

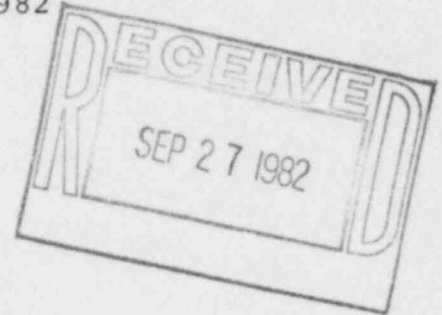
**Gibbs & Hill, Inc.**

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A Dravo Company

September 24, 1982

Mr. Uldis Potapovs, Chief  
Vendor Inspection Branch  
U.S. Nuclear Regulatory Commission  
Region IV  
611 Ryan Plaza Drive  
Suite 1000  
Arlington, Texas 76011



Dear Mr. Potapovs:

Subject: Response to Inspection Report 82-02  
Docket No. 99900524/82-02


Enclosed is Gibbs & Hill's response as requested in your letter dated August 26, 1982 pursuant to the inspection of our QA Program conducted by Mr. D. Fox of your office on June 21-25, 1982.

We have repeated the nonconformances as they were stated in the Notice of Nonconformance of your inspection report, and followed each with a response.

If we may be of any further assistance, please contact me or Mr. Nabil N. Keddis, Quality Assurance Manager.

Very truly yours,

GIBBS & HILL, INC.

  
Paul P. DeRienzo  
Vice President  
Quality Assurance

PPD:rp  
Enclosure

**Dravo**

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NOTICE OF NONCONFORMANCE A

- A. Section 17.1.5 "Instructions, Procedures, and Drawings" of the Gibbs & Hill (G&H) Topical Report states in part that, Instructions, procedures, drawings, and specifications are used, as applicable, by technical and administrative personnel for various phases of the design and procurement activities of nuclear plant . . . ."

Nonconformances with this commitment are as follows:

1. Sections 3.0 and 4.0 of procedure EDP-10 "Control of Development of Computer Programs" state in part that, "The acquisition, development, or modification of any program shall be initiated using request form F-736 (Request for Data Processing Services or Equipment), which shall be submitted to the Department Manager or Department Chief or his designee . . . . Approval requirements for form F-736 (Attachment 1) shall be carried out as follows . . . (by the) Department Manager or Department Chief Engineer, or his designee, and the Director, Computer Services . . . ."

Contrary to the above, F-736 forms were not initiated, reviewed, approved, and distributed for the development of computer programs DLFPW and PDROP version 1, nor for the modification of PDROP from version 1 to version 2.

2. Section 4.0 of procedure EDP-10 states in part that, "Independent program review by a cognizant engineer chosen by the Department Manager, Chief or his designee must be made on program documentation. It is essential that documentation be accurate and complete. A complete documentation must include not only the program verification, but also a program description to show how to prepare all program input data, as well as the methods, assumptions, and equations used to model the physical system.

"The documentation process shall include a final check of program description, and revision if necessary, to ensure that it is an accurate description of the Official Copy of the program that can readily be used by another qualified person."

Contrary to the above, the required "final check" of the program description did not ensure that the program description was as accurate description of the Official Copy of programs CONVERT, CISRS, and DLFPW in that:

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Certified By Rheanne Clark

- a. The independent program review by the cognizant engineer did not assure that the documentation was complete for computer program CONVERT in that the required program description did not exist; and
  - b. The program descriptions for computer programs CISRS and DLFPW did not show the methods, assumptions, and equations used to model the physical system.
3. Section 4.0 of procedure EDP-10 states in part that, "Program verification shall be documented using signoff Form F-887A (Computer Program Verification). The original copy of the form . . . shall be transmitted to the Director, Computer Services. The Director, Computer Services shall verify that all appropriate documentation as indicated on Form F-887A is included . . . and then sign Form F-887A acknowledging receipt of the program. He is required to maintain this material in a permanent file."

Contrary to the above, computer program verification was not documented, acknowledged, nor maintained in a permanent file as evidenced by the non-existence of Computer Program Verification Forms for the CRRS (No. 6025) and the CREED (No. 3037) programs, both of which are listed in the "G&H (Computer) Program Catalog," dated June 11, 1982, and are included in the "List of Computer Programs used on CPSES," dated December 17, 1982.

#### GIBBS & HILL'S RESPONSE

##### Item 1

1. Description of steps that have been taken or will be taken by Gibbs & Hill, Inc., to correct this item:

To correct the nonconformance, F-736 forms will be completed for PDROP version 1 and version 2 and DLFPW as set out in EDP-10 Section 3.0 item i. This will be completed by September 30, 1982.

2. Description of steps that have been taken or will be taken to prevent recurrence:

To prevent a recurrence of this problem a memo dated June 28, 1982 has been distributed to engineering and programming managers reminding them of the need for an F-736. In addition, the Information Resources Management (IRM) Librarian Administrator, who is responsible for maintaining verified programs, has been instructed in this memo not to

accept programs for verification unless an F-736 form had been previously submitted.

Item 2

In response to item 2, none of the three programs mentioned, CISRS, DLPPW, and CONVERT perform complex engineering calculations. The cognizant engineers who reviewed the documentation felt that the documentation provided was adequate, as they were very familiar with the operation and function of these programs. The lack of more detail in the descriptions has been deemed to have had no affect on the quality of the resulting program.

1. Description of steps that have been taken or will be taken by Gibbs & Hill, Inc., to correct this item:

To correct this nonconformance, the program documentation for DLFPW, CISRS, and CONVERT will be expanded to conform to the requirements of EDP-10. This will be completed by the end of 1982. Also EDP-10 will be revised to spell out in detail the documents required for program verification.

