REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:8402150345 DOC.DATE: 84/02/10 NOTARIZED: YES DOCKET #
FACIL:50-410 Nine Mile Point Nuclear Station, Unit 2, Niagara Moha 05000410
AUTH.NAME AUTHOR AFFILIATION
LEMPGES,T.E. Niagara Mohawk Power Corp.
RECIP.NAME RECIPIENT AFFILIATION
SCHWENCER,A. Licensing Branch 2

SUBJECT: Forwards proprietary & nonproprietary structural audit open issue close out info,Affidavit requesting proprietary status for info encl.Proprietary info withheld.

DISTRIBUTION CODE: B001S COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 27+54
TITLE: Licensing Submittal: PSAR/FSAR Amdts & Related Correspondence

NOTES:PNL 1cy FSAR'S & AMDTS ONLY. 05000410

	RECIPIENT ID CODE/NAME		COPIES LTTR	COPIES ENCL	RECIPIENT ID CODE/NAME		COPIES LTTR	COPIES ENCL
	NRR/DL/ADL		1	0	NRR LB2 BC		1	0
	NRR LB2 LA		1	0	HAUGHEY,M	#2	1	1
INTERNAL:	ELD/HDS3		1	0	IE FILE	#3	1	1
	IE/DEPER/EPB	#15,16,17	3	3	IE/DEPER/IRB	#4	1	1
	IE/DQASIP/QAB	#18	1	1	NRR/DE/AEAB		1	0
	NRR/DE/CEB	#19	1	1	NRR/DE/EHEB	#5	1	1
	NRR/DE/EQB	#20,21	2	2	NRR/DE/GB	#6+7	2	2
	NRR/DE/MEB	#22	1	1	NRR/DE/MTEB	#8	1	1
	NRR/DE/SAB	#23	1	1	NRR/DE/SGEB	#9	1	1
	NRR/DHFS/HFEB	#24	1	1	NRR/DHFS/LQB	#10	1	1
	NRR/DHFS/PSRB	#25	1	1	NRR/DL/SSPB		1	0
	NRR/DSI/AEB	#26	1	1	NRR/DSI/ASB	#11	1	1
	NRR/DSI/CPB	#27	1	1	NRR/DSI/CSB	#12	1	1
	NRR/DSI/ICSB	#28	1	1	NRR/DSI/METB	#13	1	1
	NRR/DSI/PSB	#29	1	1	NRR/DSI/RAB	#14	1	1
	NRR/DSI/RSB	#30	1	1	REG FILE	#1	1	1
	RGN1	#31,32,33	3	3	RM/DDAMI/MIB		1	0
EXTERNAL:	ACRS	#34thru39	6	6	BNL(AMDTS ONLY)		NPO	NPO
	DMB/DSS (AMDTS)		NPO	NPO	FEMA-REP DIV 39		NPO	NPO
	LPDR	03	NPO	NPO	NRC PDR	02	1	1
	NSIC	05	NPO	NPO	NTIS		NPO	NPO
NOTES:			1	1				

TOTAL NUMBER OF COPIES REQUIRED: LTTR 54 ENCL 47

[illegible]

NIAGARA MOHAWK

NIAGARA MOHAWK POWER CORPORATION/300 ERIE BOULEVARD WEST, SYRACUSE, N.Y. 13202/TELEPHONE (315) 474-1511

February 10, 1984
(8037)

A. Schwencer, Chief
Licensing Branch No. 2
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Schwencer:

RE: Nine Mile Point Unit 2
Docket No. 50-410

Enclosed for your review are eight copies of information to close out certain open issues of the NRC Structural Audit. During the Structural Audit of December 12 through 16, 1983 we committed to provide this information.

Attachment A provides the non-proprietary information. Attachment B provides an affidavit requesting proprietary status for information in Attachment C which is considered proprietary by Stone and Webster Engineering Corporation.

