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JOSEPH A. TIERNAN
VICE PRESIDENT
NUCLEAR ENERGY

September 8, 1988

U. S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318
Response to NRC Bulletin 88-05

REFERENCE: (a) NRC Bulletin 88-05 and Supplements 1 and 2;
Nonconforming Materials Supplied by Piping
Supplies, Inc. at Folsom, New Jersey and
West Jersey Manufacturing Company at
Williamstown, New Jersey

Gentlemen:

As requested in Reference (a), we have reviewed our purchasing records to determine whether any West Jersey Manufacturing Company (WJM) or Piping Supplies, Inc. (PSI) flanges or fittings have been supplied to Calvert Cliffs for the period since January 1, 1976. We have located 81 flanges furnished by WJM; 56 flanges are installed in the Auxiliary Feedwater (AFW) System and 25 flanges are in stock. No PSI materials were found.

The flanges in the AFW system were field tested using the Equotip hardness method. On July 8, 1988, the NRC Operations Center was notified within 48 hours of receiving the test results that six flanges failed to meet the ASME Code specification for hardness. An analysis to justify continued operation concluded that the flanges are capable of meeting their operational and design basis requirements. Subsequently, NUMARC provided us with tables that correct Equotip readings at elevated temperatures. The nonconforming flanges were retested and only four flanges failed to meet the hardness specification (see Attachment 1).

NUMARC has compiled and analyzed utility and laboratory testing of WJM and PSI flanges and fittings. These data show, in general, that the suspect materials meet strength requirements and are satisfactory for ASME code applications. NUMARC has also determined that the testing results justify a tolerance band

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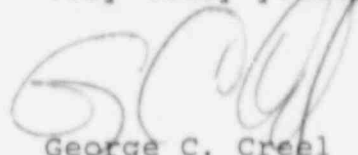
(i.e., 116-137 HB) for the hardness acceptance criteria. All of our WJM flanges meet this criteria and, therefore, the continued use of these flanges do not present a safety problem.

The in-stock flanges were sent to our metallurgical laboratory for testing. Four flanges failed the Code specification for hardness (HB <137) and three flanges failed the Code specification for ultimate tensile strength (UTS <70 ksi) (see Attachment 2). We have segregated and retained all of the in-stock WJM flanges.

In accordance with Supplement 1 to the Bulletin, we have enclosed all our test results for WJM flanges (see Attachment 3).

Should you have any further questions regarding this matter, we will be pleased to discuss them with you.

Very truly yours,



George C. Creel
for Joseph A. Tiernan
Vice President
Nuclear Energy

STATE OF MARYLAND :
: TO WIT :
City of Baltimore :

I hereby certify that on the 8th day of September, 1988, before me, the subscriber, a Notary Public of the State of Maryland in and for Baltimore City, personally appeared George C. Creel, being duly sworn, and states that he is Vice President of the Baltimore Gas and Electric Company, a corporation of the State of Maryland; that he provides the foregoing response for the purposes therein set forth; that the statements made are true and correct to the best of his knowledge, information, and belief; and that he was authorized to provide the response on behalf of said Corporation.

WITNESS my Hand and Notarial Seal:

Minnie L. Robinson
Notary Public

My Commission Expires:

July 4 1990
Date

JAT/GLB/dlm
Attachments

Document Control Desk
September 8, 1988
Page 3

cc: D. A. Brune, Esquire
J. E. Silberg, Esquire
R. A. Capra, NRC
S. A. McNeil, NRC
W. T. Russell, NRC
D. C. Trimble, NRC
T. Magette, DNR

ATTACHMENT (1)

INSTALLED NON-CONFORMING FLANGES

HEAT CODE	HLD/ HB *	SIZE INS	RATING LBS	DESCRIPTION**	CLASS	MATERIAL	SUPPLIER
ETKI	130	6	1500	FL RF WN	3	SA105	Guyon Alloys
ETKI	134	6	1500	FL RF WN	3	SA105	Guyon Alloys
VP	130	0.5	150	FL RS SW	3	SA105	Guyon Alloys
4219	133	6	150	FL RF WN	3	SA105	Guyon Alloys

