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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

July 8, 1980

Docket No. 50-213

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

Dear Mr. Counsil:

RE: SEP TOPICS III-10.A, V-II.A, VI-4, VI-7.C.1, and VIII-3.B
Haddam Neck Plant

Enclosed are copies of our current evaluations of Systematic Evaluation Program Topics Nos. III-10.A, V-11.A, VI-4, VI-7.C.1, and VIII-3.B. These assessments compare 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 if your as-built facility differs from the licensing basis assumed in our assessments within 45 days of receipt of this letter.

These evaluations 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. These topic assessments may be revised in the future if your facility design is changed or if NRC criteria relating to this topic are modified before the integrated assessment is completed.

Sincerely,

Dennis M. Crutchfield

Dennis M. Crutchfield, Chief
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SEP TECHNICAL EVALUATION
TOPIC III-10.A

THERMAL-OVERLOAD PROTECTION FOR MOTORS OF MOTOR-OPERATED VALVES

HADDAM NECK

Docket No. 50-213

XNC
4-15-80

SEP TECHNICAL EVALUATION
TOPIC III-10.A

THERMAL-OVERLOAD PROTECTION FOR MOTORS
OF MOTOR-OPERATED VALVES

HADDAM NECK

TOPIC III-10.A   Thermal-Overload Protection for Motors of Motor-Operated Valves

The objective of this review is to provide assurance that the application of thermal-overload protection devices to motors associated with safety-related motor-operated valves do not result in needless hindrance of the valves to perform their safety functions.

In accordance with this objective, the application of either one of the two recommendations contained in Regulatory Guide 1.106, "Thermal-Overload Protection for Electric Motors on Motor-Operated Valves," is adequate. These recommendations are as follows:

(1) Provided that the completion of the safety function is not jeopardized or that other safety systems are not degraded, (a) the thermal-overload protection devices should be continuously bypassed and temporarily placed in force only when the valve motors are undergoing periodic or maintenance testing, or (b) those thermal-overload protection devices that are normally in force during plant operation should be bypassed under accident conditions.

(2) The trip setpoint of the thermal-overload protection devices should be established with all uncertainties resolved in favor of completing the safety-related action. With respect to those uncertainties, consideration should be given to (a) variations in the ambient temperature at the installed location of the overload

protection devices and the valve motors, (b) inaccuracies in motor heating data and the overload protection device trip characteristics and the matching of these two items, and (c) setpoint drift. In order to ensure continued functional reliability and the accuracy of the trip point, the thermal-overload protection device should be periodically tested.

In addition, the current licensing criteria require that:

(3) In MOV designs that use a torque switch to limit the opening or closing of the valve, the automatic opening or closing signal should be used in conjunction with a corresponding limit switch.

DISCUSSION

Review of Haddam Neck drawings show 52 safety-related motor-operated valves.[4-9] All of these valves have thermal-overload protection devices which are not bypassed; there is no docketed information to indicate that TOL trip setpoints have been set to comply with Criterion 2, above. Additionally, valve travel for all of these valves is terminated by torque switches rather than limit switches.

EVALUATION

Thermal-overload protection for motor-operated valves at Haddam Neck does not comply with current licensing criteria. Thermal-overload devices are not bypassed, no information is available to support adequacy of trip setpoints, and torque switches rather than limit switches are used to terminate valve travel.

REFERENCES

1. IEEE Standard 179-1971, "Criteria for Protection Systems for Nuclear Power Generating Stations."

2. Branch Technical Position EICSB-27, "Design Criteria for Thermal Overload Protection for Motors of Motor-Operated Valves."

3. Regulatory Guide 1.10 , "Thermal Overload Protection for Electric Motors on Motor-Operated Valves."

4. Haddam Neck Drawing 16103-32112, Sheet 26, Revision 5, dated 4-4-69.

5. Haddam Neck Drawing 16103-32112, Sheet 27, Revision 4, dated 10-22-68.

6. Haddam Neck Drawing 16103-32112, Sheet 28, Revision 9, dated 2-22-76.

7. Haddam Neck Drawing 16103-32112, Sheet 29, Revision 10, dated 10-19-79.

8. Haddam Neck Drawing 16103-32112, Sheet 29A, Revision 2, dated 10-79.

9. Haddam Neck Drawing 16103-32112, Sheet 30, Revision 6, dated 10-7-69.

SEP TECHNICAL EVALUATION REPORT
ELECTRICAL, INSTRUMENTATION, AND CONTROL FEATURES FOR
ISOLATION OF HIGH AND LOW PRESSURE SYSTEMS

