NORTHEAST UTILITIES

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

General Offices • Selden Street, Berlin, Connecticut

P.O. BOX 270
HARTFORD, CONNECTICUT 06141-0270
(203) 666-6911

June 29, 1984

Docket No. 50-423
B11251

Director of Nuclear Reactor Regulation
Mr. B. J. Youngblood, Chief
Licensing Branch No. 1
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

References: (1) B. J. Youngblood to W. G. Counsil, Request for Additional Information for Millstone Nuclear Power Station, Unit No. 3, dated January 16, 1984.

(2) B. J. Youngblood to W. G. Counsil, Request for Additional Information for Millstone Nuclear Power Station, Unit No. 3, dated May 31, 1983.

(3) W. G. Counsil to B. J. Youngblood, Submittal of Revised Responses to PSB Mechanical Series Questions, dated April 6, 1984.

(4) W. G. Counsil to B. J. Youngblood, Summary/Submittal of Revised Responses to PSB Mechanical Series Questions, dated May 8, 1984.

(5) W. G. Counsil to B. J. Youngblood, Summary/Submittal of Revised Responses to PSB Mechanical Series Questions, dated May 1, 1984.

Gentlemen:

Millstone Nuclear Power Station, Unit No. 3
Submittal of Revised Responses to PSB
Mechanical Series Questions

Enclosure 3 of Reference (1) requested additional information on many of the responses to questions asked in Reference (2). References (3), (4) and (5) responded to all open items. As a result of further discussions, revised responses or back-up references are being forwarded on the following responses. Below is a summary of the revisions provided in Attachment 1.

430.62 - Revision to Table 430.62-3 provided. As agreed upon with the NRC during a June 21, 1984 meeting, this item is confirmatory based upon the

B001
1/1

commitment made per the revision and agreement to hold a site inspection of emergency illumination levels present in access/egress areas and work stations August 6, 1984.

430.73 - Revised response provided

430.114 - Revision to pg. 9.5-30j (referenced in question response) provided

430.133 - Back-up reference documents provided

If you have any questions, please contact our licensing representative directly.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY,
et. al.

BY NORTHEAST NUCLEAR ENERGY COMPANY,
Their Agent

W. G. Counsil
Senior Vice President

STATE OF CONNECTICUT)
) ss. Berlin
COUNTY OF HARTFORD)

Then personally appeared before me W. G. Counsil, who being duly sworn, did state that he is Senior Vice President of Northeast Nuclear Energy Company, an Applicant herein, that he is authorized to execute and file the foregoing information in the name and on behalf of the Applicants herein and that the statements contained in said information are true and correct to the best of his knowledge and belief.

Notary Public My Commission Expires March 31, 1986

TABLE Q430.62-3

WORK STATIONS/LIGHTING LEVELS(1)

Work Stations	Estimated Footcandle Levels: Normal Lighting	Essential Ac (O)(2)	Essential Ac (P)(2)	Dc 8-Hr Battery Packs
Main Control Room (Operating Area)	Note A	Note A	Note A	3(3) (4)
Auxiliary Shutdown Panel	20(3)	~~N/A~~ 10(3)	10(3)	4(3) (4)
Emergency Generator Control Panel				
(O)	20(3)	Note B(3)	N/A	4(3) (4)
(P)	20(3)	N/A	Note C(3)	4(3) (4)

NOTES:

1. Average maintained, floor level unless otherwise specified.

2. (O) = Orange Train
   (P) = Purple Train

3. Average maintained, on vertical panel or board surface, within seeing task area.

A. 100 footcandles - half (O), half (P); dimmer controlled.

B. 10 footcandles, all (O).

C. 10 footcandles all (P).

revision

4. PORTABLE BATTERY POWERED LANTERNS ARE AVAILABLE TO SUPPLEMENT THE 8-HR BATTERY PACKS AS REQUIRED.

Question Q430.73 (Section 3.2, 9.5.4, 9.5.5, 9.5.6, 9.5.7. and 9.5.3;

