

NORTHEAST UTILITIES

THE CONNECTICUT LIGHT AND POWER COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

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March 8, 1990

Docket No. 50-213
B13466

Re: 10CFR50, Appendix R
ISAP Topic 1.64

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

- References:
1. E. J. Mroczka letter to U.S. Nuclear Regulatory Commission, "Haddam Neck Plant, New Switchgear Building, Response to Request for Additional Information," dated September 29, 1989.
 2. A. B. Wang letter to E. J. Mroczka, "New Switchgear Room Safety Evaluation--Haddam Neck Plant," dated January 22, 1990.

Gentlemen:

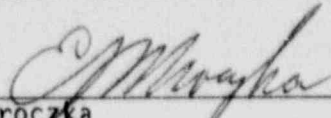
Haddam Neck Plant
New Switchgear Building
Additional Information (TAC 65034)

In a letter dated September 29, 1989 (Reference 1), Connecticut Yankee Atomic Power Company (CYAPCO) provided the NRC Staff with a response to Staff questions raised during an August 29, 1989, telephone conference. In this letter, CYAPCO committed to provide the NRC Staff with a copy of the Regulatory Guide 1.75 Compliance Review being developed for use at the Haddam Neck Plant upon its completion. On January 22, 1990 (Reference 2), the NRC Staff issued a Safety Evaluation Report (SER) associated with the electrical design of the Haddam Neck New Switchgear Building and concluded that this SER was based in part on CYAPCO's commitment to provide a copy of the Regulatory Guide 1.75 Compliance Review. In response to these commitments, the Haddam Neck Plant's Regulatory Guide 1.75 Compliance Review is provided as Attachment 1.

We trust you will find this information satisfactory, and we remain available to answer any questions you may have.

Very truly yours,

CONNECTICUT YANKEE ATOMIC POWER COMPANY


E. J. Mroczka
Senior Vice President

cc: W. T. Russell, Region I Administrator
A. B. Wang, NRC Project Manager, Haddam Neck Plant
J. T. Shedlosky, Senior Resident Inspector, Haddam Neck Plant

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Attachment 1

Haddam Neck Plant
Regulatory Guide 1.75 Compliance Review

March 1990

HADDAM NECK

NEW SWITCHGEAR BUILDING

IEEE-STD-384/REG. GUIDE 1.75 COMPLIANCE FEATURES

Purpose - This document is intended to capture and present details relative to the means by which electrical features associated with the New Switchgear Building (NSB) comply with the intent of the subject Std. and Regulatory Guide.

Introduction - IEEE Std. 384 (Standard Criteria for Separation of Class 1E Equipment and Circuits), and Reg. Guide 1.75 (Physical Independence of Electric Systems) specify and endorse means by which electrical equipment and circuitry can achieve an acceptable degree of physical and electrical separation between redundant divisions as well as between these divisions and non-1E equipment/circuitry.

The Haddam Neck plant, having begun commercial operation in 1968, is not committed by regulation to comply with these two separation documents; however, it has been CYAPCO's position since shortly after their publication, to take reasonable steps to meet the intent of the new requirements when modifying or adding to, existing plant systems. Major examples wherein past work has taken major steps in the direction of compliance are the early 1980's containment electrical penetration replacement job, the containment recabling effort (promulgated by EQ requirements) and the recent RPS phase 1 and 2 and NIS upgrade projects.

Relative to the NSB project, CYAPCO charged Bechtel Construction Incorporated with compliance to the two documents throughout the design and construction of the NSB.

Scope -

The NSB project provides a new switchgear building, electrical distribution equipment, instrumentation, controls, raceway, including ductbanks and cabling, for the purpose of repowering/controlling and monitoring existing plant equipment and systems. The boundaries of what we will call the "strict" IEEE 384/R.G. 1.75 compliance zone extend from the NSB to the new ductbank and tray discharge points into existing structures. Figure 1 is a simplified sketch depicting these boundaries. Once having penetrated existing structures and enclosures, it is CYAPCO's intent to meet the subject separation criteria intent using reasonable techniques and design features.

This document is limited to the "strict" compliance zone discussed above.

