Filed: November 3, 1982

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

before the

ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE, et al.	)	Docket Nos. 50-443 OL 50-444 OL
(Seabrook Station, Units 1 & 2)	)	

APPLICANTS' ANSWERS TO
"THE STATE OF NEW HAMPSHIRE's
FIRST SET OF INTERROGATORIES
AND REQUEST FOR PRODUCTION OF
DOCUMENTS TO PUBLIC SERVICE
COMPANY OF NEW HAMPSHIRE, INC."

Pursuant to 10 CFR § 2.740b, the Applicants hereby respond to "The State of New Hampshire's First Set of Interrogatories and Request for Production of Documents to Public Service Company of New Hampshire, Inc.," served on them by mail on October 15, 1982.

GENERAL MATTERS

1. Supplementation. The Applicants object to the terms of the first unnumbered paragraph appearing on page 2 of these interrogatories insofar and on the grounds that it is a misstatement of 10 CFR § 2.740(e), as amended through 43 Fed. Reg. 17,802 (April 26, 1978).

2. Production of Documents. The Applicants will make the documents for which production is called for by these interrogatories available for inspection and copying at one or more appropriate places at a time to be mutually agreed upon by Counsel for NHAG and the Applicants.

Interrogatory No. G.1

Question:

Identify all persons which you intend to call as witnesses in this proceeding in relation to the following contentions. (The numbering system used in the Licensing Board's Order of September 13, 1982 is used for the purposes of these Interrogatories.) Identification should include a summary of the educational and professional background of that individual.

A. Contention NH 9

B. Contention NH 10

C. Contention NH 13

D. Contention NH 20

E. Contention NH 21

F. Contention NECNP 1.B.2

G. Contention NECNP 1.D.3

H. Contention NECNP I.F.

I. Contention NECNP II.B.1 through II.B.5

J. Contention SAPL Supplement 3

Answer:

Applicants have not yet determined which, if any, witnesses they will call with respect to this contention.

Interrogatory No. G.2

Question:

Provide a reasonable description of the substance of the testimony of each witness on each of the above contentions. Please include an identification of all documents which will be relied on in that testimony.

Answer:

Applicants have not yet identified the substance of the testimony, if any, on each of the above contentions.

Interrogatory No. 9.1

Question:

Identify all persons who were and are responsible in a supervisory capacity for the design and

installation of the radioactivity monitoring system for Seabrook.

Answer:

The persons currently responsible in a supervisory capacity for the design of the Radiation Data Management System (RDMS) are:

J. A. MacDonald, Radiation Protection Manager, YAEC, Framingham, MA

R. P. Neustadder, Supervising Engineer, Instrumentation and Controls, UE&C, Philadelphia, PA.

These individuals are currently involved with the design of the RDMS. Others have been involved in the past.

Ultimate responsibility for the installation of the RDMS rests with R. Rebel, Seabrook Construction Manager, UE&C, Seabrook, NH.

Interrogatory No. 9.2

Question:

Identify the document(s) which comprehensively describe the design or operation of the radiation data management system (RDMS).

Answer:

There are three documents which comprehensively describe the RDMS.

1. System Design Description for Radiation Data Management System, #SD-90.

2. Specification for Radiation Data Management System, Specification #9763-006-172-1.

3. Seabrook Station FSAR, Subsections 11.5 and 12.3.

Interrogatory No. 9.3

Question:

Identify all documents which relate to the conformity of the Seabrook RDMS to NRC regulatory requirements.

Answer:

Seabrook FSAR 3.1.

Interrogatory No. 9.4

Question:

Identify the document(s) which comprehensively describe the design or operation of the post-accident monitoring system (PAMS).

Answer:

Seabrook Station does not have a system uniquely termed the Post-Accident Monitoring System. Post-accident monitoring instruments for measurement of radioactivity releases are comprised of radiation monitors and samplers. The documents which relate to the RDMS are mentioned in response to Interrogatory NH

9.2. The design of the Post-Accident Sampling System is described in response to Interrogatory NH 9.14.

Interrogatory No. 9.5

Question:

Identify all documents which relate to the conformity of PAMS to the requirements of Regulatory Guide 1.47.

Answer:

Regulatory Guide 1.47 is titled, "Bypassed and Inoperable Status Indication for Nuclear Power Plant Safety Systems" and as such does not pertain to PAMS items. Therefore, we have no documents relating to the conformity of PAMS to Regulatory Guide 1.47.

Interrogatory No. 9.6

Question:

Identify all documents which have been prepared for the purpose of studying, reviewing, or critiquing the radioactivity monitoring system, the RDMS or the PAMS, for Seabrook.

Answer:

The studying, reviewing and critiquing of the Radiation Monitoring System is accomplished via a series of correspondence dealing with the system specification and the system design description. The documents which detail the correspondence, consisting

of letters, memos and notes of telecon, are in the UE&C RDMS specification file and system description file.

Interrogatory No. 9.7

Question:

Identify all documents which relate to the conformity of PAMS Guide 1.97.

Answer:

Comparison of the Seabrook post-accident monitoring instrumentation with the guidance of Regulatory Guide 1.97, Revision 2, has not been prepared. The Applicants are following the development of NRC requirements for emergency response facilities (re: SECY 82-111). The schedule for complying with the NRC requirements will be developed when the requirements are promulgated.

Interrogatory No. 9.8

Question:

Identify all aspects in which Seabrook Radiation Monitoring System is not in strict compliance with Reg. Guide 1.97. For each aspect identified, indicate PSNH reason for non-compliance and the alternative method chosen by PSNH to comply with Criterion 64.

Answer:

Seabrook Station's Radiation Data Managements System conforms to the guidance in Regulatory Guide

1.97 requirements as they pertain to Criterion 64, Effluent Releases.

Interrogatory No. 9.9

Question:

Explain the criteria used for the selection of each type of monitoring instrument used in the radiation monitoring system.

Answer:

The type of monitoring instrument used in the Radiation Monitoring System was specifically chosen based on operating history at other stations, the radiations or isotopes of interest, the expected and anticipated amounts of radioactivity, regulatory requirements and guidelines, and the physical characteristics of the stream being monitored. In summary, monitoring instruments appropriate to the intended service were selected.

Interrogatory No. 9.10

Question:

Explain the criteria used for selecting the location of each type of monitoring instrument in the radiation monitoring system.

Answer:

The location of monitoring instruments was chosen based on the type of monitoring instrument, the normal

expected background radiation, ease of access for maintenance, short runs to systems being monitored, post-accident radiation levels, and need to access instruments during post-accident recovery and regulatory requirements.

Interrogatory No. 9.11

Question:

For each type of monitoring instrument used in the radiation monitoring system, describe the calibration and testing procedures including the frequency and performance of such procedures.

