UNITED STATES OF AMERICA
UNITED STATES NUCLEAR REGULATORY COMMISSION

before the

ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
PUBLIC SERVICE COMPANY NEW HAMPSHIRE, et al.	)	Docket Nos. 50-443 OL-1 50-444 OL-1
(Seabrook Station, Units 1 and 2)	)	(On-site Emergency Planning and Safety Issues)

AFFIDAVIT OF RICHARD BERGERON

I, RICHARD BERGERON, being on oath, depose and say as follows:

1. I am the Instrumentation and Controls Engineering Supervisor for New Hampshire Yankee. My responsibilities include the supervision of the Instrumentation and Controls engineering/design activities and the Seabrook Station Equipment Qualification program. In this capacity I am responsible for identifying, locating and categorizing RG-58 coaxial cable applications and the determination of which cables require compliance with the environmental qualification requirements set forth in 10 CFR 50.49. A statement of my professional qualifications is attached and marked "A".

2. This affidavit describes the meaning of the color-coding of RG-58 coaxial cable in Seabrook Station and the reasoning

for having assigned it Operability Code A; the means used to identify and locate all Seabrook Station RG-58 coaxial cable applications; the means used to identify those RG-58 cables which could be subjected to a harsh environment within the Seabrook Station Unit 1 nuclear island (see Attachment B); the rationale for determining that RG-58 coaxial cable is nonsafety-related; and the rationale why only cables located in harsh environments within the nuclear island need be replaced.

3. Specification 9763-006-113-19 establishes the requirements for all of the specialty cable supplied to Seabrook Station by ITT Surprenant. It includes RG-11 coaxial, RG-11 triaxial, RG-58 coaxial and RG-59 coaxial cables supplied under Purchase Order 113-19. The specification assigns Cable Code TA6Y to the RG-58 cable. Cable codes are used to identify plant cables and are described in the Computerized Conduit and Cable Schedule Programs (CASP) Design Guide. In the Design Guide, Cable Code TA6Y denotes that RG-58 is a coaxial, single conductor cable, and is colored black with a red tracer to signify that it is non-vital, associated with Train A.

4. The RG-58 coaxial cable supplied by ITT Surprenant was specified and purchased with a black with red trace jacket color. See EQF excerpts provided as Attachment C. As discussed in FSAR Section 8.3.1.3, cables which are colored

black with a red tracer are Train A associated. See Attachment D for excerpts from the referenced FSAR sections. As discussed in FSAR Section 8.3.1.4, cables which are identified by a black with a red tracer color jacket are nonsafety-related cables. Further, FSAR Section 8.3.1.4.a also indicates that associated cables are Non-Class IE circuits. Finally, FSAR Section 8.3.1.4.k when read in conjunction with FSAR Section 8.3.1.3 indicates that cables with the single solid color of red, white, blue or yellow signify cables which are safety-related or Class IE. Therefore, it is clear from the FSAR that the RG-58 coaxial cable supplied by ITT Surprenant is not intended to perform an accident mitigating function (i.e., it is nonsafety-related).

5. During the initial development of the EQ program, it was decided to use the very conservative approach of reviewing cable for the most restrictive potential application (e.g., Operability Code A) regardless of actual plant application. This approach eliminated the necessity for implementation of special programmatic controls restricting cable usage. As testified to previously (Transcript excerpts provided as Attachment E), a conservative assumption was made during the initial phase of the Environmental Qualification Program, namely that a given piece of equipment, cable, etc. was required to perform a safety function. However, it is

possible that the EQ File could indicate that the cable is Operability Code A which designates that it is required to perform a safety function, but, in actuality the cable is only required to be evaluated to determine if any failures of the cable due to the environment will affect the accomplishment of a safety function. This is the case for the RG-58 coaxial cable supplied by ITT Surprenant. The ITT Surprenant RG-58 coaxial cable was specified, purchased, environmentally qualified and installed within the nuclear island to safety-related requirements, but it does not perform any accident mitigating function.

6. Equipment identification numbers for cables were typically assigned only to each type of cable within each purchase order (types of cables being power, control, instrument or thermocouple.) The primary purpose of the equipment identification number in the Harsh Environment Equipment List was to tie the cable type to an EQ File. For each type of cable there may have been numerous cable codes, depicting various constructions, sizes, and colors, all within the same EQ File. The specific requirements for each cable code were considered within the EQ File and the acceptance criteria established accordingly.

7. The first method for identifying RG-58 coaxial cable applications was through the use of the Cable Schedule Program (CASP). CASP is a computer based system for

maintaining the design configuration of both safety-related and nonsafety-related installed plant cables such as the RG-58 coaxial cable. The CASP system provides the controls to identify and maintain cable routes and termination locations for each uniquely identified plant cable.

8. The CASP database is an appropriate means to identify ITT Surprenant RG-58 coaxial cable applications for three reasons. First, CASP is the primary design document for configuration control for electrical cable at Seabrook Station. Second, CASP has the capability to identify ITT Surprenant RG-58 coaxial cable applications by means of sorting on the Cable Code TA6Y because the PG-58 coaxial cable which was supplied by ITT Surprenant only uses the Design Guide Cable Code TA6Y. Therefore, a sort of the CASP database on the Cable Code TA6Y will identify ITT Surprenant RG-58 coaxial cable applications. Third, one capability of CASP used at Seabrook Station is to determine the shortest route and length of a cable, given the network of raceways, the origin and destination of cable, and applicable design requirements. This information is then used to install, inspect and maintain the cable. Accordingly, CASP is subjected to the comprehensive design verification and updating process used for any installation document subject to the requirements of 10 CFR 50, Appendix B. This

necessarily provides the additional assurance that CASP agrees with the as-built condition of the plant.

9. A sort was made of CASP to generate a list of all installed cables with the Cable Code TA6Y used to denote the ITT Surprenant RG-58 coaxial cable. This sort identified 126 RG-58 coaxial cable runs, all nonsafety-related.

10. The second method for identifying RG-58 coaxial cable applications was through a review of the electrical schematic drawing packages. At Seabrook Station the electrical schematic drawings are contained in electrical schematic drawings packages. These packages, in addition to the schematic drawing, contain other information such as cable tables. Thus, a review of the schematic drawings in conjunction with other information contained in that drawing package allows one to identify the cable chosen, (e.g., ITT Surprenant RG-58 coaxial cable) for a specific cable circuit.

11. The Seabrook Station electrical schematic drawing package review is also appropriate to identify ITT Surprenant RG-58 coaxial cable runs because these are design basis documents whose input is not derived from CASP and because one can determine the cable applications for a given cable circuit from these documents. These documents have also been subjected to the comprehensive design verification and updating process used for design basis documents under 10 CFR

50, Appendix B. Thus, these documents can be relied upon to identify what cable was used in what applications.

12. It should be noted that the results of the reviews using CASP and the electrical schematics were consistent.

13. The method of categorizing the RG-58 coaxial cable applications was through the use of cable raceway drawings and environmental zone maps. Following the identification of a specific ITT Surprentant RG-58 coaxial cable (i.e., specific cable identification number) the route of each cable was traced by using Seabrook Station cable raceway drawings. In conjunction with tracing the route of an identified RG-58 cable, a review was performed to identify the cable(s) routed with the RG-58 cable(s). This was done using CASP to identify other cables sharing the raceway with the RG-58 cable(s). CASP was also used to determine whether the other cable was safety-related (i.e., Class IE) or nonsafety-related (i.e., Non-Class IE).

14. After each RG-58 cable route was established, the environmental zones through which each cable traveled was determined using Environment Zone Maps contained in the Service Environment Chart Design Basis Calculation. The Service Environment Charts were used to identify the applicable environmental parameters for each environmental zone. See FSAR Figure 3.11(B)-1, Shts I-5, provided in Attachment D, and Excerpt from Environmental Qualification

Report provided in Attachment F. The harsh environment zones were then superimposed upon the cable raceway drawings used to trace the RG-58 coaxial cable routing.

15. This evaluation also concluded that none of the RG-58 coaxial cables are routed inside the Containment Building or in the Main Steam and Feedwater pipe chases. A review of applicable drawings and documents and related documentation was performed. This verified that the drawings and documents used in the evaluation reflected the as-built configuration.

16. The information obtained from the above reviews were evaluated to identify common groupings of cables. This evaluation categorized the 126 RG-58 coaxial cables into the following:

No. of Cables	Category
21	Spare RG-58 cables
12	RG-58 cables (now spares) routed at least partially through a harsh environment within the nuclear island (replaced with RG-59)
74	RG-58 cables located in mild environments within the nuclear island
10	RG-58 cables routed with other nonsafety-related cables outside the nuclear island
9	RG-58 cables routed in mild environments within the nuclear island and routed with nonsafety-related cables outside the nuclear island

17. Following the review of environmental zones described in paragraph 14 above, each RG-58 coaxial cable application was then categorized into one of five common groupings, as summarized in Attachment G. The tabulation provided in Attachment G identifies each RG-58 coaxial cable, indicates which category it falls under (e.g., spare, harsh, etc.) and specified its function, classification and the environmental zone(s) for each cable. In addition, the tabulation refers to figures diagramming the applications, which are provided in Attachment H.

18. The figures provided in Attachment H depict the routing a given cable follows through the various environmental zones at Seabrook Station and identifies the building and specific environmental zone the cable passes through. They also indicate whether the cables are inside or outside the nuclear island, and for those cables within the nuclear island whether the zone is harsh or mild. The process used to develop the information to produce the figures is discussed above at paragraphs 13 and 14.

19. As indicated above, none of the 126 RG-58 coaxial cables are safety-related; therefore, none are within the scope of 10 CFR 50.49(b)(1). An evaluation was made of the above five cable categories to determine which cables are required to otherwise comply with the environmental qualification requirements set forth in 10 CFR 50.49. To determine if a

given component, cable, etc., is required to be environmentally qualified pursuant to 10 CFR 50.49, one must first determine if the item is within the scope of concern as discussed in 10 CFR 50.49(b) and then determine if the item is not in a mild environment, per 10 CFR 50.49(c). If the item is not within the scope of concern as discussed in 10 CFR 50.49(b) then the inquiry into the applicability of 10 CFR 50.49 ends. If the item is within the scope of concern but is in a mild environment then the inquiry into the applicability of 10 CFR 50.49 also ends. In either case 10 CFR 50.49 qualification requirements would not apply.

20. Spare cables are not functioning or energized and therefore would not pose any threat to other cables in the same raceway. In order to use a spare cable, a design change has to be initiated prior to its incorporation into the plant design. One of the considerations in any design change is the need to comply with the requirements of 10 CFR 50.49. The design control program prevents a cable which is not qualified for a given application from being used. The spare cables are subjected to this design control process which precludes the use of any spare until the cable has been designated for use in the plant design, has been reviewed through the design control process and has been shown to meet all applicable NRC regulations. Until such time as the spare cables are designated for use in the plant design, they need

not comply with the environmental qualification requirements of 10 CFR 50.49.

21. 10 CFR 50.49(c) provides in pertinent part "Requirements for . . . (3) environmental qualification of electric equipment important to safety located in mild environment are not included within the scope of this section [10 CFR 50.49]." A mild environment is defined as "an environment that would at no time be significantly more severe than the environment that would occur during normal plant operation including anticipated operational occurrences." 10 CFR 50.49(c). Therefore, cables located in mild environments are not required to comply with the environmental qualification requirements set forth in 10 CFR 50.49.

22. 10 CFR 50.49(b) provides in pertinent part "Electric equipment important to safety covered by this section [10 CFR 50.49] is: . . . (2) Nonsafety-related equipment whose failure under postulated environmental conditions could prevent satisfactory accomplishment of safety functions . . . by the safety-related equipment." Therefore RG-58 coaxial cables which are routed with other nonsafety-related cables outside the nuclear island need not comply with the requirements set forth in 10 CFR 50.49.

23. For those applications outside the nuclear island none were identified where a safety-related cable was being routed along with the RG-58 coaxial cable outside the nuclear

island. Thus, the postulated failure of any of these RG-58 coaxial cable cannot prevent satisfactory accomplishment of safety functions by safety-related equipment since none of the cables it comes in contact with outside the nuclear island are safety-related (i.e., the failure could only affect another nonsafety-related cable). Therefore, the RG-58 coaxial cables outside the nuclear island are not "important to safety," the qualification requirements of 10 CFR 50.49 are not applicable and further inquiry is not required for these cables.

24. Based on the foregoing, the only cables which may need to comply with the environmental qualification requirements set forth in 10 CFR 50.49 are the twelve (12) nonsafety-related RG-58 coaxial cables which are routed at least partially through a harsh environment within the nuclear island. 10 C.F.R. 50.49(b)(2). These cables are: FM3-JW5; FM3-JW5/1; FM6-JW5; FM6-JW5/1; FM4-JX1; FM4-JX1/1; FM7-JX1; FM7-JX1/1; GU4-Y59/2; GU4-Y59/3; GU4-Y59/4; and GU4-Y59/5. These 12 RG-58 coaxial cables havebeen replaced with already qualified RG-59 cable as contained in EQ File 113-19-01 (NECNP Exh. No. 4).

Richard Bergeron

Dated: September 9, 1988

Then personally appeared Richard Bergeron, before and personally known to me, who, being first duly sworn, made oath that the foregoing statements are true to the best of his knowledge, information, and belief.

Notary Public

My Commission Expires: 4/23/93

BERGERON AFFIDAVIT
ATTACHMENT A

RICHARD BERGERON
Instrumentation & Controls Engineering Supervisor

Education

B.S. Marine Engineering
Maine Maritime Academy - May 1969

Summary of Experience

Mr. Bergeron joined Public Service Company of New Hampshire in May 1982 as Senior I&C Engineer in the Engineering Services Department. His areas of responsibility include coordination of I&C Engineering activities for the Station Staff, Construction and Startup interface activities, as well as various special projects. Mr. Bergeron was recently appointed to the position of Intrumentation & Control Supervisor in the Engineering Department. For the past six years Mr. Bergeron has also been assigned as the Station Staff Representative on the Equipment Qualification Task Force. He has been responsible for the coordination and review of the Equipment Qualification Program, as well as coordinating the implementation of the Station Equipment Qualification Program.

Mr. Bergeron came to Public Service Company of New Hampshire from Stone & Webster Engineering Corporation, where he was employed from 1972-1982. He held the position of Principal Instrument Application Engineer, responsible for specifying, purchasing and design review of electron and pneumatic instrumentation control systems. Mr. Bergeron is also experienced in the scheduling and preparation of Logic Diagrams and System Descriptions which define the functional control concepts. He was also assigned as a task member to assist in the development and preparation of the 79-01B equipment qualification submittal for Duquesne Light Company.

Between 1969 and 1972, Mr. Bergeron was employed by Gulf Oil Corporation as an engineer in their Marine Engineering Division. There he was responsible for the operation and maintenance of their Marine Power Plants.

