

1/16/93

REPASSIVATION POTENTIAL ALLOY 825 RP825P5

SPECIMEN ALLOY 825 600 GRIT FINISH HH 4371FG

 $l = 1.912$ " $d = 0.251$ " WET AREA $\approx 8.0 \text{ cm}^2$

START WT = 12.00802g

END WT = 11.53983g $\text{DD } 1/28/93$ SPECIMEN CLEANED IN DI H_2O , ACETONE,
10% HNO_3 FOR 60 min. RINSED IN DI WATERSOLUTION 10000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
10 PPM NO_3^- 2 PPM F^- 2000 ml MAKE AS FOLLOWS32.96336 g NaCl LOT 922649A0.23610 g NaHCO_3 LOT 89778940 ml STOCK SOLUTION # SO_4 -1/93 (1000 PPM SO_4^{2-})20 ml STOCK SOLUTION # NO_3 -1/93 (1000 PPM NO_3^-)4 ml STOCK SOLUTION # F -1/93 (1000 PPM F^-)

+ DI WATER TO 2000 ml (SS# INFO P.164)

 $T = 95^\circ\text{C}$ N_2 THERMO # 1238004 PURGEDWITH 99.999% N_2

START PH: 7.896

END PH: 8.674

POTENTIOSTAT ESC 440-1 CHANNEL #3 DATA

SAVED ON WORKBENCH DATA AS RP825P5.DAT

USING WB|WBB|REPASS2B

ELECTRODE SCE FISHER 13-620-51 SN

 $E_{\text{CORR}} = -582.2 \text{ mV SCE}$ KEITNLEY 614 $E_{\text{PT}} = +161.9 \text{ mV SCE}$ " "

CATHODIC STRIP -200 V FOR 2 MIN

PIT INITIATION 600 mV SCE FOR 15 min

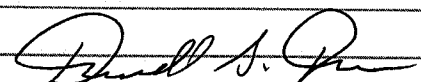
PIT GROWTH 400 mV SCE FOR 15 min

SPECIMEN STARTED 3:17 PM 1/16/93

SPECIMEN STOPPED 7:17 AM 1/18/93

RUNTIME: 144,000 SEC

REPASSIVATION POTENTIAL: -3.9 mV SCE

CHARGE DENSITY 240 COUL/cm² 1/18/93

1/16/93

REPASSIVATION POTENTIAL ALLOY 825 RP825P6

SPECIMEN ALLOY 825 600 GRIT FINISH HH 4371FG

 $l = 1.916$ " $d = 0.249$ " WET AREA $\approx 8.0 \text{ cm}^2$

START WT = 11.86695g

END WT = 10.73949g $\text{DD } 1/28/93$ SPECIMEN CLEANED IN DI H_2O , ACETONE
10% HNO_3 FOR 60 min RINSED IN DI H_2O

SOLUTION SAME AS RP825P5 P170

 $T = 95^\circ\text{C}$ N_2 THERMO # 1238001PURGED WITH 99.999% N_2

START PH: 7.896

END PH: 8.592

POTENTIOSTAT ESC 440-1 CHANNEL #2

DATA SAVED AS WB|DATA|RP825P6.DAT

USING WB|WBB|REPASS2B

ELECTRODE SCE FISHER 13-620-51 SN

 $E_{\text{CORR}} = -582.7 \text{ mV SCE}$ KEITNLEY 614 $E_{\text{PT}} = +255.3 \text{ mV SCE}$ " "

CATHODIC STRIP -2.00 V FOR 2 min

PIT INITIATION 400 mV FOR 30 min

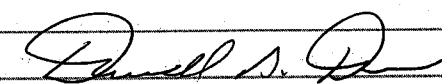
PIT GROWTH 200 mV FOR 12 HOURS

SPECIMEN STARTED 3:25 PM 1/16/93

SPECIMEN STOPPED 7:20 AM 1/18/93

RUNTIME 143,000 SEC

REPASSIVATION POTENTIAL 9.2 mV SCE

CHARGE DENSITY 620 COUL/cm² 1/18/93

1/21/93

REPASSIVATION POTENTIAL RP825P7

SPECIMEN ALLOY 825 HH4371FG 600 GRIT FINISH

 $\ell = 1.913"$ $d = 0.248"$ WET AREA = 8.0 cm^2 START WT = ~~11.50~~ ^{OR 11.85058g}END WT. 11.78631 ~~11.85058g~~ 1/28/93SPECIMEN CLEANED IN DI H_2O ACETONE10% HNO_3 FOR 60 min AND RINSED IN DI H_2O SOLUTION 10000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-} 10 PPM NO_3^- 2 PPM F^- 2 ℓ OF SOLUTION MADE AS FOLLOWS.

32.95955g NaCl LOT 922649A

0.23197g NaHCO_3 LOT 89778940 ml STOCK SOLUTION # SO_4 -1/9320 ml STOCK SOLUTION # NO_3 -1/9320 ml STOCK SOLUTION # F -1/93

+ DI WATER TO 2000 ml (SS# P164)

T = 95°C N_2 THERMO 1238001 PURGEDWITH N_2

START pH = 7.918

END pH = 9.003

POTENTIOSTAT ESC 440-1 CHANNEL #3 DATA

SAVED AS WB\DATA\RP825P7.DAT

USING REPASS3B

ELECTRODE FISHER SCE 13-620-51 SN# 0169033

 $E_{\text{CORR}} = -668.1 \text{ mV SCE}$ RETINLEY 614 $E_{\text{PT}} = +244.0 \text{ mV SCE}$ " "

CATHODIC STRIP -2.00 V SCE FOR 2 min

PIT INITIATION +400 mV SCE FOR 10 min

PIT GROWTH +200 mV SCE FOR 10 min

SPECIMEN STARTED 12:22 PM 1/21/93

SPECIMEN STOPPED 2:55 PM 1/22/93

RUNTIME 95,000

REPASSIVATION POTENTIAL +15.5 mV

CHARGE DENSITY 32 COUL/cm²

D. J. 1/22/93

1/21/93

REPASSIVATION POTENTIAL RP825P8

SPECIMEN ALLOY 825 HH4371FG 600 GRIT FINISH

 $\ell = 1.910"$ $d = 0.248"$ WET AREA = 8.0 cm^2

START WT 11.82733

END WT 11.62899 ~~11.82733~~ 1/28/93SPECIMEN CLEANED IN DI H_2O ACETONE10% HNO_3 FOR 60 min AND RINSED IN DI H_2O SOLUTION 500 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-} 10 PPM NO_3^- 2 PPM F^- 1000 ml MADE AS FOLLOWS:

0.82424g NaCl LOT 922649A

0.11580g NaHCO_3 LOT 89778920 ml STOCK SOLUTION SO_4 -1/9310 ml STOCK SOLUTION NO_3 -1/932 ml STOCK SOLUTION F -1/93

+ WATER TO 1000 ml (STOCK SOLUTION P164)

T = 95°C N_2 THERMO # 1238004 PURGEDWITH N_2

START pH 8.195

END pH 9.058

POTENTIOSTAT ESC 440-1 CHANNEL #2 DATA SAVED

AS WB\DATA\RP825P8.DAT USING REPASS3B.

ELECTRODE FISHER SCE 13-620-51 SN 0165415

 $E_{\text{CORR}} = -658.0 \text{ mV SCE}$ RETINLEY 614 $E_{\text{PT}} = -221.2 \text{ mV SCE}$ " "

CATHODIC STRIP -2.00 V SCE FOR 2 min

PIT INITIATION +600 mV SCE FOR 30 min

PIT GROWTH +500 mV SCE FOR 24 hr

SPECIMEN STARTED 12:28 PM 1/21/93

SPECIMEN STOPPED 8:00 AM 1/25/93

RUNTIME 330,000 SEC

REPASSIVATION POTENTIAL +137.5 mV

CHARGE DENSITY 110 COUL/cm²

DATA NOT COLLECTED UNTIL 1/22/93 2:55 PM

≈ 95,000 SEC INTO TEST DUE TO ERROR.

1/22/93 $V = 291 \text{ mV}$ $I = 6.2 \times 10^{-4}$ AT START OF DATA COLLECTION

1/28/93

REPASSIVATION POTENTIAL RP825P9

SPECIMEN ALLOY 825 NH 4371 FG 600 GRIT FINISH

 $\ell = 1.915$ $d = 0.248$ " WGT AREA = 8.0 cm^2

START WT: 11.61027g

END WT: 11.55039g

SPECIMEN CLEANED IN DI H_2O ACETONE
10% HNO_3 FOR 60 min AND RINSED IN
DI H_2O SOLUTION 10000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
10 PPM NO_3^- 2 PPM F^- 1000 ml MADE AS FOLLOWS
16.48081g NaCl LOT 922649A (FISHER)
0.11550g NaHCO_3 LOT 897789 (FISHER)
20 ml STOCK SOLUTION # SO_4^{2-} - 1/93
10 ml STOCK SOLUTION # NO_3^- - 1/93
2 ml STOCK SOLUTION F^- - 1/93
(STOCK SOLUTIONS P 164)+ DI WATER TO 1000 ml $T = 95^\circ\text{C}$ H_2 THERMO #1238001 PURGED WITH N_2

START PH: 8.020

END PH: 9.007 2/1/93 *JD*POTENTIOSTAT ESC 440-1 CHANNEL 3 DATA SAVER
AS RP825P9.DAT IN WORKBENCH DATA SUB DIR
USING REPASS4F (FAST SCAN = 2 SEC)

ELECTRODE FISHER SC6 13-620-S1 SN#

 $E_{\text{CORR}} = -544.9 \text{ mV}$ SC6 KEITHLEY 617 $E_{\text{PT}} = -124.2 \text{ mV}$ " "

CATHODIC STRIP -2.00V FOR 2 min

PIT INITIATION 400 mV SCE FOR 10 min

PIT GROWTH 200 mV SCE FOR 50 min

SPECIMEN STARTED 1/28/93 3:35 PM

SPECIMEN STOPPED 1/29/93 5:32 PM

RUNTIME 93260 SEC

REPASSIVATION POTENTIAL -3.8 mV

CHARGE DENSITY 28 COUL/cm²*JD* 1/29/93

1/28/93

REPASSIVATION POTENTIAL RP825P10

SPECIMEN ALLOY 825 NH 4371 FG 600 GRIT FINISH

 $\ell = 1.913$ $d = 0.250$ " WGT AREA = 8.0 cm^2

START WT: 11.59955g

END WT: 11.49354g

SPECIMEN CLEANED IN DI H_2O ACETONE
10% HNO_3 FOR 60 min AND RINSED IN DI WATER.SOLUTION. 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
10 PPM NO_3^- 2 PPM F^- 1000 ml MADE AS FOLLOWS
1.64884g NaCl LOT 922649A
0.11547g NaHCO_3 LOT 897789
20 ml STOCK SOLUTION SO_4^{2-} - 1/93
10 ml STOCK SOLUTION NO_3^- - 1/93
2 ml STOCK SOLUTION F^- - 1/93

(STOCK SOLUTIONS P 164)

+ DI WATER TO 1000 ml $T = 95^\circ\text{C}$ H_2 THERMO 1238004 PURGED WITH N_2

START PH 8.184

END PH 9.250 2/1/93 *JD*POTENTIOSTAT ESC 440-1 CHANNEL 2 DATA SAVER
AS WB\DATA\RP825P10.DAT USING
REPASS4F.

ELECTRODE FISHER 13-620-S1 SN

 $E_{\text{CORR}} = -557.3 \text{ mV}$ KEITHLEY 617 $E_{\text{PT}} = -43.0 \text{ mV}$ " "

CATHODIC STRIP -200 V FOR 2 min

PIT INITIATION 400 mV SCE FOR 30 min

PIT GROWTH 400 mV SCE FOR 12 HOURS

SPECIMEN STARTED 1/28/93 3:42 PM

SPECIMEN STOPPED 1/29/93 5:32 PM

RUNTIME 92900 SEC

REPASSIVATION POTENTIAL -62.8 mV

CHARGE DENSITY 52 COUL/cm²*JD* 1/29/93

2/2/93

REPASSIVATION POTENTIAL

1/27/94

~~RP82SP11~~ RP82SP11

SPECIMEN ALLOY 82S 600 GRID FINISH HN4371EG
 $l = 1.915$ $d = 0.250$ WGT AREA = 8.0 cm^2
 SPECIMEN CLEANED IN DI WATER 10% HNO_3
 FOR 60 min RINSED IN DI WATER, ACETONE
 AND DRIED

START WT 11.99808g

END WT 11.86047g

SOLUTION 500 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml MAKE AS FOLLOWS
 0.82416 g NaCl LOT 922649A
 0.11677g NaHCO_3 LOT 897789
 20 ml STOCK SOLUTION SO_4^{2-} 1/93
 10 ml STOCK SOLUTION NO_3^- 1/93
 2 ml STOCK SOLUTION F^- 1/93

(STOCK SOLUTIONS P164)

+ DI H_2O TO 1000 ml $T = 95^\circ\text{C}$ N_2

THERMO # 1238001

START PH 8.163

END PH 9.293

POTENTIOSTAT ESC 440-1 CHANNEL #3 DATA SAVED
 AS RP82SP11.DAT USING RPASS4F (WORKBENCH)

ELECTRODE FISHER SCE 13-620-S1 SN 0165415

 $E_{\text{CORR}} = -447 \text{ mV SCE KEITHLEY 617}$ $E_{\text{PT}} = -143 \text{ mV SCE " "}$

CATHODIC STRIP -2.00V FOR 2 min

PIT INITIATION +600 mV SCE FOR 30 min

PIT GROWTH +500 mV SCE FOR 12 HR.

SPECIMEN STARTED 12:56 pm 2/2/93

SPECIMEN STOPPED 9:10 AM 2/4/93

RUNTIME 159,000 SEC

REPASSIVATION POTENTIAL -23.56 mV SCE

CHARGE DENSITY 65 Coul/cm^2

[Signature]
 2/4/93

POTENTIOSTATIC POLARIZATION CR82SN1

SPECIMEN ALLOY 82S MILL FINISH SURFACE
 ON 3.22 cm^2 600 SIC GRIT FINISH
 ON 5.11 cm^2 TOTAL WGT AREA = 8.33 cm^2
 HN4371FL SPECIMEN CLEANED IN
 DI WATER, ACETONE AND DRIED

START WT 23.90918g

END WT 23.90214g

SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml MAKE AS FOLLOWS
 1.64780g NaCl LOT 922649A
 0.11601g NaHCO_3 LOT 897789
 20 ml STOCK SOLUTION SO_4^{2-} 1/93
 10 ml STOCK SOLUTION NO_3^- 1/93
 2 ml STOCK SOLUTION F^- 1/93
 (STOCK SOLUTIONS P164)

+ DI H_2O TO 1000 ml $T = 95^\circ\text{C}$ H_2 THERMO # 1238004

START PH 8.172

END PH 9.532

POTENTIOSTAT ESC 440-1 CHANNEL #2 DATA
 SAVED AS CR82SN1.DAT USING RPASS4F

ELECTRODE FISHER SCE 13-620-S1 SN 0165403

 $E_{\text{CORR}} = -491 \text{ mV SCE KEITHLEY 617}$ $E_{\text{PT}} = -367 \text{ mV SCE " "}$ $E_{\text{APP}} = +197 \text{ mV SCE}$

SPECIMEN STARTED 12:39 pm 2/2/93

SPECIMEN STOPPED 9:30 AM 2/4/93

RUNTIME 161,000

CHARGE DENSITY 2.4 Coul/cm^2 CURRENT DENSITY 10^{-7} A/cm^2

[Signature]
 2/4/93

2/12/93

REPASSIVATION POTENTIAL RP825P12

SPECIMEN ALLOY 825 HN4371FG 600SIL
 CLEANED IN ULTRASONIC BATH RINSED
 IN DI WATER, ACETONE IMMERSED
 IN 10% HNO_3 FOR 60 min & RINSED
 IN DI WATER $l = 1.912$ $d = 0.250$
 START WT 11.88171g WGT AREA = 8.0cm^2
 END WT 11.83824g 2/24/93 DD
 SOLUTION 500 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS
 0.82412g NaCl LOT 922649A
 0.12003g NaHCO_3 LOT 897789
 20 ml STOCK SOLUTION SO_4 -2/93
 10 ml STOCK SOLUTION NO_3 -2/93
 2 ml STOCK SOLUTION F^- -2/93 + DI H_2O TO 1000 ml
 STOCK SOLUTIONS P180
 $T = 95^\circ\text{C}$ N_2 THERMO 1238001
 N_2 PURGED
 START PH 8.165
 END PH 9.368
 POTENTIOSTAT ESC 440 #1 CHANNEL 3 DATA
 SAVED AS RP825P12.DAT USING RPASS 4F
 REFERENCE SCE FISHER 13-620-51 SN 0165403
 $E_{\text{CORR}} - 743\text{ mV SCE}$ KEITHLEY 614
 $E_{\text{PT}} - 574.5\text{ mV SCE}$ " "
 CATHODIC STRIP -2.00V 2 min
 PIT INITIATION +600 mV SCE FOR 30 min
 PIT GROWTH +500 mV SCE FOR 6 h
 SPECIMEN STARTED 3:32 PM 2/12/93
 SPECIMEN STOPPED 7:38 PM 2/13/93
 RUNTIME 100,700 SEC
 REPASSIVATION POTENTIAL +0.056 V KEITHLEY 614
 CHARGE DENSITY 21 Coul/cm^2

David D.
 2/13/93

REPASSIVATION POTENTIAL RP825P13

SPECIMEN ALLOY 825 HN4371FG 600SIL
 CLEANED AS BEFORE (p178)
 $l = 1.914$ $d = 0.250$ WGT AREA = 8.0cm^2
 START WT 11.92249g
 END WT 11.83108g 2/24/93 DD
 SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml MADE AS FOLLOWS
 16.48015g NaCl LOT 922649A
 0.11863g NaHCO_3 LOT 897789
 20 ml STOCK SOLUTION SO_4 -2/93
 10 ml STOCK SOLUTION NO_3 -2/93
 2 ml STOCK SOLUTION F^- -2/93
 + DI H_2O TO 1000 ml STOCK SOLUTIONS
 P180 $T = 95^\circ\text{C}$ N_2 THERMO 1238004
 N_2 PURGED
 START PH 8.032
 END PH ~~9.368~~ 9.368 (2/16/93) 8.973
 POTENTIOSTAT ESC 440 #1 CHANNEL #2 DATA
 SAVED AS RP825P13.DAT USING RPASS 4F
 REFERENCE SCE FISHER 13-620-51 SN 0169033
 $E_{\text{CORR}} - 506.2\text{ mV SCE}$ KEITHLEY 614
 $E_{\text{PT}} - 268\text{ mV SCE}$ ~~11/27/94~~ -268 mV SCE
 CATHODIC STRIP -2.00V SCE FOR 2 min
 PIT INITIATION +400 mV SCE FOR 10 min
 PIT GROWTH +200 mV SCE FOR 110 min
 SPECIMEN STARTED 330 PM 2/12/93
 SPECIMEN STOPPED 7:39 PM 2/13/93
 RUNTIME 101,000 SEC
 REPASSIVATION POTENTIAL -20 mV KEITHLEY 614
 CHARGE DENSITY 44 Coul/cm^2

David D.
 2/13/93

2/16/93

STOCK SOLUTIONS

SO₄-2/93 1000 PPM SO₄²⁻ AS Na₂SO₄
 1.47850 g Na₂SO₄ LOT 901213
 + DI WATER TO 1000 ml
 2/3/93 EXP 3/3/93

NO₃-2/93 1000 PPM NO₃⁻ AS NaNO₃
 1.37169 g NaNO₃ LOT 897183
 + DI WATER TO 1000 ml
 2/3/93 EXP 3/3/93

F-2/93 1000 PPM F⁻ AS NaF
 2.21231 g NaF LOT 896405
 + DI WATER TO 1000 ml
 2/3/93 EXP 3/3/93

1M NaCl STOCK SOLUTION 1MCl-2/93
 58.44135 g NaCl LOT 922649A
 + DI WATER TO 1000 ml
 2/10/93 EXP 3/10/93

1000 Cl-2/93 1000 PPM Cl⁻ AS NaCl
 3.29594 g NaCl LOT 922649
 + DI WATER TO 2000 ml
 2/10/93 EXP 3/10/93

100 Cl-2/93 100 PPM Cl⁻ AS NaCl
 100 ml STOCK SOLUTION 1000 Cl-2/93
 + 900 ml DI WATER
 2/10/93 EXP 3/10/93

2/16/93

REPASSIVATION POTENTIAL RP825P14

SPECIMEN ALLOY 825 HH4371FG 600SiC
 FINISH CLEANED IN ULTRASONIC BATH
 DI WATER, ACETONE AND DRIED
 L=1913" d=0.248" WGT AREA ≈ 8.0 cm²
 START WT 11.78408 g
 END WT 11.74881 g 2/24/93 (D)