Answer

The calibration and testing of the Radiation Monitoring System is done on two levels.

The first level of calibration and testing is accomplished in the fabrication facility, prior to delivery. This includes complete functional testing of each monitor, primary calibrations traceable to the National Bureau of Standards and a transfer calibration. The attached table provides a listing of the factory calibration and testing procedures.

The second level of calibration and testing is done on-site. The frequency and procedures for this level of calibration and testing are provided in the plant

Technical Specifications. Further details on calibration and testing of the Radiation Monitoring System will be included in the plant operating procedures which will be available three months prior to fuel load.

Vendor Supplied Information on Calibration and Testing

UE&C Foreign Print	Title
72761	Acceptance Test and Transfer Calibration Procedure
72741	Calibration Report RD 53
72742	Calibration Report RD 54
72745	Calibration Report RD 55-30
71920	Calibration Report RD 60 Part, Iodine and Gas Detector
71921	Calibration Report RD 25-03 Duct Monitor
71846	Calibration Report RD 52 Off-Line Beta Detector
71847	Calibration Report RD 56 Particulate Detector
71848	Calibration Report RD 53 Off-Line Gamma Detector
71849	Calibration Report RD 59 Gas and Iodine Off-Line Detector
71850	Radical Report for RD 1, 2A, 10 and 23

Interrogatory No. 9.12

Question:

Explain the criteria used to determine which monitoring instruments should be considered "important to safety" and indicate which monitoring instruments are so considered.

Answer:

Seabrook Station categorizes all electrical equipment either as Class 1E (safety related) or non-Class 1E (not safety related).

The following is a list of Class 1E radiation monitoring instruments for monitoring releases to the plant and its environs, and criteria for their selection:

a. Ma ipulator Crane Monitors RE-6535A and RE-6535B

The se monitors and associated electronics are Cla.s 1E because they perform the safety function of terminating containment purge on detection of high radiation.

b. Control Room Air Intake Monitors RE-6506A, RE-6506B, RE-6507A and RE-6507B

These monitors and associated electronicas are Class 1E because they perform the safety function of isolating the Control Room air intake on detection of high radiation.

c. Containment Structure Monitors RE-6576A and RE-6576B

These monitors and associated electronics are Class 1E because they are required to monitor conditions inside containment for post-LOCA.

d. Plant Vent Monitors RE-6533-1, RE-6533-2, RE-6533-3, RE-6528-1, Re-6528-2, RE-6528-3, RE-6530-1 and RE-6530-2

These monitors and associated electronics are Class 1E because they are required by Regulatory Guide 197(2) to monitor post-accident stack releases.

Interrogatory No. 9.13

Question:

NUREG 0737, Section II(B)(2) requires that radiation and shielding design review of the spaces around systems that may, as a result of an accident, contain highly radioactive materials. Please identify this review document and provide a copy pursuant to 10 C.E.R., Section 2.741. Explain the manner in which the radioactivity monitoring system will be coordinated with the conclusions of this review, including but not limited to the question of whether additional monitoring instrumentation will be required.

Answer:

In conformance with NUREG-0737, Section II(B)(2) a radiation and shielding design review of spaces around systems that may, as a result of an accident, contain highly radioactive materials has been performed for the Seabrook Station. The document containing this information is identified as the "Post-Accidnet Dose Engineering Manual, Seabrook Station," dated April 28, 1982. This document was prepared by United Engineers

and Contractors, Inc. (UE&C address) and reviewed by Yankee Atomic Electric Company (YAEC address) and Public Service Company of New Hampshire (PSNH address). The document in question addresses the requirements specified in NUREG-0737 and a copy is currently available at each of the three locations given above.

The results of this review have not affected the implementation of the Post-Accident Radioactivity Monitoring System and specifically has not identified the need for additional monitoring instrumentation.

Interrogatory No. 9.14

Question:

NUREG 0737, Section (B)(3) requires a review of reactor coolant and containment atmosphere sampling line systems to determine post-accident sampling capability. Please identify the document resulting from this review and provide a copy pursuant to 10 C.F.R., Section 2.741. Explain in detail how PSNH will comply with II(B)(3) and specify all aspects in which strict compliance with II(B)(3) will not be achieved.

Answer:

Post-accident sampling capability will be provided in accordance with NUREG-0737, Section II.B.3, as committed to the NRC by letter SBN-212, "Implementation of TMI Action Plan Requirements of NUREG-0737," J. DeVincentis to Frank Miraglia, dated February 12, 1982.

The subject letter indicates that the shielding and operation of the Reactor Coolant and Containment Atmosphere Sampling Systems, including a post-accident sampling panel provides the capability tomeet NUREG-0737 requirements. Details of the post-accident sampling panel design are provided in P.O. No. SNH-662 9763.006-120-10 and Change Orders 1, 2 and 3 thereto. As required by Section II.B.3 for operating license applicants, procedures to obtain post-accident samples and the radiological and chemical analyses will be completed no less than four months prior to the issuance of an operating license.

Interrogatory No. 9.15

Question:

NUREG 0737, II(F)(1) requires that additional accident monitoring instrumentation for radiation monitoring be installed. Further, II(F)(1) requires that displays added to the control room not increase the potential for operator error. Identify all documents relating to the requirements of II(F)(1) and produce such documents pursuant to 10 C.F.R., Section 2.741. Explain the manner in which compliance with II(F)(1) will be achieved and specify all aspects in which strict compliance will not be achieved.

Answer:

The following documents addresses Seabrook Station's commitment to NUREG-0737 requirements and Item II(F)(1), subparts 1, 2 and 3, specifically.

PSNH letter, dated February 12, 1982, "Implementation of TMI Action Plan Requirements of NUREG-0737," J. DeVincentis, Project Manager, to Mr. Frank Miraglia, USNRC, Chief, Division of Licensing.

Seabrook Station conforms to all aspects of NUREG-0737, Item II(F)(1), subparts 1, 2 and 3.

Interrogatory No. 9.16

Question:

NUREG 0737, III(D)(1.1) requires PSNH to implement a program to reduce leakage from systems outside containment that would or could contain highly radioactive fluids during a serious transient and/or accident. Identify all documents relating to the development of the program under III(D)(1.1) and produce such documents pursuant to 10 C.F.R. Section 2.741. Explain the manner in which compliance with III(D)(1.1) will be achieved and specify all aspects in which strict compliance will not be achieved.