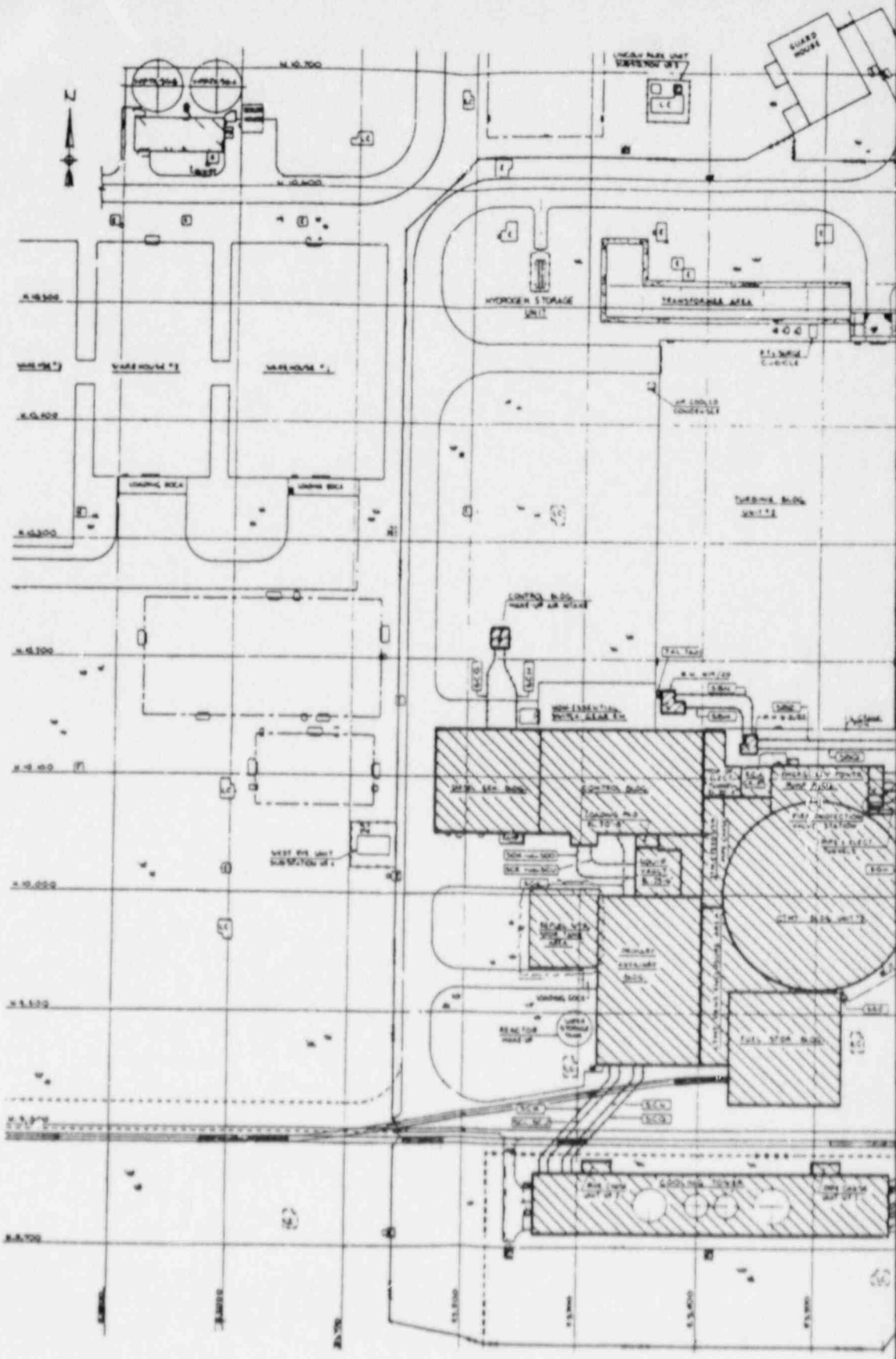
BERGERON AFFIDAVIT

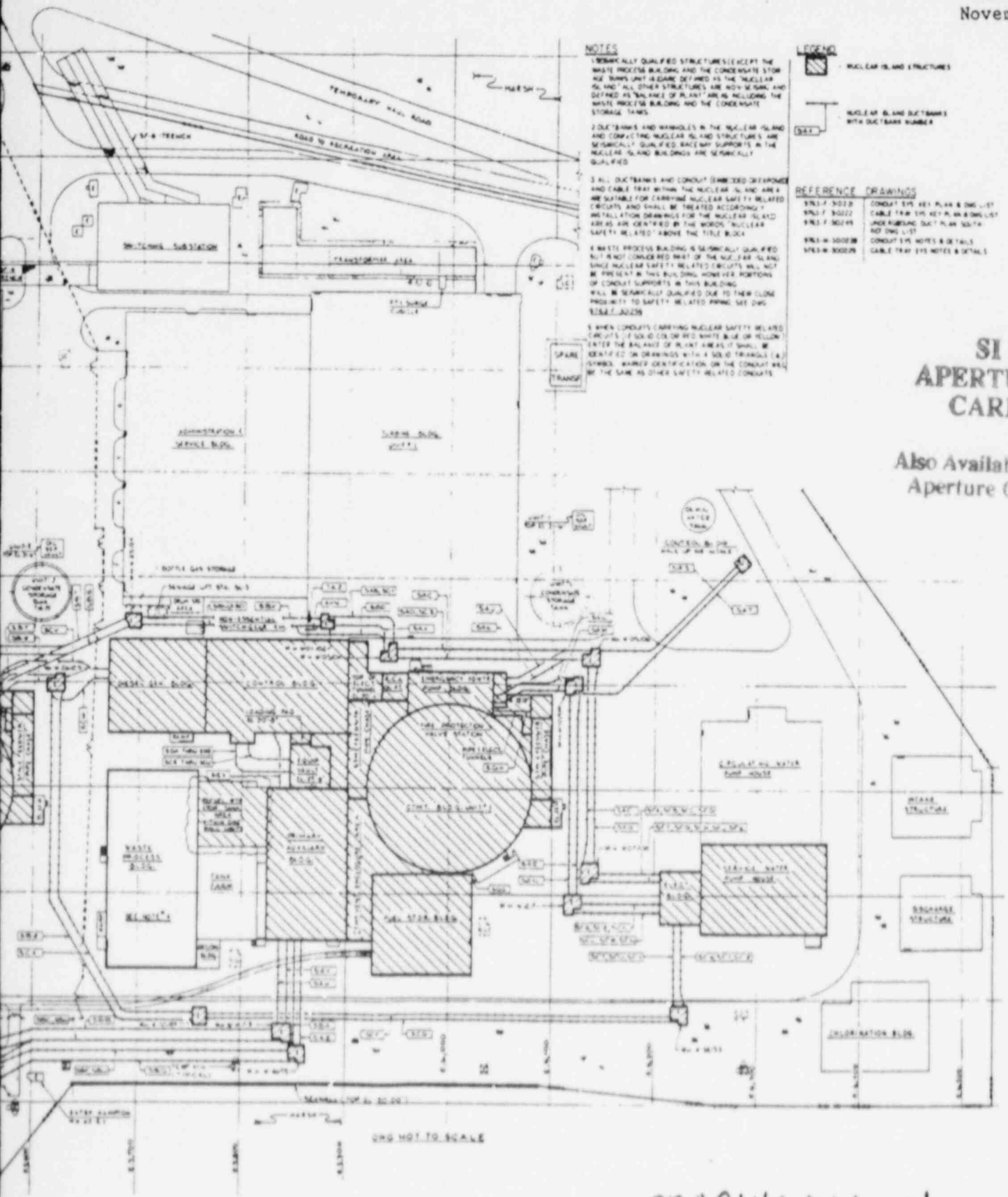
ATTACHMENT B

KEY PLAN-NUCLEAR ISLAND AREA ELECTRICAL

CONTENTS

FSAR Fig. 8.3-58


N
HYDROGEN STORAGE UNIT
TRANSFORMER AREA
WAREHOUSE #3
WAREHOUSE #1
CONTROL BLDG.
TURBINE BLDG.
UNIT #2
FUEL STOR. BLDG.



8809140061 - 01

PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE SEABROOK STATION - UNITS 1 & 2 FINAL SAFETY ANALYSIS REPORT	KEY PLAN-NUCLEAR ISLAND AREA ELECTRICAL
	9763-F-300210 | FIGURE 8.3-58

BERGERON AFFIDAVIT

ATTACHMENT C

EQUIPMENT QUALIFICATION FILE
NO. 113-19-01 EXCERPTS

CONTENTS

PUBLIC SERVICE OF NEW HAMPSHIRE

HARSH ENVIRONMENT EQUIPT LIST

SEABROOK STATION

SORT NO 05 SHEET 9

UNIT 1

DWG 9763 M 300218

REV 004

DATE 10/20/86

E.Q.FILE NO 113-19-01

REV NO	EQUIPMENT ID	SERVICE LEGEND	MANUFACTURER MODEL NO	BLDG ENV ZONE	EQ FILE NO PO NO	SAFETY FUNCT	OPER CODE	EVENT CODE
		REMARKS						
004	EDF CBL - 6	INSTRUMENT CABLE	III-S FR-XLPE/EXANE	ALL	113-19-01 113-19	PWR	A	ALL

Electrical Equipment Qualification File No. 113-19-01

EQUIPMENT SUMMARY EVALUATION

1.0 Description

The equipment under evaluation is the Coaxial and Triaxial Instrument Cable manufactured by ITT Surprenant Division. This cable is located in all areas of the plant, both inside and outside containment, and will be evaluated for the worst case postulated environment conditions inside containment. The traceability of the test documentation to the cable supplied by ITT for UE&C Specification 9763-006-113-19 is provided in reference 4.

2.0 Conclusion

This equipment is qualified by sequential test for the postulated accident temperature, pressure, humidity, chemical spray and radiation dose and by test supplemented by analysis for the required operating time. This equipment has a qualified life of 40 years at 167°F (75°C).

Therefore, this equipment is qualified to the requirements of NUREG-0588, Category I.

3.0 Limitations

None.

4.0 Discussion

Two specimens are tested in Reference 2. These specimens are RG-11/U and RG-59/U coaxial. Reference 4 states that these two specimens are representative of the four different types of cables supplied to Seabrook as per Reference 1. The supplied cables are RG-11 triaxial, and RG-11, RG-58 and RG-59 coaxial. The insulation in these cables is cross-linked polyethylene with an Exane jacket. The limiting Environmental Zones for radiation are PB-15A, PB-4, PB-18 and PB-19. There is no Class 1E Electrical Equipment is Zones PB-4 and PB-19 (Reference 8). The qualified life of the cable in Zones PB-15A and PB-18 (Radiation TID 200 Mrads) is limited to 33.20 years.

All margins suggested by IEEE 323-1974 have been meet.

A vertical tray flame test has been conducted in accordance with Section 2.5 of IEEE Standard 383-1974 (Reference 3, p. 2, Item 5).

5168m

Public Service Company of New Hampshire
Seabrook Station
Docket: 50-443

QUALIFICATION WORK SHEET

EQUIPMENT QUALIFICATION FILE NO. 113-19-01

Prepared By: [signature] Date: 10/8/86

Checked By: [signature] Date: 11/3/86

Equipment Description	Postulated Environment			Qualified Environment		Qualification Method	Outstanding Items
	Parameter	Value	Reference	Value	Reference		
Purchase Order No.: 9763-006-113-19 Equipment ID No(s).: EDE-CBL-6 Equipment Type: Instrument Cable Manufacturer: III Supremant Model Number: RG-11 Triaxial, RG-11, RG-58 & RG-59 Coaxial Accuracy: Spec: N/A Demon: N/A Limiting Environment: Location: Containment (All Zones) Rad Zone: Primary Aux. Bldg. (PB-15A, PB-18) Note 1 Lowest Elevation: Note 2 Flood level: Note 2 Above Flood level: Note 2	Operating Time	1 Year	1 p. 1	1 Year	3 p. 2 5	Test and Analysis	None
	Peak Temperature (°F)	375	1 p. 1	390	2 p. 11	Test	None
	Peak Pressure (Psig)	60	1 p. 1	113	2 p. 11	Test	None
	Relative Humidity (%)	100	1 p. 1	100	2 p. 10	Test	None
	Chemical Spray (pH)	Boric Acid 1.2% by wt. pH-7.5 to 10.5	1 p. 2	Boric Acid 1.7% by wt. pH-10.5	2 p. 10 6	Test	None
	40 Year Normal Radiation Dose (Rads)	2.0×10^8	1 p. 3 Note 1	1.66×10^8 (Note 1)	2 p. C-2	Test	None
	1 Year Accident Radiation Dose (Rads)	---	1 p. 3 Note 1				
	Aging (°F/Years)	167/40 (75°C)	3 p. 2 4	167/40 (75°C) (Note 1)	3 p. 2	Test and Analysis	None
	Submergence	N/A	Note 8	N/A	N/A	N/A	None

Documentation References:

UE&C Drawing No. 9763-F-300219, Revision 19, Service Environmental Chart, 9/25/86.
FP-33262-02, FIRL Report No. F-A5550-8, Qualification Tests of Electrical Cables in a Simulated Steam Line Break and Loss-of-Coolant-Accident Environment, 1/14/83.
VU-30454, III to UE&C, 8/23/82.
UE&C Specification No. 9763-006-113-19, Sec. for Specialty Cable, 9/20/82.
Impell Calculation No. 070-032-002.
Seabrook E.Q. File No. 113-19-01, Assessment Checklist, Note 11.
SBH-97605, UE&C's letter to Impell, dated 2/13/85.
SBH-96765, UE&C letter, "Flooding Study Matrix."
Impell letter No. 0570-032-NY-156, dated 2/2/86 Summary of Class 1E Equipment Submerged as a dessult of Design Basis Events.

Notes:

1. The limiting zones for radiation are PB-15A and PB-18. Zones PB-4 and PB-19 are excluded since no electrical equipment is installed in these areas, (Reference 7). The qualified life of the cable (irradiated to 1.66 Mrads) in these zones is limited to 33.20 years.
2. Submergence qualification is not required (Reference 9).

2

APPENDIX A

BILL OF MATERIAL

SEABROOK STATION UNITS 1 & 2

SPECIALTY CABLE

(1) ITEM NO.	(2) MINIMUM CABLE VOLTAGE	(3) TYPE CABLE (FUNCTION)	(4) CONDUCTOR COLOR	(5) OVERALL JACKET COLOR	(6) CONDUCTOR SIZE AWG (STRAND)	(7) NUMBER CONDUCTORS	(8) SHIELD TYPE (COVERAGE)	(9) PURCHASE ORDER QTY-FEET	(10) CABLE CODE
1.	2500 vdc	Triaxial (RG-11,	N/A	Red	#18 (7x)	1	Braid (90% Min.)	25,000	UA1T
2.	2500 vdc	Triaxial (RG-11,	N/A	White	#18 (7x)	1	Braid (90% Min.)	25,000	UA2T
3.	2500 vdc	Triaxial (RG-11,	N/A	Blue	#18 (7x)	1	Braid (90% Min.)	7,000	UA3T
4.	2500 vdc	Triaxial (RG-11,	N/A	Yellow	#18 (7x)	1	Braid (90% Min.)	7,000	UA4T
5.	2500 vdc	Triaxial (RG-11,	N/A	Black With Red Trace	#18 (7x)	1	Braid (90% Min.)	60,000	UA6T
6.	2500 vdc	Coaxial (RG-11,	N/A	Black With Red Trace	#18 (7x)	1	Braid (90% Min.)	5,000	TA6T
7.	1000 vac	Coaxial (RG-58,	N/A	Black With Red Trace	#21 (19x)	1	Braid (90% Min.)	60,000	TA6Y
8.	1000 vac	Coaxial (RG-59,	N/A	Red	#24 (7x)	1	Braid (95% Min.)	5,000	TA1Y
9.	1000 vac	Coaxial (RG-59,	N/A	White	#24 (7x)	1	Braid (95% Min.)	5,000	TA2Y
10.	1000 vac	Coaxial (RG-59,	N/A	Black With Red Trace	#24 (7x)	1	Braid (95% Min.)	5,000	TA6U

CAE 113-14-

Ex. 7

Form 4439

ACCT NO

PURCHASE ORDER

united engineers & constructors inc

DATE October 7, 1982

P. O. NO. 9763.006-113-

THE ORDER NUMBER MUST APPEAR ON INVOICES, CORRESPONDENCE, SHIPPING PAPERS AND PACKAGES. SNH-7am

Mail 5 copies of invoice and all shipping papers and packing slips to UNITED ENGINEERS & CONSTRUCTORS INC Post Office Box 700 Seabrook, New Hampshire 03

PURCHASER: Public Service Company of New Hampshire et al
c/o United Engineers & Constructors Inc. Agents
Post Office Box 700
Seabrook, New Hampshire 03874

Page 1 of 4

REQ NO 13819

REQ BY C.W.Morris

SELLER: ITT-Supranant Division
172 Sterling Street
Clinton, Massachusetts 01510

ALL CORRESPONDENCE AND A COPY OF THESE PAPERS AND PACKING LISTS MUST BE SENT UNITED ENGINEERS & CONSTRUCTORS INC P O BOX 8223 PHILA PA 19101 ATTN E M CASE MANAGER PROCUREM

SHIP VIA Motor Freight

CONSIGN TO Public Service Company of New Hampsh... c/o United Engineers & Constructors Seabrook Station Seabrook, New Hampshire 03874

TERMS 1% ten (10)/ net thirty (30) days.

DATED 9/21/82

PRICED BY GW

BUYER T.M.O'L.

Items furnished hereunder shall be made in a workmanlike manner and fit for the purpose set forth. All items are subject to Purchaser's inspection at destination. Rejected items will be held at Seller's risk and expense. On demand Seller shall replace without delay. Seller shall pay all royalties and license fees and shall defend all suits or claims whatsoever for infringement of any patent rights and shall save the Purchaser harmless from loss on account thereof.

ITEM NO	DESCRIPTION	PRICE

FURNISH F.O.B. Job Site.

SPECIALTY CABLE

Design, furnish, fabricate, test and deliver 1 Lot of Special Cable in accordance with the following documents:

A. Specification No. 9763.006-113-19, dated September 20, 1982 consisting of Cover Page, Table of Contents, nineteen (19) reproduced typewritten pages, Figure 1, three (3) pages of Appendix A, and three (3) pages of Appendix B, attached hereto and made a part hereof.

B. Specification No. 9763-QAS-3, Quality Assurance Administrative and System Requirements, For Safety Related Electrical Equipment, Revision 7, dated April 11, 1979, consisting of Cover, Table of Contents, Current Page Listing, Identification of Changes, and thirty-nine (39) reproduced typewritten pages, already in your possession and made a part hereof.

C. Specification No. 9763-EQ-1, Class IE Equipment Qualification Requirements, Revision 7, dated February 19, 1976, consisting of Cover, Table of Contents, ten (10) reproduced typewritten pages and Data to be submitted with Proposal, consisting of two (2) reproduced typewritten pages, numbered D1 and D2, already in your possession and made a part hereof.

PRICING:

TOTAL FIRM DELIVERED PRICE . . . . . $130,365.

ITEM	QUANTITY	DESCRIPTION			PRICE/MFT	EXTENSION
1.	25,000 ft.	UA1T	Trlax	RG-11 Red	$810.00	$ 20,250.00
2.	25,000 ft.	UA2T	Trlax	RG-11 White	$810.00	$ 20,250.00
3.	7,000 ft.	UA3T	Trlax	RG-11 Blue	$810.00	$ 5,670.00
4.	7,000 ft.	UA4T	Trlax	RG-11 Yellow	$810.00	$ 5,670.00
5.	60,000 ft.	UA6T	Trlax	RG-11 Black/Red	$810.00	$ 48,600.00

Continued

Form 4435

ACCT NO

PURCHASE ORDER

united engineers
& constructors inc

DATE October 7, 1982

THE ORDER NUMBER MUST APPEAR ON INVOICES CORRESPONDENCE SHIPPING PAPERS AND PACKAGES

P. O. NO. 9763.006-11

PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE et al
c/o United Engineers & Constructors Inc. Agents

PURCHASER

REQ NO

REQ BY

ITT-Supremant Division

SELLER

ALL CORRESPONDENCE AND A COPY OF PACKING LISTS MUST BE SENT TO UNITED ENGINEERS & CONSTRUCTORS INC P O BOX 8223 PHILA PA 19101 ATTN E H CASE MANAGER PROC.

SHIP VIA

CONSIGN TO

TERMS

DATED

MADE BY

BUYER

Items furnished hereunder shall be made in a workmanlike manner and fit for the purpose set forth. All items are subject to Purchaser's inspection at destination. Rejected items will be held at Seller's risk and expense. On demand Seller shall replace without delay. Seller shall pay all royalties and license fees and shall defend all suits or claims whatsoever for infringement of any patent rights and shall save the Purchaser harmless from loss on account thereof.

ITEM NO.	DESCRIPTION	PRICE

ITEM	QUANTITY		DESCRIPTION			PRICE/MFT	EXTENSION
6.	10,000 ft.	TA6T	Coax	RG-11	Black/Red	$755.00	$ 7,550.00
7.	60,000 ft.	TA6Y	Coax	RG-58	Black/Red	$250.00	$ 15,000.00
8.	5,000 ft.	TA1Y	Coax	RG-59	Red	$225.00	$ 1,125.00
9.	5,000 ft.	TA2Y	Coax	RG-59	White	$225.00	$ 1,125.00
10.	5,000 ft.	TA6U	Coax	RG-59	Black/Red	$225.00	$ 1,125.00

Premium Price - Vendor to expedite delivery to October 8, 1982.

ITEM	QUANTITY		DESCRIPTION			PREMIUM
5.	25,000 ft.	TA6T	Triax	RG-11	Black/Red	$ 4,000.00

Prices are firm for delivery through January 14, 1983.

TERMS OF PAYMENT:
1% ten (10)/ net thirty (30) days.

SPECIAL CONDITIONS - Form No. 9763-4224, Revised May 20, 1981 consisting of Cover Page, Table of Contents and twenty (20) reproduced typewritten pages is attached hereto and made a part hereof.

GAURANTEE:
In accordance with Article 9 of Special Conditions Form 9763-4224 for a period of one (1) year from date of commercial operation.

