316L5

15:24 COMPLIANCE RUN	LVDT		FILE
15:43 END RUN	58.8		(1).DAT
2/17/00			
7:08 109.5°C 2001 LBS	LVDT 59.5		
7:10 COMP. RUN			
7:23 END RUN	59.4		(2)
9:10 COMP. RUN			
9:19 END RUN	59.5		(3)
12:10 COMP. RUN			
12:22 END RUN	59.8		(4)
15:10 COMP. RUN			
15:20 END RUN	59.7		(5)
2/18/00 109°C 1999.4 LBS	59.6		
7:10 COMP. RUN			
7:20 END RUN	59.62	OCV = -485mV	(6)
2/21/00			
7:06 108°C	60.35	-546	
7:10 COMP. RUN			
7:18 END RUN			(7)
2/22/00			
7:08 108°C	60.18	-551	
2/23/00			
7:12 108°C	60.33	-557	
2/24/00			
7:06 108°C	60.27	-555	
8:45 COMP RUN			
8:52 END RUN	60.43		(8)
2/25/00			
7:07 109°C	60.25	-551	
2/28/00			
7:08 107°C	61.23	-552	
7:35 COMP. RUN			
7:41 END RUN	60.84		(9)

Jerry Stewart 2/28/00

316L5

2/29/00	LVDT	OCV	FILE
7:07 108°C	60.65	-557	
3/1/00			
7:11 110°C	60.98	-552	
3/2/00			
7:10 109°C	60.95	-550	
3/3/00			
7:11 109°C	60.75	-558	
7:35 COMP. RUN			
7:43 END RUN	60.83		(10).DAT
3/6/00			
7:07 112°C	62.15	-557	
7:10 COMP. RUN			
7:18 END RUN			(11)
3/7/00			
7:07 112°C	62.85	-559	
7:10 COMP. RUN			
7:18 END RUN	62.84		(12)
3/8/00			
7:10 111°C	63.02	-557	
7:20 END RUN	63.07		(13)
3/9/00			
7:06 111°C	63.27	-561	
7:10 COMP. RUN			
7:20 END RUN			(14)
3/10/00			
7:12 112°C	63.18	-560	
3/11/00			
11:18 111°C	63.35	-565	
3/13/00			
7:12 111°C	63.38	-569	
7:23 END RUN	63.14		(15)
3/14/00 7:06	63.60	-570	

COMPUTER WANTS TO OVERWRITE FILE (Ø).DAT

Jerry Stewart 3/14/00

316L5

CHANGE LOG FILE TO 316L5A

	LVDT	GCV	FILE
1201 COMP. RUN			
1209 END RUN	6381	-571	316L5A(2) - (1) DAS
3/15/00			
7:22 41°C	6365	-571	
9:30 COMP. RUN			
9:38 END RUN	6348	-573	(1)
10:29 START UNLOADING			
10:34 START COOL DOWN			
3/16/00			
7:10 23°C		-375mV	

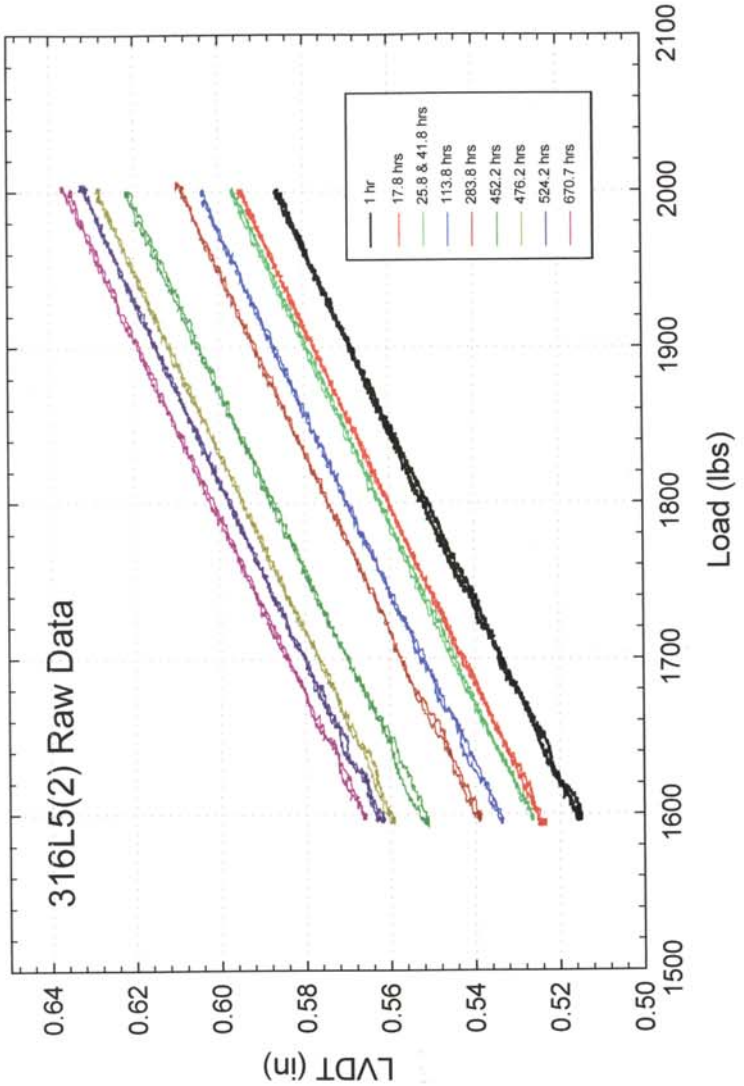
POST TEST CLEANING SAME AS PRETEST.

MINOR PITTING ON FACES IN PIN AREA

SOME PITTING IN PIN HOLES - LOADING AREA -

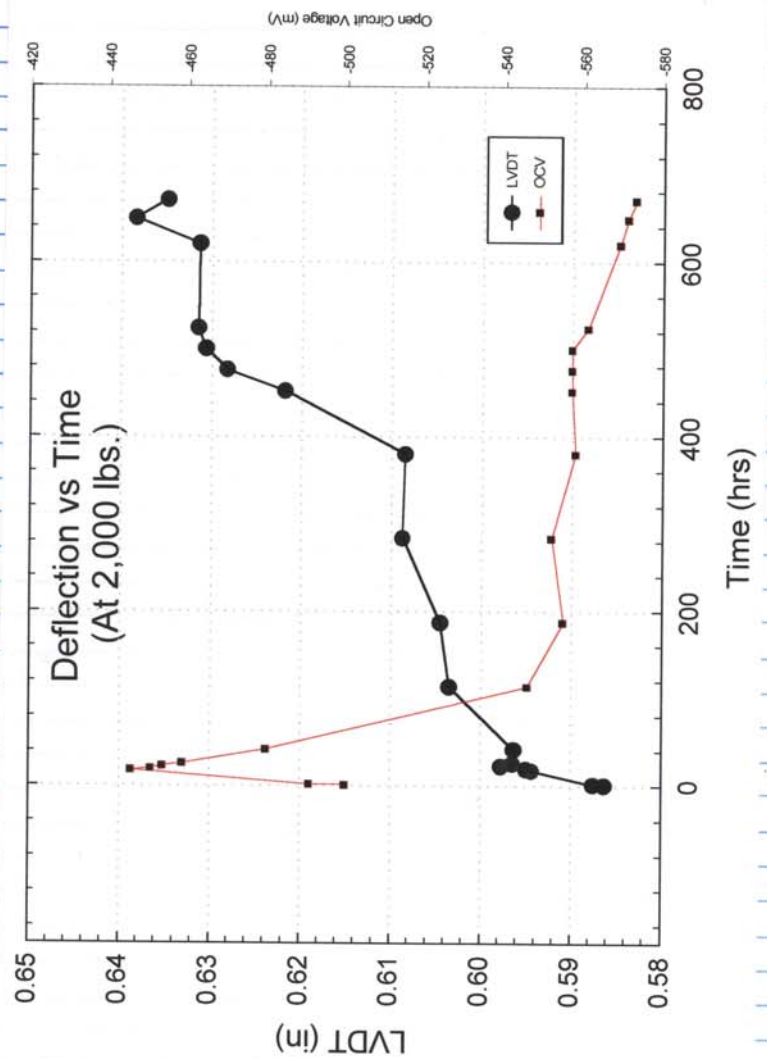
Jerry Stewart 3/16/00

316L5



Jerry Stewart 3/16/00

316L5
SEE NOTE PAGE 155 JLS 4/26/00



Terry Stewart 3/16/00

AIR TEST - 316L12 - 30% $MgCl_2$ AT 110°C - 2000 LBS
(FRAME 1) HEAT # P80746
SEE NOTE PAGE 155 JLS 4/26/00
FOR SAMPLE PREP & FILE NAMING CONVENTION - SEE PAGE 143.

TEST SOLUTION: 30% $MgCl_2$
REAGENT: $MgCl_2 \cdot 6H_2O$ - FISHER LOT # 995595
1921.7g DISSOLVED IN 18 MEG OHM WATER TO MAKE 3 l SOLUTION

THERMOMETER S/N 115749
SCRE S/N 8210528
3/13/00

INITIAL pH: 6.887 @ 20.4°C FINAL pH: 5.547 @ 22.3°C 3/23/00 JLS

9:14 SOLUTION ADDED
9:32 OCV = -441 mV
9:47 START HEATING
3/14/00
12:15 START LOADING
12:34 LOADED "ZEROED" LVDT: 28.24 OCV: -417 mV FILE
1:00 COMP. RUN - BASELINE IN N_2
1:06 END RUN 27.87 -415 (Ø)
1:08 START AIR FLOW
3/15/00
7:21 108°C 28.45 -478
9:16 COMP RUN
9:26 END RUN 28.73 -480 (1) - DAT
3/16/00
7:11 107°C 29.45 -490
7:40 COMP. RUN
7:49 END RUN 29.47 -491 (2)
3/17/00 7:12 107°C 29.86 -494
9:00 COMP. RUN
9:08 END RUN 29.77 -489 (3)

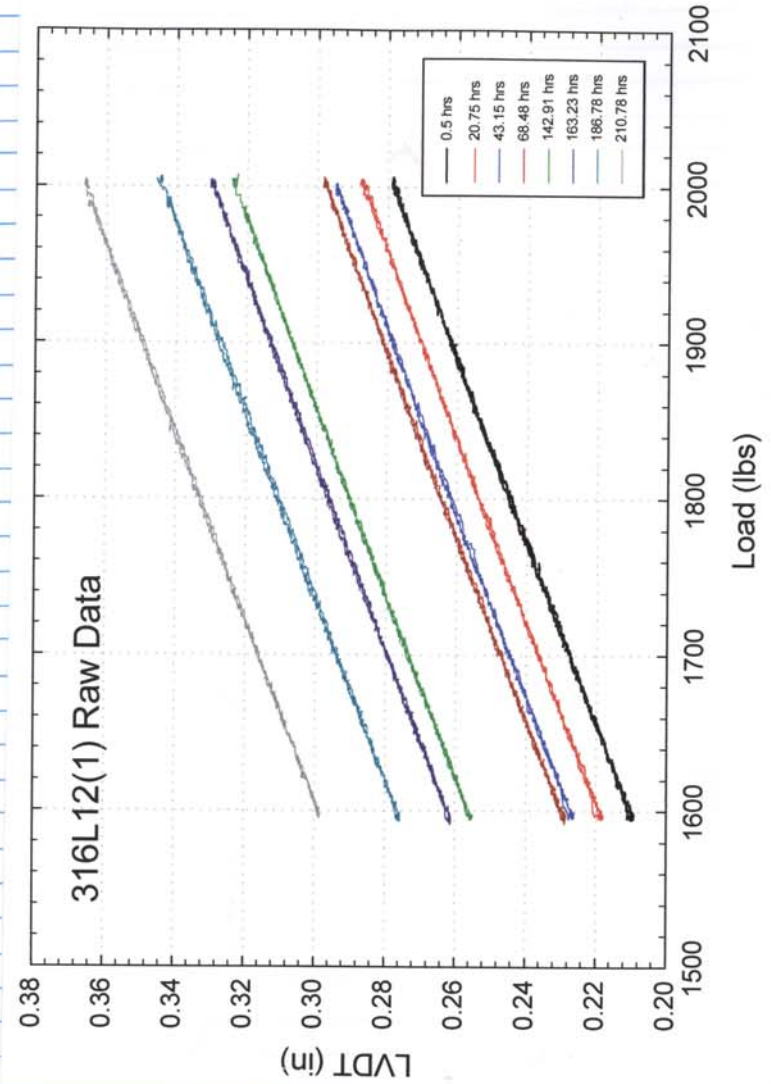
Terry Stewart 3/17/00

316L12

	LVDT	OCV	FILE
3/19/00			
11:26 108°C	32.06	-503	
11:37 END RUN	32.39		(4)
3/20/00			
7:17	33.11	-559	
7:28 COMPUTER HUNG			
RESTART & CHANGE FILE NAME → 316L12A			
7:45 COMP. RUN			
7:56 END RUN	32.95	-553	(Ø)
3/21/00			
7:07 108°C	34.30	-558	
7:18 COMP. RUN			
7:27 END RUN	34.45	-558	(1)
3/22/00			
7:07 108°C	36.52	-572	
7:19 COMP. RUN			
7:27 END RUN	36.60	-572	(2)
8:19 SWITCH TO N_2			
8:27 UNLOADED			
8:29 START COOL DOWN			
3/23/00			
7:05 24°C OCV = -413mV STOP LOG			

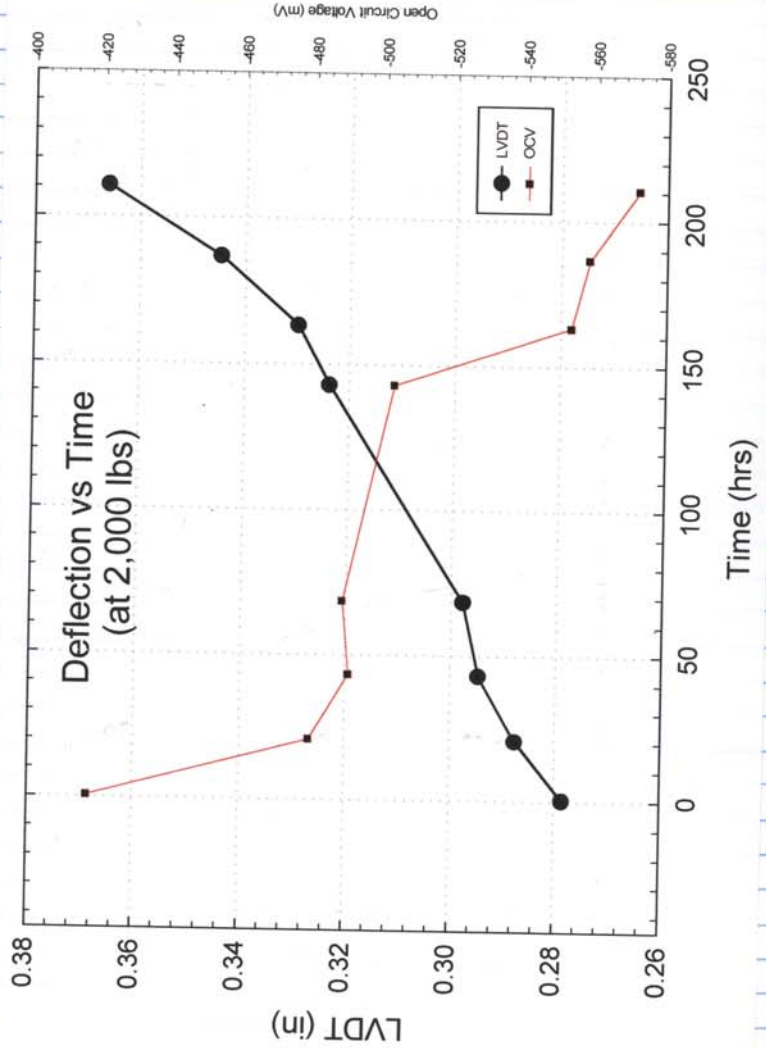
Jerry Stewart 3/23/00

316L12



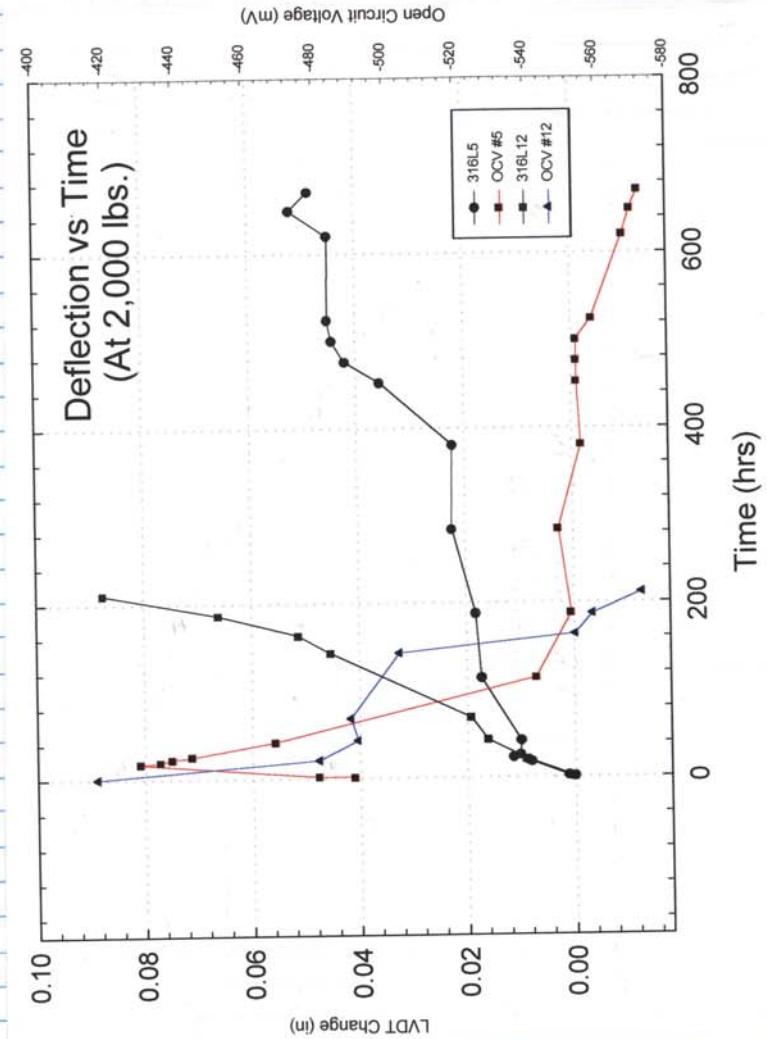
Jerry Stewart 3/23/00

316L12
SEE NOTE PAGE 155 JKS 4/26/00



Jerry Stewart 3/23/00

316L5 & 316L12 SUMMARY
SEE NOTE PAGE 155 JKS 4/26/00



Jerry Stewart 3/23/00

SPECIMEN #316L3
SEE NOTE PAGE 155 JVS 4/26/00
PARAMETERS: 110°C - 2000 LBS LOAD - NO GAS
-370 mV vs SCE - 30% $MgCl_2$
REUSING TEST SOLUTION FROM LAST FRAME
TEST (316L12) HEAT # P80746

THERMOMETER S/N 115749
SCE S/N 5087374

4/19/00
USING POTENTIOSTAT CHAN-9
9:44 OCV = -547 mV
9:49 START HEATING SP 100°C
9:52 START LOG FILE: 316L3
12:00 66°C (RTD: 62.5°C) -548 mV SP↑ 144°C
3:40 103°C -539 mV SP↑ 150°C

4/20/00 7:11 107°C -499 mV
7:28 SET VOLTAGE = -370 mV DOESN'T RESPOND
7:57 -373 mV RESPONSE THIS SLOW?
8:08 LOAD 2003 LBS LVDT 66.36 OCV -370 mV
8:11 VOLTAGE SET TO -390 mV PER D.D.

9:08	LOAD	LVDT	OCV	FILE
	2007	67.70	-391	
9:15 COMPLIANCE RUN				
9:23 END	2002	67.52	-391	316L3(1)-(Ø).DAT
1:25 COMP RUN				
1:32 END	2001	67.91	-391	(1)

4/21/00

7:28	2004	68.95	-457?	
8:00 COMP RUN				
8:09 END	2003	69.15	-463	(2)

12:00 COMPUTER CLOCK READS 12:24

Jerry Silvert 4/21/00

316L-3

4/22/00	LOAD	LVDT	OCV	FILE
8:41 106°C	2003	70.30	-603	
8:45 COMP RUN				
8:53 END RUN		70.06		(3)

4/24/00

7:04 107°C	2000	71.79	-635	
7:05 COMP-RUN				
7:14 END RUN		71.68		(4)

8:25 POTENTIOSTAT OFF CHANGED TO SCE # 8210528

4/25/00

7:28		72.22	-641 (HP = -353 mV)	
7:30 COMP RUN				
7:38 END	2003	72.05	-638	(5)

2:00 BACK OF POTENTIOSTAT IS WIRED WRONG! CAME THAT WAY FROM THE FACTORY. CHAN 9 IS NOW CORRECT.

NOTE: ALL OCV READINGS PRIOR TO THIS DATE AND TIME ARE WRONG!

OCV SET TO -340 mV

4/26/00 7:14				
106°C	1995	74.30	-340	
7:16 COMP RUN				
7:22 END RUN		74.35		(6)
4/27/00 7:08				
106°C	1996	78.34	-340	
7:10 COMP. RUN				
7:17 END	2002	78.36	-340	(7)
2:00	2000	79.90	-340	
3:06 COMP RUN				
3:19 END		80.16		(8)

Jerry Silvert 4/27/00

316L3

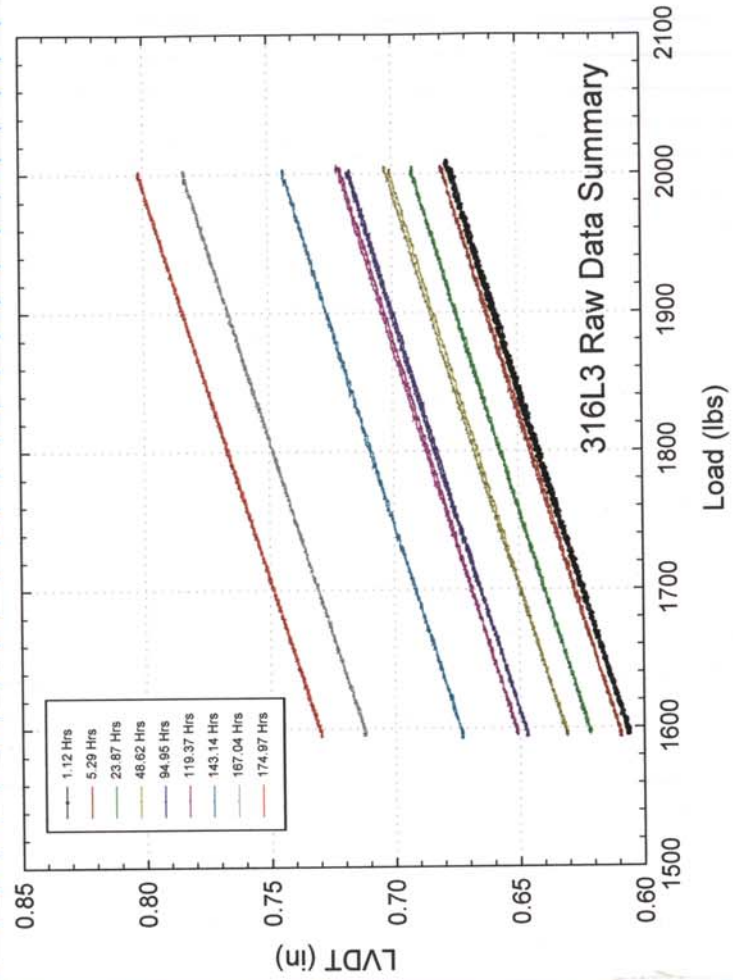
4/28/00	LOAD	LVDT	OCV	FILE
7:19	106°C	85.06	-340	
7:20	COMP. RUN			
7:29	END 2002	85.05	-340	(9)
9:26		85.79	RESET LVDT	
9:27		20.31	NEW VALUE	
3:07	COMP RUN	21.90		
3:39	END 2002	21.97		(10)
				~~(10)~~
4/30/00				
10:20	106°C 1910	39.45	WEIGHS TOUCHING	
	1978		LOWERED WEIGHT ELEVATOR	
10:24	COMP RUN			
10:35	END 2004	42.01		(11)
5/1/00				
7:12	106°C 1879	53.30	BOTTOMED OUT AGAIN	
	TRIED TO RELOAD AND SAMPLE POPPED			
9:30	1808	53.96		
10:48	1789	54.11		
2:00	1759	54.36		
5/2/00				
7:13	1590	55.33		
9:09	END TEST			
	1572	55.44		

FINAL PH: 4.684 @ 52.6°C

(FINAL PH FROM 316L12 WAS 5.547 @ 22.3°C)

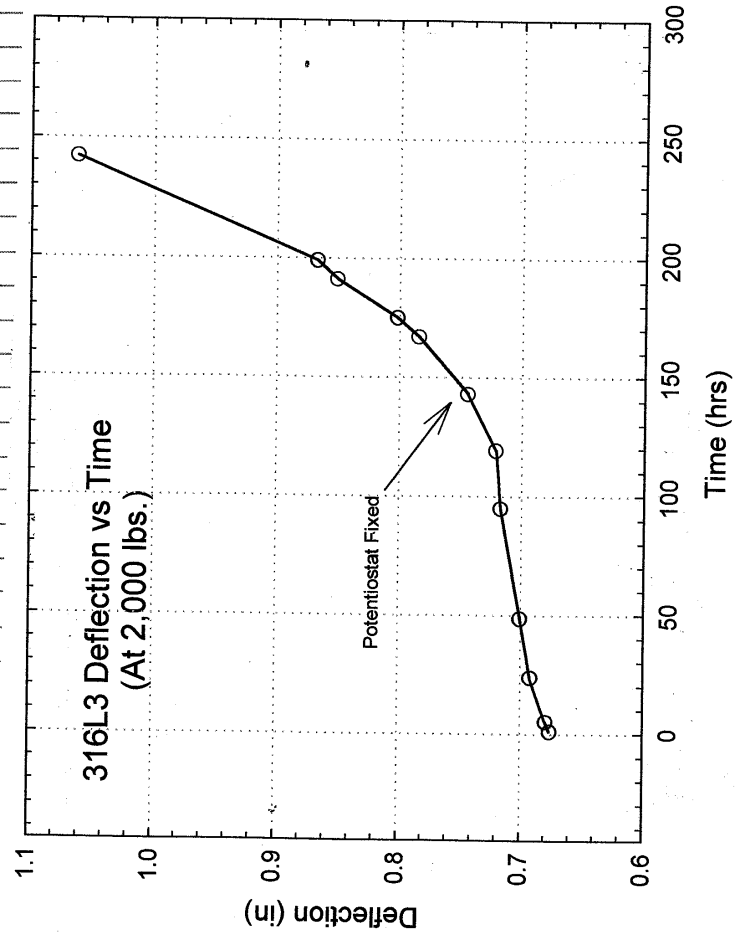
Amy Summit 5/2/00

316L3



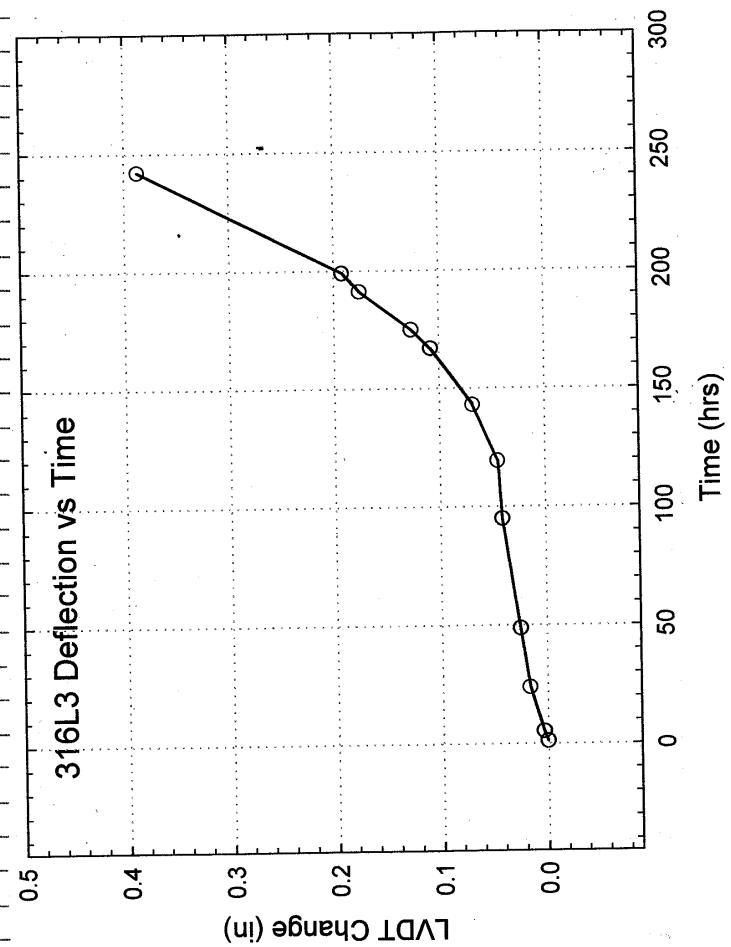
Amy Summit 5/2/00

316L3



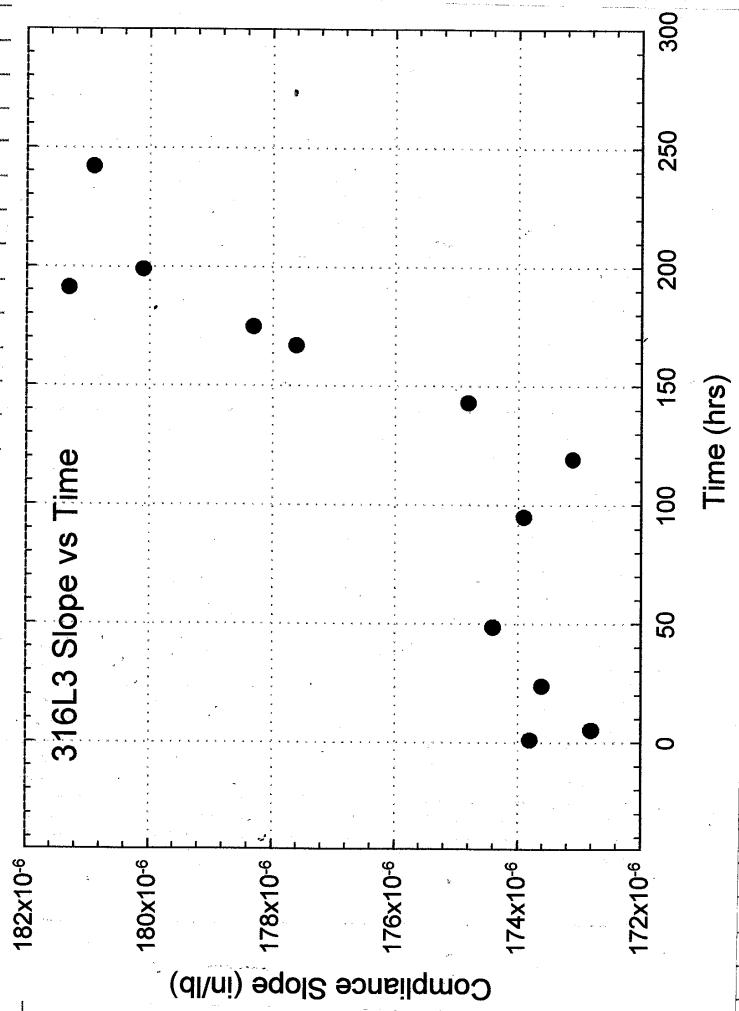
5/2/00

316L3



5/2/00

316L3



Jerry Sievert 6/2/00

GAGE BLOCKS USED TO CALIBRATE LVDT'S -

CERTIFICATE OF CALIBRATION

PRECISION METROLOGY

7350 North Teutonia Avenue Milwaukee, WI 53209
(414) 351-7420 * FAX: (414) 351-7429

10002 6632
Certification Number

Gage Id	11159		
Company	SOUTHWEST RESEARCH INSTITUTE	Manufacturer	BROWN & SHARPE
Type	GAGE BLOCK SET ENGLISH	Serial Number	R-241
Size	.050-4.00"	Department	N/A
Model	N/A	Procedure	GGG-G-15C
Lab Temp	68.0 Lab Humid 40.0	Cal Date	06/01/1999
Technician:	AAA Gage Calibrated at Precision Metrology	Next Cal Due	06/01/2000

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Jerry Sievert 6/20/00

PRECISION METROLOGY

CUSTOMER	SOUTHWEST RESEARCH INSTITUTE	STYLE	RECTANGULAR
GAGE ID #	11159	MATERIAL	STEEL
CAL DATE	06/01/1999	GRADE	3
DUE DATE	06/01/2000	SERIAL #	R-241

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Jerry Stewart 6/20/00

3/26/13 30% $MgCl_2$, 110°C - 2000 LBS - NO GAS
(FRAME 2) HEAT # P80746

5/4/00
TEST SOLUTION: 1060g FISHER LOT 995595 & 860g FISHER LOT 984733 WERE DISSOLVED IN 18 MEG OHM WATER TO MAKE 3 l OF SOLUTION

INITIAL pH 5.483 @ 24.6°C, FINAL pH 4.925 @ 22.2°C JS 6/26/00

THERMOMETER S/N 115814, SCRE S/N 8131141

5/9/00 KEITHLEY MODEL 614 S/N 704936
7:50 FILLED WITH TEST SOLUTION
8:02 OCV = NOT STEADY
9:23 OCV = -170 mV
9:50 START HEATING S.P. 100°C
10:05 SP ↑ 125°C
12:08 88°C -180 mV
2:52 96°C -242 mV SP ↑ 139°C

5/10/00
7:10 105°C -150 mV SP ↑ 144°C
9:41 108°C -362 mV (FOUND BUBBLE ON LUGGIN PROBE)
10:09 108°C -361 mV (POTENTIOSTAT = -361 mV)
10:13 START LOG FILE: 3/6/13
10:16 SET OCV = -370 mV
10:33 LOADED - REZERO LVDT

LOAD	LVDT	OCV	FILE
2004	8.70	-372	
12:02 COMP RUN			
12:10 END 2005	9.41	-372	(Ø)
3:10 COMP RUN			
3:24 END 2002	9.73	-371	(1)
5/11/00			
7:10 108°C 2000	10.24	-390 TO -411	NOT STEADY

Jerry Stewart 6/26/00

3/6L13

5/11/00
7:27 BUBBLES ON SCE & LUGGIN -376 mV
7:30 COMP RUN
7:39 END 2002 10.15 -372 (2)
5/12/00
7:15 2001 10.42 NOISE - BUBBLES -
7:33 COMP RUN
7:43 END 2003 10.31 -363 (3)
5/15/00
7:09 2003 10.65 -260
7:30 COMP RUN
7:39 END 2000 10.54 -258 (4)
5/16/00
7:08 2001 10.75 -250
7:24 COMP RUN
7:34 END 2002 10.61 -261 (5)
9:33 CHANGE LUGGIN PROBE -350
5/17/00
7:12 2003 10.74 -350
7:43 COMP RUN
7:54 END 2001 10.54 -350 (6)
10:30 CHANGE POTENTIOSTAT BOARD -370
5/18/00
7:10 2002 10.57 -370
5/19/00
7:05 2001 10.68 -372
7:19 COMP. RUN
7:32 END 2002 10.58 -370 (7)
5/22/00
7:08 2001 10.82 -370
7:34 COMP RUN
7:46 END 2001 10.62 -370 (8)
2:30 DD SWAPPED POT. BOARDS

