SEABROOK STATION
Engineering Office

PSNH

May 29, 1986

Public Service of New Hampshire

SBN- 1074
T.F. B7.1.2

NEW HAMPSHIRE YANKEE DIVISION

United States Nuclear Regulatory Commission
Washington, DC 20555

Attention: Mr. Vincent S. Noonan, Project Director
PWR Project Directorate No. 5

References:
(a) Construction Permits CPPR-135 and CPPR-136, Docket Nos. 50-443 and 50-444
(b) PSNH Letter (SBN-1006), dated April 16, 1986, "NRC Requests for Additional Information", J. DeVincentis to V. S. Noonan
(c) PSNH Letter (SBN-1039), dated May 7, 1986, "NRC Requests for Additional Information", J. DeVincentis to V. S. Noonan

Subject: NRC Requests for Additional Information

Dear Sir:

In discussions with our Bethesda Licensing Office, various members of the Staff requested additional information/clarifications concerning a few items. In response to these questions, enclosed please find the following attachments:

1) Revised FSAR Table 3.2-2, Sheet 38 of 39, deleting footnote for NNS systems and components.

2) Further information regarding Seabrook's instrumentation for detection of inadequate core cooling to that previously submitted by PSNH Letter (SBN-952), dated February 24, 1986.

3) Revised FSAR pages 13.4-5, 14.2-2, 14.2-3, and 14.2-4, (Table 14.2-1, Sheet 3 of 3) supplementing information provided by PSNH Letter (SBN-1039), dated May 7, 1986. Revised FSAR Table 14.2-1, Sheet 3 of 3 provided herein, supercedes the revision provided in Reference (c).

4) Further information regarding Seabrook's mobile waste services for solid radwaste handling to that previously submitted by PSNH Letter (SBN-1036), dated May 7, 1986. It should be noted that NUS drawing E-8815-M-2002, which has been identified as being proprietary, will be made available for the Staffs use out of our Bethesda Licensing Office.

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5) Further information regarding Seabrook's tornado missile analysis for the diesel generator exhaust stacks.

6) Further information regarding Seabrook's initial test program to that provided by PSNH Letter (SBN-814), dated June 7, 1985.

We trust that the enclosed provides the additional information/ clarifications requested by Staff and request that the acceptability of the enclosed, where applicable, be reflected in the upcoming supplement to Seabrook's SER.

Very truly yours,

John DeVincentis
Director of Engineering

Enclosures

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ATTACHMENT 1

11. Building code:

AB = Administration and Service Building
CE = Containment Enclosure Building
CD = Control and Diesel Generator Building
CS = Containment Structure
CT = Service Water Cooling Tower
CW = Service & Circulating Water Pump House
EF = Auxiliary Feedwater House & Electrical Penetration Area
FB = Fuel Storage Building
PB = Primary Auxiliary Building
MF = Main Steam and Feedwater Pipe Chase
CW = Service Water Pump House
TB = Turbine Building
WB = Waste Processing Building
YD = Yard

Arrangement drawings for the buildings in which the systems are located are presented in Section 1.2.

12. Ductwork from the downstream side of the air cleaning units to the fan intakes and discharge of the fans to the building boundaries is Safety Class 3, seismic Category I.

13. Ductwork located within the mechanical equipment room to the boundary of the control room is Safety Class 3, seismic Category I.

14. Motors, valve operators and valve actuators which must operate (run, open or close) in order for the system to perform its safety function are classified as within the scope of the OQAP. Motors or operators which are associated with mechanical components which serve only as part of a pressure boundary are not within the scope of the OQAP.

15. Non-safety class equipment and piping essential for diesel generator operation will be subject to pertinent requirements of the OQAP.

DELETE ENTIRE NOTE 16.

16. This component is NNS, but ~~not~~ fabricated and purchased as Safety Class 3 prior to the final downgrading of the RGWS as NNS in accordance with ANSI/ANS 51.1-1983 requirements.

⊗ The tank support elements should satisfy the requirements of Position 5 of Regulatory Guide 1.143, Rev. 1.

16.