SOLUTION 1000 PPM Cl⁻ 85 PPM HCO₃⁻ 20 PPM SO₄²⁻
 10 PPM NO₃⁻ 2 PPM F⁻ 1000 ml AS FOLLOWS
 1.64867 g NaCl LOT 922649A
 0.12077 g NaHCO₃ LOT 897789
 20 ml STOCK SOLUTION SO₄-2/93
 10 ml STOCK SOLUTION NO₃-2/93
 2 ml STOCK SOLUTION F-2/93
 + DI WATER TO 1000 ml
 STOCK SOLUTIONS P180
 T=95°C H₂ THERMO 0323004
 CALIBRATED 2 FEB 93
 N₂ PURGED

POTENTIOSTAT ESC 440-1 CHANNEL #2 DATA
 SAVED AS RP825P14.DAT USING
 REPASS4F. (WORKBENCH)

REFERENCE FISHER SC6 13-620-51 SN

E_{CORR} -606 mV REINACTY 614

E_{PT} -51 mV " "

CATHODIC STRIP -2.00V FOR 2m

PIT INITIATION 600 mV SC6 FOR 30m

PIT GROWTH 400 mV SC6 FOR

SPECIMEN STARTED 2/16/93 4:00 PM

SPECIMEN STOPPED 2/18/93 4:40 PM

RUNTIME 174,000 SEC

REPASSIVATION POTENTIAL +70 mV SCE

CHARGE DENSITY 12+

SOLUTION START PH 8.110

END PH 9.195 E_{CORR} END -450 mV

E_{PT} END -29 mV

2/18/93

2/16/93

RP825 P15 REPASSIVATION POTENTIAL ALLOY 825

SPECIMEN : PREPARED AS RP825 P14 P181 (ALLOY 825) -
L = 1.914 d = 0.248" WGT AREA = 8.0 cm²

START WT 12.00023g HEAT # HN4371FG

END WT 11.76128g 2/24/93 DD

SOLUTION 1000 PPM Cl⁻ 85 PPM HCO₃⁻ 20 PPM SO₄²⁻10 PPM NO₃⁻ 2 PPM F⁻ 1000 ml AS FOLLOWS

1.65071 g NaCl LOT 922649A

0.11826 g NaHCO₃ LOT 89778920 ml STOCK SOLUTION SO₄-2/9310 ml STOCK SOLUTION NO₃-2/932 ml STOCK SOLUTION F⁻-2/93

+ DI WATER TO 1000 ml

STOCK SOLUTIONS P180

START PH 8.160

END PH 8.957

T = 95°C N₂ THERMO 1238004N₂ PURGE

POTENTIOSTAT ESC 440-1 CHANNEL #3 DATA

SAVED AS RP825 P15.DAT USING RPASS4F

ON WORKBENCH

REFERENCE SCE FISHER 13-620-51 SN

E_{CORR} - ~~606~~^{1127/94} -488 mV KEITNEL 614E_{PT} - ~~51~~^{1127/94} -40.0 mV "

CATHODIC STRIP -2.00V FOR 2 min

PIT INITIATION: 600 mV SCE FOR 30 min

PIT GROWTH: 400 mV SCE FOR

SPECIMEN STARTED 2/16/93 4:00 PM

SPECIMEN STOPPED 2/18/93 4:40 PM

RUNTIME 174,000 SEC

REPASSIVATION POTENTIAL -95 mV

CHARGE DENSITY 110 C/CM²

DD 2/18/93

2/16/93

RP825 P16 REPASSIVATION POTENTIAL ALLOY 825

SPECIMEN : PREPARED THE SAME AS RP825 P14

P181 ALLOY 825 NN 4371FG

L = 1.914 d = 0.250 WGT AREA 8.0 cm²

START WT 12.00977g

END WT 11.11817g 2/24/93 DD

SOLUTION 1000 PPM Cl⁻ 85 PPM HCO₃⁻ 20 PPM SO₄²⁻10 PPM NO₃⁻ 2 PPM F⁻ 1000 ml AS FOLLOWS

1.64954 g NaCl LOT 922649A

0.11661 g NaHCO₃ LOT 89778920 ml STOCK SOLUTION SO₄-2/9310 ml STOCK SOLUTION NO₃-2/932 ml STOCK SOLUTION F⁻-2/93

+ DI WATER TO 1000 ml

STOCK SOLUTIONS P180

START PH 8.169

END PH 8.998

T = 95°C N₂ THERMO 1238001N₂ PURGE

POTENTIOSTAT ESC 440-1 CHANNEL #4 DATA

SAVED AS RP825 P16.DAT USING

RPASS4F (WORKBENCH)

REFERENCE SCE FISHER 13-620-51 SN

E_{CORR} -696 mV KEITNEL 614E_{PT} -253 mV "

CATHODIC STRIP -2.00V FOR 2 min

PIT INITIATION 600 mV SCE FOR 30 min

PIT GROWTH 400 mV SCE FOR

SPECIMEN STARTED 2/16/93 4:00 PM

SPECIMEN STOPPED 2/18/93 4:40 PM

RUNTIME 174,000 SEC

REPASSIVATION POTENTIAL -110 mV SCE

CHARGE DENSITY 430 C/CM²

DD 2/18/93

2/22/93

CR6VICH CORROSION EXPT 825-8.

SPECIMEN ALLOY 825 H#4371FG 600SIC CLEANED
IN ULTRASONIC BATH RINSED IN DI WATER
ACETONE AND DRIED

$l = 2.493''$ $w = 0.498''$ $T = 0.121''$
 $area = 20.68 \text{ cm}^2$

START WT 23.69590g

END WT 23.47191g

SOLUTION 0.5M NaCl 85PPM HCO_3^- 20PPM SO_4^{2-}
10PPM NO_3^- 2PPM F^- AS FOLLOWS.

29.22437g NaCl LOT 922649A

0.12450g NaHCO_3 LOT 89778920ml STOCK SOLUTION SO_4^{2-} 2/9310ml STOCK SOLUTION NO_3^- 2/932ml STOCK SOLUTION F^- 2/93

+ DI WATER TO 1000ml

STOCK SOLUTIONS P180

START PH 7.831

END PH 7.625

SETUP: CELL SAME AS 827-7 P167

WITH PLEXIGLASS CELL WITH TWO PORTS

PORT #1 AT TIP

MI200 ISG (FLEXABLE) #44436 } CI TIP

MI403 REF Ag/AgCl #43647 }

MI506 GLASS PH #44060 } PH TIP

MI402 Ag/AgCl REF #41402 }TIP REFERENCE = Ag/AgCl #44671

PORT #2 AT MOUTH

MI200 CI ISG (FLEXABLE) #44431 } CI MOUTH

MI403 REF Ag/AgCl #43636 }

MI506 GLASS PH #43720 } PH MOUTH

MI402 Ag/AgCl REF #41436 }MOUTH REF Ag/AgCl #44629

2/22/93

CR6VICH CORROSION EXPT 825-8

BULK ELECTRODES

MI200 (RIGID) #42978 } CI BULK

MI403 (Ag/AgCl) #44628 }

MI506 GLASS PH #44817 } PH BULK

MI402 Ag/AgCl REF #41432 }

+ FISHER 13-620-53 SN 8118182

CI TIP TO ORION EA920-5001A & ABB S6120 #1 CHART REC

CI BULK TO ORION ^{7/27/94} 720A 2 SN 5885

CI MOUTH TO ORION 720A CN 1 & ABB S6120 CHART #2

PH TIP TO ORION EA940 SN 2330 AND ABB 120 #1 CHART

PH BULK TO ORION 720A CN 2 SN 003368

PH MOUTH TO ORION 720A 00336A CN1 AND ABB S6120 #2

PT COUNTER ELECTRODES IN SEPARATE COMPARTMENT

ELECTRODE CALIBRATIONS

PH TIP

 $mV = -57.787(PH) + 408.33$ $pH = -0.0173$ ^{7/27/94} $pH = -17.3(V) + 7.066$

PH MOUTH

 $mV = -57.55(PH) + 406.7$ $pH = -17.4(V) + 7.067$

PH BULK

 $mV = -57.083(PH) + 380.93$ $pH = -17.5(V) + 6.673$

CI TIP

 $mV = -22.97 * \ln(\text{PPM } \text{Cl}^-) + 269.60$ $\text{PPM } \text{Cl}^- = \text{EXP}[-0.0435 \text{ mV} + 11.739]$

CI MOUTH

 $mV = -23.60 * \ln(\text{PPM } \text{Cl}^-) + 274.95$ $\text{PPM } \text{Cl}^- = \text{EXP}[-0.0424 \text{ mV} + 11.649]$

CI BULK

 $mV = -21.21 * \ln(\text{PPM } \text{Cl}^-) + 257.28$ $\text{PPM } \text{Cl}^- = \text{EXP}[-0.0471 \text{ mV} + 12.129]$

2/22/93

CR6VIGL: CORROSION 825-8

CELL ASSEMBLED 2/18/93 TORQUED TO 20 IN/OZ
AND MONITORING FROM 2/20/93

AT 11:00 AM 2/22/93

CI TIP 24.2 mV

CI MATH 28.3 mV

CI BULK 47.7 mV

PH TIP -53.5 mV

PH MATH -43.7 mV

PH BULK -78.8 mV

READINGS STABLE

 $E_{\text{SPECIMEN}} = E_{\text{OC}} = 0.018 \text{ V } A_1/A_{\text{AgCl}}$ $E_{\text{CR6VIGL TIP}} = 0.016 \text{ V } "$ $E_{\text{CATHODE}} = 0.015 \text{ V } "$

Daniel D
2/22/93

11:43 AM SPECIMEN POLARIZED TO +200 mV

2/26/93

10:42 AM READINGS CONSTANT SINCE SHORTLY

AFTER POLARIZATION TO 200 mV CI CONC STABLE

PH STABLE SO INCREASE TO +250 mV A_1/A_{AgCl}

Daniel D
2/26/93

3/1/93

10:13 AM CI CONC AND PH UNCHANGED SINCE

POLARIZATION TO 250 mV A_1/A_{AgCl} SPECIMENINCREASED TO 300 mV A_1/A_{AgCl}

Daniel D
3/1/93

3/15/93

FOLLOWING INCREASE TO 600 mV TO INITIATE

CR6VIGL CORROSION AND REPASSIVATION AT

0 mV SPECIMEN WAS STOPPED

Daniel D
3/15/93

PH AND Cl^- ISG CALIBRATION DATA SAVED AS
8258CAL.DAT ON IWA025-DISK

2/24/93

REPASSIVATION POTENTIAL RP825P17

SPECIMEN ALLOY 825 NN 4371FG 600SIC CLEANED

IN ULTRA SONIC BATH RINSED IN DI

WATER, ACETONE THEN CLEANED IN 10%

 HNO_3 FOR 1 hr $l = 1.914$ $d = 0.249$

START WT 11.97488 g

END WT 11.93115 g

SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-} 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS

1.64894 g NaCl LOT 922649A

0.11837 g NaHCO_3 LOT 89778920 ml STOCK SOLUTION SO_4^{2-} -2/9310 ml STOCK SOLUTION NO_3^- -2/932 ml STOCK SOLUTION F^- -2/93

+ DI WATER TO 1000 ml STOCK

SOLUTIONS P 180, T=95°C, H_2 THERMO 1238001, N_2 PURGED

START PH 8.104

END PH 9.390

POTENTIOSTAT ESC440-1 CHANNEL # 2 DATA

SAVED AS RP825P17.DAT USING WORKBENCH

REPASS 4F.

REFERENCE SCE FISHER 13-62D-S1 SN 0169033

 $E_{\text{CORR}} = -768 \text{ mV}$ KESTREL 617 $E_{\text{PT}} = -167 \text{ mV}$ " "

CATHODIC STRIP -2.00 V FOR 10 m

PIT INITIATION 600 mV 10 m

PTT GROWTH 400 mV

SPECIMEN STARTED 4:00 PM 2/24/93

SPECIMEN STOPPED 7:28 AM 2/25/93

RUNTIME 55,608 SEC

REPASSIVATION POTENTIAL -70 mV

CHARGE DENSITY 21 COUL/cm²

Daniel D
2/25/93

2/24/93 R6PASSIVATION POTENTIAL RP825P18

SPECIMEN: ALLOY 825 NN4371FC PREPARED
 THE SAME AS RP825P17 P187
 $l = 1.913$ $d = 0.250$ NET AREA $\approx 8.0 \text{ cm}^2$
 START WT 12.00254g
 END WT 11.99713g

SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS
 1.64855g NaCl LOT 922649A
 0.11889g NaHCO_3 LOT 897789
 20 ml STOCK SOLUTION SO_4^{2-} 2/93
 10 ml STOCK SOLUTION NO_3^- 2/93
 2 ml STOCK SOLUTION F^- 2/93
 + DI WATER TO 1000 ml STOCK
 SOLUTIONS P180 $T = 95^\circ\text{C}$ H_2 THERMO
 # 1238004 N_2 PURGED
 START PH 8.183
 END PH 9.376

POTENTIOSTAT ESC 440-1 CHANNEL #3
 DATA SAVED AS RP825P18.DAT USING
 REPASS4F

REFERENCE SCE FISHER SCE 13-620-S1 SN 0165403

$E_{\text{CORR}} -753 \text{ mV}$ KEITHLEY 617

$E_{\text{PT}} -218 \text{ mV}$ " "

CATHODE STRIP -2.00 V FOR 2 min

PIT INITIATION 600 mV FOR 5 min

PIT GROWTH 400 mV

SPECIMEN STARTED 4:05 PM 2/24/93

SPECIMEN STOPPED 7:26 AM 2/25/93

RUNTIME 55,000 SEC

REPASSIVATION POTENTIAL 276 mV

CHARGE DENSITY 2.4 COUL/cm²

David D 2/28/93

2/24/93 R6PASSIVATION POTENTIAL RP825P19

SPECIMEN ALLOY 825 NN4371FC PREPARED THE
 SAME AS RP825P17 P187
 $l = 1.915$ $d = 0.249$ NET AREA $\approx 8.0 \text{ cm}^2$
 START WT 11.96909g
 END WT 11.94859g

SOLUTION 500 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS
 0.82542g NaCl LOT 922649A
 0.11877g NaHCO_3 LOT 897789
 20 ml STOCK SOLUTION SO_4^{2-} 2/93
 10 ml STOCK SOLUTION NO_3^- 2/93
 2 ml STOCK SOLUTION F^- 2/93 + DI WATER TO

1000 ml, STOCK SOLUTIONS P180 $T = 95^\circ\text{C}$ H_2 THERMO

0323004 N_2 PURGED

START PH 8.223

END PH 9.401

POTENTIOSTAT ESC 440-1 CHANNEL #4 DATA SAVED
 AS ~~REPAS~~ RP825P19.DAT USING REPASS4F

REFERENCE SCE FISHER 13620-S1 SN 821163

$E_{\text{CORR}} -747 \text{ mV}$ KEITHLEY 617

$E_{\text{PT}} -130 \text{ mV}$

CATHODE STRIP -2.00V FOR 2 min

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 500 mV FOR 60 min

SPECIMEN STARTED 4:15 PM 2/24/93

SPECIMEN STOPPED 7:24 AM 2/25/93

RUNTIME 54,000 SEC

REPASSIVATION POTENTIAL 147 mV

CHARGE DENSITY 10.0 COUL/cm²

David D 2/28/93

2/26/93

REPASSIVATION POTENTIAL RP82SP20

SPECIMEN ALLOY 825 HN437IFG 600 S.C. PREPARED

TAG SAME AS RP82SP17 P187

 $l = 1.912'$ $d = 0.249''$ WGT AREA $= 8.0 \text{ cm}^2$

START WT 11.97213g

END WT 11.42693g

SOLUTION 10000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-} 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS

16.48078g NaCl LOT 922649A

0.11858g NaHCO_3 LOT 89778920 ml STOCK SOLUTION SO_4^{2-} - 2/9310 ml STOCK SOLUTION NO_3^- - 2/932 ml STOCK SOLUTION F^- - 2/93

+ DI WATER TO 1000 ml STOCK

SOLUTIONS P180 $T = 95^\circ\text{C}$ H_2 THERMID # 0323004 N_2 PURGED

POTENTIOSTAT ESC 440-1 CHANNEL #2 DATA

SAVED AS RP82SP20.DAT USING

WORKBENCH REPASS4F.

REFERENCE SC6 FISHER 13-620-S1 SN 821163

START PH 7.904

END PH 9.013

ECORR -703 4/21/94

EPT ~~752~~ ^{DO} + 426 mV

CATHODIC STRIP -2.00V FOR 2m

PIT INITIATION 400mV FOR 10m

PIT GROWTH 200mV FOR 10h

SPECIMEN STARTED 4:40 PM 2/26/93

SPECIMEN STOPPED 3:30 PM 2/28/93

RUNTIME 167000 SEC

REPASSIVATION POTENTIAL -140mV

CHARGE DENSITY 260 COUL/CM²

D. Q. 3/1/93

2/26/93

REPASSIVATION POTENTIAL RP82SP21

SPECIMEN ALLOY 825 HN437IFG 600 S.C. PREPARED

TAG SAME AS RP82SP17 P187

 $l = 1.915''$ $d = 0.249''$ WGT AREA $= 8.0 \text{ cm}^2$

START WT 11.90749g

END WT 11.89366g

SOLUTION 10000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-} 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS

16.48238g NaCl LOT 922649A

0.11895g NaHCO_3 LOT 89778920 ml STOCK SOLUTION SO_4^{2-} - 2/9310 ml STOCK SOLUTION NO_3^- - 2/932 ml STOCK SOLUTION F^- - 2/93

+ DI WATER TO 1000 ml STOCK

SOLUTIONS P180 $T = 95^\circ\text{C}$ H_2 THERMID 1238004 N_2 PURGED

POTENTIOSTAT ESC 440-1 CHANNEL #3 DATA

SAVED AS RP82SP21.DAT USING

WORKBENCH REPASS4F.

