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SUBJECT: Outlines Mark II owners group understanding of agreement re NEDO-21985, "Functional Capability Criteria for Essential Mark II Piping," Sept 1978.Factor-short radius elbow tables encl.

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MK II-038-LIC

February 25, 1980

Mr. R. J. Bosnak
Nuclear Regulatory Commission
Division of Systems Safety
Mechanical Engineering Branch
Washington, D.C. 20555

Subject: Functional Capability Criteria of Essential Mark II Piping

Reference 1: NEDO-21985, "Functional Capability Criteria for Essential Mark II Piping," September 1978

Dear Mr. Bosnak:

The following represents the Mark II Owners understanding of agreements reached in the January 29, 1980 meeting between the Mark II Owners Group Load Combinations/SRSS Subcommittee and the NRC staff. Three topics involving criteria for assessment of functional capability were discussed and are summarized below:

1. Mark II plants will be allowed to use criteria established in reference 1 for thin wall piping of $100 > (Do/t) > 50$. Individual applicants will identify the thin wall piping to which these criteria have been applied in each plant's FSAR/DAR.

2. The criteria in Tables 1 and 2 of reference 1 can be used to supplement the indices for fittings not identified in draft Standard Review Plan 3.9.3.

3. At the request of NRC staff, a matrix of B_1 indices as calculated by methods of reference 1 and piping size and schedule has been prepared for both short and long radius elbows ($r = D$ and $r = 1.5D$, respectively). These are provided as attached Tables 1 and 2. B_1 indices for pipes with bend radii > five pipe diameters are generally greater than 0.5.

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In the event your understanding of items 1 and 2 differs from that of the Mark II Owners, or if the information presented in Tables 1 and 2 is not sufficient, please contact me at your earliest convenience. Prompt resolution of open issues regarding functional capability is of great importance to the program.

Very truly yours,

H. Chau
Licensing Chairman
Mark II Owners Group

HC/mvf

Attachment

xc: Mark II Owners
Dr. S. N. Hou

TABLE I

R Nom. Pipe Size	Pipe O.D. D	B_1 FACTOR-SHORT RADIUS ELBOWS												
		Light Wall	Sch. 20	Sch. 30	Std.	Sch. 40	Sch. 60	X-Stg	Sch. 80	Sch. 100	Sch. 120	Sch. 140	Sch. 160	XX Stg.
3	3.5	.000			.0	.0		0.018	.018				0.072	0.135
3½	4.0	0.0			.0	.0		0.0113	0.0113					0.1226
4	4.5	0.0			.0	.0		0.0065	0.0065		0.0384		0.0678	0.113
5	5.563	0.0			.0	.0		.0	.0		0.0293		0.062	0.094
6	6.625	0.0			.0	.0		.0	.0		0.023		0.0573	0.089
8	8.625	.0	.0	.0	.0	.0	.0	.0		.002	.024	.040	.056	.051
10	10.75	.0	.0	.0	.0	.0	.0	.0			.017	.038	.056	.038
12	12.75	.0	.0	.0	.0	.0	.0	.0			.018	.033	.055	.018
14	14.0	.0	.0	.0	.0	.0	.0	.0		.007	.025	.043	.061	
16	16.0	.0	.0	.0	.0	.0	.0	.0	.0	.003	.022	.044	.059	
18	18.0	.0	.0	.0	.0	.0	.0	.0	.0	.003	.022	.039	.058	
20	20.0	.0	.0	.0	.0	.0	.0	.0	.0	.002	.020	.040	.057	
24	24.0	.0	.0	.0	.0	.0	.0	.0	.0	.002	.021	.037	.056	
30	30.0	.0	.0	.0	.0			.0						
36	36.0	.0	.0	.0	.0	.0		.0						
42	42.0			.0				.0						

TABLE 2

B_1 FACTOR-LONG RADIUS ELBOWS

Nom. Pipe Size	Pipe O.D.	Light Wall	Sch. 20	Sch. 30	Std.	Sch. 40	Sch. 60	X-Stg.	Sch. 80	Sch. 100	Sch. 120	Sch. 140	Sch. 160	XX Stg.	R
3	3.500	.0			.027	.027		.076	.076				.157	.253	4½
3½	4.000	.0			.019	.019		.067	.067					.234	5¾
4	4.500	.0			.012	.012		.060	.060		.108		.152	.220	6
5	5.563	.0			.0	.0		.045	.045		.094		.142	.191	7½
6	6.625	.0			.0	.0		.042	.042		.084		.136	.183	9
8	8.625	.0	.0	.0	.0	.0	.005	.029	.029	.053	.085	.110	.134	.126	12
10	10.750	.0	.0	.0	.0	.0	.004	.004	.023	.049	.075	.108	.134	.108	15
12	12.750	.0	.0	.0	.0	.0	.0	.0	.022	.049	.077	.099	.132	.077	18
14	14.000	.0	.0	.0	.0	.0	.002	.0	.029	.061	.087	.114	.141		21
16	16.000	.0	.0	.0	.0	.0	.0	.0	.026	.155	.083	.116	.139		24
18	18.000	.0	.0	.0	.0	.0	.0	.0	.025	.054	.083	.108	.137		27
20	20.000	.0	.0	.0	.0	.0	.0	.0	.024	.054	.080	.110	.136		30
24	24.000	.0	.0	.0	.0	.0	.0	.0	.022	.053	.081	.106	.134		36
30	30.000	.0	.0	.0	.0			.0							45
36	36.000	.0	.0	.0	.0	.0		.0							54
42	42.000				.0			.0							63