Answer:

PSNH will implement a program to reduce leakage from systems outside containment that would or could contain highly radioactive fluids during a serious transient or accident in accordance with NUREG-0737, Section III.D.1.1. This commitment was made to the NRC

by letter SBN-212, "Implementation of TMI Action Plan Requirements of NUREG-0737," J. DeVincentis to Frank Miraglia, dated February 12, 1982. The subject letter indicates the manner in which compliance to NUREG-0737 will be achieved. As required by III.D.1.1 a summary description of the ongoing leak reduction program will be completed four months prior to fuel load.

Interrogatory No. 9.17

Question:

NUREG 0737, III(D)(3.3) requires improved in-plant airborne iodine instrumentation and association training and procedures under accident conditions. Explain the manner in which compliance with III(D)(3.3) will be achieved and specify all aspects in which strict compliance will not be achieved.

Answer:

Seabrook Station will conform to NUREG-0737, III(D)(3.3). Seabrook Station will use solid-state detectors with multi-channel analyzing capability to differentiate radioiodine from noble gases in the sample. When ingerference from noble gases significantly decreases the sensitivity of the analytical system, iodine specific sample media and/or sample purging capability will be used. All personnel

involved with in-plant sampling and analysis will be specifically trained in the appropriate procedures.

Interrogatory No. 9.18

Question:

NUREG 0737, III(D)(3.4) requires assurance that control room operators will be adequately protected against the effects of accidental release of toxic and radioactive gases. Identify all documents relating to the requirements set forth in III(D)(3.4) and produce such documents pursuant to 10 C.F.R. Section 2.714. Explain the manner in which compliance with III(D)(3.4) will be achieved and specify all aspects in which strict compliance will not be achieved. In answering this Interrogatory, PSNH's attention is directed to Attachment 1 of III(D)(3.4).

Answer:

There are no documents specifically relating to the requirements set forth in Section III(D)(3.4) of NUREG-0737 since "NUREG-0737 III(D)(3.4) contains no changes to previous requirements and guidance." Specific discussion of the Seabrook Station Control Room Habitability Systems is contained in Seabrook FSAR Section 6.4. This section describes the concept of the dual remote air intakes and their ability to reduce the potential for Control Room makeup air contamination due to accident-generated airborne radioactivity. Isolation of the contaiminated air makeup air is automatically initiated on high radioactivity detection

at either of the air intakes. The results of an analyses calculating the potential doses to Control Room occupants, performed in accordance with USNRC Standard Review Plan 6.4, "Habitability Systems" and Reference (c) of NUREG-0737, Section III(D)(3.4), are presented in Seabrook FSAR Section 15.6.3.3 and 15.6.5.4.

Information used to evaluate Control Room habitability for radioactive releases due to design basis accidents is presented in these FSAR sections and in Seabrook FSAR Section, Appendix 15B.

Interrogatory No. 9.19

Question:

Please provide a listing of all radiation monitoring displays and alarms which are located in the control room. In addition, for each display or alarm which appears, provide the location of such display or alarm within the control room.

Answer:

The Radiation Monitoring System display and alarm equipment in the Control Room are a RDMS CRT display with keyboard, a line printer with keyboard, and the Class 1E monitoring cabinets. The location of this equipment can be found in FSAR Figure 1.2-32, and can

be identified by instrument tag numbers CP-295 (RM-XM-6565), RM-XX-6565 and CP180A and B, respectively.

Interrogatory No. 9.20

Question:

Explain how the radiation monitoring system has been designed to detect leaks from the reactor containment as required by Design Criterion 52, 53, and 54. Identify all documents which relate to the design and installation of the leakage detection system and produce such documents in accordance with the provisions of 10 C.F.R. 2.741.

Answer:

General Design Criteria 52, 53, and 54 do not apply to any function performed by the Radiation Monitoring System.

Interrogatory No. 9.21

Question:

Explain how the radioactivity monitoring system is designed to detleakage from the reactor coolant pressure boundary as required by Criterion 55. Identify all documents which relate to the design and installation of radioactivity monitoring system for the purpose of detecting leaks from the reactor coolant pressure boundary and produce such documents in accordance with the provisions of 10 C.F.R. 2.741.

Answer:

General Design Criterion 55 does not apply to any function performed by the Radiation Monitoring System.

Interrogatory No. 9.22

Question:

With regard to each type of radioactivity monitoring instrument used in the plant, explain the criteria used to insure that such instruments will continue to function in an accident environment.

Answer:

The radiation monitoring equipment required to monitor releases to the plants and its environs under post-accident conditions is environmentally and seismically qualified to operate in the expected conditions. FSAR Section 3.11 provides details of the qualification program.

Interrogatory No. 9.23

Question:

Describe the monitoring instrumentation and controls available to warn and prevent reversed air flow in the plant's ventilating system. Describe the actuation of controls (i.e., automatic or manual).

Answer:

The Seabrook plant's Ventilation System incorporates back-draft dampers, tornado dampers and, in some cases, control dampers for the purpose of preventing reversed air flow. Both back-draft dampers and tornado dampers are manual devices which operate from the air flow passing through them. In some cases,

these dampers are also provided with limit switches which, in conjunction with other instrumentation, will annunciate a system failure. Control dampers are power-operated dampers which can be actuated by a number of signals such as a manual signal, protection system signal, air intake/exhaust isolation signal or fan status signal. Control dampers are designed to fail in the safe position which can be either in the open or closed position depending on the system design. Control switches are provided on the main control board for control dampers which allows the operator to manually operate the damper or maintain the automatic position. Damper status lights are also provided to indicate damper position.

Interrogatory No. 9.24

Question:

FSAR 12.3.1.b.3 states that the Incontainment high range monitoring detectors are to be located near the top of the dome. Does this meet NUREG 0737, II(F)(1) classification number 3 on page II(F)(1)-11. Also explain whether the detectors meet the energy response and accuracy specified in Reg. Guide 1.97, page 1.97-19, Footnote #7.

Answer:

The incontainment high-range monitoring detectors will be located to allow for ease of access for

maintenance, will be widely separated so as to provide independent measurement, and will be placed to allow for maximum "view" of containment volume with minimal interference from shielding or large components.

Interrogatory No. 9.25

Question:

Table 12.3-14 of the FSAR indicates that the skid mounted plant vent radioiodine and particulate detectors have a high range of only 1 uCi/cc. NUREG0737, Section II(F)(1)-2 recommends a high range capability of 10^2 uCi/cc for all plant effluent streams and it further recommends that provisions for limiting occupational dose to personnel involved in sampling, transport and analysis be considered. Please explain the failure to comply with NUREG 0737.

