

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
REGION IV

Report No. 99900401/81-01

Company: Combustion Engineering Incorporated
Power Systems Group
1000 Prospect Hill Road
Windsor, Connecticut 06095

Inspection Conducted: April 28 - May 1, 1981

Inspectors: CJ Hale/for 5-13-81
R. H. Brickley, Contractor Inspector
Reactor Systems Section
Vendor Inspection Branch
Date

Approved by: CJ Hale 5-13-81
C. J. Hale, Chief
Reactor Systems Section
Vendor Inspection Branch
Date

Summary

Inspection conducted on April 28 - May 1, 1981 (99900401/81-01)

Areas Inspected: 10 CFR Part 50, Appendix B in the areas of background verification of technical personnel, design verification, and control of computer programs. The inspection involved 25 inspector-hours on site by one NRC inspector.

Results: There were no nonconformance, unresolved, or follow up items identified.

DETAILS SECTIONA. Persons Contacted

- D. R. Earles, Supervisor, Steamline Break Analysis
- W. R. Horlacher, QA Coordinator, Plant Engineering
- *E. H. Kennedy, Manager, Project and Generic Licensing
- H. T. Melcher, Engineering Specialist
- *C. M. Molnar, Lead Engineer, ECCS Analysis
- *G. S. Weiner, Manager of Employment

*Denotes those in attendance at the exit interview.

B. Background Verification of Technical Personnel1. Objectives

The objectives of this area of the inspection were to verify that measures have been established and are being effectively implemented that assure:

- a. The education and work experience information contained in employees' job applications are being verified by the employing organization.
- b. There is objective, documented evidence/records that attest to the employees' education and experience.

2. Method of Accomplishment

The preceding objectives were accomplished by an examination of various employee screening forms utilized by CE and the verification records maintained on five members of the CE technical staff.

3. Findings

- a. There were no nonconformance, unresolved, or follow up items identified.
- b. All new employees' are required to furnish evidence such as degree, diploma, certificate, etc. for all education received above the High School level. This evidence must be presented on the first day of work and copies of it are maintained in personnel files. It is not CE's current practice to verify the authenticity of these documents via direct contact with the issuing organization.

- c. CE runs an employment background check on all new hires. In four of the records that were examined the former employer had responded. In the fifth case the former employer had not responded as yet.
- d. All new employees are in a probationary status for 12 months. During this period the individual works under the surveillance of a senior employee. The individual's performance is formally evaluated at six and 12 months.
- e. Reportedly CE does not utilize employment agencies nor do they use "job shoppers."
- f. Although CE's employment practices were not formally documented in a procedure a hand written draft outline of a proposed policy/procedure (Procedure - New Hires) was made available to the inspector.

C. Control of Computer Programs

1. Objectives

The objectives of this area of the inspection were to determine that:

- a. Computer programs have been developed, verified, qualified, and are being used in accordance with procedures which have been prepared, reviewed, and approved by authorized management.
- b. A computer program custodian has been designated and has the responsibility for maintaining the security of the program.
- c. Each computer program that has been authorized for use has been qualified, has an appropriate user's manual, and this manual (or another manual) provides a detailed description of the mathematical models, empirical data, assumptions used, and applicable references.
- d. The computer program has been verified/qualified and that documentation exists which includes:
 - (1) A description of the program version and options validated,
 - (2) A detailed description of the test problems, including boundary conditions, mathematical model, and all key parameters.
 - (3) A listing of the test problem input data checks and a reprint of the program input and output, or reference to the location where this is stored.
 - (4) The comparison of solutions, evaluation of the program validity, and an analysis of any identified errors.

- e. Technically qualified individuals have reviewed and approved the verification/qualification of each computer program prior to its use in safety related applications.
- f. Revisions and modifications have been subjected to the same review and approval as the original version of the program.
- g. Errors identified in computer programs are promptly corrected and appropriately verified prior to use.
- h. Errors which could result in significant deficiencies in nuclear plant design are reported to the NRC under the requirements of 10 CFR Part 21, 10 CFR Part 50.55(e), and 10 CFR Part 50, Appendix K, as appropriate.

2. Method of Accomplishment

The preceding objectives were accomplished by an examination of the user's manuals, theoretical manuals, and verification analyses for several versions of the computer program CESEC. In addition, the inspector examined the applicable procedures from the QA of Design Procedures Manual.

3. Findings

- a. There were no nonconformance, unresolved, or follow up items identified.
- b. The computer program CESEC provides a digital simulation of the NSSS and is used in the safety analysis performed by CE. The program is designed to facilitate the analysis of abnormal or accident operational conditions via the study of postulated transients.
- c. The CE Topical Report CENPD-107 (CESEC-Digital Simulation of a CE NSSS) and its supplements were found to provide a detailed description of the mathematical models, empirical data, assumptions, and applicable references.
- d. The training manual (CESEC-II User Course) and the information contained in the topical report, and its supplements, were found to satisfy the "Users Manual" requirements.
- e. The QA of Design Procedure 5.2 (Design Analysis), Revision 3 dated April 2, 1979, was found to impose the requirements of paragraph C.1 above.

D. Design Verification

1. Objectives

The objectives of this area of the inspection were to determine that procedures have been established and are being implemented that:

- a. Identify individuals or groups who are authorized to perform design verification reviews.
- b. Require the results of the design verification effort to be clearly indicated, and filed.
- c. Identify and document the method by which design verification is to be performed.
- d. Identify the items to be considered during design verification by the design review method.
- e. Prescribe the requirements for performing design verification by the alternate calculations method.
- f. Prescribe the requirements for performing design verification by the qualification testing method.

2. Method of Accomplishment

The preceding objectives were accomplished by an examination of:

- a. Procedures QADPs 5.2 (Design Analysis), Revision 3 dated 4/2/79, and 5.4 (Design Verification), Revision 3 dated 4/30/81, that impose the requirements of paragraph D.1 above.
- b. The verification analysis performed on six versions of CESEC.

3. Findings

There were no nonconformance, unresolved, or follow up items identified.

E. Exit Interview

An exit interview was held with management representatives on May 1, 1981. In addition to those individuals indicated by an asterisk in paragraph A, those in attendance were:

M. R. Etheridge, Vice President, General Services
P. D. Ford, Supervisor, Compliance
F. G. Harvey, Creditor, Engineering QA (EQA)
C. W. Hoffman, Director, Group QA
G. J. Hubba, Manager, EQA
T. R. Swift, Manager, Group Quality Systems
V. P. Vallario, Industrial Relations

The inspector discussed the scope and findings of the inspection. Management comments were generally for clarification only, or acknowledgement of the statements of the inspector.