Specific Separation Requirements - It is the intent of this section to specify the divisions (includes trains, channels, non-1E, etc.) requiring some degree of separation to meet IEEE 384 and Reg. Guide 1.75.

It is important to understand that the NSB houses Safety Related Train "B" equipment/circuitry and, in no manner, does it interact with or contain Safety Related Train "A" equipment or circuits. Additionally, Train "B" associated Vital AC (VAC) channels "C" and "D" are present within the building. This presence includes the "C" and "D" Uninterruptible Power Supplies (UPS's) and distribution panels C1 and D1. Further, some building services such as normal lighting, security, communications, and portions of the HVAC system are non-1E. Thus, this document will limit discussion to all divisions with the exception of Train "A" and VAC channels "A" and "B".

The following are the separation requirements for divisional and channel separation within the "strict" compliance zone.

- o Train "B" cabling is the dominate system within the NSB and has VAC Channel "C" power routed in the same raceway. VAC Channel "D" is routed as described below. Channel "C" instrument cables are separated for noise reduction by barriers or separate conduits from Train "B" cables. Non-1E circuits are also routed independently as described below.
- o Channel "D" instrument loop circuits may not travel with and must be separated from all other divisions, both 1E or non-1E, since failure modes for instrumentation loop circuitry are not predictable and depend on the cable degradation characteristics that accompany in-situ events for which the Standard and Reg. Guide are intended.
- o VAC Channel "D" power circuitry, since it is associated with the "B" division battery and since loss of instrumentation power results in fail safe modes, need not meet the separation distances of the two documents; however, for reliability reasons, "D" VAC power is to be run its entire length within dedicated conduit.
- o Non-1E power/control/instrumentation, by virtue of its being associated only with the NSB, is treated as "B" division "associated" and thus need not meet the separation distances of the two documents; however, once again, it shall be contained within conduit throughout its full length. Non-1E circuitry does, however, require full separation from "D" instrumentation loop circuitry since, by association with "B" division and "C" channel, cross-channel/divisional interactions can be postulated via the non-1E associated circuitry.

o IE to Non-IE Power Supply Separation

All non-IE loads are supplied through qualified Class IE circuit breakers for protection of the 480V and 120V power panels. The 480V breaker supply to panel LP-U7-1 is tripped for loss of power and SIS thereby removing the non-IE loads from Bus 11 during an emergency. Panel LP-U7-1 supplies the lower two floors of the switchgear building and the non-IE lighting, HVAC and auxiliaries on the third floor (switchgear room).

The 120 VAC panel PP-U8-1 in MCC-12 has 15A breakers and series fuses for redundant protection to the non-IE loads as follows: Metering Pump Speed Control, Halon Fire Protection System and the Radio Base Station including the UPS backup supply.

Calculations E-016 by Bechtel and PA-83-117-0976-GE by NUSCO, demonstrate the requirements of Reg. Guide 1.75 and IEEE 384 are met.

o Separation Within Cabinets

Vendor equipments have separate areas within their cabinets for non-IE devices. Partitions and barrier strips are used to achieve internal separation. Instrumentation signals for the App. "R" local panel in the switchgear room are isolated by the Foxboro Class IE instrument racks for Channels C and D.

Annunciator signals for the main control board alarms from Bus 11, Inverters, Battery Charger, and DC bus are dry contact inputs. Bechtel calculation numbers E-015 and E-021 conclude the annunciator system does not degrade the Class IE circuits within cabinets or common raceways and thus meets the requirements of IEEE 384 and Reg. Guide 1.75.

- o Siltemp material is a qualified barrier for cables. The use of Siltemp wrap in lieu of rigid conduit is allowed in instances wherein the use of rigid conduit is impractical (transition areas in handholes and chases, etc.).

- o Identification Requirements

Cable trays and conduits are marked as specified by Specification SP-EE-076.

Cables are marked at each end by ID markers determined by the set route cable schedule.