Answer:

NUREG-0737, Section II(F)(1)-2 deals with sampling of plant effluents and subsequent analysis of samples. This particular subsection is not applicable to the monitors specified in Table 12.3-4 of the FSAR. Further Section II(F)(1) - Attachment 2, does not specify a range capability for this sampling/analysis program, but specifies a shielding design criteria of 10^2 uCi/cc source term for radioiodine and particulates. Seabrook Station will have the capability to sample and quantify the activity of gaseous streams of this magnitude of activity, and will

limit the occupational dose to personnel sampling and analyzing samples to the amounts specified in NUREG-0737, Section II(F)(1) - Attachment 2.

Interrogatory No. 9.26

Question:

FSAR 12.3.5.2.b.5 "Portable Continuous Air Monitors" (CAM's) specifies a range of 10b1^{0} to 10 ^{6} uCi/cc. FSAR table 12.5-1 "Portable Health Physics Instrumentation" does not indicate the ranges for air sampling instruments should have a range of 10 ^{9} to 10 ^{3}uCi/cc for radiohalagens and particulates. Please explain the variation from the guidance of Reg. Guide 1.97.

Answer:

FSAR Table 12.5-1 indicates the expected number of low and high volume air samples. Air samples in concert with analytical detection equipment have measurement capabilities dependent on the sample parameters (e.g., volume sampled) and detector parameters (e.g., lower limit of detection). As such the air samplers along with analytical detection equipment will have the capability to measure airborne activity in the range of 10-^{9} to 10-^{3} uCi/cc. Portable Continuous Air Monitors (CAMs) are used operationally to monitor air quality at work sites during maintenance

activities and are not intended for use during post-accident conditions.

Interrogatory No. 9.27

Question:

Regulatory Guide 1.97 rev. 2 page 1.97-24 specifies that portable radiation instrumentation should be capable of detecting a high level of 10^4 rads/hr of beta radiation and low energy photons. FSAR table 12.5-1 does not indicate this capability. The highest range detector listed for betas is one that detects beta and gamma combined. This detector has a high range limit of 1 R/hr. Please explain the justification for variation from Reg. Guide 1.97.

Answer:

Portable radiation intstrumentation will be available with detection capability up to 10^4 rads/hr. These instruments will have the ability to detect both low energy photons and beta radiation. Table 12.5-1 of the FSAR will be changed to indicate this capability.

Interrogatory No. 9.28

Regulatory Guide 1.97 rev. 2 page 1.97-24 specifies that a portable multi-channel gamma-ray spectrometer should be available for measurement of Plant and Environs radioactivity. Will Seabrook have one?

Answer:

Seabrook Station will have portable multi-channel gamma ray spectroscopy equipment.

Interrogatory No. 9.29

Question:

Regulatory Guide 1.97 rev. 2 page 1.97-25 specifies on site accident sampling capability. Provide a detailed explanation of PSNH compliance in this area. Please identify documents which set forth the accident sampling capability, and produce such documents under the provisions of 10 C.F.R. 2.741.

Answer:

Seabrook Station will be able to sample and analyze the primary coolant, containment sump and the containment air for radioactivity determination as indicated in Regulatory Guide 1.97, Revision 2. The document that describes the post-accident sampling capability is referenced in the response to Interrogatory NH 9.14.

Interrogatory No. 9.30

Question:

Most of the High Range Noble gas effluent monitors listed in FSAR Table 12.3-14 have high range limits considerably below the requirements listed on NUREG 0737, Table II(F)(1)-1. Please explain this failure to comply with requirements.

Answer:

The Waste Processing Building Ventilation System and the Primary Auxiliary Building Ventilation System both exhaust to the plant vent, and thus are monitored

by the high range noble gas effluent monitor. The containment air particulate monitor samples reactor containment and exhaust back into reactor containment. This monitor is isolated from containment on containment isolation signal. NUREG-0737, Table II(F)(1)-1, does not apply to the administration and services building radiogas monitor since the areas exhausted by this ventilation system do not contain systems containing primary coolant or primary coolant off-gas, nor do these areas have any potential source terms post-accident.

Interrogatory No. 9.31

Question:

In FSAR 7.5.3.3.0, you state "the design shall permit the administrative control and access to all setpoint adjustments, moduel calibration adjustments, and test points." How will this be accomplished? Please identify documents which set forth such access control.

Answer:

The ability to control all setpoint adjustments, monitor calibration adjustments, and all test points within the Radioactivity Monitoring System is accomplished via keylock control and password. The administrative controls which apply to this system will

be available three months prior to startup in the plant operating procedures.

Interrogatory No. 9.32

Question:

PSNH indicated in Amendment 45 RIA 420-2 that it will provide information on the Post Accident Monitoring System (PAMS) instrumentation by 4/82. Please provide all documents which relate to the PAMS. If the PAMS has not been finalized, please state when such documentation will be available.

Answer:

See our response to Interrogatory 9.7.

Interrogatory No. 9.33

Question:

PSNH indicates in Amendment 45 RIA 470-5 that Section 7.5 of the FSAR will be revised to address Regulatory Guide 1.97 Rev. 2. Please identify all documents which have been developed for this purpose. When will the FSAR be so revised?

Answer:

See our response to Interrogatory 9.7.

Interrogatory No. NH 10.1

Question:

Identify all persons who were or are responsible in a supervisory capacity for the design and installation of the control room for Seabrook.

Answer:

The persons currently responsible in a supervisory capacity for the design of the Control Room are:

R. P. Neustadter, Supervising Engineer, Instrumentation and Controls, UE&C, Philadelphia, PA.

W. H. Reed, Instrumentation and Controls Engineering Manager, YAEC, Framingham, MA

These individuals are currently involved with the design of the Seabrook Control Room. Others have been involved in the past.

Ultimate responsbility for the installation of the Seabrook Control Room rests with R. Rebel, Seabrook Construction Manager, UE&C, Seabrook, NH.

Interrogatory No. 10.2

Question:

Identify all documents which have been developed for the purpose of studying, reviewing or critiquing the control room design, including but not limited to the documents resulting from the Detailed Control Room Design Review (DCRDR) required by NUREG 0737, Section I(D)(1). Please produce such documents pursuant to 10 C.F.R. Section 2.741. Please provide information on the status of the DCRDR.

Answer:

The following documents have been developed specifically for studying, reviewing or critiquing the Control Room design.

Seabrook Control Room Review- attachment to letter No. SB-12593, dated December 23, 1981.

2. Seabrook Station Control Room Design Review Preliminary Report - attached to letter No. SBN-274, May 12, 1982.

3. Nuclear Engineering Services Agreement between Yankee Atomic Electric Company and Thomas B. Sheridan Associates.

In addition, a file has been developed containing a large number of memos, letters and notes of meeting which deal with the study, review and critique of the main control panel design. This file is labeled "MCB - Seabrook, Human Factors, I99.99.29" and is maintained by W. G. Alcusky, Yankee Atomic Electric Company.

