

PPPL Fatigue Crack Growth Rate Test Results

2nd set of tests
 Test Temp = 77 K

Specimen No.	Pull Direction	Polynomial fit da/dn Paris Eqn Parameter		Correlation Coefficient	Delta K Measurement Range		Standard Deviation C	Standard Deviation n	Orientation
		C	n		Delta Kmin	Delta Kmax			
A1	T	5.00E-10	3.22	0.953	43	89			1
A2	L	8.00E-10	3.12	0.972	27	79			2
A3	T	1.00E-09	3.02	0.941	39	85			1
A4	L	9.00E-09	2.59	0.987	32	83			2
A5	T	9.00E-09	2.56	0.942	28	79			1
average		4.06E-09	2.90			std dev	4.51309E-09	0.306953	
B1	T	5.00E-09	2.73	0.93	27	35			1
B2	T	6.00E-09	2.68	0.965	41	88			1
B3	T	2.00E-09	2.96	0.968	41	88			1
B4	L	1.00E-09	3.08	0.958	27	78			2
B5	T	2.00E-08	2.45	0.963	32	83			1
average		6.80E-09	2.78			std dev	7.66159E-09	0.246881	
C1	T	3.00E-09	2.82	0.984	27	79			1
C2	L	5.00E-09	2.68	0.947	27	78			2
C3	T	4.00E-09	2.79	0.96	41	88			1
C4	L	4.00E-10	3.25	0.981	41	88			2
C5	T	3.00E-09	2.83	0.952	32	83			1
average		3.08E-09	2.87			std dev	1.71231E-09	0.218472	
TW1	N/A*	6.00E-11	3.89	0.961	28	78			
TW2	N/A*	4.00E-12	4.64	0.959	27	56			
TW3	N/A*	6.00E-11	3.89	0.963	41	88			
TW4	N/A*	2.00E-11	4.03	0.959	41	88			
TW5	N/A*	1.00E-11	4.28	0.988	32	82			
average	N/A*	3.08E-11	4.15			std dev	2.72617E-11	0.318795	

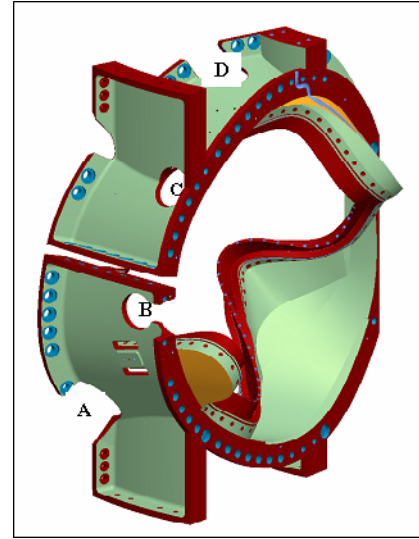
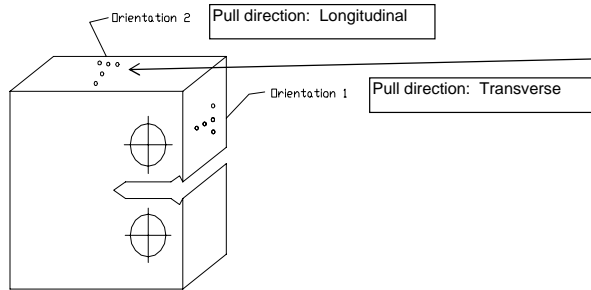


Fig. 1. The specimens were cut from the discs removed from the prototype as shown above. The "D" disc was cut and welded as shown in Fig. B, below; the specimens for this are labeled "TW". The other specimen labels correspond to the disc identifier (ie., A from A disc; B from B disc; C from C disc).. As indicated in Fig. A and B, the punch marks on the samples indicate the circumferential (Longitudinal)

N/A*: Not applicable. The fracture propagation is through the weld material.



NOTE: Longitudinal and Transverse refer to pull direction.

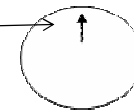
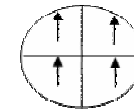


Fig A. Scribe or punch an arrow to indicate circumferential direction



FigB. Scribe or punch an arrow in each quadrant to indicate circumferential direction - weld back together in the same location & orientation.