REFERENCE SC6 FISHER 13-620-S1 SN 0169033

START PH 8.047

END PH ~~7.8~~ ^{DO} 8.937

ECORR -688 mV 1/27/94

EPT +8 mV

CATHODIC STRIP -2.00V FOR 2m

PIT INITIATION 400mV FOR 5m

PIT GROWTH 200mV FOR 30m

SPECIMEN STARTED 4:35 PM 2/26/93

SPECIMEN STOPPED 3:16 PM 2/28/93

RUNTIME 168,000 SEC

REPASSIVATION POTENTIAL +86 mV

CHARGE DENSITY 6.1 COUL/CM²

D. Q. 3/1/93

2/26/93

REPASSIVATION POTENTIAL RP82SP22

SPECIMEN ALLOY 82S HN437IFG 600SIC PREPARATION
 AS RP82SP17 P187
 $d = 1.915$ $d = 0.247$ NET AREA $\approx 8.0 \text{ cm}^2$
 START WT 11.79403
 END WT 11.36997g

SOLUTION 500 ppm Cl^- 85 ppm NaCO_3 20 ppm SO_4^{2-}
 10 ppm NO_3^- 2 ppm F^- 1000 ml AS FOLLOWS
 0.82677g NaCl LOT 922649A
 0.11899g Na_2CO_3 LOT 897789
 20 ml STOCK SOLUTION SO_4 - 2/93
 10 ml STOCK SOLUTION NO_3 - 2/93
 2 ml STOCK SOLUTION F^- - 2/93
 + DI WATER TO 1000 ml STOCK
 SOLUTIONS P 180 $T = 95^\circ\text{C}$
 N_2 TNGRMD 1238001 N_2 PURGED

POTENTIOSTAT ESC 440-1 CHANNEL 4 DATA
 SAVED AS RP82SP22.DAT USING WORKBENCH
 REPASS4F. DD 2/21/94

REFERENCE SC6 FISHER ~~13~~ 13-620-S1 SN 0165403

START PN 8.247

END PN 9.160

E_{CORR} -762 mV

E_{PT} -20.9

CATHODIC STRIP -2.00V FOR 2 min

PIT INITIATION 600 mV

PIT GROWTH 500 mV

SPECIMEN STARTED 4:20 PM 2/26/93

SPECIMEN STOPPED 5:35 PM 2/28/93

RUNTIME 169000 SEC

REPASSIVATION POTENTIAL -61 mV

CHARGE DENSITY 210 COUL/cm²

DD 3/1/93

3/4/93

POTENTIAL STATIC POLARIZATION CR82SN2

SPECIMEN ALLOY 82S MILL FINISHED SURFACES
 HN437IFG SAME AS CR82SN1 P177
 START WT 23.78584g
 END WT 23.53047g

SOLUTION 1000 ppm Cl^- 85 ppm NaCO_3 20 ppm SO_4^{2-}
 10 ppm NO_3^- 2 ppm F^- 1000 ml AS FOLLOWS
 1.64893g NaCl LOT 922649A
 0.12054g Na_2CO_3 LOT 897789
 20 ml STOCK SOLUTION SO_4 - 3/93
 10 ml STOCK SOLUTION NO_3 - 3/93
 2 ml STOCK SOLUTION F^- - 3/93
 + DI WATER TO 1000 ml STOCK
 SOLUTIONS P ~~180~~ 199 $T = 95^\circ\text{C}$
 N_2 TNGRMD 1238004 N_2 PURGED

START PN 8.244

END PN 9.021

POTENTIOSTAT ESC 440-1 CHANNEL #2 DATA
 SAVED AS CR82SN2.DAT USING REPASS4F
 REFERENCE SC6 FISHER 13-620-S1 SN 0165403

E_{CORR} -548 mV

E_{PT} +523 mV

E_{APP} +300 mV FOR 336500 SEC

SPECIMEN STARTED 5:00 PM 3/3/93

SPECIMEN STOPPED 10:43 PM 3/7/93

RUNTIME 366,000 SEC

REPASSIVATION POTENTIAL -71 mV

CHARGE DENSITY 120 COUL/cm²

OPEN CIRCUIT POTENTIALS AT END OF TEST

E_{CORR} -288 mV

E_{PT} -378 mV

WEIGHT LOSS = ~~0.25537g~~ 0.25537g

SPECIMEN PITTED ON SO_4 DEPLETED SURFACES

DD 7/27/94
DD 3/8/93

3/4/93

POTENTIOSTATIC POLARIZATION CR82SN3

SPECIMEN ALLOY 82S NH4371FG MILL FENISNGO
 SURFACES SAME AS CR82SN1 P177
 START WT 23.92592g
 END WT 23.69552g
 SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS
 1.64931g NaCl LOT ~~822649A~~ 922649A
 0.12093g NaHCO_3 LOT 897789
 20 ml STOCK SOLUTION SO_4^{2-} 3/93
 10 ml STOCK SOLUTION NO_3^- 3/93
 2 ml STOCK SOLUTION F^- 3/93
 + DI WATER TO 1000 ml STOCK
 SOLUTIONS P ~~776~~ 199 T = 95°C N_2 TNGRMD
 0323004 N_2 PURGED

START PN 8.203

END PN 9.122

POTENTIOSTAT ESC440-1 CHANNEL #3 DATA

SAVED AS CR82SN3.DAT USING RPASS4F

REFERENCE SC6 FISHER 13-620-S1 SN 821163

 E_{CORR} -535 mV E_{PT} +354 mV E_{APP} +375 mV FOR 140,000 SEC

SPECIMEN STARTED 5:05 PM 3/3/93

SPECIMEN STOPPED

RUNTIME 160,000 SEC

REPASSIVATION POTENTIAL -38 mV SCE

CHARGE DENSITY 110 COUL/CM²

REST POTENTIAL AT END OF TEST

 E_{CORR} -292 mV E_{PT} -541 mV

SPECIMEN PITTED ON CR DEPLETED SURFACES

WEIGHT LOSS 0.23046 g

Dund D 3/8/93

3/4/93

POTENTIOSTATIC POLARIZATION CR82SN4

SPECIMEN ALLOY 82S NH4371FG MILL FENISNGO
 SURFACES SAME AS CR82SN1 P177
 START WT 23.89772g
 END WT 23.67289g
 SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS
 1.64956g NaCl LOT 922649A
 0.12070g NaHCO_3 LOT 897789
 20 ml STOCK SOLUTION SO_4^{2-} 3/93
 10 ml STOCK SOLUTION NO_3^- 3/93
 2 ml STOCK SOLUTION F^- 3/93
 + DI WATER TO 1000 ml STOCK
 SOLUTIONS P ~~776~~ 199 T = 95°C N_2 TNGRMD
 1238001 N_2 PURGED

START PN 8.135

END PN 9.218

POTENTIOSTAT ESC440-1 CHANNEL 4 DATA

SAVED AS CR82SN4.DAT USING RPASS4F

REFERENCE SC6 FISHER 13-620-S1 SN 0169033

 E_{CORR} -515 mV E_{PT} +47 mV E_{APP} +450 mV SCE FOR 20 hr

SPECIMEN STARTED 5:10 PM 3/3/93

SPECIMEN STOPPED 5:00 PM 3/4/93

RUNTIME 85,200 SEC

REPASSIVATION POTENTIAL +39 mV

CHARGE DENSITY 110 COUL/CM²

WEIGHT LOSS = 0.22483 g

SPECIMEN PITTED ON CR DEPLETED SURFACES.

Dund D 3/8/93

3/9/93

REPASSIVATION POTENTIAL RP825 P23

SPECIMEN ALLOT 825 HN437IFG 600SiC
 THERMALLY TREATED AT 300°C FOR 30 DAYS
 $\ell = 1.912$ $d = 0.250$ WGT AREA = 8.0 cm^2
 START WT 11.99760g
 AFTER 30 DAYS 11.99756g
 END WT 11.97257

SOLUTION 1000 PPM Cl^- 85 PPM NaCO_3 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS
 1.64923g NaCl LOT 922649A
 0.12055g Na_2CO_3 LOT 897789
 20 ml STOCK SOLUTION SO_4^{2-} - 3/93
 10 ml STOCK SOLUTION NO_3^- - 3/93
 2 ml STOCK SOLUTION F^- - 3/93

+ DI WATER TO 1000 ml

STOCK SOLUTIONS P 199

T = 95°C N_2 THERMO N_2 PURGED

START PH 8.216

END PH 9.373

POTENTIOSTAT ESC 440 #1 CHANNEL #2 DATA

SAVED AS RP825P23.DAT USING R6PASS4F.

REFERENCE SCE FISHER 13/620/51 SN 0169033

 $E_{\text{CORR}} = -166 \text{ mV}$ KEITHLEY 614 $E_{\text{PT}} = +143 \text{ mV}$ " "

CATHODIC STRIP -2.00V FOR 2 min

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH ~~+143 mV~~ ^{400 mV} FOR 90 min

SPECIMEN STARTED 5:33 PM 3/9/93

SPECIMEN STOPPED 5:43 PM 3/10/93

RUNTIME 87,000 SEC

REPASSIVATION POTENTIAL 119 mV SCE KEITHLEY 614

CHARGE DENSITY 12 COUL/cm²

WEIGHT LOSS 0.00004g

Daniel D 3/10/93

3/9/93

REPASSIVATION POTENTIAL RP825P24

SPECIMEN ALLOT 825 HN437IFG 600SiC
 THERMALLY TREATED AT 300°C FOR 30 DAYS
 $\ell = 1.913$ $d = 0.244$ WGT AREA = 8.0 cm^2
 START WT 11.70453
 AFTER 30 DAYS 11.70442g
 END WT NOT RECORDED

SOLUTION 1000 PPM Cl^- 85 PPM NaCO_3 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS
 1.64897g NaCl LOT 922649A
 0.12021g Na_2CO_3 LOT 897789
 20 ml SO_4^{2-} - 3/93
 10 ml NO_3^- - 3/93
 2 ml F^- - 3/93

STOCK SOLUTIONS P 199

T = 95°C N_2 THERMO N_2 PURGED

START PH 8.214

END PH 9.315

POTENTIOSTAT ESC 440 #1 CHANNEL #3 DATA

SAVED AS RP825P24.DAT USING R6PASS4F

REFERENCE SCE FISHER 13-620-51 SN 8211163

 $E_{\text{CORR}} = -196 \text{ mV}$ KEITHLEY 614 $E_{\text{PT}} = +34 \text{ mV}$ " "

CATHODIC STRIP -2.00V FOR 2 min

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 400 mV FOR 14 h

SPECIMEN STARTED 5:42 PM 3/9/93

SPECIMEN STOPPED 5:45 PM 3/10/93

RUNTIME 87,000 SEC

REPASSIVATION POTENTIAL -65 mV SCE

CHARGE DENSITY 60 COUL/cm²

WEIGHT LOSS NOT RECORDED

Daniel D 3/10/93

3/9/93

REPASSIVATION POTENTIAL - RP82SP25

SPECIMEN ALLOY P25 HN4371FG 6005°C
 THERMALLY TREATED AT 100°C FOR 30 DAYS.
 $\phi = 1.913$ $d = 0.251$ WET AREA $\sim 8.0 \text{ cm}^2$
 START WT 11.96336 AFTER 30 DAYS 11.96326
 END WT 11.69107g

SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS
 1.64952 g NaCl LOT 922649X
 0.12124g NaHCO_3 LOT 897789
 20 ml SO_4 - 3/93
 10 ml NO_3 - 3/93
 2 ml F^- - 3/93

(STOCK SOLUTIONS P 199) + WATER
 TO 1000 ml $T = 95^\circ\text{C}$ N_2 THERMO
 N_2 PURGED

START PN 8.250
 END PN 9.189

POTENTIOSTAT ESC 440-1 CHANNEL #4 DATA

SAVED AS RP82SP25.DAT USING REPASS 4F

REFERENCE SC6 FISHER 13-620-51 SN 0165403

$E_{\text{CORR}} -518 \text{ mV}$ KEITHLEY 614

$E_{\text{PT}} +200 \text{ mV}$ " "

CATHODIC STRIP -2.00V FOR 2m

PIT INITIATION 600mV FOR 30min

PIT GROWTH 400mV

SPECIMEN STARTED 5:48 PM 3/9/93

SPECIMEN STOPPED 5:46 PM 3/10/93

RUNTIME 86,000 SEC @ 1/27/94

REPASSIVATION POTENTIAL -91 mV -91 mV

CHARGE DENSITY 130 Coul/cm^2

WEIGHT LOSS 0.27229g

James D. 3/10/93

STOCK SOLUTIONS

SO_4 - 3/93

1000 PPM SO_4 AS Na_2SO_4
 1.48310 g Na_2SO_4 LOT 901213
 + DI WATER TO 1000 ml

NO_3 - 3/93

1000 PPM NO_3 AS NaNO_3
 1.37156 g NaNO_3 LOT 897183
 + DI WATER TO 1000 ml

F^- - 3/93 @ 7/27/94

1000 ~~ppm~~ PPM F^- AS NaF
 2.21213 g NaF LOT 896405
 + DI WATER TO 1000 ml

James D. 3/9/93

3/19/93

REPASSIVATION POTENTIAL RP825P26

SPECIMEN ALLOY 825 HN437IFG 600S.C
 THERMALLY TREATED AT 100°C 30 DAYS
 $\ell = 1.914''$ $d = 0.248''$ WGT AREA 8.0 cm²
 START WT 11.81330 g
 AFTER THERMAL TREATMENT 11.81332 g
 END WT 11.79855 g
 SOLUTION 1000 PPM Cl⁻ 85 PPM HCO₃⁻ 20 PPM SO₄⁼
 10 PPM NO₃⁻ 2 PPM F⁻ 1000 ml AS FOLLOWS
 1.64924 g NaCl LOT 922649A
 0.11906 g NaHCO₃ LOT 897789
 20 ml STOCK SOLUTION SO₄-3/93
 10 ml STOCK SOLUTION NO₃-3/93
 2 ml STOCK SOLUTION F-3/93
 + DI WATER TO 1000 ml STOCK SOLUTIONS
 P 199 T= 95°C N₂ THERMO 0323004
 N₂ PURGED
 START PH 8.211
 END PH 9.711
 POTENTIOSTAT ESC 440-1 CHANNEL #2 DATA
 SAVED AS RP825P26.DAT USING REPASS4E
 REFERENCE SCE FISHER 13-620-S1 SN 0165403
 E_{CORR} -475 mV REITHLEY 614
 E_{PT} -109 mV
 CATHODIC STRIP -2.00 V FOR 2 min
 PIT INITIATION 600 mV FOR 30 min
 PIT GROWTH 400 mV FOR 90 min
 SPECIMEN STARTED 7:00 PM 3/19/93
 SPECIMEN STOPPED 10:50 AM 3/20/93
 RUNTIME 57,000 SEC
 REPASSIVATION POTENTIAL -1.006 V
 CHARGE DENSITY 7.2 COUL/cm²
 WEIGHT LOSS 0.01477 g
 OBVIOUS LOGIC ERROR IN PROGRAM -1.0 V
 REPASSIVATION POTENTIAL TOO LOW BRINGS TUBE
 LEAR E_{RP} FROM DATA FILE 80 mV *Phil D* 3/23/93

3/19/93

REPASSIVATION POTENTIAL RP825P27.

SPECIMEN ALLOY 825 HN437IFG 600S.C
 THERMALLY TREATED AT 306°C 1 DAY
 $\ell = 1.914''$ $d = 0.248''$ WGT AREA 8.0 cm²
 START WT 11.86955 g
 AFTER THERMAL TREATMENT 11.86965 g
 END WT 11.69550 g
 SOLUTION 1000 PPM Cl⁻ 85 PPM HCO₃⁻ 20 PPM SO₄⁼
 10 PPM NO₃⁻ 2 PPM F⁻ 1000 ml AS FOLLOWS
 1.64858 g NaCl LOT 922649A
 0.11937 g NaHCO₃ LOT 897789
 20 ml STOCK SOLUTION SO₄-3/93
 10 ml STOCK SOLUTION NO₃-3/93
 2 ml STOCK SOLUTION F-3/93
 + DI WATER TO 1000 ml STOCK SOLUTIONS
 P 199 V T= 95°C N₂ THERMO 1238004
 N₂ PURGED
 START PH 8.297
 END PH 9.505
 POTENTIOSTAT ESC 440-1 CHANNEL #3 DATA SAVED
 AS RP825P27.DAT USING REPASS 4F
 REFERENCE SCE FISHER 13-620-S1 SN 0169033
 E_{CORR} -278 mV REITHLEY 614
 E_{PT} +588 mV
 CATHODIC STRIP -2.00 V FOR ~~30 min~~ ^{DD 7/22/94} 2 min
 PIT INITIATION 600 mV FOR 30 min
 PIT GROWTH 400 mV FOR 14 hr
 SPECIMEN STARTED 7:04 PM 3/19/93
 SPECIMEN STOPPED 10:50 AM ^{DD 7/22/94} 3/20/93
 RUNTIME 56,000 SEC
 REPASSIVATION POTENTIAL -65 mV
 CHARGE DENSITY 85 COUL/cm²
 WEIGHT LOSS 0.17405 g

Phil D 3/23/93

3/19/93

REPASSIVATION POTENTIAL RP825P28

SPECIMEN ALLOY 825 HN4371FG 600SiC
 THERMALLY TREATED AT 100°C 1 DAY
 $l = 1.912$ $d = 0.249$ $WET AREA = 8.0 \text{ cm}^2$
 START WT 11.74770 g
 AFTER THERMAL TREATMENT 11.79787 g
 END WT 11.60114 g

SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F- 1000 ml AS FOLLOWS
 1.64865 g NaCl LOT 922649A
 0.11947 g NaHCO_3 LOT 897789
 20 ml STOCK SOLUTION SO_4^{2-} - 3/93
 10 ml STOCK SOLUTION NO_3^- - 3/93
 2 ml STOCK SOLUTION F - 3/93
 + DI WATER TO 1000 ml STOCK SOLUTIONS
 P 199 T = 95°C N_2 PURGED

H_2 THERMO 1238001

START pH 8.302

END pH 9.470

POTENTIOSTAT ESC 440-1 CHANNEL #4 DATA SAVED
 AS RP825P28.DAT USING R6PASS 4F

REFERENCE SCE FISHER 13-620-S1 SN 8211163

$E_{\text{CORR}} - 600 \text{ mV}$ KEITHLEY 614

$E_{\text{PT}} - 323 \text{ mV}$

CATHODIC STRIP - 2.00V FOR 2 min

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 400 mV FOR 14 hr

SPECIMEN STARTED 7:08 PM 3/19/93

SPECIMEN STOPPED 10:50 AM 3/20/93

RUNTIME 56,000 SEC

REPASSIVATION POTENTIAL -80 mV

CHARGE DENSITY 96 C/cm²

WEIGHT LOSS 0.19636 g

Paul D. 3/23/93

3/24/93

REPASSIVATION POTENTIAL RP825P29

SPECIMEN ALLOY 825 HN4371FG 600SiC
 PICKLED IN 10% HNO_3 FOR 60 min
 $l = 1.913$ $d = 0.249$ $WET AREA = 8.0 \text{ cm}^2$
 START WT 11.99818 g
 END WT 11.77474 g

SOLUTION 10,000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F- 1000 ml AS FOLLOWS
 16.48033 g NaCl LOT 922649A
 0.11881 g NaHCO_3 LOT 897789
 20 ml STOCK SOLUTION SO_4^{2-} - 3/93
 10 ml STOCK SOLUTION NO_3^- - 3/93
 2 ml STOCK SOLUTION F - 3/93
 + DI WATER TO 1000 ml STOCK
 SOLUTIONS P 199 T = 95°C N_2 PURGED
 N_2 THERMO 1238001

START pH 7.939

END pH 8.979

POTENTIOSTAT ESC 440-1 CHANNEL #2 DATA SAVED
 AS RP825P29.DAT USING R6PASS 4F

REFERENCE SCE FISHER 13-620-S1 SN 0169033

$E_{\text{CORR}} - 726 \text{ mV}$ KEITHLEY 614

$E_{\text{PT}} - 12 \text{ mV}$

CATHODIC STRIP - 2.00V FOR 2 min

PIT INITIATION 400 mV FOR ~~30 min~~^{15 min}

PIT GROWTH 200 mV FOR

SPECIMEN STARTED 4:36 PM 3/24/93

SPECIMEN STOPPED 5:12 PM 3/25/93

RUNTIME 88,000 SEC

REPASSIVATION POTENTIAL -81 mV KEITHLEY 614

CHARGE DENSITY 110 C/cm²

WEIGHT LOSS 0.22344 g

Paul D. 3/26/93

3/21/93

REPASSIVATION POTENTIAL RP82SP30

SPECIMEN ALLOY 82S NH4371FG 600S.C
 PICKLED IN 10% HNO_3 FOR 60 min
 $l = 1.914"$ $d = 0.249"$ WGT AREA = 8.0 cm^2
 START WT 12.00825 g
 END WT 11.25280 g

SOLUTION 10000 PPM Cl^- 85 PPM NaCO_3 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS
 16.48776 g NaCl LOT 922649A
 0.11821 g Na_2CO_3 LOT 897789
 20 ml STOCK SOLUTION SO_4^{2-} - 3/93
 10 ml STOCK SOLUTION NO_3^- - 3/93
 2 ml STOCK SOLUTION F^- - 3/93
 + DI WATER TO 1000 ml STOCK SOLUTIONS
 P 199 $T = 95^\circ\text{C}$ N_2 TNGRMD 1238004
 N_2 PURGED

START PH 8.022
 END PH 8.989

POTENTIOSTAT ESC 440-1 CHANNEL #3 DATA
 SAVED AS RP82SP30.DAT USING RPASS 4F

REFERENCE SCE FISHER 13-620-51 SN 0165403
 $E_{\text{CORR}} = -709 \text{ mV}$ KEITHLEY 614
 $E_{\text{PT}} = -204 \text{ mV}$ "

CATHODIC STRIP - 2.00 V FOR 2 MIN OR 7/27/94
 PIT INITIATION 400 mV FOR 30 min 20 min
 PIT GROWTH 200 mV

SPECIMEN STARTED 4:38 pm 3/24/93
 SPECIMEN STOPPED 5:15 pm 3/25/93

RUNTIME 88,000 SEC
 REPASSIVATION POTENTIAL -153 mV KEITHLEY 614
 CHARGE DENSITY 370 C/cm^2
 WEIGHT LOSS 0.74745 g

David D 3/26/93

3/31/93

REPASSIVATION TIME ALLOY 82S REPTIM 23.