The DCRDR is currently being performed at Seabrook and is approximately 50% complete.

Interrogatory No. NH 10.3

Question:

Identify the document which provides the layout for the control panel and all other displays, controls, and instruments located in the control room. Please produce such documents pursuant to 10 C.F.R. 2.741.

Answer:

The drawings which provide the layouts requested follow here:

F-500090
F-500091
F-500100
F-510101
F-510102
F-510103
F-510104
F-510105
F-510106
F-510107
F-510108
F-510109
F-510110
F510111
F-510112
F-510114
F-510115
F-510116
F-510117
F-510118
F-510120
F-510122
F-510124
F-510126
F-510127
SO #360, FP 70157
SO #360, FP 70158
SO #172-1, FP 71399
C-500360/69
C-500371/73
C-500384/95

Interrogatory No. NH 10.4

Question:

Explain how the display for safety-related instrumentation is presented on the Seabrook control panel.

Answer:

The display of safety-related instrumentation on the control board is no different than the display of non-safety-related instrumentation with the exception of the added safety train color coding. In general, all instrumentation is presented on the vertical panel of the control board, near the control devices which relate to the instrument.

Interrogatory No. NH 10.5

Question:

Identify the person responsible for the human engineering aspects of the detailed control room design review.

Answer:

The Detailed Control Room Design Review at Seabrook is a team effort. The following persons are on that team as permanent members:

Thomas B. Sheridan, Sc. D. - Massachusetts Institute of Technology

David D. Lanning, Ph. D. - Massachusetts Institute of Technology

Michael M. Danchak, Ph. D. - The Hartford Graduate Center

William G. Alcusky - Yankee Atomic Electric Company

J. Dynan Candon - Yankee Atomic Electric Company

J. L. Peterson - Public Service Company of New Hampshire

A. Miller - Yankee Atomic Electric Company

L. A. Walsh - Public Service Company of New Hampshire

As the need arises, other persons from the staffs of Public Service Company of New Hampshire and Yankee Atomic Electric Company are used to supplement the team in specific areas of design review.

Interrogatory No. 10.6

Question:

General Design Criterion 19 requires that equipment be located outside the control roomwith the capability for hot shutdown and to maintain hot shutdown and, with a capability for cold shutdown. Please explain how this aspect of General Design Criterion 19 will be satisfied and please provide a layout of the remote shutdown panel controls and displays pursuant to 10 C.F.R. 2.741.

Answer:

To satisfy the requirements of GDC 19 and 10 CFR Part 50, Appendix R, the Seabrook Station design has incorporated a safety grade Remote Safe Shutdown (RSS) capability. This capability is enhanced by the provision of two redundant trains of equipment, controls and instrumentation, either of which is sufficient to effect a safe shutdown of the plant. The plant shutdown from outside the Control Room can be monitored and controlled from either of the remote safe shutdown control panels and the supporting emergency shutdown stations, which include the diesel generator control panels, the 4160 volt switchgear, the 460 volt motor control centers, the 125 volt dc and 120 volt ac distribution panels and the RHR local panels.

Additional details of the RSS capability can be found in the following documents:

a. FSAR Section 7.4 - Systems Required for Safe Shutdown.

b. System Description SD-95 - Remote Safe Shutdown System.

c. Fire Protection of Safe Shutdown Capability (10 CFR 50, App, Appendix R) Report.

d. Request for Additional Information RAI 420.38 and RAI 420.39.

The RSS control panels are detailed on Drawings 9763-F-500093 and 9763-F-500375.

Interrogatory No. NH 10.7

Question:

NUREG 0737(I)(D)(2) requires that a safety parameter display system be installed. Please provide a layout of the SPDS pursuant to 10 C.F.R. 2.741.

Answer:

Details of the SPDS layout will be developed in our response to the requirements that the NRC is developing for emergency response facilities (re: SECY 82-111).

Interrogatory No. NH 10.8

Question:

NUREG 0737(II)(B)(1) requires that reactor coolant system vents be remotely operated from the control room. Explain how PSNH will comply with II(B)(1) and identify all documents which relate to the displays and

controls which will be added to the control room as a result of II(B)(1). Please produce such documents pursuant to 10 C.F.R. 2.741.

Answer:

PSNH will comply with Section II(B)(1) by providing the capability to vent the Reactor Coolant System with the pressurizer power-operated relief valves and the capability to vent the reactor vessel head with the reactor vessel vent valves shown on Drawings F-805002 and F-805007. The displays and controls added to the Control Room as a result of Section II(B)(1) are indicated in the following documents:

Reactor Vessel Head Vent Valves	Control Switch	Loop and Logic Drawing	MCB Layout Drawing*	Schematic Drawing
RC-V-2281	RC-CS-2281	9763-M-506621 9763-M-503775	MCB Section CF Device #195 9763-F-510103	9763-M-310882 SH E88/1
RC-V-323	RC-CS-2885	9763-M-506621 9763-M-503755 9763-M-503800	MCB Section CF Device #193 9763-F-510103	9763-M-310882 SH 8U9
Pressurizer PORVs				
RC-PCV-456A	RC-CS-456-A1	9763-M-506641 9763-M-503743	MCB Section CF Device #15 9763-F-510103	9763-M-310882 SH E 87/19
RC-PCV-456B	RC-CS-456-B1	9763-M-506641 9763-M-503743	MCB Section CF Device #16 9763-F-510103	9763-M-310882 SH E88/19

Interrogatory No. NH 10.9

Question:

NUREG 0737(II)(D)(3) requires that reactor coolant system relief and safety valves be provided with positive indication in the control room. Identify all documents which relate to the displays and controls added to the control room as a result of II(D)(3) and produce such documents pursuant to 10 C.F.R. 2.741.

Answer:

The Reactor Coolant System Power-Operated Relief Valves (PORV) and safety valve position indication(open/closed) will be provided in the Control Room as required by NUREG-0737, Section II(D)(3).

The RCS PORV position is monitored by limit switches and indicated by lights located at the associated control switches [RC-CS-456-A1 & B1 shown on MCB Section CF Drawing 9763-F-510103 (Device 15 & 16)] and alarmed at the plant computer (9763-M-503746).

The RCS safety valves will be monitored by an environmentally and seismically qualified acoustic flow detection device meeting the requirements of Specification 9763-006-252-30. Safety valve position indication in the Control Room will be provided by CP-299:

1. MCB Section BF, position indicating lights (9763-F-510102).

2. Analog display on CP-299 in Control Room (FSAR Figure 1.2-32).

3. VAS alarm.

Interrogatory No. 10.10

Question:

NUREG 0737(II)(F)(1) requirs additional accident monitoring instrumentation and associated displays and controls to be added to the control room. Identify all documents which relate to the location of displays and controls in the control room as a result of this requirement. Please produce such documents pursuant to 10 C.F.R. 2.741.