Two (2) unpriced copies of outside Purchase Orders are to be submitted to the attention of Mr. D. E. McCaig, Manager - Expediting.

Monthly progress charts outlining engineering, purchasing, production and delivery status will be submitted starting August 23, 1982.

Continu

BERGERON AFFIDAVIT

ATTACHMENT D

EXCERPTS FROM FSAR

CONTENTS

8.3.1.3 Physical Identification of Safety-Related Equipment

All cables, raceways and safety-related equipment are assigned to a particular channel or train. There are two redundant trains of power and controls, and four redundant channels of instrumentation. Each channel or train is assigned a particular color, as shown below:

Separation Group	Equipment Nameplate	Raceway Tag	Cable Color
A. Channel I and Train A	Red	Red	Red
Train A Associated	Black		Black w/Red Tracer
B. Channel II and Train B	White	White	White
Train B Associated	Black		Black w/White Tracer
C. Channel III	Blue	Blue	Blue
D. Channel IV	Yellow	Yellow	Yellow

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47
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Each piece of electrical equipment is marked with the node number indicated on the design drawings, in the particular color corresponding to the channel or train to which that equipment is assigned. Similarly, trays and exposed conduits are marked with color-coded markers. The cable jacket color code serves as its identification. The operator or maintenance craftsman needs only to observe the color of the nameplate of any piece of equipment or the cable jacket color to determine which channel or train it serves. For exceptions to the above cable and raceway identification criteria, see Subsection 8.3.1.4.k.

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8.3.1.4 Independence of Redundant Systems

a. General

The Seabrook Station complies with the requirements of FSAR Appendix 8A, IEEE 384-1974 and Regulatory Guide 1.75, Rev. 2. These documents describe acceptable methods of complying with IEEE 279-1971 and Criteria 3, 17 and 21 of Appendix A to 10 CFR Part 50 with respect to the physical independence of the circuits and electrical equipment comprising or associated with the Class 1E power system, the protection system, systems actuated or controlled by the protection system, and auxiliary or supporting systems that must be operable for the protection system and the systems it actuates to perform their safety-related functions. Preservation of independence of redundant systems within the control boards and all other field mounted racks is discussed in Subsection 7.1.2.2.

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8.3.1.4 Independence of Redundant Systems

a. General

The Seabrook Station complies with the requirements of FSAR Appendix 8A, IEEE 384-1974 and Regulatory Guide 1.75, Rev. 2. These documents describe acceptable methods of complying with IEEE 279-1971 and Criteria 3, 17 and 21 of Appendix A to 10 CFR Part 50 with respect to the physical independence of the circuits and electrical equipment comprising or associated with the Class 1E power system, the protection system, systems actuated or controlled by the protection system, and auxiliary or supporting systems that must be operable for the protection system and the systems it actuates to perform their safety-related functions. Preservation of independence of redundant systems within the control boards and all other field mounted racks is discussed in Subsection 7.1.2.2.

In accordance with the provisions of Section 4.5a and 4.6.2 of FSAR Appendix 8A, Sections 4.5(1) and 4.6.1 of IEEE 384-1974, and Position C4 of Regulatory Guide 1.75, Revision 2, we have elected to associate all of the Non-Class 1E circuits with Class 1E circuits. This application of associated circuits allows the plant to be designed with one less separation group; that is, instead of having five separation groups consisting of four safety-related separation groups and one non-safety-related separation group, Seabrook has only four separation groups. The major advantages of this approach are the ability to provide greater separation distances between the groups, as well as to reduce the raceway system's exposure to fire.

As a result of this design, all plant circuits are specifically assigned to one of the following four separation groups as noted in Figure 8.3-57:

Group A - Train A, Channel I and Train A Associated Circuits
Group B - Train B, Channel II and Train B Associated Circuits
Group C - Channel III
Group D - Channel IV

The great majority of associated circuits are with Group A, a very limited number are with Group B, and none are with Groups C and D.

The circuits that are associated with Train A consist of:

1) Non-Class 1E power, control, instrument circuits contained within the Nuclear Island.

2) Non-Class 1E power, control, and instrumentation circuits that traverse the Nuclear Island boundary.

3) Non-Class 1E power, control, and instrument circuits outside the Nuclear Island.

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The circuits that are associated with Train B consist of:

1) Non-Class 1E power, control, and instrument circuits contained within the Nuclear Island.

2) Non-Class 1E power, control, and instrumentation circuits that traverse the Nuclear Island boundary.

The Nuclear Island boundary is shown in Figure 8.3-58. This figure denotes the buildings, structures, duct banks, etc., which are part of the Nuclear Island. All other buildings, structures, etc., are considered to be outside the Nuclear Island.

The four separation groups are routed through four separate raceway systems per the separation criteria given in Table 8.3-10. This separation criteria are based on a combination of the following:

1) Standard separation criteria given in Sections 5.1.3, 5.1.4, and 5.6 of FSAR Appendix 8A and IEEE 384-1974 and

2) Separation criteria established by analysis and testing as permitted aby Sections 5.1.1.2 and 5.6 of FSAR Appendix 8A and IEEE 384-1974. This analysis and testing are documented in References (a) and (2) (see FSAR Seciton 8.3.4).

The following analysis examines the design features and modes of failure of associated circuits of each separation group to determine any interaction and challenges with other separation groups. The overall objective is to assure that the ability to achieve a safe plant shutdown under design basis event (DBE) conditions is not compromised.

b. Train A Associated Circuit Analysis

1. Associated Circuits Contained within the Nuclear Island

Non-Class 1E circuits that remain within the Nuclear Island are permitted to share the same raceway as Train A Class 1E circuits. These circuits are classified as Train A Associated Circuits and are designed and installed to meet all the requirements placed on associated circuits as required by the compliance documents listed earlier.

Challenges to Class 1E circuits, because of failure in an associated circuit, have been examined and determined to have no detrimental effect because:

(a) When Class 1E power supplies are utilized, failure of a Non-Class 1E motor, load, or device connected to this power supply will be promptly isolated by operation of Class 1E protective devices.

Non-Class 1E loads connected to Class 1E buses are in all cases protected by Class 1E devices. The breakers protecting Non-Class 1E loads are coordinated such that failure of all Non-Class 1E loads, with proper operation of their own breakers, will not result in tripping of the incoming breaker to the bus.

Further, in the few cases where credit is taken for the incoming bus feeder breaker to provide backup protection to meet Regulatory Guide 1.63, the associated bus is dedicated to Non-Class 1E loads only and, therefore, will not degrade a Class 1E bus.

(b) In cases where Non-Class 1E power supplies, such as switchgear, motor control centers, and distribution panels are utilized, these are of identical design of the Class 1E counterparts and have been purchased to the same specification requirements inclusive of quality control. Mounting of the Non-Class 1E power supplies within the Nuclear Island is identical to the mounting of their Class 1E counterparts; therefore, credit can be taken for this equipment to function under DBE conditions.

Penetrations for 600 volt service and below are modular type with a header plate welded to the outside of a 12 inch containment sleeve. Because of the concern regarding leakage currents of terminal blocks during accident conditions, low level instrumentation circuit conductors inside containment are connected to the penetration conductors with qualified splices. Safety-related 480 volt power, 120 volt ac and 125 volt dc control circuit conductors inside containment required to function for LOCA and main steam line break conditions are also connected to the penetration conductors with qualified splices. The balance of medium power 480 volt conductors, and control and instrumentation conductors are terminated on terminal blocks inside terminal boxes both inside and outside containment. 480 volt heavy power conductors are terminated with lugs on special termination plates inside terminal boxes both inside and outside containment. Nuclear instrumentation detector circuits are terminated with connectors inside terminal boxes both inside and outside containment. Penetrations for medium voltage have header plates welded to the outside of an 18 inch containment sleeve. Each penetration consists of three 1000 MCM conductors terminated with premolded stress cones inside terminal boxes both inside and outside containment.

The capability of the electrical penetrations to withstand the total range of time versus fault current without loss of containment integrity under worst case environmental conditions was demonstrated by test. These test results are summarized in the response to RAI 430.56.

The penetrations are arranged in two levels, with one power train and two channels entering above the intermediate floor of the containment building, and the redundant train and two channels entering below the intermediate floor. Once inside the containment, this floor provides the necessary physical separation and protection between the redundant trains; outside the containment, this separation is continued by separate tunnels connecting the penetration area to the switchgear and cable spreading areas of the control building.

Penetration conductors are sized using ICEA guidelines with an additional restriction of a 65°C ambient temperature.

The design, construction, and installation of the penetration assemblies are in accordance with IEEE 317 and Regulatory Guide 1.63. (See Subsections 8.1.5.3, 8.3.1.1, and 8.3.1.2 for further details on compliance to Regulatory Guide 1.63).

k. Cable and Raceway Identification

The computerized conduit and cable schedule provides a permanent record of the routing and termination of cables. Circuit level coding identifies the individual channel or train assigned to each raceway and cable. These data are entered into the conduit and cable program, which in turn produces reports designating the unique number with origin, destination, channel or train, and specific path for every cable. Every cable is identified by a tag affixed at each end, bearing the unique cable number.

Each channel or train is assigned a particular color, as described in Subsection 8.3.1.3.

All safety-related cables have jackets of the color assigned to the particular channel and train so there is no difficulty in distinguishing between cables of redundant channels. Non-safety related cables are associated with either Train A or B and have black jackets with a red trace for cables associated with Train A and a white trace for cables associated with Train B. It is immediately evident to the operator or maintenance man, by observing the color of the cable jacket, that a given cable is safety-related and that it is a particular channel or train. This system also prevents placing a cable of one channel or train with cables of another, by the obvious dissimilarity of jacket color.

Each cable is further identified by a footage and cable code on the jacket of the cable at intervals of approximately five feet. Reference to pulling records reveals the cable number, routing, separation, circuit type, and use of any cable at any accessible point in the raceway system where the footage marker and cable code can be identified.

Exceptions to the above cable identification criteria exist for vendor supplied speciality cables for radiation monitoring system and portions of various other systems (for example telephone system, lighting and fire protection/detection). For these exceptions, the necessary information to ensure adequate control of separation, installation, inspection, etc. is provided in the construction documents.

Raceways which are part of the computerized cable and conduit schedule are marked to identify their number and circuit level. Conduit raceways are identified at each end where conduit terminates and at both sides of walls, floors and in-line boxes. Tray raceway markers are spaced at 15 foot or less intervals. These markings are in the same colors assigned to the channels and trains. For example, a raceway with a red section marking is utilized only by cables with red (or black with red tracer) jackets. Hence, it is readily apparent that a given cable is routed with its respective channel.

Raceways which are not part of the computerized conduit and cable schedule may not be marked with a unique identification number, but their function is obvious by tracing the raceway to its end device. These raceways may be used to carry vendor supplied speciality cables for radiation monitoring system and portions of various other systems such as telephone system, lighting and fire protection/detection. For these raceways, the necessary information to ensure adequate controls of separation, installation, inspection, etc. is provided in the construction documents.

Since, in general, there is no sharing of safety-related systems between the two units (see discussion of compliance to GDC 5, Subsection 8.3.1.2), there is no need to distinguish the safety-related cables of one unit from the safety-related cables of the

other unit. As such, the cable and raceway coloring scheme is identical for the two units. In the common areas, the unit to which a cable belongs is not apparent from the raceway or cable markings. If it is required to know the unit to which a cable belongs, it can be obtained by observing the equipment designation number, which has the unit number as a prefix. The basis for cable and raceway identification is to distinguish between redundant channels, indicate which channel is involved, and which cables are safety-related.

1. Administrative Responsibility and Control

Administrative responsibility for assuring compliance with applicable design criteria and bases relative to independence of redundant systems rests with the A/E's Project Electrical Engineer. He is responsible for coordination with the A/E's field electrical supervisor to verify that the independence, separation and availability of Class 1E equipment is preserved during installation of the electric power system.

The following control procedures are established by the A/E's Project Electrical Engineer to assure compliance of the electric power system with the design criteria and bases:

1. Periodic design reviews with the cognizant engineer, the design supervisor, and the reviewing engineer to assure the criteria are being interpreted and followed,

2. Issuance of periodic administrative and design directives covering procedures, and

3. Periodic field reviews at the job site by the Project Electrical Engineer and/or the cognizant engineer to check field installation procedures, to provide interpretation of design drawings and guidance for solution of field installation problems, and to verify compliance with criteria.

The design of the conduit and raceway system is guided by the recommendations of applicable IEEE, ICEA and NEC standards. For instance, the limiting percentages of fill of internal area of the various size conduits or cable trays are fixed in one of the input forms of the computer conduit and cable schedule and these limits are automatically applied to all conduits and cable trays by the computer. If the conduit or cable tray is one which the computer is free to size, it designates the size which accommodates the cables to be enclosed. If the conduit or cable tray size is designer-designated and the fill exceeds the limiting percentage, the computer indicates an error message so that either the conduit can be made a larger size, or the cables routed by another path. By these methods, all raceways are assured of being of adequate capacity.

Correct installation practice assures that the design criteria by which the equipment was selected are not violated during construction. Installation bases are prescribed, where necessary, by the

BUILDING	OUTDOOR											
AREA/ ELEVATION	-	INCORE INSTRU (+) 64'-9"		REACTOR AREA (+) 25'-0"		REFUEL'G CAVITY 0'-0"		REGEN HX (+) 25'-0"		VALVE ROOM (+) 26'-0"		
ENVIRONMENTAL ZONE	-	CS-1		CS-2		CS-3		CS-1		CS-5		
CONDITION	NORMAL	NORMAL	ABNORMAL	NORMAL	ABNORMAL	NORMAL	ABNORMAL	NORMAL	ABNORMAL	NORMAL	ABNORMAL	
TEMPERATURE (°F)												
MAXIMUM	84 ⑦	120	120	120	120	120	120	120	120	120	120	
MINIMUM	0	50 ⑦	—	50 ⑦	—	50 ⑦	—	50 ⑦	—	50 ⑦	—	
PRESSURE (PSIG)		16.0 ⑦		16.0 ⑦		16.0 ⑦		16.0 ⑦		16.0 ⑦		
MAXIMUM	-	1.5	—	1.5	—	1.5	—	1.5	—	1.5	—	
NORMAL	0	0.5	—	0.5	—	0.5	—	0.5	—	0.5	—	
MINIMUM	-	(+) 3.5 ⑦	—	(-) 3.5 ⑦	—	(+) 3.5 ⑦	—	(+) 3.5 ⑦	—	(+) 3.5 ⑦	—	(+)
HUMIDITY (%)												
MAXIMUM	100	90	—	90	—	90	—	90	—	90	—	
MINIMUM ⑫	30	10	—	10	—	10	—	10	—	10	—	
RADIATION (RADS) TOTAL INTEGRATED DOSE - ④	10^3	⑤		⑤		⑤		⑤		⑤		
SPRAY ⑭	SEASHORE LEVELS OF SALT WATER IN AIR											

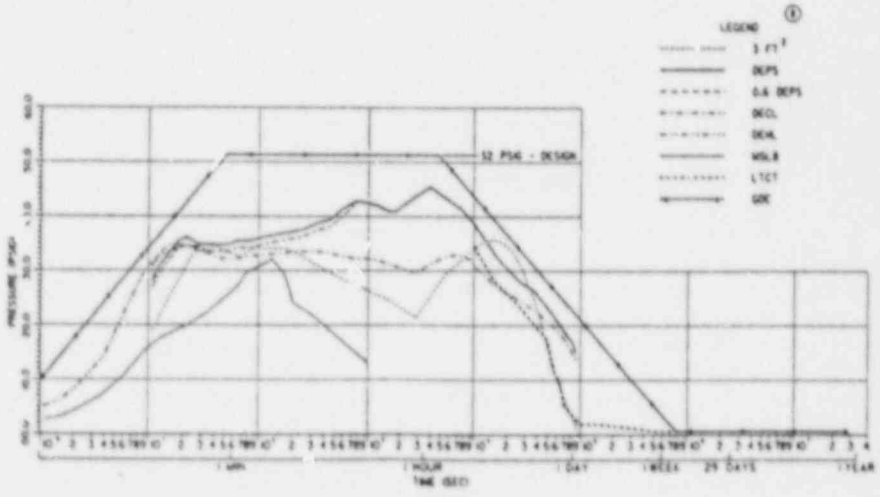


FIGURE 1 ⑦
CONTAINMENT ACCIDENT DESIGN ENVELOPE
PRESSURE - TIME

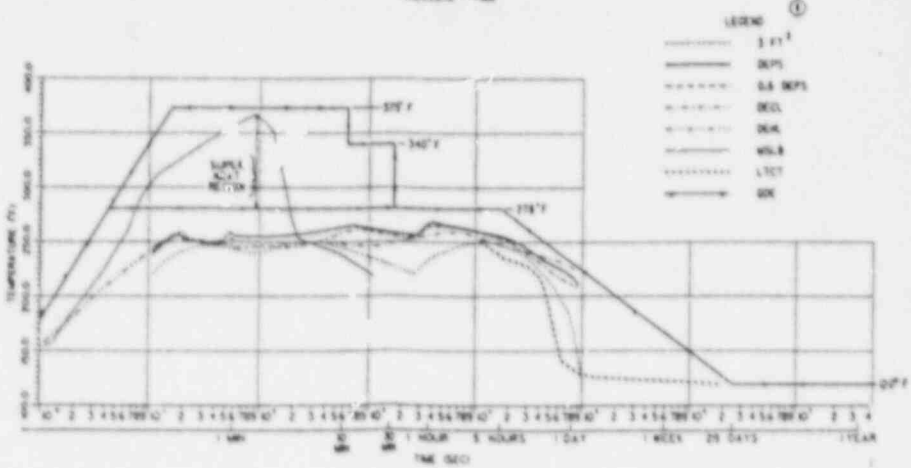


FIGURE 2 ⑦
CONTAINMENT ACCIDENT DESIGN ENVELOPE
TEMPERATURE - TIME

CONTAINMENT																			
...X LETDOWN HX (-)26'-0"		RC DR TANK HX (-)26'-0"		RC DR TANK (-)26'-0"		STEAM GEN AREA (-)26'-0"		OUT SEC SHIELD WALL (-)26'-0"		PRESSURIZER ROOM 0'-0"		OUT SEC SHIELD WALL 0'-0"		OPERATING FLOOR 25'-0"		INSIDE CONTAINMENT STRUCTURE AND PENETRATIONS WITHIN WALLS			
CS-6		CS-7		CS-8		CS-9		CS-10		CS-4		CS-12		CS-13		ALL ZONES			
...NORMAL 1	ABNORMAL 3	NORMAL 1	ABNORMAL 3	NORMAL 1	ABNORMAL 3	NORMAL 1	ABNORMAL 3	NORMAL 1	ABNORMAL 3	NORMAL 1	ABNORMAL 3	NORMAL 1	ABNORMAL 3	NORMAL 1	ABNORMAL 3	ACCIDENT 1	ACCIDENT 2	ACCIDENT 8	
[illegible]	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	271	370	120	
50 (13)	—	50 (13)	—	50 (13)	—	50 (13)	—	50 (13)	—	50 (13)	—	50 (13)	—	50 (13)	—	-	-	-	
(+)60 (2) 1.5 0.5 3.5 (1)	— — —	(+)60 (2) 1.5 0.5 (-)3.5 (1)	— — —	(+)60 (2) 1.5 0.5 (-)3.5 (1)	— — —	(+)60 (2) 1.5 0.5 (-)3.5 (1)	— — —	(+)60 (2) 1.5 0.5 (-)3.5 (1)	— — —	(+)60 (2) 1.5 0.5 (-)3.5 (1)	— — —	(+)60 (2) 1.5 0.5 (-)3.5 (1)	— — —	(+)60 (2) 1.5 0.5 (-)3.5 (1)	— — —	46.7 - -	34.5 - -	2 - -	
40 10	— —	40 10	— —	40 10	— —	40 10	— —	40 10	— —	40 10	— —	40 10	— —	40 10	— —	STEAM/AIR MIXTURE SEE FIGURES 1 & 2			
(5)		(5)		(5)		(5)		(5)		(5)		(5)		(5)		(5)			
NONE																BORIC ACID 1.23 WT PH 7.3-10.5 NaOH USED TO CONTROL PH			

...ES ○

-3.5 PSIG IS RESULT OF INADVERTENT SPRAY ACTUATION WITH MINIMUM WATER TEMPERATURE.