Sincerely,

T E Lempges

Mr. T. E. Lempges
Vice President of Nuclear Generation

TEL/NLR:1f

Attachment

cc: A. F. Zallnick, Jr.
C. V. Mangan
M. Haughey
W. Morrison
S. Z. Doyle (File)
R. Pinney (CHOC)

Limited Distribution Prop

B001
1/7 Prop
7NP

Change: BNL
DMB/DCS
FEMA
LPDR
TDR
NSIC
NTIS
} Non Prop Only

ATTACHMENT A

NINE MILE POINT UNIT 2

NRC REQUEST NO. 1

Verify and confirm the design of all structures affected by SRV and hydrodynamic loading.

RESPONSE

The design of structures within the reactor building will be verified for the SRV and hydrodynamic loading during the load verification stage. Structures within the reactor building either are designed for conceptual (i.e., preliminary) SRV and hydrodynamic loading or are provided with an adequate design margin, which should account for future load verification.

Based on current schedule, the load verification for the reactor pedestal is planned to be completed by June 1984. The load verification for other structures will be completed by September 1985. The NRC will be notified of the results of this verification upon completion.

NRC REQUEST NO. 2

Provide an assessment of the significant differences between the requirements of ACI 349, as augmented by the NRC Regulatory Guide 1.142 and the requirements of ACI 318-77. (Reference NRC Q Nos. 220.31 and 220.33).

RESPONSE

Results of an assessment of the significant differences between the codes used in NMP2 design versus those referenced in NRC Regulatory Guide 1.142, Revision 1, will be submitted by June 1984.

NRC REQUEST NO. 3

Review the effect of vertical floor flexibility in the analysis of equipment and floor designs.

RESPONSE

An assessment of the effect of vertical floor flexibility in the analysis of equipment and floor designs will be performed and submitted by June 1984.

NRC REQUEST NO. 4

Provide a summary of cable tray support calculation methodology for the supports attached to floor and ceiling.

RESPONSE

ELECTRICAL TUNNEL CABLE TRAY SUPPORTS ATTACHING FLOOR TO CEILING

Summary

The most critical cable tray support type FP87 was reanalyzed to include differential movement of the top (roof) slab relative to the base. The support at the top of the slab was modeled first as pinned, which was the condition used in the original design calculation. all stresses were found to be acceptable. The second case assumed the support to be fixed and stresses were still found to be acceptable.

Analysis

1. Static Analysis - Dead loads from the members and cable tray loadings were included. Differential slab movement of the top slab relative to the base was also statically analyzed by treating the OBE profile (maximum) displacements as support displacements. This is a conservative approach, since the profile displacements are the maximum values of the actual displacements.

2. Dynamic Analysis - A lump mass model was used to perform the dynamic analysis. The response spectra of the roof slab were input into the analysis. OBE being the most critical seismic case (after considering load factors), was used. Member forces and moments were determined by using modal superposition and SRSS of the responses.

Design

All members were checked and found to be within allowable stress limits for both cases (top support, fixed, and pinned). Results of the computer run for static were added by absolute sum method to the SRSS of dynamic stresses.

ELECTRICAL TUNNEL TRAY SUPPORTS WITH DISPLACEMENT

Summary of Results

Verticals

	Original Design	W/Differential Movement - Pinned	W/Differential Movement - Fixed
Axial Load	0.7 K	1.1 K	1.1 K
Bending Moment*	10.1 IN-K	9.6 IN-K.	21.9 IN-K
Combined Stress Equation*	0.3	0.35	0.67

*NOTE: The original design has a higher moment than the pinned, differential movement design because of a conservative, simplifying used assumption used during the original analysis.

Horizontals

For all designs, the vertical member stresses govern the shape selection. Therefore, for horizontal members using the same members as verticals is adequate.

Vertical Connection

NOTE: The design of vertical connection governs over Horizontal to connection.