Answer:

The location of the displays in the Control Room added in response to NUREG-0737, Section II(F)(1) are indicated in the following drawings (refer to FSAR Figure 1.2-32 for location of the referenced control panel):

1. Noble gas effluent radiation monitor:

Indicator	Location	Drawing
RM-RI-6533A	CP-180A	FP-71399

2. Sampling - no indication in the Control Room.

3. Containment high-range radiation monitor:

RM-RI-6526-1	CP-180A	FP-71399
RM-RI-6526-2	CP-180B	FP-71399

4. Containment pressure monitor:

SI-PI-2576	MCB-BF	9763-F-510102

		Device #134
SI-PI-2577	MCB-BF	9763-F-510102 Device #124

5. Containment water level monitor:

CBS-LI-2384	MCB-BF	9763-F-510102 Device #138
CBS-LI-2385	MCB-BF	9763-F-510102 Device #149

6. Containment hydrogen monitor:

CGC-AI-5828A	MCB-CF	9763-F-510103 Device #108
CGC-AI-5828B	MCB-CF	9763-F-510103 Device #109

Interrogatory No. NH 10.11

Question:

NUREG 0737(II)(F)(2) relates to additional instrumentation for detection of inadequate core cooling. Identify all documents which relate to the types and locations of displays and alarms to be added to the control room as a result of this instrumentation. Please produce such documents pursuant to the provisions of 10 C.F.R. 2.741.

Answer:

Instrumentation for detection of inadequate core cooling is a subset of the Post-Accident Monitoring (PAM) instrumentation. The PAM instruments will be selected as part of the response to the requirements

that the NRC is developing for the emergency response facilities (Re: SECY 82-111).

Interrogatory No. NH 10.12

Question:

The guidelines in NUREG 0700 recommend additional analyses to optimize the allocation of functions to man and machine and further examination of advanced control room technology for new control rooms. Identify documents which have been prepared for this purpose, and explain further plans for analyses in this area. Identify all documents in which PSNH has studied the characteristics of the existing control room instrumentation controls, other equipment, and physical arrangements that may detract from operator performance. If detracting characteristics were identified, explain such characteristics in detail and explain remedial measures to be supplemented.

Answer:

Section 1.1 of NUREG-0700 states that "the scope of the Control Room Design Review described by these guidelines covers the human engineering review of completed Control Rooms, i.e., operational Control Rooms or those at that stage of the licensing process where Control Room design and equipment selection are committed." It then goes on to say, as stated in the interrogatory above, that additional analyses and further examination are recommended for new Control Rooms.

Seabrook has a completed Control Room under the definition discussed above. It is not a new Control Room. Therefore, no documents exist describing this process, and no further plans for analysis have been developed.

The identification of those characteristics of the existing Control Room instrumentation, controls, other equipment and physical arrangements that may detract from operator performance is currently being performed in the DCRDR. The documentation does not yet exist.

Interrogatory No. NH 10.13

Question:

Has PSNH defined or put into effect a plan of action that applies human-factor principles to improve control room design and enhance operator effectiveness? Explain the plan, identify documents describing the plan and method of implementation.

Answer:

The document that contains the plan of action requested above is the Seabrook Station Control Room Design Review Preliminary Report, listed in the response to 10.2. The document is self-explanatory.

Interrogatory No. NH 10.14

Question:

Has a task analysis been performed for determining the basis for the systems review of the control room

design, determining operator training and staffing needs, determining the kind of information the safety parameters display system SPDS) will present, and developing emergency operating procedures? If so, explain the analysis and identify documents which set forth the analysis and the means of implementation.

Answer:

The use of task analysis in determining the basis for the systems review of the Control Room is described in the document titled Seabrook Station Control Room Design Review. Task analyses have not been formally documented in the determination of operator training and staffing needs. INPO is currently developing task analyses for training. Seabrook has committed to use the INPO results to develop task analyses specific for their station, and using them to aid in the development of operator training plans. The operating staff crews will be composed as shown in Technical Specifications Table 6.2-1 and meet the requirements outlined in Technical Specifications Subsection 6.2.2. Each member of the station organization will meet or exceed the minimum qualifications recommended for comparable positions in Regulatory Guide 1.8, Revision 1-R, except that ANSI/ANS 3.1-1978 will be used as a standard rather than ANS 3.1/ANSI 18.1-1971.

No task analysis has yet been performed for determining the kind of information the Safety Parameters Display System (SPDS) will present.

Task analyses are currently being developed by the Westinghouse Owner's Group to be used in the development of emergency operating procedures. These have not yet been issued for use.

Interrogatory No. SAPL Supp. 3.1

Question:

The Commission's Interim Policy Statement on Nuclear Power Plant Accident Considerations under NEEPA, 45 Fed. Reg. 40101 requires a reasoned consideration of the risks of release of radiation to the groundwater. Identify all documents which relate to the risk and impact of the release of radioactivity to the groundwater under accident conditions.

Answer:

The documents which relate to the risk and impact of the release of radioactivity to the groundwater under accident conditions are listed as Reference Nos. 3, 4, 5, 6, and 7 in the response to Supplement 3.8.

Interrogatory No. SAPL Supp. 3.2

Question:

Identify all documents which relate to the study of groundwater in the area of the site. Please produce such documents pursuant to 10 C.F.R. 2.741.

Answer:

In addition to the following documents, refer to the response to SAPL Supplement 3.8 for further information.

1969

Groundwater Hydrology for the Proposed Nuclear Station - Unit No. 1 by Weston Geophysical Research Incorporated, 1969.

10/72

Letter from B. B. Beckley (PSNH) to A. M. Shepard (YAEC), dated October 2, 1972, SM-96, subject: Seabrook Station, Seabrook Town Water.

6/77

Memorandum to R. B. MacPherson (YAEC) from J. D. Haseltine (YAEC), dated June 13, 1977, YAEC File SBP-77-20, subject: Groundwater Fluctuations.

6/77

Memorandum to J.D. Haseltine (YAEC) from S. C. Doret (YAEC), dated June 20, 1977, YAEC File 155/77 ESG, subject: Groundwater Monitoring Program.

7/77

Letter from G. F. Cole (UE&C) to J. D. Haseltine (YAEC), dated July 15, 1977, SBU-13197, subject: Groundwater Measurements.

2/79

PSNH memorandum from J. H. Herrin to B. B. Beckley, dated February 12, 1979. Notes of

meeting of Consultants on scope of pump testing program for PSNH wells.

