MHILL and the information provided by the subcontractors and concluded that the issues identified in this deficiency have been appropriately resolved and the quality of the field data generated by CH2MHill and its subcontractors for the Harris COLA project is adequate.

Deficiency #4

Failure to programmatically specify what documents are to be controlled as QA records

**NRC Issue:**

*Project QA managers for PE and its contractors were interviewed with regard to their processes for the collection, storage, and maintenance of QA records. Although the NRC audit team verified that most records sampled were developed and controlled in accordance with the applicable program guidance, the team did identify an area of concern regarding the records generated by CH2M and its subcontractors. Specifically, the NRC audit team identified that CH2M's QA record program did not specify what documents were to be controlled as QA records. PE immediately entered this issue into its corrective action program as CAR 338884-CR-014-07. At the conclusion of the NRC audit, this CAR remained open. The failure by CH2M to specify what documents were to be controlled as QA records is identified as an example of the programmatic deficiency identified in ARR-001 described in Section 1.1 of this report. [NRC Audit Report PROJ0740-2007-001, Section 3.11.b.2]*

**PEC Response:**

This deficiency is documented in CH2MHILL Condition Reports 338884-CR-014-07 and 338884-CR-011-08. Corrective actions from these CRs were twofold:

1. Revision of Project Instruction 338884-PI-03-07 to clearly define the field documents which must be controlled as field records. These documents include:
  - a. The completed attachments from the Field Safety Instruction;
  - b. The completed Quality Inspection Checklists;
  - c. Completed M&TE logs;
  - d. Completed field calibration forms;
  - e. Completed training rosters;
  - f. Completed Site characterization logs and data sheets, including those completed by subcontractors (e.g., soil boring logs, soil characterization logs, and point break test logs);
  - g. Completed sample management documents;
  - h. Completed documents which identify authorized site activities, including personnel and their affiliation;
  - i. Completed field change documentation, processed per NBG-05-01, Document Development and Change;



- j. Completed documents generated from the various field sites and offices, such as calculations, engineering design files, technical memoranda, etc.
2. Revision of the QA Project Plan to clearly identify what documents constitute QA records for the project. These documents are:
- a. NBG Procedures
  - b. Department Instructions
  - c. NBG Quality Assurance Manual (QAM)
  - d. Quality Assurance Project Plan (QAPP)
  - e. Site Work Implementation Plan (SWIP)
  - f. Project Instructions
  - g. M&TE Usage Log, History File, Inventory Log, Calibration Log
  - h. Design Record Documents (DRDs)
  - i. Engineering Design Files (EDFs)
  - j. Calculations and Design Related Documents
  - k. Design Input Transmittals (DITs) and DIT Log
  - l. Request for Information (RFIs) Form, Documentation, Weekly Status Report
  - m. Software Documents
  - n. COLA Chapters (text, tables, figures, validation package)
  - o. Personnel Training/Qualification Records
  - p. Assessment Reports
  - q. Assessment Schedules
  - r. Audit Report
  - s. Condition Reporting and Corrective Action Documentation
  - t. Correspondence
  - u. Document History Files Packages
  - v. MRB Meeting Minutes
  - w. ENG-FM-003 Forms
  - x. ENG-FM-010 Forms
  - y. Evaluated Suppliers List
  - z. Management and Independent Assessments
  - aa. PE Response Letter and Comment Resolution Form
  - bb. QA Record Transmittal/Receiving Forms, QA Records Review Checklists
  - cc. Rapid Response Team Charter, Data Packages, MRB Minutes
  - dd. Record of Auditor Qualification/Certification
  - ee. Stop Work Order
  - ff. Surveillance Report
  - gg. Procurement Documents and Purchase Orders

Since the initiation of the project, CH2MHILL has maintained quality records as required by the Project Quality Procedure (referred to as Quality Assurance Project Plan or QAPP after Revision 2) which specified QA record requirements as follows:

“Sufficient records shall be maintained to furnish evidence of activities affecting quality. The records shall include at least the following: Operation logs and the results of reviews, training records, inspections, tests, audits, monitoring of work performance, and materials/site analyses. The records shall also include closely-related data such as qualifications of personnel, procedures and equipment. Inspection and test records shall as a minimum identify the date performed, inspector or data recorder, the type of observation, the results, the acceptability, and the action taken in connection with any deficiencies noted.”

PEC conducts an Owners Acceptance Review (OAR) of the COLA and supporting documents (drawings, reports, calculations). Documents receiving an OAR are maintained as QA records. Therefore, those CH2MHILL documents that are supplied as inputs to the COLA are also maintained by PEC as QA records.

Based on the information presented above, PEC concluded that appropriate mechanisms are in place for classifying relevant records as QA records for the Harris COLA project so that they can be properly controlled.

Deficiency #5

Failure to develop adequate qualification documentation and training records for specific disciplines involved in site work activities

**NRC Issue:**

*The NRC audit team identified several deficiencies in the CH2M training and qualification program. Specifically, the CH2M QA program did not contain adequate qualification and training records for personnel qualified as "Calibration Personnel," "Geologists," "Field Engineers," and "Software Verifiers." The NRC audit team identified that there was no apparent training program established for qualifying personnel to perform calibration of measuring and test equipment, nor were there any on-the-job training records that would indicate that personnel were qualified to perform the calibration activity. Additionally, the quality records for the positions of "Geologist," "Field Engineer," and "Software Verifier," consisted only of resumes and a training log indicating attendance at an indoctrination session on CH2M QA programs. The NRC audit team was unable to identify specific qualification records for individuals classified under these job titles. The failure of CH2M to develop adequate qualification and training records are considered examples of the programmatic deficiencies identified in ARR-001 described in Section 1.1 of this report. [NRC Audit Report PROJ0740-2007-001, Section 3.13.b.2]*

**PEC Response:**

The qualification and training of CH2MHILL and subcontractor personnel performing field work activities at the Harris site was not adequately documented or readily retrievable at the time of the audit. Since that time, CH2MHILL has identified and retrieved existing qualification and training records, both internally and from subcontracted companies. CH2MHILL has also obtained signed statements from project management personnel to certify adequate qualification and training had been conducted prior to performing field work activities at the Harris site.