Jerry Sewell 6/26/00

3/6L13

5/23/00
7:09 2002 10.75 -367
~9:00 COMPUTER HUNG - NEW LOG FILES: 3/6L13B
5/24/00
7:09 2001 10.81 -367
7:35 COMPUTER HUND - REBOOT
8:36 HARD SHUT DOWN
5/25/00
COMPUTER IS BACK ON LINE
10:23 NEW LOG FILE IS: 3/6L13C
12:16 COMP RUN
12:35 END 2004 10.60 -366 (1)
5/26/00
7:14 2002 10.83 -366
7:38 COMP RUN
7:47 END 2001 10.73 -366 (2)
5/30/00
7:07 1999 11.01 -366
8:04 COMP RUN
8:15 END 2003 10.91 -366 (3)
5/31/00
7:06 2005 10.94 -366
6/1/00
7:06 2004 11.02 -366
7:36 COMP RUN
7:50 END 1999 10.84 -366 (4)
6/2/00
7:10 2000 10.94 -366
7:43 COMP RUN
7:53 END 2003 10.90 -366 (5)
6/5/00
7:09 2002 11.09 -366
7:43 COMP RUN
7:55 END 2002 10.95 -366 (6)

Jerry Sewell 6/26/00

316L13

6/6/00	2001	11.21	-366	
7:49	COMP RUN			
8:06 END	2000	10.95	-366	(7)
6/7/00				
709	1999	11.16	-366	
742	COMP RUN			
754 END	1999	10.96	-366	(8)
6/8/00				
708	2000	11.04	-366	
751	COMP RUN			
807 END	2001	10.89	-366	(9)
6/9/00				
728	2000	11.12	-366	
742	COMP RUN			
752 END	2002	10.89	-366	(10)
6/12/00				
709	2001	11.01	-366	
740	COMP RUN			
753 END	2002	10.93	-366	(11)
6/13/00				
713	2000	11.24	-366	
745	COMP RUN			
755 END	2003	11.03	-366	(12)
6/14/00				
709	2003	11.19	-366	
740	COMP RUN			
750 END	2003	11.09	-366	(13)
6/15/00				
709	2002	11.31	-366	
743	COMP RUN			
750 END	2005	11.15	-366	(14)
6/16/00				
709	2006	11.19	-366	
744	COMP RUN			
751 END	2005	11.04	-366	(15)

Jerry Sweet 6/27/00

316L13

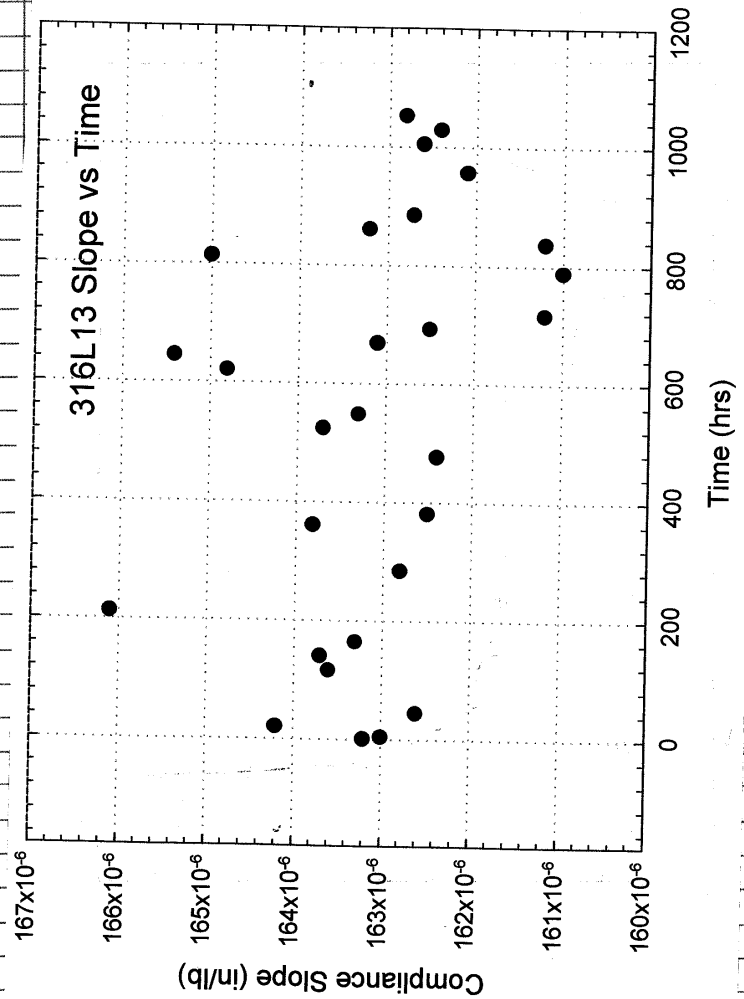
6/19/00				
7:08	2004	11.24	-366	
7:41	COMP RUN			
7:48 END	2002	11.03	-366	(16)
6/20/00				
7:13	2005	11.02	-366	
6/21/00				
707	2005	11.04	-366	
739	COMP RUN			
746 END	2003	10.92	-366	(17)
6/22/00				
709	2006	10.80	-366	
735	COMP RUN			
740 END	2001	10.65	-366	(18)
6/23/00				
709	2002	10.77	-366	
737	COMP RUN			
742 END	2005	10.81	-366	(19)
744	POTENTIOSTAT OFF			
754	UNLOADED — START COOL DOWN			

POST TEST: GENERALIZED PITTING IN ARM AREA OUTSIDE PULL RODS - TYPICAL 168 μm DIA & 62 μm DEEP ONLY A FEW PITS IN AREA COVERED BY THE PULL RODS - LARGER & DEEPER - 425 μm DIA - AND 135 μm DEEP -

THERE IS PITTING IN THE CRACK GROOVE

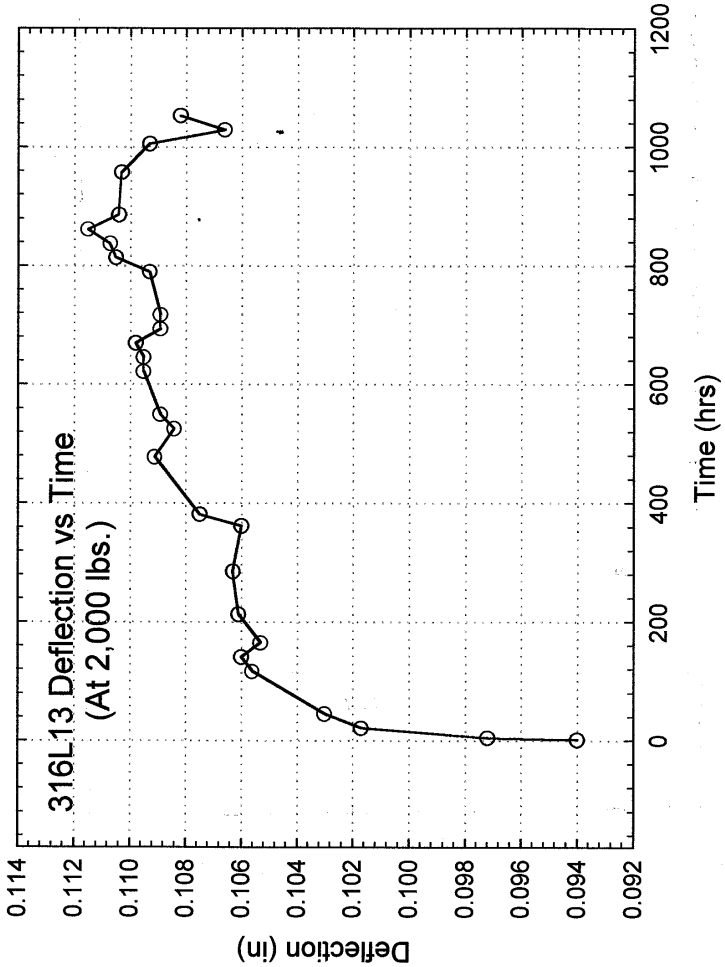
Jerry Sweet 6/27/00

316L13



Jerry Sewart 6/27/00

316L13



Jerry Sewart 6/27/00

316L10 2.0M NACL 95°C AIR 2000LBS
(FRAME 1) HEATX P80746

5/4/00
TEST SOLUTION: 175.3g NACL FISHER LOT 975121 WERE
DISSOLVED IN 18 MEG OHM WATER TO MAKE 3L SOLUTION

INITIAL pH: 7.185 @ 21.3°C

THERMOMETER S/N 115749 SCRE S/N 821528

5/8/00
920 FILLED WITH TEST SOLUTION
9:29 START DEAERATE – N_2 OCV -170mV
1026 -146mV
KEITHLEY -145mV, PT = -67mV
(MOD 614 S/N 704936
1032 START HEATING SP 90°C
1216 HEATER IS WIRED WRONG
1226 START HEATING
245 66°C -239mV SP↑ 110°C
5/9/00
705 86°C -334mV SP↑ 120°C
844 90°C -344mV SP↑ 125°C
922 92°C -347mV PT = -86mV
POT. OCV = ~~-348~~ 348mV 5/9/00
936 LOADED
LOAD 2004 LVDT 49.82 OCV -372
949 SWITCHED TO AIR
10:00 2006 50.58 -269
10:36 COMP RUN
1047 END 2004 50.81 -211 FILE (Ø)
5/10/00
713 2068 45.36? -120
LOST TEST LIQUID – STOP TEST

Jerry Sievert 6/27/00

316L10

5/15/00
RESTART

INITIAL pH: 6.731 @ 21.1°C
OCV = 26mV, PT = 161mV
9:31 START DEAERATE – N_2
952 OCV = -68mV KEITHLEY MOD 614 S/N 0704934
1010 -105mV
10:17 START HEATING SP 110°C OCV = -123mV
1:00 78°C SP↑ 120°C -256
348 90°C -276
5/16/00
707 95°C -298mV
722 SP↑ 123°C
947 93°C -300mV
949 POTENTIOSTAT = -300mV
10:00 LOADED 2003 LVDT SET 3.77 -304mV
10:03 SWITCHED TO AIR FLOW
10:04 RESTARTED LOG FILE RESET ΔTIME
10:18 2004 4.00 -241
12:07 COMP RUN
12:16 END 2003 4.07 -206 (1)
12:55 RESET LVDT 10.10 RAN OUT OF TRAVEL IN COMP RUN
300 COMP RUN
308 END 2004 10.26 -266 (2)
5/17/00
711 2004 10.26 -252
731 COMP RUN
741 END 2003 11.06 -251 (3)
5/18/00
709 2004 10.79 -255
5/19/00
704 2004 10.73 -255
733 COMP RUN
746 END 2000 10.37 -254 (4)

Jerry Sievert 6/27/00

3/6L10

5/22/00
7:07 2000 10.98 -250
7:21 COMP RUN
7:33 END 2003 10.78 -250 (5)
10:54 -240 APPLIED
3:43 SWAPPED POT. BOARD
5/23/00
708 2004 10.83 -237
~900 COMPUTER HUNG - NEW LOG FILE 3/6L10B
5/24/00
708 2005 10.89 -237
726 COMP RUN
735 END COMPUTER HUNG - REBOOT
8:36 HARD SHUTDOWN
8:42 COLD RESTART - NO PROBLEMS
3/6L10B.1 IS 21K 3/6L13B.2 IS ONLY 8K
8:48 TRIED TO RESTART LABVIEW - "APPLICATION MEMORY IS FULL"
8:51 SHUTDOWN COMPUTER
8:53 RESTART
DATA FILES FOR 3, 5, 10, 12 & 13 BACKED UP.
REPLACED "CREEP FRAMES" MODULE
REBOOT
5/25/00
10:20 COMPUTER IS BACK ON LINE
NEW LOG FILE IS 3/6L10C
10:32 COMP RUN
1042 END 2003 10.37 -237 (0)
5/26/00
7:13 2003 10.69 -237
7:27 COMP RUN
7:37 END 2003 10.52 -237 (1)
5/30/00
706 2005 10.55 -237
752 COMP RUN
803 END 2001 10.30 -237 (2)
~~Jerry Stuart~~ 6/28/00

3/6L10

5/31/00
707 2002 10.28 -237
6/1/00
707 2002 10.68 -237
727 COMP RUN
734 END 2003 10.53 -237 (3)
6/2/00
709 2002 10.97 -237
729 COMP RUN
741 END 2002 10.80 -237 (4)
6/5/00
709 2003 11.10 -237
730 COMP RUN
742 END 2001 10.83 -237 (5)
6/6/00
708 2002 11.06 -237
737 COMP RUN
747 END 2003 10.90 -237 (6)
748 CHANGE APPLIED POTENTIAL TO -0.200V
6/7/00
708 2005 11.13 -197
729 COMP RUN
741 END 2001 10.83 -197 (7)
6/8/00
707 2003 10.61 -197
740 COMP RUN
750 END 2002 10.41 -197 (8)
6/9/00
711 2002 10.54 -197
730 COMP RUN
740 END 2003 10.49 -197 (9)
6/12/00
709 2003 10.52 -197
730 COMP RUN
739 END 2007 10.50 -197 (10)
~~Jerry Stuart~~ 6/28/00

3/26L10

6/12/00
850 CHANGE APPLIED POTENTIAL -150mV
6/13/00
7:12 2007 10.79 -150
7:32 COMP RUN
7:43 END 2002 10.55 -150 (11)
6/14/00
708 2001 10.85 -150
728 COMP RUN
739 END 2002 10.74 -150 (12)
6/15/00
708 2003 10.67 -150
733 COMP RUN
742 END 2005 10.62 -150 (13)
6/16/00
708 2006 10.56 -151
7:35 COMP RUN
7:42 END 2003 10.44 -151 (14)
6/19/00
707 2002 10.62 -151
7:30 COMP RUN
7:40 END 2003 10.56 -151 (15)
6/20/00
712 2002 10.76 -151
750 COMP RUN
757 END 2003 10.63 -151 (16)
6/21/00
706 2004 10.65 -151
7:30 COMP RUN
7:37 END 2001 10.59 -150 (17)
6/22/00
7:08 2001 10.47 -151
7:30 COMP RUN
7:34 END 2004 10.52 -150 (18)

Jerry Stewart 6/28/00

3/26L10

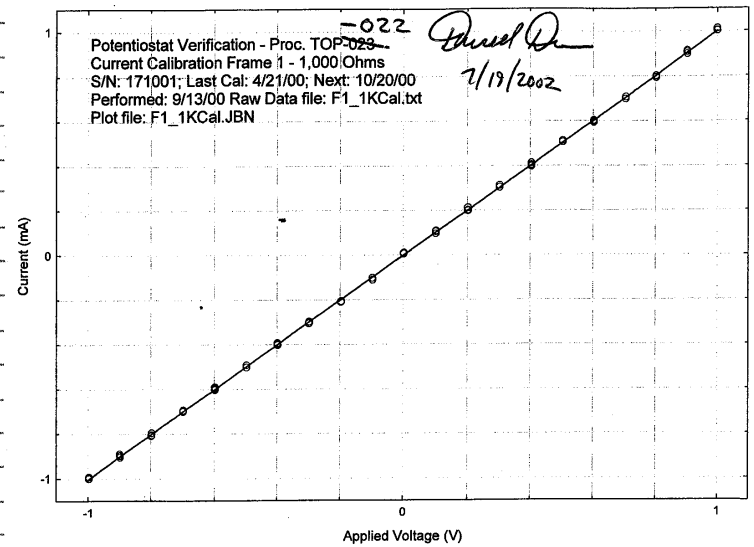
6/23/00
708 2004 10.61 -150
7:30 COMP RUN
7:35 END 2004 10.60 -150 (19)
6/26/00
708 2005 10.96 -152
7:39 COMP. RUN
7:45 END 2001 10.88 -152 (20)
6/27/00
7:35 COMP. RUN 2002 11.04 -151 (21)
6/28/00
7:35 COMP RUN 2001 11.15 -151 (22)
6/29/00
7:39 COMP RUN 2002 11.48 -152 (23)
6/30/00
7:35 COMP RUN 2002 11.70 -151 (24)
7/3/00
10:07 COMP RUN 2001 12.47 -151 (25)
7/5/00
7:36 COMP RUN 2005 12.86 -151 (26)
7/6/00
7:39 COMP RUN 2004 12.98 -151 (27)
7/7/00
7:37 COMP RUN 2003 13.34 -151 (28)
9:57 CHANGE APPLIED VOLTAGE TO -190mV
7/10/00
7:39 COMP RUN 2005 14.50 -191mV (29)
7/11/00
7:36 COMP RUN 2001 14.74 -191 (30)
7/12/00
7:36 COMP RUN 2002 14.99 -191 (31)
7/13/00
7:36 COMP RUN 2003 15.26 -191 (32)
7/14/00
7:40 COMP RUN 2004 15.53 -191 (33

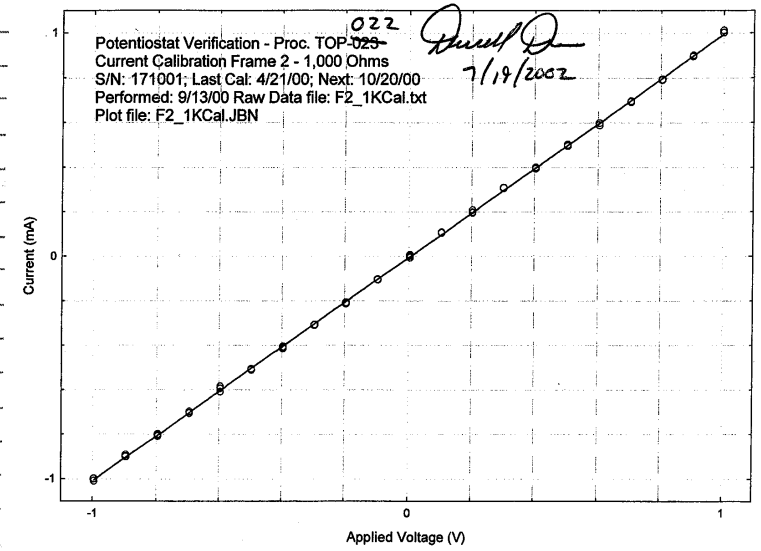
Jerry Stewart 8/18/00

3/6L10

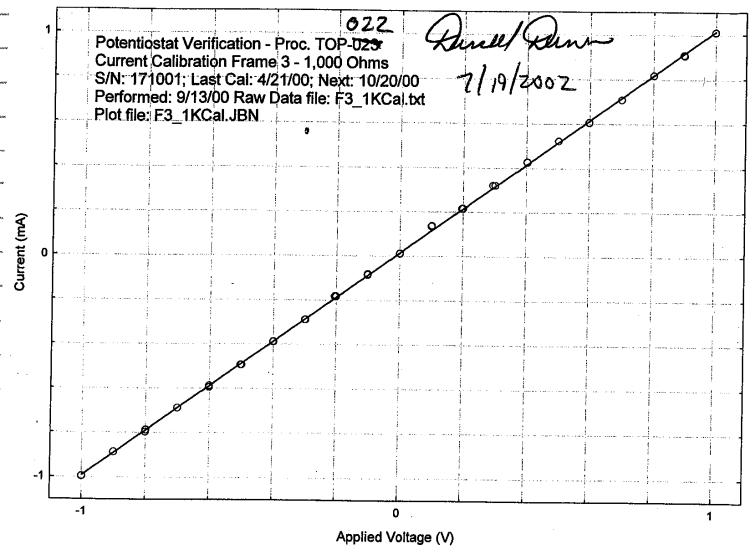
7/17/00			
7:39 Comp Run 2000	16.13	-1991 8/18/00	(34)
7/18/00			
7:38 Comp Run 2003	16.31	-191	(35)
7/19/00			
7:39 Comp Run 2004	16.67	-190	(36)
7/20/00			
7:43 Comp Run 2000	16.80	-190	(37)
7/21/00			
7:37 Comp Run 2001	17.09	-191	(38)
7/24/00			
7:37 Comp Run 2003	17.82	-191	(39)
7/25/00			
7:39 Comp Run 2003	18.02	-191	(40)
7/26/00			
7:46 Comp Run 2002	18.21	-190	(41)
7/27/00			
7:33 Comp Run 2002	18.44	-190	(42)
7/28/00			
7:55 Comp Run 2000	18.74	-190	(43)
7/31/00			
7:33 Comp Run 2001	19.60	-190	(44)
8/1/00			
7:44 Comp Run 2004	19.85	-190	(45)
8/2/00			
7:40 Comp Run 2001	19.86	-190	(46)
8/3/00			
7:44 Comp Run 2003	19.63	-190	(47)
8/4/00			
7:44 Comp Run 2003	19.93	-190	(48)
8/7/00			
7:30 Comp Run 2000	19.97	-190	(49)
2:14 Comp Run 2003	21.15	-190	(50)
2:15 TEST TERMINATED			

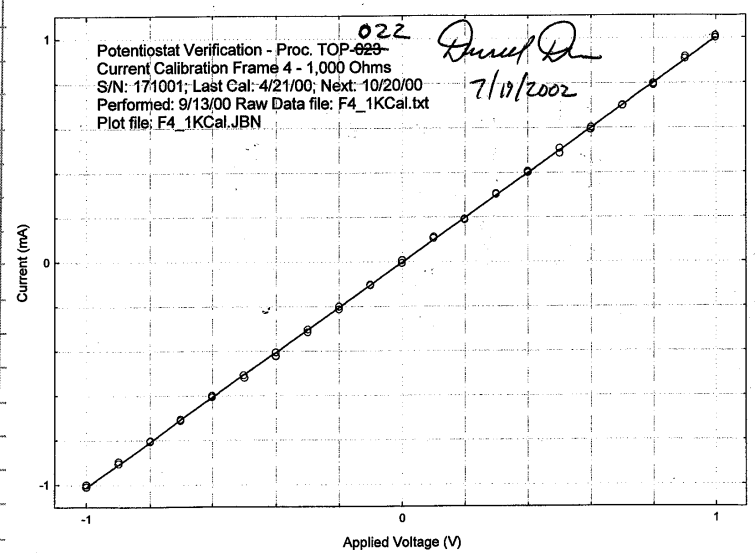
[signature] 8/18/00





[signature] 9/14/00





Jerry Sturt 9/14/00

3/16h17

TEST CONDITIONS: 30% $MgCl_2$, 110°C, 2000 LB LOAD
APPLIED VOLTAGE -350 mV

1921.7g $MgCl_2 \cdot 6H_2O$ WERE DISSOLVED IN 18 meg OHM WATER TO MAKE 3 l OF TEST SOLUTION — FISHER LOT # 995595

THERMOMETER S/N 115814, SCE S/N 8131141
APPLIED VOLTAGE MEASURED WITH KEITHLEY S/N 704936

DURING THE TEST THE FOLLOWING COMPLIANCE DATA FILES WERE GENERATED:

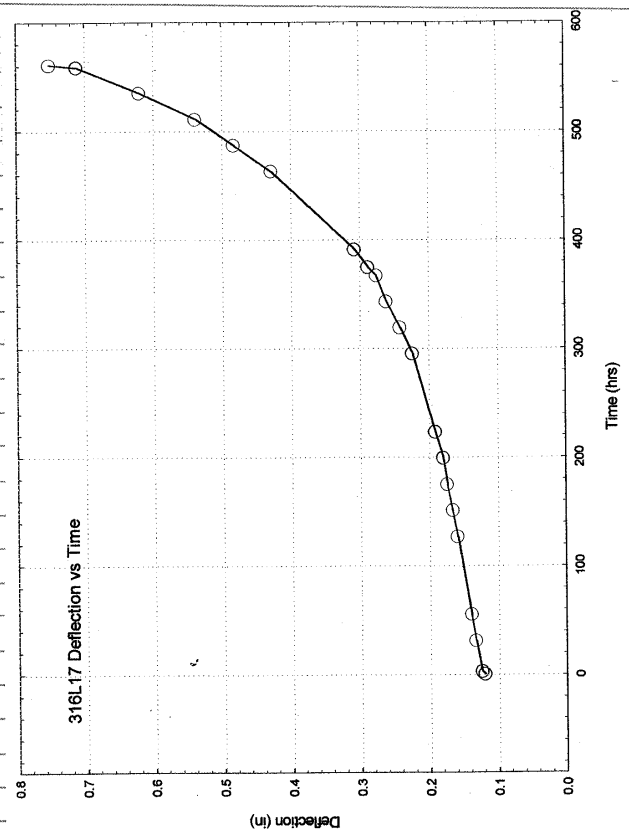
3/16h17

FILE NAME	DATE	TIME	ELAPSED TIME
316h17(2)-(0)	7/19/00	12:27	0.25HR
(1)	7/19	3:12	3.00 HRS
(2)	7/20	7:29	31.28
(3)	7/21	7:38	55.43
(4)	7/24	7:23	127.18
(5)	7/25	7:40	151.96
(6)	7/26	7:45	175.21
(7)	7/27	7:34	198.36
(8)	7/28	7:34	223.36
(9)	7/31	7:34	295.36
(10)	8/1	7:28	319.26
(11)	8/2	7:42	343.49
(12)	8/3	7:30	367.29
(13)	8/3	3:02	374.82
(14)	8/4	7:26	391.22
(15)	8/7	7:31	463.30
(16)	8/8	7:28	487.25
(17)	8/9	7:30	511.28
(18)	8/10	7:30	535.28
(19)	8/11	7:30	559.28
(20)	8/11	9:39	561.43

Jerry Sturt 9/14/00

316L17

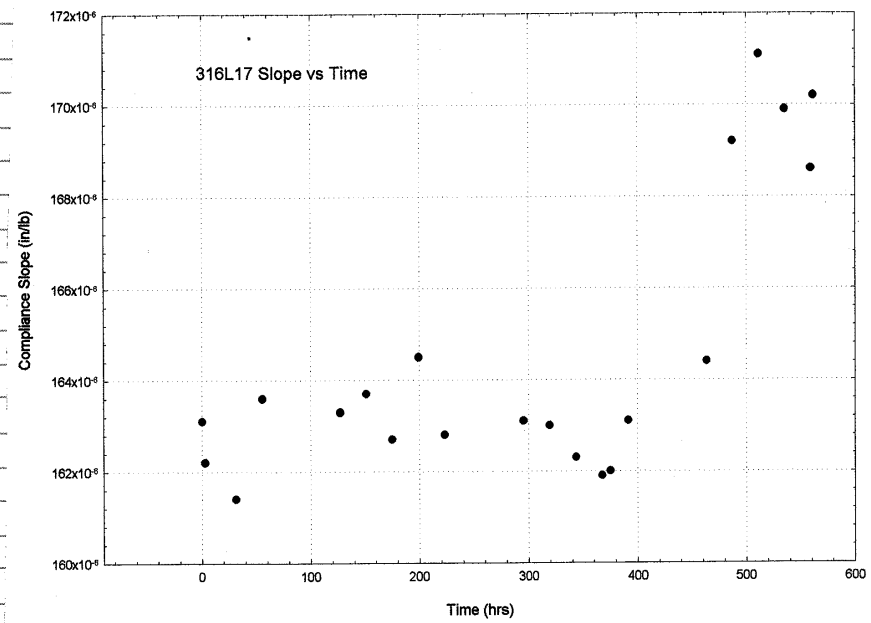
THIS PLOT SUMMARIZES LVDT READING TAKEN FROM THE INDIVIDUAL COMPLIANCE DATA FILES. POINTS INDICATE AVERAGE READING AT END OF COMPLIANCE RUN, I.E. 2000 LBS —
FILE NAME: DEFTIME.INB IN FOLDER; No17



Jerry Sievert 9/14/00

316L17

SLOPE VS TIME PLOTS — THE SLOPE OF A LSQ LINE THRU THE COMPLIANCE DATA AT A GIVEN TIME —



Jerry Sievert 9/14/00

316L18

TEST CONDITIONS: 30% $MgCl_2$, 110°C, 3000 LB LOAD
APPLIED VOLTAGE: -350 mV

COMPLIANCE RUNS 2400 - 3000 LBS IE R = 0.8

1921.7g $MgCl_2 \cdot 6H_2O$ WERE DISSOLVED IN DI WATER TO MAKE 3 l OF TEST SOLUTION -
FISHER LOT 995595 - 1250.6 g
FISHER LOT 000036 671.1 g

THERMOMETER S/N 115749
REF ELEC - SCE S/N 813141

VOLTAGES MEASURED WITH KEITHLEY S/N 0704934

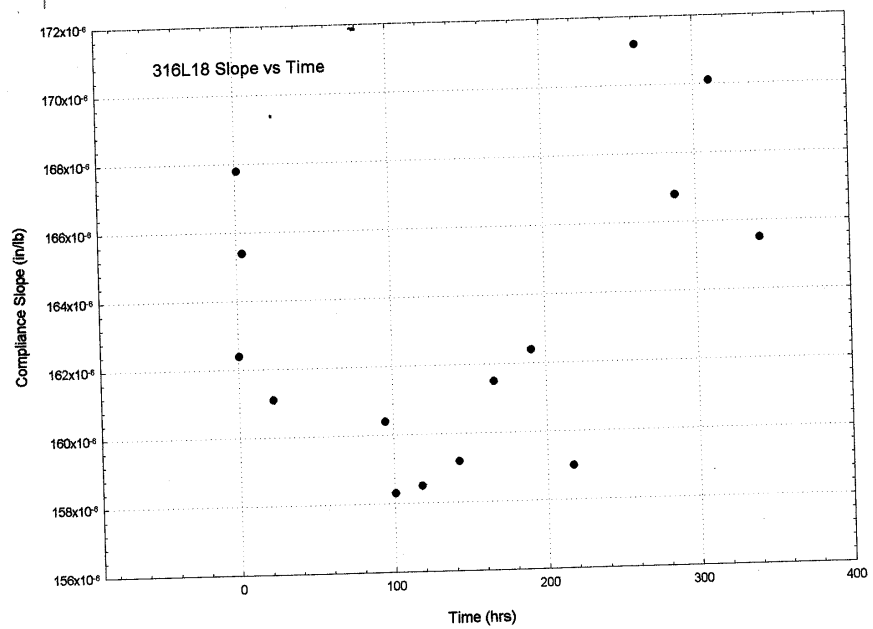
THE FOLLOWING DATA FILES WERE GENERATED:

316L18

FILE	DATE	TIME	HRS
(0)	9/26/00	9:28	0.25
(1)		10:33	1.33
(2)		13:01	3.80
(3)	9/29/00	7:19	22.10
(4)	10/2/00	8:00	94.78
(5)		2:00	100.78
(6)	10/3/00	7:36	118.38
(7)	10/4/00	7:41	142.46
(8)	10/5/00	7:25	166.19
(9)	10/6/00	7:47	190.56
(10)	10/7/00	9:58	216.74
(11)	10/9/00	7:30	262.27
(12)	10/10/00	7:44	286.50
(13)	10/11/00	7:30	310.27
(14)	10/12/00	2:30	341.27

Jerry Stark 10/13/00

316L18

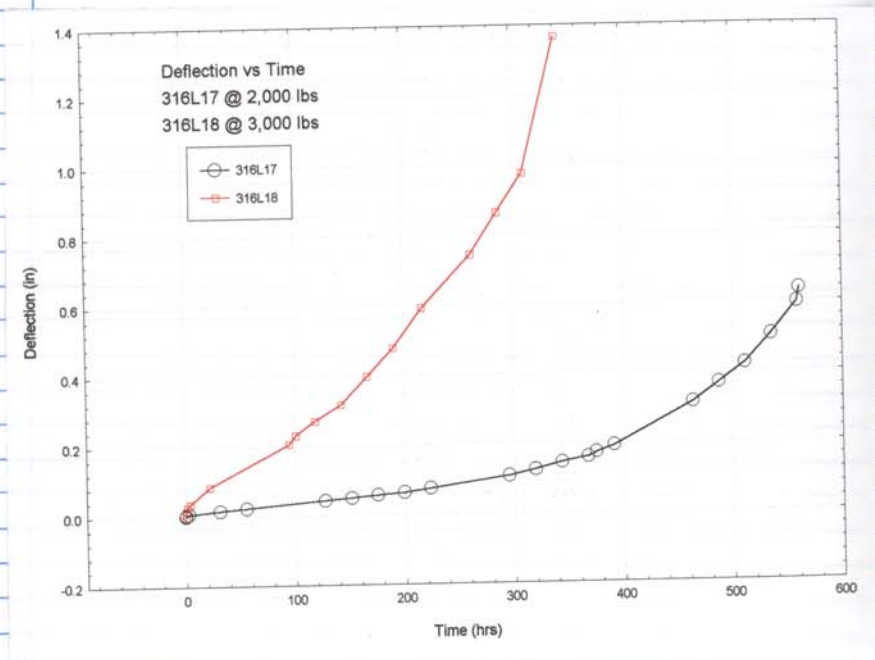


Jerry Stark 10/13/00

316L18

TESTS 316L17 & 316L18 DIFFER ONLY IN THE APPLIED LOAD - ALL OTHER TEST CONDITIONS ARE THE SAME

DEFLECTIONS HAVE BEEN ADJUSTED TO A COMMON ZERO FOR COMPARISON -



Jerry Sturt 10/13/00

316L19

TEST CONDITIONS: 30W/O $MgCl_2$ AT 110°C, LOAD 2000 LBS
APPLIED VOLTAGE: -360 mV

TEST SOLUTION: 1921.7g FISHER LOT 000036 $MgCl_2 \cdot 6H_2O$ TO MAKE 3 l -

THERMOMETER S/N 115814 - REF. ELECT. S/N 8210528

COMPLIANCE DATA FILES:

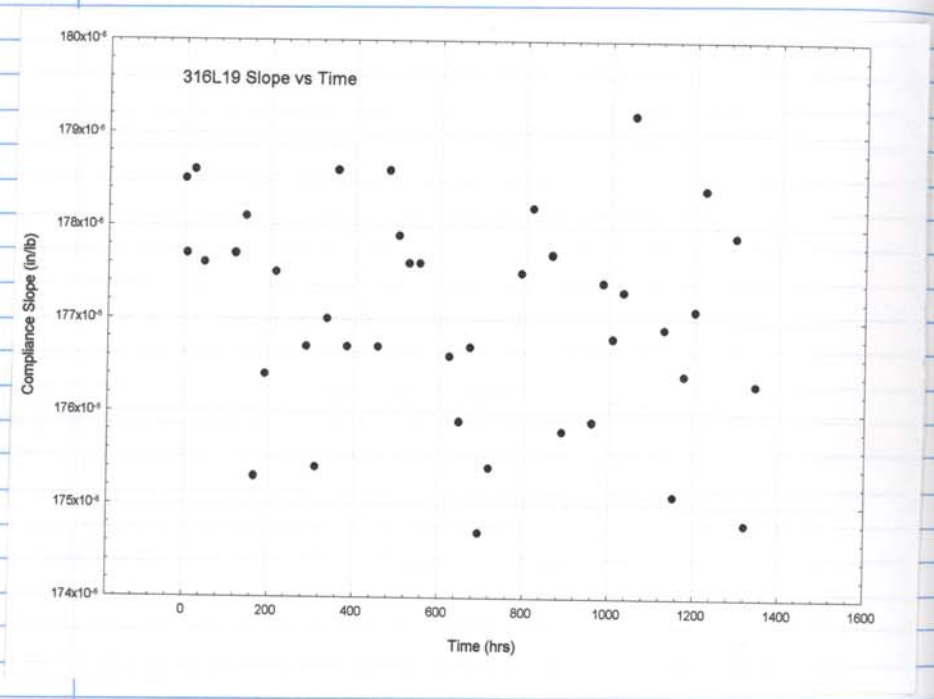
316L19

FILE	DATE	TIME	HRS
(0)	9/27/00	9:49	0.5
(1)		2:19	5.0
(2)	9/28/00	7:19	22.0
(3)	9/29/00	7:32	46.22
(4)	10/2/00	7:50	118.52
(5)	10/3/00	7:48	142.49
(6)	10/4/00	7:30	166.19
(7)	10/5/00	7:38	190.32
(8)	10/6/00	7:36	214.29
(9)	10/9/00	7:44	286.42
(10)	10/10/00	7:33	310.24
(11)	10/11/00	7:46	334.46
(12)	10/12/00	7:25	358.11
(13)	10/13/00	7:40	382.36
(14)	10/16/00	7:30	454.19
(15)	10/17/00	7:50	478.52
(16)	10/18/00	7:37	502.30
(17)	10/19/00	7:31	526.20
(18)	10/20/00	8:27	551.13
(19)	10/23/00	7:41	622.36
(20)	10/24/00	7:51	646.53
(21)	10/25/00	8:33	671.23
(22)	10/26/00	7:47	694.96
(23)	10/27/00	7:26	718.11
(24)	10/30/00	7:35	791.26
(25)	10/31/00	8:52	876.54
(27)	11/2/00	7:14	822.91
(28)	11/3/00	9:45	849.43
(29)	11/6/00	7:27	957.13
(30)	11/7/00	7:35	983.26
(31)	11/8/00	7:37	1007.29
(32)	11/9/00	7:41	1031.36
(33)	11/10/00	8:02	1055.71
(34)	11/13/00	7:52	1127.54
(35)	11/14/00	7:33	1151.22
(36)	11/15/00	7:27	1175.62
(37)	11/16/00	8:31	1200.19
(38)	11/17/00	7:45	1223.47
(39)	11/20/00	7:26	1295.10
(40)	11/21/00	7:46	1319.43
(41)	11/22/00	7:57	1343.61

TEST TERMINATED 11/22/00 - LOST COUNTER ELECTRODES

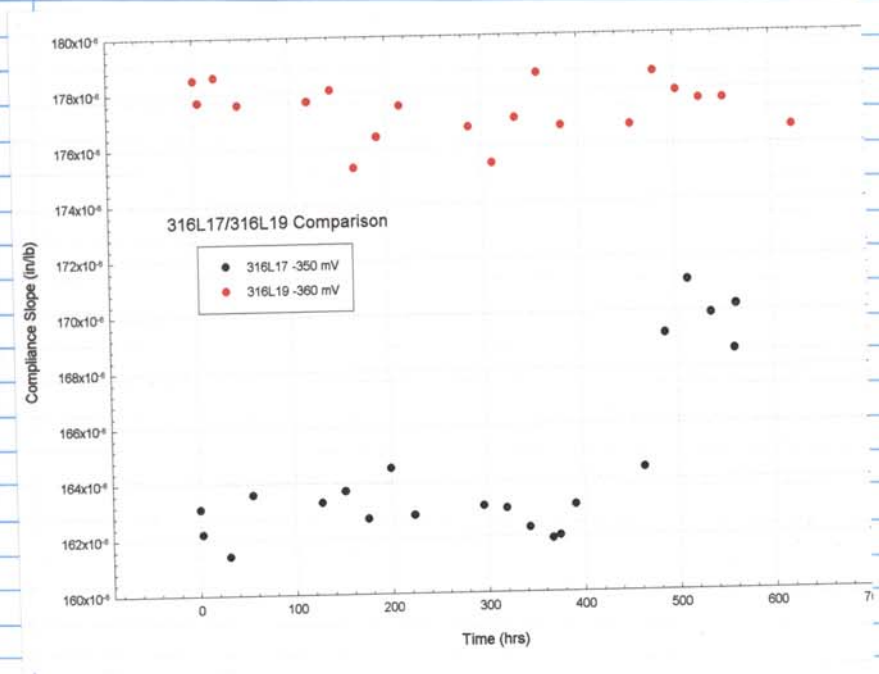
Jerry Sturt 11/24/00

316L19



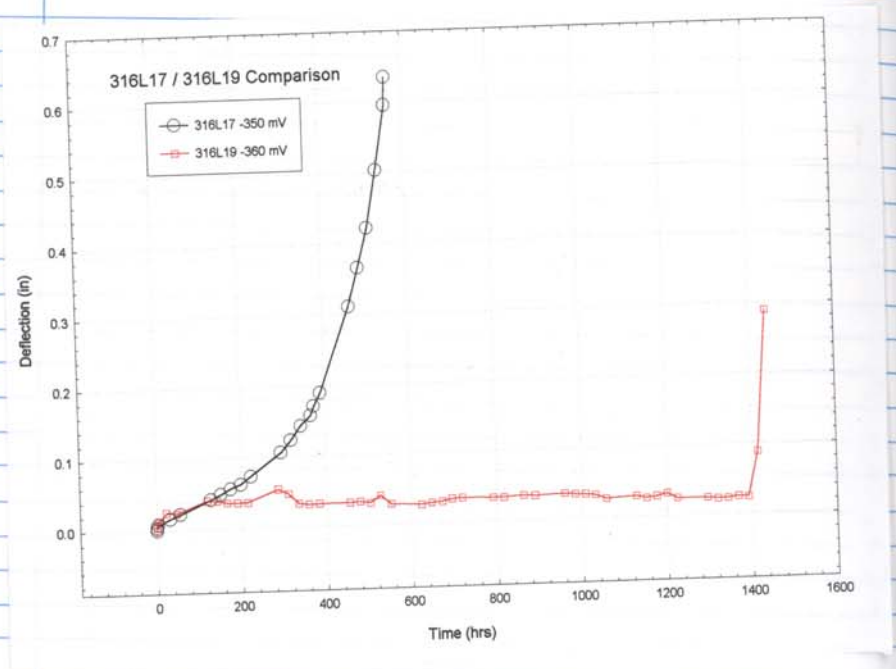
Jerry Sieart 11/24/00

316L19



Jerry Sieart 11/24/00

316L19



Jerry Stewart 11/24/00

316L20

TEST CONDITIONS: 9.07 MOLAL LiCl AT 95°C
3000 LB LOAD - APPLIED VOLTAGE -350 mV

500g FISHER LOT 972239 + 1.3 l DI H_2O
500g FISHER LOT 005438 + 1.3 l DI H_2O

THERMOMETER S/N 115749 - REF. ELECT S/N 8131141
KEITHLEY MOD 614 S/N 0704934
LUGGIN PROBE FILLED WITH SAT. KCl

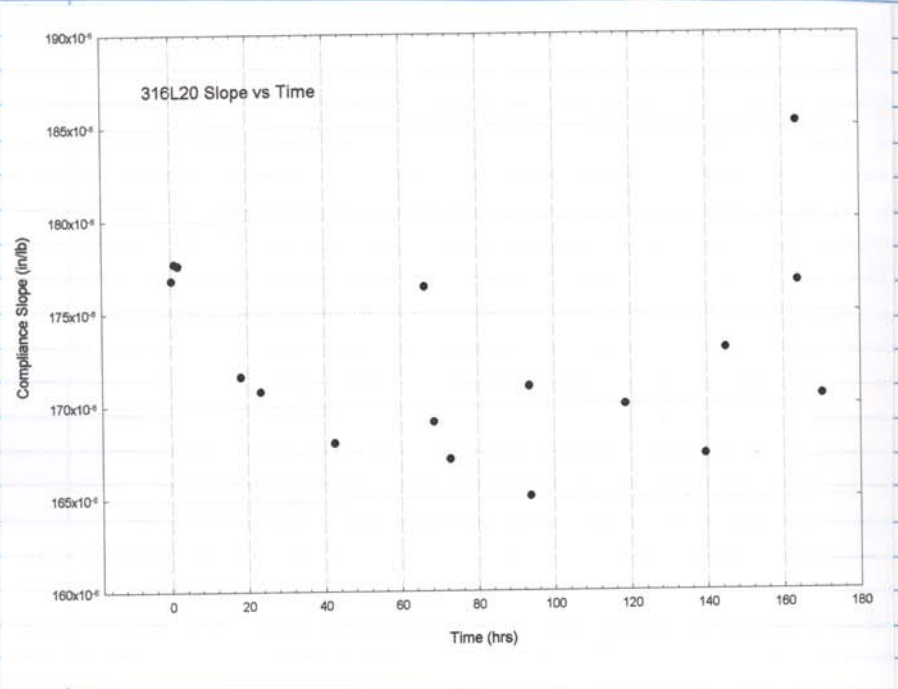
COMPLIANCE FILES:

316L20

FILE	DATE	TIME	HRS
(0)	10/24/00	1:04	0.25
(1)		1:53	1.00
(2)		2:55	5.00
(3)	10/25/00	7:11	18.30
(4)		12:21	23.47
(5)	10/26/00	7:34	42.69
(6)	10/27/00	7:11	66.31
(7)		9:25	68.54
(8)		1:38	72.76
(9)	10/28/00	10:21	93.48
(10)		10:55	93.71
(11)	10/29/00	10:25	118.54
(12)	10/30/00	7:20	139.97
(13)		12:45	144.59
(14)	10/31/00	7:27	163.59
(15)		7:14	163.87
(16)		1:57	170.09
—		23:00	179.14

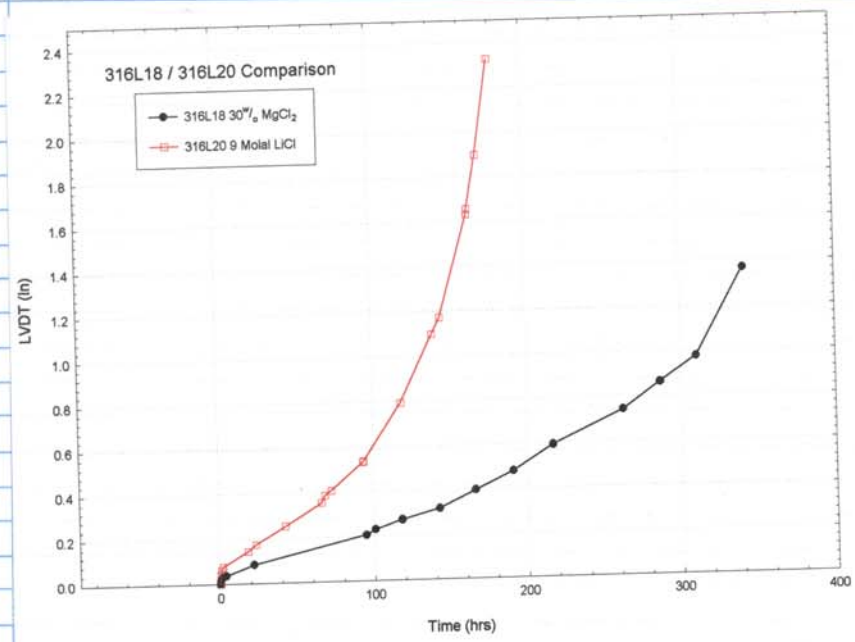
Jerry Stewart 11/24/00

316L20



Jerry Sivert 11/24/00

316L20



Jerry Sivert 11/24/00

316L20

Jerry Scott 11/24/00

316L21

TEST CONDITIONS: 9.07 MOLAL LiCl AT 95°C
3000 LB LOAD – APPLIED VOLTAGE: -400mV

TEST SOLUTION: 1000g LiCl FISHER LOT 005438
2.6 l DI WATER

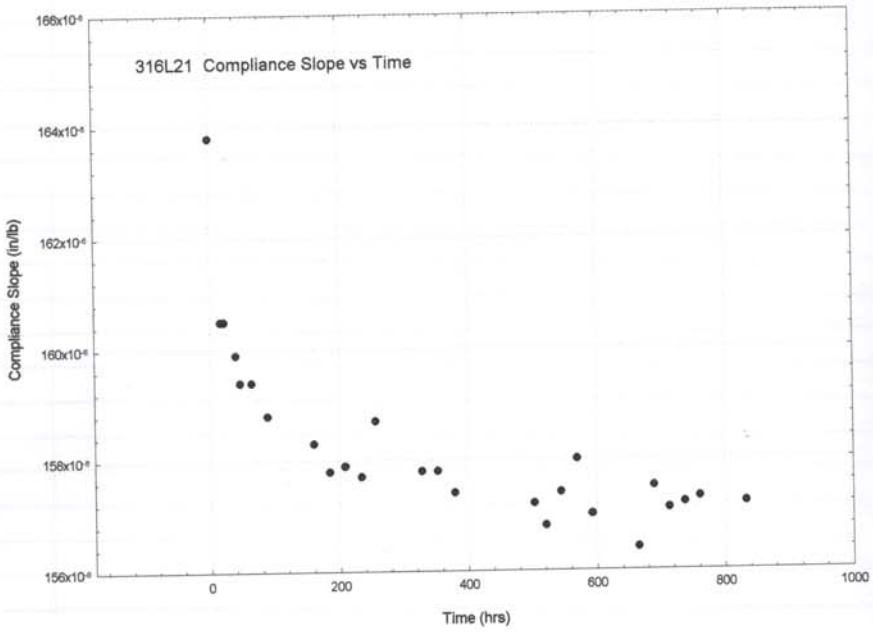
THERMOMETER S/N 115749 – REF. ELEC. S/N 813141
VOLTAGE FM HP MOD 3440A S/N US36081499

COMPLIANCE FILES:

	316L21			FRAME 4
FILE	DATE	TIME	HRS	
(0)	11/6/00	3:05	0.27	
(1)	11/7/00	7:22	16.55	
(2)		12:57	22.13	
(3)	11/8/00	7:24	40.58	
(4)		1:50	47.01	
(5)	11/9/00	7:26	64.61	
(6)	11/10/00	8:13	89.39	
(7)	11/13/00	7:40	160.84	
(8)	11/14/00	7:44	184.91	
(9)	11/15/00	7:44	208.91	
(10)	11/16/00	8:41	233.86	
(11)	11/17/00	7:31	256.69	
(12)	11/20/00	7:36	328.77	
(13)	11/21/00	7:33	352.72	
(14)	11/22/00	8:06	377.27	LVDT NOISE
(15)		8:20	377.50	LVDT NOISE
(16)		9:13	378.39	
(17)	11/27/00	1:44	502.99	
(18)	11/28/00	7:45	520.92	
(19)	11/29/00	7:40	544.84	
(20)	11/30/00	8:24	569.64	
(21)	12/1/00	7:45	592.92	
(22)	12/4/00	7:25	664.59	
(23)	12/5/00	7:59	689.16	
(24)	12/6/00	7:33	712.73	
(25)	12/7/00	8:57	737.03	
(26)	12/8/00	7:33	760.81	
(27)	12/11/00	7:58	833.14	
		1:25	838.59	TEST TERMINATED

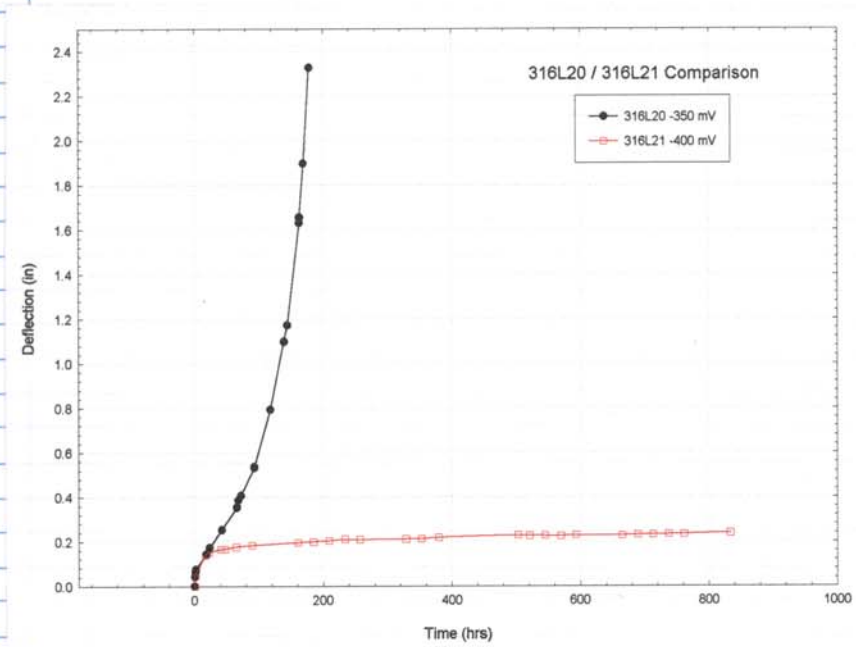
Jerry Scott 12/12/00

316L21



Jerry Stark 12/12/00

316L21



Jerry Stark 12/12/00

316L22

TEST CONDITIONS: 9.07 MOLAL LiCl AT 95°C
1250 LB LOAD, APPLIED VOLTAGE: −350 mV

TEST SOLUTION: 1000g LiCl FISHER LOT 005436
2-6 l DI WATER

THERMOMETER S/N 115814 REF. FENWICK S/N 8210528

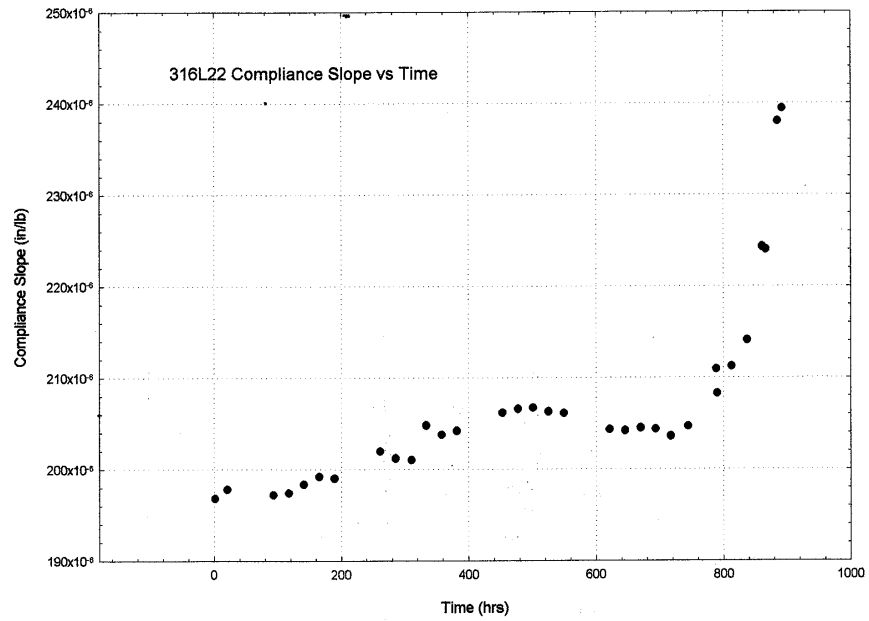
HP MOD 3401A S/N US36081499

COMPLIANCE FILES GENERATED:

	316L22			FRAME 1
FILE	DATE	TIME	HRS	
—	11/30/00	10:11	0	
(0)		12:06	1.95	
(1)	12/1/00	7:38	21.45	
(2)	12/4/00	7:40	93.48	
(3)	12/5/00	7:51	117.66	
(4)	12/6/00	7:46	141.58	
(5)	12/7/00	7:43	165.53	
(6)	12/8/00	7:51	189.66	
(7)	12/11/00	7:50	261.64	
(8)	12/12/00	7:38	285.42	
(9)	12/13/00	9:12	311.01	
		2:04	315.88	SHUTDOWN FOR HOLIDAYS
	1/16/01	2:21		RESTART
(0)	1/17/01	8:15	333.78	
(1)	1/18/01	8:28	358.00	
(2)	1/19/01	8:19	381.85	
(3)	1/22/01	7:39	453.02	
(4)	1/23/01	7:51	477.39	
(5)	1/24/01	7:41	501.22	
(6)	1/25/01	7:53	525.42	
(7)	1/26/01	7:50	549.37	
(8)	1/29/01	7:40	621.20	
(9)	1/30/01	7:38	645.17	
(10)	1/31/01	7:51	669.39	
(11)	2/1/01	7:42	693.24	
(12)	2/2/01	7:52	717.41	
(13)	2/3/01	10:48	744.34	
(14)	2/5/01	7:14	788.77	
(15)	2/5/01	8:35	790.12	
(16)	2/6/01	7:29		
(17)		7:37	813.15	
(18)	2/7/01	7:37	837.15	
(19)	2/8/01	7:18	860.83	
(20)		13:23	866.91	
(21)	2/9/01	7:24		
(22)		7:34	885.09	
		12:30	890.02	
		14:00	891.52	
		14:55	892.44	

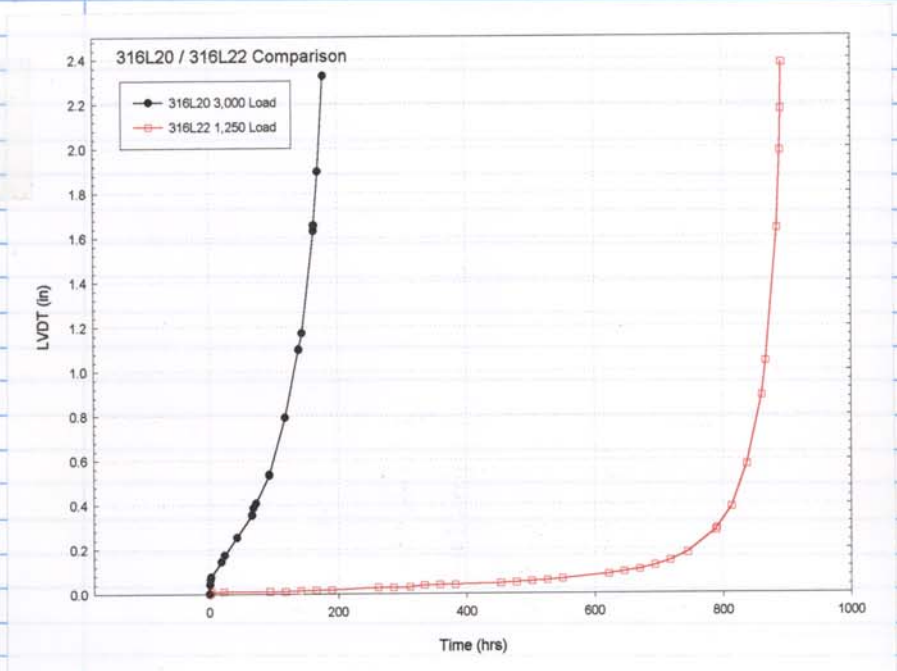
Jerry Stuart 2/12/01

316L22



Jerry Stuart 2/12/01

316L22



Jerry Stewart 3/12/01

316L24

TEST CONDITIONS: 9.07 MOLAL LiCl AT 95°C
CYCLIC - 3000 LB LOAD - R=0.7 @ 1E-3 HZ
FOR 30 HRS - APPLIED VOLTAGE - 350 mV

TEST SOLUTION: 1000 g LiCl FISHER LOT 005438
2.6 l DI WATER -

THERMOMETER S/N C96-783 REFERENCE S/N 8210528
HP MULTIMETER S/N US36081499

DATA FILES: (FILE Ø TAKEN AT END OF CYCLING)

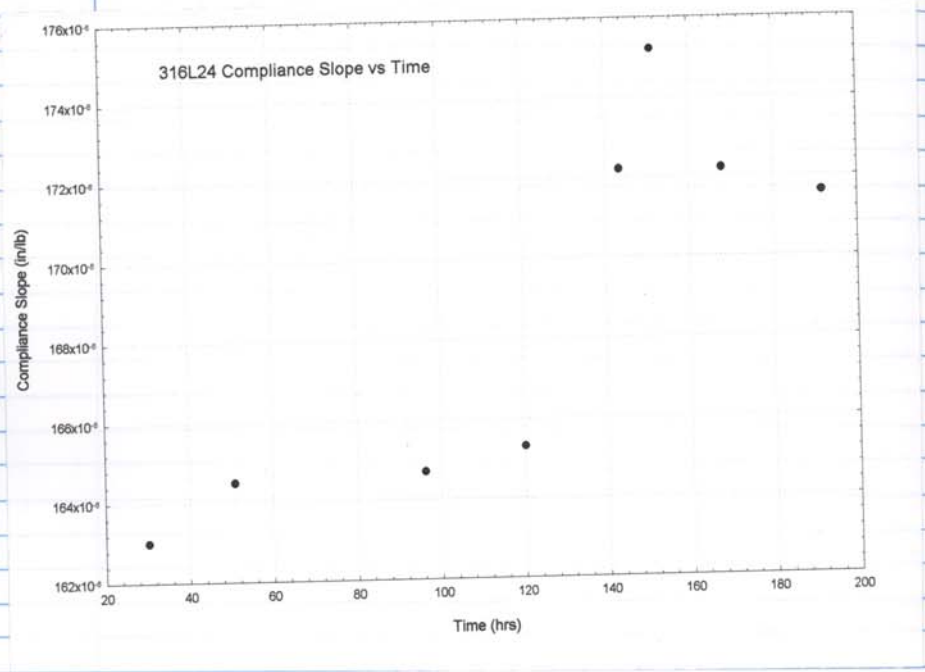
CYCLIC TEST: 316L24 FRAME 3

FILE	DATE	TIME	HRS	
(0)	3/4/01	2:03	30.18	
(1)	3/3/01	10:40	50.50	
(4)	3/5/01	8:08	96.27	
(5)	3/6/01	7:57	120.09	
(6)	3/7/01	7:20	143.47	
—		14:11	150.32	
(7)		15:05	151.22	
(9)	3/8/01	7:40	167.80	
(10)	3/9/01	7:24	191.53	
		3:04	199.26	NEW ZERO
	3/10/01	10:20	218.29	TERMINATED

TIME /3600 HRS	I *1000 mA	LOAD	LVDT /100 (IN)

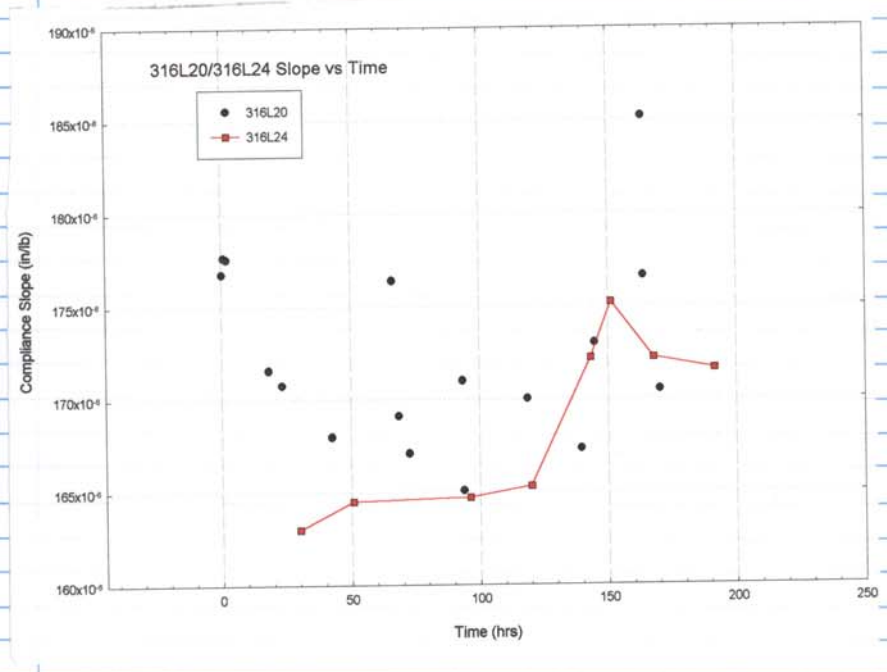
Jerry Stewart 3/12/01

316L24



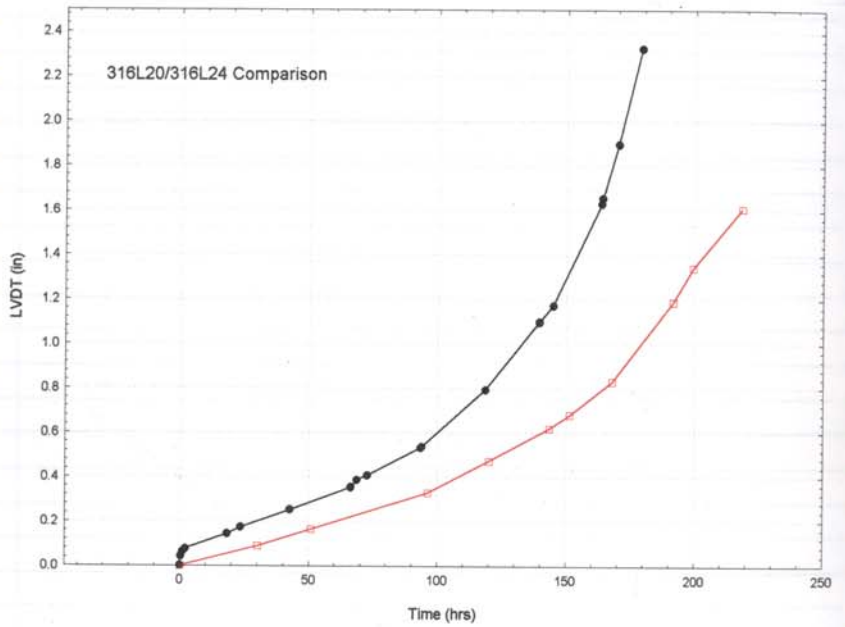
Jerry Grant 3/12/01

316L24

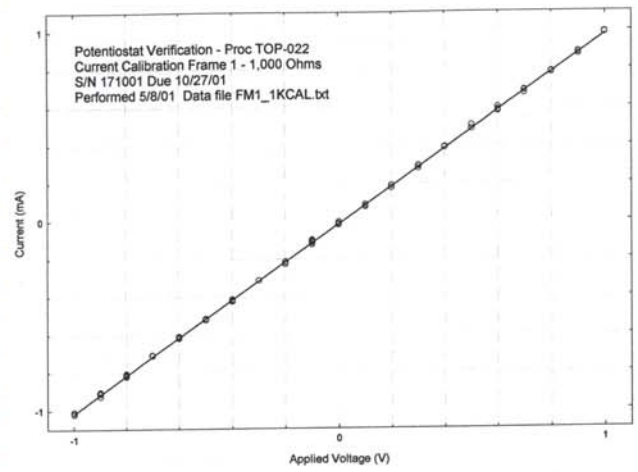


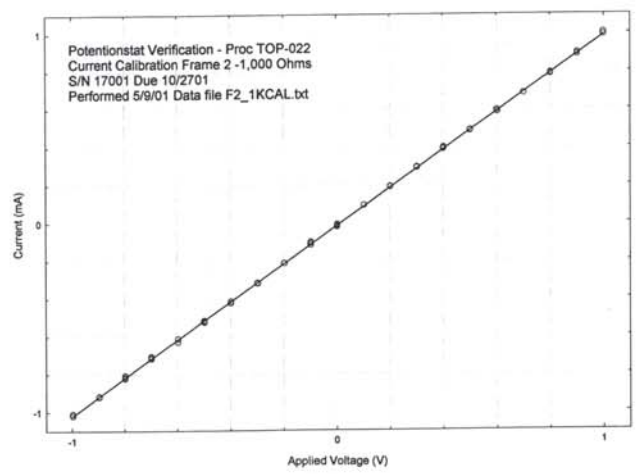
Jerry Grant 3/12/01

316L24

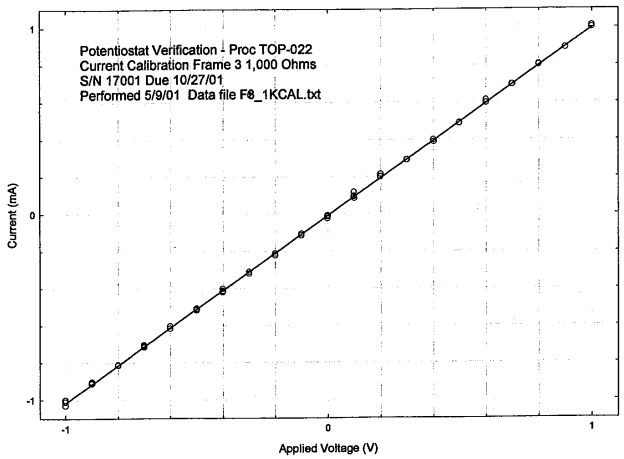


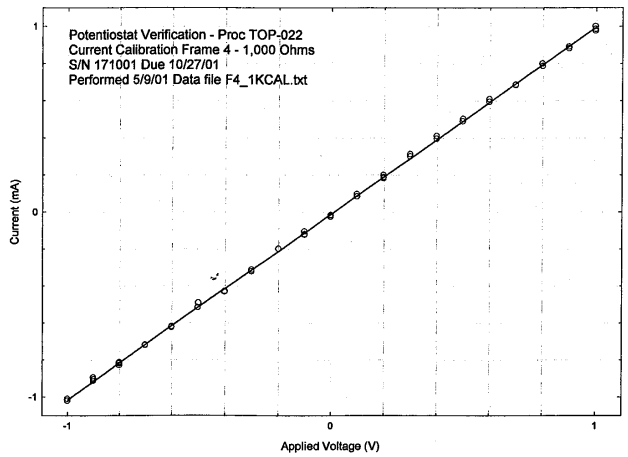
Terry Stuart 3/12/01





Terry Stuart 5/9/01





Jerry Saint 5/9/01

Specimen: C22#1 compact tension machined at metal samples received 3/23/2001 PO# 183724S
Material: Heat 2277-8-3175

Date:

Fatigue Precracking performed on

Load frame model number: #10 MTS 842.21 / 458 CNTL.

Load frame serial number: 1072

Load measurements performed using

Load cell model number: 10 MTS 661.21A-03

Load cell serial number: 1630

Date of last calibration: 5-3-01

Next calibration due: 5-3-02

Displacement measurements performed using

Model Number: .011" DISP.