4/79

Memorandum to R. B. MacPherson (YAEC) from R. E. Guillette (YAEC), dated April 18, 1979, File QAD SB 56/79, subject: April 12, 1979 meeting concerning QA Requirements of Specific Environmental Studies.

5/79

Memorandum to A. J. Stewart (YAEC) from G. A. Harper (YAEC), dated May 9, 1979, YAEC File ESG 123/79, subject: Seabrook Groundwater, Pump Test Program meeting May 7, 1979.

4/80

Memorandum to D. A. Maidrand (YAEC) from R. B. MacPherson (YAEC), dated April 8, 1980, YAEC File ESG 100/80, subject: Significant Changes in Plant since PSAR concerning station use of groundwater.

5/80

Seabrook Station Pumping - Test Project by Ward S. Motts, Hydrogeologist, Amherst, Massachusetts, dated May 9, 1980. Consultants report to PSNH on findings of pumping test.

2/82

Memorandum to R. A. Rebel (UE&C) from J. H. Herrin (PSNH), dated February 8, 1982, File SB 5.8.4.2, subject: PSNH Water Wells.

4/82

Memorandum to R. A. Marcello (YAEC) from G. A. Harper (YAEC), dated April 6, 1982, File YAEC SB O 1.5.9, subject: Update of Seabrook Station Water Supplies.

6/82

PSNH letter from J. H. Herrin To Brimmer's Lane Well Field Committee, dated June 25, 1982, "Report for the First Month of Operation, Brimmer's Lane Well Field," (PSY: 2354, File SB 5.8.4.2).

6/82

Seabrook Station Environmental Report, Operating License Stage, Volume 1, Section 2.4.2, Groundwater, Revision 2, June 1982.

6/82

Seabrook Station Final Safety Analysis Report, Section 2.4.13, Groundwater and Section 2.5.4.6, Groundwater Conditions Amendment 45, June 1982.

Interrogatory No. SAPL Supp. 3.3

Question:

Identify all persons who were and are responsible in a supervisory capacity for the study of groundwater and the potential impact to groundwater by a realease of radioactivity under accident conditions.

Answer:

The persons who were and are responsible in a supervisory capacity for the study of groundwater and the potential impact to groundwater by a release of radioactivity under accident conditions include the following:

Russell B. MacPherson
Yankee Atomic Electric Company
1671 Worcester Road
Framingham, MA 01701
Manager of Environmental Sciences

Peter S. Littlefield
Yankee Atomic Electric Company
1671 Worcester Road
Framingham, MA 01701
Manager of Radiological Engineering

George A. Harper
Yankee Atomic Electric Company
1671 Worcester Road
Framingham, MA 01701
Civil Engineer/Hydrologist

John H. Herrin
c/o Seabrook Station
P. O. Box 700
Seabrook, NH 03874
Public Service New Hampshire
Site Manager

Richard J. Holt
President
Weston Geophysical Corporation
P. O. Box 550
Westboro, MA 01581

Interrogatory No. SAPL Supp. 3.4

Question:

Explain the basis for PSNH's position as expressed in the Environmental Report (ER 7.4.1.2) that the liquid pathway need not be considered. Identify all documents and studies relied upon the PSNH in reaching this conclusion. Identification should be specific to the portion of the document or study relied upon.

Answer:

The basis for the position expressed in Section 7.4.1.2 of the Environmental Report, that the liquid pathway need not be studied in detail, was based on the reports referenced in that section, and on engineering judgment concerning Seabrook site-specific considerations. Specific sections of those referenced reports which aided in formulating this position are listed:

1. Seabrook FSAR - Section 2.4
2. WASH-1400 - Appendix VII, Section 3.3.4
3. NUREG-0440 - Section 7.4

Interrogatory No. SAPL Supp. 3.5

Question:

Identify any independent contractor or consultant or PSNH employee who has indicated disagreement with the PSNH position that the liquid pathway is unimportant and indicate the reasons upon which that person based his/her disagreement.

Answer:

To the best of our knowledge, no independent contractor, consultant or PSNH employee has indicated disagreement with the position that the liquid pathway is unimportant.

Interrogatory No. SAPL Supp. 3.6

Question:

Identify all persons who have been assigned the responsibility of performing the analysis of transients and accidents which postulates multiple failures including operator errors.

Answer:

PSNH has not done an analysis of transients and accidents which postulate multiple failures including operator errors. However, multiple failure analyses will be addressed by the Seabrook Probabilistic Safety Assessment study (SPSA). The SPSA study, being performed by Pickard, Lowe, and Garrick, Inc., is currently scheduled for completion in the fall of 1983.

Interrogatory No. SAPL Supp. 3.7

Question:

Identify all documents which relate to an analysis of transients in accidents which postulate multiple failures including operator errors. Please produce such documents pursuant to 10 C.F.R. 2.741.

Answer:

See response to SAPL Supplement 3.6.

Interrogatory No. SAPL Supp. 3.8

Question:

Identify all communications between PSNH and the NRC staff which relate to the analysis of Class 9

accidents including a release of radioactivity to the groundwater.

Answer:

Communications between PSNH and the NRC relating to the analysis of Class 9 accidents was initiated with the tendering and formal submittal of Applicants' Seabrook Station Environmental Report - Operating License Stage (ER-OLS) (see References 1 and 2). Chapter 7 of the Seabrook ER-OLS, entitled "Environmental Effects of Accidents," presents Applicants evaluation of Class 9 accidents. The remaining communications between PSNH and the NRC on this topic focused on the methods and results of Applicants' groundwater accident analysis study (See Refernces 3-7).

References to Supplement 3.8

1. PSNH letter from J. DeVincentis to F. J. Miraglia, USNRC, dated 6/29/81, "Tendering of Seabrook Station Final Safety Analysis Report and Seabrook Station Environmental Report - Operating License Stage for Acceptability and Completeness REview," (SBN-167). Chapter 7 of the Seabrook Environmental Report - OLS, entitled "Environmental Effects of Accidents," presents Applicants evaluation of Class 9 accidents.

2. PSNH letter from W. P. Johnson to D. Eisenhut, USNRC, dated 10/1/81, "Amendment 43 to March 30, 1973, Application to Construct and Operate

Seabrook Station Unit 1 and Unit 2; Submittal of Seabrook Station Final Safety Analysis Report, Seabrook Station Environmental Report - Operating License Stage and Seabrook Station General and Financial Information," (SBN-181). Chapter 7 of the Seabrook ER-OLS presents Applicants evaluation of Class 9 accidents.

3. YAEC memorandum, P. S. Littlefield to J. DeVincentis, "NRC Telecon Regarding ER Question 240.25," (Liquid Pathway Analysis), (REG 196/81), 10/13/81. Preliminary discussions with NRC reviewer (R. Codell) concerning need for liquid pathway study, and suggested that a meeting be arranged to provide further guidance on assumption and procedures.