ATTACHMENT 2

a) Detail Locations of ICC Indicators

RESPONSE

Main Control Board Section AF has the following

1. Vessel Level (Dynamic)
2. Vessel Level (Full Range)
3. Incore T/C (Hot Channel CET - 3rd Hottest)
4. Subcool Margin

Main Control Board Section BF has the following

1. Vessel Level (Dynamic)
2. Vessel Level (Full Range)
3. Incore T/C (Hot Channel CET - 3rd Hottest)
4. Subcool Margin
5. Plasma Display

Operator's Desk

1. Plasma Display

b) Status of Technical Specification

RESPONSE

ICC is listed with AMI, Table 3.3-10

c) Can the SM be read when the Computer fails?

RESPONSE

Each of the two computers is fed from a separate vital bus. A single failure of one computer will not prevent SM indication in the Control Room.

d) Alarms on Low SM and High CET

RESPONSE

The VAS will alarm on Low SM. The setpoint is less than $30^{\circ}F$ with a one minute time delay after reactor trip.

The CET's provide input to the SPDS. The SPDS display will flash when a critical safety function status tree limit is exceeded.

ATTACHMENT 3

2. Maintain surveillance of plant operations and maintenance activities to provide independent verification that these activities are performed correctly and that human errors are reduced as far as practicable.

3. Perform independent review and evaluation of plant activities including maintenance, modifications, operational problems, and operational analysis, and aid in the establishment of programmatic requirements for plant activities.

4. Where useful improvements can be achieved, this group will develop and present detailed recommendations to corporate management for such things as revised procedures or equipment modifications.

b. The ISEG is not responsible for sign-off functions such that it becomes involved in the operating organization.

13.4.3.2 Reports

The ISEG will prepare written summaries of reviews and evaluations performed as noted above. These summaries will include the results of, and recommendations resulting from, such reviews and evaluations. Monthly reports containing a summary of work completed and recommendations made will be forwarded to the Executive Assistant to the Senior Vice President, with an information copy to the NHY Senior Vice President. INSERT A

13.4.3.3 Charter

The composition, qualifications, duties and responsibilities, and reporting requirements stated above will be incorporated into the ISEG Charter.

INSERT 'A'

THE EXECUTIVE ASSISTANT TO THE SENIOR VICE PRESIDENT HAS BEEN GIVEN APPROPRIATE AND SUFICIENT AUTHORITY TO ENSURE THAT RESULTS AND RECOMMENDATIONS OF REPORTS ARE ADDRESSED AND ACTED UPON BY THE OPERATING ORGANIZATIONS.

its specific intent. This table also presents the organizations responsible for the preparation, review and approval of Preoperational, Acceptance, Start-up and Special Test procedures. The responsible design organizations or vendors will provide technical support, as requested by their respective on-site organizations, and will either review or specify the acceptance criteria used in these test procedures. The interrelationship of the various organizations during testing activities is discussed in Sections 14.2.4 and 14.2.5. 48

Startup Manager

In order to insure a comprehensive overview of the preoperational test program by the appropriate organizations, a Joint Test Group (JTG) will be formed consisting of site representatives of the Startup Test Department, Seabrook Station Operations Staff, and the Nuclear Services Division (YNSD) of Yankee Atomic Electric Company (YAEC). The ~~representative from the Startup Test Department~~ shall act as chairman of the Joint Test Group. When necessary, personnel from other organizations shall be invited to attend the meetings of the JTG for the purpose of information, coordination, or technical advice. The Nuclear Steam Supply System vendor (Westinghouse), the Architect-Engineer (UE&C), and Construction Manager (UE&C) will provide technical assistance in their areas of specialty as required throughout the test program. 48 52 52

and shall have final responsibility for approval of test procedures and test results.

The JTG will be responsible for the following activities:

a. Review and approval of preoperational test procedures.

b. Review and approval of changes to preoperational test procedures.

c. Review and approval of the results of preoperational tests.

At the time of the start of initial fuel loading, the JTG will be dissolved and the Station Operations Review Committee (SORC) will assume the responsibilities stated above during the initial startup testing. During this portion of the program, the appropriate vendor and design organizations will provide technical assistance during the initial procedure technical review by the Startup Test Department.