60 PSIG TEST CONDITION SPECIFIED ENVELOPES THE INTEGRATED LEAK RATE TEST AS WELL AS THE STRUCTURAL INTEGRITY TEST. THIS IS REQUIRED TO BE SPECIFIED AS A NON-FUNCTIONAL REQUIREMENT, BUT MAY HAVE IMPACT ON EQUIPMENT INTEGRITY DURING TEST. TIME DURATION OF PRESSURIZATION AT THIS VALUE WILL RANGE FROM ONE DAY TO ONE WEEK FOR A TOTAL NUMBER OF 32 TIMES DURING A 40-YEAR LIFE OF PLANT.

FIGURE 1, THE PRESSURE DESIGN ENVELOPE IS THE CONTAINMENT STRUCTURE DESIGN PRESSURE OF 52 PSIG WHICH IN ACCORDANCE WITH 10CFR50, GDC 50 INCLUDES A MARGIN ABOVE THE PEAK ACCIDENT PRESSURE OF 46.7 PSIG.

FIGURE 2, THE TEMPERATURE DESIGN ENVELOPE INCLUDES AN INITIAL PEAK CORRESPONDING TO THE MAIN STEAM LINE BREAK DESIGN TEMPERATURE OF 370°F AND A LOCA DESIGN TEMPERATURE OF 270°F. THIS IS THE TEMPERATURE OF THE SATURATED STEAM/AIR MIXTURE AT 52 PSIG.

THE DESIGN ENVELOPES IN BOTH CASES DO NOT INCLUDE MARGINS FOR EQUIPMENT QUALIFICATION AS REQUIRED BY IEEE 323.

TOTAL INTEGRATED DOSE IS THE SUM OF 40 YEARS NORMAL DOSE PLUS ONE YEAR POST ACCIDENT DOSE WHERE APPLICABLE.

MINIMUM TEMPERATURE NOTED WILL ONLY BE REACHED AFTER SOME PERIOD OF TIME AND ONLY IF NO ACTION IS TAKEN TO PROVIDE HEATING TO THE AFFECTED AREA.

A TORNADO CAN PRODUCE A -3 PSIG DEVIATION FROM NORMAL ATMOSPHERIC PRESSURE. THE D.G. SHOULD START UNDER THESE CONDITIONS, HOWEVER, OPERATION AT LOAD IS NOT REQUIRED BECAUSE THE DURATION OF THE PRESSURE TRANSIENT IS ONLY 1.5 SEC WHICH IS LESS THAN STARTING TIME OF THE DIESEL.

THE DESIGN BASIS AMBIENT TEMPERATURE RANGE OF 0 TO 89°F USED FOR EQUIPMENT LOCATED WITHIN BUILDINGS IS TAKEN FROM ASHRAE 1967 "HANDBOOK OF FUNDAMENTALS", 98% OF THE TEMPERATURE DATA LIES BETWEEN THESE TWO LIMITS.

A STATISTICAL ANALYSIS OF REGIONAL EXTREME TEMPERATURE CONDITIONS PREDICTS 100 YEAR MAXIMUM AND MINIMUM HOURLY OUTDOOR TEMPERATURES OF 102°F AND -29°F, RESPECTIVELY (FSAR SECTION 2.3.2 B). SAFETY-RELATED EQUIPMENT LOCATED INSIDE SELECTED BUILDINGS HAVE BEEN EVALUATED FOR SATISFACTORY PERFORMANCE UNDER 24-HOUR AVERAGE OUTDOOR TEMPERATURE CONDITIONS OF -18°F AND 89°F. THE ANALYSIS SUMMARIZING THE OPERATIONAL CAPABILITY OF THE INDOOR EQUIPMENT FOR THESE EXTREME OUTDOOR TEMPERATURES WAS SUBMITTED TO THE NRC IN A LETTER BY PSNH, DATED JUNE 24, 1983, TO MR. G.A. KNIGHTON FROM MR. JOHN DeVINCENTIS, YAEC.

W.P.B. EVAPORATOR CUBICLES T_{max} = 120°F

THE INTEGRATED DOSE, WHICH IS THE SUM OF THE FORTY YEAR NORMAL AND ACCIDENT (LOCA) DOSES IS AS FOLLOWS:

A. NORMAL FOR GENERAL AREA: 2X10⁴ RADS GAMMA.
B. NORMAL FOR REACTOR COOLANT (RC) PIPING: 1.6X10⁶ RADS GAMMA.
C. NORMAL FOR RC PIPING IN LINE INSTRUMENTATION 3X10⁷ RADS GAMMA.
D. NORMAL FOR AREA BETWEEN MISSILE SHIELD AND REACTOR PRIMARY SHIELD, AND AROUND RC PIPING PENETRATION IN PRIMARY SHIELD: 1X10⁸ RADS GAMMA.
E. ACCIDENT-INTEGRATED DOSE AFTER ONE YEAR IN LOCA ENVIRONMENT:
(1) FOR COMPONENTS NOT SUBMERGED FOLLOWING LOCA:
BETA DOSE = 5.0X10⁷ RADS, GAMMA DOSE = 1.4X10⁷ RADS.
(2) FOR COMPONENTS SUBMERGED FOLLOWING LOCA:
BETA DOSE = 2.9 X10⁷ RADS, GAMMA DOSE = 2.5X10⁷ RADS.

FOR THE FOLLOWING AREAS USE AN INTEGRATED DOSE OF 2X10⁸ RADS:
A. SPENT RESIN SLUICE TANK/TRANSFER PUMP AREA
B. DEMINERALIZER CUBICLES (EXCEPT CS MIXED BED AND CATION WHICH ARE 5X10⁷)
C. FILTER CUBICLES.
D. WASTE SOLIDIFICATION HOPPER AREA
E. DEGASIFIER AREA WASTE PROCESS BUILDING

DECLG - DOUBLE ENDED COLD - LEG GUILLOTINE MINIMUM SAFETY INJECTION
DEHLG - DOUBLE ENDED HOT - LEG GUILLOTINE MINIMUM SAFETY INJECTION
DEPS - DOUBLE ENDED PUMP SUCTION GUILLOTINE MINIMUM/MAXIMUM SAFETY INJECTION
3 FT² - 3 FT² PUMP SUCTION SPLIT MINIMUM SAFETY INJECTION
MSLB - MAIN STEAM LINE BREAK AT 102% POWER
LTCT - LONG TERM CONTAINMENT TEMPERATURE/PRESSURE RESPONSE TO DESIGN BASIS LOCA
GDE - GENERAL DESIGN ENVELOPE

MAXIMUM AND MINIMUM HUMIDITIES GIVEN FOR NORMAL CONDITIONS ARE COINCIDENT WITH MAXIMUM AND MINIMUM TEMPERATURES FOR NORMAL CONDITIONS. DURING NORMAL PLANT OPERATION (100% POWER, HEAT-UP AND COOL DOWN, REFUELING AND SHUT DOWN), HUMIDITIES COULD EXCEED THE MAXIMUM NOTED IN THE TABLE. HUMIDITIES ARE NOT CONTROLLED EXCEPT IN THE FOLLOWING ENVIRONMENTAL ZONES:
CE-1 "MAIN CONTROL ROOM"
CB-(A, B, C, D, E, F, G) "GENERAL AREAS"
CB-2 "COMPUTER ROOM"

OTHER AREA HUMIDITIES MAY REACH 95% RH DURING PLANT SHUTDOWN CONDITIONS (REF CALC NS-MISC-20)

MINIMUM TEMPERATURE APPLIES TO PLANT SHUTDOWN. MINIMUM TEMPERATURE DURING REFUELING OPERATION IS 74°F.

SPRAY FOR ZONES SW-1, CT-3, CT-4 AND CIRC WATER PUMP HOUSE PUMP ROOM IS SEASHORE LEVELS OF SALT WATER IN AIR. ALL OTHER AREAS/ZONES NOT APPLICABLE.

INDICATES AREA PROVIDED W/SAFETY RELATED VENTILATION.

FOLLOWING A FUEL HANDLING ACCIDENT THE 30 DAY INTEGRATED DOSE EXCEEDS 1 X 10⁵ RADS IN A LOCALIZED AREA WITHIN APPROXIMATELY 10 FEET OF THE CHARCOAL VENTILATION FILTERS. THE MAXIMUM 30 DAY INTEGRATED DOSE ON CONTACT IS APPROXIMATELY 7.3 X 10⁶ RADS. IT IS ASSUMED THAT THE CHARCOAL FILTERS CAN BE REPLACED WITHIN 30 DAYS. (REF CALC 4.4.14.19, REV 0)

THESE ZONES ARE ANALYZED FOR NORMAL CONDITIONS ONLY.

PRESSURIZED ACCIDENT-RCS REMAINS PRESSURIZED FOLLOWING CORE DAMAGE.

THE YEARLY AVERAGE SPACE TEMPERATURE IN [illegible] IS 77°F (CALC 4.0.47.2, REV 1)

GENERAL NOTES

A. IN AREAS WHERE SLIGHTLY POSITIVE (SLIGHT POS) OR SLIGHTLY NEGATIVE (SLIGHT NEG) PRESSURES ARE INDICATED, THE INFORMATION IS FOR DESIGN OF HVAC SYSTEMS AND IS NOT REQUIRED TO BE SPECIFIED IN EQUIPMENT SPECIFICATIONS, UNLESS THESE PRESSURES AFFECT THE DESIGN AND/OR OPERATION OF THIS EQUIPMENT.

B. ALL EQUIPMENT LOCATED EXTERNAL TO SECONDARY SHIELD WALL WITHIN CONTAINMENT, AND ALL EQUIPMENT LOCATED EXTERNAL TO CONTAINMENT WILL EXPERIENCE NEUTRON FLUX LESS THAN 10¹⁸ NVT AND THEREFORE NEUTRON EXPOSURE NEED NOT BE SPECIFIED FOR FERRITE COMPONENTS PURCHASED TO ASME CODE SECTION 3.

C. THIS DRAWING IS VALID ONLY FOR ENVIRONMENTAL QUALIFICATION OF EQUIPMENT IMPORTANT TO SAFETY AND SHOULD NOT BE UTILIZED FOR ANY OTHER DESIGN PURPOSES.

D. FOR REFERENCE CALCULATIONS WHICH SERVE AS THE BASIS FOR THE NORMAL/ABNORMAL/ACCIDENT CONDITIONS SHOWN ON THE SERVICE ENVIRONMENT CHART, SEE CALC SET NO. 4.0.0000, "DESIGN BASIS".

E. FOR ENVIRONMENTAL ZONE MAPS, SEE CALC SET NO. 4.0.0000, "DESIGN BASIS".

F. CONDITIONS- ALL NORMAL, ABNORMAL AND ACCIDENT CONDITIONS LISTED BELOW OCCUR SIMULTANEOUSLY WITH THE DESIGN BASIS OUTDOOR AMBIENT TEMPERATURES AND HUMIDITIES. THE WORST NORMAL, ABNORMAL AND ACCIDENT CONDITIONS, AS APPLICABLE FOR EACH BUILDING ZONE, ARE TABULATED IN THE CHART.

NORMAL 1 - THE MAXIMUM AND MINIMUM TEMPERATURES AND HUMIDITIES OCCURRING DURING 100% FULL POWER.

NORMAL 2 - THE MAXIMUM AND MINIMUM TEMPERATURES AND HUMIDITIES OCCURRING DURING HEATUP AND COOLDOWN.

ABNORMAL 1 - THE MAXIMUM TEMPERATURE OCCURRING DURING DIESEL GENERATOR TESTING.

ABNORMAL 2 - THE MAXIMUM TEMPERATURE OCCURRING DURING TUNNEL HEAT TREATMENT.

ABNORMAL 3 - THE MAXIMUM TEMPERATURE OCCURRING DURING LOSS OF OFFSITE POWER (LOP) WITH THE PLANT AT 100% FULL POWER. THE DURATION OF THE LOP EVENT IS 2 HOURS AND WILL OCCUR ONCE DURING THE LIFE OF THE PLANT.

ABNORMAL 4 - THE MAXIMUM TEMPERATURE OCCURRING DURING REFUELING.

ACCIDENT 1 - THE MAXIMUM TEMPERATURE, PRESSURE, HUMIDITY & RADIATION DOSE OCCURRING DURING A LOSS OF COOLANT ACCIDENT (LOCA) WITH A LOSS OF OFFSITE POWER. THE DURATION OF THE LOP IS 72 HOURS FOR ALL BUILDINGS OTHER THAN CONTAINMENT; FIGURES 1 AND 2 SHOULD BE USED FOR CONTAINMENT.

ACCIDENT 2 - THE MAXIMUM TEMPERATURE, PRESSURE AND HUMIDITY OCCURRING DURING A MAIN STEAM LINE BREAK (MSLB) EITHER IN CONTAINMENT OR IN THE MAIN STEAM AND FEEDWATER PIPE CHASES.

ACCIDENT 3 - THE MAXIMUM TEMPERATURE, PRESSURE AND HUMIDITY OCCURRING DURING A HIGH ENERGY LINE BREAK (HELB) OUTSIDE CONTAINMENT.

ACCIDENT 4 - THE MAXIMUM TEMPERATURE, PRESSURE, AND HUMIDITY OCCURRING DURING A MODERATE ENERGY LINE BREAK (MELB).

ACCIDENT 5 - THE MAXIMUM TEMPERATURE, PRESSURE AND HUMIDITY OCCURRING DURING A HOT WATER LINE BREAK (HWLB), HIGH ENERGY LINE.

ACCIDENT 6 - THE MAXIMUM TEMPERATURE, PRESSURE AND HUMIDITY OCCURRING DURING 100% FULL POWER WITH A LOSS OF TUNNELS.

ACCIDENT 7 - THE MAXIMUM TEMPERATURE, PRESSURE AND HUMIDITY OCCURRING DURING A LOSS OF COOLANT ACCIDENT WITH A LOSS OF TUNNELS.

ACCIDENT 8 - THE MAXIMUM LONG TERM TEMPERATURE, PRESSURE AND HUMIDITY RESULTING FROM A DESIGN BASIS LOCA.

ACCIDENT 9 - THE MAXIMUM TEMPERATURE OCCURRING DURING A SEISMIC EVENT WITH 100% FULL POWER OR A LOCA.

ACCIDENT 10 - THE MAXIMUM TEMPERATURE, PRESSURE AND HUMIDITY OCCURRING DURING A FUEL HANDLING ACCIDENT (FH ACCID).

G. MAXIMUM TEMPERATURE, PRESSURE AND HUMIDITY GIVEN FOR THE ACCIDENT CONDITIONS ARE COINCIDENT WITH THE WORST CASE ACCIDENT AS NOTED.

H. MINIMUM TEMPERATURES INDICATED ARE FOR ANY NORMAL MODE OF OPERATION INCLUDING PLANT SHUTDOWN.

I. DASHED (-) LINE FOR RADIATION DOSE UNDER ACCIDENT CONDITIONS INDICATES THAT THE ACCIDENT DOSE IS NEGLIGIBLE.

J. DASHED (—) LINE FOR TEMPERATURE, PRESSURE AND/OR RELATIVE HUMIDITY UNDER NORMAL, ABNORMAL AND/OR ACCIDENT COLUMNS INDICATES INFORMATION NOT REQUIRED UNDER THIS ANALYSIS.

