



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

3/25/79

✓ Bill Russell, DOR

the attached background information was handed to me by Bill Kennedy of Stone and Webster at the Beaver Valley meeting this afternoon. I believe you will want to place it in the PDR file on the stress code problem.

Roger Mattson

cc. Jim Knight
Ed Case
Vic Stello
Ted Sullivan
Mark Hartzman

WOLK

Here's tabulation of various program methods. NUPIPE is a separate page since I was unsure as to whether it should be included at all

- Percentages following job names indicate the approximate usage based on amount of piping analyzed by computer (not total amount of seismic piping in plant.)
- SHOCK did not calculate off-axis responses (i.e. y and z response due to x earthquake) so intra-modal summation is not required.
- 2D vs 3D is separate page since tabulation is not by program, but by project
- memo attached shows design basis for piping on newer (NUPIPE) jobs.

NOTED

MAR 23 1979

D.F. STAYN

DFS

Attn: V. Stello

"... will"

Summation Criteria

Projects Used

Earthquake Direction

Modal Responses

Computer Code

(Intra-modal)

(Inter-modal)

(note 1)

MYankee (95%)

Sunny (30%)

Not Applicable

$$|R_{max}| + \sqrt{R^2 - R_{max}^2}$$

Beaver 1 (100%)

Pasny (100%)

Sunny (70%)

MYankee (5%)

Summed equivalent static

forces algebraically

$$(X + Y + Z)$$

$$|R_{max}| + \sqrt{R^2 - R_{max}^2}$$

SHOCK3

Summed modal responses (internal moments, displacements and support reactions by "modified SRSS"

$$(\sum R^2)^{1/2}$$

$$|(X^2 + Z^2)^{1/2}| + |Y|$$

note 1: Descriptively, this is the largest modal force added absolutely to the SRSS of the remaining modal forces.

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Summation Criteria

Computer Code

Projects

Intra-Modal

Inter-Modal

NUPIPE

All PRESENT
DESIGN PROJECTS

Options:

- (1) Minimum $|X| + |Y|$ or $|Z| + |Y|$
- (2) $(X^2 + Z^2)^{1/2} + |Y|$
- (3) $(X^2 + Y^2 + Z^2)$

Options:

- (1) SPSS
- (2) "Grouping" per
RG 1.92
- (3) "Double Sum" per
RG 1.92
- (4) "Ten-percent" per
RG 1.92
- (5) Absolute

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Licensing Basis

<u>Project</u>	<u>Site</u>	<u>Piping Design</u>
Maine Yankee	2D	3D
Pasny	2D	3D
Surry	2D	3D
Beaver 1	2D	3D

← Not Licensing basis

3/26/79
WJL

Scope Of Effort

	Computer Runs			Support Points
	SHOCK 1	SHOCK 2		
Sunny	40	40	~	350
B.V. 1		69		351
JAF		96		NOT AVAILABLE
MY	52	5		339

4 1/2" PIPE USING SIMPLIFIED METHODS -

Est. 4 1/2" Pipe 100 - 150 COMPUTER RUNS
per unit

4-6 Support points per run



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