Serial Number: FOR WEDGE

Date of last calibration: 5/23/01 - TO SEM

Next calibration due:

Additional Information: Final load = 60% of 3000 lb

B = .500 B_{WE} = .3435 W = 2.0035

a NOTCH = .5005 / .2498 .5025 / .2508

Minimum Load	Maximum Load	Number of cycles	Crack length/width a/W Front	Crack length/width a/W Rear
~~327~~	~~3270~~			
264	2640	90,000	~~.704~~ .6045 / .3017	.6315 / .3152
~~297~~	~~2970~~			
240	2400	44000	.7055 / .3521	.6925 / .3457
~~270~~	~~2700~~			
218	2180	50000	.4025 / .4035	.7845 / .3916
~~245~~	~~2450~~			
198	1980	30000	.8525 / .4255	.8495 / .424
~~223~~	~~2230~~			
180	1800	23000	.8915 / .445	.8975 / .448

DD 10/15/01

DD 10/15/01

DD 10/15/01

DD 10/15/01

DD 10/15/01 5/23/01

Jerry Saint 6/29/01

Specimen: C22#2 compact tension machined at metal samples received 3/23/2001 PO# 183724S
Material: Heat 2277-8-3175

Date:

Fatigue Precracking performed on

Load frame model number: #10 842.21 / 458 Controller

Load frame serial number: 1072

Load measurements performed using

Load cell model number: 661.21A-03

Load cell serial number: 1630

Date of last calibration: 5-3-01

Next calibration due: 5-3-02

Displacement measurements performed using

Model Number

Serial Number

Date of last calibration:

Next calibration due:

Additional Information Final load = 60% of 3000 lb

B = .500 B_{NET} = .342 W = 2.002

A_N = .501 / .2503 .501 / .2503

Minimum Load	Maximum Load	Number of cycles	Crack length/width a/W Front	Crack length/width a/W Rear
264	2640	70000	.596 / .297	.598 / .299
240	2400	50000	.708 / .3536	.700 / .3497
218	2180	40000	.801 / .400	.791 / .395
198	1880	25000	.853 / .426	.831 / .415
180	1800	30000	.904 / .4515	.896 / .4476

Jerry Grant 6/29/01

Specimen: C22#3 compact tension machined at metal samples received 3/23/2001 PO# 183724S
Material: Heat 2277-8-3175

Date:

Fatigue Precracking performed on

Load frame model number: #10 842.21

Load frame serial number: 1072

Load measurements performed using

Load cell model number: 661.21A-03

Load cell serial number: 1630

Date of last calibration: 5-03-01

Next calibration due: 5-03-02

Displacement measurements performed using

Model Number

Serial Number

Date of last calibration:

Next calibration due:

Additional Information Final load = 60% of 3000 lb

B = .500 B_{NET} = .342 W = 2.0035

A_N = .5025 / .2508 .5035 / .2513

Minimum Load	Maximum Load	Number of cycles	Crack length/width a/W Front	Crack length/width a/W Rear
264	2640	80000	.604 / .3017	.5975 / .298
240	2400	47000	.6995 / .3491	.7005 / .3496
218	2180	38500	.7995 / .399	.7995 / .399
198	1980	24000	.8545 / .4265	.8575 / .428
180	1800	22000	.9015 / .450	.902 / .450

Jerry Grant 6/29/01

Specimen: C22#4 compact tension machined at metal samples received 3/23/2001 PO# 183724S
Material: Heat 2277-8-3175

Date:

Fatigue Precracking performed on

Load frame model number: #10 842.21

Load frame serial number: 1072

Load measurements performed using

Load cell model number: 661.21A-03

Load cell serial number: 1630

Date of last calibration: 5-03-01

Next calibration due: 5-03-02

Displacement measurements performed using

Model Number

Serial Number

Date of last calibration:

Next calibration due:

Additional Information Final load = 60% of 3000lbs

B = .500 B_N = .3425 W = 2.0035

A_N = .5025/.2508 .5035/.2513

Minimum Load	Maximum Load	Number of cycles	Crack length/width a/W Front	Crack length/width a/W Rear
264	2640	70000	.5935/.2972	.5975/.2982
*240	2400	62000	.6865/.3427	.7135/.3561
*218	2180	54000	.7905/.3946	.8135/.406
*198	1980	30000	.8305/.4145	.8645/.4315
*180	1800	29000	.9035/.451	.8975/.448

Amy J Saint 6/29/01

316L-25

TEST CONDITIONS: 9.07 MOLAL LiCl AT 95°C
CYCLIC LOAD 3000LB R=0.7 AT 1Hz - 3Hz
CYCLE ~24HRS AT -350 mV - CONTINUE TO CYCLE AND DROP VOLTAGE 5mV EVERY 30 MINUTES UNTIL APPLIED VOLTAGE IS -400 mV
CONTINUE TO CYCLE FOR ~24HRS
LEAVE STATIC AT 3000 LB -

TEST SOLUTION: 1000g LiCl FISHER LOT 005438
2-6l DI H_2O

THERMOMETER S/N C96-377 REF ELEC. S/N 8210516
HP 3440A MULTIMETER S/N US36061499

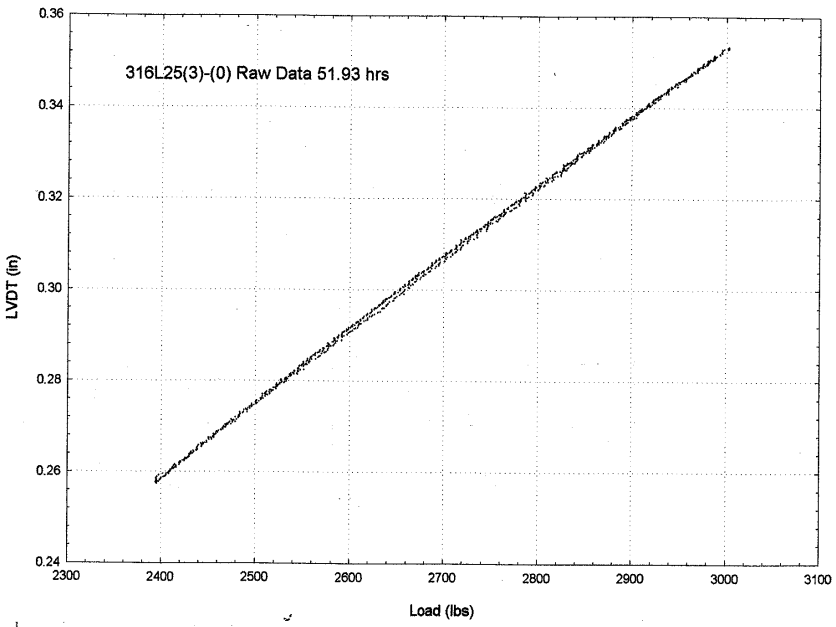
APPROXIMATELY 72 HRS INTO TEST THE FAN DIED ON THE COMPUTER POWER SUPPLY - HARD DISK CRASHED - 4/30/01

THIS TEST WILL BE REPEATED -

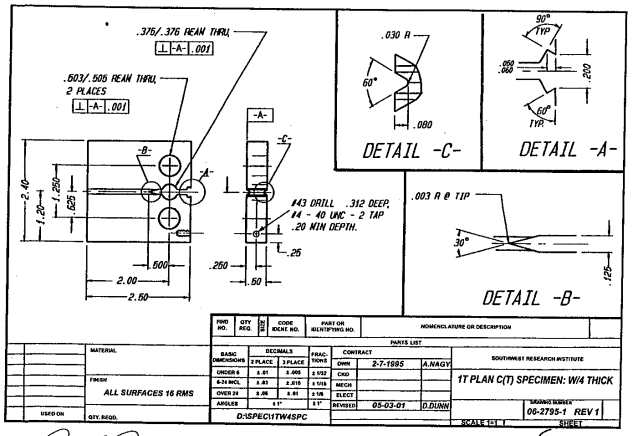
ONE COMPLIANCE RUN WAS MADE 53.91 HRS INTO TEST - THIS EXISTS ONLY AS A HARD COPY AS FAR AS WE KNOW -
SLOPE OF THE CURVE ~ 1.57E-4 in/LB

Amy J Saint 6/29/01

316L25



Jerry L. Stout 6/30/01



Originated by: Darrell Dunn Date 5/3/2001

Reviewed by: Vijay Jain Date 5/3/01
for Vijay Jain.

QA Approval: Bruce Mabrito Date 5/4/2001

Jerry L. Stout 7/5/01

6/12/02

6/12/02

CREEP FRAME CALIBRATIONS

LVDT Calibrations 1/29/02
Calibration Gage Blocks: Pratt & Whitney
Last Cal:1/7/02 Next Cal: 1/7/03

Frame 1 s/n: L0078801

Gage Id	Value (in)	Computer Reading(in x 100) 1	2	3	Average (in)	Change (in)	Error (in)	Error (%)
-----	0	99.60	99.61	99.59	0.9960	0.0000	0.0000	0.0000
X369A	0.0625	93.23	93.26	93.31	0.9327	0.0633	0.0008	1.3333
Y242A	0.1250	86.83	86.87	86.86	0.8685	0.1275	0.0025	1.9733
Y455A	0.2501	74.02	74.08	74.06	0.7405	0.2555	0.0054	2.1458
Y649A	0.5002	48.86	48.84	48.86	0.4885	0.5075	0.0073	1.4528
Y189B	1.0000	0.01	0.01	0.01	0.0001	0.9959	-0.0041	-0.4100

Frame 2 s/n: L0078900

Gage Id	Value (in)	Computer Reading(in x 100) 1	2	3	Average (in)	Change (in)	Error (in)	Error (%)
-----	0	99.84	99.87	99.86	0.9986	0.0000	0.0000	0.0000
X369A	0.0625	93.47	93.48	93.49	0.9348	0.0638	0.0013	2.0267
Y242A	0.1250	87.05	87.06	87.05	0.8705	0.1280	0.0030	2.4267
Y455A	0.2501	74.44	74.44	74.44	0.7444	0.2542	0.0041	1.6260
Y649A	0.5002	49.48	49.47	49.51	0.4949	0.5037	0.0035	0.6997
Y189B	1.0000	-0.01	-0.01	-0.01	-0.0001	0.9987	-0.0013	-0.1333

Frame 3 s/n:L2566300

Gage Id	Value (in)	Computer Reading(in x 100) 1	2	3	Average (in)	Change (in)	Error (in)	Error (%)
-----	0	99.66	99.67	99.67	0.9967	0.0000	0.0000	0.0000
X369A	0.0625	94.02	94.05	93.95	0.9401	0.0566	-0.0059	-9.4400
Y242A	0.1250	87.82	87.83	87.82	0.8782	0.1184	-0.0066	-5.2533
Y455A	0.2501	75.12	75.15	75.16	0.7514	0.2452	-0.0049	-1.9459
Y649A	0.5002	50.47	50.49	50.52	0.5049	0.4917	-0.0085	-1.6927
Y189B	1.0000	0.54	0.55	0.52	0.0054	0.9913	-0.0087	-0.8700

Frame 4 s/n:L2566600

Gage Id	Value (in)	Computer Reading(in x 100) 1	2	3	Average (in)	Change (in)	Error (in)	Error (%)
-----	0	99.60	99.63	99.63	0.9962	0.0000	0.0000	0.0000
X369A	0.0625	93.34	93.26	93.42	0.9334	0.0628	0.0003	0.4800
Y242A	0.1250	86.97	86.96	86.95	0.8696	0.1266	0.0016	1.2800
Y455A	0.2501	74.33	74.30	74.40	0.7434	0.2528	0.0027	1.0662
Y649A	0.5002	49.49	49.51	49.55	0.4952	0.5010	0.0008	0.1666
Y189B	1.0000	-0.01	-0.01	-0.01	-0.0001	0.9963	-0.0037	-0.3700

Gary Smart 1/30/02

CREEP FRAME CALIBRATIONS

LOAD CELL CALIBRATION

Frame No.: 1 Date: 1/26/02
Load Cell S/N: 732329
Proving Ring S/N: 3668C-709

Load	Ring	Meter	Computer	Table
0	3.2	0.4	0.2	0
600	54.2 (90.0)	614.5	611.7	601.71
1200	107.2 (104.8)	1231	1228	1234
1800	159.7 (152.5)	1847	1844	1850.42
2400	209.5 (206.3)	2442	2442	2441.95
3000	258.2 (253.0)	3003	3004	2998.33
3600	303.2 (300.0)	3565	3565	3559.44
4200	349.9 (346.7)	4107	4108	4118.55
4800	392.6 (389.4)	4630	4631	4630.63
5000	407.1 (403.9)	4810	4812	4809.8
4800	395.4 (391.8)	4665	4667	4659.46
4200	356.4 (352.8)	4194	4195	4191.55
3600	318.8 (310.2)	3675	3675	3681.41
3000	263.6 (260.0)	3084	3085	3081.76
2400	212.2 (208.6)	2468	2468	2469.28
1800	160.1 (156.5)	1852	1850	1850.42
1200	107.4 (103.8)	1235	1231	1225.72
600	55.7 (52.1)	617	612	614.72
0	3.6	2	1	0

LOAD CELL CALIBRATION

Frame No.: 3 Date: 1/28/02
Load Cell S/N: 789126
Proving Ring S/N: 3668C-709

Load	Ring	Meter	Computer	Table
0	3.7	0	0.2	—
600	52.5 (48.8)	583	582	575.94
1200	102.4 (99.7)	1175	1174	1165.36
1800	149.5 (145.5)	1729	1727	1723.51
2400	191.0 (187.3)	2222	2221	2216.1
3000	235.0 (231.3)	2745	2745	2739.59
3600	257.2 (253.5)	3023	3023	3004.3
4200	289.1 (285.4)	3394	3394	3386.99
4800	332.3 (328.6)	3924	3924	3901.38
5000	345.5 (341.8)	4084	4085	4059.73
4800	345.0 (341.2)	4062	4062	4057.32
4200	329.8 (326.4)	3878	3878	3875.1
3600	297.8 (294.4)	3494	3495	3492.49
3000	252.5 (249.1)	2961	2960	2951.99
2400	203.3 (199.9)	2368	2366	2365.84
1800	153.0 (149.6)	1774	1773	1768.67
1200	103.9 (100.5)	1182	1182	1186.7
600	52.2 (48.8)	588	587	575.94
0	3.4			

LOAD CELL CALIBRATION

Frame No.: 2 Date: 1/28/02
Load Cell S/N: 732328
Proving Ring S/N: 3668C-709

Load	Ring	Meter	Computer	Table
0	3.6	0	0.4	0
600	54.1 (47.5)	546	543	560.57
1200	94.9 (90.8)	1142	1139	1071.95
1800	148.9 (145.3)	1717	1714	1717.57
2400	196.5 (192.9)	2291	2289	2282.65
3000	245.0 (241.4)	2866	2864	2860.02
3600	293.6 (290.2)	3442	3440	3442.32
4200	341.9 (338.3)	4019	4016	4017.49
4800	389.5 (385.9)	4595	4591	4583.21
5000	405.5 (401.9)	4786	4783	4780.79
4800	389.9 (385.6)	4596	4592	4585.01
4200	341.3 (337.5)	4023	4019	4007.94
3600	294.1 (290.3)	3449	3446	3443.51
3000	246.1 (242.3)	2874	2871	2870.76
2400	197.1 (193.3)	2298	2296	2287.4
1800	148.5 (144.7)	1724	1721	1710.44
1200	100.1 (96.3)	1148	1144	1136.98
600	51.8 (48)	570	567	566.48
0	3.8	1.9	2	0

LOAD CELL CALIBRATION

Frame No.: 4 Date: 1/29/02
Load Cell S/N: 789157
Proving Ring S/N: 3668C-709

Load	Ring	Meter	Computer	Table
0	3.5	0	0	0
600	48.2 (44.7)	537	536	527.47
1200	96.6 (93.1)	1099	1098	1099.14
1800	142.0 (138.5)	1638	1636	1636.54
2400	188.2 (184.7)	2168	2166	2161.43
3000	231.0 (227.5)	2692	2691	2699.19
3600	275.6 (272.1)	3221	3220	3226.17
4200	319.3 (315.8)	3751	3750	3748.31
4800	362.3 (358.8)	4266	4265	4263.6
5000	376.3 (372.8)	4436	4436	4431.38
4800	365.5 (362.2)	4300	4300	4304.22
4200	320.8 (326.5)	3868	3868	3876.29
3600	291.7 (288.4)	3414	3414	3400.82
3000	251.8 (248.5)	2934	2932	2944.82
2400	202.0 (198.7)	2349	2348	2351.57
1800	152.2 (147.9)	1754	1751	1748.47
1200	101.5 (98.2)	1157	1156	1159.44
600	50.2 (46.9	560	560	553.47
0	3.3 (	1.5	1	0

Gary Smart 1/30/02

316L 26

Test conditions: 9 Mol LiCl At 95°C
Cyclic load 3000 lbs R= 0.7 At 1E-3 Hz.
8/31/01 started Cycle At -350mV continued To Cycle
till 9/11/01. Then Dropped Voltage 5 mV Every 30 minutes
Until Applied Voltage Reached -480 mV Continued To Cycle
9/13/01 Static Load At 3000 lbs

Test Solution: 1000g LiCl Lot# 005438
+ 2.6 Liters DI water

Thermometer: SN# H98-149
Reference: Fisher 13-620-52 SN# 8210516
Keithley: 614 SN# 0704934

Note: At 908.18 hrs Into Testing Procedure
Test stopped Due To failed Counter Electrode

316L26 | FRAME 3

FILE	DATE	TIME	HRS
—	5/15/01	10:06	Ø
Ø	5/17/01	10:13	48.12 MY ERROR 5/18 53 HRS
1		8:30	52.40
2	5/18/01	7:27	69.35
3	5/21/01	7:35	141.32
4	5/22/01	7:23	165.29
5	5/23/01	7:36	189.51
6	5/24/01	7:44	213.64
7	5/25/01	7:27	237.36
8	5/29/01	7:30	333.41
9	5/30/01	7:30	357.41
10	5/31/01	8:30	382.41
11	6/1/01	7:35	405.49
12	6/4/01	7:32	477.44
13	6/5/01	7:32	501.44
14	6/6/01	7:51	525.76
(16)	6/7/01	7:38	549.54
17	6/8/01	7:40	573.57
18	6/11/01	7:28	645.37
19	6/12/01	7:28	669.37
20	6/13/01	7:29	693.39
21	6/14/01	7:33	717.46
23	6/15/01	7:43	741.63
24	6/18/01	7:35	813.50
25	6/19/01	8:01	838.16
26	6/20/01	7:50	861.98

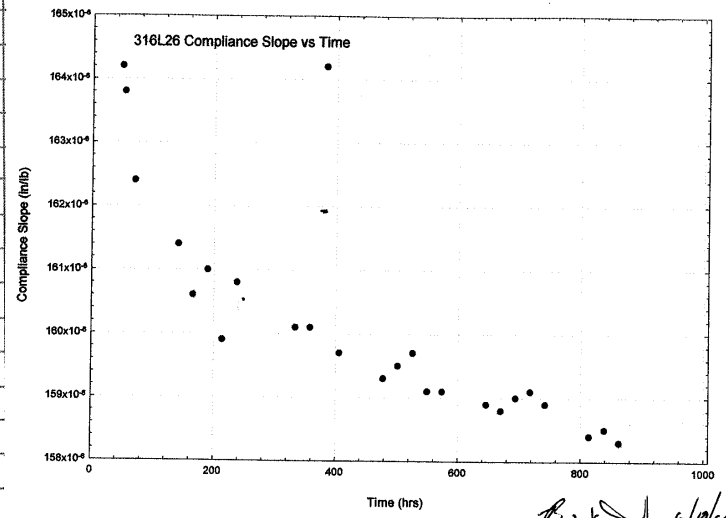
6/12/02

316L26A FRAME 3

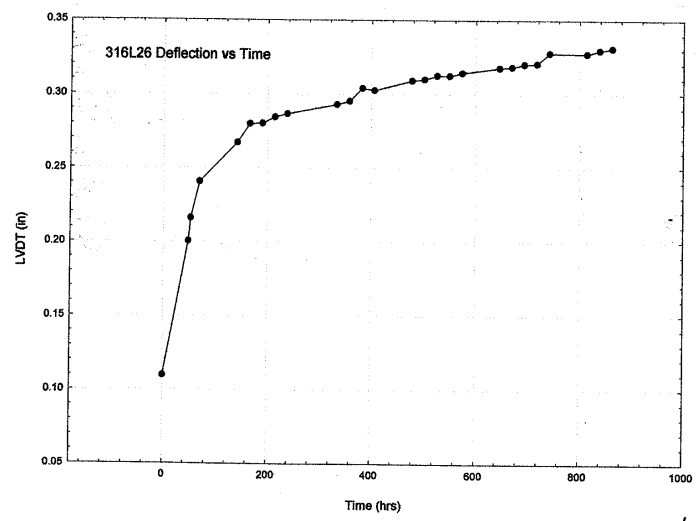
FILE	DATE	TIME	HRS
—	8/31/01	12:31	Ø
Ø	9/14/01	8:47	332.27
1	9/17/01	7:31	403.00
2	9/18/01	7:33	427.03
3	9/19/01	7:33	451.03
4	9/20/01	7:33	475.03
5	9/21/01	7:28	498.95
6	9/24/01	9:00	572.48
7	9/25/01	7:40	595.15
8	9/26/01	7:28	618.95
9	9/27/01	7:27	642.93
10	9/28/01	7:27	666.93
11	10/1/01	7:27	738.93
12	10/2/01	7:37	763.10
13	10/3/01	7:40	787.15
14	10/4/01	7:37	811.02
15	10/5/01	7:25	834.90
16	10/8/01	7:24	906.88
		8:42	908.18 SHUTDOWN

6/12/02

6/12/02

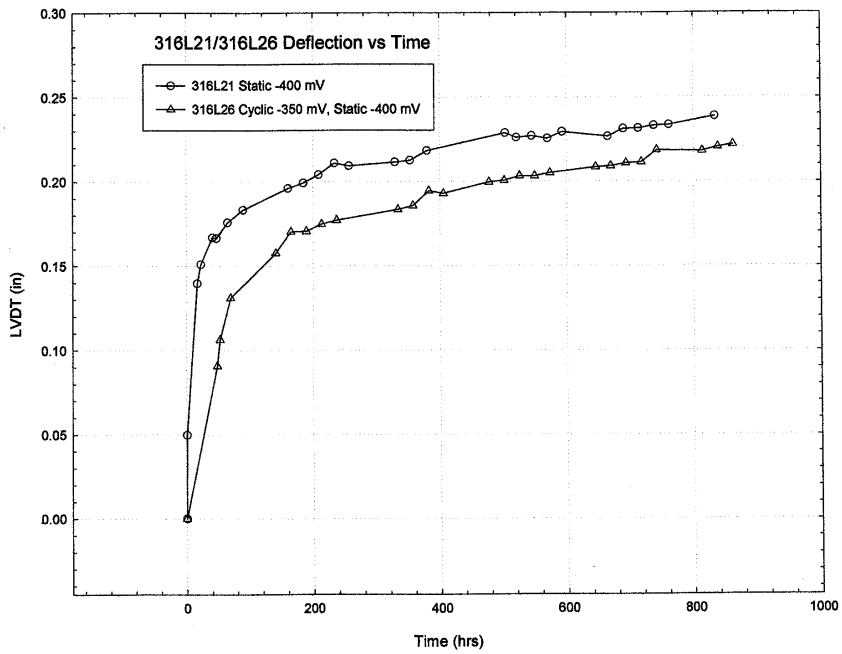


6/12/02



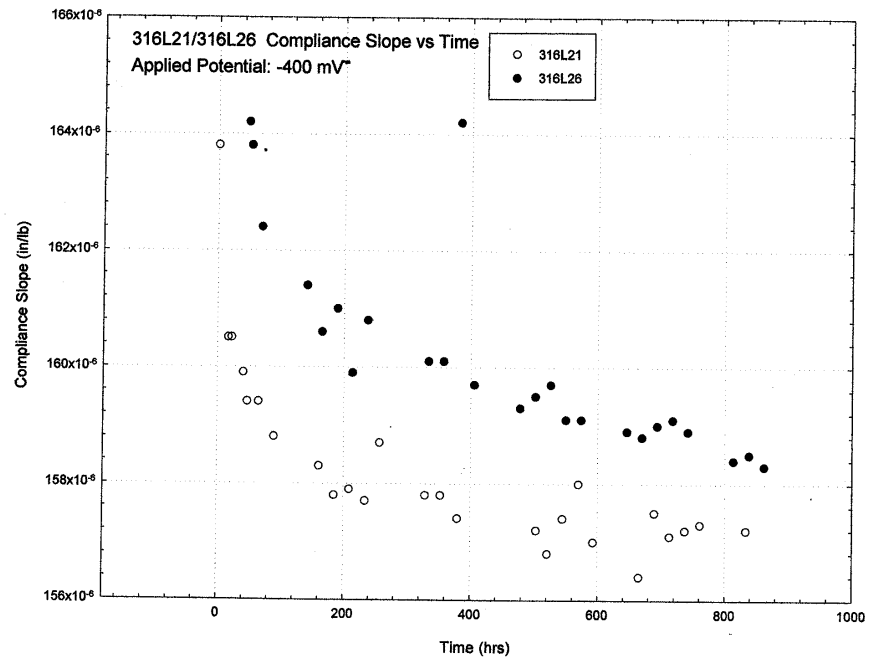
6/12/02

6/12/02



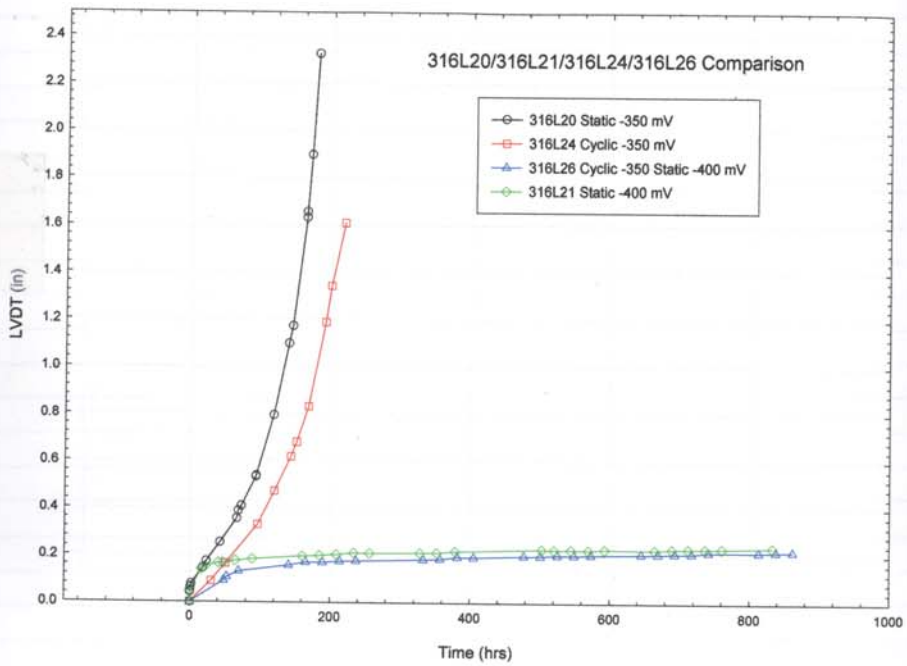
6/12/02

6/12/02



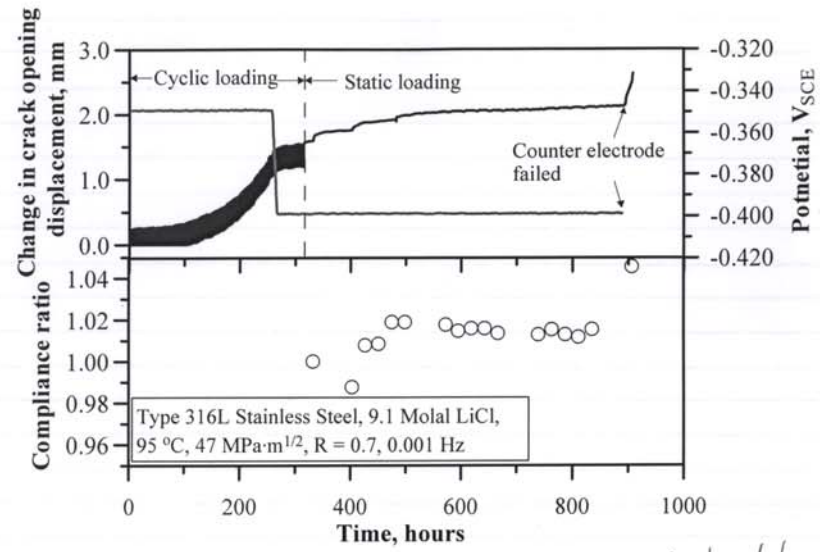
6/12/02

6/12/02



6/12/02

6/12/02



6/12/02

6/12/a

316L 27

Test condition: 9 Molal LiCl At 95°C
Cyclic Load 2000lbs R=0.8 At 1E-3hz
2/5/02 Set Applies Voltage -350 mV
then Dropped Voltage 5 mV every 30 minutes over 2wk Period
Until Applies Voltage Reaches -440 mV

Test solution: 1000g LiCl Lot# 015046
+ 2.6 Liters DI water

Thermometer SN# H98-182
Reference: Fisher 13-620-52 SN# 807248
Keithley: 614 SN# 704534

Note: Lost Both Counter Electrones Test Stopped 3/7/02

1000 SEC = 16 MIN 40 SEC (16.666 MIN)

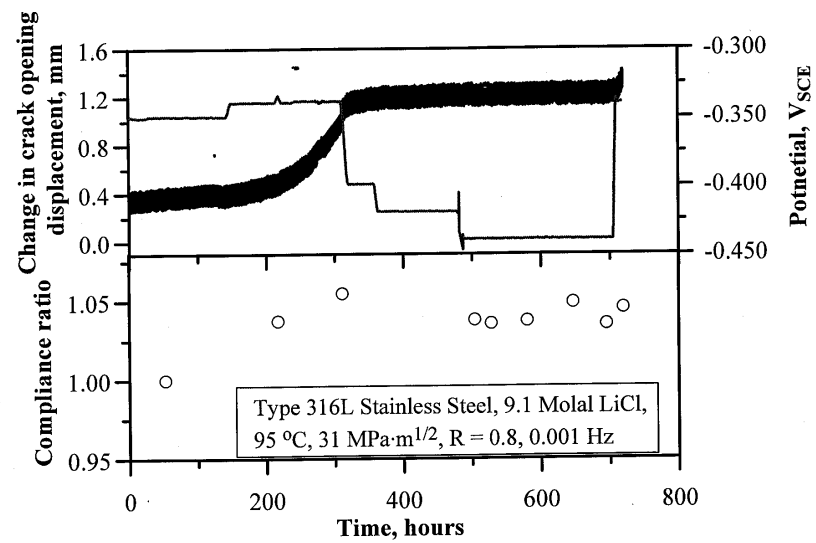
316L27(3)-(Ø) 52.73 HRS = file #
SLOPE = 1.735E-4
316L27(3)-(1) 217.10 HRS
SLOPE 1.800E-4

316L27(3)-(2) 311.5 HRS
SLOPE = 1.903E-4
316L27(3)-(3) 504.4 HRS
SLOPE 1.801E-4
316L27(3)-(4) 528.52 HRS
SLOPE = 1.797E-4
(5) 580.65 HRS
SLOPE = 1.800
(6) = 647.35 HRS
SLOPE = 1.820
(7) 695.30 HRS
SLOPE = 1.796
(8) 719.85 HRS - TERMINATED
SLOPE = 1.814E-4

6/12/02

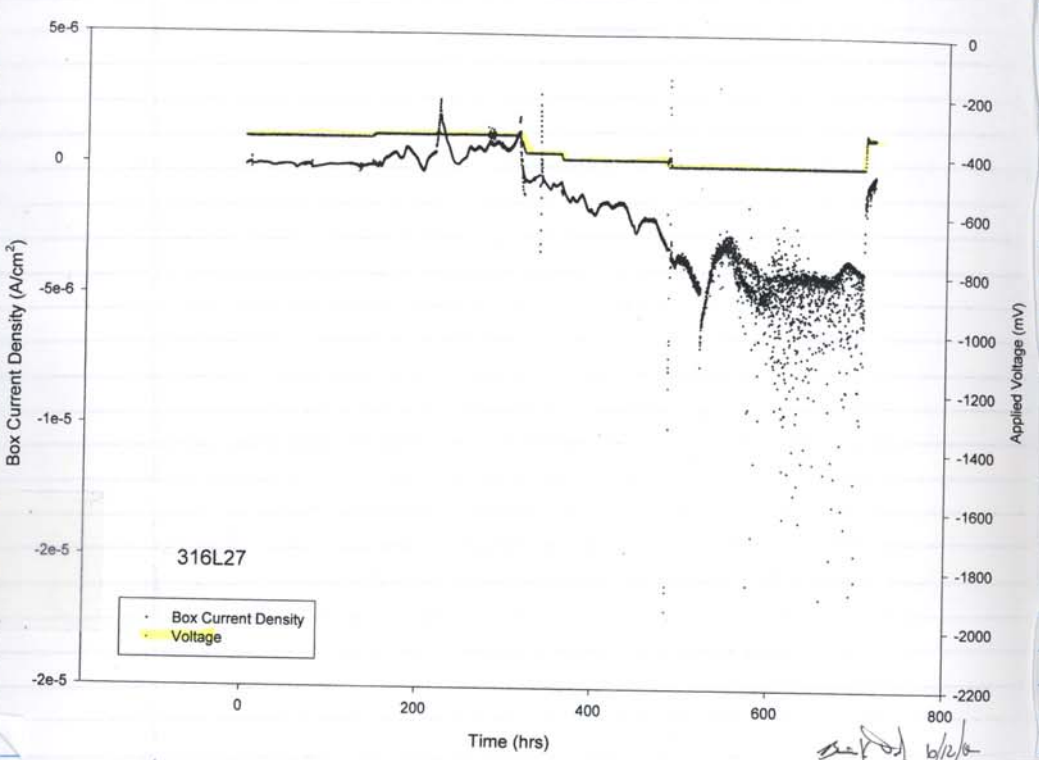
6/12/02

316L27



6/12/02

6/12/02



6/12/02

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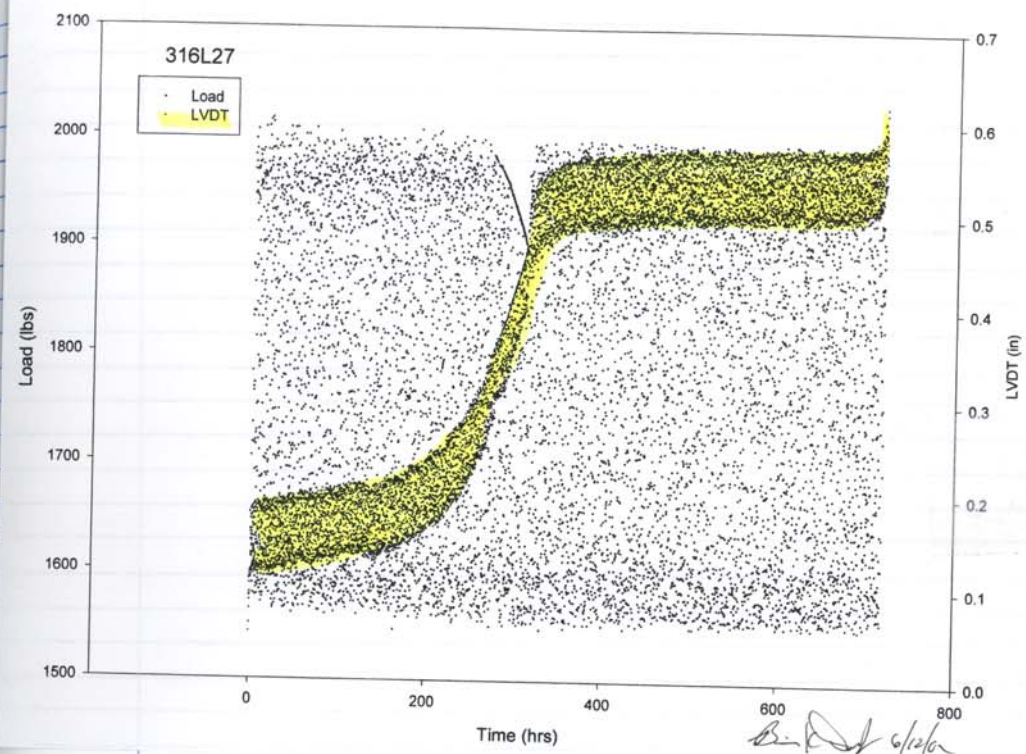
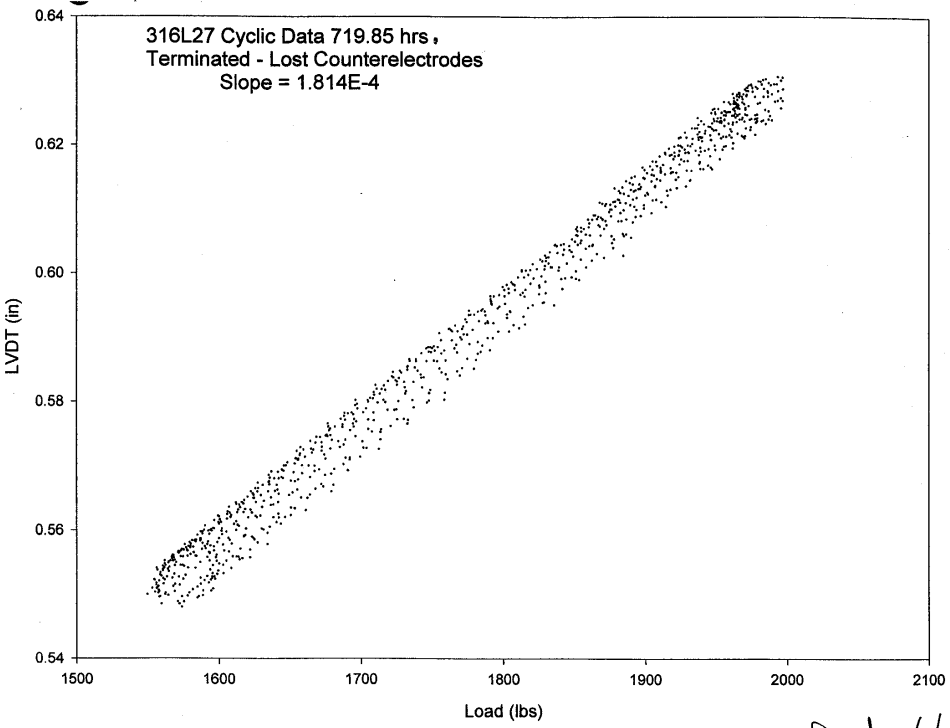