* Temperature corrected

HB * Brinnell Hardness

HLD * Equotip Hardness

HLD/HB * Equotip Hardness conversion to Brinnell Hardness

** ABBREVIATIONS

FL * Flange

RF * Raised Face

BL * Blind

SW * Socket Weld

WN * Weld Neck

SO * Slip On

ATTACHMENT (2)

ON-HAND NON-CONFORMING FLANGES

HEAT CODE	UTS ksi	HB	SIZE IN.	RATING LBS	DESCRIPTION	CLASS	MATERIAL	SUPPLIER
E1413	-	121	0.75	150	FL RF SW	2	SA	Capitol Pipe
GOEL	69.4*	143	1	150	FL BL RF	2	SA	Tioga Pipe
GDKH	68.0*	148	1	150	FL BL RF	2	SA	Tioga Pipe
GDKH	68.3*	137	1	150	FL BL RF	2	SA	Tioga Pipe
S18	-	133	0.37	150	FL RF SW	-	SA	Guyon Alloys
S18	-	132	0.37	150	FL RF SW	-	SA	Guyon Alloys
S18	-	131	0.37	150	FL RF SW	-	SA	Guyon Alloys

* Subsize tensile specimens with 0.062 sq. in. area and 1-inch gauge.

ATTACHMENT 3

CALVERT CLIFFS NUCLEAR POWER PLANT NRCB 88-05 DATA

ITEM NO.	HEAT CODE	HEAT NO.	UTS ksi	YS ksi	EL. %	HLD HLB	HLD/ HB	C	Mn	P	S	Si	SI	RTG	DESC	CL	MATL	Supplier	
1	4219	4219				#401	139#							6	150 FL RF WN	3	105	Guyon Alloys	
2	4219	4219				#392	133#							6	150 FL RF WN	3	105	Guyon Alloys	
3	518	518				392	133	131	0.234	0.681	0.02	0.037	0.165	37	150 FL RF SW		105	Guyon Alloys	
4	518	518				380	125	137	0.231	0.648	0.022	0.037	0.171	37	150 FL RF SW		105	Guyon Alloys	
5	518	518				365	116	133	0.218	0.699	0.023	0.036	0.169	37	150 FL RF SW		105	Guyon Alloys	
6	518	518				377	123	132	0.254	0.762	0.021	0.045	0.226	37	150 FL RF SW		105	Guyon Alloys	
7	518	518				373	121	141	0.236	0.674	0.022	0.04	0.187	37	150 FL RF SW		105	Guyon Alloys	
8	64C	5448182	*78.9		*28	418	151	126	0.343	0.702	0.007	0.032	0.189	0.75	150 FL BL RF	2	105	Capitol Pipe	
9	64C	5448182	*73.0		*29	393	134	134	0.347	0.709	0.006	0.032	0.18	0.75	150 FL BL RF	2	105	Capitol Pipe	
10	674X	674X	71.6	39.1	34	408	144	129	0.15	0.862	0.008	0.026	0.019	4	300 FL BL RF	2	105	Capitol Pipe	
11	676934	676934				437	167							2	150 FL RF SW	3	105	Guyon Alloys	
12	676934	676934				415	149							2	150 FL RF SW	3	105	Guyon Alloys	
13	676934	676934				421	154							2	150 FL RF SW	3	105	Guyon Alloys	
14	676934	676934				429	160							2	150 FL RF SW	3	105	Guyon Alloys	
15	75	75				403	141							2	600 FL		3	105	Guyon Alloys
16	75	75				416	150							2	600 FL		3	105	Guyon Alloys
17	81J	81J				#402	140#							3	2500 FL RF WN	3	105	Guyon Alloys	
18	81J	81J				407	143							3	2500 FL RF WN	3	105	Guyon Alloys	
19	A29	A29				415	149							1.5	600 FL RF SW	3	105	Guyon Alloys	
20	A29	A29				428	159							1.5	600 FL RF SW	3	105	Guyon Alloys	
21	A79	A79	*79.4		*33	432	162	153	0.338	0.766	0.008	0.025	0.152	1	150 FL RF SW	2	105	Capitol Pipe	