	Allowable Loads - Connection Capacity	Original Design	W/Differential Movement - Pinned	W/Differential Movement - Fixed
Shear	2.0 K	0.5 K	0.4 K	0.77 K
Axial	1.5 K	0.7 K	1.1 K	1.1 K

*Combined stress equation $\frac{Fa}{Fa\ allow} + \frac{Fb}{Fb\ allow} \leq 1.0$ Similar to AISC 1.6-1a

NRC REQUEST NO. 6

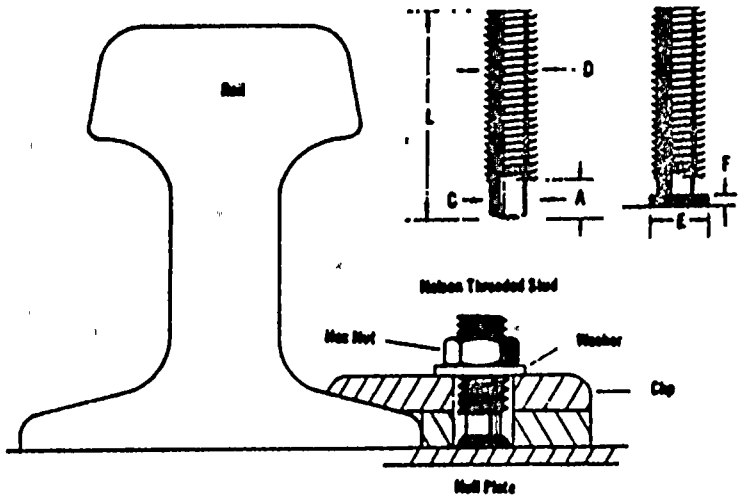
Provide data on strength, material type, and mechanical properties of Nelson studs used in NMP2 polar crane rail support design.

RESPONSE

Nelson studs Type CPL, 7/8-inch diameter threaded studs are used in fastening polar crane rail supports. This method of fastening offers easy installation, reduced maintenance, and added safety during installation and operation. The attachment provides the data on material composition, type, strength, etc, from the catalog, Nelson - Construction Applications in Power Generating Plants by (TRW - Nelson Division).

APPLICATION 10 STEEL MILLS

NELSON® STUDS FOR SECURING CRANE RAILS



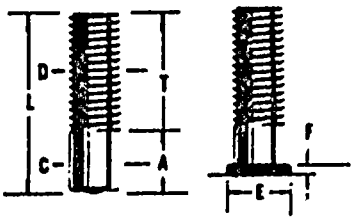
NELSON PITCH DIAMETER BASE AND FULL BASE THREADED STUDS FOR SECURING OVERHEAD CRANE RAILS — Used with a variety of clips designed for particular situations. NELSON pitch diameter and full base threaded studs provide overhead crane rail fastening that offers speed of installation, added safety, and reduced maintenance at lower cost.

*STANDARD STUD DIMENSIONS

CPL PITCH DIAMETER BASE STUDS

D Thread Diameter	L Std. Min. Length	C	A	E Weld Fillet Diameter	F Weld Fillet Height
5/8	1-1/4	9/16	5/8	3/4	3/16
3/4	1-1/2	11/16	51/64	59/64	1/4
7/8	1-3/4	51/64	55/64	1-3/64	5/16
1	2-1/2	59/64	59/64	1-3/16	3/8

*Available in required lengths above specified minimum.



HBL FULL BASE THREADED STUDS

*STANDARD STUD DIMENSIONS

D Thread Diameter	L Std. Min. Length	C	A	T Thread	E Weld Fillet Diameter	F Weld Fillet Height
5/8	1-1/16	5/8	3/8	1-1/2	7/8	3/16
3/4	1-1/4	3/4	1/2	1-3/4	1-1/16	1/4
7/8	1-1/2	7/8	5/8	1-3/4	1-1/8	5/16
1	1-41/64	1	3/4	1-3/4	1-3/8	3/8

BENEFITS:

- **FASTER RAIL INSTALLATION** — All installation is topside — no underneath staging or scaffolding — unnecessary to back up nuts with wrench on underside.

- **QUALITY ASSEMBLY AT LOWEST COST** — Weaknesses in craneway sections caused by drilled or punched holes is eliminated.

- **REDUCED MAINTENANCE** — Less corrosion because holes are eliminated.

- **SAFER** — Drop out of bolts, due to loosening in service or assembly, is eliminated.

Printed in U.S.A.