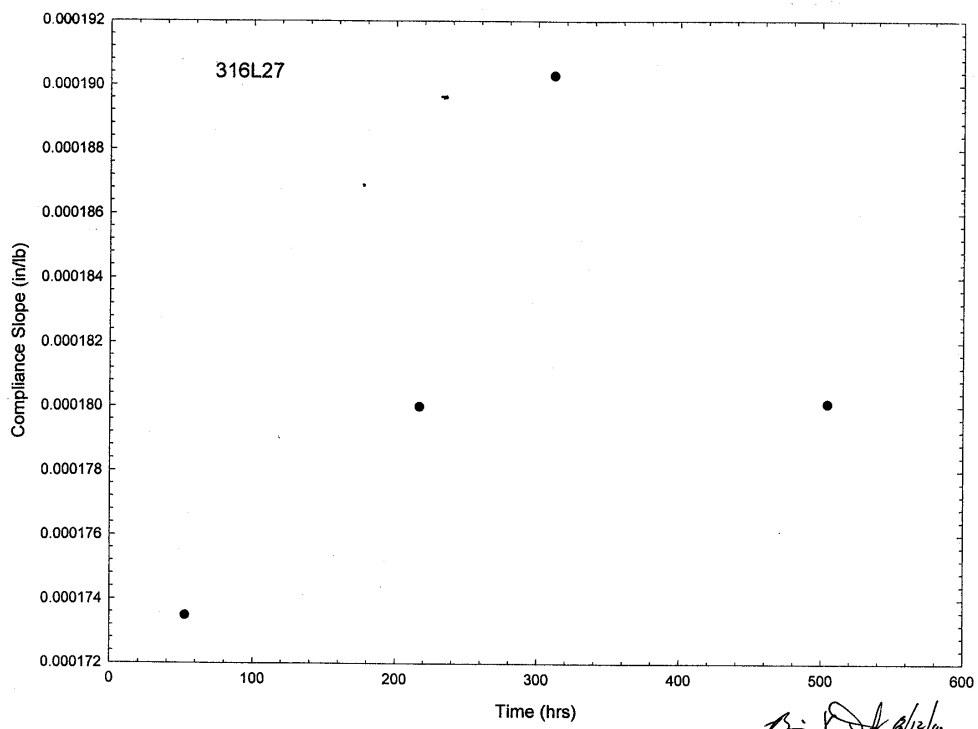
6/12/02

6/12/02



6/12/02

6/12/02



6/12/02

6/12/02

Alloy C22 Tests

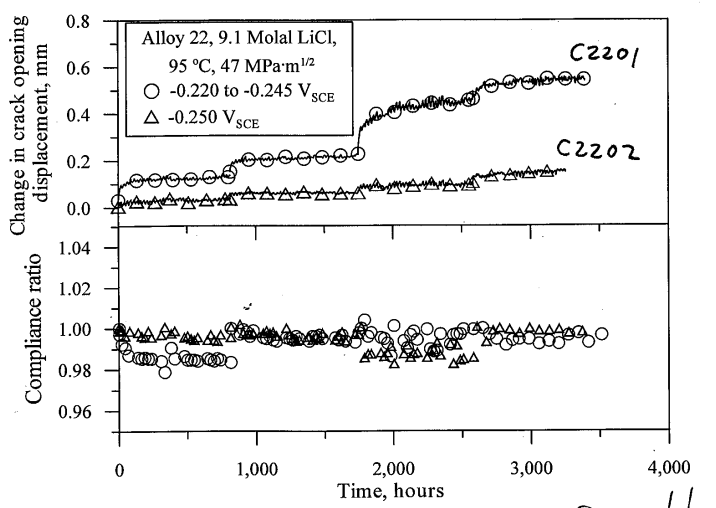
Test C2201 - C2201A - C2201B - C2201C

Test Conditions: 9.1 Molal LiCl at 95°C
Applied potential of -0.220 mv To -0.245 mv

Solution : 1000g LiCl Lot # 615046
+ 2.6 Liter of DI water

Thermometer: # C96-637
Reference: Fisher 13-620-52 SN# 8216528
Electrometer: Hp 34401A SN# 36081499

LOAD = 3000 lbs Total Hours = 3394.12



6/12/01

6/12/01

Data Files for C2201 thru C2201C

C2201 FRAME 1

FILE	DATE	TIME	HRS
—	6/19/01	8:33	0
C2201 (Ø)		12:06	3.55
1		15:00	6.45
2	6/20/01	7:29	22.93
3	6/21/01	7:24	46.85
4	6/22/01	7:29	70.93
5	6/25/01	7:26	142.88
6	6/26/01	7:41	167.13
7	6/27/01	7:34	191.01
8	6/28/01	7:31	214.96
9	6/29/01	7:25	238.91
10	7/2/01	7:26	310.88
11	7/03/01	7:22	334.81
12	7/5/01	7:23	382.83
13	7/6/01	7:30	406.95
14	7/9/01	7:30	478.95
15	7/10/01	7:27	502.90
16	7/11/01	7:38	527.08
17	7/12/01	7:33	551.00
18	7/13/01	7:31	575.00
19	7/16/01	7:20	646.82
20	7/17/01	7:28	670.95
21	7/18/01	7:39	695.13
22	7/19/01	7:38	719.11
23	7/19/01	7:35	743.06
24	7/23/01	7:20	814.87
—		7:42	815.17 SHUTDOWN
—	8/3/01	12:15	RESTART
C2201A Ø		1:56	816.85
1	8/6/01	7:23	882.30
2	8/7/01	7:33	906.17
3	8/8/01	7:39	930.27
4	8/9/01	7:35	954.20
5	8/10/01	8:31	978.13
6	8/13/01	7:34	1050.15
7	8/14/01	7:35	1074.20
8	8/15/01	7:55	1098.53
9	8/16/01	7:34	1122.19
10	8/17/01	8:00	1146.61
11	8/20/01	7:42	1218.31
12	8/21/01	7:49	1242.43
13	8/22/01	7:48	1266.41
14	8/23/01	8:06	1290.71
15	8/24/01	7:37	1314.23
16	8/27/01	7:25	1386.03

6/12/01

C2201 FRAME 1

FILE	DATE	TIME	HRS
17	8/28/01	7:38	1410.20
18	8/29/01	7:40	1434.28
19	8/30/01	7:36	1458.21
20	8/31/01	7:41	1482.29
21	9/4/01	7:43	1578.32
22	9/5/01	7:30	1602.10
23	9/6/01	7:43	1626.32
24	9/7/01	7:30	1650.10
25	9/10/01	7:38	1722.23
26	9/11/01	9:04	1747.66 SHUTDOWN
C2201B			

6/12/01

C2201B

—	10/15/01	12:28	RESTART
Ø	10/16/01	7:32	1766.73
1	10/17/01	7:44	1790.93
2	10/18/01	7:39	1814.85
3	10/19/01	7:55	1839.12
4	10/22/01	7:39	1910.69
5	10/23/01	7:40	1934.87
6	10/24/01	8:00	1959.20
7	10/25/01	7:26	1982.63
8	10/26/01	7:53	2007.08
9	10/29/01	7:30	2078.70
10	10/30/01	7:30	2102.70
11	10/31/01	8:11	2127.38
12	11/01/01	7:32	2150.73
13	11/02/01	7:33	2174.75
14	11/05/01	7:33	2246.75
15	11/06/01	7:29	2270.68
16	11/07/01	8:22	2295.23
17	11/08/01	7:53	2319.08
18	11/09/01	7:47	2342.98
19	11/12/01	7:41	2414.88
20	11/13/01	7:31	2438.71
21	11/14/01	7:32	2462.73
22	11/15/01	7:32	2486.73
23	11/16/01	7:50	2511.03
24	11/19/01	7:29	2582.68

6/12/01

C2201C FRAME 1

FILE	DATE	TIME	HRS
—	2/22/02	18:15	— RESTART
C2201C			
Ø	2/25/02	7:33	2649.98
1	2/27/02	8:54	2699.33
2	3/1/02	12:54	2751.33
3	3/4/02	7:38	2818.06
4	3/6/02	7:34	2865.49
5	3/8/02	7:29	2913.91
6	3/11/02	7:49	2986.34
7	3/13/02	8:40	3058.09
8	3/15/02	7:53	3130.31
9	3/18/02	7:33	3201.98
10	3/20/02	7:41	3274.11
11	3/22/02	7:28	3345.89
12	3/25/02	7:28	3417.89
13	3/28/02	7:29	3513.91

6/12/01

6/12/01

Alloy C-22 Test

Test: C2202 - C2202A - C2202B - C22020

Test Conditions: 9.1 Molal LiCl At 95°C
Applied Potential: -0.250 mV
Load = 3000 lbs Total Hours = 3302.73

Test C2202
Thermometer: SN# H98-182
Reference: Fisher 13-620-52 SN# 8210528
Electrometer: Hp Model # 34401A SN# US36081499

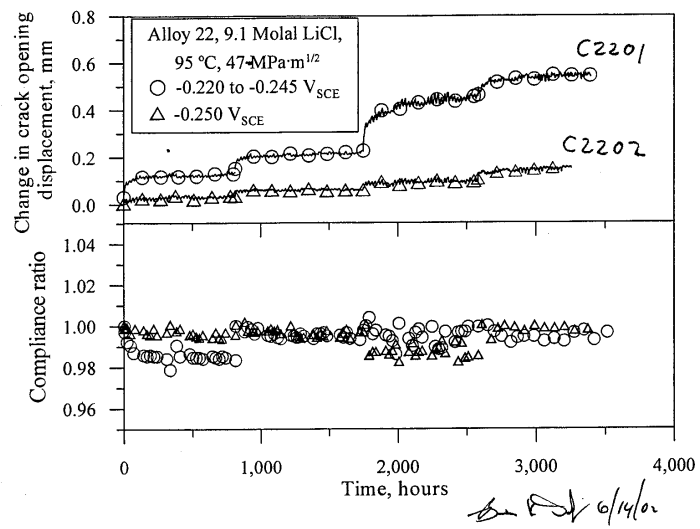
Test C2202 A
Thermometer: SN# H98-182
Reference: Fisher 13-620-52 SN# 8210528
Electrometer: Hp Model # 344014 SN# US36081499

Test C2202 B
Thermometer: SN# H98-182
Reference: Fisher 13-620-52 SN# ~~8210525~~ 8077248 6/14/02
Electrometer: Keithley 614 SN# 0704936

Test C2202C
Thermometer: SN# F98-393
Reference: Fisher 13-620-52 SN# 8077248
Electrometer: Keithley 614 SN# 0704936

Note: Lost counter Electrodes Test shutdown

6/14/02



6/14/02

6/14/02

C2202 FRAME 2

FILE	DATE	TIME	HRS	
—	6/19/01	8:48	Ø	
C2202 Ø		18:18	3.50	
1		15:10	6.37	
2	6/20/01	7:40	22.87	
3	6/21/01	7:34	46.77	
4	6/22/01	7:38	70.84	
5	6/25/01	7:36	142.81	
6	6/26/01	7:51	167.06	
7	6/27/01	7:44	190.94	
8	6/28/10	7:41	814.89	
9	6/29/01	7:38	238.84	
10	7/2/01	7:36	310.81	
11	7/3/01	7:31	334.73	
12	7/5/01	7:32	382.75	
13	7/6/01	7:40	406.88	
14	7/9/01	7:39	478.86	
15	7/10/01	7:37	502.83	
16	7/11/01	7:47	527.00	
17	7/12/01	7:43	550.93	
18	7/13/01	7:40	574.88	
19	7/16/01	7:29	646.70	
20	7/17/01	7:38	670.85	
21	7/18/01	7:49	695.03	
22	7/19/01	7:48	719.01	
23	7/20/01	7:44	742.94	
24	7/23/01	7:30	814.71	
—		7:43	814.83	SHUTDOWN
—	8/3/01	12:30		RESTART
C2202A Ø		2:06	816.53	
1	8/6/01	7:33	881.98	
2	8/7/01	7:43	906.15	
3	8/8/01	8:05	930.52	
4	8/9/01	7:48	954.24	
5	8/10/01	7:41	978.12	
6	8/13/01	7:43	1050.15	
7	8/14/01	7:44	1074.17	
8	8/15/01	8:05	1098.52	
10	8/16/01	8:00	1122.44	
11	8/17/01	8:09	1146.59	
12	8/20/01	7:52	1218.31	
13	8/21/01	7:58	1242.41	
14	8/22/01	7:57	1266.39	
15	8/23/01	8:15	1290.69	
16	8/24/01	7:46	1314.21	
17	8/27/01	7:34	1386.01	

6/14/01

C2202 FRAME 2

FILE	DATE	TIME	HRS	
18	8/28/01	7:45	1410.19	
19	8/29/01	7:49	1434.26	
20	8/30/01	7:45	1458.19	
21	8/31/01	7:50	1482.27	
22	9/4/01	7:52	1578.30	
23	9/5/01	7:41	1602.12	
24	9/6/01	7:52	1626.30	
25	9/7/01	7:39	1650.09	
26	9/10/01	7:47	1722.21	
27	9/11/01	9:15	1747.68	SHUTDOWN
C2202B				
—	10/15/01	12:43		RESTART
Ø	10/16/01	7:42	1768.66	
1	10/17/01	7:53	1790.84	
2	10/18/01	7:49	1814.77	
3	10/19/01	8:05	1839.04	
4	10/22/01	7:39	1910.61	
5	10/23/01	7:50	1934.79	
6	10/24/01	8:11	1959.19	
7	10/25/01	7:36	1982.86	
8	10/26/01	8:02	2006.99	
9	10/29/01	7:39	2078.61	
10	10/30/01	7:40	2102.62	
11	10/31/01	8:21	2127.30	
12	11/01/01	7:42	2150.65	
13	11/02/01	7:42	2174.65	
14	11/05/01	7:42	2246.65	
15	11/06/01	7:38	2270.58	
16	11/07/01	8:11	2295.13	
17	11/08/01	8:02	2318.98	
18	11/09/01	7:56	2342.88	
19	11/12/01	7:49	2414.76	
20	11/13/01	7:40	2438.61	
21	11/14/01	7:41	2462.63	
22	11/15/01	7:42	2486.65	
23	11/16/01	7:59	2510.93	
24	11/19/01	7:38	2582.58	

6/14/01

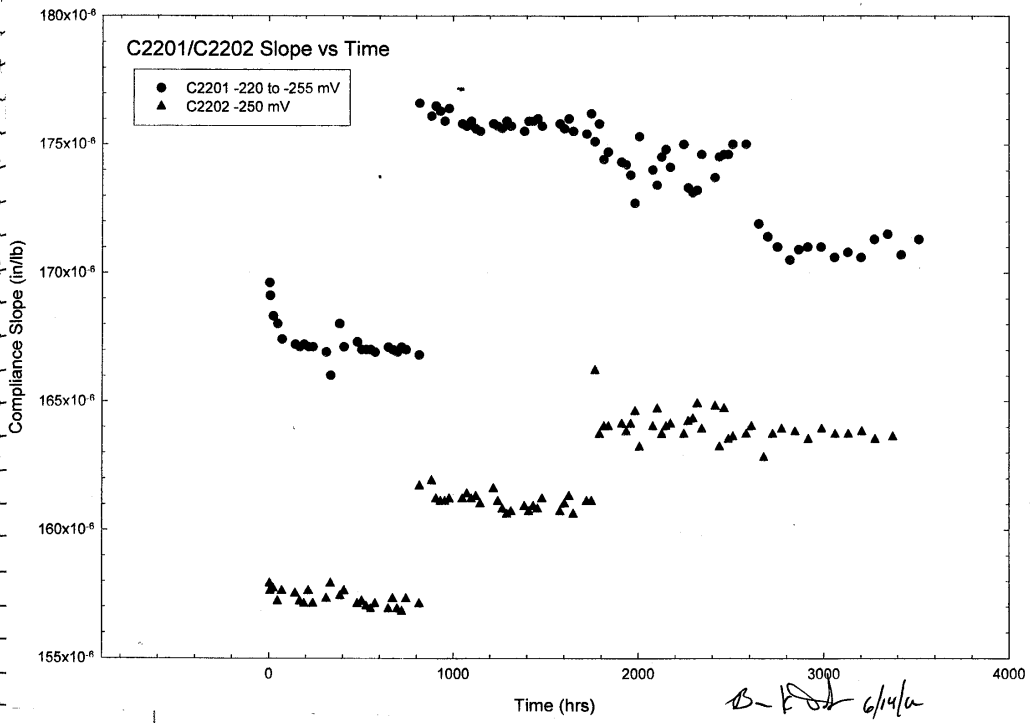
Data Files for Test
C2202 – C2202C

C2202C FRAME 2

FILE	DATE	TIME	HRS	
—	2/18/02	9:05	—	RESTART
Ø	3/1/02	1:06	2610.66	
1	3/4/02	7:49	2677.32	
2	3/6/02	7:46	2725.29	
3	3/8/02	7:40	2773.17	
4	3/11/02	7:59	2845.99	
5	3/13/02	7:52	2917.37	
6	3/15/02	8:03	2989.55	
7	3/18/02	7:42	3061.20	
8	3/20/02	7:52	3133.37	
9	3/22/02	7:41	3205.19	
10	3/25/02	7:38	3277.14	
11	3/28/02	7:41	3373.17	

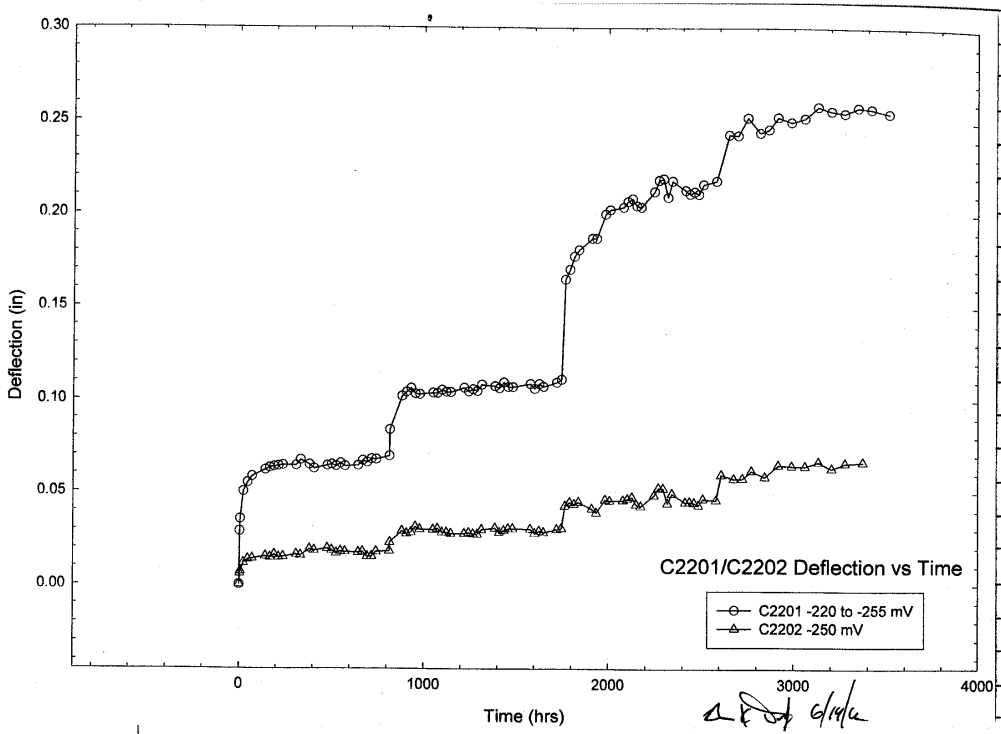
6/14/01

6/14/01



6/14/01

6/14/01



6/14/02

6/14/02

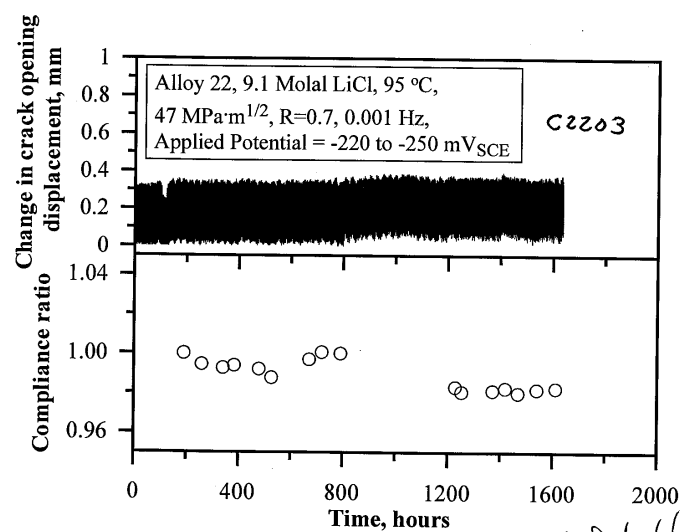
Alloy C22 Test

Test: C2203

Test Conditions: 9.1 molal LiCl at 95°C
Applied Potential -0.220 To -0.250 mV
Cyclic Load 3000 lbs R = 0.7 0.001 Hz

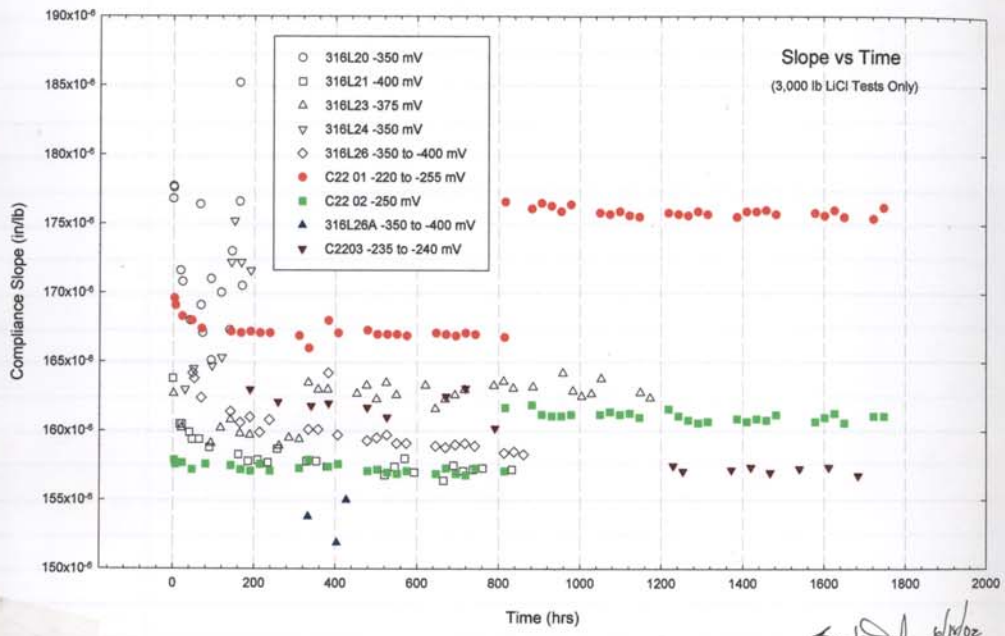
Test Solution: 1000g LiCl Lot # 005438
+ 2.6 Liter DI water

Thermometer: SN# C98-106
Reference: Fisher 13-620-52 SN# 8810528
Electrometer: Keithley 614 SN# 070486



6/14/02

6/14/02



6/18/02

6/18/02

C2203 B

Continuation of tests from page 235

SPECIMEN C2203 ALLOY 22 HEAT 2277-8-3175
FATIGUE PRECRACK INFORMATION Page 207

SOLUTION 9.07 MOLAL LiCl
1000 g LiCl LOT 015046 + DI WATER (2.6 Liter)
DEAERATED W/ N_2
T= 95 °C Hg THERMOMETER SN F98-393
CAL 1/10/2002 DUE 7/10/2002

SPECIMEN PLACED IN CELL WITH
PLATINUM COUNTER ELECTRODES AND LUGGIN
PROBE WITH FISHER REFERENCE ELECTRODE (SCE)
SN 8077248

TEST CONDUCTED IN LOADFRAME #4

TEST STARTED 4/5/2002
E_{corr} −246 mV_{SCE} KEITHLEY 619 SN 704936
CAL 5/14/2001 DUE 5/14/2002

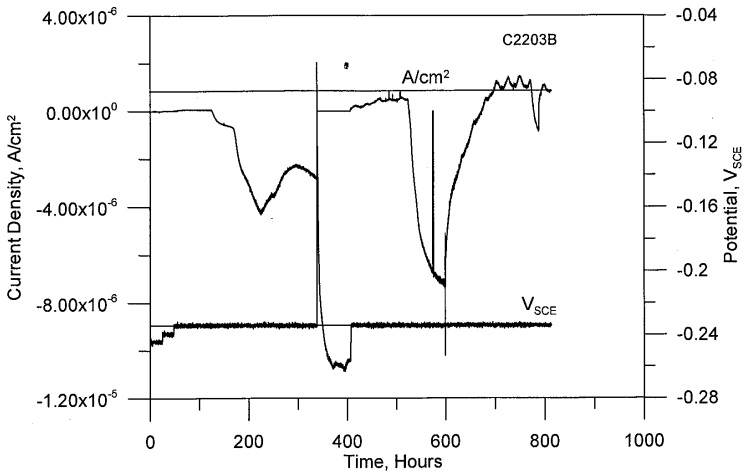
APPLIED POTENTIAL VARIED FROM −235 mV_{SCE} TO −250 mV_{SCE}

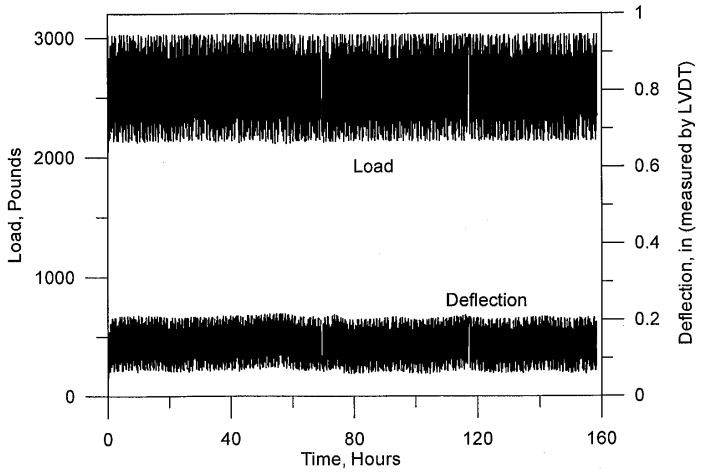
COMPLIANCE RUNS

	4/8/02 - 70 hr	5/1/02 - 621 hr
4/10/02 - 117 hr	4/12/02 - 165 hr	5/3/02 - 669 hr
	4/15/02 - 237 hr	5/6/02 - 741 hr
	4/17/02 - 285 hr	5/8/02 - 789 hr
	4/19/02 - 333 hr	5/9/02 - 813 hr
	4/22/02 - 405 hr	
	4/26/02 - 501 hr	TEST STOPPED 5/9/02 AFTER
	4/29/02 - 573 hr	LAST COMPLIANCE RUN

7/19/2002

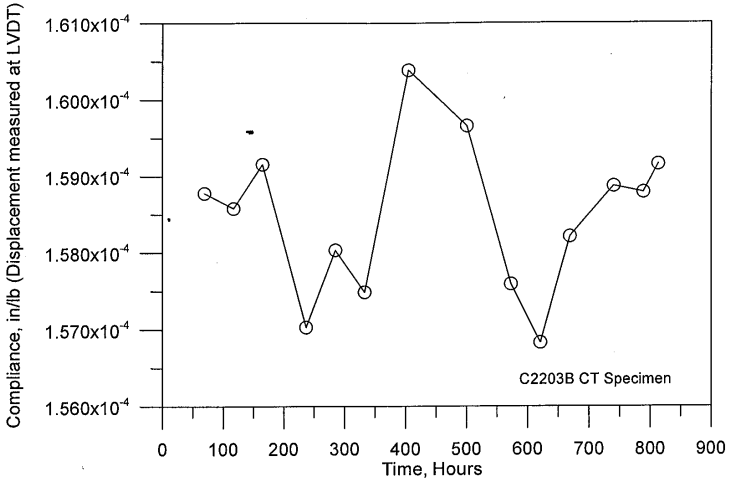
C2203 B





Russell Dunn 7/23/2002

C2203B



Russell Dunn 7/23/2002

C2203C

Continuation of tests from page 237

SPECIMEN C2203 ALLOY 22 2277-8-3175
Fatigue precrack information page 207

SOLUTION 9.07 MOLAL LiCl
1000 g LiCl LOT 015046 + DI WATER (2.6 LITER)
DEAERATED WITH N_2
T = 95°C Hg THERMOMETER H98-149
CAL 6/11/02 DUE 12/11/02

SPECIMEN in test cell with Platinum counter electrode and Luggin probe with Fisher SCE SN ~~8201~~ DD 7/19/2002 8210516

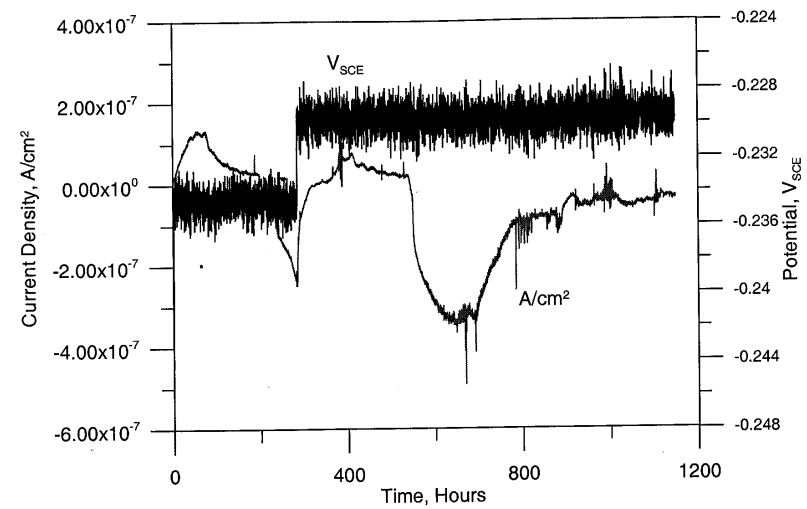
Test conducted in Load Frame #4

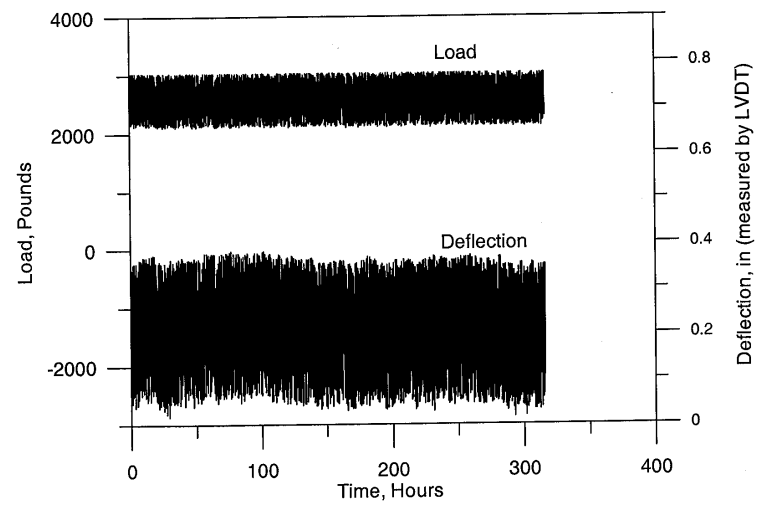
Test started 7/17/02
E_{corr} -252 mV$_{SCE}$ KEITHLEY 617 SN 537418
CAL 6/11/02 DUE 12/11/02