22	E1413	E1413				370	118	121	0.233	0.412	0.016	0.024	0.133	0.75	150 FL RF SW	2	105	Capitol Pipe	
23	ETK1	ETK1				#394	134#							6	1500 FL RF WN	3	105	Guyon Alloys	
24	ETK1	ETK1				#387	130#							6	1500 FL RF WN	3	105	Guyon Alloys	
25	GDAS	N75234				415	149							2	600 FL RF SW	3	105	Guyon Alloys	
26	GDAS	N75234				407	143							2	600 FL RF SW	3	105	Guyon Alloys	
27	GDGL	N86041	*69.4		*31	400	138	143	0.214	1.048	0.015	0.028	0.144	1	150 FL BL RF	2	105	Tioga Pipe	
28	GDGL	N86041	*76.2		*37	385	128	143	0.236	0.987	0.016	0.029	0.136	1	150 FL BL RF	2	105	Tioga Pipe	
29	GDFL	T8826	82.0		31	426	157	155	0.294	0.887	0.015	0.025	0.167	3	150 FL RF SO	1	105	Guyon Alloys	
30	GDFL	T8826	82.3	40.0	29	407	143	146	0.297	0.858	0.024	0.027	0.172	3	150 FL RF SO	1	105	Guyon Alloys	
31	GDGC	H0827	80.5	42.9	27	419	152	150	0.287	0.974	0.015	0.023	0.207	3	150 FL RF SO	1	105	Guyon Alloys	
32	GDGC	H0827	80.5	43.3	27	414	148	150	0.275	0.911	0.015	0.023	0.204	3	150 FL RF SO	1	105	Guyon Alloys	
33	GDGC	H0827	78.8	39.5	26	403	141	137	0.309	0.948	0.016	0.029	0.195	3	150 FL RF SO	1	105	Guyon Alloys	
34	GDIE	T8852				402	154							4	600 FL RF WN	3	105	Guyon Alloys	
35	GDIE	T8852				408	159							4	600 FL RF WN	3	105	Guyon Alloys	
36	GDIE	T8852				407	158							4	600 FL RF WN	3	105	Guyon Alloys	
37	GDIE	T8852				401	154							4	600 FL RF WN	3	105	Guyon Alloys	
38	GDIE	T8852				409	160							4	600 FL RF WN	3	105	Guyon Alloys	
39	GDIE	T8852				407	164							4	600 FL RF WN	3	105	Guyon Alloys	
40	GDIE	T8852				405	142							4	600 FL RF WN	3	105	Guyon Alloys	
41	GDIE	T8852				401	146							4	600 FL RF WN	3	105	Guyon Alloys	
42	GDIE	T8852				406	150							4	600 FL RF WN	3	105	Guyon Alloys	
43	GDIE	T8852				409	152							4	600 FL RF WN	3	105	Guyon Alloys	
44	GDIE	T8852				402	147							4	600 FL RF WN	3	105	Guyon Alloys	
45	GDIE	T8852				404	148							4	600 FL RF WN	3	105	Guyon Alloys	
46	GDIF	T8852				400	153							4	600 FL RF WN	3	105	Guyon Alloys	
47	GDIE	T8852				404	141							4	600 FL RF WN	3	105	Guyon Alloys	
48	GDIE	T8852				408	151							4	600 FL RF WN	3	105	Guyon Alloys	
49	GDIE	T8852				400	157							4	600 FL RF WN	3	105	Guyon Alloys	
50	GDJC	T0118				404	143							6	600 FL RF WN	3	105	Guyon Alloys	
51	GDJC	T0118				404	148							6	600 FL RF WN	3	105	Guyon Alloys	
52	GDJC	T0118				397	137							6	600 FL RF WN	3	105	Guyon Alloys	
53	GDJC	T0118				408	144							6	600 FL RF WN	3	105	Guyon Alloys	
54	GDJK	T0160				404	141							4	600 FL RF WN	3	105	Guyon Alloys	