The FSAR text and Table 3.2-1 indicates that the components and piping systems for the diesel generator auxiliaries (fuel oil system, cooling water, lubrication, air staring, and intake and combustion system) that are mounted on the auxiliary skids are designed seismic Category I and are ASME Section III, Class 3 quality to the extent possible. The engine mounted components and piping and certain other components listed in the various sections of 9.5 are designed and manufactured to DEMA standards and/or manufacturer's standards and are seismic Category I. This is not in accordance with regulatory guide 1.25 which requires the entire diesel generator auxiliary systems be designed to ASME Section III, Class 3 or Quality Group C. You also state that the figures in Section 9.5 show where quality group classification changes are. The figures do not provide this information. Provide the following: (a) the industry standards that were used in the design, manufacture, and inspection of the engine where the Quality Group Classification changes form Quality Group C and where the Seismic Category I portions of the system are located. Sections 9.5.4 through 9.5.8 define certain pumps, filters, strainers, valves, and subsystems in the diesel generator auxiliary systems as Quality Group D or not applicable with regards to Quality Group Classification. It is our position that all components and piping in the diesel generator auxiliary systems be designed to Seismic Category I, ASME Section III, Class requirements. Comply with this position or justify noncompliance.

Response:

Regulatory guidance from Regulatory Guide 1.26, Revision 3, Positions C.1 and C.2 was used when determining the quality group classification of the diesel engine and its auxiliary support systems. As noted in the regulatory guide discussion section, "other systems not covered by this guide such as instrument and service air, diesel engine and its generators and auxiliary support systems... should be designed, fabricated, erected and tested to quality standards commensurate with the safety functions to be performed."

The diesel engine and its engine-mounted portions of the auxiliary piping are designed to Seismic and QA Category I requirements and follow the guidelines of DEMA standards, which are endorsed by Regulatory Guide 1.9 and IEEE Standard 367.

Figures Q430.73-1 through Q430.73-4 show the on skid and off skid portions of piping systems and components. All piping and components are designed to Seismic and QA Category I requirements. As can be seen from Figures (Q430.73-1 through Q430.73-4, the piping up to the diesel skid interface is ASME 3. Class 3 for all auxiliary piping. The majority of on skid and engine piping is also ASME 3, Class 3. The engine and skid-mounted piping that is not ASME 3, Class 3 is designed to manufacturer's standards.

The engine manufacturer has taken the position that the piping system integral to the engine, such as the Lube Oil distribution header, jacket water distribution header, rocker are distribution system, etc., are a proprietary design, and can not be made to ASME Section III, Class 3 requirements as such. These

components are designed to a specific purpose and situation. They are inspected to meet engineering drawings and tested to Colt's rigid quality standards including hydrostatic pressure requirements, leakage at joints, etc. Furthermore, on this particular engine design, the components are made to drawing provided by the engine licensor, and Colt is not permitted to deviate from that design without his consent and design input.

An indication of typical materials used and margin between design pressure and working pressure for the on-engine piping is shown in table 430.73.1.

These materials are standard for power industry applications and are equivalent to ASME Section III Class 3 material requirements.

The piping and associated components are conservatively designed to provide low working stresses for this applications, and assure reliability of the diesel engine. This can be seen by the wide margin between working pressures and allowance pressures for given pipe sections, as shown on Table 470.73-1.

Table 430.73-1

AIR STARTING SYSTEM

O.D. (in.)[4]	Material Spec[4]	Wall Thickness (in.)[4]	Wall Thickness Required for System Pressure[2]	ANSI B31.1/ ASME III Allowable Pressure[3]	System Working Pressure
2.375	A53	.218	.07767	1150.	450
1.9	A120XS	.145	.04657	1270.	450
1.875	MT1020	.188	.05493	1460.	450
1.75	A513	.156	.04127	1650.	450
.625	A254C1	.049	.02170	975.	450
.375	MT1010	.049	.01365	1465.	450

JACKET WATER SYSTEM

O.D. (in.)	Material Spec	Wall Thickness (in.)	Wall Thickness Required for System Pressure[2]	ANSI B31.1/ ASME III Allowable Pressure[3]	System Working Pressure
4.0	MT1018[1]	.188	.01174	925.	60.
.375	MT1010	.095	.00186	3125.	60.

FUEL OIL SYSTEM

O.D. (in.)	Material Spec	Wall Thickness (in.)	Wall Thickness Required for System Pressure[2]	ANSI B31.1/ ASME III Allowable Pressure[3]	System Working Pressure
1.5	MT1018[2]	.120	.00257	1560.	35.
1.0	MT304	.065	.00155	1545.	35.
.75	MT1010	.095	.00218	2505.	35.
.5	MT304	.049	.00078	2135.	35.
.25	MT304	.035	.00039	3155.	35.

NOTES:

(1) Material properties for ASTM MT1018 not available, material properties for ASTM 1018 used.

(2) Wall thickness required to restrain system pressure calculated using equations and procedures from ANSI B31.1-1973 and ASME codes. Most conservative fabrication and material properties were assumed.