8809140061-02

PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE
SEABROOK STATION - UNITS 1 & 2
FINAL SAFETY ANALYSIS REPORT

SERVICE ENVIRONMENT CHART

9763-F-300219

FIGURE 3.11(B)-1, SH. 1

BUILDING												
AREA/ ELEVATION	WEST PIPE CHASE 3'-0"			WEST PIPE CHASE 0'-0"			WEST PIPE CHASE 28'-0"			WEST PIPE CHA STAIRWELL 3'-0"		
ENVIRONMENTAL ZONE	PCE-1			PCE-2			PCE-3			PCE-4		
CONDITION	NORMAL 1	ABNORMAL 2	ACCIDENT 3	NORMAL 1	ABNORMAL 2	ACCIDENT 3	NORMAL 1	ABNORMAL 2	ACCIDENT 3	NORMAL 1	ABNORMAL 2	
TEMPERATURE (°F) MAXIMUM	130	206	325	130	206	325	130	206	325	130	205	
MINIMUM	0 (5)	—	—	0 (5)	—	—	0 (5)	—	—	28		
PRESSURE (PSIG) MAXIMUM	SLIGHT POS.	—	4.8	SLIGHT POS.	—	4.8	SLIGHT POS.	—	4.8	3	—	
NORMAL	SLIGHT POS.	—	—	SLIGHT POS.	—	—	SLIGHT POS.	—	—	0	—	
MINIMUM	(-) 3	—	—	(-) 3	—	—	(-) 3	—	—	(-) 3	—	
HUMIDITY (%) MAXIMUM (6)	30	—	100	30	—	100	30	—	100	30	—	
MINIMUM (6)	5	—	—	5	—	—	5	—	—	8	—	
RADIATION (RADS) TOTAL INTEGRATED DOSE - (4)	1×10^3		ACCIDENT 1 8.2×10^4	1×10^3		ACCIDENT 1 8.2×10^4	1×10^3		ACCIDENT 1 8.2×10^4	1×10^3		

BUILDING	MAIN STEAM & FEEDWATER PIPE CHASES			MECHANICAL PENETRAT								
AREA/ ELEVATION	HYDROGEN ANALYZER ROOM 22'-0"			RADIOACTIVE TUNNEL (+) 34'-6"			RADIOACTIVE TUNNEL (+) 28'-6"			RADIOACTIVE TU (+) 34'-6"		
ENVIRONMENTAL ZONE	PCE-6 (6)			MPA-1 (6)			MPA-2 (6)			MPA-3 (6)		
CONDITION	NORMAL 1	ABNORMAL 2	ACCIDENT 3	NORMAL 1	ABNORMAL 2	ACCIDENT 3	NORMAL 1	ABNORMAL 2	ACCIDENT 3	NORMAL 1	ABNORMAL 2	
TEMPERATURE (°F) MAXIMUM	104	104	150	104	100	166	104	104	160	104	103	
MINIMUM	50	—	—	50	—	—	50	—	—	50	—	
PRESSURE (PSIG) MAXIMUM	SLIGHT NEG.	—	0	SLIGHT POS.	—	ACCIDENT 4 LE	SLIGHT POS.	—	ACCIDENT 4 LE	SLIGHT POS.	—	
NORMAL	SLIGHT NEG.	—	—	SLIGHT POS.	—	—	SLIGHT POS.	—	—	SLIGHT POS.	—	
MINIMUM	(-) 3	—	—	0	—	—	0	—	—	0	—	
HUMIDITY (%) MAXIMUM (6)	60	—	30	60	—	ACCIDENT 4 100	60	—	ACCIDENT 4 100	60	—	
MINIMUM (6)	3	—	—	3	—	—	3	—	—	3	—	
RADIATION (RADS) TOTAL INTEGRATED DOSE - (4)	1×10^3		ACCIDENT 1 1.2×10^3	2×10^2		7.5×10^3 (4)	2×10^2		2.8×10^3 (4)	2×10^2		

BUILDING												
AREA/ ELEVATION	DAY TANK ROOMS 5'-6"						DIESEL GENERATOR ROOMS 3'-6"					
ENVIRONMENTAL ZONE	DE-3A			DE-3B			DE-4A (6)			DE-4B (6)		
CONDITION	NORMAL 1	ABNORMAL 2	ACCIDENT 3	NORMAL 1	ABNORMAL 2	ACCIDENT 3	NORMAL 1	ABNORMAL 2	ACCIDENT 3	NORMAL 1	ABNORMAL 2	
TEMPERATURE (°F) MAXIMUM	104	108	104	104	108	108	104 (5)	120	120	104 (5)	120	
MINIMUM	50	—	—	50	—	—	50	—	—	50	—	
PRESSURE (PSIG) MAXIMUM	0	—	0	0	—	0	SLIGHT POS.	—	0	SLIGHT POS.	—	
NORMAL	SLIGHT NEG.	—	—	SLIGHT NEG.	—	—	0	—	—	0	—	
MINIMUM	(-) 3	—	—	(-) 3	—	—	(-) 5	—	—	(-) 3	—	
HUMIDITY (%) MAXIMUM (6)	60	—	55	60	—	55	60	—	38	60	—	
MINIMUM (6)	3	—	—	3	—	—	3	—	—	3	—	
RADIATION (RADS) TOTAL INTEGRATED DOSE - (4)	1×10^3		—	1×10^3		—	1×10^3		—	1×10^3		

BUILDING	COOLING TOWER											
AREA/ ELEVATION	ELECTRICAL SWITCHGEAR ROOMS 22'-0"						MECHANICAL EQUIPMENT ROOM 46'-0"			PUMP ROOM 16'-0"		
ENVIRONMENTAL ZONE	CT-1A (6)			CT-1B (6)			CT-1 (C)			CT-2		
CONDITION	NORMAL 1	ABNORMAL 2	ACCIDENT 3	NORMAL 1	ABNORMAL 2	ACCIDENT 3	NORMAL 1	ABNORMAL 2	ACCIDENT 3	NORMAL 1	ABNORMAL 2	
TEMPERATURE (°F) MAXIMUM	104	104	104	104	104	104	104	90	90	104	97	
MINIMUM	50	—	—	50	—	—	0 (5)	—	—	0 (5)	—	
PRESSURE (PSIG) MAXIMUM	SLIGHT POS.	—	SLIGHT POS.	SLIGHT POS.	—	SLIGHT POS.	C	—	0	0	—	
NORMAL	SLIGHT POS.	—	—	SLIGHT POS.	—	—	SLIGHT NEG.	—	—	SLIGHT NEG.	—	
MINIMUM	0	—	—	0	—	—	SLIGHT NEG.	—	—	SLIGHT NEG.	—	
HUMIDITY (%) MAXIMUM (6)	60	—	55	60	—	62	60	—	35	60	—	
MINIMUM (6)	2	—	—	2	—	—	30	—	—	40	—	
RADIATION (RADS) TOTAL INTEGRATED DOSE - (4)	1×10^3		—	1×10^3		—	1×10^3		—	1×10^3		
SPRAY	NONE									SEATONE LEVEL OF SAT. WATER = 68'		

NOTE:
FOR NOTES AND GENERAL NOTES SEE THIS DRAWING SHEET 1 OF (5)

8809140061-03

PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE SEABROOK STATION - UNITS 1 & 2 FINAL SAFETY ANALYSIS REPORT	SERVICE ENVIRONMENT CHART	
	9763-F-300219	FIGURE 3.11(B)-1, SH. 2

BUILDING														
AREA/ ELEVATION	HVAC EQUIPMENT ROOM 8'-0"			VALVE AISLE 37'-0"			SUPPLY FAN AREA 37'-0"			CHEMICAL VOLUME [illegible] 37'-0"		
ENVIRONMENTAL ZONE	PB-1			PB-2			PB-3			PB-4		
CONDITION	NORMAL	ABNORMAL	ACCIDENT	NORMAL	ABNORMAL	ACCIDENT	NORMAL	ABNORMAL	ACCIDENT	NORMAL	ABNORMAL	ACCIDENT
TEMPERATURE (F): MAXIMUM	104	106	109	104	115	158	104	115	158	104	115	
MINIMUM	50	—	—	50	—	—	50	—	—	50	—	
PRESSURE (PSIG): MAXIMUM	0	—	0	0	—	0.5	0	—	0.5	0	—	
NORMAL	SLIGHT NEG	—	—	SLIGHT NEG	—	—	[illegible]" WG	—	—	SLIGHT NEG	—	
MINIMUM	[illegible] 3	—	—	SLIGHT NEG	—	—	[illegible]" WG	—	—	SLIGHT NEG	—	
HUMIDITY (%): MAXIMUM (C)	60	—	96	60	—	100	60	—	100	60	—	
MINIMUM	3	—	—	3	—	—	3	—	—	3	—	
RADIATION (RADS): TOTAL INTEGRATED DOSE - (E)	[illegible] $\times 10^3$		[illegible] $\times 10^3$ (M)	2 x [illegible]		2.[illegible] $\times 10^3$ (N)	[illegible] $\times 10^2$		[illegible] $\times 10^2$ (R)	2 x [illegible]		

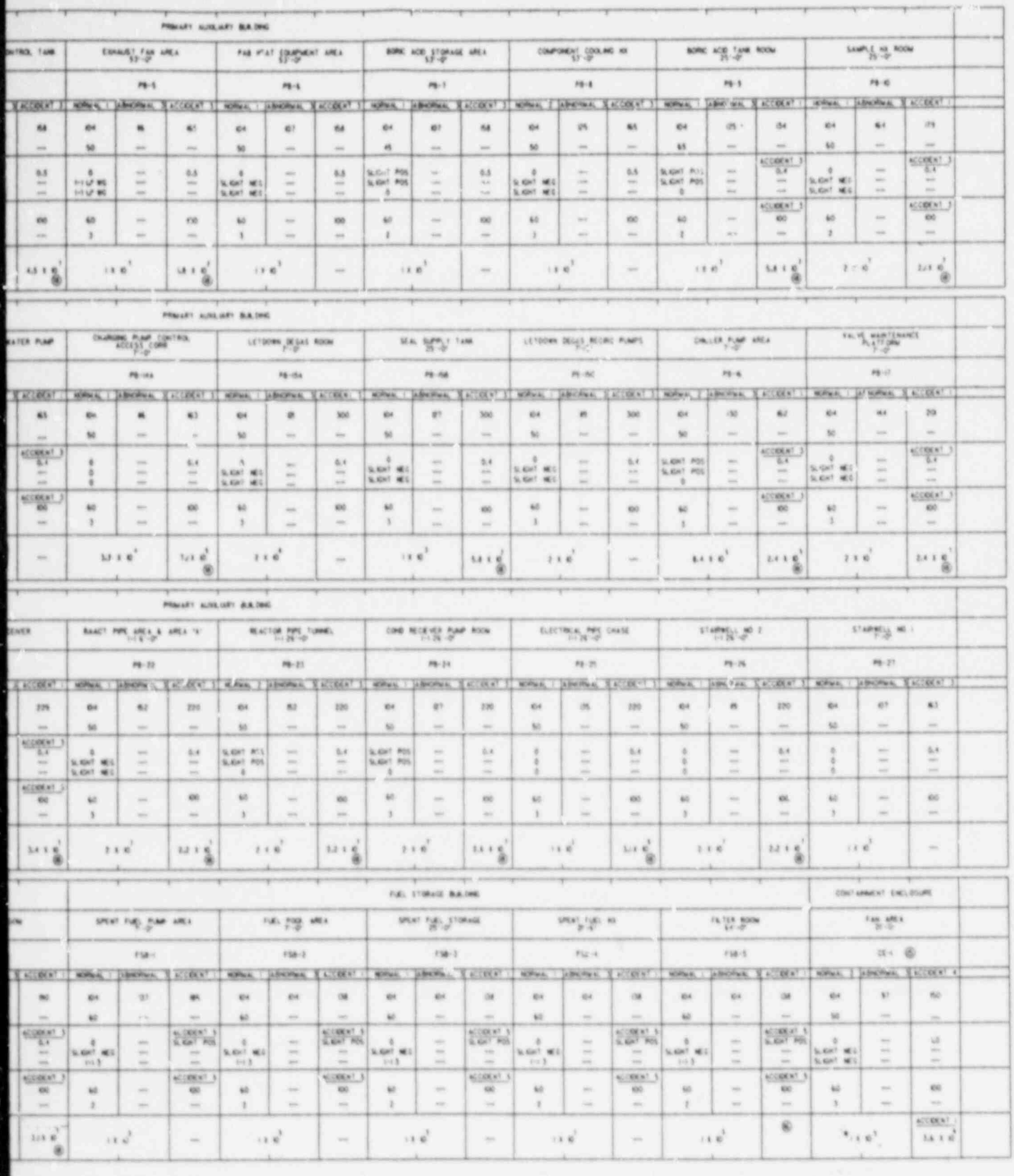
BUILDING														
AREA/ ELEVATION	PCCW PUMP AREA 25'-0"			LETDOWN DEGAS AREA 25'-0"			REACT PIPE TR AREA 'A' 7'-0"			REACTOR MAKE-UP 7'-0"		
ENVIRONMENTAL ZONE	PB-4 (F)			PB-12			PB-13			PB-14		
CONDITION	NORMAL	ABNORMAL	ACCIDENT	NORMAL	ABNORMAL	ACCIDENT	NORMAL	ABNORMAL	ACCIDENT	NORMAL	ABNORMAL	ACCIDENT
TEMPERATURE (F): MAXIMUM	104	111	135	104	125	162	104	111	163	104	124	
MINIMUM	50	—	—	60	—	—	50	—	—	50	—	
PRESSURE (PSIG): MAXIMUM	0	—	ACCIDENT 3 0.4	SLIGHT POS	—	ACCIDENT 3 0.7	SLIGHT POS	—	0.4	SLIGHT POS	—	
NORMAL	SLIGHT NEG	—	—	SLIGHT POS	—	—	SLIGHT POS	—	—	SLIGHT POS	—	
MINIMUM	SLIGHT NEG	—	—	0	—	—	0	—	—	0	—	
HUMIDITY (%): MAXIMUM (C)	60	—	ACCIDENT 3 100	60	—	ACCIDENT 3 100	60	—	100	60	—	
MINIMUM	3	—	—	2	—	—	3	—	—	3	—	
RADIATION (RADS): TOTAL INTEGRATED DOSE - (E)	4.7 x [illegible]		1.9 x [illegible] (M)	1 x [illegible]		5.8 x [illegible] (P)	2 x [illegible]		2.[illegible] x [illegible] (R)	3.3 x [illegible]		

BUILDING														
AREA/ ELEVATION	HX/FILTER CUBICLES 7'-0"			REGEN DEMIN CUBICLES 7'-0"			CHARGING PUMP ROOMS 7'-0"			DEGAS COND [illegible] 7'-6"		
ENVIRONMENTAL ZONE	PB-6			PB-15			PB-20 (A,B,C)			PB-21		
CONDITION	NORMAL	ABNORMAL	ACCIDENT	NORMAL	ABNORMAL	ACCIDENT	NORMAL	ABNORMAL	ACCIDENT	NORMAL	ABNORMAL	ACCIDENT
TEMPERATURE (F): MAXIMUM	104	114	165	125	150	196	104	105	144	104	150	
MINIMUM	50	—	—	50	—	—	50		—	50	—	
PRESSURE (PSIG): MAXIMUM	0	—	0.4	0	—	ACCIDENT 3 0.4	0	—	ACCIDENT 4 1.0	SLIGHT POS	—	
NORMAL	SLIGHT NEG	—	—	0	—	—	0	—	—	SLIGHT POS	—	
MINIMUM	SLIGHT NEG	—	—	0	—	—	0	—	—	0	—	
HUMIDITY (%): MAXIMUM (C)	60	—	100	54	—	ACCIDENT 3 100	60	—	ACCIDENT 4 100	65	—	
MINIMUM	3	—	—	3	—	—	3	—	—	3	—	
RADIATION (RADS): TOTAL INTEGRATED DOSE - (E)	2 x [illegible]		—	2 x [illegible] (O)(Q)		—	6.7 x [illegible]		2.5 x [illegible] (R)	2 x [illegible]		

BUILDING	PRIMARY AUXILIARY BUILDING											
AREA/ ELEVATION	RAD WSTE AND RMTE ACCESS AREA 25'-0"/37'-0"			HVAC PLENUM 38'-0"			RADIOACTIVE PIPE CHASE 23'-0"			SAMPLE RM [illegible] 7'-0"		
ENVIRONMENTAL ZONE	PB-28			PB-19			PB-17A			PB-16A		
CONDITION	NORMAL	ABNORMAL	ACCIDENT	NORMAL	ABNORMAL	ACCIDENT	NORMAL	ABNORMAL	ACCIDENT	NORMAL	ABNORMAL	ACCIDENT
TEMPERATURE (F): MAXIMUM	104	115	175	104	116	121	104	124	180	104	117	
MINIMUM	50	—	—	0	—	—	50	—	—	50	—	
PRESSURE (PSIG): MAXIMUM	0	—	0.05	0	—	0	0	—	0.4	0	—	
NORMAL	SLIGHT NEG	—	—	SLIGHT NEG	—	—	SLIGHT NEG	—	—	SLIGHT NEG	—	
MINIMUM	SLIGHT NEG	—	—	SLIGHT NEG	—	—	SLIGHT NEG	—	—	SLIGHT NEG	—	
HUMIDITY (%): MAXIMUM (C)	40	—	100	60	—	31	60	—	100	45	—	
MINIMUM	3	—	—	30	—	—	2	—	—	3	—	
RADIATION (RADS): TOTAL INTEGRATED DOSE - (E)	1 x [illegible]		—	1.5 x [illegible]		—	2 x [illegible]		2.4 x [illegible] (R)	2 x [illegible]		

NOTE:
FOR NOTES AND GENERAL NOTES SEE THIS DRAWING SHEET 1 OF 5

(F) PER NUCLEAR DISCIPLINE CALC. NO.: [illegible] REV. 0.