SPECIMEN ALLOY 82S NH4371FG 600 S.C FINISH
 CLEANED AS BEFORE REPTIM 21 P160
 $l = 1.913"$ $d = 0.250"$ WGT AREA = 8.0 cm^2
 START WT 12.02180 g
 END WT 11.87438 g

SOLUTION 500 PPM Cl^- 85 PPM NaCO_3 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS
 0.82499 g NaCl LOT 922649A
 0.11895 g Na_2CO_3 LOT 897789
 20 ml STOCK SOLUTION SO_4^{2-} - 3/93
 10 ml STOCK SOLUTION NO_3^- - 3/93
 2 ml STOCK SOLUTION F^- - 3/93
 STOCK SOLUTIONS P 199 + DI WATER TO
 1000 ml $T = 95^\circ\text{C}$ N_2 TNGRMD 1238004
 N_2 PURGED

START PH 8.084
 END PH 9.341

POTENTIOSTAT ESC 440-1 CHANNEL #2 DATA SAVED
 AS REPTIM 23.DAT USING REPTIMER.WBB

REFERENCE SCE FISHER 13-620-51 SN 0165403
 PIT INITIATION 600 mV FOR 30 min
 PIT GROWTH 400 mV FOR 9 HOURS
 REPASSIVATION 180 mV

$E_{\text{CORR}} = -725 \text{ mV}$ KEITHLEY 614
 $E_{\text{PT}} = -231 \text{ mV}$ KEITHLEY 614

SPECIMEN STARTED 4:16 pm 3/31/93
 SPECIMEN STOPPED 4:07 pm 4/2/93

RUNTIME 172,000 SEC OR 7/27/94
 REPASSIVATION TIME 72 C/cm^2 DID NOT REPASSIVATE
 CHARGE DENSITY 72 C/cm^2
 WEIGHT LOSS 0.14742 g

David D 4/2/93

3/31/93

REPASSIVATION TIME ALLOY 825 REPTIM 24

SPECIMEN ALLOY 825 HH4371FG 600 S.C FINISH
 PREPARED SAME AS REPTIM 21 P160
 $l = 1.913''$ $d = 0.250''$ WGT AREA = 8.0 cm^2
 START WT 12.04032g
 END WT 11.85214g

SOLUTION 500 PPM Cl^- 85 PPM NCO_3^- 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml MAKE AS FOLLOWS.
 0.82496 g NaCl LOT 922649A
 0.11949 g NaHCO_3 LOT 897789
 20 ml STOCK SOLUTION SO_4 -3/93
 10 ml STOCK SOLUTION NO_3 -3/93
 2 ml STOCK SOLUTION F -3/93
 + DI WATER TO 1000 ml STOCK SOLUTIONS
 P 199 $T = 95^\circ\text{C}$ N_2 TNRMD 1238007
 N_2 PURGED

START PH 8.243

END PH 9.258

POTENTIALSTAT ESC 440-1 CHANNEL #3 DATA SAVED
 AS REPTIM 24.DAT USING REPTIMER.WBB

REFERENCE SCE FISHER 13-620-51 SN 0169033

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 400 mV FOR 9 HOURS

REPASSIVATION 170 mV

 $E_{\text{CORR}} -709 \text{ mV}$ $E_{\text{PT}} -103 \text{ mV KEITNEY 614}$

SPECIMEN STARTED 4:20 PM 3/31/93

SPECIMEN STOPPED 4:02 PM 4/2/93

RUNTIME 172000 SEC

REPASSIVATION TIME DID NOT REPASSIVATE

CHARGE DENSITY 91 C/cm²

WEIGHT LOSS 0.18818g

4/2/93

3/31/93

REPASSIVATION TIME ALLOY 825 REPTIM 25

SPECIMEN ALLOY 825 HH4371FG 600 S.C FINISH
 PREPARED SAME AS REPTIM 21 P 199
 $l = 1.914''$ $d = 0.249''$ WGT AREA = 8.0 cm^2
 START WT 12.01383g
 END WT 11.84088g

SOLUTION 500 PPM Cl^- 85 PPM NCO_3^- 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS.
 0.82576 g NaCl LOT 922649A
 0.11830 g NaHCO_3 LOT 897789
 20 ml STOCK SOLUTION SO_4 -3/93
 10 ml STOCK SOLUTION NO_3 -3/93
 2 ml STOCK SOLUTION F -3/93
 + DI WATER TO 1000 ml STOCK SOLUTIONS
 P 199 $T = 95^\circ\text{C}$ N_2 TNRMD ~~123~~ 0323004
 N_2 PURGED

START PH 8.265

END PH 9.268

POTENTIALSTAT ESC 440-1 CHANNEL #4 DATA SAVED
 AS REPTIM 25.DAT USING REPTIMER.WBB

REFERENCE SCE FISHER 13-620-51 SN 9214083

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 400 mV FOR 9 HOURS

REPASSIVATION 160 mV

 $E_{\text{CORR}} -744 \text{ mV}$ $E_{\text{PT}} -260 \text{ mV}$

SPECIMEN STARTED 4:26 PM 3/31/93

SPECIMEN STOPPED 4:02 PM 4/2/93

RUNTIME 172,000 SEC

REPASSIVATION TIME DID NOT REPASSIVATE

CHARGE DENSITY 84 C/cm²

WEIGHT LOSS 0.17295g

4/2/93

4/7/93

REPASSIVATION TIME REPTIM 26

SPECIMEN ALLOY 825 HN4371FG 600S.C
 CLEANED IN ULTRASONIC BATH, RINSED
 WITH DI WATER, ACETONE AND DRIED
 $L = 1.914''$ $d = 0.248''$ WGT AREA = 8.0 cm^2
 START WT 12.03345
 END WT 11.95671g

SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml MAKE AS FOLLOWS
 1.64878 g NaCl LOT 922649A
 0.11820 g NaHCO_3 LOT 897789
 20 ml STOCK SOLUTION SO_4^{2-} - 4/93
 10 ml STOCK SOLUTION NO_3^- - 4/93
 2 ml STOCK SOLUTION F^- - 4/93
 + DI WATER TO 1000 ml STOCK SOLUTIONS
 P 211 $T = 95^\circ\text{C}$ N_2 PURGED
 H_2 TNGRMD 1238001

START PH 8.173

END PH 9.283

POTENTIOSTAT ESC440-1 CHANNEL #2 DATA SAVED
 AS REPTIM 26.DAT USING REPTIMER.WBB

REFERENCE SCE FISHER 13-620-51 SN 0169033

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 400 mV FOR 6 HOURS

REPASSIVATION 190 mV

 $E_{\text{CORR}} -759 \text{ mV}$ KEITNLEY 614 $E_{\text{PT}} -333 \text{ mV}$ KEITNLEY 614

SPECIMEN STARTED 4:50 PM 4/7/93

SPECIMEN STOPPED 7:20 AM 4/9/93

RUNTIME 138,000 SEC

REPASSIVATION TIME DID NOT REPASSIVATE

WEIGHT LOSS 0.07674g

CHARGE DENSITY 37 COUL/cm²

David D
 4/9/93

4/7/93

REPASSIVATION TIME REPTIM 27

SPECIMEN ALLOY 825 HN4371FG 600S.C
 CLEANED SAME AS REPTIM 26 P 208
 $L = 1.915''$ $d = 0.249''$ WGT AREA = 8.0 cm^2
 START WT 11.83946
 END WT 11.64943g

SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml MAKE AS FOLLOWS
 1.64948g NaCl LOT 922649A
 0.11812g NaHCO_3 LOT 897789
 20 ml STOCK SOLUTION SO_4^{2-} - 4/93
 10 ml STOCK SOLUTION NO_3^- - 4/93
 2 ml STOCK SOLUTION F^- - 4/93
 + DI WATER TO 1000 ml, STOCK SOLUTIONS
 P 211, $T = 95^\circ\text{C}$, N_2 PURGED, H_2 TNGRMD 1238004

START PH 8.195

END PH 9.302

POTENTIOSTAT ESC440-1 CHANNEL #3 DATA SAVED AS
 REPTIM 27.DAT USING REPTIMER.WBB

REFERENCE SCE FISHER 13-620-51 SN 9214083

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 400 mV FOR 6 HOURS

REPASSIVATION 175 mV

 $E_{\text{CORR}} -742 \text{ mV}$ KEITNLEY 614 $E_{\text{PT}} -312 \text{ mV}$ " "

SPECIMEN STARTED 4:55 PM 4/7/93

SPECIMEN STOPPED 7:20 AM 4/9/93

RUNTIME 138,000 SEC

REPASSIVATION TIME DID NOT REPASSIVATE

WEIGHT LOSS 0.19003

CHARGE DENSITY 92 COUL/cm²

David D
 4/9/93

4/7/93

R6 PASSIVATION TIME REPTIM 28

SPECIMEN ALLOY 825 NN4371FG 600S.C
 CLEANED SAME AS REPTIM 26 P 208
 $L = 1.913''$ $d = 0.248''$ WGT AREA 8.0 cm^2
 START WT 12.00705 g
 END WT 11.77801 g

SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml MAKE AS FOLLOWS
 1.64908 g NaCl LOT 922649A
 0.11992 g NaHCO_3 LOT 897789
 20 ml STOCK SOLUTION SO_4 - 4/93
 10 ml STOCK SOLUTION NO_3 - 4/93
 2 ml STOCK SOLUTION F^- - 4/93
 + DI WATER TO 1000 ml STOCK SOLUTIONS
 P 211 $T = 95^\circ\text{C}$ N_2 PURGED N_2 THERMO 0323004

START PH 8.304
 END PH 9.397

POTENTIOSTAT ESC 440-1 CHANNEL #4 DATA SAVED
 AS REPTIM 28.DAT USING REPTIMER.WBB.

REFERENCE SC6 FISHER 13-620-51 SN 0165403
 PIT INITIATION 600 mV FOR 30 min
 PIT GROWTH 400 mV FOR 6 HOURS
 R6 PASSIVATION 160 mV

$E_{\text{CORR}} - 744 \text{ mV}$ KEITNEY 614
 $E_{\text{PT}} - 318 \text{ mV}$ " "

SPECIMEN STARTED 5:01 PM 4/7/93

SPECIMEN STOPPED $\approx 10:00 \text{ AM}$ 4/8/93

RUNTIME 56,000 SEC

R6 PASSIVATION TIME DID NOT REPASSIVATE

WEIGHT LOSS 0.22904 g

CHARGE DENSITY 112 COUL/cm^2

POTENTIAL ADJUSTED TO 150 mV 100 mV AND
 0.0 mV PRIOR TO END OF EXPT

Daniel D 4/9/93

4/7/93

STOCK SOLUTIONS

SO_4 - 4/93, 1000 PPM SO_4^{2-} AS Na_2SO_4
 1.48101 g Na_2SO_4 FISHER LOT # 901213
 + DI WATER TO 1000 ml 4/6/93 EXP 5/6/93

NO_3 - 4/93, 1000 PPM NO_3^- AS NaNO_3
 1.37175 g NaNO_3 FISHER LOT # 897183
 + DI WATER TO 1000 ml 4/6/93 EXP 5/6/93

F^- - 4/93 1000 PPM F^- AS NaF
 2.21768 g NaF FISHER LOT # 896405
 + DI WATER TO 1000 ml 4/6/93 EXP 5/6/93

DATE 7/22/94
 1 MCl - 4/93 58.44108 g NaCl LOT 922649A
 + DI WATER TO 1000 ml 4/6/93 EXP 5/6/93

0.5 MCl - 4/93 29.22357 g NaCl FISHER LOT
 922649A + DI WATER TO 1000 ml
 4/6/93 EXP 5/6/93

1000 Cl - 4/93 3.29522 g NaCl FISHER LOT
 922649A + DI WATER TO 2000 ml
 4/6/93 EXP 5/6/93

100 Cl - 4/93 100 ml 1000 Cl - 4/93 +
 900 ml DI WATER 4/6/93 EXP 5/6/93

Daniel D
 4/7/93

4/9/93

CREVICE CORROSION EXPT 304L-1

SPECIMEN 304L HT0954 600 S.C FINISH

CLEANED IN ULTRASONIC BATH RINSED

WITH DI WATER, ACETONE AND DRIED

 $l = 2.503''$ $w = 0.498''$ $T = 0.124''$ AREA = 20.885 cm²

START WT = 21.16457g

END WT = 21.16270g

SOLUTION 1000 PPM Cl⁻ 85 PPM NO₃⁻ 20 PPM SO₄²⁻10 PPM NO₃⁻ 2 PPM F⁻ 1000 ml AS FOLLOWS

1.64878 g NaCl LOT 922649A

0.11817 g Na₂CO₃ LOT 89778920 ml STOCK SOLUTION SO₄ - 4/9310 ml STOCK SOLUTION NO₃ - 4/93

2 ml STOCK SOLUTION F - 4/93

+ DI WATER TO 1000 ml

STOCK SOLUTIONS PAGE 211

START PH = 8.171

END PH = 7.40

SETUP SPECIMEN PLACED IN PLEXIGLASS CELL

WITH TWO PORTS TORQUED TO 20 IN. OZ

PORT #1 AT TIP

MI200 Cl⁻ ISE (FLEXABLE) # 44200 } Cl TIP

MI 402 Ag/AgCl REF # 43636 }

MI 506 GLASS PH # 43720 } PH TIP

MI 402 Ag/AgCl REF # 41436 }

MI 402 Ag/AgCl REF - TIP REFERENCE #

PORT #2 AT MOUTH

MI200 Cl⁻ ISE (FLEXABLE) ~~# 43647~~ ^{DO 7/27/94} # 44431 } Cl MOUTH

MI 402 Ag/AgCl REF # 43647 }

MI 506 PH GLASS # 44060 } PH MOUTH

MI 402 Ag/AgCl REF # 41402 }

MI 402 Ag/AgCl REF - ~~TIP~~ ^{DO 7/27/94} REFERENCE #

4/9/93

CREVICE CORROSION EXPT 304L-1

BULK ELECTRODES

MI200 Cl⁻ ISE # 42983 } BULK Cl

MI 402 Ag/AgCl REF # 44629 }

MI 506 GLASS PH # 44817 } BULK PH

MI 402 Ag/AgCl REF # 45860 }

FISHER 13-620-S3 SN 8118182 - REFERENCE Ag/AgCl

Cl TIP TO ORION EA920 SC01A & ABB, SE120, ID# 0515265

Cl BULK TO ORION EA920 SC01A CH2 & ABB, SE120, ID# 0515265

Cl MOUTH TO ORION ~~EA920~~ ^{DO 7/27/94} 720A 5885 CH1 & ABB, SE120, ID# 0049616

PH TIP TO ORION EA940 2330 CH#1 & ABB, SE120, ID # 0515265

PH BULK TO ORION EA940 2330 CH#2 & ABB, SE120, ID # 0515265

PH MOUTH TO ORION 720A 003368 CH1 & ABB, SE120, ID# 0049616

FISHER 13-620-S3 SN 8118182 TO CHANNEL #1
OF ESC 440#2

TIP REFERENCE TO CHANNEL #3 OF ESC 440-2

MOUTH REFERENCE TO CHANNEL #2 OF ESC 440-2

Pt COUNTER ELECTRODE AND SPECIMEN CONNECTED
TO ESC 440-2 CHANNEL #1PLEXIGLASS CELL WITH SPECIMEN PLACED
IN GLASS VESSEL WITH PLEXIGLASS LID.
ENTIRE ASSEMBLY WAS PLACED IN FARADAY
CAGE ON 4/8/93 AND MONITORED FROM
4:00 PM 4/8/93 TO 4:00 PM 4/9/93AT OPEN CIRCUIT SOLUTION WAS
NOT DEAERATED.PRIOR TO ASSEMBLY ELECTRODES WERE
CALIBRATED USING 100 PPM Cl⁻, 1000 PPM Cl⁻
0.5M ~~PPM~~ ^{DO 7/27/94} Cl⁻ AND 1M Cl⁻ PH ELECTRODES
WERE CALIBRATED USING BUFFERS 1, 4, 7, 10

4/9/93

CREVICE CORROSION EXPT 304L-1

ELECTRODE CALIBRATIONS

PH TIP $mV = -57.473 (pH) + 395.053$ $pH = -17.4 (V) + 6.873$

PH MOUTH

 $mV = -57.33 (pH) + 391.84$ $pH = -17.4 (V) + 6.835$

PH BULK

 $mV = -58.3 (pH) + 385.75$ $pH = -17.2 (V) + 6.6166$ Cl⁻ TIP $mV = -22.3446 * \ln (ppm Cl^-) + 265.28$ $ppm Cl^- = \exp(-0.0448 * mV + 11.8722)$ Cl⁻ MOUTH $mV = -23.5961 * \ln (ppm Cl^-) + 276.396$ $ppm Cl^- = \exp(-0.0417 * mV + 11.7136)$ Cl⁻ BULK $mV = -22.918 * \ln (ppm Cl^-) + 273.01$ $ppm Cl^- = \exp(-0.0436 * mV + 11.9125)$

INITIAL VALUES AT 4:00 PM 4/9/93

EXTERNAL POTENTIAL -0.092 V

TIP POTENTIAL -0.124 V

MOUTH POTENTIAL -0.123 V

TIP Cl 44.0 mV

TIP pH -48.0 mV

MOUTH Cl 62.3 mV

MOUTH pH -68.7 mV

BULK Cl 111.4 mV

BULK pH -96.4 mV

AT 4:06 PM SET POTENTIAL TO -0.082 V

TIMER AT 86,700 SEC

4/12/93 7:10 AM $t = 313800$ POTENTIAL SET TO -0.042 V4/12/93 2:58 PM $t = 341700$ POTENTIAL SET TO +0.008 V4/14/93 8:12 AM $t = 419116$ SEC POTENTIAL SET TO +0.108 V4/14/93 3:54 PM $t = 517826$ SEC POTENTIAL SET TO +0.158 V

4/14/93

CREVICE CORROSION EXPT 304L-1

4/14/93 $t = 526630$ SEC POTENTIAL SET TO 0.208 V4/16/93 7:42 AM $t = 661040$ SEC POTENTIAL SET TO 0.0 V4/16/93 9:52 AM $t = 668900$ SEC POTENTIAL SET TO -0.050 V4/16/93 2:13 PM $t = 684530$ SEC POTENTIAL SET TO -0.100 V4/16/93 $t = 691470$ END OF EXPT

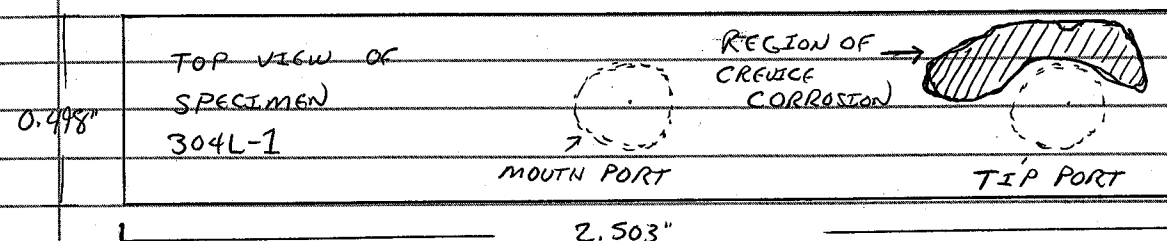
4/16/93

FINAL pH FISHER ACCUMET 7.40

4/26/93

CHARGE DENSITY 0.414 COULOMBS/cm²

SPECIMEN HAS SMALL REGION OF CREVICE CORROSION
ON TOP SIDE OF SPECIMEN NEAR TIP ELECTRODE
PORT AS SHOWN: SCALE $\approx 2:1$



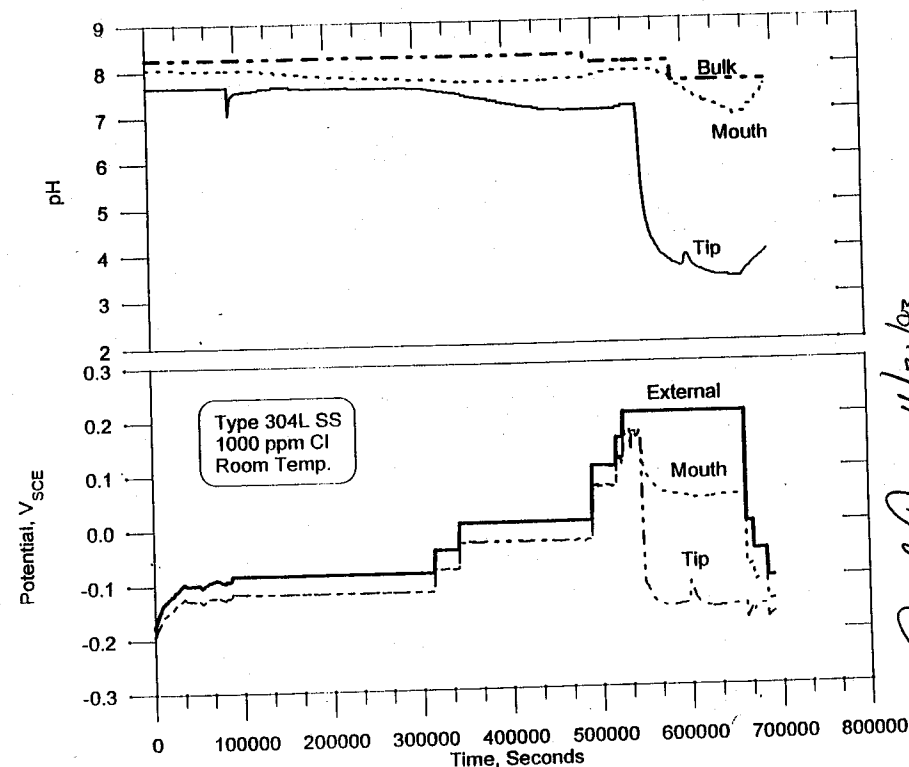
REGION OF CREVICE CORROSION MEASURES $L_{max} 1.4$ CM
 $W_{max} = 0.4$ CM $W_{min} = 0.2$ CM ESTIMATED SURFACE
AREA (GEOMETRICAL) OF CREVICE CORROSION REGION
IS 0.5 CM², UNDER 70X MAGNIFICATION
CREVICE CORROSION REGION IS VERY SHALLOW.