HADDAM NECK NUCLEAR STATION

Connecticut Yankee Atomic Power Company

Docket No. 50-213

12-27-79

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SEP TECHNICAL EVALUATION REPORT
ELECTRICAL, INSTRUMENTATION, AND CONTROL FEATURES FOR
ISOLATION OF HIGH AND LOW PRESSURE SYSTEMS

HADDAM NECK NUCLEAR STATION

1.0 INTRODUCTION

The purpose of this review is to determine if the electrical, instrumentation, and control (EI&C) features used to isolate systems with a lower pressure rating than the reactor coolant primary system are in compliance with current licensing requirements as outlined in SEP Topic V-11A. Current guidance for isolation of high and low pressure systems is contained in Branch Technical Position (BTP) EICSB-3, BTP RSB-5-1, and the Standard Review Plant (SRP), Section 6.3.

2.0 CRITERIA

2.1 Residual Heat Removal (RHR) Systems. Isolation requirements for RHR systems contained in BTP RSB-5-1 are:

(1) The suction side must be provided with the following isolation features:

(a) Two power-operated valves in series with position indicated in the control room.

(b) The valves must have independent and diverse interlocks to prevent opening if the reactor coolant system (RCS) pressure is above the design pressure of the RHR system.

(c) The valves must have independent and diverse interlocks to ensure at least one valve closes upon an increase in RCS pressure above the design pressure of the RHR system.

(2) The discharge side must be provided with one of the following features:

(a) The valves, position indicators, and interlocks described in (1)(a) through (1)(c) above.

(b) One or more check valves in series with a normally-closed power-operated valve which has its position indicated in the control room.

If this valve is used for an Emergency Core Cooling System (ECCS) function, the valve must open upon receipt of a safety injection (SI) signal when RCS pressure has decreased below RHR system design pressure.

(c) Three check valves in series.

(d) Two check valves in series, provided that both may be periodically checked for leak tightness and are checked at least annually.

2.2 Emergency Core Cooling System. Isolation requirements for ECCS are contained in SRP 6.3. Isolation of ECCS to prevent overpressurization must meet one of the following features:

(1) One or more check valves in series with a normally-closed motor-operated valve (MOV) which is to be opened upon receipt of a SI signal when RCS pressure is less than the ECCS design pressure

(2) Three check valves in series

(3) Two check valves in series, provided that both may be periodically checked for leak tightness and are checked at least annually.

2.3 Other Systems. All other low pressure systems interfacing with the RCS must meet the following isolation requirements from BTP EICSB-3:

(1) At least two valves in series must be provided to isolate the system when RCS pressure is above the system design pressure and valve position should be provided in the control room

(2) For systems with two MOVs, each MOV should have independent and diverse interlocks to prevent opening until RCS pressure is below the system design pressure and should automatically close when RCS pressure increases above system design pressure

(3) For systems with one check valve and a MOV, the MOV should be interlocked to prevent opening if RCS pressure is above system design pressure and should automatically close whenever RCS pressure exceeds system design pressure.

3.0 DISCUSSION AND EVALUATION

The Haddam Neck Nuclear Station has three systems directly connected to the RCS which have a design pressure rating of all or part of the system which is less than that of the RCS. These are the Chemical and Volume Control System (CVCS), Residual Heat Removal (RHR) system, and the Safety Injection (SI) System.

3.1 Residual Heat Removal. The RHR system takes a suction on the RCS loop 1 hot leg, cools the water, and discharges to the RCS loop 2 cold leg. Isolation is accomplished by the use of two MOVs in both the suction and discharge lines. The inboard MOVs (closest to RCS) are interlocked to prevent opening if the RCS pressure exceeds RHR system design pressure. However, this interlock is not diverse since only one pressure switch is used. The outboard valves in each line have no interlocks other than a keylock to prevent inadvertent manual operation by the operators. None of the valves will automatically close if RCS pressure exceeds RHR system design pressure during RHR operation. Each valve has position indication in the control room.

The RHR system is not in compliance with current licensing requirements for isolation of high and low pressure systems specified in BTP RSB-5-1 and listed below.

(1) The inboard valves do not have diverse and independent interlocks to prevent operation when RCS pressure exceeds RHR system design pressure

(2) No interlocks are provided to automatically close any of the valves if RCS pressure increases above RHR system design pressure during RHR system operation.

