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RECIP.NAME RECIPIENT AFFILIATION
DENTON,H.R. Office of Nuclear Reactor Regulation, Director

SUBJECT: Forwards info re engineering description, test procedures, background info, generic operating guidelines & supporting details for reactor vessel head vents, in response to NUREG-0737, Item II.B.1.

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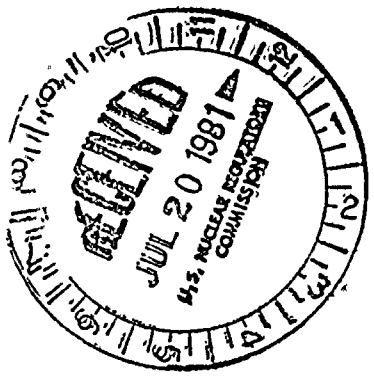
July 15, 1981
AEP:NRC:0584



Donald C. Cook Nuclear Plant Unit Nos. 1 and 2
Docket Nos. 50-315 and 50-316
License Nos. DPR-58 and DPR-74
NUREG-0737; ITEM II.B.1 - REACTOR COOLANT SYSTEM VENTS

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Denton:

This letter and its attachments document the engineering description, test procedures, background information, generic operating guidelines and supporting details for the reactor vessel head vents being installed in both Units of the Donald C. Cook Nuclear Plant.

More specifically, the attachments to this letter contain the following information:

Attachment 1: A brief description of the design, operation and testing requirements

Attachment 2: Background Information for Pressurizer Venting Operation - Rev. 0, dated March 1981.

Attachment 3: Pressurizer Venting Operation - Rev. 0, dated March 1981.

Attachment 4: Background Information for Reactor Head Vent Operation - Rev. 0, dated February 1981.

Attachment 5: Reactor Vessel Head Vent Operation - Rev. 0, dated February 1981.

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Attachment 6: The following Supporting Information is attached:

a) Suggested Technical Specifications.

b) Flow Diagram of the Reactor Head Vent System (Figure 1).

c) Flow Diagram of the Pressurizer Vent System (Figure 2).

d) Logic Diagram (Figure 3).

e) Elementary Wiring Diagram 6.

Formal submittal of Technical Specifications will take place once the system design is finalized. Westinghouse report WCAP-9600, "Report on Small Break Accidents for Westinghouse NSSS System", June 1979, Section 3.9 has been used as a reference in developing the design of the vent system.

This information is provided as requested in Item II.B.1 of NUREG-0737. The Reactor Coolant System Venting Systems at the Cook Plant will be implemented by the required date of July 1, 1982.

Very truly yours,

R. S. Hunter
Vice President

cc: John E. Dolan - Columbus
R. C. Callen
G. Charnoff
R. W. Jurgensen
D. V. Shaller - Bridgman
Joe Williams, Jr.
Region III Resident Inspector - Bridgman

Description of Design

The reactor Coolant Vent System is comprised of the Reactor Head Vent System and the Pressurizer Vent System. It has been designed to vent a volume of Hydrogen approximately equal to one-half of the reactor coolant system volume in one hour at system design pressure and temperature.

Each of these subsystems consists of two parallel flow paths one inch in size, with redundant isolation valves in each flow path. A 3/8" orifice has been installed upstream of the isolation valves to limit the flow in the case of a break downstream of the orifices to within the capacity of one centrifugal charging pump. A break of an RCS Vent Line upstream of the orifices would result in a small LOCA not greater than one inch in diameter. This type of break has been analyzed in WCAP-9600 (Reference 1) and would behave similarly to the hot leg break presented in this report. Therefore a break in the vent line would not result in a calculated core uncovery. A locked open hand valve will be installed upstream of the 3/8" orifices.

The isolation valves are D. C. powered, fail closed, solenoid valves with stem position switches. These valves can be operated from the control room. They will be normally closed during plant operation. Indicating lights will be installed in the control room so the operators will know the valve position. These valves will be qualified to IEEE-323-1974, IEEE-344-1975 and IEEE-383-1972. RTD assemblies have been added downstream of the solenoid valves to detect leakage through these valves. These RTD assemblies will set off an alarm in the control room if leakage through the valves should occur.

The reactor vessel head vent connects to a part-length control rod drive mechanism housing located near the center of the reactor head. The pressurizer vent is connected to the pressurizer relief line. The possibility of reactor coolant pressure boundary leakage is minimized because of the two isolation valves in series. Isolation valves in one flow path are powered by Train A and the valves in the second flow path are powered by Train B.

Both the reactor head vent and the pressurizer vent discharge into the upper volume of the containment at approx. elevation 673'-0", in an area which will provide adequate dilution of any combustible gas.

All piping and equipment used in the reactor head vent from the part-length rod housing to the orifices and all piping and equipment used in the pressurizer vent from the pressurizer relief piping to the orifices are designed in accordance with ASME, Section III Class 1 requirements. From the orifices up to the first anchor downstream of the second isolation valve the piping and equipment has been designed in accordance with ASME Section III Class 2 requirements. The remainder of the piping is designed to AEP Seismic Class 1 Level 4.

Testing

The isolation valves used on the reactor head vent and pressurizer vent will be tested in accordance with subsection IWV-3000 of ASME Section XI for Category B valves during refueling outages.

Operation Procedures

The following procedures are attached and are generically applicable to the D. C. Cook Plant.

1. Background Information for Pressurizer Venting Operation - Rev. 0 dated March 1981.

2. Pressurizer Venting Operation - Rev. 0 dated March 1981.

3. Background Information for Reactor Head Vent Operation - Rev. 0 dated February 1981.

4. Reactor Vessel Head Vent Operation - Rev. 0 dated February 1981.

References

1. WCAP-9600, "Report on Small Break Accidents for Westinghouse NSSS System," June 1979, (specifically Case F Section 3.2).

ATTACHMENT 2
TO AEP:NRC:0584