

March 10, 1981

Docket No. 50-213
LS05-81-03-010



Mr. W. G. Council, Vice President
Nuclear Engineering and Operations
Connecticut Yankee Atomic Power Company
Post Office Box 270
Hartford, Connecticut 06101

Dear Mr. Council:

RE: SEP TOPIC V-5, REACTOR COOLANT PRESSURE BOUNDARY LEAKAGE DETECTION
HADDAM NECK NUCLEAR POWER PLANT

Enclosed is a copy of our evaluation of SEP Topic V-5 for the Haddam Neck Nuclear Power Plant. This assessment compares your facility, as described in Docket No. 50-213, with the criteria currently used by the regulatory staff for licensing new facilities. Please inform us within 30 days if your as-built facility differs from the licensing basis assumed in our assessment or this topic will be assumed complete.

This evaluation will be a basic input to the integrated safety assessment for your facility unless you identify changes needed to reflect the as-built conditions at your facility. This assessment may be revised in the future if your facility design is changed or if NRC criteria relating to this subject are modified before the integrated assessment is completed.

In future correspondence regarding this topic, please refer to the topic number in your cover letter.

Sincerely,

Dennis M. Crutchfield, Chief
Operating Reactors Branch No. 5
Division of Licensing

Enclosure:
SEP Topic V-5

cc w/enclosure:
See next page

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SEPB:DL	SL/SEPB:DL	C/SEPB:DL	ORB#5:DL	C/ORB#5:DL	AD-SA:DL
SGagnon:dn	CBerlinger	WRusse11	RCarlson	DCRAMEid	GCLeinas
2/ /81	2/2/81	2/16/81	3/2/81	3/3/81	3/6/81



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D. C. 20555

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Mr. W. G. Council

HADDAM NECK PLANT
DOCKET NO. 50-213

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HADDAM NECK
SYSTEMATIC EVALUATION PROGRAM TOPIC V-5
REACTOR COOLANT PRESSURE
BOUNDARY (RCPB) LEAKAGE DETECTION

I. Introduction

The safety objective of Topic V-5 is to determine the reliability and sensitivity of the leak detection systems which monitor the reactor coolant pressure boundary to identify primary system leaks at an early stage before failures occur.

II. Review Criteria

The acceptance criteria for the detection of leakage from the reactor coolant pressure boundary is stated in the General Design Criteria of Appendix A, 10 CFR Part 50. Criterion 30, "Quality of Reactor Coolant Pressure Boundary", requires that means shall be provided for detecting and, to the extent practical, identifying the location of the source of leakage in the reactor coolant pressure boundary. Criterion 32, "Inspection of Reactor Coolant Pressure Boundary", requires that components which are part of the reactor coolant pressure boundary shall be designed to permit periodic inspection and testing to assess their structural and leak tight integrity.

III. Review Guidelines

The acceptance criteria are implemented by the Nuclear Regulatory Commission in Section 5.2.5, "Reactor Coolant Pressure Boundary Leakage Detection", and Section 5.2.4, "Reactor Coolant Pressure Boundary Inservice Inspection and Testing", of the Standard Review Plan. The areas of the Safety Analysis Report and Technical Specifications are reviewed to establish that information submitted by the licensee is in compliance with Regulatory Guide 1.45, "Reactor Coolant Pressure Boundary Leakage Detection Systems", and that the inservice inspection programs are based on the requirements of Section XI of the ASME Boiler and Pressure Vessel Code, "Rules for the Inservice Inspection of Nuclear Power Components". Although not a part of this review, the consequences of break and crack location in component failures is analyzed and evaluated in Section 3.6.1, "Plant Design for Protection Against Postulated Piping Failures in Fluid Systems Outside Containment", and Section 3.6.2, "Determination of Break Locations and Dynamic Effects Associated with Postulated Rupture of Piping", of the Standard Review Plan.

IV. Evaluation

Safety Topic V-5 was evaluated in this review for compliance of the information submitted by the licensee with Regulatory Guide 1.45, "Reactor Coolant Pressure Boundary Leakage Detection Systems". The information in the Safety Analysis Report and Technical Specifications was substantiated by telephone conversation with the licensee. Regulatory Guide 1.45 requires that at

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least three separate detection systems be installed in a nuclear power plant to detect an unidentified leakage from the reactor coolant pressure boundary of one gallon per minute within one hour. Leakage from identified sources must be isolated so that the flow rates may be monitored separately from unidentified leakage. The detection systems should be capable of performing their functions following seismic events and capable of being checked in the control room. Of the three separate leak detection methods required, two of the methods should be (1) sump level and flow monitoring and (2) airborne particulate radioactivity monitoring. The third method may be either monitoring of condensate flow rate from air coolers or monitoring of airborne gaseous radioactivity. Other detection methods, such as humidity, temperature and pressure, should be considered to be alarms or indirect indication of leakage to the containment. The requirements of Regulatory Guide 1.45 and Standard Review Plan 5.2.5 and plant incorporated systems that meet those requirements are tabulated in Enclosure 1.

V. Conclusions

Our review indicates that the Haddam Neck Plant is in compliance with Regulatory Guide 1.45.

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ENCLOSURE 1

TABLE 1: REACTOR COOLANT PRESSURE BOUNDARY LEAKAGE DETECTION SYSTEM

System	Plant Incorporated System	S.R.P. 5.2.5 or Reg Guide 1.45 Requirement
1) Sump Level Monitoring (Inventory)	X	Yes, 1 or 2 Mandatory
2) Sump Pump Actuators Monitoring (Time Meters)		Yes, 1 or 2 Mandatory
3) Airborne Particulate Radioactivity Monitoring	X	Yes Mandatory
4) Airborne Gaseous Radioactivity Monitoring	X	Yes, 4 or 5 Mandatory
5) Condensated Flow Rate from Air Coolers		Yes, 4 or 5 Mandatory
6) Containment Atmosphere Pressure Monitoring		Yes Optional
7) Containment Atmosphere Humidity Monitoring	X	Yes Optional
8) Containment Atmosphere Temperature Monitoring		Yes Optional
9) CVCS Makeup Flowrate		Yes Optional
10) Portable Ultrasonic Detectors		Yes Optional
11) Air Conditioner Coolant Temperature Rise		No
12)		
13)		

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