3.2 Safety Injection System. The high pressure portions of the SI system provides water to each of the RCS loop cold legs. Though this portion of the SI system is called high pressure SI system, it has a design pressure less than the RCS design pressure. Isolation is accomplished using a MOV in series with a check valve in each of the four discharge lines. The MOVs have position indication in the control room and will open upon receipt of a SI signal but have no interlocks to prevent opening when RCS pressure is above SI system design pressure.

The low pressure portion of the SI system provides water to the reactor vessel head (core deluge) via the RHR system discharge piping. Isolation is accomplished using a MOV in series with a check valve in each of the two lines. The MOVs have position indicated in the control room and will open upon receipt of a SI signal, but have no interlocks to prevent opening when RCS pressure is above SI system design pressure.

The SI system does not meet current licensing requirements for isolation of high and low pressure systems contained in SRP 6.3 since no interlocks exist to prevent the isolation valves from opening if RCS pressure exceeds SI system design pressure.

3.3 Chemical and Volume Control System. The CVCS removes water from the RCS loop 1 via the letdown line, cools it in a regenerative heat exhanger, reduces the pressure using an orifice, cools it using a non-regenerative heat exchanger, and passes it on to the filtering and cleanup portions of the system. Water is returned to the RCS after its pressure has been increased by charging pumps to either RCS loop 2 or 4 hot legs. Water may also be provided to each loop via the loop fill header.

Isolation in the letdown line is provided by a MOV in series with three parallel solenoid-operated valves. Each valve has position indication available in the control room. None of the valve are interlocked to prevent operation when CVCS design pressure is exceeded.

Isolation in the charging line is provided by a MOV in series with a check valve for each charging line (including the fill header). The MOVs have position indication in the control room but the check valves do not. The MOVs have no pressure-related interlocks to prevent overpressurization of the CVCS.

The CVCS does not meet the current licensing requirements for isolation of high and low pressure systems contained in BTP EICSB-3 as specified below.

(1) The MOVs and solenoid-operated valves in the letdown and charging lines have no pressure-related interlocks to prevent CVCS overpressurization

(2) The check valves in the charging lines have no position indication in the control room.

4.0 SUMMARY

The Haddam Neck Nuclear Station has three systems directly connected to the RCS that have a lower design pressure rating than the RCS. The RHR system, SI system, and CVCS are not in compliance with current licensing requirements for isolation of high and low pressure systems as noted below.

(1) The RHR system inboard isolation valves do not have diverse and independent interlocks to prevent opening when RCS pressure exceeds RHR system design pressure as required by BTP RSB-5-1

(2) The RHR system outboard isolation valves have no pressure-related interlocks as required by BTP RSB-5-1

(3) No interlocks are provided to automatically close any RHR system isolation valves if RCS pressure increases above RHR system design pressure during RHR system operation as required by BTP RSB-5-1

(4) The SI system isolation valves have no interlocks to prevent opening if RCS pressure exceeds SI system design pressure as requied by SRP 6.3

(5) The isolation valves for the CVCS do not have interlocks to prevent CVCS overpressurization and the check valves used for isolation do not have position indication in the control room.

5.0 REFERENCES

1. Final Safety Analysis Report, Haddam Neck Nuclear Station.

2. Haddam Neck drawings: 16103-26007, -26008, -76019, -26018, -26019.

3. Haddam Neck drawing: 16103-32112, Sheets 26, 28, 29, and 30.

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SEP TECHNICAL EVALUATION
TOPIC VI-4

ELECTRICAL, INSTRUMENTATION, AND CONTROL ASPECTS OF THE OVERRIDE OF CONTAINMENT PURGE VALVE ISOLATION

HADDAM NECK PLANT

Docket No. 50-213

XMIT /NC
3-26-80

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SEP TECHNICAL EVALUATION
TOPIC VI-4

ELECTRICAL, INSTRUMENTATION, AND CONTROL ASPECTS OF THE OVERRRIDE OF CONTAINMENT PURGE VALVE ISOLATION

HADDAM NECK PLANT

1.0 INTRODUCTION

Based on the information supplied by Connecticut Yankee Atomic Power Company (CYAPCo) and Northeast Utilities (NU), this report addresses the electrical, instrumentation, and control aspects of Containment Ventilation Isolation (CVI).