TABLE OF CONTENTS

GENERAL INFORMATION

Basic engineering specifications which cover all of the studs listed in this publication regardless of size or shape are detailed below.

STUD DIMENSIONS (After Weld Length)

The length dimension (L) carried throughout the specifications is the overall length of the stud Before Weld The After Weld length will be shorter dependent upon the size of the stud as shown in the following table.

STUD DIAMETER	LENGTH REDUCTION
3/16" Dia. Through 1/2" Dia	1/8"
5/8" Dia Through 7/8" Dia	3/16"
1" Dia. and Over	3/16" - 1/4"

MATERIALS

All of the studs shown are available in mild or stainless steel. When a stud is stocked, the steel grade it is stocked in is indicated.

The low carbon steel or mild steel studs conform within reasonable limits to the analysis shown.

C - 0.23% Max. P - 0.040% Max.
Mn - 0.90% Max. S - 0.050% Max.

Stainless Steels: Stainless steels most commonly used are types 304 or 305 Other grades of 300 series stainless steels are available (except SS-303) when required.

Aluminum: In aluminum, alloy 5356 is most commonly used for stud welding and alloy 1100 for Stored Arc.

THREADS

The standard threads on studs are UNC-2A. Prior to Plating. Other threads are available on request. Standard maximum thread length is 3".

FLUX

Nelson Studs 5/16" diameter and over are solid fluxed. Below 5/16" diameter solid flux or non fluxed studs are available upon request. The rectangular studs shown in this publication are not fluxed.

ANNEALING

Nelson Studs can be annealed to a maximum of 75 Rockwell B for low carbon steel and 90 Rockwell B for Stainless Steel An extra charge is applicable for annealing and will be quoted if desired. Typical stainless steel 304 or 305 properties as annealed are as follows

Tensile (uH) 75,000 psi
Yield 30,000 psi
Elongation 40%

ORDERING

Each stud ordered should be listed separately along with the appropriate ferrule. The stud style should be specified as well as the length, diameter, material and quantity required

Your Nelson representative will be happy to advise you on the accessories required for welding the stud ordered He is also available to aid in determining the proper anchor type and placement.

DELIVERIES

Delivery on stock items will be made within 3 days following date of receipt of an order Non-stock items or special items which require manufacture will be acknowledged in writing with a delivery promise

EXTRA CHARGES

A non-stock or special stud that requires manufacture may be subject to a set-up charge for setting dies onto the machines and changing production processes.

With approval by Nelson, a non-stock item may be given production priority if required before the acknowledged delivery date. Should such service be required and approved the customer will be charged an extra "break-in" fee for this service.

Stock items are not subject to additional charges

Packing other than standard and export packing is subject to extra charge and quotation will be made on request.

For stud diameters, lengths and materials other than shown — Consult your Nelson Field Sales Representative.

***Note: ATS and ATC Studs (Spec. 27) are supplied only in an annealed condition with physical properties as listed.**

MECHANICAL PROPERTIES: Minimum Expected Values (as cold drawn)

STUD TYPE	TENSILE (ultimate)	YIELD	REDUCTION OF AREA	ELONGATION
CPL, CFP, CFP FFP, NBL, 1/4" and 3/8" Dia. H4L, R6P, R7P CKL, L2I, S6L, F3L	55,000 psi	50,000 psi	50%	20%
Stainless 304 & 305 Studs	85,000 psi	40,000 psi	50%	35%
D2L (ASTM A-496)	80,000 psi	70,000 psi	—	—
*ATS	75,000 psi	30,000 psi	50%	40%
*ATC	50,000 psi	35,000 psi	50%	40%
S3L 1/2" and 5/8" Dia. H4L	60,000 psi	50,000 psi	50%	20%

NRC REQUEST NO. 7

Provide a summary of how cable (rope) slack is considered in the containment polar crane design.

RESPONSE

Dynamic analysis of the polar crane considered trolley positions at mid-span (MID), at quarter-span, and at the end of span (END); with the load positioned at maximum lift (UP), i.e., highest elevaiton, at minimum lift (DOWN) and with no load. the trolley at quarter span analysis was discontinued when it became apparent that stress levels would be lower than other load conditions.