(3) Maximum system pressures allowed for as delivered pipe using method and equations from ANSI B31.1 and ASME codes. Most conservative fabrication and material properties were assumed.

(4) From Colt Industries.

Table 430.73-1 cont'd.

LUBE OIL SYSTEM

O.D. (in.)	Material Spec	Wall Thickness (in.)	Wall Thickness Required for System Pressure[2]	ANSI B31.1/ ASME III Allowable Pressure[3]	System Working Pressure
3.5	MT1018[1]	.120	.02049	645.	120
1.625	MT1018[1]	.25	.00951	3175.	120
1.5	MT1010	.120	.01488	915	120
1.25	MT1018[1]	.25	.00732	4290	120
1.1875	MT1018[1]	.156	.00695	2665	120
1.0	MT1020	.095	.00795	1375	120
.75	MT1010	.065	.00744	1000	120
.625	MT1010	.065	.00620	1215	120
.375	MT1010	.065	.00372	2005.	120
.5	MT1010	.065	.00496	1550.	120
.25	MT1010	.049	.00248	2305.	120

TURBOCHARGER WATER PIPES

O.D. (in.)	Material Spec	Wall Thickness (in.)	Wall Thickness Required for System Pressure[2]	ANSI B31.1/ ASME III Allowable Pressure[3]	System Working Pressure
4.0	MT1018[1]	.188	.01174	925.	60
2.375	A120-S	.154	.00789	1070.	60
1.646	A120-S	.140	.00547	1425.	60
1.375	A120-S	.133	.00457	1635.	60
1.0	MT1018[1]	.188	.00293	3990.	60

INJECTOR COOLING SYSTEM

O.D. (in.)	Material Spec	Wall Thickness (in.)	Wall Thickness Required for System Pressure[2]	ANSI B31.1/ ASME III Allowable Pressure[3]	System Working Pressure
1.315	A120-S	.179	.00364	2370.	50
1.125	MT1010	.065	.00467	650.	50
.375	MT1010	.065	.00156	2005.	50

NOTES:

(1) Material properties for ASTM MT1018 not available, material properties for ASTM 1018 used.

(2) Wall thickness required to restrain system pressure calculated using equations and procedures from ANSI B31.1-1973 and ASME codes. Most conservative fabrication and material properties were assumed.

(3) Maximum system pressures allowed for as delivered pipe using method and equations from ANSI B31.1-1973 and ASME codes. Most conservative fabrication and material properties were assumed.

(4) From Colt Industries.

Insert A

A low-pressure alarm on the local panel and a local panel trouble alarm on the main control board are provided to alert personnel when the rocker arm lubricating oil pressure falls below the manufacturer's recommended minimum. Upon actuation of this alarm the rocker arm lube oil reservoir level and the rocker arm lube oil duplex filter pressure differential will be checked and corrective action taken to maintain operability of the rocker arm lube oil system. Insert B

430.114

Actuation of the low lube oil pressure switch will energize an annunciator and give an alarm that the lubricating oil pressure has reached a dangerously low level. Actuation of any two (2) of these low lube oil pressure switches will shutdown the engine.

High- and low-temperature alarms are provided to alert personnel when the oil temperature rises above, or falls below, the operating range recommended by the manufacturer.

The following annunciators are on each emergency generator local panel:

- Moisture detector circulating pump motor thermal overload or loss of control power
- Lube oil moisture content high
- Rocker arm lube oil pressure low
- Crank case pressure high
- Lube oil sump temperature low
- Lube oil sump level low
- Lube oil temperature high
- Rocker arm reservoir level high
- Lube oil pressure low

430.114

An emergency generator local panel trouble annunciator for each panel is located on the main control board and is alarmed whenever a respective local panel annunciator is alarmed.

9.5.8 Emergency Generator Combustion Air Intake and Exhaust System

The emergency generator combustion air intake and exhaust system supplies filtered air to the emergency diesel engine fo combustion and releases exhaust gases to atmosphere. (Figure 9.5-3)

Air is supplied from outside through filter and silencer to the diesel engine and is exhausted through a muffler to atmosphere. The system is QA Category I, Nuclear Safety Related except for the pipe from the muffler to the atmosphere which is QA Category II.

Q 430.114

INSERT A

A float valve connected to the main lube oil header provides make up oil to the Rocker Arm Lube Oil resevoir and maintains the level above the manufacturers recommended minimum.