[Signature]
4/26/93

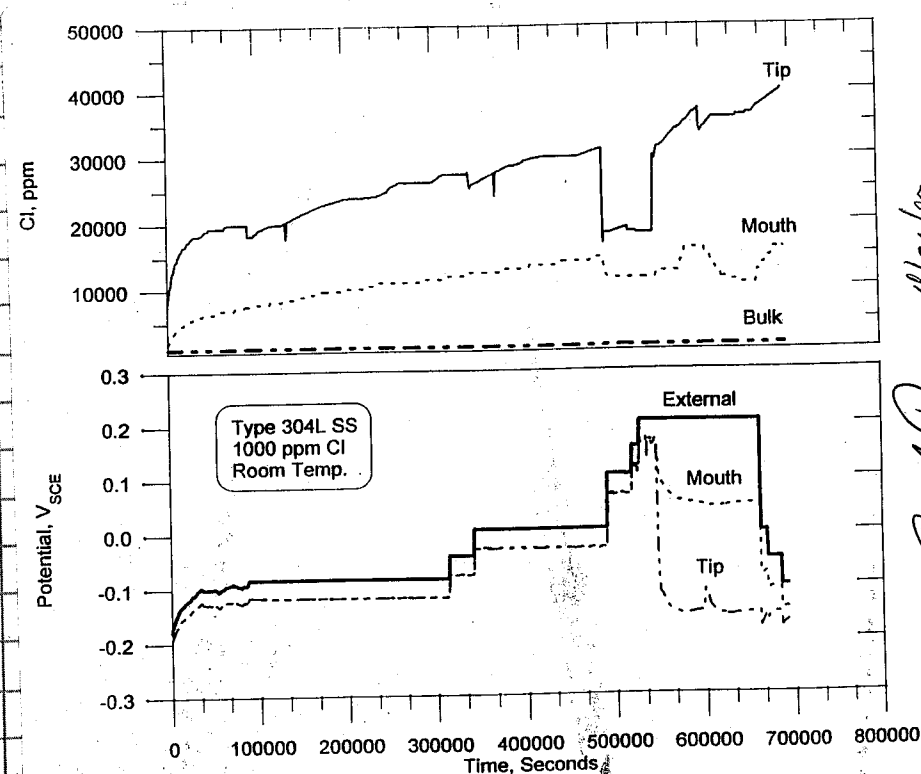
PH AND Cl⁻ ISE CALIBRATION DATA SAVED AS
304L1CAL.DAT ON IWARE 025-DISK *[Signature]* 4/28/94

4/26/93

CR6VIG6 CORROSION EXP. 304L-1



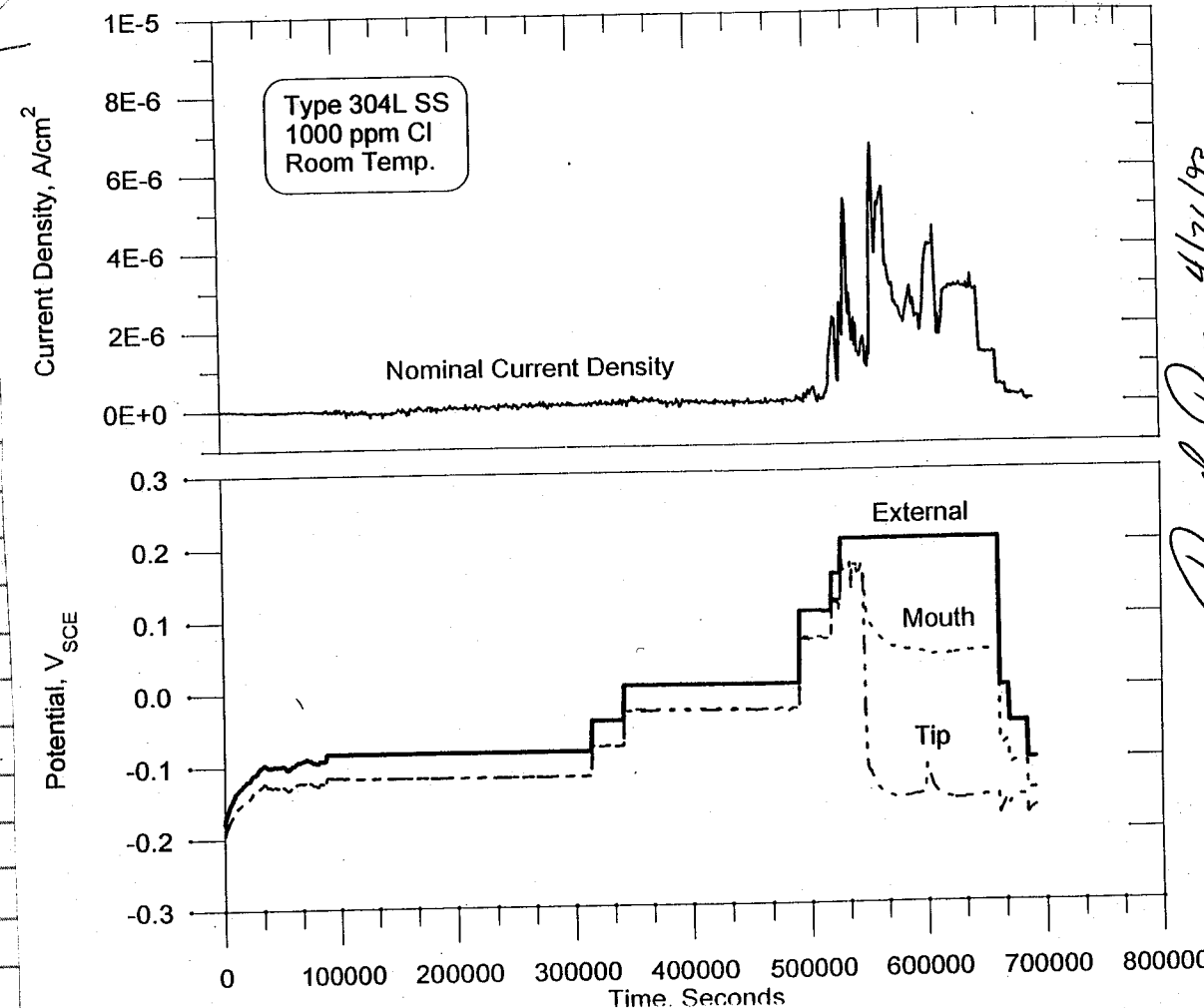
David Q 4/26/93



David Q 4/26/93

4/26/93

CR6VIG6 CORROSION EXP. 304L-1



David Q 4/26/93

DATA SAVED AS 304L-1.DAT USING
CR6VIG6.WRB COMPLETE DATA FILE
SAVED AS 304L1.FLE.WRI USING QUANTRO PRO

David Q 4/26/93

4/13/93

POTENTIOSTATIC POLARIZATION - CR825N5

SPECIMEN ALLOY 825 NH4371FG MILL FINISHED
SURFACES ULTRASONICALLY CLEANED IN
ACETONE AND DRIED $t = 0.525''$ $l = 0.778$
 $w = 0.500$ MILL FINISH SURFACE AREA = 3.22 cm^2
TOTAL EXPOSED SURFACE AREA = 8.30 cm^2

START WT 26.49824 g

END WT 26.47859 g

SOLUTION 1000 PPM Cl^- 85 PPM NaCO_3 20 PPM SO_4^{2-}
10 PPM NO_3^- 2 PPM F^- 1000 ml MAKE AS FOLLOWS
1.64810 g NaCl LOT 922649A
0.11932 g NaHCO_3 LOT 897789
20 ml STOCK SOLUTION SO_4^{2-} - 4/93
10 ml STOCK SOLUTION NO_3^- - 4/93
2 ml STOCK SOLUTION F^- - 4/93
+ DI WATER TO 1000 ml STOCK SOLUTIONS
P 211. $T = 95^\circ\text{C}$ N_2 PURGED
 H_2 THERMO 1238001

START PH 8.135

END PH 9.206

POTENTIOSTAT ESC 440-1 CHANNEL #2 DATA SAVED

AS CR825N5.DAT USING RPASS4F

REFERENCE SCE FISHER 13-620-S1 SN 9214083

 $E_{\text{CORR}} = -633 \text{ mV}$ RESISTANCE 614 $E_{\text{PT}} = -231 \text{ mV}$ " $E_{\text{APPLIED}} = +225 \text{ mV}$

SPECIMEN STARTED 4/14/93 9:00 AM

SPECIMEN STOPPED 4/19/93

RUNTIME 460,000 SEC

REPASSIVATION POTENTIAL NOT RECORDED

CHARGE DENSITY NOT RECORDED

Dund D 4/19/93

4/13/93

POTENTIOSTATIC POLARIZATION - CR825N6

SPECIMEN ALLOY 825 NH4371FG MILL FINISHED
SURFACES ULTRASONICALLY CLEANED IN
ACETONE AND DRIED $t = 0.525''$ $l = 0.789$
 $w = 0.503$ MILL FINISH SURFACE AREA = 3.40 cm^2
TOTAL EXPOSED SURFACE AREA = 8.49 cm^2

START WT 27.15901 g

END WT 27.01413 g

SOLUTION 1000 PPM Cl^- 85 PPM NaCO_3 20 PPM SO_4^{2-}
10 PPM NO_3^- 2 PPM F^- 1000 ml MAKE AS FOLLOWS
1.64810 g NaCl LOT 922649A
0.11850 g NaHCO_3 LOT 897789
20 ml STOCK SOLUTION SO_4^{2-} - 4/93
10 ml STOCK SOLUTION NO_3^- - 4/93
2 ml STOCK SOLUTION F^- - 4/93
+ DI WATER TO 1000 ml STOCK SOLUTIONS
P 211. $T = 95^\circ\text{C}$ N_2 PURGED H_2 THERMO
0323004

START PH 8.204

END PH 9.351

POTENTIOSTAT ESC 440-1 CHANNEL #3 DATA

SAVED AS CR825N6.DAT USING RPASS4F

REFERENCE SCE FISHER 13-620-S1 SN 0165403

 $E_{\text{CORR}} = -603 \text{ mV}$ RESISTANCE 614 $E_{\text{PT}} = -280 \text{ mV}$ " $E_{\text{APPLIED}} = +250 \text{ mV}$

SPECIMEN STARTED 4/14/93 9:03 AM

SPECIMEN STOPPED 4/19/93

RUNTIME 460,000 SEC

REPASSIVATION POTENTIAL NOT RECORDED

CHARGE DENSITY NOT RECORDED

Dund D 4/19/93

4/13/93

POTENTIOSTATIC POLARIZATION CR82SN7

SPECIMEN ALLOY 825 NN4371 FG MILL FINISH
 SURFACES ULTRASONICALLY CLEANED IN ACETONE
 AND DRIED. $t = 0.525$ $l = 0.775$
 $w = 0.502$ MILL FINISHED SURFACE AREA = 3.24 cm^2
 TOTAL EXPOSED SURFACE AREA 8.32 cm^2
 START WT 26.59405g
 END WT 26.56707g

SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml MAKE AS FOLLOWS
 1.64956 g NaCl LOT 922649A
 0.11828 g NaHCO_3 LOT 897789
 20 ml STOCK SOLUTION SO_4^{2-} 4/93
 10 ml STOCK SOLUTION NO_3^- 4/93
 2 ml STOCK SOLUTION F^- 4/93

+ DI WATER TO 1000 ml STOCK SOLUTIONS
 P211, N_2 PURGED, 95°C Hg THERMO 1238004.

START PH 8.271

END PH 9.193

POTENTIOSTAT ESC 440-1 CHANNEL #4 DATA SAVED
 AS CR82SN7.DAT USING REPASS4F.

REFERENCE SCE FISHER 13-620-51 SN 0169033

E_{CORR} -552 mV KEITHLEY 614E_{PT} -313 mV " " " "E_{APPLIED} +275 mV " " " "

SPECIMEN STARTED 4/14/93 9:06 AM

SPECIMEN STOPPED 4/19/93

RUNTIME 460,000 SEC

REPASSIVATION POTENTIAL NOT RECORDED

CHARGE DENSITY NOT RECORDED

David D. 4/19/93

4/28/93

REPASSIVATION TIME. REPTIM 29.DAT

SPECIMEN ALLOY 825 NN4371 FG 600 S/C
 PREPARED TNG SAME AS REPTIM 21 P160
 $l = 1.915$ $d = 0.248$ WT AREA = 8.0 cm^2
 START WT 11.61104
 END WT 11.25522

SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml MAKE AS FOLLOWS
 1.64957 g NaCl LOT 922649A
 0.11814 g NaHCO_3 LOT 897789
 20 ml STOCK SOLUTION SO_4^{2-} 4/93
 10 ml STOCK SOLUTION NO_3^- 4/93
 2 ml STOCK SOLUTION F^- 4/93
 + DI WATER TO 1000 ml STOCK SOLUTIONS
 P211 N_2 PURGED 95°C Hg THERMO 1238004

START PH 8.031

END PH 9.485

POTENTIOSTAT ESC 440-1 CHANNEL #2 DATA

SAVED AS REPTIM 29.DAT USING REPTIMER.WAB.

REFERENCE SCE FISHER 13-620-51 SN 0165403

E_{CORR} -677 mV KEITHLEY 614E_{PT} -354 mV " " " "

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 400 mV FOR 6 HOURS

REPASSIVATION 160 mV

SPECIMEN STARTED 3:50 PM 4/28/93

SPECIMEN STOPPED 8:26 AM 4/29/93

RUNTIME 59,000 SEC

REPASSIVATION TIME DID NOT REPASSIVATE

CHARGE DENSITY 182 C/ cm^2

WEIGHT LOSS 0.35582g

David D. 4/30/93

4/28/93

REPASSIVATION TIME R6PTIM 30.DAT

SPECIMEN ALLOY 825 NN4371FG 600S.C

PREPARED SAME AS R6PTIM 21 P160

 $l = 1.914$ $d = 0.249$ WGT AREA $\approx 8.0 \text{ cm}^2$

START WT 11.84023g

END WT 11.67757g

SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-} 10 PPM NO_3^- 2 PPM F^- 1000 ml MADE AS FOLLOWS:

1.65142g NaCl LOT 922649A

0.12074g NaHCO_3 LOT 89778920 ml SO_4 - 4/93 STOCK SOLUTION10 ml NO_3 - 4/93 " "2 ml F^- - 4/93 " "

+ DI WATER TO 1000 ml STOCK SOLUTIONS

PAGE 211 $T = 95^\circ\text{C}$ N_2 TNGRND 1238001 N_2 PURGED

START PH 8.150

END PH 9.503

POTENTIOSTAT ESC 440-1 CHANNEL #3 DATA SAVED

AS R6PTIM 30.DAT USING R6PTIMER.WBB

REFERENCE SC6 FISHER 13-620-S1 SN 0169033

 $E_{\text{CORR}} = -551 \text{ mV}$ KESTINLEY 614 $E_{\text{PT}} = -293 \text{ mV}$ " "

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 400 mV FOR 6 HOURS

REPASSIVATION 170 mV

SPECIMEN STARTED 3:54 pm 4/28/93

SPECIMEN STOPPED 8:25 am 4/29/93

RUNTIME 54,000 SEC

REPASSIVATION TIME DID NOT REPASSIVATE

CHARGE DENSITY 79.4 C/ cm^2

WEIGHT LOSS 0.16266g

Dana D 4/30/93

4/28/93

REPASSIVATION TIME R6PTIM 31.DAT

SPECIMEN ALLOY 825 NN4371FG 600S.C

PREPARED SAME AS R6PTIM 21 P160

 $l = 1.913$ $d = 0.249$ WGT AREA $\approx 8.0 \text{ cm}^2$

START WT 11.69730g

END WT 11.56124g

SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-} 7/27/9410 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS

1.65063g NaCl LOT 922649A

0.11855g NaHCO_3 LOT 89778920 ml SO_4 - 4/93 STOCK SOLUTION10 ml NO_3 - 4/93 " "2 ml F^- - 4/93 " "

+ DI WATER TO 1000 ml STOCK SOLUTIONS

PAGE 211, $T = 95^\circ\text{C}$, N_2 TNGRND 0323004, N_2 PURGED

START PH 8.177

END PH 9.631

POTENTIOSTAT ESC 440-1 CHANNEL #4 DATA SAVED

AS R6PTIM 31.DAT USING R6PTIMER.WBB

REFERENCE SC6 FISHER 13-620-S1 SN 2134032

 $E_{\text{CORR}} = -603 \text{ mV}$ KESTINLEY 614 $E_{\text{PT}} = -42 \text{ mV}$

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 400 mV FOR 6 HOURS

REPASSIVATION 180 mV

SPECIMEN STARTED 3:58 am 4/28/93

SPECIMEN STOPPED 4/29/93 8:15 am

RUNTIME 58,300 SEC

REPASSIVATION TIME DID NOT REPASSIVATE

CHARGE DENSITY 66.7 C/ cm^2

WEIGHT LOSS 0.13606g

LOGIC ERROR SET REPASSIVATION POTENTIAL AT 161 mV

INSTEAD OF 180 mV

Dana D 4/30/93

5/4/93

REPTIM 32 REPASSIVATION TIME

SPECIMEN ALLOY 825 NN4371FG 600 S.C

CLEANED SAME AS REPTIM 21 P160

 $R_c = 1.914$ $d = 0.248$ $WGT AREA = 8.10$

START WT 11.82219

END WT 11.66317

DD 7/27/94

SOLUTION 1000 PPM Cl^- 85 PPM $NaCO_3$ ~~8F~~20 PPM SO_4^{2-} 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS

1.64929 g NaCl LOT 922649A

0.11802 g $NaHCO_3$ LOT 89778920 ml SO_4^{2-} 5/93 STOCK SOLUTION10 ml NO_3^- 5/932 ml F^- 5/93

+ DI WATER TO 1000 ml STOCK SOLUTIONS

P 226 T = 95°C N_2 THERMO 0323007 N_2 PURGED.

START PN 8.13

END PN 9.27

POTENTIOSTAT ESC 440-1 CHANNEL #2 DATA

SAVED AS REPTIM 32.DAT USING REPTIMER.WBB

REFERENCE SCE FISHER 13-620-S1 SN 0165403

 $E_{CORR} = -640$ mV SCE KBITNET 614 $E_{PT} = -156$ mV SCE

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 400 mV FOR 6 HOURS

REPASSIVATION 160 mV

SPECIMEN STARTED 5/4/93 5:50 pm

SPECIMEN STOPPED 5/5/93 10:00 am

RUNTIME 60,000 SEC

REPASSIVATION TIME DID NOT REPASSIVATE

CHARGE DENSITY 80 C/cm²

WEIGHT LOSS 0.115902

DD 5/5/93

5/4/93

REPTIM 33 REPASSIVATION TIME

SPECIMEN ALLOY 825 NN4371FG 600 S.C

CLEANED SAME AS REPTIM 21 P160

 $R_c = 1.915$ $d = 0.246$ $WGT AREA = 8.10$ cm²

START WT 11.71349

END WT 11.58831

SOLUTION 1000 PPM Cl^- 85 PPM $NaCO_3$ 20 PPM SO_4^{2-} 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS

1.64818 g NaCl LOT 922649A

0.11847 g $NaHCO_3$ LOT 89778920 ml SO_4^{2-} 5/93 STOCK SOLUTIONS10 ml NO_3^- 5/932 ml F^- 5/93

+ DI WATER TO 1000 ml STOCK SOLUTIONS

P 226 T = 95°C N_2 THERMO 1238004 N_2 PURGED.

START PN 8.21

END PN 9.33

POTENTIOSTAT ESC 440-1 CHANNEL #3 DATA

SAVED AS REPTIM 33.DAT USING REPTIMER.WBB

REFERENCE SCE FISHER 13-620-S1 SN 2134032

 $E_{CORR} = -724$ mV $E_{PT} = -240$

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 400 mV FOR 6 HOURS

REPASSIVATION ~~160 mV~~ 170 mV

SPECIMEN STARTED 5/4/93 5:52 pm

SPECIMEN STOPPED 5/5/93 10:00 am

RUNTIME 60,000 SEC

REPASSIVATION TIME DID NOT REPASSIVATE.