**Qualification of Personnel** - The CH2MHILL qualification requirements for education and experience are stated in procedure NBG-QA-02-01, Appendix A. Records were reviewed to identify the CH2MHILL and subcontractor personnel that performed work at the Harris site. Information sources included existing qualification and training records, time reporting records, and daily field documentation. Existing documentation of each individual's qualifications (e.g., resumes, work experience and dates of employment, and licenses) was also retrieved. The records of qualifications for each individual

identified were compared to the qualification requirements in NRG-QA-02-01 and the results were documented to ensure that individuals were qualified for the role they performed as part of the site investigation. The Project Manager reviewed the individuals' qualifications and supplied a signed statement certifying that, based on the review of qualification records, each individual that performed field activities at the Harris site was qualified prior to performing work. As a result of this effort, previously identified deficiencies regarding qualification of personnel have been resolved. Documentation of qualifications is now on file at CH2MHILL for individuals who performed work at the Harris site.

The NRC audit report identified deficiencies regarding the documentation of qualifications of specific positions including calibration personnel, geologists, field engineers, and software verifiers. The CH2MHILL qualification procedure, NRG-QA-02-01, Appendix A, lists the qualification requirements by the following types of positions: Manager, Supervisor, Operators, Technicians, Maintenance, Technical Staff, Quality, Inspection and Test, and Administrative. Appendix B to the procedure provides expanded information regarding the educational requirements for each type of position and also provides several typical job designations that would fall under each position type.

Geologists, field engineers, and software verifiers fall under the position type of "Technical Staff." Calibration personnel are classified as "Technicians." The training and qualification requirements for these positions are set forth in procedure NRG-QA-02-01 and its attachments.

CH2MHILL has confirmed that those personnel who worked at the Progress Energy Harris site were indeed qualified in accordance with position-specific qualification requirements prior to the performance of the work at the site. CH2MHILL has also confirmed the qualifications of the software verifiers who did not work on site, but worked in support of the project.

The results of this review confirmed that the qualification of personnel who performed work at the Harris site met established CH2MHILL requirements.

**Training of Personnel** - In conjunction with the efforts described above regarding qualification of personnel, training of individuals that performed work at the Harris site and documentation of that training were also subjected to a comprehensive review. As identified in the NRC audit, the available documentation of training consisted only of

logs of individuals indicating attendance at training sessions on specified CH2MHILL programs and procedures.

To supplement the existing training documentation, information was gathered that demonstrates that adequate training was provided and documented for CH2MHILL employees and subcontractors prior to their performing work at the Harris site. Sources of information included training rosters, daily field documentation of site work, and electronic training notifications, including participant responses. In addition, project management, including the CH2MHILL field team leads, have supplied signed statements certifying that personnel that performed work at the Harris site were adequately trained prior to performing work. Evidence of training provided is now on file at CH2MHILL for individuals involved in Harris site investigation activities, either in the form of contemporaneous evidence of training or subsequent trainer statements.

Qualified and trained CH2MHILL field team leads were on site directly overseeing the field work activities. Field team leads were interviewed as part of this investigation, and confirmed that their observation of the manner in which the actual work was accomplished provided evidence that personnel were, in fact, adequately qualified and trained to perform their assigned tasks. This information further supports the conclusion that personnel performing work demonstrated adequate knowledge and understanding to satisfactorily complete assigned tasks.

Documentation of training as described above is now on file at CH2MHILL for individuals involved in Harris site investigation activities.

**Calibration training** - Deficiency 5 also states: "The NRC audit team identified that there was no apparent training program established for qualifying personnel to perform calibration of measuring and test equipment, nor were there any on-the-job training records that would indicate that personnel were qualified to perform the calibration activity." The audit team correctly states that there was no training program for qualifying the personnel of CH2MHILL and its onsite subcontractors to perform calibration of measuring and test equipment (M&TE), but this does not constitute a deficiency in the CH2MHILL QA program because no calibration of measuring and test equipment was conducted onsite. Instead, calibration of such equipment was performed offsite by qualified subcontractors or vendors. These calibrations were performed to National Institute of Standards and Technology standards and/or the lab performing the calibration was accredited by the National Voluntary Accreditation Program or the American Association for Laboratory Accreditation. A basis for

acceptance was determined for equipment identified in the Engineering Design Files as well as equipment identified by Measuring and Test Equipment Logs.

During the audit, the NRC identified an instance of a CH2MHILL employee filling out an M&TE calibration form but no M&TE calibration training records were available for this employee. Condition Report 338884-CR-013-07 was initiated to address this discrepancy. It was determined that the individual in question had inappropriately used a M&TE form to document the field verification of a piece of non-measuring and test equipment.

Based on the information presented above, PEC believes that the conditions described in Deficiency # 5 had no impact on the appropriateness of the design or field work activities performed by CH2MHILL for the Harris COLA project.