2. Description of steps that have been taken or will be taken to prevent recurrence:

To prevent a recurrence of this problem a memo will be sent to engineering and programming managers, reminding them that when a program is verified, the cognizant engineer must ensure that program documentation exists as required in EDP-10. In addition, instructions will be given to the librarian to check for the presence of the full documentation package.

This action will be completed by October 31, 1982.

Item 3

In response to Item 3, it must be pointed out that the inclusion of a program on the G&H Program Catalog or on the List of Programs used on CPSES does not guarantee that all steps required by EDP-10 have been completed.

The G&H Program Catalog is an accounting document; programs are placed on this list early in the development process so that all runs including testing runs may be billed correctly.

The List of Programs used on CPSES was compiled by engineering in order to identify which programs were assigned to the CPSES project.

The programs identified by the auditor, CRRS and CREED were in the process of verification at the time of the audit.

1. Description of steps that have been taken or will be taken by Gibbs & Hill, Inc., to correct this item:

Verification of these programs will be completed by December 31, 1982 and thereafter they will be maintained as required by EDP-10.

2. Description of steps that have been taken or will be taken to prevent recurrence:

To insure that design input data comes from a verified computer program the following steps have been or will be implemented:

1. A message is now displayed on computer runs of verified programs stating that the program has been verified.
2. Engineering Design procedures will be changed to require design reviewers to reject design documents using computer programs which do not contain the above message. These procedural changes will be completed by the first quarter of 1983.
3. EDP-10 will be modified to require IRM to periodically circulate to all engineering managers an official list of all verified programs.

These committed changes to EDP-10 will be released by the end of the first quarter of 1983.

#### NOTICE OF NONCONFORMANCE B

- B. Section 17.1.2 (QA Program) of the G&H Topical Report states in part that, "G&H has an established QA Program for the management, engineering and design, procurement and construction phases of its work on nuclear power plant projects . . . designed to comply with the supplementary requirements of the American National Standards Institute (ANSI) N45.2 series standards as well as the NRC Regulatory Guides applicable to quality requirements as referenced in Appendix A of this document."

Appendix A references as item 8.0, NRC Regulatory Guide 1.64 (Revision 2 - June 1976), which endorses ANSI N45.2.11-1974.

ANSI N45.2.11-1974 (Quality Assurance Requirements for the Design of Nuclear Power Plants), states in part that, "Procedures shall be employed to assure that design activities are carried out in a planned, controlled, orderly and correct manner. Program procedures shall cover the



following . . . 2.2.4. Document control including review, approval, release, distribution, and revision . . . 2.2.5. Maintenance and retention of design documents . . . 2.2.8. Identifying appropriate design input . . . 2.2.13. Taking corrective action . . . 2.2.14. Making experience reports available to cognizant design personnel . . . 2.2.15. Controlling design changes."

Nonconformances with these commitments are as follows:

Contrary to the above sections of ANSI 2.11-1974, procedures did not exist, and therefore were not employed, for:

1. Identifying design inputs in computer code program descriptions;
2. Approving, releasing, distributing, and revising program descriptions;
3. Identifying, maintaining, and retaining program descriptions, source listings, and computer test problem input and output data, with the status of a quality assurance record;
4. Controlling changes to computer codes with respect to assuring that the impact of changes to computer codes is carefully considered and required actions documented, and the change is justified and subjected to design control measures commensurate with those that were, or should have been, applied to the original code, including revalidation/reverification;
5. Taking corrective action when a significant deficiency is detected in a computer code with respect to determining the cause, and instituting appropriate changes in the computer code development and/or validation process to prevent recurrence, and providing for reporting the deficiency and corrective action to appropriate levels of supervision and management to assure followup action; and
6. Making computer code experience reports available to cognizant design personnel.

GIBBS & HILL RESPONSE

1. Description of steps that have been taken or will be taken by Gibbs & Hill, Inc., to correct this item.

The NRC auditor's interpretation of ANSI N45.2.11-1974 as applying in every detail to computer codes and program verification will require changes to EDP-10 and

implementation of the revised procedure. A summary of the changes to be made to EDP-10 are outlined below.

1. The program description will be expanded to include a description of the methods, assumptions, and equations used to model the physical system.

For simple programs where the design criteria are readily apparent from the code listing, a copy of the code listing will be sufficient to satisfy this requirement.

2. EDP-10 currently contains provisions for approval and revision of program descriptions when such actions are performed in conjunction with program development or modification. The cognizant engineer responsible for program verification is required to check documentation.

Procedure EDP-10 will be revised to include provisions for documentation control procedures.

3. EDP-10 currently requires IRM to maintain these documents. EDP-10 will be revised to include procedures for maintaining these documents.
4. EDP-10 does address changes to programs to the extent that 1) changes must be initiated via a form F-736 which describes the changes to be made and 2) a verified program must be reverified after a change. EDP-10 will be modified to require engineering managers to be informed of changes to be made and to consider the impact of these changes on their work, including the need for revalidation/reverification. Such actions will be documented.
5. In the past, errors found in a program were documented via a memo from IRM. To formalize this practice, EDP-10 will be revised to reflect this requirement.
6. EDP-10 will be revised to include provisions for making computer code experience reports available to cognizant design personnel.

To prevent any failure to follow the revised procedures, a copy of the revised EDP-10 will be sent to engineering managers and programmers within IRM who are responsible for developing or revising engineering programs.

EDP-10 will be revised and reissued by the end of the first quarter of 1983.

2. Description of steps that have been taken or will be taken to prevent recurrence:
  - a. The new requirements to be added to EDP-10 will be explained to the affected disciplines during QA training seminars. These will be held on an ongoing basis during the balance of 1982 and if needed, into 1983.
  - b. The QA Department will monitor implementation of the requirements of EDP-10 through scheduled audits.