All personnel authorized to direct testing during the test program and to approve the procedures used in these tests will be appropriately qualified in accordance with the requirements of Regulatory Guide 1.58 (Revision 1, 9/80) as further clarified in Section 1.8. Personnel authorized to direct preoperational and startup tests (Phases 2 through 6) shall also meet the additional requirements of a Bachelor Degree in Engineering or related science with a minimum of one year experience acquired in testing, operation, and maintenance of power generating facilities for the direction of preoperational tests and a minimum of two years experience for the direction of startup tests. For personnel who do not possess the formal education, this requirement may be waived where upon other factors provide sufficient demonstration of ability. Personnel assigned to the Startup Test Department shall also receive additional training in the administration and requirements of the test program. The qualifications of the station operating and technical staff are discussed in Section 13.1.

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Tests performed as part of or subsequent to loading of fuel into the reactor core are designated as Startup Tests (ST). In addition, Special Test Procedures (STP) will be used for situations which require the performance of a test for investigative or data collection purposes which are not in the original scope of the test program.

Each test specified above will contain as a minimum, the following sections:

a. Test Objectives
b. Prerequisites
c. Special Precautions
d. Initial Conditions (including environmental)
e. Test Instructions
f. Final Conditions
g. Acceptance Criteria

The Test Instructions section of the test will provide data blanks or reference data sheets which specifically identify the data to be recorded in each test. Means will be provided to identify the individuals who witness or record data during each test and the instrumentation used for data collection. Administrative procedures will be provided to specify proper methods for collection and retention of test data.

Table 14.2-1 shows the organizations responsible for the preparation, review and approval of Preoperational, Acceptance, Startup and Special Test procedures. The responsible design organizations or vendors will provide technical support, as requested by their respective on-site organizations, and will either review or specify the acceptance criteria used in these test procedures.

14.2.4 Conduct of the Test Program

The preoperational test program will be administered in accordance with the Preoperational Test Program Description which is prepared by the Startup Test Department and approved by the Joint Test Group participating organizations. Where necessary, due to certain unique activities associated with testing, administrative procedures will be prepared by the Startup Test Department, ~~and~~ reviewed by the Joint Test Group; otherwise, station administrative procedures will be used as applicable during the initial test program. 52 52

, and the Startup Manager shall have final responsibility for approval;

The initial startup program will be administered in accordance with a startup procedure which is prepared by the Startup Test Department and approved by the Station Operations Review Committee. Normal station administrative procedures will be used during the initial startup program. 48

with the Station Manager having final approval responsibility

Prior to the performance of a system preoperational or acceptance test, a test engineer (or engineers) will be assigned by the Startup Test Department to direct the test. For startup tests, Startup Test Department engineers or appropriately qualified station staff technical personnel will be assigned test director responsibility. These individuals will be responsible for insuring that prerequisites are complete, precautions are complied with and initial conditions are established. They will then direct the station operating per- 48

sonnel in the performance of the test and assure all applicable data is recorded. Station operating personnel will be responsible for the safe and proper operation of the plant and its associated equipment throughout the test program. The Shift Supervisor shall take whatever action is necessary including, but not limited to, stopping any test and placing plant equipment in a safe condition.

All field changes to preoperation[illegible] acceptance test procedures shall be approved by the Shift Test Direc[illegible]r to performance. The JTG shall review all such field changes with[illegible]urteen days of implementation. All changes to startup test procedures will be approved in accordance with technical specification requirements. 54

All plant modifications which are initiated as a result of system preoperational or acceptance tests shall be controlled in accordance with the procedure for modifications during plant construction. Any such modifications or repairs will be retested to the requirements of the test procedure. Subsequent to the completion of the system preoperational test, all modifications or repair activities shall be performed and retested in accordance with the normal station administrative procedures for modifications or maintenance as applicable.

14.2.5 Review, Evaluation and Approval of Test Results

Upon completion of each preoperational, acceptance, or startup test, the responsible test engineers shall review the test data for completeness, perform any evaluations or calculations required, and compare the results to the stated acceptance criteria. Any unresolved or incomplete items, including acceptance criteria, shall be described on a summary list of test exceptions. The test results shall then be submitted to the Joint Test Group or Station Operations Review Committee, as applicable for ~~completion~~ review ~~and approval~~. Upon satisfactory review ~~and approval~~ by the Joint Test Group or Station Operations Review Committee, the test will be ~~considered complete pending resolution or completion of any outstanding exceptions by the responsible organization~~. test results approved by the Startup Manager or the Station Manager

results

Prior to the start of fuel loading, a final review will be made by the Joint Test Group of the preoperational test program to insure all required preoperational and acceptance tests have been conducted and test results approved.

