



CALCULATION COVER SHEET

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NINE MILE POINT NUCLEAR STATION

Unit (1, 2 or 0=Both): 1

Discipline: STRUCTURAL

Title
 SCREENING EVALUATION WORK SHEETS FOR HYDRAULIC CONTROL UNITS 305-125

Calculation No.
 S0.0SEWS305125

(Sub)system(s) NA	Building RB	Floor Elev. 237	Index No. S0.0
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Originator(s)
 CARMEN R. AGOSTA

Checker(s) / Approver(s)
 MOHAMMED ALVI

Rev	Description	Design Change No.	By	Date	Chk	Date	App	Date
00	INITIAL ISSUE	NA	CA	7-8-97	M.A	7-8-97	M.A	7-8-97

Computer Output/Microfilm Filed Separately (Yes / No / NA): NA

Safety Class (SR / NSR / Qxx) : SR

Superseded Document(s) : NONE

Document Cross Reference(s) - For additional references see page(s) : NA

Ref No	Document No.	Doc Type	Index	Sheet	Rev
1	NER-1S-012	NER	---	---	00

- General Reference(s) :
2. GENERIC IMPLIMENTATION PROCEDURE (GIP)
 3. NMPC Letter to NRC, File Code NMP1L 1044, dated March 11, 1996

Remarks :
 NONE

Confirmation Required (Yes / No) : No
 See Page(s) : _____

Final Issue Status
 (APP / FIO / VOI) : APP

File Location
 (Calc / Hold) : Calc

Operations Acceptance
 Required (Yes / No) : No

Evaluation Number(s) / Revision : NR
 Copy of Applicability Review Attached (Yes / N/R)?N/R

Component ID(s) / EPN(s) / Line Number(s) :
 NA

Key Words : NMP-1, STRUCTURAL, SQUG, SEWS, SEISMIC VERIFICATION

9708070152 970731
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Nine Mile Point Nuclear Station

Unit: 1

Disposition: --

Originator/Date

CA 7-8-97

Checker/Date

M.A 7-8-97

Calculation No.

S0.0SEWS305125

Revision

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Ref.

PURPOSE: Document the Screening Evaluation Work Sheets (SEWS) for the HYRAULIC CONTROL UNITS, EQUIPMENT NUMBER 305-125

This SEWS has been prepared as part of the commitment to use the SQUG (GIP) methodology to document the seismic adequacy of SSEL components.

CONCLUSION: The attached calculation to the SEWS concluded the frame and anchorage for the Hydraulic Control Units are adequate. Therefore, the Hydraulic Control Units are seismically adequate.

ATTACHMENTS

A. SEWS for Equipment ID Number 305-125.



SCREENING EVALUATION WORK SHEET (SEWS)		GIP Rev Status: Yes Sheet 1 of 2
ID : HCU (Rev. 0) <u>305-125</u>	Class : 0. Other	
Description : Hydraulic Control Units		
Building : RB	Floor El. : 237.00	Room, Row/Col : M5
Manufacturer, Model, Etc. :		

SEISMIC CAPACITY VS DEMAND

1.	Elevation where equipment receives seismic input	237.00
2.	Elevation of seismic input below about 40' from grade (grade = 243.00)	N/A
3.	Equipment has fundamental frequency above about 8 Hz (est. frequency =)	N/A
4.	Capacity based on:	
5.	Demand based on:	
	File	Record
Capacity		
Demand 1		
Demand 2		

Does capacity exceed demand? Yes

ANCHORAGE

1.	The sizes and locations of anchors have been determined.	Yes
2.	Appropriate equipment characteristics have been determined (mass, CG, natural freq., damping, center of rotation).	Yes
3.	The type of anchorage is covered by the GIP.	Yes
4.	The adequacy of the anchorage installation has been evaluated (weld quality and length, nuts and washers, expansion anchor tightness, etc.)	Yes
5.	Factors affecting anchorage capacity or margin of safety have been considered: embedment length, anchor spacing, free-edge distance, concrete strength/condition, and concrete cracking.	Yes
6.	For bolted anchorages, any gaps under the base are less than 1/4 .	Yes
7.	Factors affecting essential relays have been considered: gaps under the base, capacity reduction for expansion anchors.	Yes
8.	The base has adequate stiffness and the effect of prying action on anchors has been considered.	Yes
9.	The strength of the equipment base and the load path to the CG is adequate.	Yes
10.	The adequacy of embedded steel, grout pads or large concrete pads have been evaluated.	Yes
11.	The anchorage capacity exceeds the demand.	Yes