APPLIED POTENTIAL -240 mV$_{SCE}$ AT 2:04 PM 7/17/2002
-235 mV$_{SCE}$ AT 2:30 PM 7/17/2002

10/11/02

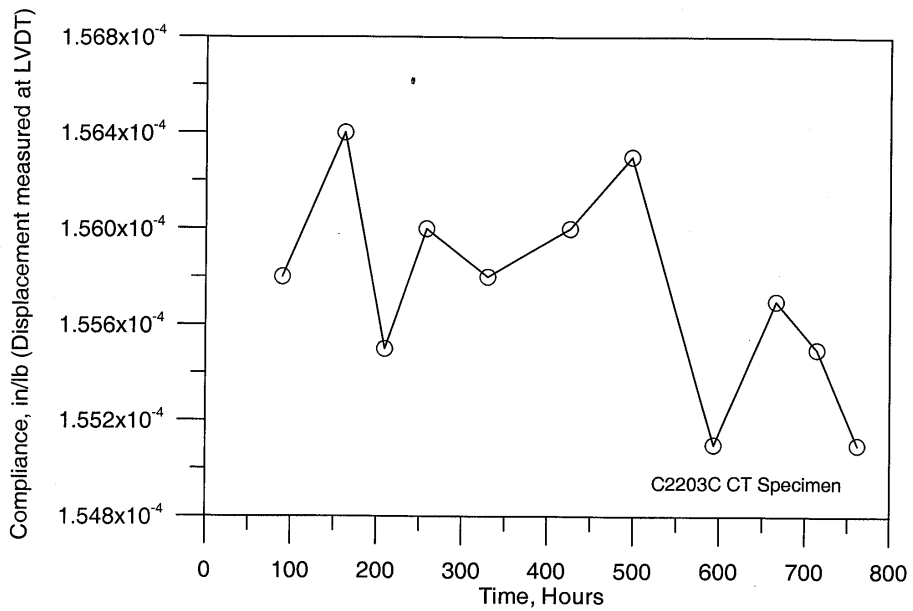
C2203C





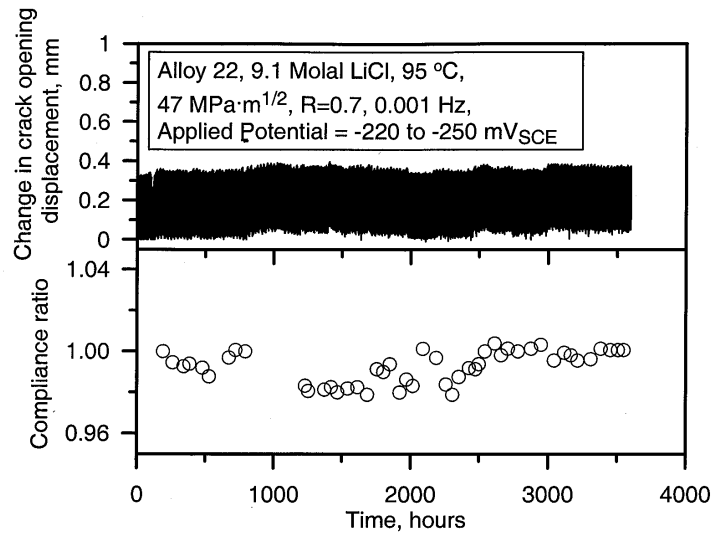
10/11/02

C2203C



10/11/02

C2203C



10/11/02

316L 23

SPECIMEN 316L 23 P80746 316L STAINLESS STEEL

SOLUTION 9.07 MOLAL LiCl
1000 g LiCl LOT 015046 + DI WATER (2.6 LITER)
NO GAS USED TO DEAERATE TEST SOLUTION
T=95°C Hg THERMOMETER C96-783 DD 7/19/2002
CAL ~~10/30/2001~~ DD 7/19/2002 DUE ~~4/30/2002~~ 5/3/2001
11/3/2000

SPECIMEN Placed in test cell with Platinum Counter electrodes and Luggin Probe with Fisher SCE Reference Electrode SN 8210516

TEST conducted in Load Frame #2

Test started 11/28/2000
E_{corr} -326 mV_{SCE} KEITHLEY 614 704936
CAL 3/18/2000 DUE 3/18/2001

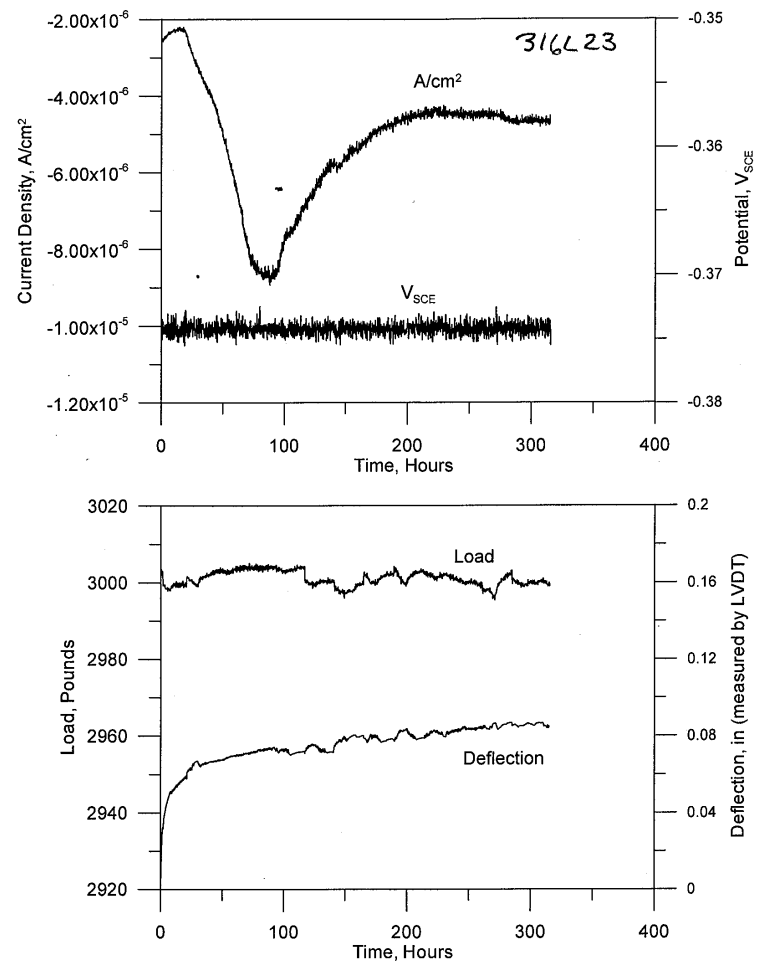
APPLIED POTENTIAL -375 mV_{SCE}

TEST RUN FOR APPROXIMATELY 315 hr

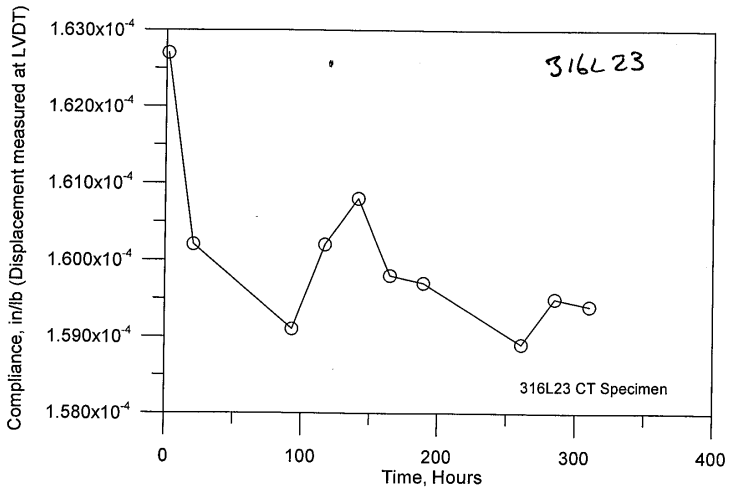
TEST STOPPED 12/13/2000

GRAPHS OF LOG FILE AND COMPLIANCE
PAGES 245 & 246

Darrell Dunn 7/19/2002



Darrell Dunn 7/16/2002



Darrell Dunn 7/19/2002

316L 23A

Continuation of Test on page 244

SPECIMEN 316L 23 HEAT P80746 316L STAINLESS STEEL

SOLUTION 9.07 MOLAL LiCl
SAME SOLUTION AS P 244
SAME TEST PARAMETERS AND EQUIPMENT AS P244
SAME INSTRUMENTS AS PAGE 244

REFERENCE ELECTRODE FISHER SCE 8210528
THERMOMETER C96-616 CAL 12/22/2000 DUE 6/22/2001

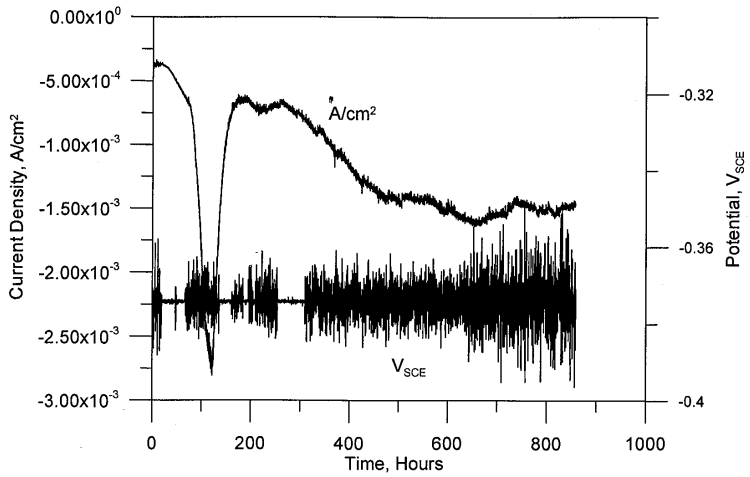
TEST STARTED 1/15/01
E_{corr} -305 mV SCE KEITHLEY 614 SN 704936

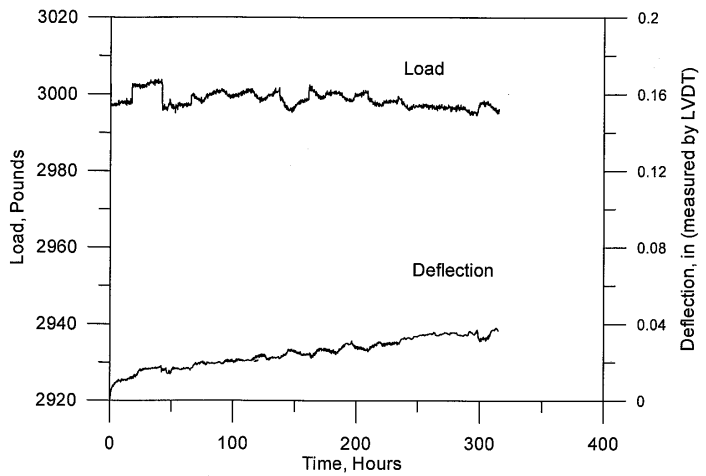
APPLIED POTENTIAL -375 mV SCE

TEST STOPPED 2/21/2001

GRAPHS OF LOG FICE AND COMPLIANCE
PAGES 248 & 249

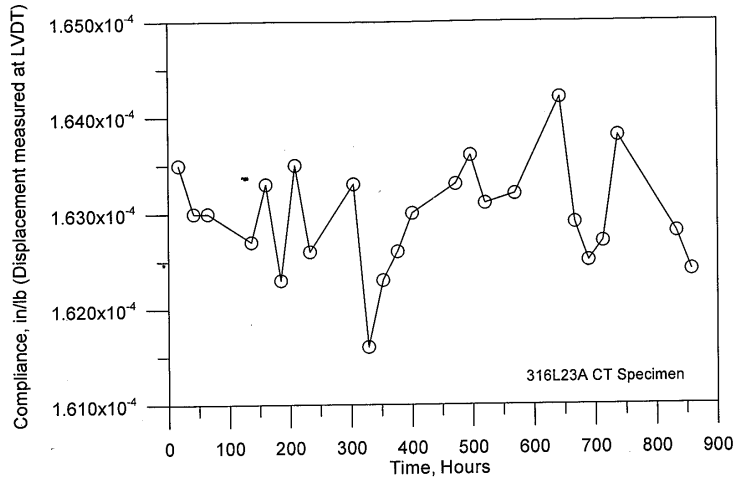
Darrell Dunn 7/19/2002





POTENTIAL NOISE MAY BE DUE TO BUBBLE IN LUGGIN PROBE

7/19/2002



7/19/2002

C2204

SPECIMEN C2204 ALLOY 22 HEAT 2277-8-3175
FATIGUE PRECRACK INFORMATION P 208

SOLUTION SIMULATED CONCENTRATED WATER
12.96 g KCl LOT 005573
10.86 g NaCl LOT 016089
17.50 g $NaNO_3$ LOT 006604
41.38 g Na_2SO_4 LOT 010224
192.68 g $NaHCO_3$ LOT 897789
6.189 g NaF LOT 991559
+ DI WATER TO 2000 mL
SCALE OHAUS SN 2883 CAL 2/15/02 DUE 8/15/02
pH 7.136
pH ADJUSTED TO 10.3 w/ NaOH
pH MEASURED w/ FISHER ACCUMET 950 SN 3340
CAL 7/24/2001 DUE 7/24/2002
T= 73°C Hg THERMOMETER ~~H98-182~~ DD 7/25/2002
H98-182 CAL 5/21/2001 DUE 5/21/2002

SOLUTION DEAERATED w/ N_2

SPECIMEN PLACED IN TEST CELL WITH PLATINUM COUNTER ELECTRODES AND LUGGIN PROBE WITH FISHER SCE REFERENCE 8210516

TEST CONDUCTED IN FRAME #3

TEST STARTED 3/26/2002
E_{corr} +137 mV_{SCE} KEITHLEY SN 704934
CAL 3/28/2001 DUE 3/28/2002
APPLIED POTENTIAL +380 mV_{SCE}
TEST RUN 809.97 hr
TEST STOPPED 4/29/2002

Russell Dunn 7/25/2002

C2204

COMPLIANCE RUNS DD 7/25/2002

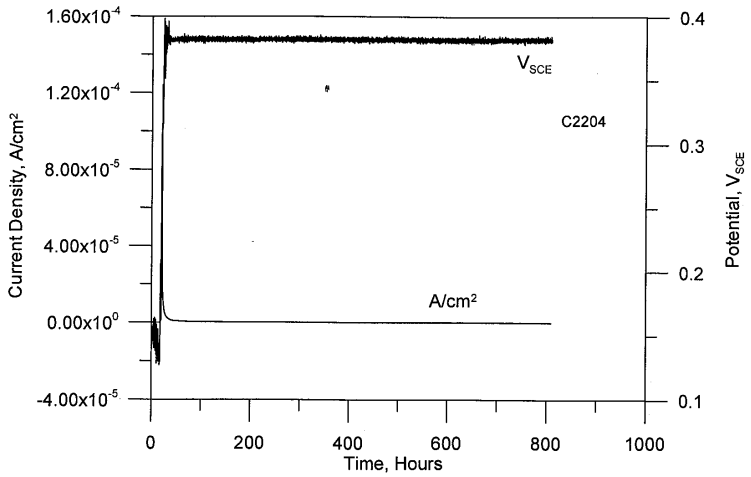
DATE	TIME (TEST) hr	~~TEST~~ TIME
3/29/2002	66.9	8:54 AM
4/1/2002	141.6	11:39 AM
4/3/2002	186.9	8:55 AM
4/5/2002	234.6	8:53 AM
4/8/2002	305.4	8:22 AM
4/10/2002	353.4	8:25 AM
4/12/2002	400.8	7:45 AM
4/15/2002	473.1	8:06 AM
4/17/2002	521.2	8:11 AM
4/19/2002	569.1	8:05 AM
4/22/2002	641.0	7:58 AM
4/26/2002	736.9	7:53 AM
4/29/2002	808.9	7:52 AM

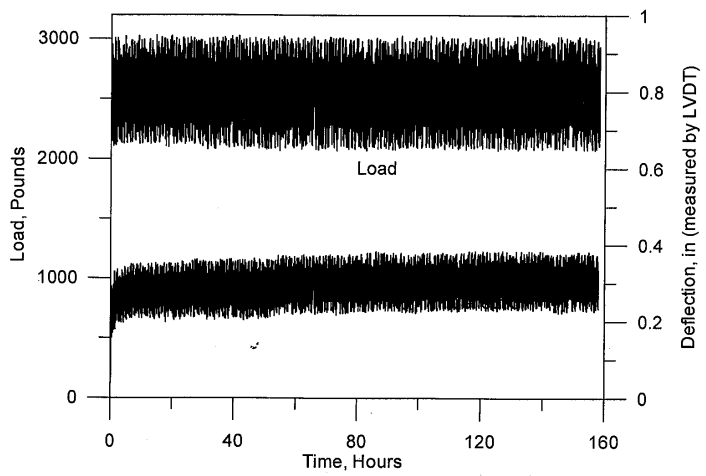
LOG FILE PLOT AND COMPLIANCE P 252 & 253

APPLIED LOAD 3000 LB
R = 0.7
FREQUENCY = 0.001 Hz

Russell Dunn 7/25/2002

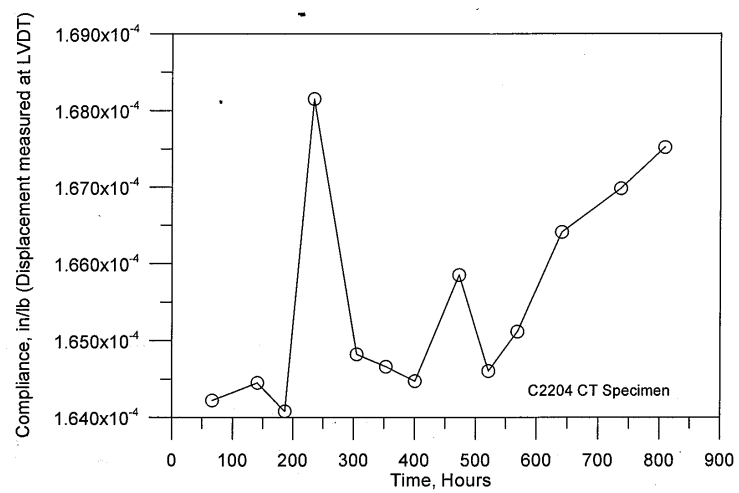
C2204





Darrell Dunn 7/25/2002

C2204



Darrell Dunn 7/25/2002

C2204A

CONTINUATION OF TEST PAGE 250

SPECIMEN C2204 ALLOY 22 HEAT 2277-8-3175

SOLUTION SIMULATED CONCENTRATED WATER
6.192 g NaF LOT 991559
12.96 g KCl LOT 005573
10.86 g NaCl LOT 016089
17.52 g $NaNO_3$ LOT 006604
41.42 g Na_2SO_4 LOT 010224
192.63 g $NaNCO_3$ LOT 923337A
+ DI WATER TO 2000 ml
SCALE OHAUS SN 2883 CAL 2/15/02 DUE 8/15/02
PH : 7.153
pH MEASURED W FISHER ACCUMET 950 SN 3340
CAL 7/24/2001 DUE 7/24/2002

T= 95°C Hg THERMOMETER C96-637
CAL 1/10/2002 DUE 7/10/2002

SOLUTION DEAERATED W/ N_2

SPECIMEN PLACED IN TEST CELL WITH PLATINUM COUNTER ELECTRODES AND LUGGIN PROBE WITH FISHER SCE REFERENCE 8210516

TEST CONDUCTED IN FRAME #3

TEST STARTED 5/10/2002
E_{corr} +32 mV KEITHLEY SN 555368
CAL 3/7/2002 DUE 3/7/2003

TEST RUN 792.1 HOURS
TEST STOPPED 6/12/2002

Darrell Dunn 7/25/2002

C2204A

COMPLIANCE RUNS

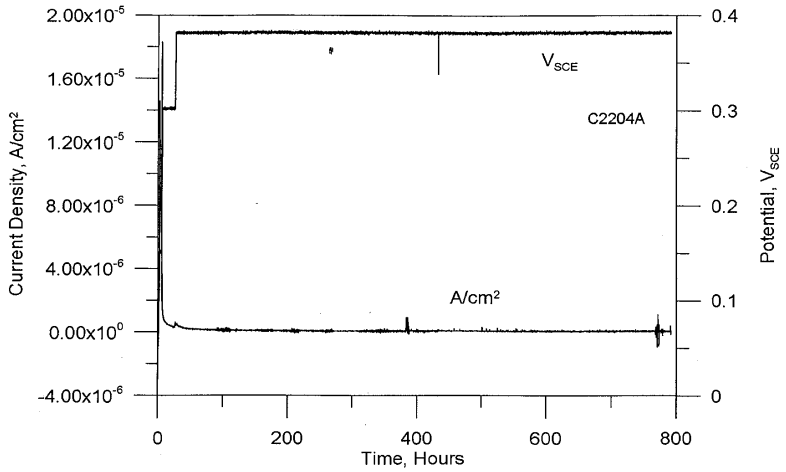
DATE	TIME	TEST TIME hr
5/13/2002	7:42 AM	71.5
5/16/2002	7:47 AM	143.6
5/20/2002	8:05 AM	239.9
5/22/2002	8:56 AM	288.7
5/24/2002	8:11 AM	336.0
5/29/2002	8:09 AM	456.0
5/31/2002	8:18 AM	504.1
6/3/2002	~~8:08 AM~~ DD 7/25/2002 8:08 AM	576
6/5/2002	8:33 AM	624.4
6/7/2002	8:26 AM	672.3
6/10/2002	8:10 AM	744.0
6/12/2002	8:17 AM	792.1

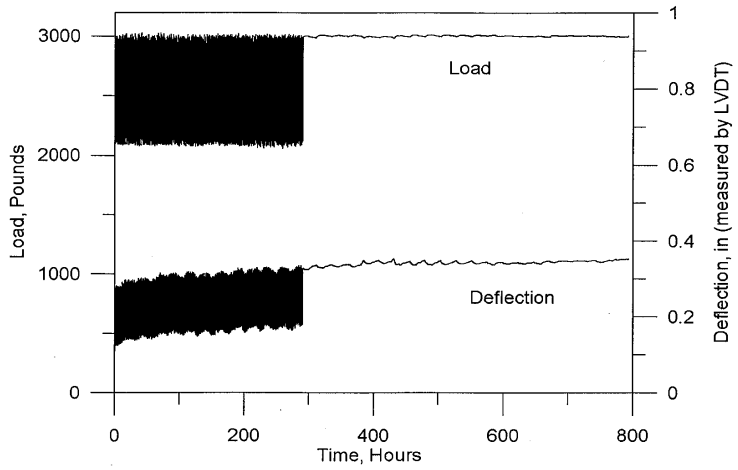
LOG FILE PLOT AND COMPLIANCE P 256 & 257

APPLIED LOAD 3000 LB
R = 0.7
FREQUENCY = 0.001 Hz

Darrell Dunn 7/25/2002

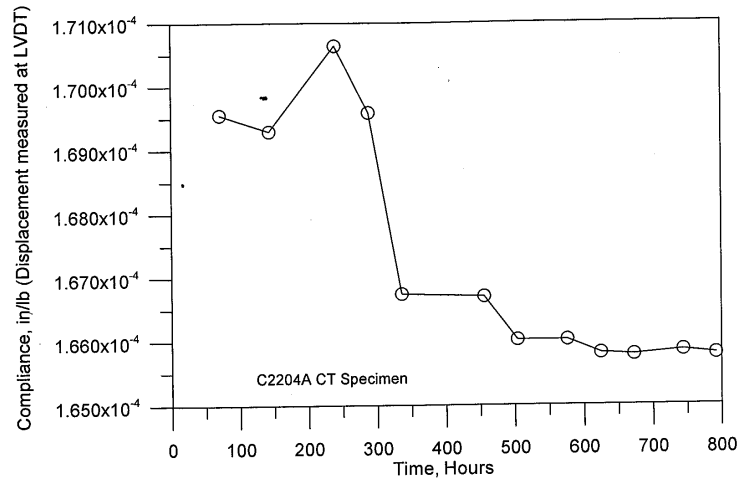
C2204A





Darrell Dunn 7/25/2002

C2204A



Darrell Dunn 7/25/2002

C2204B

CONTINUATION OF TEST PAGE 234 & 250

SPECIMEN ALLOY 22 2277-8-3175

SOLUTION SIMULATED CONCENTRATED WATER
6.19 g NaF LOT 991559
12.97 g ~~Na~~ DD 7/25/2002 KCl LOT 005573
10.86 g NaCl LOT 020814
17.52 g $NaNO_3$ LOT 020809
41.38 g Na_2SO_4 LOT 010224
192.73 $NaHCO_3$ LOT 92337A
+ DI WATER TO 2000 mL
SCALE OHAUS SN 2883 CAL 2/15/02 DUE 8/15/02
pH = 7.836
pH MEASURED WITH FISHER ACCUMET 950 SN 3340
CAL 7/24/2001 DUE 7/24/2002

SOLUTION DEAERATED W/ N_2

T = 95°C Hg THERMOMETER E98-273 DD 7/25/2002
CAL ~~3/7/2002~~ DD 7/25/2002 DUE ~~3/7/2003~~ DD 7/25/2002
2/22/2002 8/22/2002
SPECIMEN PLACED IN TEST CELL WITH PLATINUM COUNTER ELECTRODES AND LUGGIN PROBE WITH FISHER SCE REFERENCE 8077248

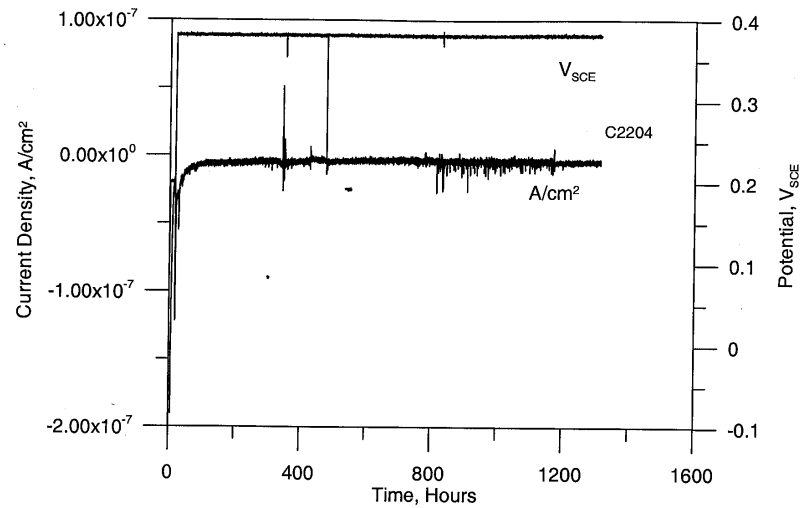
TEST CONDUCTED IN FRAME #3

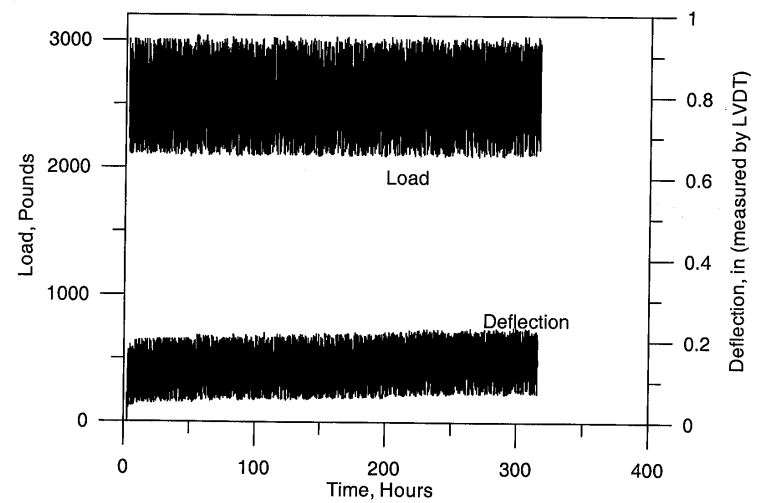
TEST STARTED 7/16/2002
E_{corr} +46 mV_{SCE} KEITHLEY 614 SN 555368
CAL 3/7/2002 DUE 3/7/2003

TEST RUN 1314 hours
TEST STOPPED 9/10/02

10/11/02

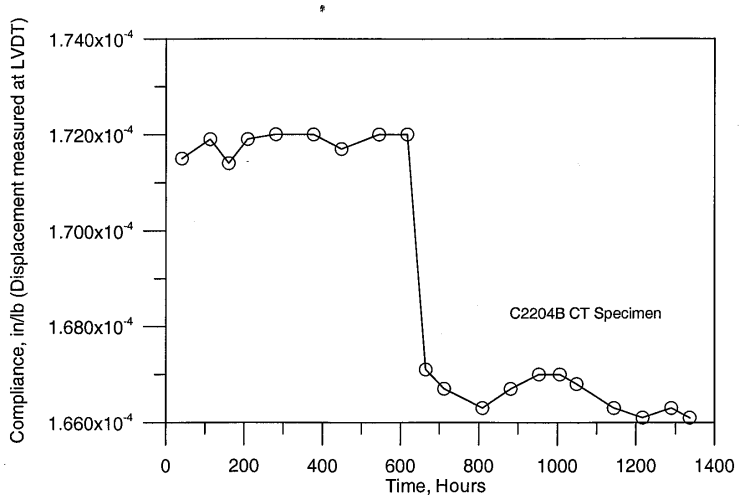
C2204B





10/11/02

C2204B



10/11/02

C2204B

10/11/02

C2206

SPECIMEN C2206 ALLOY C-22 2277-8-3175
SPECIMEN WAS THERMALLY AGED AT ~870°C FOR
30 min IN LINDBERG OVEN MODEL 51333
SPECIMEN THERMALLY AGED 6/14/2002
OVEN SET POINT 890°C
MEASURED TEMP 899 – 904°C USING
OMEGA MODEL HH22 SN T94140
CAL 3/22/02
THERMOCOUPLE TYPE K SN 326 CAL 1/11/02

SOLUTION 4 MOLAR NaCl
467.5 g NaCl LOT 010488
+ DI WATER TO 2 LITERS
2 2 LITER BATCHES OF SOLUTION
SCALE OHAUS SN 2883 CAL 2/15/2002 DUE 8/15/2002
pH NOT RECORDED

T = 95°C Hg THERMOMETER E98-2173
CAL DUE

SPECIMEN PLACED IN TEST CELL WITH
PLATINUM COUNTER ELECTRODES AND LUGGIN
PROBE WITH SCE REFERENCE 8077248

TEST CONDUCTED IN FRAME #1

TEST STARTED 5/15/02
E_{corr} −259 mV$_{SCE}$
~~KEITHLEY~~ DD 7/25/2002
HP 34401A SN US36081499
APPLIED POTENTIAL −220 mV$_{SCE}$
TEST RUN 1176.7 hr
TEST STOPPED 7/3/2002

Darrell Dunn 7/25/2002

COMPLIANCE RUNS

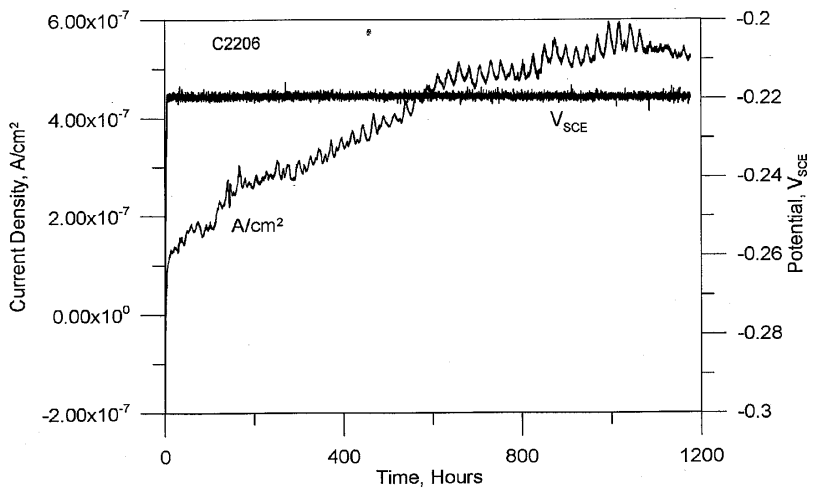
DATE	TIME	TEST TIME hr
5/16/02	8:00 AM	24.1
5/20/02	7:46 AM	119.8
5/22/02	9:10 AM	169.3
5/24/02	8:00 AM	216.1
5/29/02	7:55 AM	336.0
5/31/02	8:06 AM	384.2
6/3/02	7:59 AM	456.1
6/5/02	8:23 AM	504.5
6/7/02	8:16 AM	552.4
6/10/02	7:57 AM	624.1
6/12/02	8:07 AM	672.2
6/14/02	7:57 AM	720.1
6/17/02	7:52 AM	792.0
6/19/02	8:03 AM	840.2
6/21/02	8:08 AM	888.2
6/24/02	8:00 AM	960.1

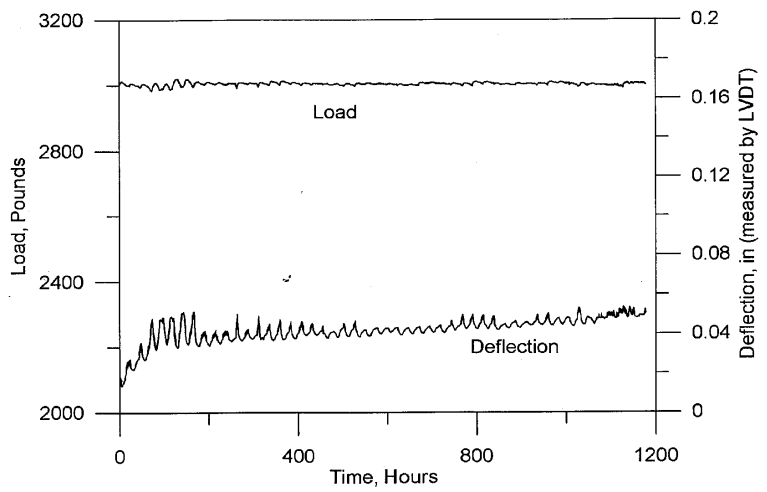
APPLIED LOAD 3000 LB

INTERGRANULAR CORROSION OF SPECIMEN
IN CREVICE AREA BETWEEN SPECIMEN AND
LOAD COUPLING.