Instances have been reported where automatic closure of containment ventilation (purge isolation) valves would not occur, if needed, because the actuation signals were manually overridden (blocked) during normal plant operation. Lack of proper management controls, procedural inadequacies, and circuit design deficiencies contributed to these instances. These events also brought into question the mechanical operability of the valves. These events were determined by the Nuclear Regulatory Commission (NRC) to be an Abnormal Occurrence (#78-05) and were reported to Congress.

The NRC is now reviewing the electrical override aspects and the mechanical operability aspects of containment purging for all operating reactors. On November 28, 1978, the NRC issued a letter, "Containment Purging During Normal Plant Operation"[1] to all Boiling Water Reactor and Pressurized Water Reactor licensees to initiate a review of these systems. CYAPCo responded to this request for information in a letter dated January 3, 1979[2]. The NRC supplied information specifically for this review on March 4, 1980.[3]

2.0 EVALUATION OF HADDAM NECK NUCLEAR PLANT

2.1 Review Guidelines

The intent of this evaluation is to determine if the actuation signals for the CVI system meet the following NRC requirements:

1. Guideline No. 1--In keeping with the requirements of General Design Criteria 55 and 56, the overriding[a] of one type of safety actuation signal (e.g., radiation) should not cause the blocking of any other type of safety actuation signal (e.g., pressure) for those valves that have no function besides containment isolation.

2. Guideline No. 2--Sufficient physical features (e.g., key lock switches) are to be provided to facilitate adequate administrative controls.

3. Guideline No. 3--A system level annunciation of the overridden status should be provided for every safety system impacted when any override is active. (See R.G. 1.47.)

Additionally, this review uses the following NRC design guidelines:

1. Guideline No. 4--Diverse signals should be provided to initiate isolation of the containment ventilation system. Specifically, containment high radiation, safety injection actuation, and containment high pressure (where containment high pressure is not a portion of safety injection actuation) should automatically initiate CVI.

2. Guideline No. 5--The instrumentation and control systems provided to initiate the CVI should be designed and qualified as safety grade equipment.

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a. The following definition is given for clarity of use in this evaluation:

Override: The signal is still present, and it is blocked in order to perform a function contrary to the signal.

3. Guideline No. 6--the overriding or resetting[a] of the CVI actuation signal should not cause any valve or damper to change position.

2.2 Containment Ventilation Isolation Circuits Design Description

The Haddam Neck plant has manual containment purge valves.[3] These valves are not a part of the automatic containment isolation system. Sections 3.11 and 1.8 of the Haddam Neck Technical Specifications require containment integrity whenever the plant is in an operating mode or the reactor coolant system is greater or equal to 300 psig and 200°F.[2] Since the containment purge valves are part of the containment boundary, these valves are locked closed when containment integrity is required by Technical Specification 1.8.2.[2]

2.3 Containment Ventilation Isolation System Design Evaluation

Guideline 1 allows no signal override to prevent another safety actuation signal from functioning. Because there are no signals which initiate closure of the CVI valves, this guideline does not apply to the Haddam Neck plant.

Guideline 2 requires reset and override switches to have physical provisions to aid in administrative control of reset and override switches. This guideline does not apply to the Haddam Neck CVI system.

Guideline 3 requires system level annunciation wherever an override affects the performance of a safety system. This guideline does not apply to the Haddam Neck CVI system.

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a. The following definition is given for clarity of use in this evaluation:

Reset: The signal has come and gone, and the circuit is being cleared in order to return it to the normal condition.

Guideline 4 requires that isolation of the CVI system be actuated by several diverse signals. The Haddam Neck plant has only manual valves that are locked closed when the unit is in an operating mode. The NRC has no requirement that these valves be automatically operated; therefore, the Haddam Neck plant need not conform to this guideline.

Guideline 5 requires isolation actuation signals to be derived from safety grade equipment. The Haddam Neck plant has no present need to adhere to this guideline, as there are no isolation actuation signals.

Guideline 6 requires that resetting of isolation logic will not, of itself, automatically open the isolation valves. This guideline is not applicable as the Haddam Neck CVI system uses manual valves that are required by Technical Specification to be locked closed when the unit is in an operating condition.

3.0 SUMMARY

The electrical, instrumentation, and control design aspects of the containment ventilation isolation valves for the Haddam Neck plant were evaluated using the design guidelines stated in Section 2.1 of this report. Because the Haddam Neck containment ventilation valves are locked shut as required by Technical Specifications, and have no automatic isolation signals or overrides, the NRC guidelines do not apply.