If during the course of the peroperational test program it becomes necessary to delay a portion of a preoperational test, such tests will be incorporated into the startup test program if adequate justification is present for delaying the test beyond core load. At this time, only AT-17, Waste Solidification System Test, may be performed subsequent to core loading. This may be required 48

TABLE 14.2-1
(Sheet 3 of 3)

Definitions

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Technical Support

"Technical Support" defines the off-site organizations that will be used to provide technical input for the initial test program, as required.

Legend:

STD	Startup Test Department - New Hampshire Yankee
JTG	Joint Test Group – JTG shall review, the Startup Manager shall approve.
NSS	Nuclear Steam Supply Vendor - Westinghouse Electric Corporation
AE	Architect-Engineer and Construction Manager - United Engineers & Constructors
SS	Station Staff - New Hampshire Yankee
NSD	Nuclear Services Division - Yankee Atomic Electric Company
TG	Turbine Generator Vendor - General Electric Company
SORC	Station Operations Review Committee – SORC shall review, the Station Manager shall approve.

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MOBILE SOLIDIFICATION SYSTEM

INTERFACE

A. GENERAL

New Hampshire Yankee references licensing Topical Report PS-53-0378, Rev. 0, "NUS Process Services Corporation Topical Report on Radwaste Solidification System", for use of the NUS system at Seabrook Station. The following sections address the applicants specific information identified in Section 3.0 of The Safety Evaluation Report, issued on May 30, 1985, by Mr. Cecil O. Thomas, Chief Standardization and Special Projects Branch, Division of Licensing.

NOTE
NUS drawing E-8815-M-2002 is a proprietary document and has not been provided herewith.

B. PLANT INTERFACES

NUS drawing, E-8815-M-2002, diagrammatically illustrates the NUS component relationships and the necessary plant interfaces. The following list further defines the NUS/plant connections.

NUS	NHY (Ref. Fig. 11.4-1, sht. 7)
1 1/2" Waste	WS-HV-10275 or WS-HV-10276
1 1/2" Dewatering	WS-HV-10279
3/4" Water Supply	WS-HV-10277
1" Air Supply	Local plant air tap

The attached sketch, NSG-SK-0001 illustrates a typical equipment arrangement but does not constitute the final arrangement. Final equipment arrangements must consider plant conditions at the time of processing and require final approval by the Station Radwaste/Utilities Supervisor and the NUS Project Manager. Processing activities must also comply with station issued radiation work permits.

Final equipment arrangements will include the following considerations.

1. Radioactive components will be segregated from nonradioactive components, to the extent practical. Sufficient space exists in the area to locate temporary shielding, if required.

2. Spill control methods for the final arrangement will be evaluated prior to processing. Such methods may include but are not limited to absorbants and temporary curbing. Local, permanent plant floor drains are available for incorporation into the spill control technique, if required.

3. NUS maintains the disposable liner at a negative pressure with their vent filtration skid which includes a HEPA filter. The discharge of this unit may be routed to a local building ventilation exhaust duct, if required.

C. WASTE CLASSIFICATION

Compliance with waste classification requirements is specified in the New Hampshire Yankee Process Control Program (PCP). The PCP was transmitted to Mr. V. S. Noonan, Project Director, by SBN-1003, dated April 14, 1986.

The NUS Process Control Program was transmitted via PSNH letter (SBN-1036) dated May 7, 1986.