Darrell Dunn 7/25/2002

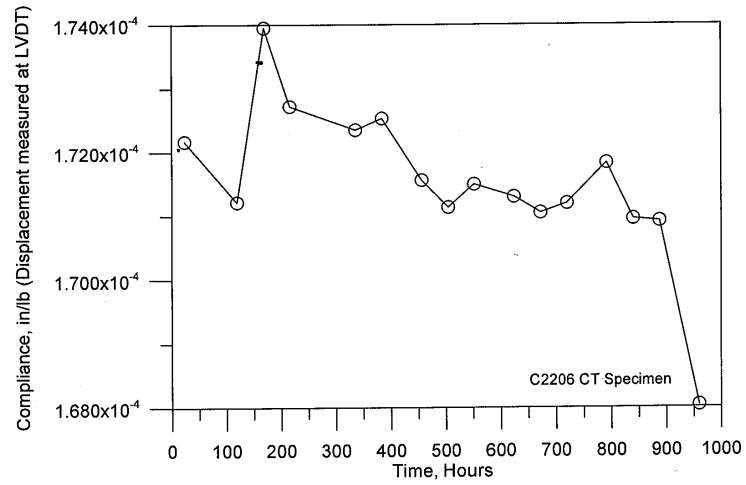
C2206





7/25/2002

C2206



7/25/2002

C2206A

CONTINUATION OF TEST PAGE 262

SPECIMEN ALLOY 22 2277-8-3175
THERMALLY AGED SEE PAGE 262

SOLUTION 4 MOLAR NaCl
935.13 g NaCl LOT 020814
+ DI WATER TO 4000 mL
SCALE OHAUS SN 2883 CAL 2/13/2002 DUE 8/15/2002
pH NOT RECORDED

T = 95 °C Hg THERMOMETER E98-191
CAL 6/11/2002 DUE 12/11/2002

SPECIMEN PLACED IN TEST CELL WITH PLATINUM
COUNTER ELECTRODES AND LUGGIN PROBE
WITH FISHER SCE REFERENCE 813141

TEST CONDUCTED IN FRAME #1

TEST STARTED 7/18/2002
E_{corr} −166 mV_{SCE}
HP 34401 A SN US36081499
APPLIED POTENTIAL −220 mV_{SCE}

TEST RUN 1297 hours
TEST STOPPED 9/10/02

10/11/02

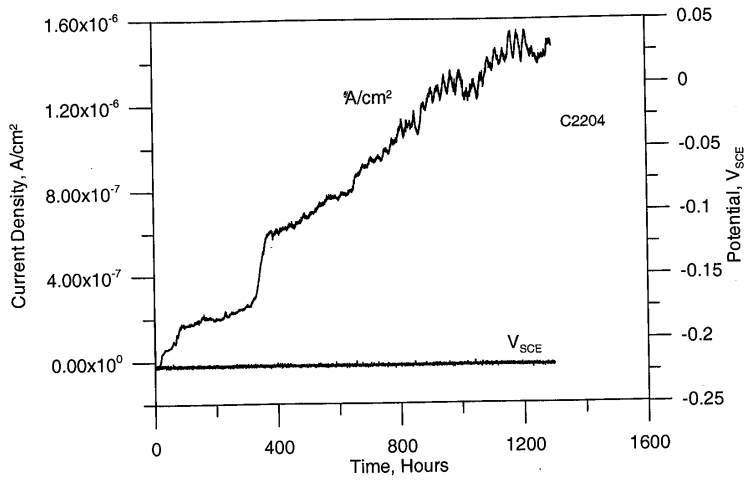
C2206A

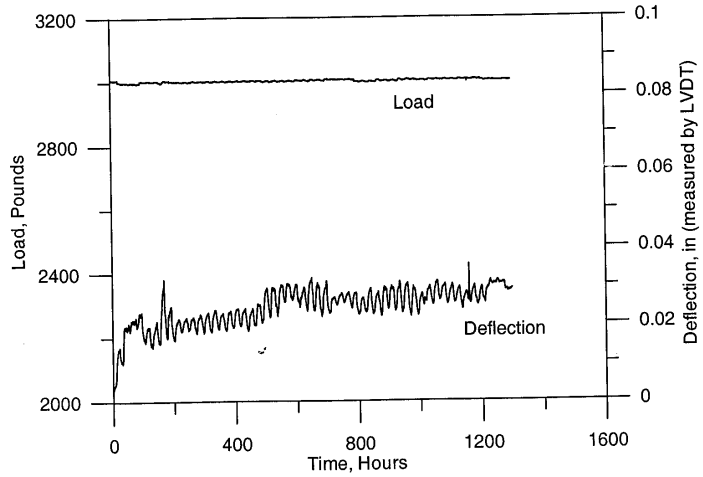
C2206A time hours	C2206A compliance in/lb	C2206A compliance m/N	C2206A normalized compliance
48.3	0.0001709	8.7417E-08	0.992652397
168.3	0.0001689	8.6394E-08	0.981035634
216.7	0.000171	8.74681E-08	0.993233236
241.13	0.0001769	9.0486E-08	1
313.3	0.0001762	9.0128E-08	0.996042962
361	0.0001765	9.02814E-08	0.997738836
409.1	0.0001769	9.0486E-08	1
481.1	0.0001762	9.0128E-08	0.996042962
577.2	0.0001763	9.01791E-08	0.996608253
648.9	0.0001767	9.03837E-08	0.998869418
745	0.0001771	9.05884E-08	1.001130582
817.2	0.0001774	9.07418E-08	1.002826456
865.2	0.0001773	9.06907E-08	1.002261164

C2206A time hours	C2206A compliance in/lb	C2206A compliance m/N	C2206A normalized compliance
936.5	0.0001781	9.10999E-08	1.006783493
989.9	0.0001781	9.10999E-08	1.006783493
1032.4	0.0001782	9.1151E-08	1.007348785
1128.3	0.0001782	9.1151E-08	1.007348785
1200.6	0.0001786	9.13556E-08	1.009609949
1273.5	0.0001788	9.14579E-08	1.010740531
1320.6	0.0001785	9.13045E-08	1.009044658

10/11/02

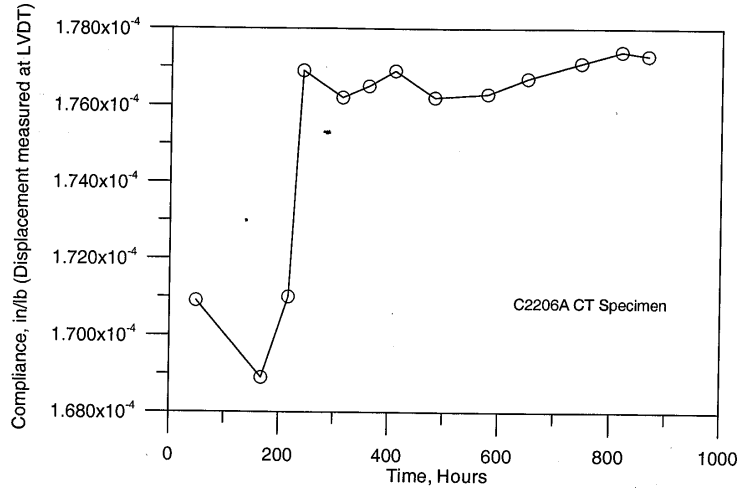
C2206A





10/11/02

C2206A



10/11/02

Test C2204 (pg # 250)

FORM FOR REQUESTING WORK FROM OTHER DIVISIONS

A. TO BE COMPLETED BY DIVISION 20 PERSONNEL

Requester: Darrell Dunn **Request Date:** 4-30-02
Project No.: 20.01402.571 **Phone No.:** X 6090
Description of Work Requested:
ICP Analysis of Solution for Chromium, Cobalt, Iron, Molybdenum, Nickel, Potassium, Sodium And Tungsten
Thanks

☐ Optical Microscopy ☐ SEM ☐ Hardness ☐ Profilometer ☐ Auger ☐ Other

QUALITY REQUIREMENTS: The work requested is governed by the CNWRA Quality Assurance Program which addresses requirements of 10CFR50, Appendix B. Personnel performing this work shall be qualified under the CNWRA QA program or equivalently under the SwRI Nuclear QA program. Test and analysis methods shall be documented by approved procedures or recognized, standard methods. Measuring and test equipment shall be calibrated and controlled according to CNWRA and SwRI Nuclear QA program requirements.

Sample Identification	Description
#13 Well Solution	#15 & 16 PT Flag Solution 20% HCl
#13 PT Flag Solution - 20% HCl	#1 Simulated Concentrated H_2O (Solid)
#14 Well Solution	#2 Simulated Concentrated H_2O
#14 PT Flag Solution - 20% HCl	
#15 & 16 Well Solution	

B. TO BE COMPLETED BY DIVISION PERFORMING WORK[1]

☐ Optical Microscopy ☐ SEM ☐ Hardness ☐ Profilometer ☐ Auger ☐ Other

Person Assigned: _____ **Signature:** _____
Division: _____ **Date:** _____

Make, Model & Serial No. of Equipment Used *(attach list if necessary)*: _____

Software Used (If any): _____

Standards Used (If any): _____

Photographic Negative Numbers (If Applicable): _____

[1] Please sign and date any hardcopy of analysis or list of photographs (The photographs themselves need not be signed). If error occurred during entry, do not erase or overwrite, but strikeout with single line, initial and date, and then reenter correct information.

Results from Test pg # 271 - 272

5/29/02

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Test C2204
Sample ID
#1 SIMULATED CONCENTRATED H_2O SOLID

Lab Name: Southwest Research Institute
Lab Code: SwRI
Matrix: Liquid
Lab System ID: 204903

Client: Division 20
Date Received: 04/30/02
Project No.: 20.01402.571
Work Order: 22374

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Chromium	4.26	0.8
Cobalt	<0.5	0.5
Iron	<10	10
Molybdenum	4.43	0.5
Nickel	<0.5	0.5
Potassium	4220	100
Sodium	44200	100
Tungsten	1.39	1

SOUTHWEST RESEARCH INSTITUTE
DUPLICATE SUMMARY

Test C2204
Sample ID
#1 SIMULATED CONCENTRATED H_2O SOLID

Lab Name: Southwest Research Institute
Lab Code: SwRI
Matrix: Liquid
Lab System ID: 204903

Client: Division 20
Date Received: 04/30/02
Project No.: 20.01402.571
Work Order: 22374

Analysis	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD
Chromium	4.26	4.27	0.26%
Cobalt	<0.5	<0.5	0.00%
Iron	<10	<10	0.00%
Molybdenum	4.43	4.25	4.03%
Nickel	<0.5	0.69	200%
Potassium	4220	4160	1.43%
Sodium	44200	44300	0.23%
Tungsten	1.39	1.33	4.28%

5/29/02

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Test C2204

Sample ID
#2 SIMULATED CONCETRATED H_2O

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/30/02

Matrix: Liquid

Project No.: 20.01402.571

Lab System ID: 204910

Work Order: 22374

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Chromium	4.11	0.8
Cobalt	<0.5	0.5
Iron	<10	10
Molybdenum	4.24	0.5
Nickel	<0.5	0.5
Potassium	4070	100
Sodium	42400	100
Tungsten	1.16	1

SOUTHWEST RESEARCH INSTITUTE

MATRIX SPIKE SUMMARY

Test C2204

Sample ID
#2 SIMULATED CONCETRATED H_2O

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/30/02

Matrix: Liquid

Project No.: 20.01402.571

Lab System ID: 204910

Work Order: 22374

Analysis	Sample Result (mg/L)	Spike Result (mg/L)	Spike Added (mg/L)	Recovery
Chromium	4.11	23.9	20.0	99.0%
Cobalt	<0.5	51.9	50.0	103.9%
Iron	<10	93.4	100	93.4%
Molybdenum	4.24	313	300	103.0%
Nickel	<0.5	51.3	50.0	102.6%
Potassium	4070	24100	20000	100.2%
Sodium	42400	63300	20000	104.5%
Tungsten	1.16	312	300	103.6%

8/29/02

CREEP FRAME CALIBRATION

LVDT Calibrations 1/21/03
Calibration Gage Blocks: Pratt & Whitney
Last Cal:1/9/03 Next Cal: 1/9/04

Frame 1 s/n: L0078801

Gage Id	Value (in)	Computer Reading(in x 100) 1	2	3	Average (in)	Change (in)	Error (in)	Error (%)
-----	0	99.65	99.69	99.70	0.9968	0.0000	0.0000	0.0000
X369A	0.0625	93.29	93.30	93.33	0.9331	0.0637	0.0012	1.9733
Y242A	0.1251	86.87	86.88	86.89	0.8688	0.1280	0.0029	2.3181
Y455A	0.2500	74.05	74.11	74.12	0.7409	0.2559	0.0059	2.3467
Y649A	0.5001	48.92	48.88	48.90	0.4890	0.5078	0.0077	1.5397
Y189B	1.0000	0.01	0.01	0.01	0.0001	0.9967	-0.0033	-0.3300

Frame 2 s/n: L0078900

Gage Id	Value (in)	Computer Reading(in x 100) 1	2	3	Average (in)	Change (in)	Error (in)	Error (%)
-----	0	99.94	99.99	100.00	0.9998	-0.0030	-0.0030	0.0000
X369A	0.0625	93.61	93.63	93.65	0.9363	0.0605	-0.0020	-3.2000
Y242A	0.1251	87.20	87.21	87.23	0.8721	0.1247	-0.0004	-0.3464
Y455A	0.2500	74.59	74.60	74.60	0.7460	0.2508	0.0008	0.3333
Y649A	0.5001	49.65	49.70	49.56	0.4964	0.5004	0.0003	0.0667
Y189B	1.0000	-0.01	-0.01	-0.02	-0.0001	0.9969	-0.0031	-0.3067

Frame 3 s/n:L2566300

Gage Id	Value (in)	Computer Reading(in x 100) 1	2	3	Average (in)	Change (in)	Error (in)	Error (%)
-----	0	99.82	99.84	99.84	0.9983	-0.0015	-0.0015	0.0000
X369A	0.0625	93.53	93.52	93.53	0.9353	0.0615	-0.0010	-1.5467
Y242A	0.1251	87.11	87.14	87.13	0.8713	0.1255	0.0004	0.3464
Y455A	0.2500	74.53	74.52	74.52	0.7452	0.2516	0.0016	0.6267
Y649A	0.5001	49.73	49.64	49.73	0.4970	0.4998	-0.0003	-0.0600
Y189B	1.0000	0.01	0.01	0.01	0.0001	0.9967	-0.0033	-0.3300

Frame 4 s/n:L2566600

Gage Id	Value (in)	Computer Reading(in x 100) 1	2	3	Average (in)	Change (in)	Error (in)	Error (%)
-----	0	99.83	99.82	99.84	0.9983	-0.0015	-0.0015	0.0000
X369A	0.0625	93.72	93.72	93.75	0.9373	0.0595	-0.0030	-4.8000
Y242A	0.1251	87.34	87.36	87.37	0.8736	0.1232	-0.0019	-1.4921
Y455A	0.2500	74.69	74.70	74.68	0.7469	0.2499	-0.0001	-0.0400
Y649A	0.5001	49.84	49.83	49.81	0.4983	0.4985	-0.0016	-0.3133
Y189B	1.0000	-0.01	-0.02	-0.02	-0.0002	0.9970	-0.0030	-0.3033

4/7/03

LOAD CELL CALIBRATION

Frame No.: 1 Date: 1/21/03

Load Cell S/N: 732329

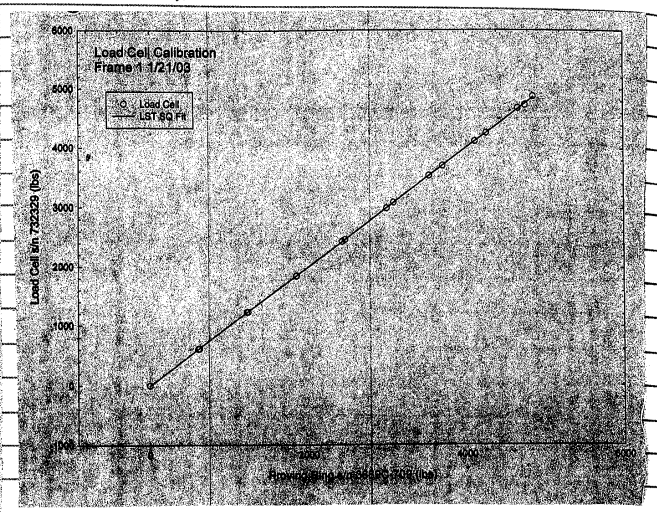
Morehouse Proving Ring S/N: 3669C-709

Last Cal.: 1/15/02 Next Cal.: 1/15/04

Load	Ring	Meter	Computer	Table
0	8.6	0.6	-1.5	0
600	60.6 (0)	610.8	609.3	615.64
1200	119.2 (0.0)	1205.0		1209.35
1800	169.8 (0.0)	1708.2	1742.7	1749.22
2400	219.9 (0.0)	2198.6	2198.2	2192.83
3000	269.7 (0.0)	2690.6	2690.3	2686.05
3600	324.8 (0.0)	3237.6	3235.8	3240.27
4200	352.2 (0.0)	4117.5	4117.5	4120.16
4800	401.3 (0.0)	4618.0	4618.3	4620.05
5000	417.3 (0.0)	4773.7	4772.9	4776.43
4800	400.8 (0.0)	4793.5	4792.3	4790.27
4200	352.5 (0.0)	4215.9	4216.2	[illegible]
3600	321.3 (0.0)	3720.0	3720.9	[illegible]
3000	269.2 (0.0)	3235.6	3235.2	[illegible]
2400	217.5 (0.0)	2746.0	2746.2	[illegible]
1800	165.3 (0.0)	2252.9	2249.0	2248.18
1200	115.8 (0.0)	1733.0	1733.3	1731.07
600	61.9 (0.0)	614.8	609.5	[illegible]
0	9.0			

DD 9/18/03

CREEP FRAME CALIBRATION



LOAD CELL CALIBRATION

Frame No.: 2 Date: 1/22/03

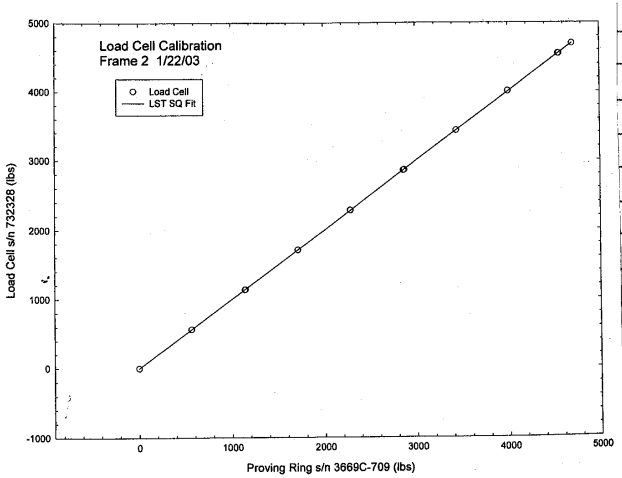
Load Cell S/N: 732328

Morehouse Proving Ring S/N: 3668C-709

Last Cal.: 1/15/01 Next Cal.: 1/15/04

Load	Ring	Meter	Computer	Table
0	27.4	0.3	0.5	
600	75.0 (0.0)	565.1	563.0	564.13
1200	124.0 (0.0)	1139.6	1138.9	1140.52
1800	172.9 (0.0)	1712.7	1713.8	1714.0
2400	220.6 (0.0)	2286.0	2285.7	2286.2
3000	269.0 (0.0)	2858.5	2859.3	2862.4
3600	317.0 (0.0)	3431.1	3430.6	3435.7
4200	364.9 (0.0)	4004.9	4003.6	3999.6
4800	410.8 (0.0)	4546.6	4545.9	4558.6
5000	422.5 (0.0)	4695.5	4694.5	4699.1
4800	410.2 (0.0)	4597.7	4596.6	4548.9
4200	364.5 (0.0)	4003.0	4006.1	4008.8
3600	317.3 (0.0)	3434.6	3434.6	3438.7
3000	269.5 (0.0)	2865.6	2863.9	2873.2
2400	221.3 (0.0)	2291.1	2290.7	2288.6
1800	172.6 (0.0)	1716.2	1715.0	1716.9
1200	124.2 (0.0)	1142.8	1141.7	1149.9
600	75.3 (0.0)	567.1	566.0	567.7
0	27.2	0.2	0.2	

DD 9/18/03



4/7/03

LOAD CELL CALIBRATION

Frame No.: 3 Date: 1/23/03

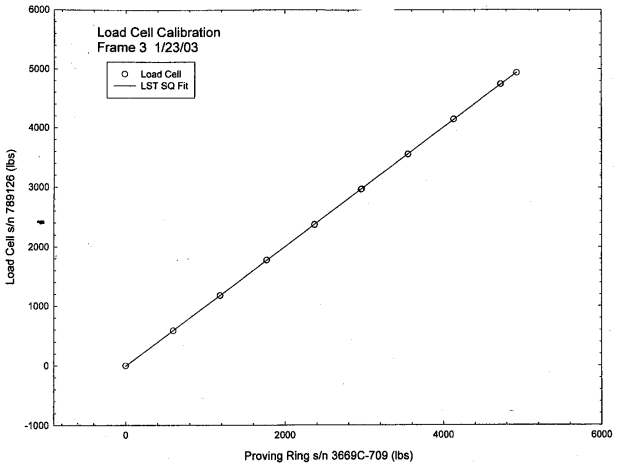
Load Cell S/N: 789126

Morehouse Proving Ring S/N: 3668C-709

Last Cal.: 1/15/01 Next Cal.: 1/15/04

Load	Ring	Meter	Computer	Table
0	28.5	0.5	0.1	
600	77.8 (0.0)	585.5	584.8	593.44
1200	127.9 (0.0)	1175.3	1176.6	1185.53
1800	177.0 (0.0)	1772.3	1770.9	1767.48
2400	227.9 (0.0)	2365.7	2369.1	2371.43
3000	277.0 (0.0)	2958.9	2958.6	2956.16
3600	326.9 (0.0)	3551.3	3551.6	3550.22
4200	379.9 (0.0)	4145.5	4145.1	4126.96
4800	435.0 (0.0)	4743.1	4743.5	4727.49
5000	451.6 (0.0)	4938.7	4931.7	4927.9
		DD 9/18/03		
4800	434.9 (0.0)	4743.6	4744.1	4736.64
4200	378.3 (0.0)	4151.7	4150.3	4131.77
3600	326.8 (0.0)	3554.6	3554.7	3551.02
3000	277.9 (0.0)	2967.1	2966.6	2963.27
2400	227.9 (0.0)	2372.2	2370.6	2371.83
1800	177.5 (0.0)	1778.4	1777.2	1775.14
1200	127.4 (0.0)	1183.5	1183.5	1179.59
600	77.4 (0.0)	588.2	586.6	584.63
0	27.4	0.1	-0.3	

CREEP FRAME CALIBRATION



LOAD CELL CALIBRATION

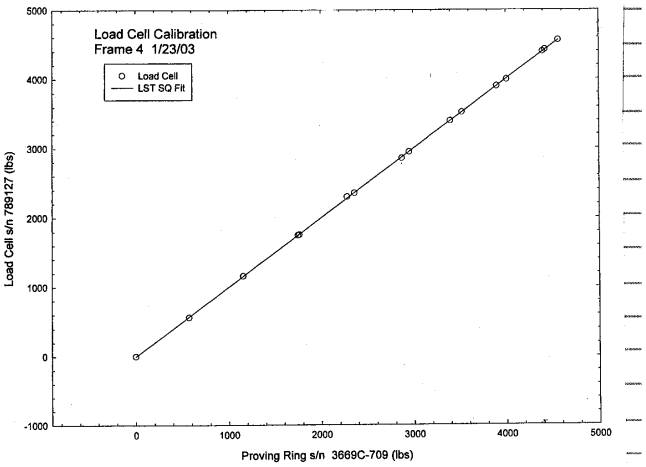
Frame No.: 4 Date: 1/23/03

Load Cell S/N: 789127

Morehouse Proving Ring S/N: 3668C-709

Last Cal.: 1/15/01 Next Cal.: 1/15/04

Load	Ring	Meter	Computer	Table
0	27.5	0.9	-0.3	
600	75.5 (0.0)	560.7	560.9	570.03
1200	125.4 (0.0)	1156.8	1155.6	1155.9
1800	175.5 (0.0)	1797.4	1795.7	1799.65
2400	220.0 (0.0)	2295.6	2295.7	2293.89
3000	269.9 (0.0)	2859.5	2859.0	2871.56
3600	319.0 (0.0)	3393.6	3393.2	3398.12
4200	356.5 (0.0)	3894.0	3894.1	3900.18
4800	397.1 (0.0)	4396.6	4394.6	4396.68
5000	411.3 (0.0)	4559.5	4559.6	4563.9
		DD 9/18/03		
4800	399.5 (0.0)	4921.8	4921.9	4921.37
4200	364.5 (0.0)	3989.6	3989.4	4006.75
3600	324.6 (0.0)	3519.4	3516.5	3529.13
3000	276.6 (0.0)	2946.6	2946.0	2951.99
2400	226.8 (0.0)	2351.3	2349.8	2359.71
1800	176.7 (0.0)	1755.6	1753.5	1763.52
1200	125.2 (0.0)	1158.3	1157.4	1153.59
600	75.9 (0.0)	561.3	560.6	571.21
0	27.6 (0.0)	0.0	-0.3	



4/7/03

Specimen: C2206 compact tension specimen
Material: Heat 2277-8-3175

Date:

Fatigue Precracking performed on
Load frame model number: 810 Test System
Load frame serial number: #17

Load measurements performed using
Load cell model number: MTS 661.214-02
Load cell serial number: 5930
Date of last calibration: 12-07-01
Next calibration due: 12-07-02

Displacement measurements performed using
Model Number MTS 632.03B-30
Serial Number 594
Date of last calibration: 12 MAR 02
Next calibration due:

Additional Information W = 2.000 B = .497 B_N = .337 $B = \sqrt{B \cdot B_N}$ = .4093
A_{NF} .4965 A_{NA} .5035
BL 5035 BL 4965

Minimum Load (lb)	Maximum Load	Number of cycles	Crack length/width a/W Front		Crack length/width a/W Rear	
264	2640	1,515,988	.5785	.289	.5935	.297
240	2400	587,162	.6965	.348	.6985	.349
218	2180	266,728	.7975	.3988	.8055	.4028
198	1980	114,286	.8365	.4183	.8385	.4193
			w/o/ac Dmax	w/o/ac Dmax		
180	1800	~~242,664~~	~~.890~~	~~.445~~		
		244,418	.8965	.4483	.9035	.4518

Daniel D 4/7/03

C2206A1

CONTINUATION OF TEST ON PAGE 266

TEST SOLUTION AND ALL TEST CONDITIONS SAME AS C2206A P 266

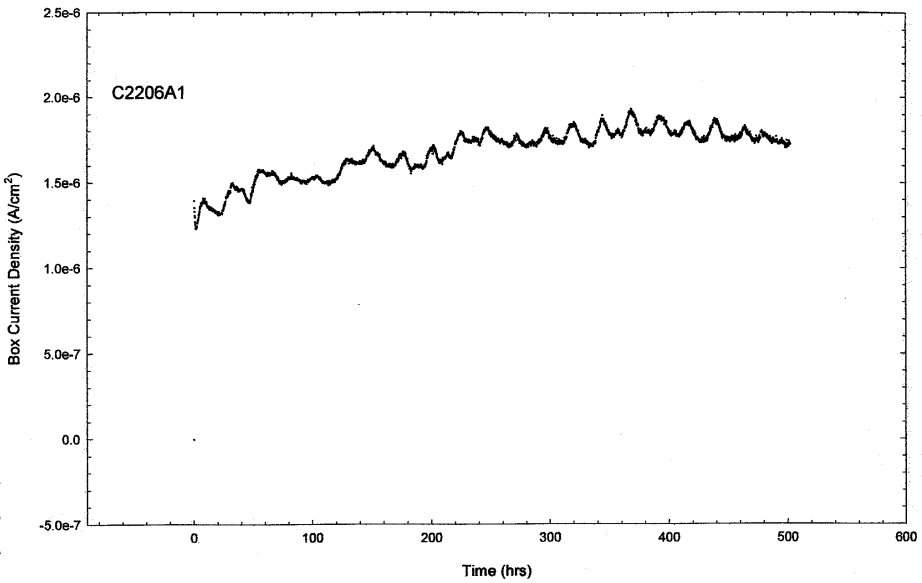
DATA FILE STARTED 9/12/02 10:25 AM
DATA FILE STOPPED 10/3/02 8:41 AM

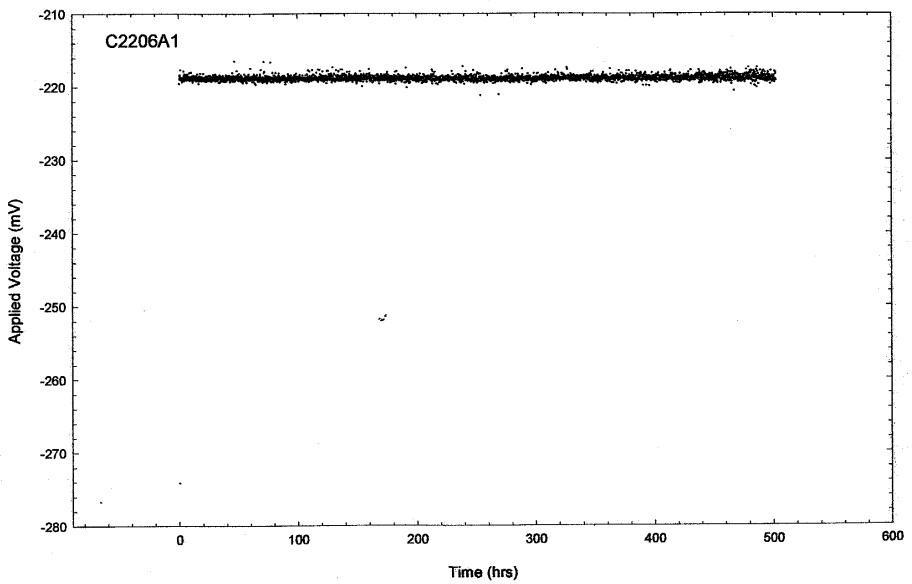
SPECIMEN REMOVED FROM CELL AT END OF TEST

C2206A1 IS A CONTINUATION OF C2206A SO TIMES OF COMPLIANCE MEASUREMENTS ARE ZEROED TO INITIAL START OF C2206A

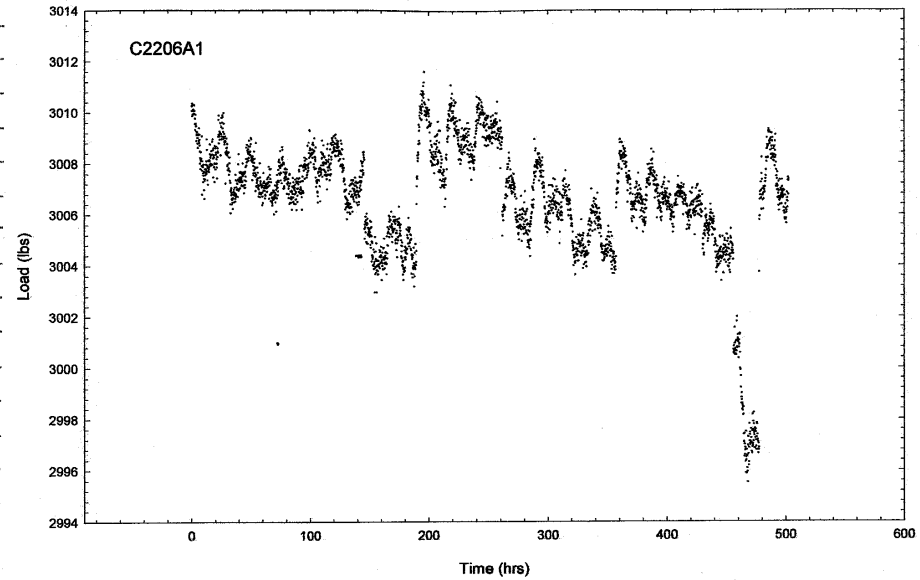
C2206A1 time hours	C2206A1 compliance in/lb	C2206A1 compliance m/N	C2206A1 normalized compliance
1357.5	0.0001792	9.16625E-08	1.013001696
1434.5	0.0001789	9.15091E-08	1.011305822
1481.9	0.0001791	9.16114E-08	1.012436405
1525.6	0.0001789	9.15091E-08	1.011305822
1597.6	0.0001794	9.17648E-08	1.014132278
1645.9	0.0001794	9.17648E-08	1.014132278
1693.3	0.0001792	9.16625E-08	1.013001696
1765.9	0.0001788	9.14579E-08	1.010740531
1813.5	0.0001801	9.21229E-08	1.018089316

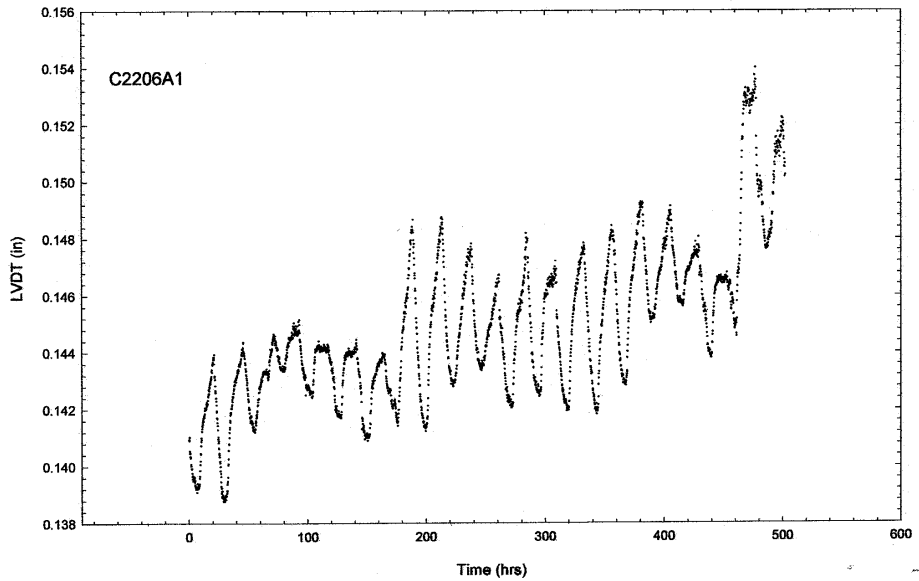
Daniel D 4/7/03


C2206A1
Box Current Density (A/cm²)
2.5e-6
2.0e-6
1.5e-6
1.0e-6
5.0e-7
0.0
-5.0e-7
0
100
200
300
400
500
600
Time (hrs)


C2206A1
Applied Voltage (mV)
-210
-220
-230
-240
-250
-260
-270
-280
0
100
200
300
400
500
600
Time (hrs)

4/7/03


C2206A1
Load (lbs)
3014
3012
3010
3008
3006
3004
3002
3000
2998
2996
2994
0
100
200
300
400
500
600
Time (hrs)


C2206A1
LVDT (in)
0.156
0.154
0.152
0.150
0.148
0.146
0.144
0.142
0.140
0.138
0
100
200
300
400
500
600
Time (hrs)

4/7/03

C2206B

CONTINUATION OF TEST ON PAGE 277

SPECIMEN ALLOY 22 2277-8-3175
THERMALLY AGED SEE PAGE 262

SOLUTION 4 MOLAR NaCl
935.13 g NaCl LOT 028804
+ DI WATER TO 4000 mL
SCALE OHAUS SN 2883
pH = 7.243

T = 95°C Hg THERMOMETER S/N H98-187

SPECIMEN PLACED IN TEST CELL WITH
PLATINUM REFERENCE ELECTRODES
AND LUGGIN PROBE WITH FISHER SCE 8077248

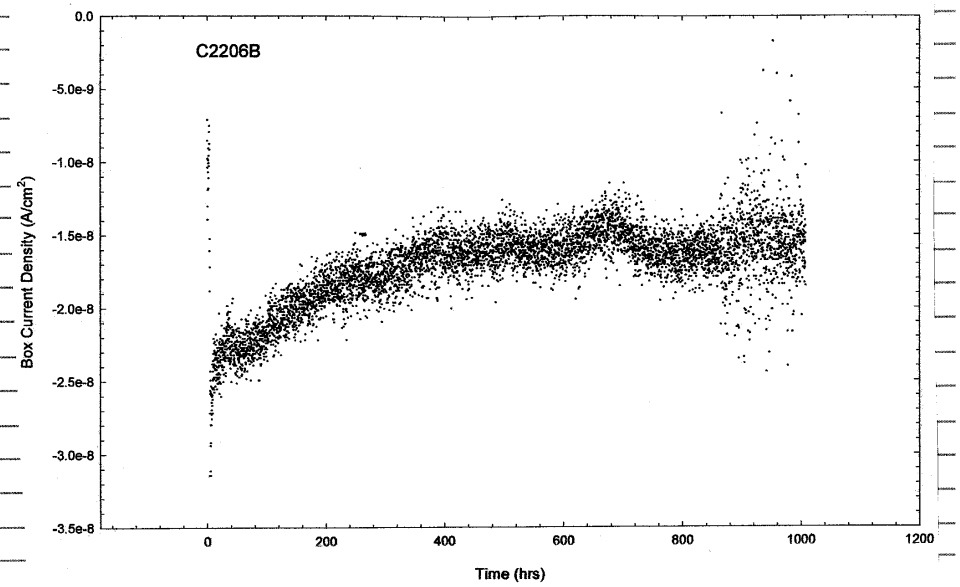
TEST CONDUCTED IN FRAME #1
TEST STARTED 12/2/02
E_{corr} 47 mV$_{SCE}$ KEITHLEY SN 537418