4. PSNH letter from J. DeVincentis to L. Wheeler, USNRC, dated 1/4/82, "Submittal of Additional Information; Environmental Report RAI 240.25," (SBN-203), (Liquid Pathway Analysis). Applicants' Liquid Pathway Study results submitted to NRC.

5. YAEC memorandum, P. S. Littlefield to File, "Telecon with NRC (R. Codell) Groundwater Accident Analysis," 2/24/82. NRC requested verbal response to eight questions on PSNH's Liquid Pathway Study (i.e., response to RAI 240.25).

6. PSNH letter from W. P. Johnson to F. J. Miraglia, USNRC, dated 2/25/82, "Revision 1 - Seabrook Station ER-OLS," (SBN-210). Revised Seabrook ER-OLS to incorporate response to RAI 240.25 (Liquid Pathway Analysis).

7. YAEC memorandum, G. A. Harper to File, "Telecon with NRC (R. Codell), "SB ER-Liquid Pathway Analysis," (ESG 16/82), 3/16/82. Applicants' response to NRC's questions requested in Reference 5.

Interrogatory No. SAPL Supp. 3.9

Question:

Identify all persons responsible for considering whether additional features or other actions should be added to Seabrook which would prevent or mitigate the consequences of serious accidents.

Answer:

It is PSNH's philosophy to elicit suggestions that warrant consideration as means of improving the safety and reliability of Seabrook Station from the entire professional staff of its own engineering organization, as well as from that of its service company (yankee Atomic), engineer-constructor (UE&C), and major vendors and consultants (e.g., Westinghouse). Thus, to respond to this request would presumably require a voluminous listing of all professionals working on the Seabrook Project; the usefulness of which is questionable. Therefore, without providing further specificity concerning what features or actions are of particular interest, PSNH cannot meaningfully respond to this request.

Interrogatory No. SAPL Supp. 3.10

Question

Identify all documents which have been developed for the purpose of studying, reviewing, or critiquing

the question of whether additional features or other accidents should be added to Seabrook which would prevent or mitigate the consequences of serious accidents. Please produce such documents pursuant to 10 C.F.R. 2.741.

Answer:

There are no documents that have been developed specifically for the purpose of studying, reviewing, or critiquing the question of whether additional features or other accidents should be added to Seabrook which would prevent or mitigate the consequences of serious accidents. With regard to future modifications to station design, operations or maintenance that might enhance station safety, PSNH will rely on the results of the Seabrook Probabilistic Safety Assessment (SPSA) study, now in progress, as an aide in its decisionmaking. Since the SPSA study is presently scheduled for completion in the fall of 1983, PSNH cannot provide the requested documentation at this time.

Interrogatory No. SAPL Supp. 3.11

Question:

Explain what additional features which would prevent or mitigate the consequences of serious accidents have been considered by PSNH and explain the reasons that such featureswere not included in the present design.

Answer:

It is the opinion of PSNH, based on the information currently available, that the present design of Seabrook Station encompasses those features required for preventing or mitigating the consequences of serious accidents. PSNH will rely upon the results of the Seabrook Probabilistic Safety Assessment Study, now in progress, as an aide in its decisionmking for evaluating possible future modifications to the Station design (see response to SAPL supplement 3.10). Since that study is not completed, PSNH cannot yet identify what features were considered and not adopted as Station design changes or modifications.

Interrogatory No. SAPL Supp. 3.12

Question:

PSNH, in its FSAR Section 15.8, relies on WCAP-8330, Westinghouse Anticipated Transients With Trip Analysis, August 19, 1974 to address the Anticipated Transients Without Scram issue. Please identify this document and pruce it pursuant to 10 C.F.R. 2.741.

Answer:

The subject report is adquately identified in the above interrogatory. The Applicant will designate a location where this document will be made available for review.

Signatures

As to Answers:

I, Wendell P. Johnson, being first duly sworn, do depose and say that the foregoing answers are true, expect insofar as they are based on information that is available to the Applicants but not within my personal knowledge, as to which I, based on such information, believe them to be true.

Wendell P. Johnson

Sworn to before me this
day of November, 1982:

Notary Public
My Commission expires: 8/5/88

As to Objections:

Thomas G. Dignan, Jr.
R. K. Gad III
Ropes & Gray
225 Franklin Street
Boston, Massachusetts 02110
Telephone: 423-6100

CERTIFICATE OF SERVICE

I, Robert K. Gad III, one of the attorneys for the Applicants herein, hereby certify that on November 3, 1982 I made service of the within "Applicants' Answers to 'The State of New Hampshire's First Set of Interrogatories and Request for Production of Documents to Public Service Company of New Hampshire, Inc.'" by mailing copies thereof, postage prepaid, to:

Helen Hoyt, Chairperson
Atomic Safety and Licensing
Board Panel
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dr. Emmeth A. Luebke
Atomic Safety and Licensing
Board Panel
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dr. Jerry Harbour
Atomic Safety and Licensing
Board Panel
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Atomic Safety and Licensing
Board Panel
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Atomic Safety and Licensing Appeal
Board Panel
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Rep. Beverly Hollingworth
Coastal Chamber of Commerce
209 Winnacunnet Road
Hampton, NH 03842

William S. Jordan, III, Esquire
Harmon & Weiss
1725 I Street, N.W.
Suite 506
Washington, DC 20006

E. Tupper Kinder, Esquire
Assistant Attorney General
Office of the Attorney General
208 State House Annex
Concord, NH 03301

Roy P. Lessy, Jr., Esquire
Office of the Executive Legal
Director
U.S. Nuclear Regulatory
Commission
Washington, DC 20555

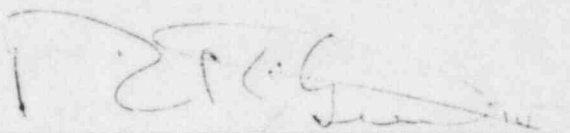
Robert A. Backus, Esquire
116 Lowell Street
P.O. Box 516
Manchester, NH 03105

Philip Ahrens, Esquire
Assistant Attorney General
Department of the Attorney
General
Augusta, ME 04333

David L. Lewis
Atomic Safety and Licensing
Board Panel
U.S. Nuclear Regulatory Commission
Rm. E/W-439
Washington, DC 20555

Edward J. McDermott, Esquire
Sanders and McDermott
Professional Association
408 Lafayette Road
Hampton, NH 03842

Jo Ann Shotwell, Esquire
Assistant Attorney General
Environmental Protection Bureau
Department of the Attorney General
One Ashburton Place, 19th Floor
Boston, MA 02108



Robert K. Gad III