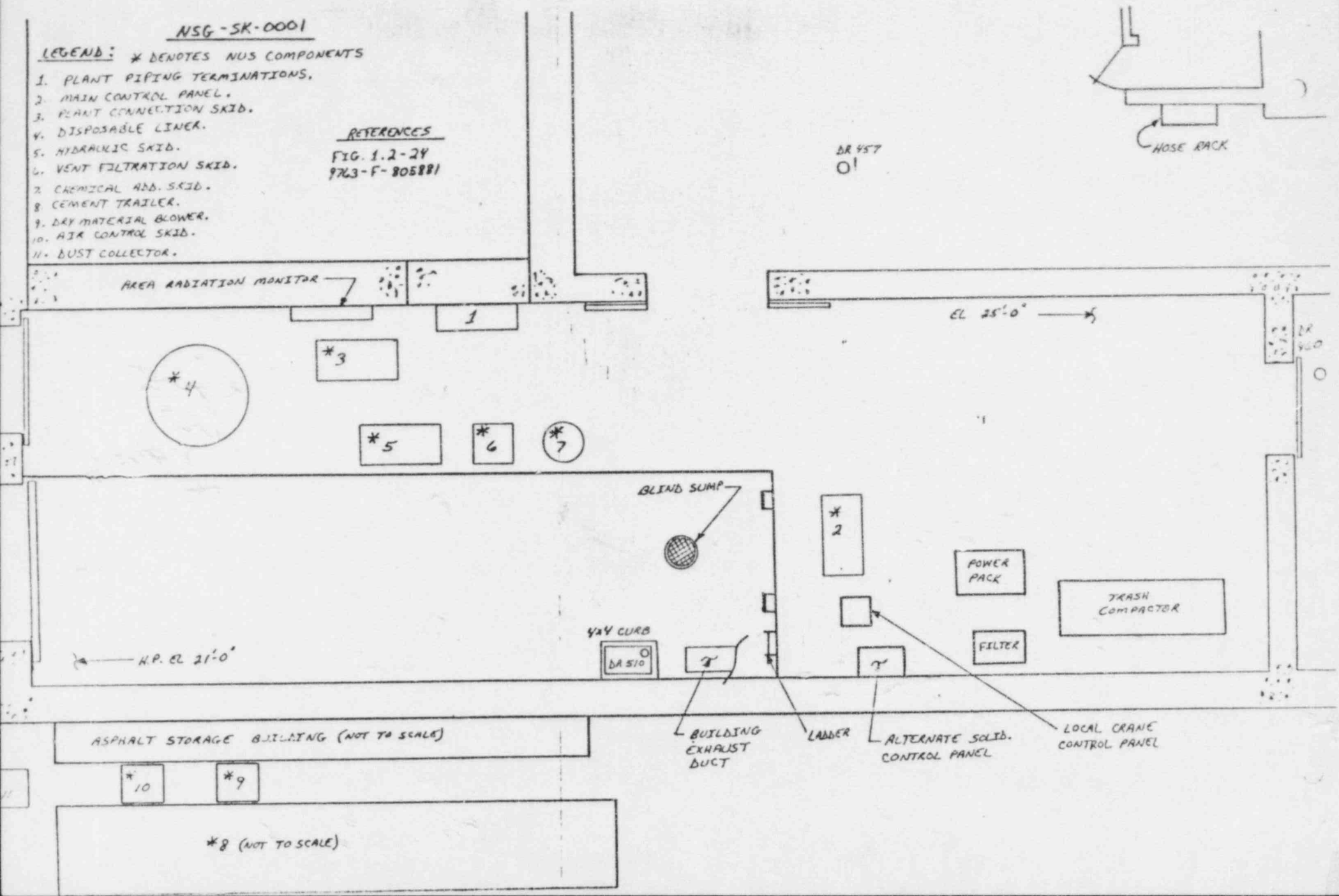
D. WASTE TYPE AND VOLUME

The NUS system will process the same types of "wet" waste as the in-plant system. The "wet" waste volumes and activities are listed in Tables 11.4-2 and 11.4-3.

E. APPENDIX I REVIEW

Waste processing via the mobile system will be performed within the Waste Process Building. This arrangement allows the use of the permanent plant drain system (WLD) and the monitored building ventilation (WAH). Therefore, no additional Appendix I reviews are required.