INSERT B

The Diesel Engine manufacturer has indicated that the low pressure switch in the Rocker Arm lube oil system provides an indication of low level in the oil resevoir. This low pressure indication is sufficient to warn the operators of low lube oil level. In addition, the rocker arm lube oil reservoir level will be checked in accordance with manufacturer's recommendations prior to any manual start, directly on engines on standby and daily on operating engines.

COPY

April 11, 1983

ZCZC MA 002 UG BOSTON MA 1 APR 1983
X 26-0007 COLTFMOFF BELT
COLT INDUSTRIES
POWER SYSTEMS DIV.
ATTN: G. W. OLSON
BELOIT, WISC.
?12179?
BT
PURCHASE ORDER NO. 2447.300-241
EMERGENCY DIESEL GENERATOR SYSTEMS
MILLSTONE NUCLEAR POWER STATION - UNIT 3
NORTHEAST UTILITIES SERVICE COMPANY

WE UNDERSTAND THAT A DEGRADED CONDITION EXISTS FOR THE EMERGENCY DIESEL GENERATORS AS A RESULT OF INTAKE AIR TEMPERATURE OF LESS THAN 50-DEGREE-F FOR FULL SPEED NO LOAD OPERATION. PLEASE RESPOND WITH THE FOLLOWING CURVES AND INFORMATION: 1. TYPE OF DEGRADATION EXPECTED AT FULL-SPEED NO-LOAD WITH LOW AMBIENT AIR TEMPERATURE (DETERIORATION IN ITS LOAD ACCEPTANCE OR LAOD CARRYING CAPABILITY?)
LEVEL OF DEGRADATION VS. PERCENTGE OF FULL-LOAD APPLIED TO A FULL-SPEED NO-LOAD CONDITION WITH AMBIENT INTAKE AIR AT MINUS-17-DEGREES AND ZERO-DEGREES-F. PLEASE MAKE RECOMMENDATIONS FOR IMPROVING THIS CONDITION. WE EXPECT YOUR REPLY BY APRIL 6.

C. NARDELLA
STONE & WEBSTER ENGINEERING CORPORATION

TLX 94-0001 STOWEBEN BSN B
NNNN
ZCZC 003 PD BOSTON MA 1 APR 1983 CBS026598
PMS COLT INDUSTRIES DISTRICT OFFICE
ATTN: R.A. DUDLEY
20 PROVIDENCE ST.
RM.#477 STATLER OFFICE BLDG.
BOSTON, MA. 02116

Copy to: SOrefice - 2
JOCrockett

RAckley
AADasenbrock
MBoyden
OWLowe
SStamm
PReilly
GMSchierberg-3
JGrove/File 2447.300-241
JGrove/Chrono File
LDMichielutti
CNardella
MGentry(Site)
JSorrentino
LFusegni

Colt Industries

NOTE: MAY 10 1983 RIC...

Fairbanks Morse
Engine Division
701 Lawton Avenue
Beloit, Wisconsin 535...
608 364-44...

(2C6072)182

April 28, 1983

Stone & Webster Engineering Corp
P.O. Box 2325
Boston, MA 02107

Attention: Mr. Coss Nardella

Subject: P.O. No. 2472.300-241
Emergency Diesel Generators
Millstone Nuclear Power Station - Unit 3
Northeast Utility Service Company
No-Load Operation

Reference: (a) Stone & Webster Wire Dated April 1, 1983

Enclosure: (1) Colt Letter 9/11/75 to NRC

Gentlemen:

Our response to your referenced wire follows:

1. There is no degradation of the engine's ability to accept and carry load after operation at full speed no load conditions as required by the Stone & Webster specifications.

2. There is no degradation as stated above.

We assume your questions originate from information which Colt previously furnished to the Public Service of New Hampshire, Seabrook Nuclear Plant. The information given to PSNH was in response to a specific question as to how to minimize the accumulation of unburned combustion products over a longer period of no load operation.

Colt's recommendation is unchanged from that taken in our letter to Mr. Fred Clemenson of the Nuclear Regulatory Commission dated 9/11/75. A copy of this letter is attached for your information and files.

We consider this to be a complete response to your referenced wire and trust you will find this information useful.

Yours very truly,

COLT INDUSTRIES OPERATING CORP
FAIRBANKS MORSE ENGINE DIVISION

G. W. Olson
Supervisor, Contract Administration

GWO/jeh

cc: W. Gardell
J. Balderston
R. A. Dudley, Boston
W. T. Hailey
G. E. Lanzendorfer
J. M. Moriarty
V. T. Stonehocker