The attached table summarizes the rope accelerations under OBE and SSE seismic loading for the preceding various conditions.

The maximum dynamic acceleration alone had a value of 1.01 g, which when considered against 1 g gravity loads results in a stable rope situation, with essentially no differential acceleration and no slack-rope condition.

NINE MILE POINT UNIT 2

SUMMARY OF POLAR CRANE ROPE LOADS

OBE

Load Position	Dynamic Acceleration (Gs)	Static and Dynamic Acceleration (Gs)
MID/UP	0.63	1.63
MID/DOWN	0.48	1.48
END/UP	1.00	2.00
END/DOWN	0.44	1.44

SSE

Load Position	Dynamic Acceleration (Gs)	Static and Dynamic Acceleration (Gs)
MID/UP	0.68	1.68
MID/DOWN	0.61	1.61
END/UP	1.01	2.01
END/DOWN	0.54	1.54

NRC REQUEST NO. 9

Revise response to NRC Question 220.28 based on reviewing a seismic Category I structure for an additional torsional moment resulting from additional eccentricity of 5 percent of the maximum building dimension.

RESPONSE

See revised response to NRC Question 220.28.

QUESTION F220.28 (SRP 3.7.2-II.11)

To account for accidental torsion, the SRP states that an additional eccentricity of ±5 percent of the maximum building dimension at the level under consideration should be assumed in the seismic analysis of Category I structures. For Nine Mile Point 2, however, the accidental torsion effects for the additional ±5 percent were not considered in the analysis. Provide an assessment of the adequacy of the analysis considering the effects of accidental torsion.

RESPONSE

As explained in Section 3.7.2.1.1A, the seismic analyses of Category I structures consider the effects of actual eccentricities between the centers of rigidity and centers of mass of structural components (which cause the torsional loading). Therefore, since the results of the analyses already account for the torsional effects, it is not necessary to consider an additional eccentricity of 5 percent of the maximum building dimension.

Additionally, the design of the control building, which is considered representative of Category I structures, was reviewed for an additional torsional moment resulting from additional eccentricity of 5 percent of the maximum building dimension. It was shown that the additional shear stresses resulting from this analysis were not significant and were within the design capacities.

NRC REQUEST NO. 10

Provide additional justification for the validity of the use of the 1.3 static coefficient factor in equipment design (Reference NRC Question 220.9).

RESPONSE

Response to this request is already incorporated in FSAR Amendment 7, December 1983.

NRC REQUEST NO. 11

Provide a discussion on the primary containment hatch boundary conditions and the correlation of forces/displacements between the two models.

RESPONSE

Response to this request will be provided by March 1984.

NRC REQUEST NO. 14

Verify all Category I foundations for stability considering upward seismic forces.

RESPONSE

Response to this request will be provided by March, 1984.

NRC REQUEST NO. 15

Verify that radwaste and screenwell buildings are analyzed and designed as independent structures.

RESPONSE

The screenwell building design is updated to reflect the results of the revised seismic analysis, which does not include the radwaste building. The radwaste building is seismically analyzed as an independent structure; therefore, both structures are analyzed and designed independently of each other.

NRC REQUEST NO. 16

For all Category I buildings, verify vermiculite concrete-bearing capacity against sliding resistance.

RESPONSE

Response to this request will be provided by March, 1984.

ATTACHMENT B

Nine

FEB 02 1984

Syracuse – Headquarters

Commonwealth of Massachusetts)
SS.
County of Suffolk)

I, Ben Charlson, being duly sworn according to law depose and say I am Vice President of Stone & Webster Engineering Corporation (SWEC) and that:

1. For the reasons listed below the material contained in Attachment C of the responses to the U.S. Nuclear Regulatory Commission (NRC) request for information from their structural audit which is being filed with the U.S. Nuclear Regulatory Commission by Niagara Mohawk Power Corporation (NMPC) in connection with its license application for Nine Mile Point Unit 2, Docket No. 50-410, contains information considered by SWEC to be confidential information containing trade secrets and should be withheld from public disclosure.