ATTACHMENT 4


NSG-SK-0001
LEGEND: * DENOTES NUS COMPONENTS
1. PLANT PIPING TERMINATIONS.
2. MAIN CONTROL PANEL.
3. PLANT CONNECTION SKID.
4. DISPOSABLE LINER.
5. HYDRAULIC SKID.
6. VENT FILTRATION SKID.
7. CHEMICAL ADD. SKID.
8. CEMENT TRAILER.
9. DRY MATERIAL BLOWER.
10. AIR CONTROL SKID.
11. DUST COLLECTOR.
REFERENCES
FIG. 1.2-24
9763-F-805881
HOSE RACK
DR 457
AREA RADIATION MONITOR
EL 25'-0"
BLIND SUMP
4x4 CURB
DA 510
POWER PACK
TRASH COMPACTOR
FILTER
H.P. EL 21'-0"
BUILDING EXHAUST DUCT
LADDER
ALTERNATE SOLID. CONTROL PANEL
LOCAL CRANE CONTROL PANEL
ASPHALT STORAGE BUILDING (NOT TO SCALE)
*8 (NOT TO SCALE)

ATTACHMENT 5

ATTACHMENT 5

DIESEL GENERATOR EXHAUST STACKS - TORNADO MISSILE

BACKGROUND

Per the request of the NRC Staff, this additional information regarding the probabilistic analysis of the diesel generator exhaust stacks for tornado missiles is being provided. Our analysis was based on information from the site-specific Seabrook tornado missile analysis, which was prepared by Applied Research Associates, Inc. (Report C569, dated September 1983).

DISCUSSION

In Section 3.5.2 of the Seabrook SER, NRC tornado missile acceptance criterion is given as: "The probability of significant damage to structure, systems, and components required to prevent a release of radioactivity in excess of 10CFR Part 100 following a missile strike, assuming loss of off-site power, shall be less than or equal to a median value of 10^{-7} or a mean value of 10^{-6} per year". It is further stated that the numerical acceptance criteria, 10^{-6} to 10^{-7} per year, satisfies the Standard Review Plan Guidelines for tornado missile failure probability.

An analysis was performed by Seabrook to evaluate the probability of tornado missiles impacting the diesel generator exhaust stacks. The analysis was based on the site-specific Seabrook tornado missile analysis which was reviewed and accepted by the NRC as discussed in Section 3.5.2 of the SER, Supplement No. 4.

Two of the tornado missile targets in the Seabrook specific analysis are on the roof of the diesel generator building. One of the targets is actually the diesel generator exhaust stack openings which penetrate the roof of the diesel generator building. The tornado missile impact probabilities on these targets were then adjusted by the ratio of the actual exhaust stack target area to the area of the target modeled in the Seabrook specific analysis.

The concept of adjusting the tornado missile hit probabilities by ratios of target area was reviewed by the NRC consultant in Appendix J to the SER and was judged to be acceptable.

The major conclusion from our analysis of the diesel generator exhaust is:

- The probability of a tornado missile impacting on a diesel generator exhaust stack is estimated to be about 10^{-6}/year.

The above estimate is a direct result of adjusting results from the site-specific study as previously noted. The estimated tornado missile hit probability on the diesel generator stacks is considered to be conservative for the same reasons as discussed in the site-specific study reviewed and approved in Appendix J to the SER.

DIESEL GENERATOR EXHAUST STACKS - TORNADO MISSILE

Furthermore, the tornado missile impact probability given above does not imply failure of the exhaust stacks in a manner that would preclude diesel generator operation. The design of the exhaust stacks offer additional shielding by the 60" diameter stack which surrounds the 40" diameter actual exhaust stack. If the exhaust stack configuration is penetrated or severed by a tornado missile, the operation of the diesel generator would not be affected. The probability that the exhaust stack configuration would be dented or deformed by a tornado missile such that the reduced flow area results in an increased back-pressure on the diesel generator engine exhaust system which would preclude operability is considered to be lower than that given previously for impacting alone.

CONCLUSION

Based on the above discussion, it is concluded that the diesel generator exhaust stack configurations comply with the NRC probabilistic tornado missile acceptance criterion.

STANDING OPERATING ORDER NO. 86-013

SUBJECT: DIESEL GENERATOR EXHAUST STACKS

86-013 During the months of November through March each Diesel Generator exhaust stack shall be checked periodically after any significant snow fall for snow drifting over the stack rendering the Diesel inoperable. Attached is a copy of the memo explaining the necessity of these checks.