8809140061-04

PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE SEABROOK STATION - UNITS 1 & 2 FINAL SAFETY ANALYSIS REPORT	SERVICE ENVIRONMENT CHART	
	9763-F-300219	FIGURE 3.11(B)-1, SH. 3

BUILDING												
AREA/ ELEVATION	OBS VAULTS 1-16'-0"			OBS VAULTS 1-16'-0"			OBS VAULTS 1-13'-0"			OBS VAULTS 1-13'-0"		
ENVIRONMENTAL ZONE	EV-1A (5)			EV-1B (5)			EV-2A (5)			EV-2B (5)		
CONDITION	NORMAL 1	ABNORMAL 2	ACCIDENT 4	NORMAL 1	ABNORMAL 2	ACCIDENT 4	NORMAL 1	ABNORMAL 2	ACCIDENT 4	NORMAL 1	ABNORMAL 2	
TEMPERATURE (°F) MAXIMUM	104	92	185	104	92	185	104	93	185	104	93	
MINIMUM	50	—	—	50	—	—	50	—	—	50	—	
PRESSURE (PSIG) MAXIMUM	SLIGHT POS	—	LOX	SLIGHT POS	—	LOX	0	—	LOX	0	—	
NORMAL	SLIGHT POS	—	—	SLIGHT POS	—	—	SLIGHT NEG	—	—	SLIGHT NEG	—	
MINIMUM	0	—	—	0	—	—	SLIGHT NEG	—	—	SLIGHT NEG	—	
HUMIDITY (%) MAXIMUM (6)	60	—	100	60	—	100	60	—	100	60	—	
MINIMUM	3	—	—	3	—	—	3	—	—	3	—	
RADIATION (RADS) TOTAL INTEGRATED DOSE - (4)	4.7×10^3		ACCIDENT 1 5.6×10^5	4.7×10^3		ACCIDENT 1 5.6×10^5	4.7×10^3		ACCIDENT 1 5.6×10^5	4.7×10^3		

BUILDING	EQUIPMENT VAULTS											
AREA/ ELEVATION	STAIRWELLS 1-16'-0"						CONTROL BUILDING TO PAB 30'-6"			TRAIN A 0'-0"		
ENVIRONMENTAL ZONE	EV-6A			EV-6B			ET-1			ET-2A		
CONDITION	NORMAL 1	ABNORMAL 2	ACCIDENT 4	NORMAL 1	ABNORMAL 2	ACCIDENT 4	NORMAL 1	ABNORMAL 2	ACCIDENT 4	NORMAL 1	ABNORMAL 2	
TEMPERATURE (°F) MAXIMUM	104	94	196	104	97	185	104	105	144	104	105	
MINIMUM	50	—	—	50	—	—	0	—	—	50	—	
PRESSURE (PSIG) MAXIMUM	0	—	ACCIDENT 4 LOX	0	—	LOX	0	—	0	0	—	
NORMAL	0	—	—	0	—	—	0	—	—	0	—	
MINIMUM	0	—	—	0	—	—	0	—	—	0	—	
HUMIDITY (%) MAXIMUM (6)	60	—	ACCIDENT 4 100	60	—	100	60	—	20	60	—	
MINIMUM	3	—	—	3	—	—	5	—	—	3	—	
RADIATION (RADS) TOTAL INTEGRATED DOSE - (4)	4.7×10^3		6×10^7 (8)	4.7×10^3		6×10^7 (8)	1×10^3		—	1×10^3		

BUILDING												
AREA/ ELEVATION	MAIN CONTROL ROOM 73'-0"			GENERAL AREAS 75'-0"			COMPUTER ROOM 75'-0"			HVAC ROOM 75'-0"		
ENVIRONMENTAL ZONE	CB-1 (5)			CB-1A,B,C,D,E,F,G (5)			CB-2			CB-3 (5)		
CONDITION	NORMAL 1	ABNORMAL 2	ACCIDENT 4	NORMAL 1	ABNORMAL 2	ACCIDENT 4	NORMAL 1	ABNORMAL 2	ACCIDENT 4	NORMAL 1	ABNORMAL 2	
TEMPERATURE (°F) MAXIMUM	75	75	75	75	75	75	72	—	—	83	83	
MINIMUM	70	—	—	70	—	—	72	—	—	72	—	
PRESSURE (PSIG) MAXIMUM	SLIGHT POS	—	SLIGHT POS	SLIGHT POS	—	SLIGHT POS	SLIGHT POS	—	—	SLIGHT NEG	—	
NORMAL	SLIGHT POS	—	—	SLIGHT POS	—	—	SLIGHT POS	—	—	SLIGHT NEG	—	
MINIMUM	SLIGHT POS	—	—	SLIGHT POS	—	—	SLIGHT POS	—	—	SLIGHT NEG	—	
HUMIDITY (%) MAXIMUM (6)	60	—	60	60	—	60	60	—	—	78	—	
MINIMUM	30	—	—	30	—	—	30	—	—	30	—	
RADIATION (RADS) TOTAL INTEGRATED DOSE - (4)	1×10^3		—	1×10^3		—	1×10^3		—	1×10^3		

BUILDING	CONTROL BUILDING											
AREA/ ELEVATION	BATTERY ROOMS 21'-6"											
ENVIRONMENTAL ZONE	CB-1A (5)			CB-1B (5)			CB-4A (5)			CB-4B (5)		
CONDITION	NORMAL 1	ABNORMAL 2	ACCIDENT 4	NORMAL 1	ABNORMAL 2	ACCIDENT 4	NORMAL 1	ABNORMAL 2	ACCIDENT 4	NORMAL 1	ABNORMAL 2	
TEMPERATURE (°F) MAXIMUM	97	97	97	97	97	97	97	97	97	97	97	
MINIMUM	65	—	—	65	—	—	65	—	—	65	—	
PRESSURE (PSIG) MAXIMUM	SLIGHT NEG	—	SLIGHT NEG	SLIGHT NEG	—	SLIGHT NEG	SLIGHT NEG	—	SLIGHT NEG	SLIGHT NEG	—	
NORMAL	SLIGHT NEG	—	—	SLIGHT NEG	—	—	SLIGHT NEG	—	—	SLIGHT NEG	—	
MINIMUM	SLIGHT NEG	—	—	SLIGHT NEG	—	—	SLIGHT NEG	—	—	SLIGHT NEG	—	
HUMIDITY (%) MAXIMUM (6)	50	—	50	50	—	50	50	—	50	50	—	
MINIMUM	2	—	—	2	—	—	2	—	—	2	—	
RADIATION (RADS) TOTAL INTEGRATED DOSE - (4)	1×10^3		—	1×10^3		—	1×10^3		—	1×10^3		

NOTE:
FOR NOTES AND GENERAL NOTES SEE THIS DRAWING SHEET 1 OF 5

880914000161-05

PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE SEABROOK STATION - UNITS 1 & 2 FINAL SAFETY ANALYSIS REPORT	SERVICE ENVIRONMENT CHART	
	9763-F-300219	FIGURE 3.11(B)-1, SH. 4

BUILDING	MECHANICAL PENETRATION AREA	AIR INTAKE	COOLING TOWER		
AREA/ ELEVATION	RADIOACTIVE TUNNEL (-) 34'-6"	CONTROL BUILDING VENT MAKE-UP AIR INTAKE-UNIT 2 8'-6"	PUMP ROOM 46'-0"	MECHANICAL EQUIPMENT ROOM 46'-0"	
ENVIRONMENTAL ZONE	MPA-6 (17)	MUA-2 (17)	CT-5 (17)	CT-6 (17)	
CONDITION	NORMAL 2	NORMAL 1	NORMAL 1	NORMAL 1	
TEMPERATURE (°F)					
MAXIMUM	172	104	104	104	
MINIMUM	50	40	0 (5)	0 (5)	
PRESSURE (PSIG)					
MAXIMUM	SLIGHT POS	0	0	0	
NORMAL	SLIGHT POS	0	0	0	
MINIMUM	0	0	0	0	
HUMIDITY (%)					
MAXIMUM (12)	8	60	60	60	
MINIMUM	3	5	30	30	
RADIATION (RADS) NORMAL INTEGRATED DOSE	2 X 10^7 **	1 X 10^3 *	1 X 10^3 *	1 X 10^3 *	

* PER NUCLEAR DISCIPLINE CALC. NO. 4.4.14.94 F (REV 0).
** PER NUCLEAR DISCIPLINE CALC. NO. 4.4.14.70 F (REV 3).

UNIT 2)		ELECTRICAL TUNNEL	MAIN STEAM & FEEDWATER PIPE CHASES			
ELECTRICAL SWITCHGEAR ROOMS 22'-0"		ELECTRICAL TRAY AREA 0'-0"	EAST PIPE CHASE STAIRWELL 3'-0"	EAST PIPE CHASE CABLE TUNNEL 8'-2"	EAST PIPE CHASE ELECTRICAL TRAY AREA 3'-0"	EAST PIPE CHASE ELECTRICAL TRAY AREA 3'-0"
CT-7A (17)	CT-7B (17)	ET-5A (17)	PCE-7 (17)	PCE-8 (17)	PCE-9 (17)	PCE-10 (17)
NORMAL 1	NORMAL 1	NORMAL 1	NORMAL 1	NORMAL 1	NORMAL 1	NORMAL 1
104	104	86	130	130	144	130
0 (5)	0 (5)	50	C (5)	0 (5)	0 (5)	0 (5)
0	0	SLIGHT POS	SLIGHT POS	0	SLIGHT POS	0
0	0	SLIGHT POS	SLIGHT POS	0	SLIGHT POS	0
0	0	0	0	0	0	0
60	60	43	30	30	20	30
30	30	3	30	30	30	30
1×10^{3} *	1×10^{3} *	1×10^{3} *	1×10^{3} *	1×10^{3} *	1×10^{3} *	1×10^{3} *

NOTE:
FOR NOTES AND GENERAL NOTES SEE THIS DRAWING SHEET 1 OF (5)

8809140061-06

PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE SEABROOK STATION - UNITS 1 & 2 FINAL SAFETY ANALYSIS REPORT	SERVICE ENVIRONMENT CHART	
	9763-F-300219	FIGURE 3.11(B)-1, SH. 5

BERGERON AFFIDAVIT

ATTACHMENT E

EXCERPT FROM ASLB HEARING TRANSCRIPT
TUESDAY, SEPTEMBER 30, 1986

CONTENTS

Transcript pgs. 384-389

Sim 7-6

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MS. CURRAN: I would like to turn now to equipment qualification file No. 113-10-11, which I would ask the reporter to mark for identification purposes as Exhibit 5.

(The document referred to was marked NECNP Exhibit 5 for identification.)

MS. CURRAN: Do you have a copy of that, Mr. Woodward?

WITNESS WOODWARD: Yes, I do.

BY MS. CURRAN:

Q According to Applicant's testimony at page 7, this is one of the pieces of equipment that is not qualified for 100 days. Am I correct?

A (Witness Salvo) That is correct.

Q This piece of equipment is qualified for -- at least not for all parameters -- this piece of equipment is qualified for 30 submergence, am I correct?

A (Witness Woodward) Yes, that is correct.

Q Would you please describe the location and the use of this cable at the Seabrook plant?

A This cable is 300 volt instrument cable that can be found anywhere in the plant. With respect to all specific applications, I couldn't answer that question.

Q But it is possible, is it not, that this cable

Sim 7-7

supplies electricity to instruments that would say show the conditions of accidents at the plant and monitor the various parameters associated with accidents at the plant?

A It is possible, yes.

End Sim Sue fols

Q Now, according to Page 7 of the qualification report review checklist, this test program doesn't include submergence tests. And, their checklist refers to Note 9 for an explanation of that.

I would like to turn to Note 9 which is on Page 11 of the assessment checklist. And, in particular I would like to discuss the statement in Note 9 that this particular table supplies instrument rack MM-IR-12.

Now, as I understand it, the cable that supplies MM-IR-12 may be submerged during an accident; is that correct?

A (Witness Woodward) That's correct.

Q However, the note explains that instrument rack MM-IR-12 is denoted operability Code C. Now, would you explain what operability Code C means?

A In accordance with the regulations and criteria set forth in NUREG 0588 and Regulatory Guide 1.89, all the equipment in Seabrook for which qualification is addressed is assigned operability codes.

Operability Code C represents equipment which may see what we call harsh environment of which submergence may be one subsequent to design basis events.

However, it performs no safety function relative to mitigating the accident or putting the plant in a safe condition after these events. And, also it has been evaluated

12-SueW

to see if any failures of this equipment due to the environment will effect anything else in the plant, the safety of the plant.

Q Okay. I would like to turn to Reference 12 which is the letter from the Impell Corporation to Yankee Atomic, dated February 2nd, 1986. Now, on February 2nd, do I understand it that at that time the Impell Corporation considered that instrument rack MM-IR-12 was Class 1E equipment which would have been operability Code A?

(Mr. Woodward and Mr. Salvo are conferring.)

A Yes. As of the date of this letter, the equipment on, and parts of instrument rack of MM-IR-12, were considered to be essential to the plant at that time.

Q And, am I correct that Impell suggested that rack MM-IR-12 should either be relocated above flood level or it should be shown that operability for a moderate energy line break is not required?

Is that correct?

(The witness is looking at the document.)

A Yes, as stated on Page 4 of that letter.

Q Now, did New Hampshire Yankee relocate this instrument rack?

A (Witness Salvo) During the initial phase of the EQ program, an assumption was made that -- a conservative assumption was made -- many pieces of equipment were assumed

to have an operability Code A, which meant that they were required to perform a safety function. When the specific files were reviewed and we encountered problems that did not envelope all accident assumptions, conservative action assumptions, that we made we went back and did a specific review of each piece of equipment's operability requirements.

This is what was done for this particular instrument rack. It was originally assumed an operability Code A as a conservative assumption. And, after problems were encountered due to submergence, we then performed a specific review for that piece of equipment. And, it was determined that no piece of equipment in that rack was required to perform any safety function during a mild energy break.

And, that was performed by United engineers.

Q And, was a report and an evaluation prepared for that piece of equipment?

A I believe so.

Q But, you are not sure?

A Well, United has done a document of review. I haven't seen a report. But, United did perform a review and I have not specifically seen the report.

Q Now, turning back to the Note 9 in the assessment checklist, Note 9 refers to Reference 16 as an explanation for the downgrading of the instrument rack, MM-IR-12, from operability Code A to operability Code C; is that correct?

-4-SueW

(Mr. Woodward and Mr. Salvo are conferring.)

A (Witness Woodward) Reference 16 reports that the operability code will be changed in the program from either A or B to C.

Q And, Reference 16 -- correct me if I'm wrong, but Reference 16 is the only reference in this file to the change in the operability code for that instrument rack, from A to C. It's the only explanation that's given of how this operability code has changed.

Is that right?

(Mr. Woodward and Mr. Salvo are conferring.)

A Yes, this is the official United engineer's documentation that notifies people that the change will occur. Ultimately, the equipment list or that harsh environment list we have previously talked about will show that change.

Q Okay. I would just like to review this reference with you since it is a kind of unusual looking document.

The first page is an engineering change authorization; is that right?

A That's correct.

Q Basically, this lists the equipment, the specific pieces of equipment, for which the company is requesting the authorization to downgrade the safety code?

(Mr. Woodward and Mr. Salvo are conferring.)

BERGERON AFFIDAVIT

ATTACHMENT F

EXCERPT FROM ENVIRONMENTAL
QUALIFICATION REPORT (EQR)

CONTENTS

PSNH

SEABROOK STATION
Engineering Office

Public Service of New Hampshire

New Hampshire Yankee Division

October 31, 1985

SBN- 886
T.F. B7.1.2

United States Nuclear Regulatory Commission
Washington, DC 20555

Attention: Mr. George W. Knighton, Chief
Licensing Branch No. 3
Division of Licensing

References: (a) Construction Permits CPPR-135 and CPPR-136, Docket Nos. 50-443 and 50-444
(b) PSNH Letter (SBN-549), dated August 12, 1983, "Response to Safety Evaluation Report Outstanding Issue #6 (SER 3.11, Equipment Qualification Branch)," J. DeVincentis to C. W. Knighton

Subject: Environmental Qualification of Electrical Equipment; SER Outstanding Issue #6

Dear Sir:

As discussed at the June 13, 1985 meeting regarding Seabrook's Environmental Qualification Program, the report entitled, "Environmental Qualification of Electrical Equipment Important to Safety" (hereinafter referred to as EQR), was being updated and would be submitted to the NRC in the late fall. Accordingly, please find enclosed three (3) copies of the revised EQR, which documents our compliance with 10CFR50.49.

It is also our understanding, from the above referenced meeting, that the NRC site audit would be scheduled approximately six to eight (6-8) weeks after submittal of the EQR. We respectively request that you advise us as soon as possible of your plans for conducting this audit, so that we can begin planning for support of your audit activities.

If you have any questions or require further clarifications, please do not hesitate to contact us.

Very truly yours,

John DeVincentis, Director
Engineering and Licensing

Enclosure

cc: Atomic Safety and Licensing Board Service List

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2.0 DEFINITION OF ELECTRICAL EQUIPMENT IMPORTANT TO SAFETY

2.1 Criteria for Selection of Equipment

The Seabrook environmental qualification program addresses all electrical equipment important to safety which is located in a potentially harsh environment. Equipment which would not be exposed to a harsh environment during postulated accident conditions (i.e., mild environment) is not included. A mild environment, as defined in 10 CFR 50.49(c) is, "...an environment that would at no time be significantly more severe than the environment that would occur during normal plant operation, including anticipated operational occurrences."

Seabrook Station defines a harsh environment as those areas of the plant where normal or accident environmental temperatures exceed 130°F, pressures exceed 1 psig, humidity is 100% and condensing, or the total integrated radiation dose exceeds 1×10^4 rads.

Electrical equipment important to safety which were considered for inclusion within the scope of the Seabrook program includes the following:

A. Safety-related (Class 1E) electrical equipment.
B. Nonsafety-Related electric equipment whose failure under postulated environmental conditions could prevent satisfactory accomplishment of safety functions.
C. Post-accident monitoring equipment.

The systems found to contain electric equipment in the above categories are listed in Table 2-1.

2.2 Identification of Equipment

In response to the requirements of 10 CFR 50.49 paragraph (d), a documented review was performed of all applicable design documents to assure that all equipment important to safety [10 CFR 50.49 paragraphs (b)(1), (b)(2), (b)(3)] was identified. The equipment was listed and categorized in accordance with the guidance provided in Appendix E to Regulatory Guide 1.89, Rev. 1.

