

068/01/78

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50-220

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NIAGARA MOHAWK PWR

DOCDATE: 07/26/78
DATE RCVD: 07/31/78

DOCTYPE: LETTER NOTARIZED: NO

COPIES RECEIVED

SUBJECT:

LTR 1 ENCL 1

RESPONSE TO NRC LTR DTTD 03/20/78... FORWARDING INFO CONCERNING RELIEF VALVE
ACTUATIONS FOLLOWING A POSTULATED ISOLATION EVENT FOR SUBJECT FACILITY.

PLANT NAME: NINE MILE PT -- UNIT 1

REVIEWER INITIAL: XJM

DISTRIBUTOR INITIAL: *pl*

***** DISTRIBUTION OF THIS MATERIAL IS AS FOLLOWS *****

GENERAL DISTRIBUTION FOR AFTER ISSUANCE OF OPERATING LICENSE.
(DISTRIBUTION CODE A001)

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ms4

DISTRIBUTION: LTR 40 ENCL 39
SIZE: 1P+5P

CONTROL NBR: 782120040

***** THE END *****

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July 26, 1978

Director of Nuclear Reactor Regulation
Attn: Mr. Victor Stello, Jr., Director
Division of Operating Reactors
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

U.S. NRC
RECEIVED
SERVICES UNIT

1978 JUL 31 AM 10 55

RECEIVED DISTRIBUTION
SERVICES UNIT

Gentlemen:

Re: Nine Mile Point Unit 1
Docket No. 50-220
DPR-63

Pursuant to your letter of March 20, 1978, the attachment to this letter contains the information concerning relief valve actuations following a postulated isolation event for Nine Mile Point Unit 1.

The analyses show that stresses for the torus shell and support columns are within ASME code allowables, even if all six relief valves experience subsequent actuation.

General Electric, in a letter dated July 21, 1978 from L. J. Sobon (General Electric) to Mr. Victor Stello, Jr. (Nuclear Regulatory Commission), submitted information concerning the generic approach for calculating the above plant-unique column and shell loads.