Signed: _____ Date: May 1 6 1978

ATTACHMENT 6

a. The low power psuedo-rod-ejection test will be deleted for Unit 2. (Appendix A, Section 4.c)

b. The power coefficient measurement for Unit 2 will consist of a single measurement at approximately 75% power. (Appendix A, Section 5.a.)

12. Vibration levels of the reactor coolant system and piping reaction to transient conditions are measured during hot functional testing (Appendix A.2.f.)

13. Evaluation of rod scram times for scrams that occur during power ascension will not be performed since no practical method for obtaining this data exists for a Westinghouse PWR. (Appendix A, Section 5.h).

14. The static rod drop test will not be performed at Seabrook. Performance of this test at other facilities has resulted in abnormally high power tilts and large Xenon oscillations and may increase the risk of fuel failure. Performance of this test at plants similar to Seabrook has provided ample data to demonstrate that Westinghouse computer codes are able to adequately predict core thermal and nuclear parameters for RCCA misalignments up to and including full insertion of a single high worth rod. In addition, following performance of this test a Catawba, INPO has recommended that utilities delete this test from their startup programs. (Appendix A, Section 5.f).

15. The psuedo-rod ejection test will not be performed at greater than 10% power at Seabrook. Performance of this test may result in violation of the Technical Specification limits on peaking factor. Since the accident analysis for Seabrook shows the at power ejected rod worth and power peaking factor are bounded by the zero power case, the calculational model will be verified during the pseudo-rod-ejection test at zero power. (Appendix A, Section 5.e).

Regulatory Guide 1.68.2, Rev. 1
Initial Startup Test Program to Demonstrate Remote Shutdown Capability for Water-Cooled Nuclear Power Plants

Since the remote shutdown mode of operation is designed to handle a substantial decay heat load, operation of the residual heat removal system from the remote shutdown panels during the initial test program does not offer sufficient reassurance that Technical Specifications cooldown limits would not be violated while performing the cold shutdown demonstration as described in Regulatory Guide 1.68.2.

The remote shutdown capability of Seabrook Station will be demonstrated in accordance with the intent of Regulatory Guide 1.68.2 except as follows:

1. During the cold shutdown demonstration, reactor coolant system temperature will be reduced approximately 50°F and reactor coolant pressure reduced accordingly to transfer from Technical Specifications Mode 3 to Mode 4.

2. Operation of the RHR system will be initiated from the remote shutdown panels. After RHR system operation has been established, control will be transferred back to the control room, and the remote shutdown demonstration will be concluded.

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Regulatory Guide 1.79, Rev.1
Preoperational Testing of Emergency Core Cooling Systems for Pressurized Water Reactors

The initial test program for the Seabrook Station will be conducted in accordance with the intent of Regulatory Guide 1.79 except for the following:

1. Section C.1.c.(2) specifies that an opening test of the accumulator isolation valves be performed at the maximum differential pressure that the valve will experience using both normal and emergency power supplies. Since the valve operational capability is independent of the source of power and the valve motors are a small fraction of the

TABLE 14.2-3
(Sheet 46 of 49)

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42. INTEGRATED PLANT COOLDOWN FROM HOT FUNCTIONAL TESTS

Objective

To demonstrate the ability to bring the plant from normal operating temperature and pressure to cold shutdown conditions.

Plant Conditions/Prerequisites

The plant is at normal temperature and pressure following the completion of hot functional testing.

Test Method

The plant will be brought to ~~cold~~ HOT shutdown conditions using steam dumps and the residual heat removal system, ~~as required.~~ INSERT 'A' During operation of the residual heat removal system, cooldown rates will be monitored and controlled, and data will be collected to verify its heat removal capability. The cooldown limitations of Technical Specification 3.4.10.1 will not be exceeded. At specific points, the cooldown will be terminated to allow the performance of specified hot functional tests.

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Acceptance Criteria

The plant has been brought to cold shutdown conditions in accordance with normal plant operating procedures.

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INSERT 'A'

, FROM OUTSIDE THE CONTROL ROOM. AFTER INITIATION OF RESIDUAL HEAT REMOVAL SYSTEM COOLING, THE PLANT WILL BE FURTHER COOLED an additional ↓50°F. AFTER THE additional ↓50°F COOLDOWN, CONTROL WILL BE TRANFERED BACK TO THE CONTROL ROOM.