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Data Summary for Fracture Toughness (KIC)

(US Customary Unit)

Specimen Type: C(T)
Material: SS304 and SSA286
Material Form: As received
Relative Humidity: 50% ± 10%
Drawing: Fig. 2
Loading Rate: 30 - 150 ksi-in.$^{1/2}$/min

Requestor: Wall
Company: Electric Power Research Institute
P.O. No.: 4700007062
Job No.: 02039-011217
Machining Source: Customer

		Precrack		KIC						Final 2.5% Precrack Data			Crack Measurements (a)						(1)						
SPECIMEN I.D.	LOCATION	Test Machine	Test	Test Machine	Test	Test Temp	Crack Plane	Specimen Thickness "B"	Specimen Width "W"	Maximum Stress Intensity	Stress Intensity range	Precrack Cycles	Average	Surface 1	1/4 Thickness	1/2 Thickness	3/4 Thickness	Surface 2	Material Yield Strength	K_Q		Invalid According to Test Method		Test	
SPECIMEN ID	(if appl)	No.	Date	No.	Date	°F	Orientation	in.	in.	ksi-in.$^{1/2}$	ksi-in.$^{1/2}$	N	in.	in.	in.	in.	in.	in.	ksi	ksi-in$^{1/2}$	K_Q = KIC?	E399 Section:	P_{MAX}/P_Q	Eng.	Remarks
304-80-2	-	1107	7/29/20	4315	9/16/20	RT	As Received	0.500	1.000	9.3	8.4	48191	0.547	0.573	0.577	0.551	0.513	0.490	40.0	53.9	NO	8.2.3, 9.1.4	1.08	PJI	(2),(4),(5)
A286-20-2	-	1104	7/10/20	1011	8/21/20	RT	As Received	0.500	1.000	13.3	12.0	222172	0.536	0.523	0.530	0.536	0.543	0.547	34.9	66.7	NO	9.1.4	1.06	DAN	(2),(5)
A286-20-4	-	1001	7/10/20	1011	8/24/20	RT	As Received	0.500	1.000	13.6	12.2	214929	0.543	0.545	0.546	0.542	0.541	0.537	34.9	63.2	NO	9.1.4	1.07	DAN	(2),(5)
A286-20-5	-	1001	7/13/20	1011	8/24/20	RT	As Received	0.500	1.000	11.3	10.1	91474	0.539	0.528	0.533	0.538	0.545	0.550	34.9	59.2	NO	9.1.4	1.00	DAN	(3),(5)
A286-40-1	-	1105	7/13/20	1011	8/21/20	RT	As Received	0.500	1.000	13.2	11.9	42383	0.534	0.532	0.542	0.532	0.529	0.531	34.9	39.8	NO	9.1.4	1.00	DAN	(3),(5)
A286-40-2	-	1104	7/13/20	1011	8/25/20	RT	As Received	0.500	1.000	11.1	10.0	79501	0.533	0.550	0.541	0.530	0.527	0.535	34.9	42.3	NO	9.1.4	1.00	DAN	(3),(5)
A286-40-3	-	1102	7/13/20	1011	8/25/20	RT	As Received	0.500	1.000	13.3	12.0	36272	0.536	0.504	0.518	0.537	0.554	0.563	34.9	40.7	NO	8.2.3, 9.1.4	1.00	DAN	(3),(4),(5)
A286-40-4	-	1108	7/13/20	1011	8/26/20	RT	As Received	0.500	1.000	13.3	12.0	36435	0.537	0.538	0.536	0.537	0.539	0.535	34.9	41.0	NO	9.1.4	1.00	DAN	(3),(5)
A286-40-5	-	1107	7/13/20	1011	8/26/20	RT	As Received	0.500	1.000	13.1	11.8	45122	0.531	0.540	0.529	0.529	0.534	0.535	34.9	40.6	NO	9.1.4	1.01	DAN	(2),(5)
A286-60-1	-	1102	7/13/20	1011	8/26/20	RT	As Received	0.500	1.000	11.1	10.0	69216	0.533	0.546	0.534	0.529	0.534	0.541	34.9	39.1	NO	9.1.4	1.01	DAN	(2),(5)
A286-60-2	-	1105	7/13/20	1011	8/27/20	RT	As Received	0.500	1.000	10.9	9.8	115426	0.530	0.526	0.525	0.528	0.538	0.560	34.9	39.1	NO	9.1.4	1.00	DAN	(3),(5)

Remarks:

(1) Material Yield Strength provided by customer.
(2) Type I CMOD record according to ASTM E399-20 Figure 7.
(3) Type III CMOD record according to ASTM E399-20 Figure 7.
(4) Precrack not straight (ASTM E399-20 P8.2.3).
(5) Remaining ligament too small (ASTM E399-20 P9.1.4).

All results are reported For Information Only

Applicable Specification(s) : ASTM E1820-20, analyzed per ASTM E399-20

Customer: Electric Power Research Institute, Inc. 3420 Hillview Ave, Palo Alto CA 94304

Additional customer nos.: SOW: Compact Tension Testing of Cold-Worked Stainless Steel Alloys;
EPRI Task ID: 1-110095-01-02;

Approved for Release by:

Digitally signed by Tim Esau
Date: 2020.10.02 12:45:09 -04'00'

Tim Esau, Quality Manager