Are anchorage requirements met? Yes

INTERACTION EFFECTS

1.	Soft targets are free from impact by nearby equipment or structures.	Yes
2.	If the equipment contains sensitive relays, it is free from all impact by nearby equipment or structures.	Yes
3.	Attached lines have adequate flexibility.	Yes
4.	Overhead equipment or distribution systems are not likely to collapse.	Yes
5.	No other adverse concerns were found.	Yes

Is equipment free of interaction effects? Yes



SCREENING EVALUATION WORK SHEET (SEWS)		GIP Rev Status: Yes Sheet 2 of 2
ID : HCU (Rev. 0)	Class : 0. Other	
Description : Hydraulic Control Units		
Building : RB	Floor El. : 237.00	Room, Row/Col : M5
Manufacturer, Model, Etc. :		

IS EQUIPMENT SEISMICALLY ADEQUATE?

Yes

COMMENTS

SRT are W. Djordjevic and C. Agosta - 8/29/95

HCU tube frame and anchorage acceptable per S&A calculation 93C2771-C-007. See Ref. Drwg. C-15151-C.

Associated scram header and insert & withdrawal lines are well and obviously seismically supported. No issues with attached lines were identified.

No photos

Evaluated by:

Date:

W. Djordjevic
C. Agosta

10/17/95
12/6/95



Project: NINE MILE POINT NUCLEAR STATION

Unit: 1

Originator/Date

Calc. No.

Rev

50.0 SEWS 305125

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Checked

Date

Disposition

Ref.

PAGE A4 REVIEWED & ACCEPTED BY:

<p align="center">REVIEWED (PAGE A4) NIAGARA MOHAWK POWER CORPORATION NUCLEAR ENGINEERING DEPARTMENT</p> <p align="center">DISPOSITION OF SUBMITTAL</p> <p><input checked="" type="checkbox"/> ACCEPTED <input type="checkbox"/> ACCEPTED WITH CHANGES NOTED <input type="checkbox"/> NOT ACCEPTED <input type="checkbox"/> REVISE & RESUBMIT</p> <p>SIGNATURE: <u><i>C. Alt</i></u> DATE: <u>7-8-97</u></p> <p>DISCIPLINE: <u>STRUCTURAL</u> UNIT: <u>1</u></p>
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Stevenson and Associates

A Structural-Mechanical Consulting Engineering Firm

CLIENT NMPC JOB No. 93C2771 SHEET 1 OF

SUBJECT HEU Units

REVISIONS	WD
	12/11/95
	MSI: 11/11/95

ATTACHMENT
 CALC NO
 REVISION
 PAGE NO
 52.0 52.0 52.0 52.0 52.0
 A2
 A

Ref's Drawy C-15151-C

Objective: Check Tube Frame and Embedded Anchorage

Tube Frame

- Each back to back include weights 800#

- C.G. is 50" (conservative)
Heu is flexible, use Sc pk at E1 237'

$$\begin{aligned} \text{Moment at base} &= 400#(50") (0.525) \cdot 1.4 \quad \text{100-400 rule} \\ &= 14.56 \text{ in-k} \end{aligned}$$

$$S_{\text{two 1.5" pipe legs}} = 2 \times \frac{\pi}{32} (1.90^3 - 1.61^3) = 0.53 \text{ in}^3$$

$$\sigma_{\text{tube}} = \frac{14.56}{0.53} = 27.5 \text{ ksi ok}$$

Anchorage

Take 17 units + check embedded $\frac{3}{4}$ " CIP Anchor

$$M_D = 17 (800) (50) (0.525 \times 1.4) = 495 \text{ in-k}$$

$$\frac{T_D}{D} = \frac{M_D}{3'-9"} \times \frac{1}{\text{Benders}} = 0.84 \text{ k} < 15 \text{ k ok}$$

$$T_A = 15 \text{ k}$$