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ATTACHMENT G

ITT SURPRENANT RG-58 COAXIAL CABLE APPLICATIONS

CATEGORY	QUANTITY	LISTING
Spare RG-58 Coaxial Cable	21	Sheet 1
RG-58 cables (now spares) routed at least partially through a harsh environment with the nuclear island (replaced with RG-59)	12	Sheet 2
RG-58 Cables located in mild environment within the nuclear island	74	Sheets 3 thru 8
RG-58 Cables routed only with other nonsafety-related cables outside the nuclear island	10	Sheet 9
RG-58 Cables routed in mild environments within the nuclear island and routed only with nonsafety-related cables outside the nuclear island	9	Sheet 10
Total no. of cables	126	

NO.	CABLE NO.	ENVIRONMENTAL ZONES	CATEGORY	FIGURE	FUNCTION	CLASSIFICATION
1.	FM4-JX1/2	CB2, CB4, ET2A, ET4A, ET3A, ET3B	Spare	A1 *	-	Nonsafety-related
2.	FM7-JX1/2	CB2, CB4, ET2A, ET4A, ET3A, ET3B	Spare	A1 *	-	Nonsafety-related
3.	FM3-JW5/2	CB2, CB4, CB10, ET1, PB25, PB11, PB12	Spare	A3 *	-	Nonsafety-related
4.	FM6-JW5/2	CB2, CB4, CB10, ET1, PB25, PB11, PB12	Spare	A3 *	-	Nonsafety-related
5.	FM6-JX5/2	CB2, CB4, ET2A, ET4A, ET3A	Spare	B *	-	Nonsafety-related
6.	FM4-JX5/2	CB2, CB4, ET2A, ET4A, ET3A	Spare	B *	-	Nonsafety-related
7.	FM7-GY4/2	CB2, CB4, CB6A	Spare	B *	-	Nonsafety-related
8.	FM4-GY4/2	CB2, CB4, CB6A	Spare	B *	-	Nonsafety-related
9.	FE7-FM6/2	CB1, CB2	Spare	B *	-	Nonsafety-related
10.	FM6-GY6/2	CB2, CB4, CB6A	Spare	B *	-	Nonsafety-related
11.	FM4-GY6/2	CB2, CB4, CB6A	Spare	B *	-	Nonsafety-related
12.	FM3-FP1/2	CB2	Spare	B *	-	Nonsafety-related
13.	FM7-FP1/2	CB2	Spare	B *	-	Nonsafety-related
14.	FE7-FM4/2	CB1, CB2	Spare	B *	-	Nonsafety-related
15.	FM3-GY0/2	CB2, CB5A, CB4, TB	Spare	C *	-	Nonsafety-related
16.	FM7-GY0/2	CB2, CB5A, CB4, TB	Spare	C *	-	Nonsafety-related
17.	F86-G13	CB1, CB4, TB	Spare	C *	-	Nonsafety-related
18.	FM3-GY9/2	CB2, CB5A, CB4, TB	Spare	C *	-	Nonsafety-related
19.	FM6-GY9/2	CB2, CB5A, CB4, TB	Spare	C *	-	Nonsafety-related
20.	FE2-FM4/2	CB1, CB2	Spare	B *	-	Nonsafety-related
21.	FE2-FM6/2	CB1, CB2	Spare	B *	-	Nonsafety-related

* See Note 1

NO.	CABLE NO.	ENVIRONMENTAL ZONES	CATEGORY	FIGURE	FUNCTION	CLASSIFICATION
1.	FM4-JX1	CB2, CB4, ET2A, ET4A, ET3A, ET3B	Harsh (Spare)	A1	Replaced by RG-59	Nonsafety-related
2.	FM7-JX1	CB2, CB4, ET2A, ET4A, ET3A, ET3B	Harsh (Spare)	A1	Replaced by RG-59	Nonsafety-related
3.	FM4-JX1/1	CB2, CB4, ET2A, ET4A, ET3A, ET3B	Harsh (Spare)	A1	Replaced by RG-59	Nonsafety-related
4.	FM7-JX1/1	CB2, CB4, ET2A, ET4A, ET3A, ET3B	Harsh (Spare)	A1	Replaced by RG-59	Nonsafety-related
5.	GU4-Y59/2	PB12, PB11, PB14, PB14A, PB13, PB15C, PB15A	Harsh (Spare)	A2	Replaced by RG-59	Nonsafety-related
6.	GU4-Y59/4	PB12, PB11, PB14, PB14A, PB13, PB15C, PB15A	Harsh (Spare)	A2	Replaced by RG-59	Nonsafety-related
7.	GU4-Y59/3	PB12, PB11, PB14, PB14A, PB13, PB15C, PB15A	Harsh (Spare)	A2	Replaced by RG-59	Nonsafety-related
8.	GU4-Y59/5	PB12, PB11, PB14, PB14A, PB13, PB15C, PB15A	Harsh (Spare)	A2	Replaced by RG-59	Nonsafety-related
9.	FM3-JW5	CB2, CB4, CB10, ET1, PB25, PB11, PB12	Harsh (Spare)	A3	Replaced by RG-59	Nonsafety-related
10.	FM3-JW5/1	CB2, CB4, CB10, ET1, PB25, PB11, PB12	Harsh (Spare)	A3	Replaced by RG-59	Nonsafety-related
11.	FM6-JW5/1	CB2, CB4, CB10, ET1, PB25, PB11, PB12	Harsh (Spare)	A3	Replaced by RG-59	Nonsafety-related
12.	FM6-JW5	CB2, CB4, CB10, ET1, PB25, PB11, PB12	Harsh (Spare)	A3	Replaced by RG-59	Nonsafety-related

NO.	CABLE NO.	ENVIRONMENTAL ZONES	CATEGORY	FIGURE	FUNCTION	CLASSIFICATION
1.	FM4-JX5	CB2, CB4, ET2A, ET4A, ET3A	Mild	B	Station Computer Applications	Nonsafety-related
2.	FM6-JX5/1	CB2, CB4, ET2A, ET4A, ET3A	Mild	B	Station Computer Applications	Nonsafety-related
3.	FM6-JX5	CB2, CB4, ET2A, ET4A, ET3A	Mild	B	Station Computer Applications	Nonsafety-related
4.	FM4-JX5/1	CB2, CB4, ET2A, ET4A, ET3A	Mild	B	Station Computer Applications	Nonsafety-related
5.	FE2-FM4/1	CB1, CB2	Mild	B	Station Computer Applications	Nonsafety-related
6.	F52-FN1/3	CB1, CB4, CB2	Mild	B	Station Computer Applications	Nonsafety-related
7.	F52-FN5/3	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
8.	F72-FN5/2	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
9.	FM6-GY6/1	CB2, CB4, CB6A	Mild	B	Station Computer Applications	Nonsafety-related
10.	F52-FN1/4	CB1, CB4, CB2	Mild	B	Station Computer Applications	Nonsafety-related
11.	F52-FN5/4	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
12.	FM6-GY6	CB2, CB4, CB6A	Mild	B	Station Computer Applications	Nonsafety-related
13.	F52-FN1/5	CB1, CB4, CB2	Mild	B	Station Computer Applications	Nonsafety-related

NO.	CABLE NO.	ENVIRONMENTAL ZONES	CATEGORY	FIGURE	FUNCTION	CLASSIFICATION
14.	F52-FN5/5	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
15.	FM0-FT5	CB2, CB1	Mild	B	Station Computer Applications	Nonsafety-related
16.	FM4-GY6/1	CB2, CB4, CB6A	Mild	B	Station Computer Applications	Nonsafety-related
17.	FM0-FT5/1	CB2, CB1	Mild	B	Station Computer Applications	Nonsafety-related
18.	F52-FN1/6	CB1, CB4, CB2	Mild	B	Station Computer Applications	Nonsafety-related
19.	W4H-W4J	CB1F, CB1D	Mild	B	Station Computer Applications	Nonsafety-related
20.	F52-FN5/6	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
21.	F52-FN1/7	CB1, CB4, CB2	Mild	B	Station Computer Applications	Nonsafety-related
22.	F52-FN5/7	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
23.	FN4-W4H/3	CB2, CB5A, CB1F	Mild	B	Station Computer Applications	Nonsafety-related
24.	F81-FN4	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
25.	FM3-FP1	CB2	Mild	B	Station Computer Applications	Nonsafety-related
26.	FN4-W4H/2	CB2, CB5A, CB1F	Mild	B	Station Computer Applications	Nonsafety-related
27.	FM7-FP1	CB2	Mild	B	Station Computer Applications	Nonsafety-related

NO.	CABLE NO.	ENVIRONMENTAL ZONES	CATEGORY	FIGURE	FUNCTION	CLASSIFICATION
28.	FM3-FP1/1	CB2	Mild	B	Station Computer Applications	Nonsafety-related
29.	FM7-FP1/1	CB2	Mild	B	Station Computer Applications	Nonsafety-related
30.	F90-FN4/2	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
31.	F10-FM0	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
32.	F90-FN4/1	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
33.	F52-FN5	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
34.	F72-FN5	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
35.	F52-FN1	CB1, CB4, CB2	Mild	B	Station Computer Applications	Nonsafety-related
36.	F31-FN1	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
37.	F31-FN5	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
38.	FE7-FM6	CB1, CB2	Mild	B	Station Computer Applications	Nonsafety-related
39.	FM4-GY4	CB2, CB4, CB6A	Mild	B	Station Computer Applications	Nonsafety-related
40.	FE2-FM6	CB1, CB2	Mild	B	Station Computer Applications	Nonsafety-related
41.	FM7-GY4	CB2, CB4, CB6A	Mild	B	Station Computer Applications	Nonsafety-related

NO.	CABLE NO.	ENVIRONMENTAL ZONES	CATEGORY	FIGURE	FUNCTION	CLASSIFICATION
42.	FE7-FM6/1	CB1, CB2	Mild	B	Station Computer Applications	Nonsafety-related
43.	FE2-FM6/1	CB1, CB2	Mild	B	Station Computer Applications	Nonsafety-related
44.	F61-FN1/1	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
45.	FM7-GY4/1	CB2, CB4, CB6A	Mild	B	Station Computer Applications	Nonsafety-related
46.	F61-FN1/3	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
47.	F61-FN1/2	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
48.	F40-FN5/1	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
49.	FN4-W4H	CB2, CB5A, CB1F	Mild	B	Station Computer Applications	Nonsafety-related
50.	F40-FN5/2	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
51.	FM4-GY4/1	CB2, CB4, CB6A	Mild	B	Station Computer Applications	Nonsafety-related
52.	FN4-W4H/1	CB2, CB5A, CB1F	Mild	B	Station Computer Applications	Nonsafety-related
53.	FM0-FT5/2	CB2, CB1	Mild	B	Station Computer Applications	Nonsafety-related
54.	W4H-W4J/2	CB1F, CB1D	Mild	B	Station Computer Applications	Nonsafety-related

NO.	CABLE NO.	ENVIRONMENTAL ZONES	CATEGORY	FIGURE	FUNCTION	CLASSIFICATION
55.	FM0-FT5/3	CB2, CB1	Mild	B	Station Computer Applications	Nonsafety-related
56.	W4H-W4J/1	CB1F, CB1D	Mild	B	Station Computer Application	Nonsafety-related
57.	F90-FN4	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
58.	W4H-W4J/3	CB1F, CB1D	Mild	B	Station Computer Applications	Nonsafety-related
59.	F10-FM0/1	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
60.	F40-FN5	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
61.	F10-FM0/2	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
62.	F52-FN1/1	CB1, CB4, CB2	Mild	B	Station Computer Applications	Nonsafety-related
63.	F52-FN5/1	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
64.	F31-FN1/1	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
65.	F61-FN1	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
66.	FM4-GY6	CB2, CB4, CB6A	Mild	B	Station Computer Applications	Nonsafety-related
67.	F10-FM0/3	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
68.	FE7-FM4	CB1, CB2	Mild	B	Station Computer Applications	Nonsafety-related

NO.	CABLE NO.	ENVIRONMENTAL ZONES	CATEGORY	FIGURE	FUNCTION	CLASSIFICATION
69.	F52-FN1/2	CB1, CB4, CB2	Mild	B	Station Computer Applications	Nonsafety-related
70.	F52-FN5/2	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
71.	FE2-FM4	CB1, CB2	Mild	B	Station Computer Applications	Nonsafety-related
72.	F72-FN5/1	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
73.	F31-FN1/2	CB1, CB4, CB5A, CB2	Mild	B	Station Computer Applications	Nonsafety-related
74.	FE7-FM4/1	CB1, CB2	Mild	B	Station Computer Applications	Nonsafety-related

NO.	CABLE NO.	ENVIRONMENTAL ZONES	CATEGORY	FIGURE	FUNCTION	CLASSIFICATION
1.	G7S-R3J/1	WPB	Note 2	D	Waste Feed TK-198B Level Control	Nonsafety-related
2.	G7S-R3G	WPB	Note 2	D	Waste Feed TK-198A Level Control	Nonsafety-related
3.	G7S-R3J	WPB	Note 2	D	Waste Feed TK-198B Level Control	Nonsafety-related
4.	G7S-R3L/1	WPB	Note 2	D	Waste Concentrate Bottoms TK-200 Level Control	Nonsafety-related
5.	G67-ZM3/2	WPB	Note 2	D	Primary Drains Tank Degasifier TK-67 Level Control	Nonsafety-related
6.	G67-ZM3/3	WPB	Note 2	D	Primary Drains Tank Degasifier TK-67 Level Control	Nonsafety-related
7.	G67-ZM3/4	WPB	Note 2	D	Primary Drains Tank Degasifier TK-67 Level Control	Nonsafety-related
8.	G67-ZM3/5	WPB	Note 2	D	Primary Drains Tank Degasifier TK-67 Level Control	Nonsafety-related
9.	G7S-R3G/1	WPB	Note 2	D	Waste Feed TK-198A Level Control	Nonsafety-related
10.	G7S-R3L	WPB	Note 2	D	Waste Concentrate Bottoms TK-200 Level Control	Nonsafety-related

NO.	CABLE NO.	ENVIRONMENTAL ZONES	CATEGORY	FIGURE	FUNCTION	CLASSIFICATION
1.	FM3-GY9	CB2, CB5A, CB4, TB	Note 3	C	Station Computer Applications	Nonsafety-related
2.	FM3-GY9/1	CB2, CB5A, CB4, TB	Note 3	C	Station Computer Applications	Nonsafety-related
3.	FM6-GY9/1	CB2, CB5A, CB4, TB	Note 3	C	Station Computer Applications	Nonsafety-related
4.	FM6-GY9	CB2, CB5A, CB4, TB	Note 3	C	Station Computer Applications	Nonsafety-related
5.	FM3-GY0	CB2, CB5A, CB4, TB	Note 3	C	Station Computer Applications	Nonsafety-related
6.	FM7-GY0	CB2, CB5A, CB4, TB	Note 3	C	Station Computer Applications	Nonsafety-related
7.	FM3-GY0/1	CB2, CB5A, CB4, TB	Note 3	C	Station Computer Applications	Nonsafety-related
8.	FM7-GY0/1	CB2, CB5A, CB4, TB	Note 3	C	Station Computer Applications	Nonsafety-related
9.	F86-S3W	CB1, CB4, TB	Note 3	C	Generator Hydrogen Core Cooling Monitor	Nonsafety-related

NOTES:

1. Routing of spares through environmental zones is as shown in referenced figure, however, the cable is not connected to any devices as the figure depicts.

2. RG-58 cables routed outside nuclear island only with other nonsafety-related cables.

3. RG-58 cables routed in mild environments within the nuclear island and routed only with nonsafety-related cables outside the nuclear island.

LEGEND/KEY

Category Column

Spare - Spare RG-58 Cables

Harsh - RG-58 Cables (now spares) routed at least partially through a harsh environment within the nuclear (replaced with RG-59)

Mild - RG-58 Cables located in mild environments within the nuclear island

Functions Column

Station Computer - All Seabrook Station Plant Computer Applications, i.e., connections between main frame and computer peripheral connections between computer peripherals, etc.

Environmental Zones

TB - Turbine Building outside nuclear island

WPB - Waste Processing Building outside nuclear island

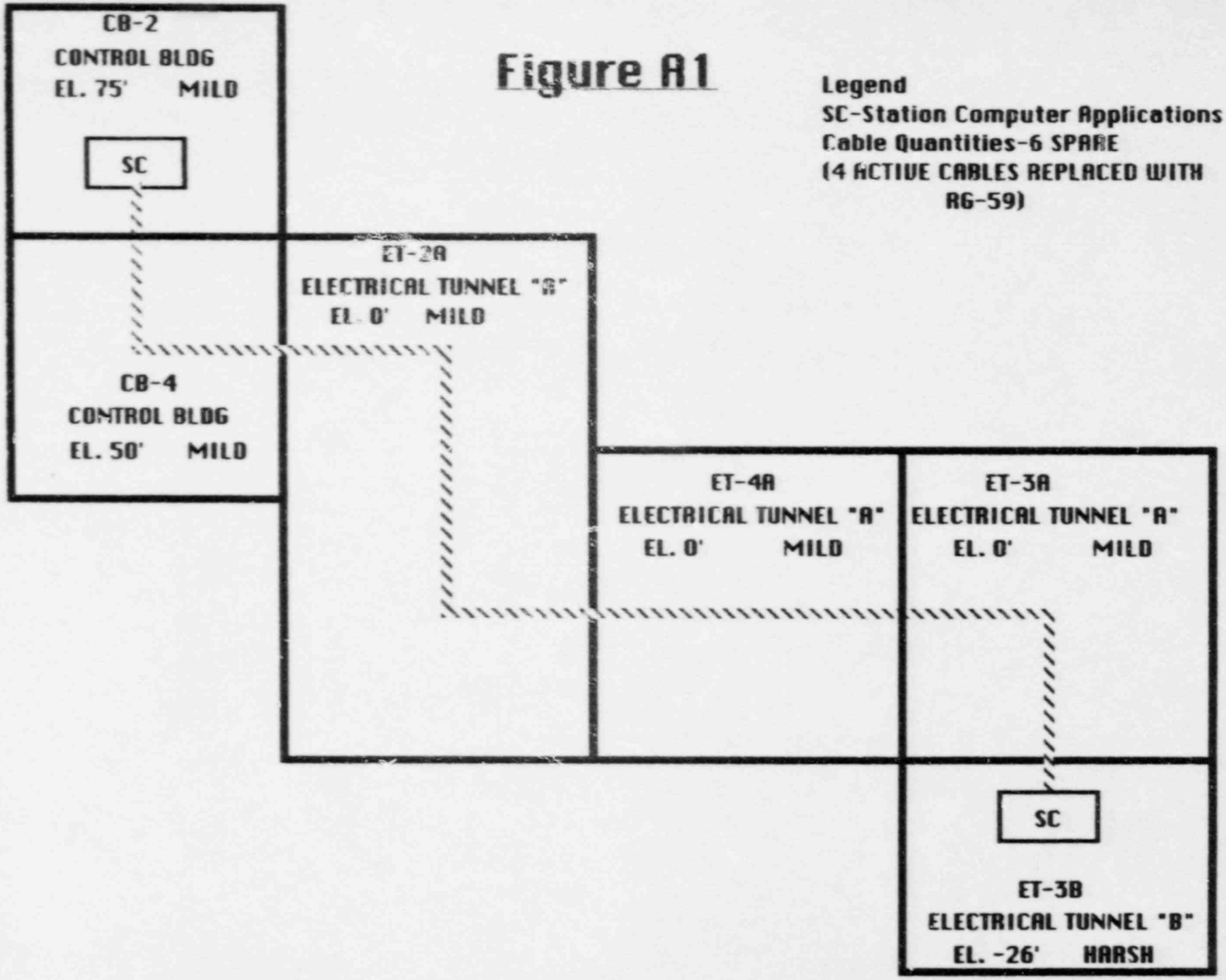
BERGERON AFFIDAVIT

ATTACHMENT H

ITT SURPRENANT RG-58 COAXIAL CABLE
APPLICATIONS; ENVIRONMENTAL ZONE ROUTINGS

CONTENTS

Figure A1



Legend
SC-Station Computer Applications
Cable Quantities-6 SPARE
(4 ACTIVE CABLES REPLACED WITH RG-59)