SEP Topic VII-2 will review related engineered safety feature systems to insure that control logic and design is in accordance with IEEE Standard 279. The mechanical operability of the containment purge valves is being analyzed separately from this report.

4.0 REFERENCES

1. NRC/DOR letter, A. Schwencer, to all BWR and PWR licensees, "Containment Purging During Normal Plant Operation," dated November 28, 1978.

2. CYAPCo letter, W. G. Counsil, to Director of Nuclear Reactor Regulation, NRC, "Haddam Neck Plant Containment Purging," January 3, 1979.

3. NRC letter, J. E. Knight, to Wayne Roberts, EG&G Idaho, Inc., "Information for Containment Purge Review for Haddam Neck," March 4, 1980.

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SEP TECHNICAL EVALUATION
TOPIC VI-7.C.1
INDEPENDENCE OF REDUNDANT ONSITE POWER SYSTEMS

HADDAM NECK

Docket No. 50-213

XMIT/NC

3-21-80

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TECHNICAL EVALUATION
TOPIC VI-7.C.1
INDEPENDENCE OF REDUNDANT ONSITE POWER SYSTEMS

HADDAM NECK

1.0 INTRODUCTION

The objective of this review is to determine if the onsite electrical power systems (AC and DC) are in compliance with current licensing criteria for electrical independence between redundant standby (onsite) power sources and their distribution systems.

General Design Criterion 17 requires that the onsite electrical power supplies and their onsite distribution systems shall have sufficient independence to perform their safety function assuming a single failure. Regulatory Guide 1.6, "Independence Between Redundant Standby (Onsite) Power Sources and Between Their Distribution System," and IEEE Standard 308-1974, "IEEE Standard Criteria for Nuclear Power Generating Stations" provide a basis acceptable to the NRC staff for meeting GDC 17 in regards to electrical independence of onsite power systems.

2.0 CRITERIA

2.1 AC Supplies. When operating from standby sources, redundant load groups and redundant standby sources should be independent of each other at least to the following extent.

(1) The standby source of one load group should not be automatically paralleled with the standby source of another load group under accident conditions

(2) No provisions should exist for automatically transferring one load group to another load group or loads between redundant power sources

(3) If means exist for manually connecting redundant load groups together, at least one interlock should be provided to prevent an operator error that would parallel their standby power sources.

2.2 DC Supplies. Each DC load group should be energized by a battery and charger. The battery-charger combination should have no automatic connection to any other redundant DC load group.

3.0 DISCUSSION AND EVALUATION

3.1 AC Supplies

3.1.1 Discussion. The Haddam Neck onsite standby AC power system consists of two redundant diesel emergency-generator (EG) supplied trains. During accident conditions, EG-2A supplies 4160 V bus 8 and, through transformer 485, 480 V bus 1-5 and MCC 8-5; EG-2B supplies 4160 V bus 9 and, through transformer 496, 480 V bus 1-6 and MCC 8-6.[4] MCCs 5-5 and 5-6 may be supplied from either bus 1-5 or 1-6. Breakers 2T8, 8T2, 3T9, and 9T3 open on loss of offsite power. The Haddam Neck system includes one breaker (manual), which is neither interlocked nor procedurally controlled, that permits paralleling divisions A and B; this is the tie breaker between MCCs 8-5 and 8-6. Paralleling of buses 1-5 and 1-6 has been prevented by removal of tie breaker 5T6 from its cubicle, key locks on the containment air recirculation fan circuits, and a throwover scheme which prevents MCCs 5-5 and 5-6 from being supplied simultaneously by buses 1-5 and 1-6.

3.1.2 Evaluation. The Haddam Neck onsite standby AC power system does not meet current licensing criteria because MCCs 8-5 and 8-6 can be tied together while each is being supplied from different power divisions.

3.2 DC Supplies

3.2.1 Discussion. The Haddam Neck onsite standby DC power system consists of two batteries, two battery chargers, two DC buses, and four inverters.[5] A manual bus tie breaker exists between the two buses; no interlocks or procedures prevent paralleling the two batteries via this breaker.[4] Interlocks prevent the connection of any inverter input to both buses simultaneously, but each inverter can be supplied from either DC bus, i.e., all four inverters (and their loads) may be supplied from only one battery.

3.2.2 Evaluation. While there are not automatic transfers of any redundant DC load groups, the batteries may be paralleled by the manual bus tie breaker; also, all four inverters may be supplied by a single battery. Neither of these arrangements complies with the intent of RG 1.6.