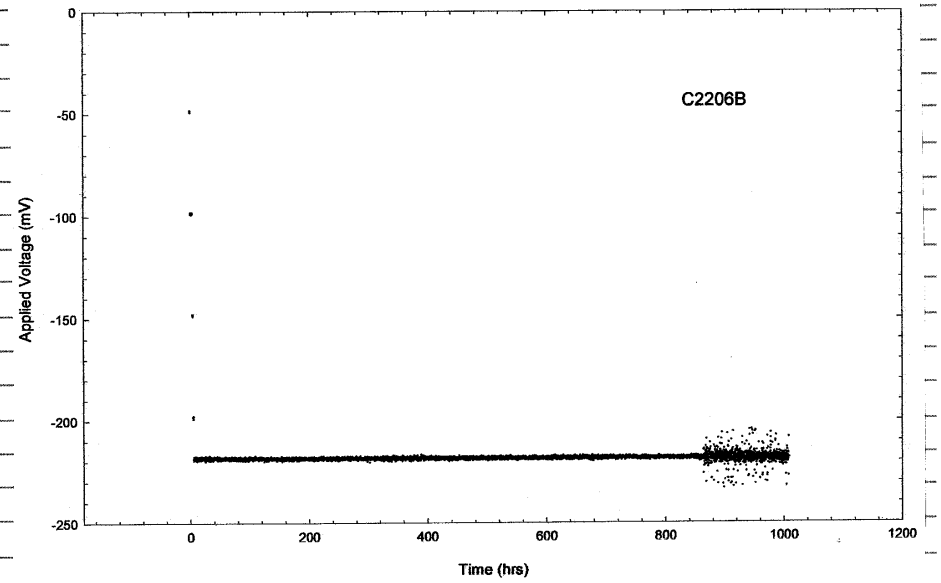
APPLIED POTENTIAL -220 mV$_{SCE}$

TEST STOPPED 1/13/03

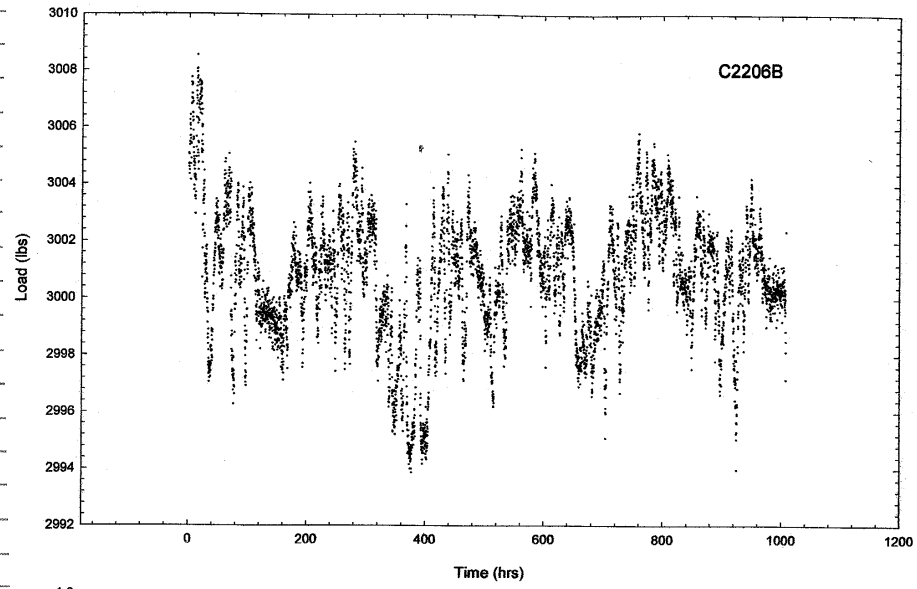
C2206B time hours	C2206B compliance in/lb	C2206B compliance m/N	C2206B normalized compliance
23.5	0.0001813	9.27367E-08	1
71.9	0.0001821	9.31459E-08	1.004412576
168.8	0.0001813	9.27367E-08	1
215.8	0.0001814	9.27878E-08	1.000551572
743.6	0.0001806	9.23786E-08	0.996138996
1005.4	0.0001818	9.29924E-08	1.00275786

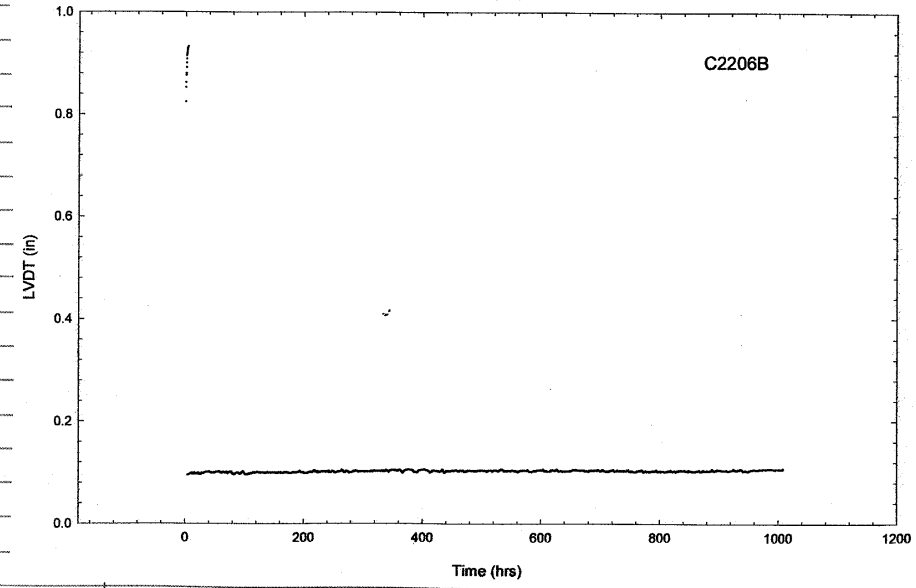
4/7/03





4/7/03





4/7/03

C2206C

CONTINUATION OF TEST ON PAGE 280

SPECIMEN ALLOY C-22 2277-8-3175
THERMALLY AGED SEE PAGE 262

SOLUTION 4 M NaCl
701.28 g NaCl LOT 010488
+DI WATER TO 3000 mL
SCALE OHAUS 2883
pH NOT RECORDED

T = 95°C Hg THERMOMETER C96-816

SPECIMEN PLACED IN CELL WITH PLATINUM COUNTER ELECTRODE AND LUGGIN WITH FISHER SCE SN 8077248

TEST CONDUCTED IN FRAME # 1

TEST STARTED 2/18/03
E_{corr} = 56 mV KEITHLEY SN 537418

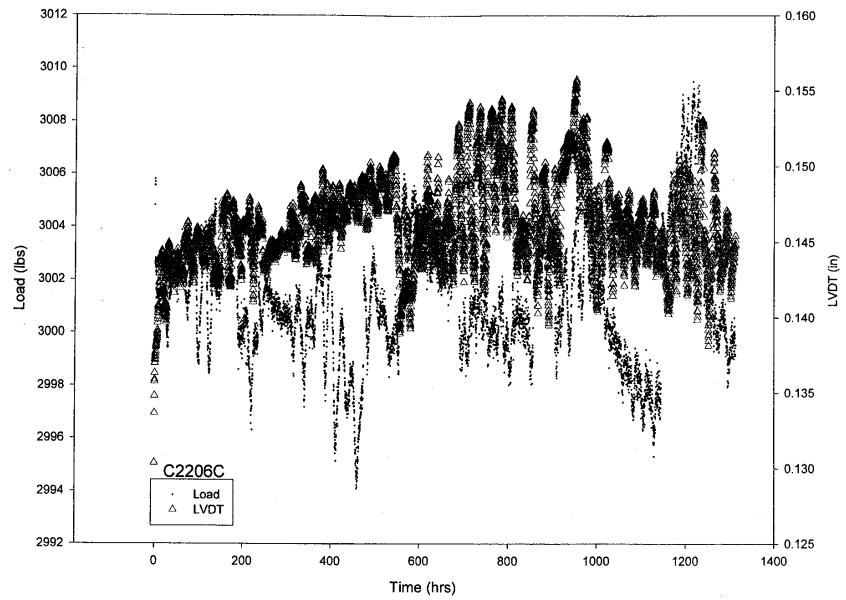
APPLIED POTENTIAL −220 mV SCE

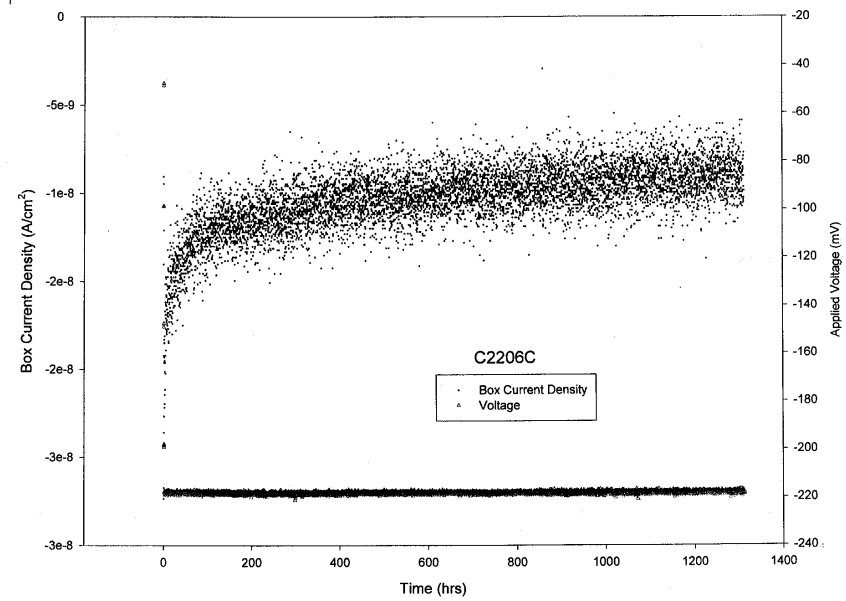
COMPUTER CRASH 4/14/03
TEST CONTINUED AS C2206D

7/10/03

C2206C time hours	C2206C compliance in/lb	C2206C compliance m/N	C2206C normalized compliance
68.1	0.0001813	9.27367E-08	1
138.8	0.0001805	9.23275E-08	0.995587424
186.6	0.0001799	9.20206E-08	0.992277992
235.8	0.0001802	9.2174E-08	0.993932708
306.5	0.0001794	9.17648E-08	0.989520132
355.3	0.0001798	9.19694E-08	0.99172642
402.8	0.0001802	9.2174E-08	0.993932708
474.6	0.0001799	9.20206E-08	0.992277992
546.3	0.0001797	9.19183E-08	0.991174848
643	0.0001796	9.18671E-08	0.990623276
690.9	0.0001792	9.16625E-08	0.988416988
810.8	0.0001802	9.2174E-08	0.993932708
858.6	0.0001792	9.16625E-08	0.988416988
907.2	0.0001792	9.16625E-08	0.988416988
1027	0.0001802	9.2174E-08	0.993932708
1146.1	0.0001802	9.2174E-08	0.993932708
1241.7	0.00018	9.20717E-08	0.992829564

7/10/03





7/10/03

C2204B1

CONTINUATION OF TEST ON PAGE 258

SPECIMEN ALLOY 22 2277-8-3175

SOLUTION AND TEST CONDITIONS SAME AS P258

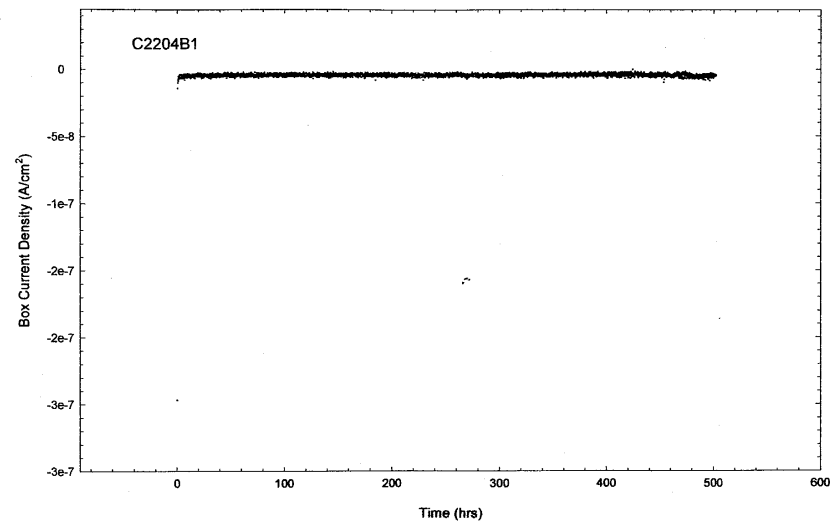
C2204B1 IS A CONTINUATION OF C2204B AND WAS NECESSARY DUE TO COMPUTER PROBLEMS EXPERIENCED DURING TESTING

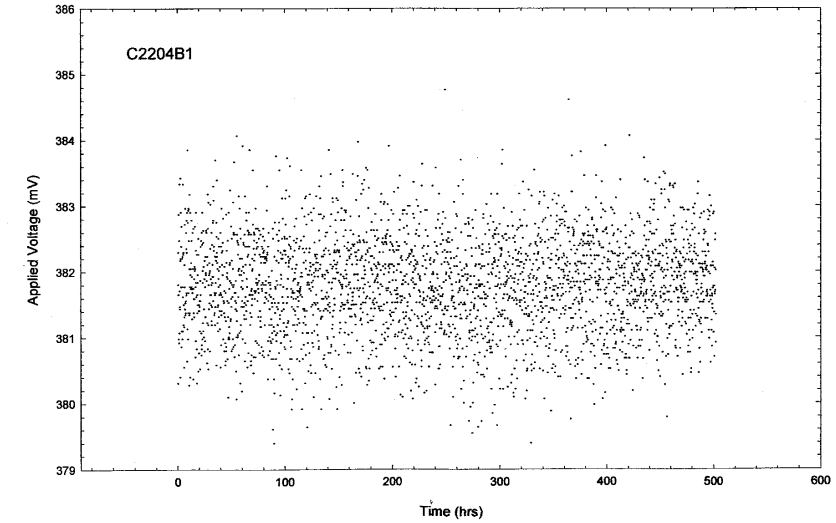
TIMES OF COMPLIANCE MEASUREMENTS ARE ZEROED AT START OF C2204B

TEST STOPPED 10/3/02

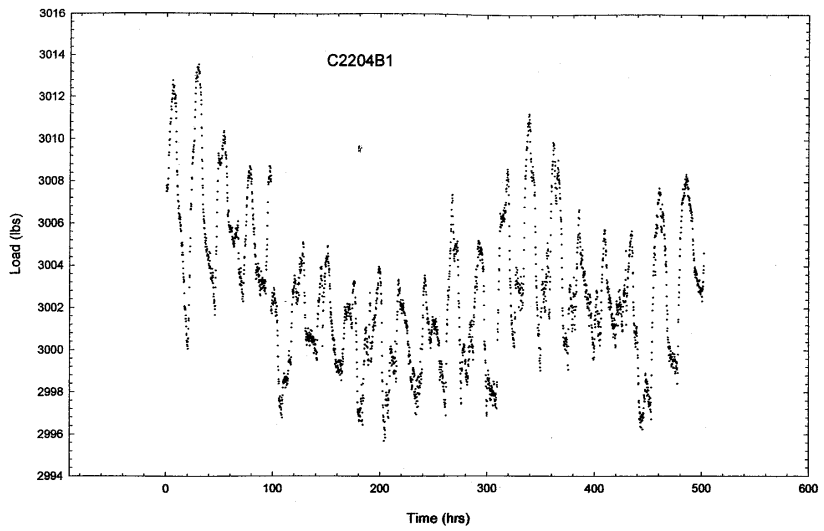
C2204B1 time hours	C2204B1 compliance in/lb	C2204B1 compliance m/N	C2204B1 normalized compliance
1375.2	0.0001658	8.48083E-08	0.966763848
1451.9	0.0001658	8.48083E-08	0.966763848
1499.6	0.0001663	8.5064E-08	0.9696793
1542.9	0.000166	8.49106E-08	0.967930029
1615.4	0.0001662	8.50129E-08	0.96909621
1663.3	0.0001661	8.49617E-08	0.96851312
1711.1	0.000166	8.49106E-08	0.967930029
1783.3	0.0001661	8.49617E-08	0.96851312
1831.3	0.0001663	8.5064E-08	0.9696793

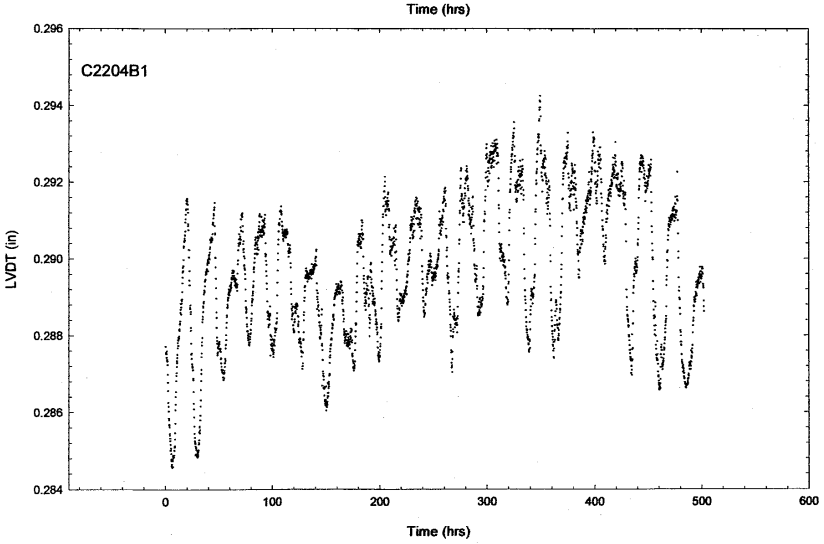
7/10/03





7/10/03





7/10/03

C2204C

CONTINUATION OF TEST ON PAGE 286

SPECIMEN ALLOY 22 2277-8-3175

SOLUTION SIMULATED CONCENTRATED WATER

6.351 g	KCl	LOT 005573	SOLUTION #1
5.342 g	NaCl	LOT 025149	
8.751 g	$NaNO_3$	LOT 020809	
20.70 g	Na_2SO_4	LOT 010224	1000 mL
96.31 g	$NaHCO_3$	LOT 025478	
3.091 g	NaF	LOT 991559	
pH 7.734			

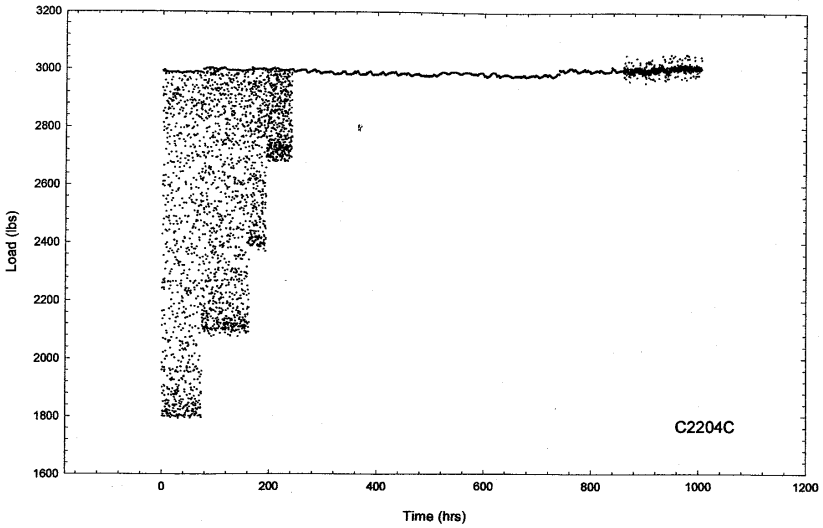
12.961 g	KCl	LOT 005573	
10.864 g	NaCl	LOT 025149	
17.509 g	$NaNO_3$	LOT 020809	
41.38 g	Na_2SO_4	LOT 010224	SOLUTION #2
142.69 g	$NaHCO_3$	LOT 025478	2000 mL
6.141 g	NaF	LOT 99,559	
pH 7.809			

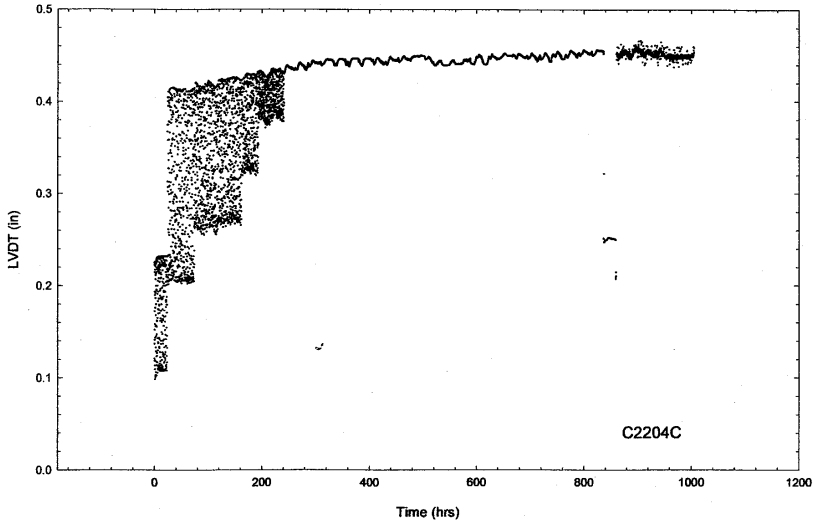
SCALE O NAVS 2883

SPECIMEN PLACED IN TEST CELL WITH PLATINUM COUNTER ELECTRODES AND LUGGIN WITH FISHER SCE SN 8131141

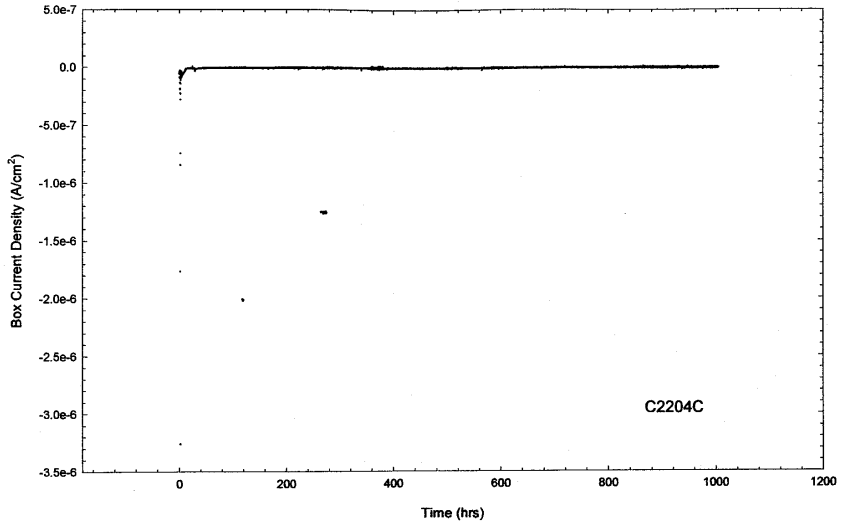
TEST CONDUCTED IN FRAME #3
~~TEST~~ STARTED ~~7/9/03~~ 12/02/02 DD 7/11/03
APPLIED POTENTIAL + 380 mV
ECORR ~~20 mV~~ -104 mV$_{SCE}$ DD 7/11/03
TEST STOPPED 1/13/03

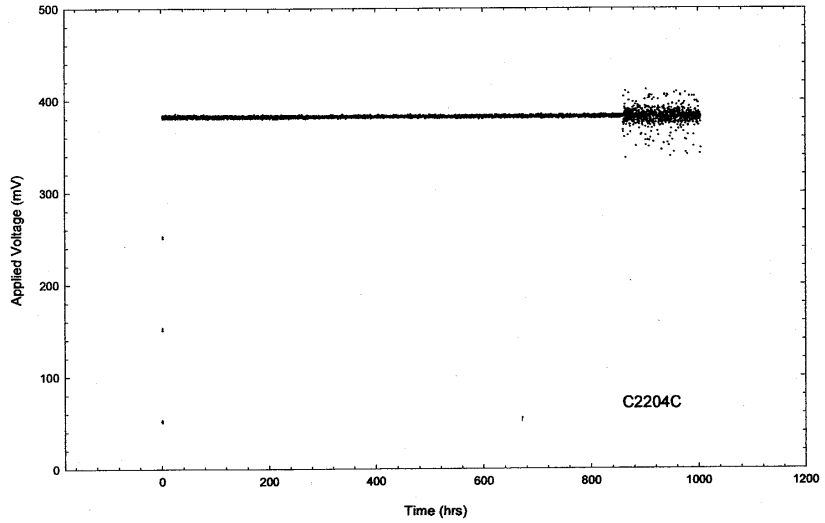
7/11/03


Load (lbs)
3200
3000
2800
2600
2400
2200
2000
1800
1600
0
200
400
600
800
1000
1200
Time (hrs)
C2204C


LVDT (in)
0.5
0.4
0.3
0.2
0.1
0.0
0
200
400
600
800
1000
1200
Time (hrs)
C2204C

7/11/03


Box Current Density (A/cm²)
5.0e-7
0.0
-5.0e-7
-1.0e-6
-1.5e-6
-2.0e-6
-2.5e-6
-3.0e-6
-3.5e-6
0
200
400
600
800
1000
1200
Time (hrs)
C2204C


Applied Voltage (mV)
500
400
300
200
100
0
0
200
400
600
800
1000
1200
Time (hrs)
C2204C

7/11/03

C2204C time hours	C2204C compliance in/lb	C2204C compliance m/N	C2204C normalized compliance
19.71	0.000104	5.3197E-08	1
67.17	0.0001761	9.00768E-08	1
96.31	0.0001729	8.844E-08	0.981828507
164.92	0.0001706	8.72635E-08	0.968767746
211.22	0.0001672	8.55244E-08	0.949460534
739.94	0.0001685	8.61894E-08	0.956842703
1004.74	0.0001729	8.844E-08	0.981828507

COMPLIANCE NORMALIZED TO 67.17 HOURS
FOR ALL MEASUREMENTS AFTER 67.17 HOURS

7/11/03

C220S

OBJECTIVE - MEASURE CRACK GROWTH IN
SIMULATED CONCENTRATED WATER WITHOUT NITRATE

SPECIMEN ALLOY C22 2277-8-3175

SOLUTIONS
3.094 g NaF LOT 991559
6.481 g KCl LOT 005573
5.143 g NaCl LOT 020814
20.71 g Na_2SO_4 LOT 010224
96.35 g $NaHCO_3$ LOT ~~923337A~~ DD 7/11/03 923337A
pH = 7.749
1000 mL SOLUTION #1

6.191 g NaF LOT 991559
12.961 g ~~AL~~ DD 7/11/03 KCl LOT 005573
10.868 g NaCl LOT 020814
41.39 g Na_2SO_4 LOT 010224
192.68 g $NaHCO_3$ LOT 923337A
pH 7.741
2000 mL SOLUTION #2

SCALE OHAUS 2883

ECORR 7mV NP SN US36081499

REFERENCE GESNER SCE 8131141

TEST CONDUCTED IN FRAME 2

APPLIED POTENTIAL +380 mV$_{SCE}$
TEST STARTED 12/2/02
TEST STOPPED 1/13/03

7/11/03

Specimen: C22 05 compact tension specimen
Material: Heat 2277-8-3175

Date:

Fatigue Precracking performed on

Load frame model number: 810 Test System

Load frame serial number: Frame 17

Load measurements performed using

Load cell model number: MTS 661.21A-02

Load cell serial number: 5930

Date of last calibration: 12-07-01

Next calibration due: 12-07-02

Displacement measurements performed using

Model Number MTS 632.03B-30

Serial Number 394

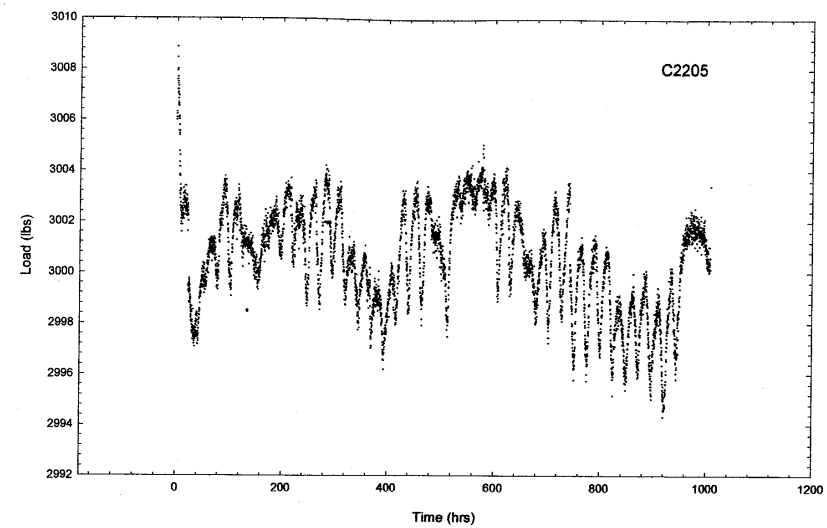
Date of last calibration: 12 MAR 02

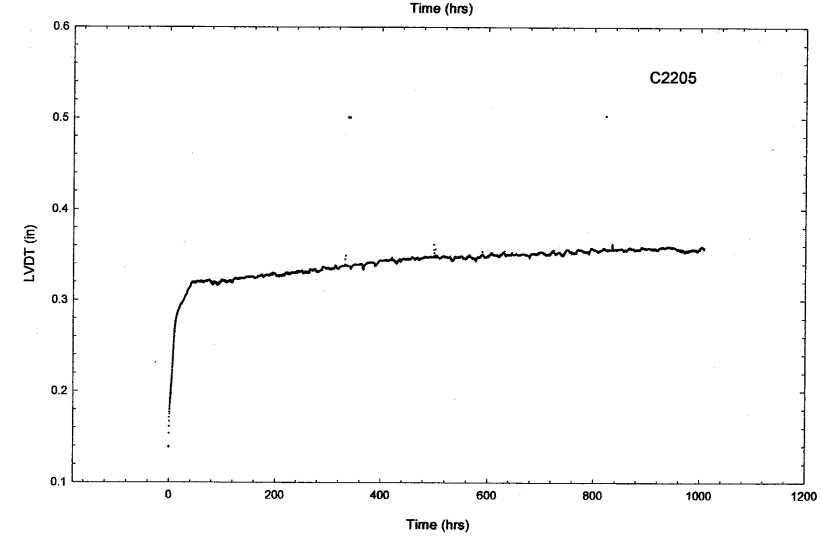
Next calibration due:

Additional Information W = 1.994 B = .4965 BN = .338
a NOTCH F+B = .494
W = 1.994

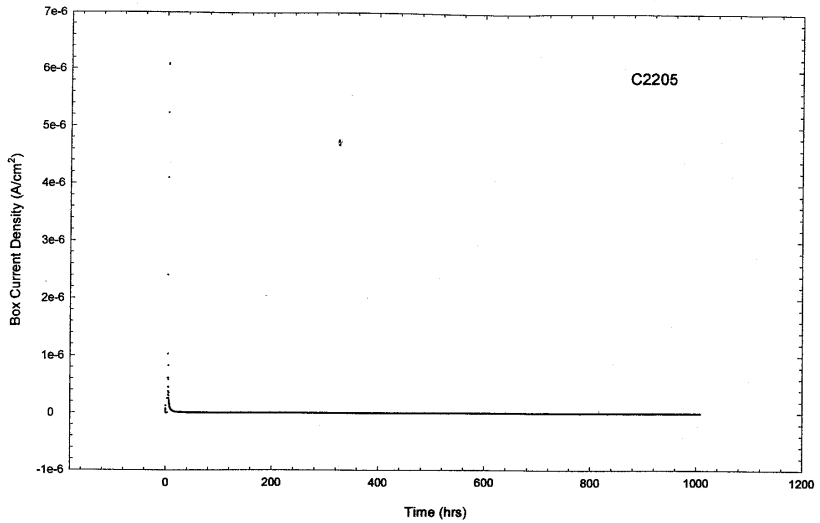
Minimum Load LBS	Maximum Load LBS	Number of cycles	Crack length/width a/W Front		Crack length/width a/W Rear	
264	2640	66537	.589	.295	.593	.297
240	2400	45367	.685	.343	.685	.343
218	2180	45857	.790	.396	.794	.398
198	1980	19334	.839	.4207	.839	.4207
180	1800	29683	.898	.4503	.899	.4509

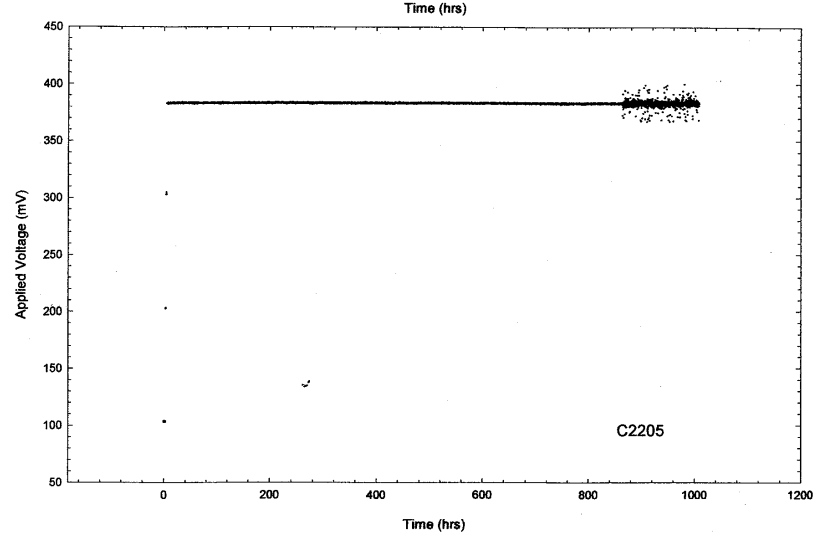
7/11/03





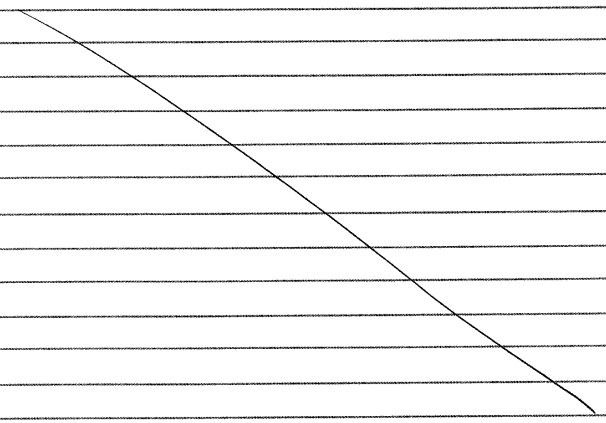
7/11/03





7/11/03

C2205 time hours	C2205 compliance in/lb	C2205 compliance m/N	C2205 normalized compliance
23.2	1.603000E-04	8.1995E-08	1
71.2	1.582000E-04	8.09208E-08	0.986899563
168.5	1.584000E-04	8.10231E-08	0.988147224
215.4	1.574000E-04	8.05116E-08	0.981908921
743.2	1.573000E-04	8.04605E-08	0.98128509
1008.4	1.565000E-04	8.00513E-08	0.976294448



CONTINUED IN NOTEBOOK 599

Darrell Dr 7/11/03

I have reviewed this scientific notebook and find it in compliance with QAP-001. There is sufficient information regarding procedures used for conducting tests, acquiring and analyzing data so that another qualified individual could repeat the activity.

2/12/04