FIGURE A2

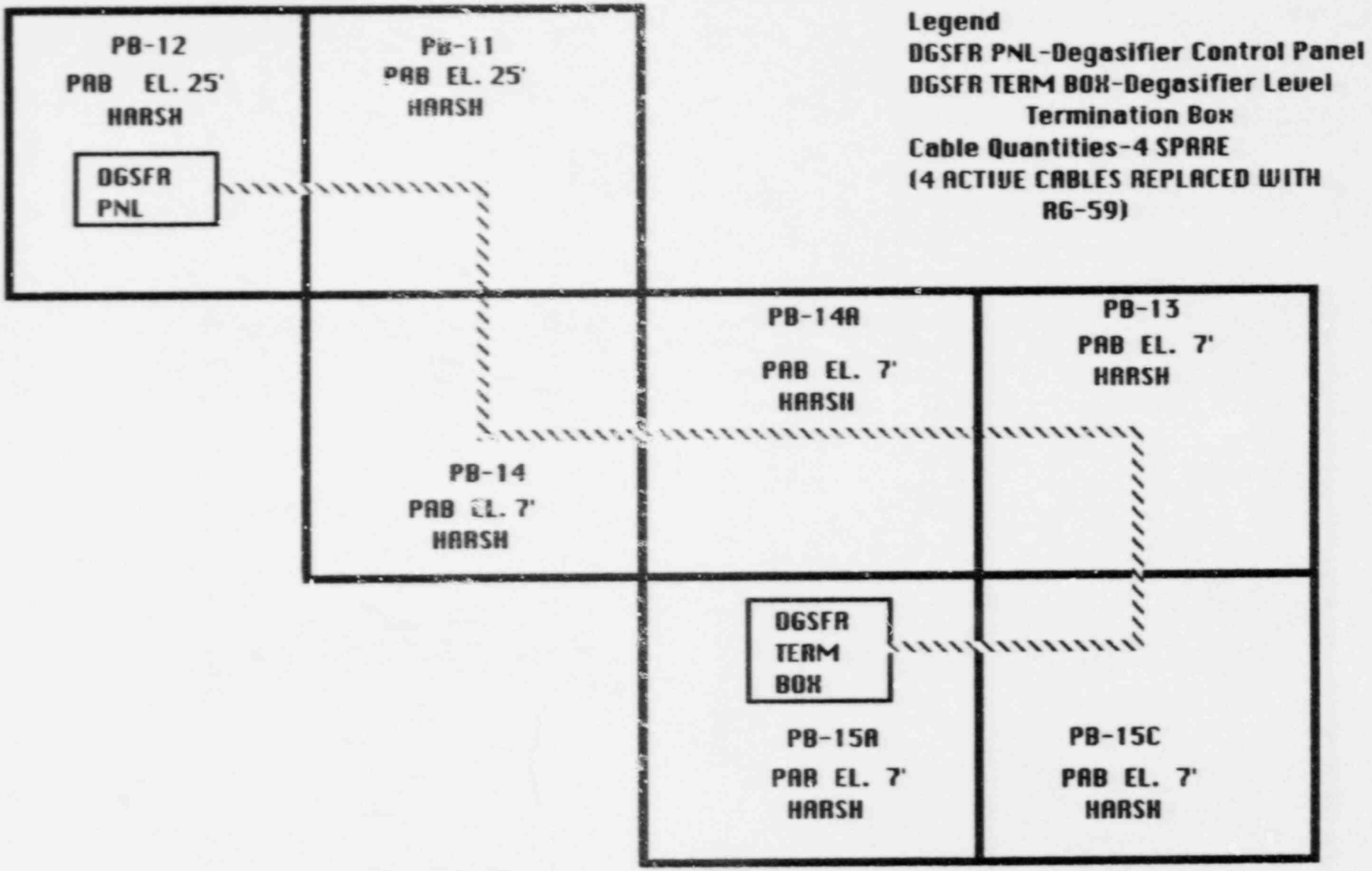

PB-12
PAB EL. 25'
HARSH
DGSFR
PNL
PB-11
PAB EL. 25'
HARSH
PB-14
PAB EL. 7'
HARSH
PB-14A
PAB EL. 7'
HARSH
PB-13
PAB EL. 7'
HARSH
DGSFR
TERM
BOX
PB-15A
PAB EL. 7'
HARSH
PB-15C
PAB EL. 7'
HARSH
Legend
DGSFR PNL-Degasifier Control Panel
DGSFR TERM BOX-Degasifier Level
Termination Box
Cable Quantities-4 SPARE
(4 ACTIVE CABLES REPLACED WITH
RG-59)

FIGURE A3

Legend
SC-Station Computer Applications
Cable Quantities-6 SPARE
(4 ACTIVE CABLES REPLACED WITH
RG-59)

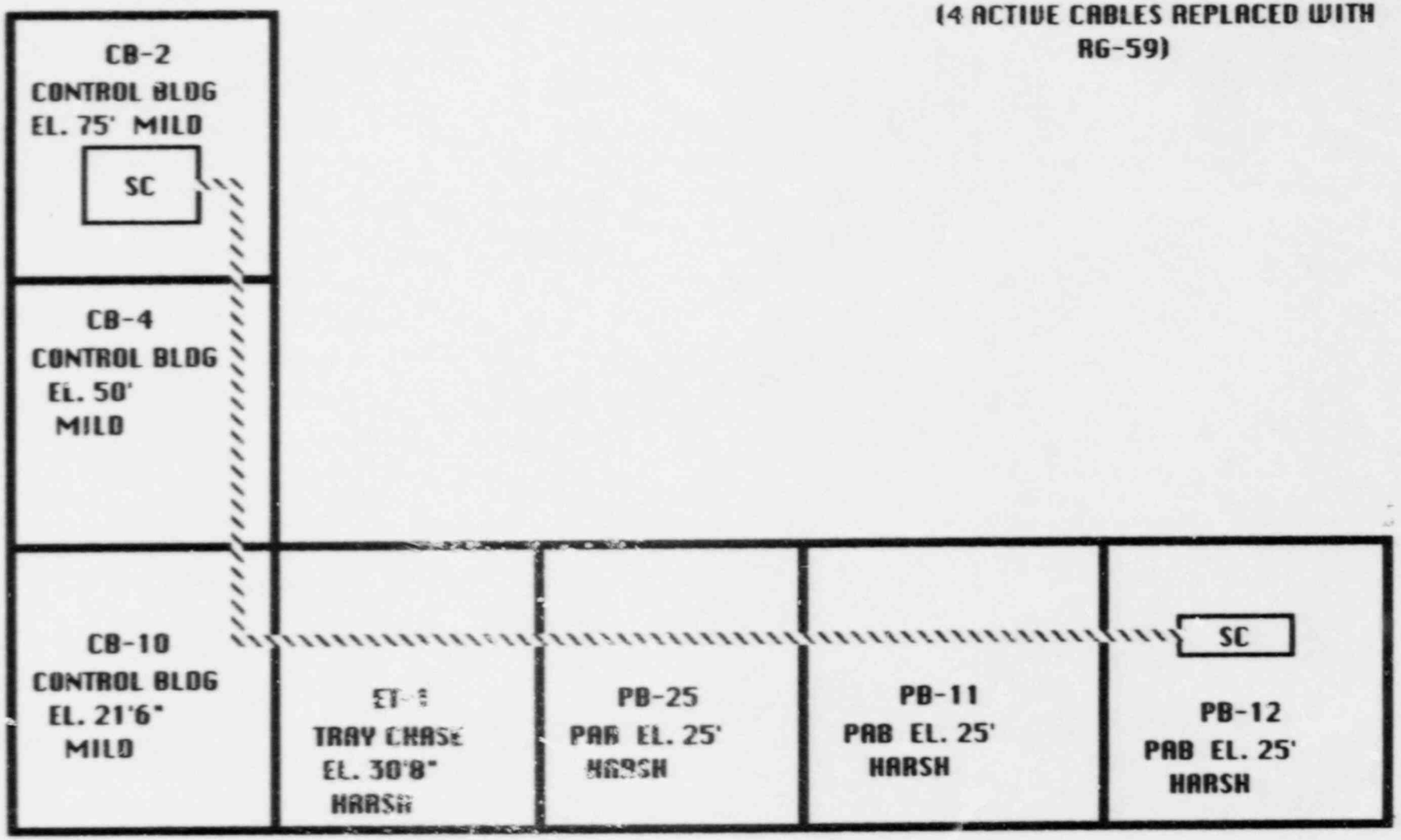


Figure B

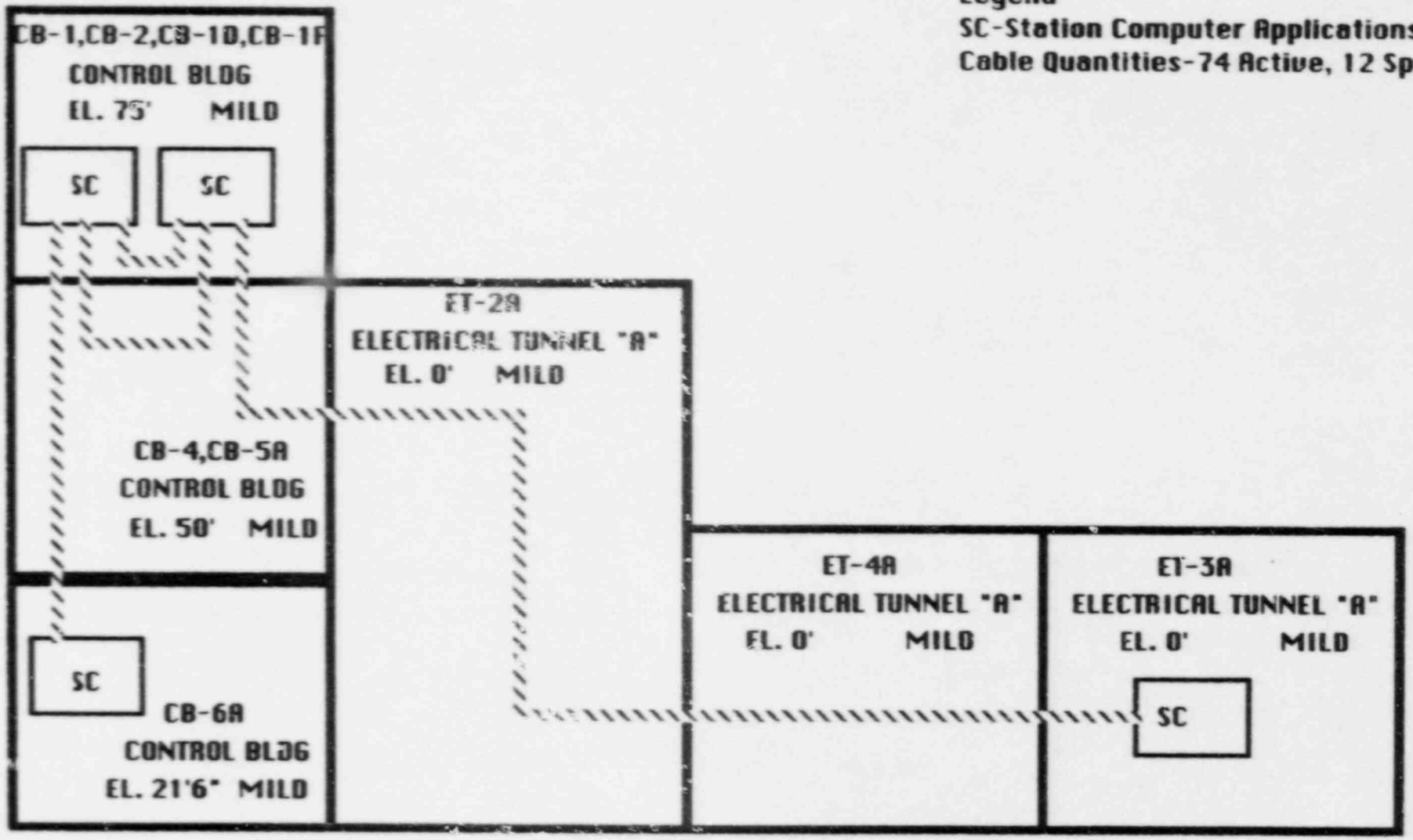

Legend
SC-Station Computer Applications
Cable Quantities-74 Active, 12 Spare
CB-1,CB-2,CB-1D,CB-1F
CONTROL BLDG
EL. 75' MILD
SC
SC
ET-2A
ELECTRICAL TUNNEL "A"
EL. 0' MILD
CB-4,CB-5A
CONTROL BLDG
EL. 50' MILD
ET-4A
ELECTRICAL TUNNEL "A"
EL. 0' MILD
ET-3A
ELECTRICAL TUNNEL "A"
EL. 0' MILD
SC
SC
CB-6A
CONTROL BLDG
EL. 21'6" MILD

FIGURE C

Legend
SC-Station Computer Applications
MCB-Main Control Board
Gen Mon-Generator Hydrogen Core Cooling Monitor
Cable Quantities- 9 Active, 5 Spare

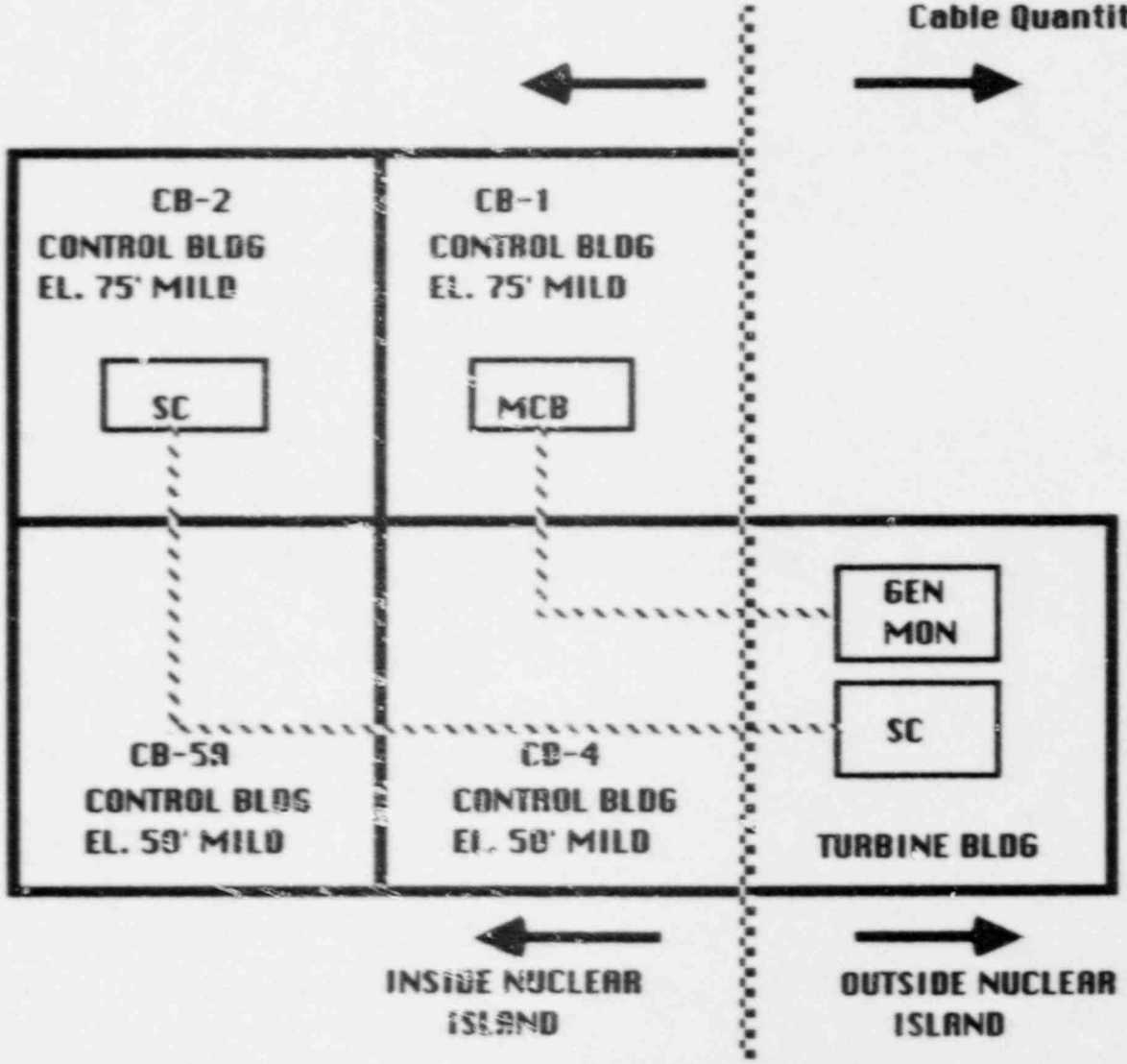
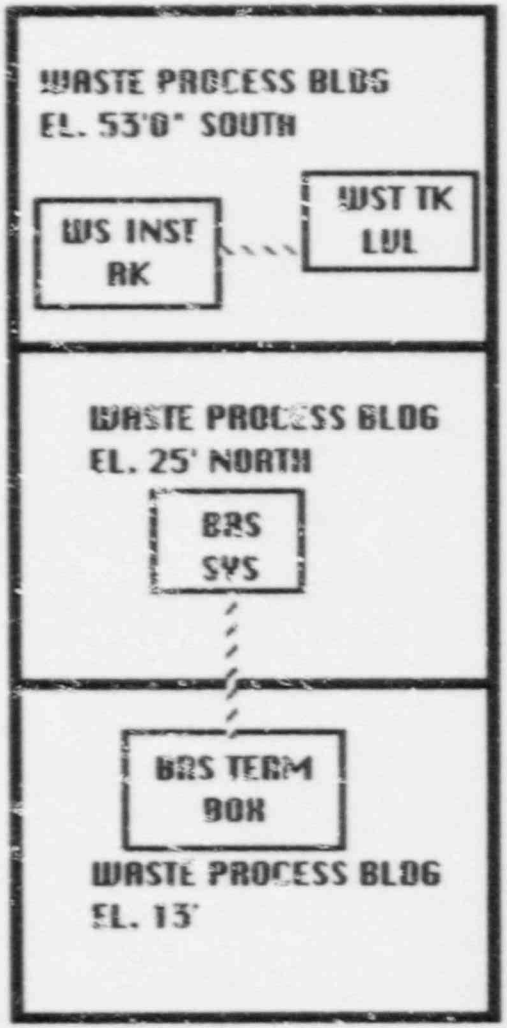


FIGURE D



OUTSIDE NUCLEAR ISLAND

Legend
WS INST RK- Waste Solids System Instrument Rack
WST TK LVL- Waste Feed Tank Level
BRS SYS- Boron Recovery System Control Panel
BRS TERM BOX- Primary Drains Tank Degasifier Level Control Termination Box
Cable Quantities- 10 Active

CERTIFICATE OF SERVICE

I, Jeffrey P. Trout, one of the attorneys for the Applicants herein, hereby certify that on September 9, 1988, I made service of the within documents by depositing copies thereof with Federal Express, prepaid, for delivery to (or where indicated, by depositing in the United States mail, first class postage paid, addressed to) the individuals listed below.

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