CHARGE DENSITY 88 C/cm²

WEIGHT LOSS 0.175189

DD 7/27/94

DD 5/5/93

5/7/93

STOCK SOLUTIONS...

SO₄ - 5/93 1000 PPM SO₄⁻
 1.48505 g Na₂SO₄ LOT 901213 +
 DI WATER TO 1000 ml EXP 6/6/93

NO₃ - 5/93 1000 PPM NO₃⁻
 1.37662 g NaNO₃ LOT 89783 +
 DI WATER TO 1000 ml EXP 6/6/93

F⁻ - 5/93 1000 PPM F⁻
 2.21413 g NaF LOT 896405 + DI
 WATER TO 1000 ml EXP 6/6/93

1M Cl⁻ - 5/93 1 MOLAR Cl⁻
 58.44197 g NaCl LOT 922649A +
 DI WATER TO 1000 ml EXP 6/6/93

0.5M Cl⁻ - 5/93 0.5 MOLAR Cl⁻
 29.22179 g NaCl LOT 922649A +
 DI WATER TO 1000 ml EXP 6/6/93

1000 Cl⁻ - 5/93 3.29230 g NaCl
 LOT 922649A + DI WATER TO 2000 ml
 1000 PPM Cl⁻ AS NaCl EXP 6/6/93

100 Cl⁻ - 5/93 100 PPM Cl⁻
 100 ml 1000 Cl⁻ - 5/93 + 900 ml
 DI WATER EXP 6/6/93

David D 5/7/93

5/7/93

REPTIM 34

ALLOY 825

REPASSIVATION TIME

SPECIMEN ALLOY 825 NH437IFG 600S.C
 CLEANED SAME AS REPTIM 21 P160
 L = 1.912 d = 0.248 WGT AREA = 8.0 cm²
 START WT 11.85735
 END WT 11.37564

SOLUTION 1000 PPM Cl⁻ 85 PPM NCO₃ 20 PPM SO₄⁻
 10 PPM NO₃ 2 PPM F⁻ 1000 ml AS FOLLOWS.
 1.64857 g NaCl LOT 922649A
 0.11947 g NaNCO₃ LOT 897789
 20 ml SO₄ - 5/93 STOCK SOLUTION
 10 ml NO₃ - 5/93 "
 2 ml F⁻ - 5/93 "

+ DI WATER TO 1000 ml STOCK
 SOLUTIONS P 226 T = 95°C N₂ THERMO
 # 1238004 N₂ PURGED

START PH 8.204

END PH 9.020

POTENTIOSTAT ESC 440-1 CHANNEL #2 DATA
 SAVED AS REPTIM 34.DAT USING REPTIMER.WBB

REFERENCE SCE FISHER 13-620-S1 SN 0165403

E CORR -684 mV KEITHLEY 614

EPT -110 mV

PIT INITIATION 600 mV FOR ~~30 min~~ 60 min *DD 7/27/94*

PIT GROWTH 400 mV FOR 33 HOURS

REPASSIVATION -0.050 V SCE

SPECIMEN STARTED 2:00 PM 5/7/93

SPECIMEN STOPPED 3:33 PM 5/10/93

RUNTIME 273000 SEC

CORR DENSITY 235 C/cm²

WEIGHT LOSS 0.48171 g

REPASSIVATION TIME 569 SEC

David D 5/10/93

5/7/93

R6PTIM35 ALLOY 825 REPASSIVATION TIME

SPECIMEN: ALLOY 825 H4371 FG 600 S.C

PREPARED SAME AS R6PTIM 21 P160

 $l = 1.915$ $d = 0.246$ $WT\ AREA = 8.0\ cm^2$

START WT 11.64536

END WT 11.24499

DD

SOLUTION 1000 PPM Cl^- 85 PPM $NaCO_3$ 20 PPM Na_2SO_4 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS1.64852 g $NaCl$ LOT 922649A0.11980 g $NaHCO_3$ LOT 89778920 ml SO_4 - 5/93 STOCK SOLUTION10 ml NO_3 - 5/93 STOCK SOLUTION2 ml F^- - 5/93 STOCK SOLUTION

+ DI WATER TO 1000 ml STOCK

SOLUTIONS P226 $T = 95^\circ C$ $H_2TNERMB$ # 1238001 N_2 PURGED

START PN 8.170

END PN 9.065

POTENTIALSTAT ESC 440-1 CHANNEL #3 DATA

SAVED AS R6PTIM35.DAT USING R6PTIMER.WBB

REFERENCE SCE F35NR 13-620-S1 SN Z134032

 $E_{CORR} = -686\ mV$ R6PTIMLEY 614 $E_{PT} = -256\ mV$ " " DD 7/21/94PIT INITIATION 600 mV FOR ~~30 min~~ 60 min

PIT GROWTH 400 mV FOR 33 HOURS

REPASSIVATION 0.0 V SCE

SPECIMEN STARTED 2:00 PM 5/7/93

SPECIMEN STOPPED 5:33 PM 5/10/93

RUNTIME 272970 SEC

REPASSIVATION TIME DID NOT REPASSIVATE

CHARGE DENSITY 249 C/ cm^2

WEIGHT LOSS 0.40037 g

5/10/93

5/11/93

CREVICE CORROSION EXPT 304L-2

SPECIMEN 304L HT# T0954 600 S.C FINISH

CLEANED IN ULTRASONIC BATH RINSED

WITH DI WATER ACETONE AND DRIED

 $l = 2.500$ $w = 0.497$ $t = 0.124$ AREA = 20.827 cm^2

START WT 21.14781 g

END WT NOT RECORDED

SOLUTION 1000 PPM Cl^- 85 PPM $NaCO_3$ 20 PPM Na_2SO_4 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS1.64886 g $NaCl$ LOT 922649A0.11986 g $NaHCO_3$ LOT 89778920 ml SO_4 - 5/93 STOCK SOLUTION10 ml NO_3 - 5/93 "2 ml F^- - 5/93 "

+ DI WATER TO 1000 ml

STOCK SOLUTIONS P226

START PN 8.211

END PN 8.077

SETUP SPECIMEN PLACED IN PLEXIGLASS CELL

WITH TWO PORTS TORQUED TO 20 IN OZ

USING PROTO 6103 CAL DUE TO 7/20/93

PORT #1 AT TIP

MI 200 Cl^- ISE FLEXABLE #44199

MI 506 GLASS PH #43720

MI 402/403 DOUBLE TUNCTION REFERENCE #41402

PORT #2 AT MOUTH

MI 200 Cl^- ISE FLEXABLE #44176

MI 506 GLASS PH #44060

MI 402/403 DOUBLE TUNCTION REFERENCE #43636

REFERENCE ELECTRODES IN BULK

MI 402 44629 REF FOR MI 200 44199 AT TIP

MI 402 41436 REF FOR MI 506 43720 AT TIP

MI 402 44671 REF FOR MI 200 44176 AT MOUTH

MI 402 44628 REF FOR MI 506 44060 AT MOUTH

5/11/93

CREVIC CORROSION 304L-2

BULK ELECTRODES

MI 200 CI ISE # 42983

MI 402 Ag/AgCl REF # 43647

MI 506 GLASS PH # 44817

MI 402 Ag/AgCl REF # 45860

FISHER 13-620-S3 SN 8118182 REFERENCE Ag/AgCl

CI TIP TO ORION EA920 SN 5001A AND ABB SE120 0515265

CI BULK TO ORION EA920 SN 5001A AND ABB SE120 0515265

CI MOUTH TO ORION 720A IO 5885 AND ABB SE120 0049616

PH TIP TO ORION EA940 SN 2330 AND ABB SE120 0515265

PH BULK TO ORION EA940 SN 2330 AND ABB SE120 0515265

PH MOUTH TO ORION 720A 003368 AND ABB SE120 0049616

FISHER 13-620-S3 SN 8118182 TO CHANNEL #1
OF ESC 440 #2TIP REFERENCE TO CHANNEL #3 OF ESC 440 #2
MOUTH REFERENCE TO CHANNEL #2 OF ESC 440 #2PT COUNTER ELECTRODE AND SPECIMEN CONNECTED
TO ESC 440-2 CHANNEL #1PLEXIGLASS CELL WITH SPECIMEN PLACED IN
GLASS CELL WITH PLEXIGLASS LID ENTIREASSEMBLY PLACED IN FARADAY CAGE ON 5/11/93
AT 2:45 PM SOLUTION WAS NOT DEAERATED.PRIOR TO ASSEMBLY ELECTRODES WERE CALIBRATED
USING 100 PPM Cl^- 1000 PPM Cl^- 0.5 M Cl^-
1.0 M Cl^- AND 2.5 M Cl^- PH ELECTRODES
WERE CALIBRATED USING BUFFERS 1.00, 4.00,
7.00, AND 10.00.

5/11/93

CREVIC CORROSION 304L-2

PH TIP MI 506 / MI 402 41436 / 43726

mV = ~~77.7 (V)~~ ^{77.7 (V)} - 56.51 (PH) + 392.887

pH = -17.7 (V) + 7.04

PH BULK MI 506 / MI 402 44817 / 45860

mV = -58.47 (PH) + 386.11

pH = -17.1 (V) ^{77.7 (V)} + 7.01 + 6.60

PH MOUTH MI 506 / MI 402 44060 / 44628

mV = -58.4533 (PH) + 409.793

pH = -17.1 V ^{77.7 (V)} + 7.01

CI TIP MI 200 / MI 402 44199 / 44629

mV = -23.4852 $\ln(\text{PPM } \text{Cl}^-)$ + 275.901PPM Cl^- = $\text{EXP}[-0.0426 \text{ mV} + 11.7479]$

CI BULK MI 200 / MI 402 42983 / 43647

mV = -23.7019 $\ln(\text{PPM } \text{Cl}^-)$ + 279.653PPM Cl^- = $\text{EXP}[-0.0422 \text{ mV} + 11.7973]$

CI MOUTH MI 200 / MI 402 44176 / 44671

mV = -21.6523 $\ln(\text{PPM } \text{Cl}^-)$ + 260.659PPM Cl^- = $\text{EXP}[-0.0462 \text{ mV} + 12.038]$

INITIAL CONDITIONS AT START OF EXPT 5/11/93 3:00 PM

POTENTIALS

TIP -0.216 Ag/AgCl

MOUTH -0.236 Ag/AgCl

SPECIMEN -0.223 Ag/AgCl

pH

TIP 7.47 -28.5 mV

MOUTH 8.20 -75.0 mV

BULK 8.44 -85.4 mV

CI

TIP 79.5 mV

MOUTH 107.3 mV

BULK 110.0 mV

5/11/93

CREVICE CORROSION 304L-2

3:00 PM POTENTIAL SET AT 0.100 V A_2/A_1 CI
 TIMER STARTED FROM 0 SEC *David D 5/11/93*

5/12/93

8:00 AM POTENTIAL CHANGED TO 0.0 V A_2/A_1 CI
 TIMER = 61160 SEC CI TIP READING
 320 mV *David D 5/12/93*

T = 90261 SEC POTENTIOSTAT TURNED OFF

5/13/93

9:00 AM 0.10V APPLIED CI TIP READING CORRECTLY
 mV = 95 *David D 5/13/93*

5/14/93

265100 SEC 4:40 PM EXPT STOPPED
 CI ELECTRODE IN TIP STILL NOT
 PERFORMING WELL AND IS VERY
 NOISY. EXPERIMENT ENDED.

David D 5/14/93

5/21/93

CHLORINE AT TIP VARIED FROM 90 mV
 TO 325 mV IN THE RANGE OF DATA
 RECORDED SHORTLY AFTER START OF
 EXPERIMENT CI AT TIP WENT OFF
 SCALE OR GREATER THAN 200 mV

PN AT TIP VARIED FROM 0 mV TO +350 mV
 OR FROM pN 7.04 TO pN 0.8 LOW
 PN READINGS CORRESPONDED WITH LOW
 CI CONCENTRATIONS AT THIS LOCATION.
 SIGNAL WAS AT TIMES VERY NOISY.

CHLORINE AT MOUTH VARIED FROM 140 mV
 TO 108 mV OR FROM 1151 ppm TO 262 ppm
 SIGNAL WAS AT TIMES VERY NOISY ESPECIALLY
 NEAR THE END OF THE EXPERIMENT. LARGE
 SPIKE IN CI READING OCCURRED AT t = 61160 SEC

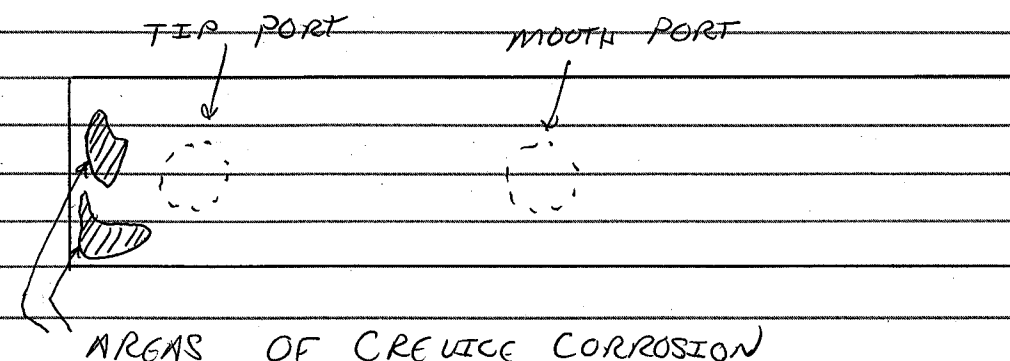
5/21/93

CREVICE CORROSION 304L-2

WNGN POTENTIAL WAS CHANGED TO 0.0 V
 INDICATING POSSIBLE INTERFERENCE WITH
 EXTERNAL ELECTRODE.

PN AT MOUTH VARIED FROM +50 TO
 -50 mV OR FROM pN 6.15 TO 7.92
 PN GRADUALLY DECREASED THROUGHOUT COURSE
 OF EXPERIMENT SIGNAL WAS SOMEWHAT
 NOISY. SPIKE IN PN ELECTRODE OUTPUT
 OCCURRED AT t = 61160 SEC INDICATING POSSIBLE
 INTERFERENCE WITH EXTERNAL ELECTRODE.

DRAWING OF TOP OF CREVICE SPECIMEN



NO CREVICE CORROSION WAS OBSERVED ON
 BOTTOM SIDE OF SPECIMEN.

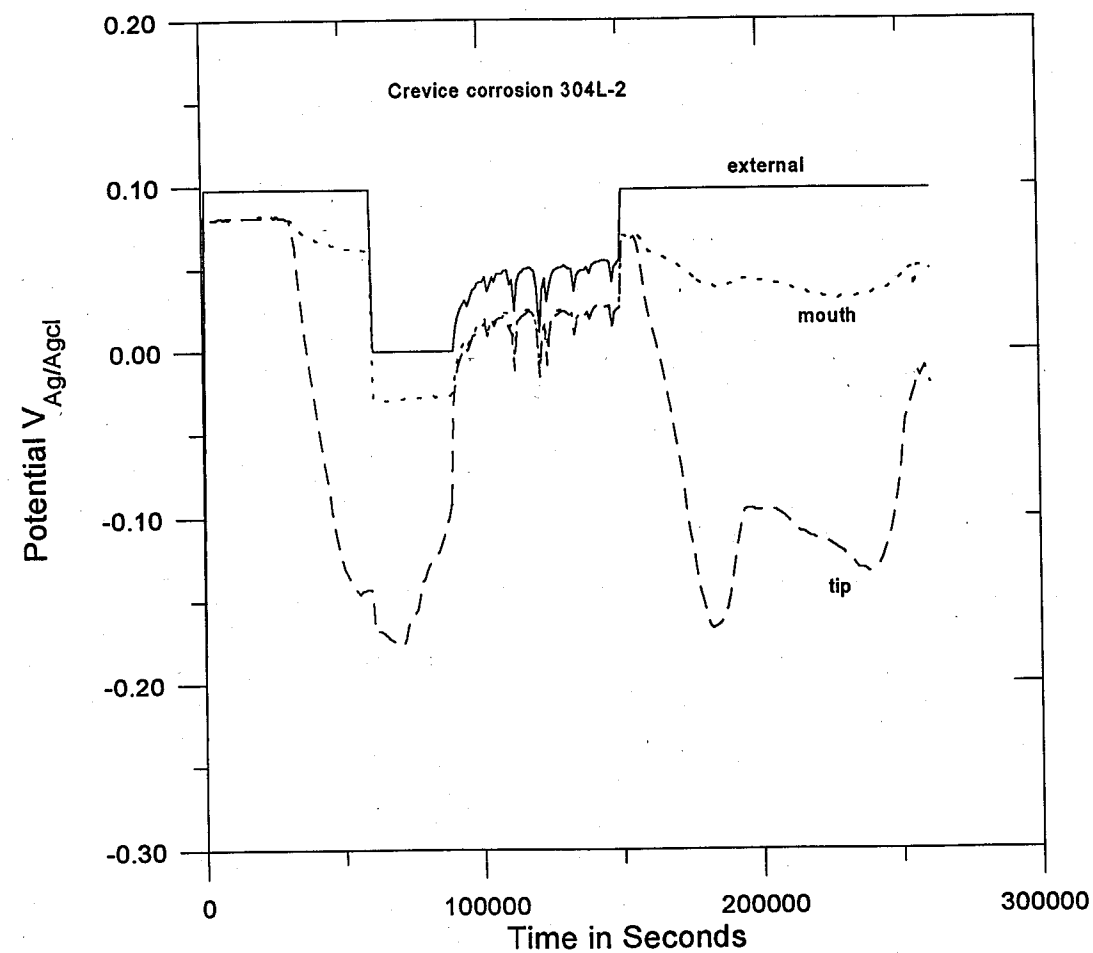
DATA FILE SAVED AS 304L-2.DAT USING
 CREVICE.WBB

David D 5/21/93

PN AND CI-ISE CALIBRATION DATA SAVED AS
 304L2.CAL.DAT ON IUPUI-025 DISK 4/21/94
David D

5/21/93

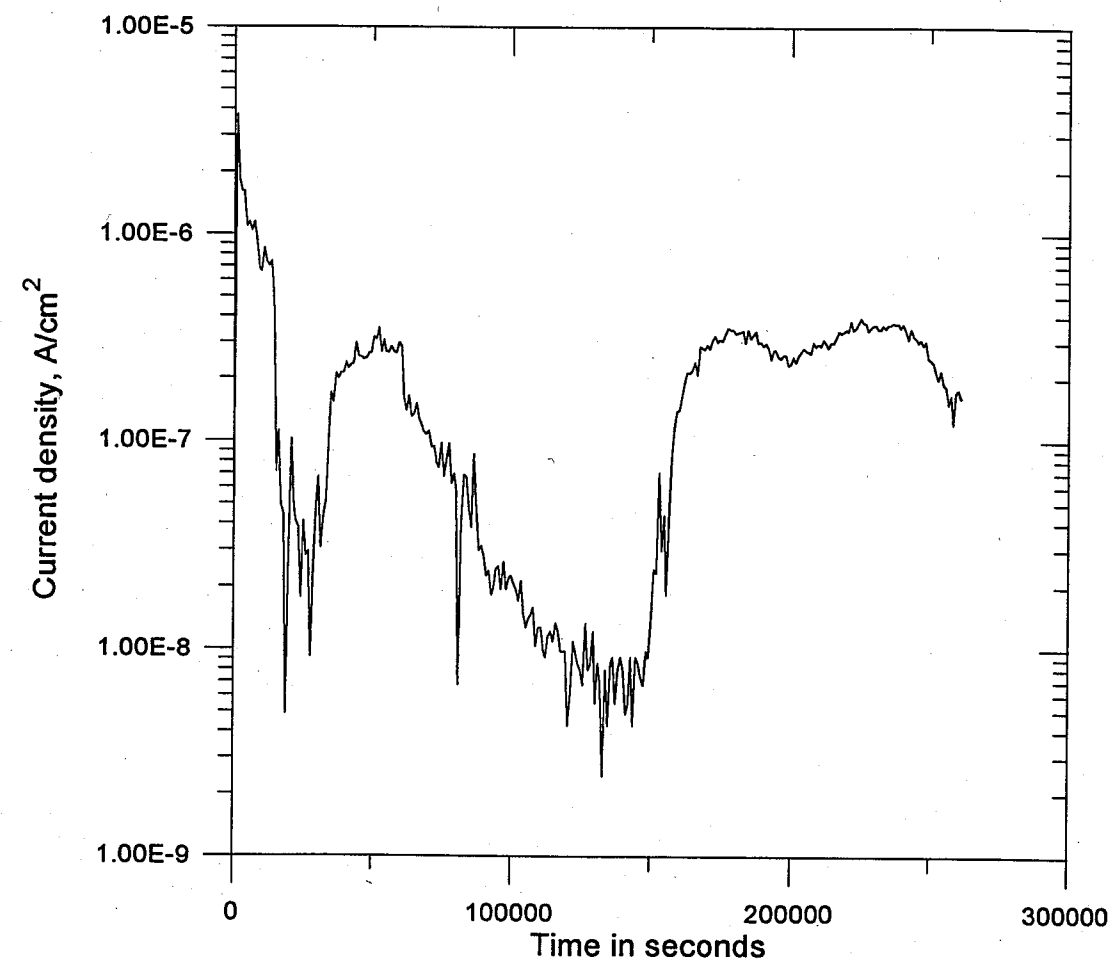
CREVICE CORROSION 304L-2



David D.
5/21/93

5/21/93

CREVICE CORROSION 304L-2



David D.
5/21/93

236

5/13/93

REPTIM 36

REPASSIVATION TIME

SPECIMEN ALLOY 825 H4371FG 600SiC

CLEANED SAME AS REPTIM 21 P160

 $l = 1.913$ $d = 0.248$ WGT AREA = 8.0 cm^2

START WT 11.83055 g

END WT 11.38002 g

SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-} 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS

1.65024 g NaCl LOT 922649A

0.11819 g NaHCO_3 LOT 89778920 ml STOCK SOLUTION SO_4^{2-} - 5/9310 ml NO_3^- - 5/932 ml F^- - 5/93

+ DI WATER TO 1000 ml STOCK SOLUTIONS

P 226 $T = 95^\circ\text{C}$ N₂ TNGRMD 1238004

DEAERATED WITH NITROGEN

START PH 8.171

END PH 9.118

POTENTIOSTAT ESC 440-1 CHANNEL # 2 DATA

SAVED AS REPTIM36.DAT USING REPTIMER.WBB

REFERENCE SCE FISHER 13-620-S1 SN 0165415

 $E_{\text{CORR}} = -733 \text{ mV}$ $E_{\text{PT}} = -254 \text{ mV}$

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 400 mV FOR 33 HOURS

REPASSIVATION -40 mV

SPECIMEN STARTED 11:23 AM 5/13/93

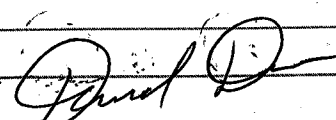
SPECIMEN STOPPED 11:15 AM 5/15/93

RUNTIME 174,360 SEC

REPASSIVATION TIME 481 SEC

CHARGE DENSITY 218 C/cm^2

WEIGHT LOSS 0.45053 g

 5/15/93

237

5/13/93

REPTIM 37 REPASSIVATION TIME

SPECIMEN ALLOY 825 600SiC

CLEANED SAME AS REPTIM 21 P160

 $l = 1.913$ $d = 0.248$ WGT AREA = 8.0 cm^2

START WT 11.76750 g

END WT 11.29108 g

SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-} 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS0.11904 g NaHCO_3 LOT 897789

1.64908 g NaCl LOT 922649A

20 ml SO_4^{2-} - 5/9310 ml NO_3^- - 5/932 ml F^- - 5/93

+ DI WATER TO 1000 ml STOCK SOLUTIONS

P 226 $T = 95^\circ\text{C}$ N₂ TNGRMD 0323007

DEAERATED WITH NITROGEN

START PH 8.094

END PH 9.178

POTENTIOSTAT ESC 440-1 CHANNEL # 3 DATA

SAVED AS REPTIM37.DAT USING REPTIMER.WBB

REFERENCE SCE FISHER 13-620-S1 SN 0169033

 $E_{\text{CORR}} = -757 \text{ mV}$ $E_{\text{PT}} = -257 \text{ mV}$

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 400 mV FOR 33 HOURS

REPASSIVATION -30 mV

SPECIMEN STARTED 11:29 AM 5/13/93

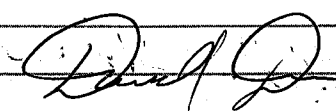
SPECIMEN STOPPED 11:13 AM 5/15/93

RUNTIME 173,800 SEC

REPASSIVATION TIME 977 SEC

CHARGE DENSITY 231 C/cm^2

WEIGHT LOSS 0.47642 g

 5/15/93

REPTIM 38 REPASSIVATION TIME

SPECIMEN ALLOY 825 HN 4371FG 600S.C
 PREPARED SAME AS R6PTIM 21 P160
 $l = 1.911$ $d = 0.248$ $WGT AREA = 8.0 cm^2$
 START WT 11.91772g
 END WT 11.63853g

SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS
 1.64902g NaCl LOT 922649A
 0.11926g $NaHCO_3$ LOT 897789
 20ml SO_4^{2-} - 5/93
 10ml NO_3^- - 5/93
 2ml F^- - 5/93

+ DI WATER TO 1000 ml STOCK SOLUTIONS
 P 226 $T = 95^\circ C$ Hg THERMO# 1238001

DEAERATED WITH NITROGEN

START PH 8.072

END PH 9.138

POTENTIostat ESC 440-1 CHANNEL # 4 DATA
 SAVED AS REPTIM 38.DAT USING REPTIMER.WBB

REFERENCE SCE FISHER 13-620-S1 SN 8211163

E_{CORR} - 749 mV

E_{PT} - 298 mV

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 400 mV FOR 33 HOURS

REPASSIVATION - 60 mV

SPECIMEN STARTED 11:33 AM 5/13/93

SPECIMEN STOPPED 11:13 AM 5/13/93

RUNTIME 173400 SEC

REPASSIVATION TIME 721 SEC

CHARGE DENSITY 134 C/cm²

WEIGHT LOSS 0.27919g

SAMPLE MOUNTED IN BAKELITE AND SECTIONED

David D. 5/16/93

5/19/93

R6PTIM 34 REPASSIVATION TIME

SPECIMEN ALLOY 825 HN 4371FG 600S.C
 PREPARED SAME AS REPTIM 21 P160
 $l = 1.915$ $d = 0.248$ $WGT AREA 8.0 cm^2$
 START WT 11.82507
 END WT 11.42881g

SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS
 1.64831g NaCl LOT 922649A
 0.11918g $NaHCO_3$ LOT 897789
 20ml SO_4^{2-} - 5/93
 10ml NO_3^- - 5/93
 2ml F^- - 5/93

+ DI WATER TO 1000 ml STOCK SOLUTIONS

P 226 $T = 95^\circ C$ Hg THERMO 1238004

DEAERATED WITH NITROGEN

START PH 8.141

END PH 9.051

POTENTIostat ESC 440-1 CHANNEL # 2 DATA

SAVED AS ~~REPTIM 34~~ ^{5/21/93} REPTIM 39.DAT USING REPTIMER.WBB

REFERENCE SCE FISHER 13-620-S1 SN 9214083

E_{CORR} - 726 mV

E_{PT} - 57 mV

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 400 mV FOR 33 HOURS

REPASSIVATION - 20 mV

SPECIMEN STARTED 4:30 PM 5/19/93

SPECIMEN STOPPED 8:00 AM 5/21/93

RUNTIME 143,000

REPASSIVATION TIME 1005 SEC

CHARGE DENSITY 193 C/cm²

WEIGHT LOSS 0.39626g

David D. 5/21/93

5/19/93

REPTIM 40 REPASSIVATION TIME

SPECIMEN ALLOY 825 NN4371FG 600SiC
 PREPARED SAME AS REPTIM 21 P160
 $L = 1.915$ $d = 0.248$ WGT AREA = 8.0 cm^2
 START WT 11.87470
 END WT 11.27739

SOLUTION 1000 PPM Cl^- 85 PPM NaCO_3 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS
 1.64979 g NaCl LOT 922649A
 0.12095 g NaHCO_3 LOT 897789
 20 ml SO_4 - 5/93
 10 ml NO_3 - 5/93
 2 ml F^- - 5/93

+ DI WATER TO 1000 ml STOCK SOLUTIONS
 P 226 $T = 95^\circ\text{C}$ N_2 THERMO 0323007
 DEAERATED WITH NITROGEN

START PN 8.104

END PN 9.103

POTENTIOSTAT ESC 440-1 CHANNEL #3 DATA
 SAVED AS REPTIM40.DAT USING R6PTIMER.WBB

REFERENCE SCE FISHER 13-620-51 SN 0165415

 $E_{\text{CORR}} = -710 \text{ mV}$ $E_{\text{PT}} = -49 \text{ mV}$

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 400 mV FOR 33 HOURS

REPASSIVATION -0.013V

SPECIMEN STARTED 4:35 pm 5/19/93

SPECIMEN STOPPED 8:00 am 5/21/93

RUNTIME 143,000 SEC

REPASSIVATION TIME 663 SEC

CHARGE DENSITY 289 C/cm^2

WEIGHT LOSS 0.59731g

SAMPLE MOUNTED IN BARELITE AND SECTIONED

Daniel Q 5/21/93

5/19/93

REPTIM 41 REPASSIVATION TIME

SPECIMEN ALLOY 825 NN4371FG 600SiC
 PREPARED SAME AS REPTIM 21 P160
 $L = 1.913$ $d = 0.249$ WGT AREA = 8.0 cm^2
 START WT 11.87044
 END WT 11.52707g

SOLUTION 1000 PPM Cl^- 85 PPM NaCO_3 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS
 1.64891 g NaCl LOT 922649A
 0.11819 g NaHCO_3 LOT 897789
 20 ml SO_4 - 5/93
 10 ml NO_3 - 5/93
 2 ml F^- - 5/93

+ DI WATER TO 1000 ml STOCK SOLUTIONS
 P 226 $T = 95^\circ\text{C}$ N_2 THERMO 1238001
 DEAERATED WITH NITROGEN

START PN 8.132

END PN 9.071

POTENTIOSTAT ESC 440-1 CHANNEL #4 DATA SAVED
 AS REPTIM41.DAT USING R6PTIMER.WBB

REFERENCE SCE FISHER 13-620-51 SN 8211163

 $E_{\text{CORR}} = -744 \text{ mV}$ $E_{\text{PT}} = -324 \text{ mV}$

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 400 mV FOR 33 HOURS

REPASSIVATION -4 mV

SPECIMEN STARTED 4:40 pm 5/19/93

SPECIMEN STOPPED 8:00 am 5/21/93

RUNTIME 143,000 SEC 7/22/94

REPASSIVATION TIME 663 SEC 1506 SEC

CHARGE DENSITY 170 C/cm^2

WEIGHT LOSS 0.34337g

Daniel Q 5/21/93

5/20/93

CREVIC CORROSION 304L-3

SPECIMEN 304L HT # T0954 600 S.C FINISH

CLEANED IN ULTRASONIC BATH, RINSED

WITH DI WATER, ACETONE AND DRIED

 $\rho = 2.500$ $w = 0.497$ $t = 0.122$ AREA = 20.75 cm^2

START WT = 21.09321g

END WT = 21.09320g

SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-} 10 PPM NO_3^- 2 PPM F^-

1.64631g NaCl LOT 922649A

0.11817g NaHCO_3 LOT 89778920 ml SO_4^{2-} 5/93 STOCK SOLUTION16 ml NO_3^- 5/93 "2 ml F^- 5/93 "

+ DI WATER TO 1000 ml STOCK SOLUTIONS

P 226

START PN 8.171

END PN 8.201

SETUP SAME AS 304L-2 P 229

PORT #1 AT TIP

MI 200 Cl^- ISE 44199

MI 506 GLASS PN 43720

MI 402/403 DOUBLE JUNCTION REFERENCE # 41402

PORT #2 AT MOUTH

MI 200 Cl^- ISE 44447

MI 506 GLASS PN 43717

MI 402/403 DOUBLE JUNCTION REFERENCE 43636

REFERENCE ELECTRODES IN BULK

MI 402 44629 REF FOR MI 200 44199 AT TIP

MI 402 41436 REF FOR MI 506 43720 AT TIP

MI 402 44671 REF FOR MI 200 44447 AT MOUTH

MI 402 44628 REF FOR MI 506 43717 AT MOUTH

5/20/93

CREVIC CORROSION 304L-3

BULK ELECTRODES

MI 200 42983 Cl^- ISEMI 402 43647 Ag/AgCl REF

MI 506 44817 GLASS PH

MI 402 45860 Ag/AgCl REFFISHER 13-620-53 SN 8118182 REFERENCE Ag/AgCl

CI TIP TO ORION EA 920 SN 5001A AND ABB SE120 0515265

CI BULK TO ORION EA 920 SN 5001A AND ABB SE120 0515265

CI MOUTH TO ORION 720A ID 5885 AND ABB SE120 0049616

PH TIP TO ORION EA 940 SN 2330 AND ABB SE120 0515265

PH BULK TO ORION EA 940 SN 2330 AND ABB SE120 0515265

PH MOUTH TO ORION 720A SN 003368 AND ABB SE120 0049616

FISHER 13-620-53 SN 8118182 TO ESC 440 #2 CHANNEL

#1

TIP REF TO CHANNEL #3 OF ESC 440 #2

MOUTH REF TO CHANNEL #2 OF ESC 440 #2

Pt COUNTER ELECTRODE AND SPECIMEN CONNECTED TO

ESC 440 #2 CHANNEL #1

PLEXI GLASS CELL WITH SPECIMEN AND ELECTRODES

PLACED IN GLASS VESSEL WITH PLEXI GLASS LID

AND ENTIRE ASSEMBLY WAS PLACED INSIDE

FARADAY CAGE ON 5/20/93 SOLUTION

WAS NOT DEGRADED

PRIOR TO ASSEMBLY ELECTRODES WERE CALIBRATED

USING STOCK SOLUTIONS 100 PPM Cl^- 1000 PPM Cl^- 0.5 M Cl^- 1.0 M Cl^- AND 2.5 M Cl^- PN

ELECTRODES WERE CALIBRATED USING BUFFERS

1.00, 4.00, 7.00 & 10.00

PN TIP MI 506 / MI 402 43720 / 41436

mV = $-55.9367(\text{PN}) + 392.077$ PN = $-17.9(\text{V}) + 7.00$

5/20/93

CREVIC CORROSION 304L-3

PH BULK MIS06 / MI 402 44817 / 45860
 $mV = -57.7633(PH) + 383.573$
 $pH = -17.3(V) + 6.64$
 PH MOUTH MIS06 / MI 402 43717 / 44628
 $mV = -55.7633(PH) + 395.823$
 $pH = -17.9(V) + 7.09$
 CI TIP MI 200 / MI 402 44199 / 44629
 $mV = -23.6724 \ln(\text{ppm CI}) + 278.238$
 $\text{ppm CI} = \text{EXP}[-0.0422 \text{ mV} + 11.753]$
 CI BULK MI 200 / MI 402 42983 / 43647
 $mV = -21.0842 \ln(\text{ppm CI}) + 254.279$
 $\text{ppm CI} = \text{EXP}[-0.0474 \text{ mV} + 12.059]$
 CI MOUTH MI 200 / MI 402 44447 / 44671
 $mV = -23.1872 \ln(\text{ppm CI}) + 269.509$
 $\text{ppm CI} = \text{EXP}[-0.0431 \text{ mV} + 11.623]$

Paul D 5/20/93

5/21/93

INITIAL CONDITIONS AT START OF TEST

10:55 AM

CI TIP = 93.8 PH TIP = -31.6 mV
 CI BULK = 104.1 PH BULK = -34.6 mV
 CI MOUTH = 101.4 PH MOUTH = -39.8 mV

POTENTIAL AT TIP = -116 mV
 POTENTIAL AT MOUTH = -87 mV
 $E_{\text{CORR}} = -125 \text{ mV}$

AT 11:05 AM $t = 64800 \text{ SEC}$ $V_{\text{SET}} = 0.0 \text{ V}$

5/26/93

AT 7:30 AM $t = 483960 \text{ SEC}$ $V_{\text{SET}} = 200 \text{ mV}$

AT 3:00 PM EXPERIMENT STOPPED.

Paul D 5/26/93

5/31/93

CREVIC CORROSION 304L-3

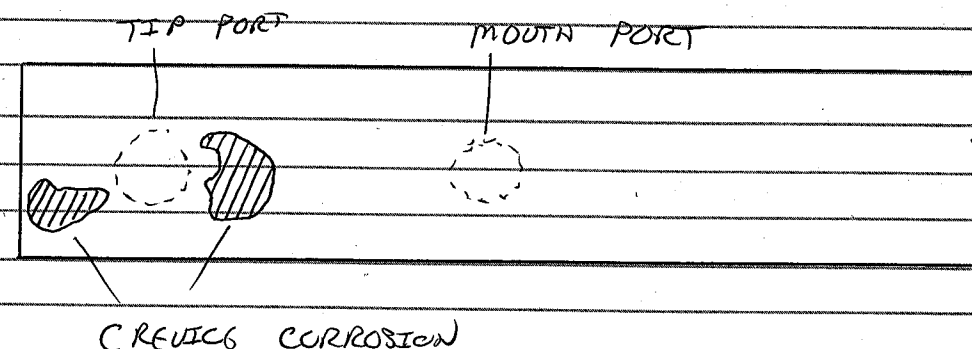
CHLORINE AT MOUTH REMAINED BETWEEN
 90 AND 100 mV OR 2423 ppm TO 1508 ppm

PH AT MOUTH REMAINED BETWEEN +40 AND
 +60 mV OR 6.37 TO 6.01

PH AT TIP VARIED FROM ~~7/22/94~~ -130 mV
 TO +40 mV OR 9.32 TO 6.28

CI AT TIP WAS ERRATIC AND VARIED
 FROM APPROXIMATELY 500 mV TO -30 mV
 INTERFERENCE WITH ANOTHER ELECTRODE OR A
 BAD CI REFERENCE MAY HAVE CAUSED THIS
 CONDITION.