4.0 SUMMARY

The Haddam Neck onsite standby AC and DC power systems do not comply with current licensing criteria. In each case, a manual breaker exists which allows paralleling of the two power divisions; no interlocks or procedures prevent this. Additionally, the DC power system design permits all four inverters to be supplied from a single battery.

5.0 REFERENCES

1. General Design Criterions 17, "Electrical Power System," of Appendix A, "General Design Criteria of Nuclear Power Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities."

2. "Independence Between Redundant Standby (Onsite) Power Sources and Between Their Distribution Systems," Regulatory Guide 1.6.

3. "IEEE Standard Criteria for Nuclear Power Generating Stations," IEEE Standard 308-1974, The Institute of Electrical and Electronic Engineers, Inc.

4. Letter, CYAPCo (Counsil) to NRC (Ziemann), dated March 6, 1980.

5. Northeast Utilities Service Co. drawing for CYAPCo, Drawing 161003-30055, Revision 2, dated 8-14-79.

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SEP TECHNICAL EVALUATION
TOPIC VIII-3.B

DC POWER SYSTEM BUS VOLTAGE
MONITORING AND ANNUNCIATION

HADDAM NECK

Docket No. 50-213

XMIT
January 3, 1980

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SEP TECHNICAL EVALUATION
TOPIC VIII-3.B

DC POWER SYSTEM BUS VOLTAGE
MONITORING AND ANNUNCIATION

HADDAM NECK

1.0 INTRODUCTION

The objective of this review is to determine if the DC power system bus voltage monitoring and annunciation are in compliance with current licensing criteria for Class IE DC power systems.

The specific requirements for DC power system monitoring derive from the general requirements embodied in Sections 5.3.2(4), 5.3.3(5), and 5.3.4(5) of IEEE Standard 308-1974[1], and in Regulatory Guide 1.47[2]. In summary, these general requirements simply state that the DC system (batteries, distribution systems, and chargers) shall be monitored to the extent that it is shown to be ready to perform its intended function.

2.0 CRITERIA

As a minimum, the following indications and alarms of the Class IE DC power system(s) status shall be provided in the control room:[3]

- Battery current (ammeter-charge/discharge)
- Battery charger output current (ammeter)
- DC bus voltage (voltmeter)
- Battery charger output voltage (voltmeter)
- Battery high discharge rate alarm
- DC bus undervoltage and overvoltage alarm
- DC bus ground alarm (for ungrounded system)
- Battery breaker(s) or fuse(s) open alarm

- Battery charger output breaker(s) or fuse(s) open alarm

- Battery charger trouble alarm (one alarm for a number of abnormal conditions which are usually indicated locally).

3.0 DISCUSSION AND EVALUATION

3.1 Discussion. Two 125 V batteries, two battery chargers, and two DC buses comprise the Haddam Neck Class IE DC power systems. Control room indication consists of battery charger ammeters, bus voltmeters, bus undervoltage alarms, bus ground alarms, and "Battery Charger OFF" alarms.[4,5] Local (switchgear room) indication consists of charger ammeters and voltmeters, neutral-to-ground and positive-to-ground voltmeters, and ground indicating lamps.

3.2 Evaluation. The Haddam Neck control room has no indication of battery current, charger output current, battery high discharge rate, bus overvoltage, battery fuse status, or charger output breaker/fuse status. Therefore, the Haddam Neck DC power systems monitoring is not in compliance with current licensing criteria.

4.0 SUMMARY

Of 11 parameters currently required to be indicated or alarmed in the control room, only four are indicated or alarmed in the Haddam Neck control room. Therefore, the Haddam Neck DC power systems are not monitored in compliance with current licensing criteria.

5.0 REFRENCES

1. IEEE Standard 308-1974, "Standard Criteria for Class IE Power Systems for Nuclear Power Generating Stations."

2. Regulatory Guide 1.74, "Bypassed and Inoperable Status Indication for Nuclear Power Plant Safety Systems."

3. NRC Memorandum, PSB (Rosa) to SEPB (Crutchfield), "DC System Monitoring and Annunciation," dated October 16, 1979.

4. Letter, Connecticut Yankee Atomic Power Company (Counsil) to NRR (Ziemann), "SEP Topic VIII-3.B, DC Power System Bus Voltage Monitoring and Annunciation," dated August 29, 1979.

5. Stone and Webster/Connecticut Yankee Atomic Power Company drawing 16103-308, Rev. 11, dated 10-14-76.