ATTACHMENT 3

CALVERT CLIFFS NUCLEAR POWER PLANT NRCB 88-05 DATA

ITEM NO.	HEAT CODE	HEAT NO.	UTS ksi	YS ksi	EL. %	HL0	HL0/ HB	C	Mn	P	S	Si	S2	RTG	DESC	CL	MATL	Supplier
55	8DJK	I0160				403	141							4	600 FL RF WN	3	105	Guyon Alloys
56	8DJK	I0160				409	145							4	600 FL RF WN	3	105	Guyon Alloys
57	8DJK	I0160				412	147							4	600 FL RF WN	3	105	Guyon Alloys
58	8DKH	NB6973	*80.2		*25	394	134	142	0.287	1.018	0.017	0.031	0.14	1	150 FL BL RF	2	105	Tioga Pipe
59	8DKH	NB6973	*68.0		*32	392	133	148	0.267	1.107	0.015	0.03	0.141	1	150 FL BL RF	2	105	Tioga Pipe
60	8DKH	NB6973	*68.3		*32	400	138	137	0.216	1.022	0.015	0.029	0.144	1	150 FL BL RF	2	105	Tioga Pipe
61	8DKH	NB6973	*79.5		*30	415	149	129	0.252	1.034	0.016	0.031	0.144	1	150 FL BL RF	2	105	Tioga Pipe
62	J82D	N92289				445	173							0.5	150 FL	3	105	Guyon Alloys
63	J82D	N92289				431	161							0.5	150 FL	3	105	Guyon Alloys
64	J82D	N92289				419	152							0.5	150 FL	3	105	Guyon Alloys
65	J82D	N92289				443	142							0.5	150 FL	3	105	Guyon Alloys
66	J82D	N92289				411	146							0.5	150 FL	3	105	Guyon Alloys
67	J82D	N92289				402	140							0.5	150 FL	3	105	Guyon Alloys
68	J82D	N92289				401	139							0.5	150 FL	3	105	Guyon Alloys
69	J82D	N92289				402	140							0.5	150 FL	3	105	Guyon Alloys
70	J82D	N92289				404	141							0.5	150 FL	3	105	Guyon Alloys
71	J82D	N92289				405	142							0.5	150 FL	3	105	Guyon Alloys
72	J82D	N92289				403	141							0.5	150 FL	3	105	Guyon Alloys
73	J82D	N92289				399	138							0.5	150 FL	3	105	Guyon Alloys
74	J82D	N92289				399	138							0.5	150 FL	3	105	Guyon Alloys
75	J82D	N92289				404	141							0.5	150 FL	3	105	Guyon Alloys
76	J82D	N92289				384	127	143	0.268	0.701	0.01	0.026	0.198	0.5	150 FL	3	105	Guyon Alloys
77	J82D	N92289				415	149	140	0.29	0.677	0.012	0.026	0.2	0.5	150 FL	3	105	Guyon Alloys
78	J82D	N92289				405	142	154	0.26	0.69	0.011	0.025	0.185	0.5	150 FL	3	105	Guyon Alloys
79	J82D	N92289				414	148	148	0.281	0.653	0.01	0.028	0.198	0.5	150 FL	3	105	Guyon Alloys
80	VP	VP				425	140							0.5	150 FL	3	105	Guyon Alloys
81	VP	VP				8087	130E							0.5	150 FL	3	105	Guyon Alloys

NOTES

1. * Subsize tensile specimens with 0.062 sq. in. area and 1 inch gage.
2. All WJM material.
3. In place tests, not temperature corrected except where # sign is indicated.
4. Results without chemical analysis are in place test results.
5. Acceptance criteria per ASME SA105 or ASTM A105.