2. In support of its averment that the above-mentioned information is confidential, SWEC provides the following reasons:

   a. The information sought to be withheld consists of modeling techniques used in seismic analyses of the structures, techniques to analyze column loading of the spent fuel pool, and design basis and details for the polar crane supports.

   b. I am a Vice President for SWEC and have the authority to review and protect the confidential commercial information sought to be withheld.

   c. SWEC is in the business of designing and constructing nuclear power plants. This business is competitive and firms that engage in it compete on the basis of the nature and quality of the products and services that they offer clients. The above referenced material is one such product.

   d. The subject material was developed at considerable expense to SWEC and is of substantial value to SWEC in the conduct of its business. A competitor would derive an unfair advantage in obtaining the proprietary information sought to be withheld. Thus the unrestricted disclosure of this material could have an adverse commercial impact on SWEC. The data is plant specific and the methodology is for Nine Mile Point Unit 2; however, the data could be applied to other situations.

   e. It is, accordingly, the customary practice of SWEC to treat such material as confidential commercial information.

f. To the best of my knowledge and belief, the identified materials are not available from any public source and have not been made available to third parties, except in confidence.

Ben Charlson, being duly sworn, deposes and says that he has read the foregoing affidavit and the matters stated therein are true and correct to the best of his knowledge, information, and belief.

Ben Charlson

Ben Charlson
Vice President
Stone & Webster Engineering Corporation

Sworn and subscribed before me
this 31st day of
January 1984

Catherine G. Trabucco

Catherine Trabucco
NOTARY PUBLIC
For the Commonwealth of Massachusetts
My Commission Expires Nov. 8, 1985

ATTACHMENT B

Nine

FEB 02 1984

Syracuse – Headquarters

Commonwealth of Massachusetts)
SS.
County of Suffolk)

I, Ben Charlson, being duly sworn according to law depose and say I am Vice President of Stone & Webster Engineering Corporation (SWEC) and that:

1. For the reasons listed below the material contained in Attachment C of the responses to the U.S. Nuclear Regulatory Commission (NRC) request for information from their structural audit which is being filed with the U.S. Nuclear Regulatory Commission by Niagara Mohawk Power Corporation (NMPC) in connection with its license application for Nine Mile Point Unit 2, Docket No. 50-410, contains information considered by SWEC to be confidential information containing trade secrets and should be withheld from public disclosure.

2. In support of its averment that the above-mentioned information is confidential, SWEC provides the following reasons:

   a. The information sought to be withheld consists of modeling techniques used in seismic analyses of the structures, techniques to analyze column loading of the spent fuel pool, and design basis and details for the polar crane supports.

   b. I am a Vice President for SWEC and have the authority to review and protect the confidential commercial information sought to be withheld.

   c. SWEC is in the business of designing and constructing nuclear power plants. This business is competitive and firms that engage in it compete on the basis of the nature and quality of the products and services that they offer clients. The above referenced material is one such product.

   d. The subject material was developed at considerable expense to SWEC and is of substantial value to SWEC in the conduct of its business. A competitor would derive an unfair advantage in obtaining the proprietary information sought to be withheld. Thus the unrestricted disclosure of this material could have an adverse commercial impact on SWEC. The data is plant specific and the methodology is for Nine Mile Point Unit 2; however, the data could be applied to other situations.

   e. It is, accordingly, the customary practice of SWEC to treat such material as confidential commercial information.

f. To the best of my knowledge and belief, the identified materials are not available from any public source and have not been made available to third parties, except in confidence.

Ben Charlson, being duly sworn, deposes and says that he has read the foregoing affidavit and the matters stated therein are true and correct to the best of his knowledge, information, and belief.

Ben Charlson

Ben Charlson
Vice President
Stone & Webster Engineering Corporation

Sworn and subscribed before me
this 31st day of
January 1984

Catherine G. Trabucco

Catherine Trabucco
NOTARY PUBLIC
For the Commonwealth of Massachusetts
My Commission Expires Nov. 8, 1985

Proprietary

ATTACHMENT C