



August 3, 1983
LD-83-070

Mr. Richard C. DeYoung, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Report on Potential Safety Hazard Related to Damage Discovered in a
CEA Shroud Assembly

Dear Mr. DeYoung:

This letter confirms my July 29, 1983 verbal notification to you pursuant to reporting of a potential safety hazard concerning damage discovered in a CEA shroud assembly.

The CEA shroud assembly in question was fabricated by C-E at it's P.F. Avery manufacturing division and supplied to Palo Verde Unit 1. During inspection following the completion of the unit's hot functional test program cracks were discovered at the top of seven (7) of the shrouds. Based on a preliminary review of the damage, C-E is concerned that the cracks could have the potential to delay or prevent CEA insertion. Although C-E is concerned with the discovery of cracks in a component which was acceptable at the time of installation and the possible generic implications for other plants having similar components, we do not now have information which would indicate that the problem cited above extends to these other units.

Actions have been initiated to further characterize the nature of the damage and to determine the cause of the failures. Corrective actions will be based on these ongoing investigations as more information is developed. Since the damage cited is to a component not used in any operating reactors, C-E does not feel that the potential exists for an immediate safety concern.

Attachment (1) provides additional information pursuant to the reporting of potential safety hazards.

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If you have any questions on the above, please feel free to contact me or Mr. C. M. Molnar of my staff at (203) 285-5205.

Very truly yours,

COMBUSTION ENGINEERING, INC.,

A handwritten signature in dark ink, appearing to read "A. E. Scherer". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

A. E. Scherer
Director
Nuclear Licensing

AES:tmr
Attachment
cc: J. M. West, C-E

INFORMATION CONCERNING POTENTIAL SAFETY HAZARD
RELATED TO DAMAGE DISCOVERED IN A CEA SHROUD ASSEMBLY

1. Name and address of the individual or individuals informing the Commission.

Combustion Engineering, Inc.,
1000 Prospect Hill Road
P.O. Box 500
Windsor, Ct. 06095-0500

2. Identification of the facility, the activity, or the basic component supplied for such facility or such activity within the United States which fails to comply or contains a defect.

The basic component which is the subject of this report is the stainless steel Control Element Assembly (CEA) shroud assembly delivered to and installed at Palo Verde Unit 1. This component limits cross flow and provides separation of the CEA assemblies. In addition guides at the upper end of the shrouds provide for alignment of the CEA extension shafts with the Control Element Drive Mechanisms (CEDMs) during installation of the reactor vessel head onto the vessel.

3. Identification of the firm constructing the facility or supplying the basic component which fails to comply or contains a defect.

The subject component was fabricated by:

Combustion Engineering, Inc.,
1000 Prospect Hill Road
P. O. Box 500
Windsor, Ct. 06095-0500

4. Nature of the defect or failure to comply and the safety hazard which is created or could be created by such defect or failure to comply.

The CEA shroud assembly was fabricated by C-E at our P.F. Avery manufacturing facility, under manufacturing orders requiring adherence to Section III of the ASME Code. The assembly limits cross flow and provides separation of the CEA assemblies. The shroud design consists of an assemblage of large vertical tubes connected by vertical plates in a grid pattern. The shroud assembly is mounted on the Upper Guide Structure (UGS) base plate and is held in position by eight tie rod tube assemblies which are threaded into the UGS base plate at their lower end. The tie rods are bolted against plates located at the top of the CEA shroud assembly and are pretensioned. Guides for the CEA extension shafts are provided at the tops of the tubes for alignment with the CEDMs during installation of the reactor vessel head onto the vessel. The tubes and connecting plates are furnished with multiple holes to permit hydraulic communication.

Since Palo Verde Unit 1 will be the first System 80 Standard Plant design to start-up a full Precritical Vibration Monitoring Program (PVMP) per Regulatory Guide 1.20 was carried out. During planned inspections following the hot functional test program, cracks were discovered in a number of the CEA shroud tubes. At this time seven (7) cracked tubes have been identified. The cracks are located in the upper end of the tube in a region where the CEA extension shaft guides are welded to the structure. Damage in these tubes was not apparent during post-manufacturing or pre-installation visual inspection. At this time the root cause of the damage to the CEA shroud assembly is still under investigation.

C-E considers the damage found to be a matter of concern since failure of the shroud assembly has the potential to delay or prevent CEA insertion.

5. The date on which the information of such defect or failure to comply was obtained.

The post-hot functional test inspection first revealed the damage on or about July 27, 1983. After a preliminary review of the damage at C-E's engineering offices, it was concluded, on July 29, 1983, that a potentially reportable defect may exist. A detailed evaluation of the concern is still in progress.

6. In the case of a basic component which contains a defect or fails to comply, the number and location of all such components in use at, supplied for, or being supplied for one or more facilities or activities subject to the regulations in this part.

The CEA shroud assembly which is the subject of this report is common to C-E's System 80 Standard Plant Design. This design is not used on other C-E NSSS's. In addition to Palo Verde Unit 1, similar components have been delivered to Palo Verde Units 2 & 3, WPPSS Unit 3, and Yellow Creek Unit 1. All of these units are in the construction phase and, therefore, do not pose an immediate safety concern.

7. The corrective action which has been, is being, or will be taken; the name or the individual or organization responsible for the action; and the length of time that has been or will be taken to complete the action.

Inspection of the CEA shroud assembly at Palo Verde Unit 1 is continuing to better characterize the damage. These inspections will include visual as well as dye penetration examinations, as appropriate. Investigations into the cause of the failure and its applicability to other units are also underway by C-E. As this unit and others like it are not in operation there is no immediate safety concern. Appropriate repairs will be made taking into consideration information being developed in the ongoing investigations.

8. Any action related to the defect or failure to comply about the facility activity, or basic component that has been, is being, or will be given to purchasers or licensees.

C-E is in the process of preparing an Infobulletin on this report for distribution to owner's of C-E NSSS's.