Cables in open exposed trays are marked with colored tape at intervals of fifteen (15) feet or less using the colors as follows:

Train A Orange

Channel A Red

" B White

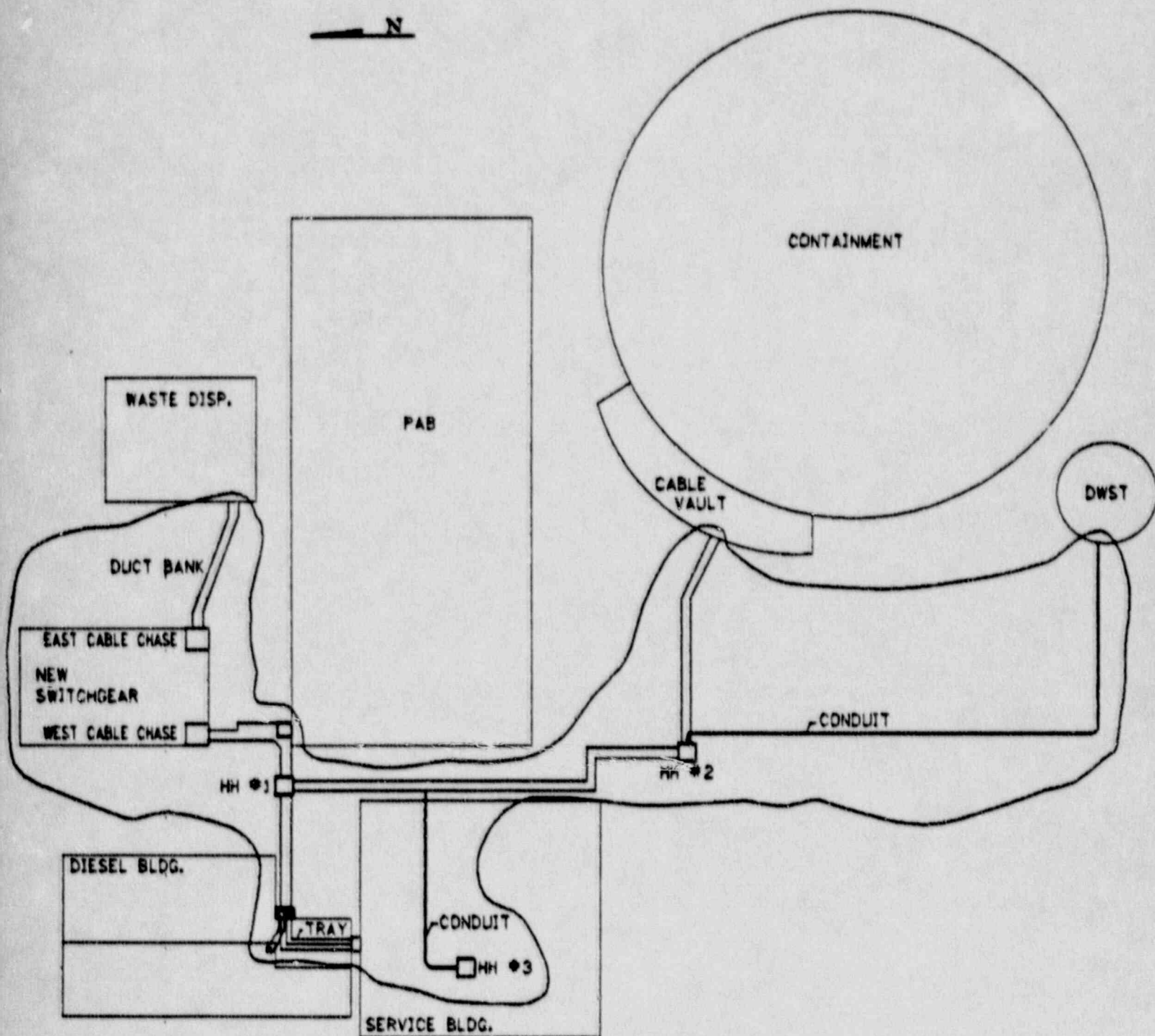
Train B Green

Channel C Blue

" D Yellow

Equipment is labeled with the nomenclature that appears on the Operations Critical Drawings.

FIGURE 1
CONNECTICUT YANKEE RACEWAY



AREA WITHIN CIRCLE DEPICTS "STRICT" COMPLIANCE AREA