Very truly yours,

NIAGARA MOHAWK POWER CORPORATION

Donald P. Dise

Donald P. Dise
Vice President-Engineering

MGM/szd

Attachment

782120040

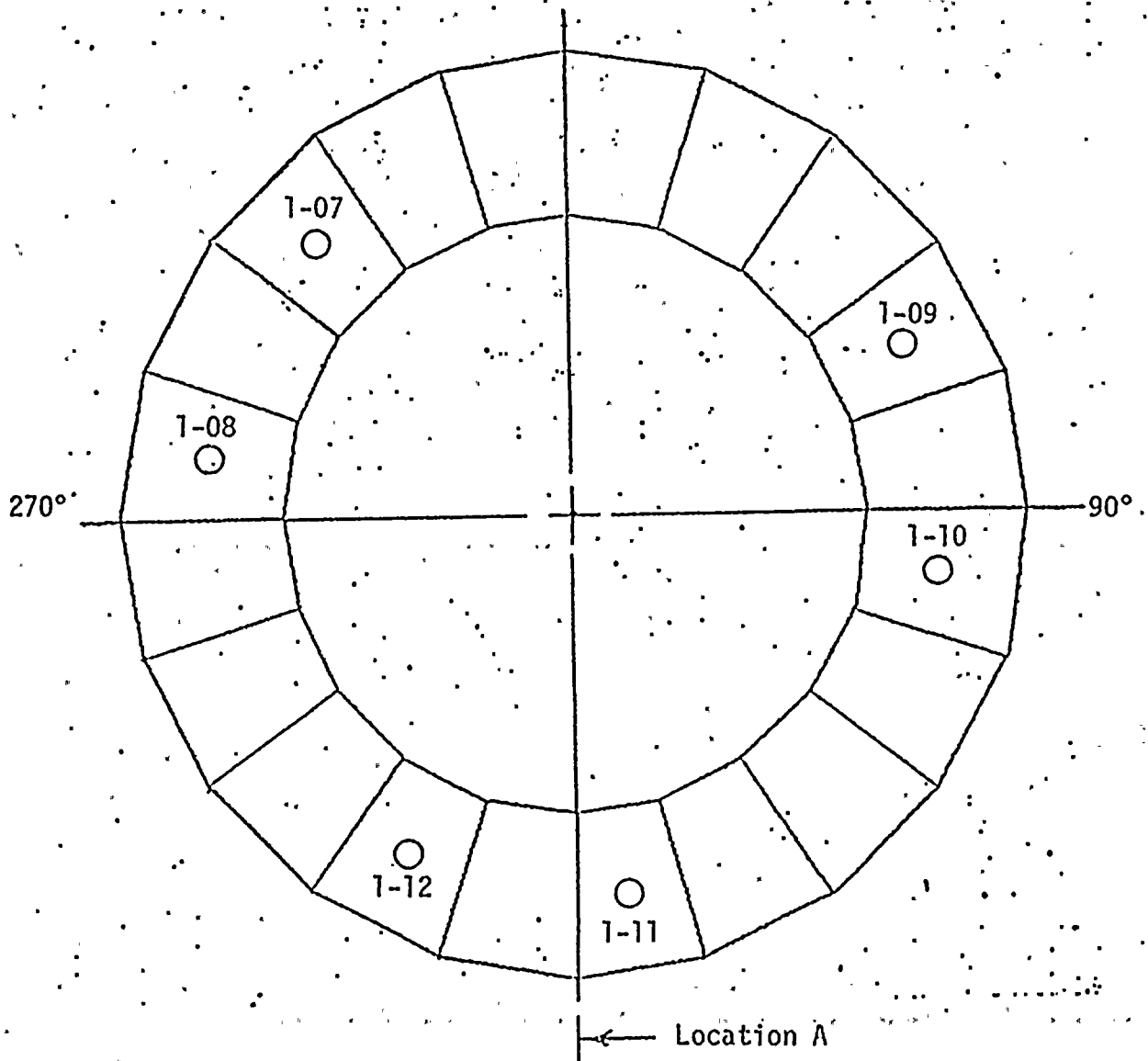
Acc'd
5/11

NINE MILE POINT UNIT 1

MULTIPLE CONSECUTIVE
S/RV ACTUATION EVALUATION

Nine Mile Point Nuclear Power Station
Multiple Consecutive S/RV Actuation Evaluation

- 6 SRV lines
- assume multiple consecutive actuation of all valves
- determination of the maximum shell stress and support column load for the torus segment containing relief line 1-11



Shell Stress Determination

Factor for Multiple Actuation:

Multiplier for Relief Line 1-09 = .11

Multiplier for Relief Line 1-10 = .11

Multiplier for Relief Line 1-11 = 1.0

Multiplier for Relief Line 1-12 = .19

Multiplier for Relief Line 1-08 = .11

Multiplier for Relief Line 1-07 = .11

Net Multiplier = $(1.2)(SRSS) = 1.2497$

Hot Pop Multiplier = 2.37

Plant Unique Shell Stress Multiplier = .28

From Monticello S/RV Test - Single Cold Actuation of Valve D:

Extreme Fiber Shell Stress at Midbay, 45° up from bottom toward
inside columns = 3400 psi

Factor relating stress at bottom midbay to stress 45° up from bottom
midbay = 1.49

Nine Mile Point Torus Radius = 162 in.

Monticello Torus Radius = 166 in.

Nine Mile Point Torus Thickness = .460 in.

Monticello Torus Thickness = .584 in.

Resultant SRV Shell Stress ($P_L + P_B$) =

$$(.28)(1.49)(3400)(1.2497)(2.37) \frac{(.584)(162)}{(.460)(166)} = 5205 \text{ psi}$$

Factor from extreme fiber to membrane stress = .86

Resultant SRV Shell Stress (P_M) = (.86)(5205) = 4476 psi

Hydrostatic Pressure Stress at 4' Downcomer Submergence = 1771 psi
(including Seismic)

Total Shell Stress:

Membrane, $P_M = 4476 + 1771 = 6247$ psi

Membrane + Bending, $P_L + P_B = 5205 + 1771 = 6976$ psi

Shell Material: A-201B FBX

ASME Code Allowable Stress:

$$P_M < S_{mc} = 16,500 \text{ psi}$$

$$P_L + P_B < 1.5 S_{mc} = 24,750 \text{ psi}$$

Fraction of Code Allowables:

$$P_M = .38$$

$$P_L + P_B = .28$$

Support Column Load Determination

Factor for Multiple Actuation: Location A

Multiplier for Relief Line 1-09 = .1
Multiplier for Relief Line 1-10 = .12
Multiplier for Relief Line 1-11 = 1.0
Multiplier for Relief Line 1-12 = .7
Multiplier for Relief Line 1-08 = .11
Multiplier for Relief Line 1-07 = .09
Σ 2.12

Consecutive Actuation Factor = 1.96

Plant Unique Column Load Multiplier = .30

From Monticello Rams Head SRV Test, Single Cold Actuation:

Outside Column Compressive Load = 196.7 kips

Resultant SRV Column Load = (.30)(196.7)(2.12)(1.96) = 245 kips

Outside Column Deadweight + Seismic = 200 kips

Total Outside Column Compressive Load = 245 + 200 = 445 kips

Outside Column ASME Code Allowable = 579 kips

Outside Column Fraction of Code Allowable = .77

Column Weld Joint ASME Code Allowable = 678 kips

Column Weld Joint Fraction of Code Allowable = .66