TOP SIDE OF SPECIMEN



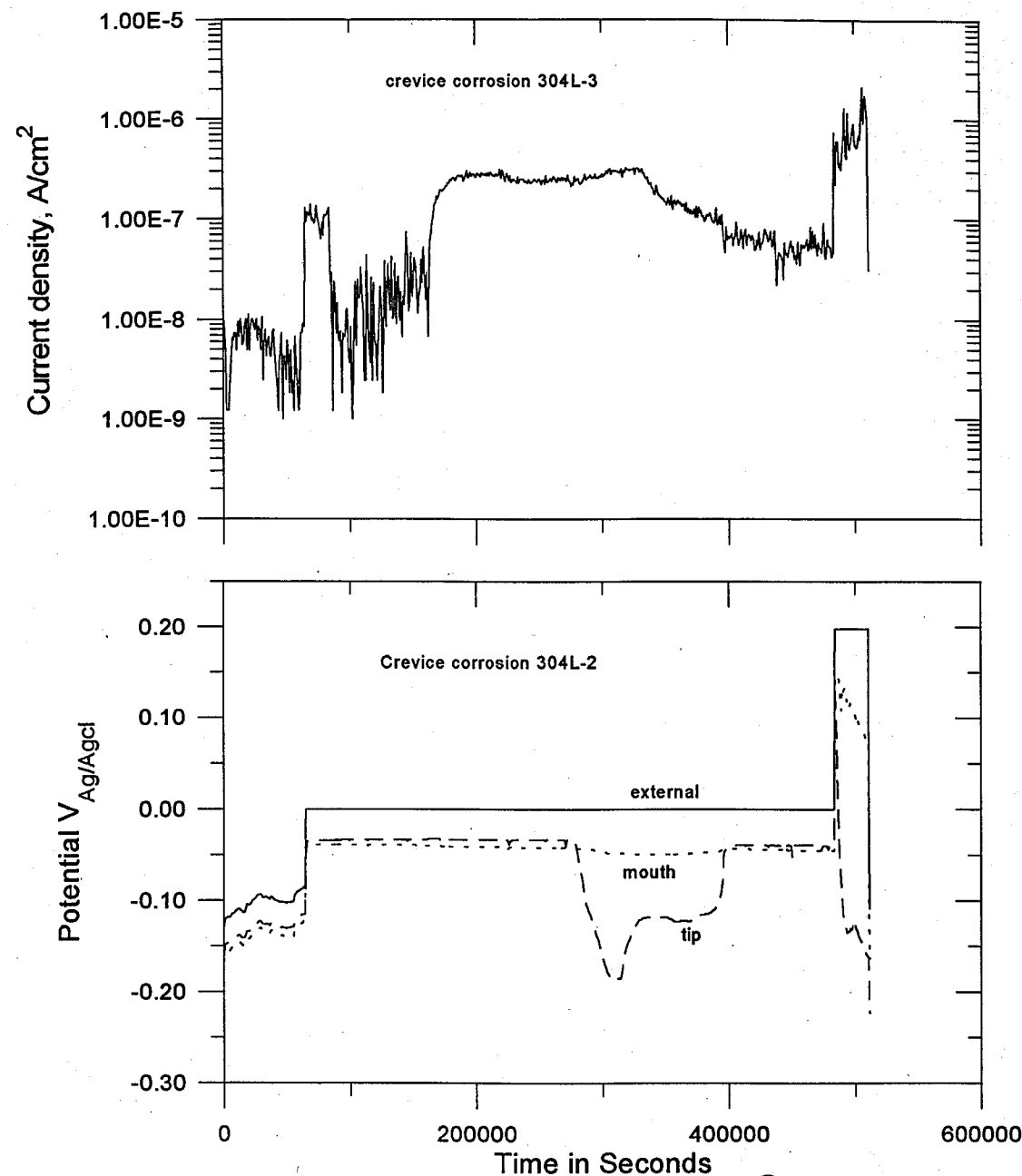
DATA FILE SAVED AS 304L-3.DAT USING
 CREVIC.WRB

Paul D 5/31/93

PH AND CI⁻ ISC CALIBRATION DATA SAVED AS
 304L3CAL.DAT ON IUPUI OZS-DISK *Paul D* 4/28/94

5/31/93

CREVICE CORROSION 304L-3



[Signature]
5/31/93

5/31/93

REPTIM 42

REPASSIVATION TIME

SPECIMEN ALLOY 825 NN4371FG 600SIC

PREPARED FROM AS REPTIM 21 P160

 $L = 1.914$ d. 0.251 WGT ARGON

START WT 11.9554g

END WT 11.60197g

SOLUTION 1000 ppm Cl^- 85 ppm $NaCO_3$ 20 ppm SO_4^{2-} 10 ppm NO_3^- 2 ppm F^- 1000 ml AS FOLLOWS1.65045 g $NaCl$ LOT 922649A0.12152 g $NaNO_3$ LOT 89778920 ml SO_4 - 5/93 STOCK SOLUTION10 ml NO_3 - 5/932 ml F^- - 5/93

+ DIWATER TO 1000 ml STOCK SOLUTIONS

P 226 $T = 95^\circ C$ N_2 THERMO 1238004

DEAERATED WITH NITROGEN

START PN 8.121

END PN 8.927

POTENTIOSTAT ESC 440 #1 CHANNEL # 2 DATA SAVED
AS REPTIM 42.DAT USING REPTIMER.WBB

REFERENCE SCE FISHER 13-620-51 SN 0165415

PLT INITIATION 600 mV FOR 30 min

PLT GROWTH 400 mV FOR 33 HOURS

REPASSIVATION 25 mV

 $E_{CORR} = -687$ mV KEITHLEY 614 $E_{PT} = -222$ mV

SPECIMEN STARTED 4:55 PM 5/26/93 RESTARTED 9:00 AM 5/27/93

SPECIMEN STOPPED 1:13 PM 5/31/93

RUNTIME 366,000 SEC

REPASSIVATION TIME DID NOT REPASSIVATE

CHARGE DENSITY 269 C/cm^2

WEIGHT LOSS 0.35352 g

SPECIMEN RESTARTED DUE TO LACK OF PITTING

AFTER 28 C/cm^2 PASSED PROBLEM DUE TO BAD

LUGGIN PROBE.

LUGGIN PROB LOST SOLUTION 5/30/93

[Signature]
5/31/93

5/26/93

REPTIM 43

REPASSIVATION TIME

SPECIMEN ALLOY 825 HN4371FG 600 SiC

PREPARED SAME AS REPTIM 21 P160

 $l = 1.912$ $d = 0.247$ WET AREA $\approx 8.0 \text{ cm}^2$

START WT 11.75108

END WT 11.42644g

SOLUTION 1000 PPM Cl^- 85 PPM NaCO_3 20 PPM SO_4^{2-} ~~1000 ml AS FOLLOWS~~ ^{DD 7/27/94}10 PPM NO_3^- 2 PPM F- 1000 ml AS FOLLOWS

1.64922 g NaCl LOT 922649A

0.11842 g NaHCO_3 LOT 89778920 ml SO_4^{2-} - 5/93 STOCK SOLUTION10 ml NO_3^- - 5/93 "

2 ml F- 5/93 "

+ DI WATER TO 1000 ml STOCK SOLUTIONS

P 226 T=95°C H₂ THERMO 0323007

DEAERATED WITH NITROGEN

START PH 8.093

END PH 8.934

POTENTIOSTAT ESC 440 #1 CHANNEL #3 DATA

SAVED AS REPTIM 43.DAT USING REPTIMER.WBB

REFERENCE SCE FISHER 13-620-S1 SN 8211163

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 400 mV FOR 33 HOURS

REPASSIVATION 15 mV

 E_{CORR} -690 mV KEITNEY 614 E_{PT} -244 mV

SPECIMEN STARTED 4:55 PM 5/26/93

SPECIMEN STOPPED 12:22 PM 5/29/93

RUNTIME 244,600 SEC

REPASSIVATION TIME 708 SEC

CHARGE DENSITY 194 C/cm²

WEIGHT LOSS 0.32464g

LOGGIN PROBE LOST SOLUTION SCE NOT

IN CONTACT WITH TEST SOLUTION

5/29/93

5/26/93

REPTIM 44

REPASSIVATION TIME

SPECIMEN ALLOY 825 HN4371FG 600 SiC

PREPARED SAME AS REPTIM 21 P160

 $l = 1.913$ $d = 0.248$ WET AREA $\approx 8.0 \text{ cm}^2$

START WT 11.89888g

END WT 11.48502g

SOLUTION 1000 PPM Cl^- 85 PPM NaCO_3 20 PPM SO_4^{2-} 10 PPM NO_3^- 2 PPM F- 1000 ml AS FOLLOWS

1.64879 g NaCl LOT 922649A

0.11835 g NaHCO_3 LOT 89778920 ml SO_4^{2-} - 5/93 STOCK SOLUTION10 ml NO_3^- - 5/93 "

2 ml F- 5/93 "

+ DI WATER TO 1000 ml STOCK SOLUTION

P 226 T=95°C H₂ THERMO 1238001

DEAERATED WITH NITROGEN.

START PH 8.132

END PH 9.052

POTENTIOSTAT ESC 440 #1 CHANNEL #3 DATA

SAVED AS REPTIM 44.DAT USING REPTIMER.WBB

REFERENCE SCE FISHER 13-620-S1 SN 9214083

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 400 mV FOR 33 HOURS

REPASSIVATION 5 mV

 E_{CORR} -706 mV E_{PT} -90 mV

SPECIMEN STARTED 4:55 PM 5/26/93

SPECIMEN STOPPED ~~DD 7/27/94~~ ^{DD 7/27/94} 12:30 PM 5/29/93RUNTIME ~~633 SEC~~ 244,000 SEC

REPASSIVATION TIME 633 SEC

CHARGE DENSITY 202 C/cm²

5/29/93

5/28/93

CREVICE CORROSION 304L-4

SPECIMEN 304L HT # T0954 600S.C FINISH

CLEANED IN ULTRASONIC BATH RINSED WITH

DI WATER, ACETONE AND DRIED

 $l = 2.501''$ $w = 0.498''$ $t = 0.123''$ AREA = 20.82 cm^2

START WT = 21.32562g

END WT = 21.32508g

SOLUTION 1000 ppm Cl^- 85 ppm HCO_3^- 20 ppm SO_4^{2-} 10 ppm NO_3^- 2 ppm F- 1000 ml AS FOLLOWS

1.64993g NaCl LOT 922649A

0.11909g NaHCO_3 LOT 89778920 ml SO_4 - 5/93 STOCK SOLUTION10 ml NO_3 - 5/93

2 ml F - 5/93

+ DI WATER TO 1000 ml

STOCK SOLUTIONS P 226

START PH 8.131

END PH 8.015

SETUP SAME AS 304L-2 P 229

PORT #1 AT TIP

MI 200 Cl^- ISE FLEXABLE # 47228MI 402/403 Ag/AgCl REF FOR MI 200 44629

MI 506 GLASS PH ELECTRODE 43720

MI 402/403 Ag/AgCl TIP REFERENCE 41402

PORT #2 AT MOUTH

MI 200 Cl^- ISE FLEXABLE 44447MI 402/403 Ag/AgCl REF FOR MI 200 44621

MI 506 GLASS PH ELECTRODE 43717

MI 402/403 Ag/AgCl REF FOR MOUTH 43636

BULK ELECTRODES

MI 402/403 41436 FOR MI 506 43720 AT TIP

MI 402/403 44628 FOR MI 506 43717 AT MOUTH

MI 506 44816 BULK PH

MI 402/403 45860 Ag/AgCl FOR MI 506 44817

5/28/93

CREVICE CORROSION 304L-4

BULK ELECTRODES CONT.

MI 200 42998 Cl^- ISE IN BULKMI 402 43647 Ag/AgCl REF FOR BULK MI 200

FISHER 13-620-53 SN 8118182

CI TIP TO ORION EA 920 SN 8001A AND ABB SEIZO 0515265 RECORDER

CI BULK TO ORION EA 920 SN 8001A AND ABB SEIZO 0515265 RECORDER

CI MOUTH TO ORION 720A ID 5885 AND ABB SEIZO 0049616 RECORDER

PH TIP TO ORION EA 940 SN 2330 AND ABB SEIZO 0515265

PH BULK TO ORION EA 940 SN 2330 AND ABB SEIZO 0515265

CI MOUTH TO ORION 720A 003368 AND ABB SEIZO 0049616

7/27/94

FISHER 13-620-53 13-620-53 SN 8118182 TO

CHANNEL #1 OF ESC 440 #2

TIP REFERENCE TO CHANNEL #3 OF ESC 440 #2

MOUTH REFERENCE TO CHANNEL #2 OF ESC 440 #2

Pt COUNTER ELECTRODE AND SPECIMEN CONNECTED

TO ESC 440 #2 CHANNEL #1

PLEXIGLASS CELL WITH SPECIMEN PLACED IN

GLASS VESSEL WITH PLEXIGLASS LID. ENTERIC

ASSEMBLY PLACED IN FARADAY CAGE ON

5/28/93 SOLUTION WAS NOT DEAERATED

PRIOR TO ASSEMBLY, ELECTRODES WERE CALIBRATED

USING 1000 ppm Cl^- 100 ppm Cl^- 0.5 m Cl^- 1.0 m Cl^- AND 2.5 m Cl^- PH ELECTRODES

WERE CALIBRATED USING BUFFERS 1.00, 4.00

7.00 AND 10.00

5/28/93

CREVICE CORROSION 304L-4

PH TIP MI 506 / MI 402

$$mV = -57.0667 (pH) + 400.767$$

$$pH = -17.5 (V) + 7.02$$

PH BULK MI 506 / MI 402

$$mV = -59.0567 (pH) + 390.187$$

$$pH = -16.9 (V) + 6.60$$

PH MOUTH MI 506 / MI 402

$$mV = -58.3333 (pH) + 407.783$$

$$pH = -17.1 (V) + 6.99$$

CI TIP MI 200 / MI 403

$$mV = -19.682 \ln(\text{ppm Cl}^-) + 243.27$$

$$\text{ppm Cl}^- = \text{Exp}[-0.0508 \text{ mV} + 12.36]$$

CI BULK MI 200 / MI 403

$$mV = -21.2495 \ln(\text{ppm Cl}^-) + 259.341$$

$$\text{ppm Cl}^- = \text{Exp}[-0.0471 \text{ mV} + 12.20]$$

CI MOUTH MI 200 / MI 403

$$mV = -21.4083 \ln(\text{ppm Cl}^-) + 263.153$$

$$\text{ppm Cl}^- = \text{Exp}[-0.0467 \text{ mV} + 12.29]$$

INITIAL CONDITIONS AT START OF EXPT

5/29/93 2:00 pm

	POTENTIALS	pH	Cl ⁻
TIP	-0.020	-25.8 mV	90.4 mV
BULK	0.018	-70.6 mV	112.6 mV
MOUTH	-0.028	-16.9 mV	89.9 mV

t = 64800 SEC VSOT 0.050 V Ag/AgCl

DATA SAVED AS 304L-4.DAT USING CREVIC6.WBR

5/29/93

PH AND Cl⁻ ISE CALIBRATION DATA SAVED AS 304L4CAL.DAT USING IWPE-025 DISK

4/28/94

6/14/93

CREVICE CORROSION 304L-4

PH AT TIP DECREASED TO +460 mV AT t = 417600 SEC

460 mV = pH - 1.03 WHICH IS OUT OF pH

CALIBRATION RANGE. pH SIGNAL WAS NOISY FROM

t = 313200 SEC WHEN THE EXTERNAL POTENTIAL WAS

CHANGED TO +200 mV. A SUDDEN DECREASE IN THE

PH ELECTRODE SIGNAL WAS OBSERVED AT t = 417600 SEC

WHEN EXTERNAL POTENTIAL WAS CHANGED TO 0.0 V

CI AT TIP REACHED A MAXIMUM OF 2954 ppm (86 mV)

AT t = 367200 SEC.

PH AT MOUTH DECREASED TO 5.79, SUDDEN

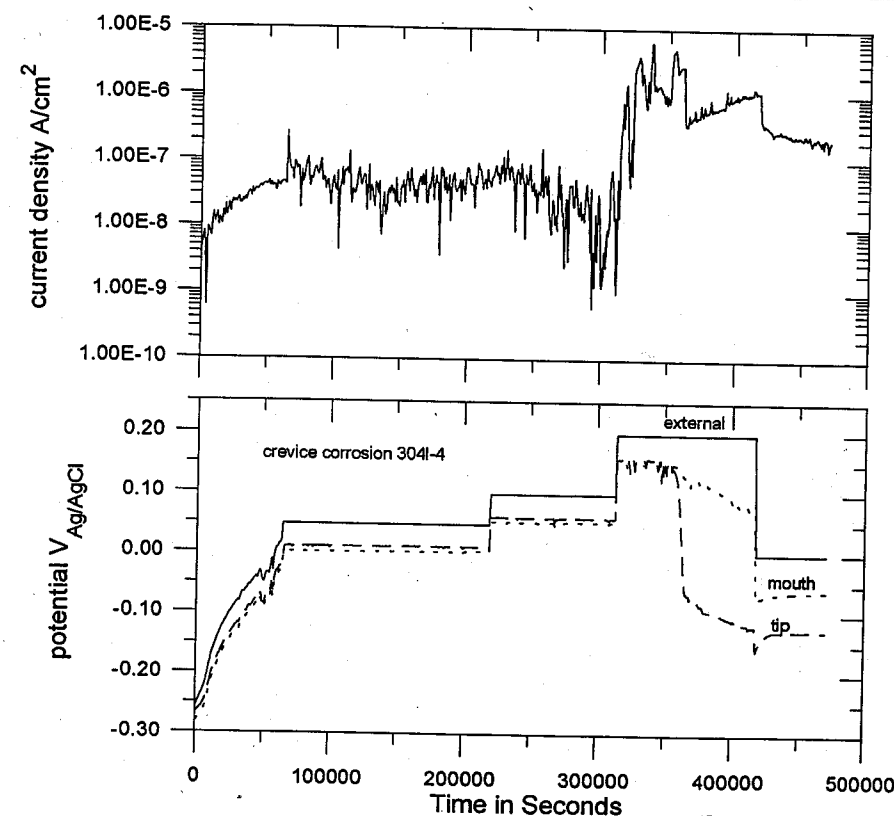
CHANGE IN PH WAS OBSERVED AT t = 417600 SEC

WHEN POTENTIAL WAS CHANGED TO 0.0 V. CI AT

MOUTH INCREASED THROUGHOUT COURSE OF EXPERIMENT

OUTPUT OF CI ELECTRODE AT END OF TEST = 79 mV

6/14/93



6/14/93

6/1/93

REPTIM 45 REPASSIVATION TIME

SPECIMEN ALLOY 825 NH4371FG 600S.C
 PREPARED SAME AS REPTIM 21 P160
 $l = 1.915$ $d = 0.250$ WET AREA = 8.0 cm^2
 START WT NOT RECORDED
 END WT 11.54864g

SOLUTION 500 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS
 0.82416g NaCl LOT 922649A
 0.11817g NaHCO_3 LOT 897789
 20 ml SO_4^{2-} 5/93
 10 ml NO_3^- 5/93
 2 ml F^- 5/93

+ DI WATER TO 1000 ml STOCK
 SOLUTIONS P 226 $T = 95^\circ\text{C}$ N_2 PURGED

START PH 8.206

END PH 9.131 @ 7/27/94

POTENTIAL STAT ESC 440-3 ESC 440 #1 CHANNEL #2

DATA SAVED AS REPTIM 45 USING REPTIMER, WBB

REFERENCE SCE FISHER 13-620-S1

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 500 mV FOR 40 hr

REPASSIVATION 0 mV

 $E_{\text{CORR}} -697 \text{ mV}$ KEITZLEY 614 $E_{\text{PT}} -52 \text{ mV}$

SPECIMEN STARTED 4:08 PM 6/1/93

SPECIMEN STOPPED 12:24 PM 6/3/93

RUNTIME 159300 SEC

REPASSIVATION TIME 228 SEC

CHARGE DENSITY 125 C/cm^2

J. D. 6/3/93

6/1/93

REPTIM 46 REPASSIVATION TIME

SPECIMEN ALLOY 825 NH4371FG 600S.C
 PREPARED SAME AS REPTIM 21 P160
 $l = 1.913$ $d = 0.248$ WET AREA = 8.0 cm^2
 START WT NOT RECORDED
 END WT 11.70936g

SOLUTION 500 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-} @ 7/27/94
 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS
 0.82511g NaCl LOT 922649A
 0.11918g NaHCO_3 LOT 897789
 20 ml SO_4^{2-} 5/93 STOCK SOLUTION
 10 ml NO_3^- 5/93 "
 2 ml F^- 5/93 "

+ DI WATER TO 1000 ml STOCK SOLUTIONS
 P 226 $T = 95^\circ\text{C}$ N_2 PURGED

START PH 8.094

END PH 9.011

POTENTIAL STAT ESC 440 #1 CHANNEL #2 @ 7/27/94

DATA SAVED AS REPTIM 46.PAT USING REPTIMER, WBB

REFERENCE SCE FISHER 13-620-S1

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 500 mV FOR 40 hr

REPASSIVATION -25 mV

 $E_{\text{CORR}} -712 \text{ mV}$ KEITZLEY 614 $E_{\text{PT}} -32 \text{ mV}$

SPECIMEN STARTED 4:03 PM 6/1/93

SPECIMEN STOPPED 12:23 PM 6/3/93

RUNTIME 159600 SEC

REPASSIVATION TIME 918 SEC

CHARGE DENSITY 121 C/cm^2

J. D. 6/3/93

6/9/93

REPTIM 47

REPASSIVATION TIME

SPECIMEN ALLOY 825 NN4371FG 600S.C
 PREPARED SAME AS REPTIM 21 P160
 $L = 1.912$ $d = 0.249$ NET AREA = 8.0 cm^2
 START WT 11.94457
 END WT 11.60034g

SOLUTION 1000 PPM Cl^- 85 PPM NaCO_3 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS
 1.64867 g NaCl LOT 922649A
 $0.11927 \text{ g NaHCO}_3$ LOT 897789
 20 ml SO_4 - 6/93 STOCK SOLUTION
 10 ml NO_3 - 6/93 "
 2 ml F^- - 6/93 "

STOCK SOLUTIONS P 260

T = 95°C Hg THERMO 1238001

DEAERATED WITH NITROGEN

START PH 8.159

END PH 9.093

POTENTIAL STAT ESC 440 #1 CHANNEL #2 DATA

SAVED AS REPTIM 47.DAT USING REPTIMER.WBB

REFERENCE SCE 13-620-S1 SN 0169033

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 400 mV

REPASSIVATION 10 mV

E_{CORR} -690 mV REITHLEY 614E_{PT} -171 mV " 7/21/94SPECIMEN STARTED ~~6/10/93~~ 6:30 pm 6/9/93

SPECIMEN STOPPED 6/11/93 3:50 pm

RUNTIME 163,000

REPASSIVATION TIME DID NOT REPASSIVATE

CHARGE DENSITY 309 C/cm²CURRENT DENSITY IN 10^{-3} A/cm RANGE POSSIBLE

PROBLEM WITH LOGGING PROBE

 6/11/93

6/9/93

REPTIM 48

REPASSIVATION TIME

SPECIMEN ALLOY 825 NN4371FG 600S.C
 PREPARED SAME AS REPTIM 21 P160
 $L = 1.914$ $d = 0.250$ NET AREA = 8.0 cm^2
 START WT 11.96256
 END WT 11.47896

SOLUTION 1000 PPM Cl^- 85 PPM NaCO_3 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS
 1.64977 g NaCl LOT 922649A
 $0.11859 \text{ g NaHCO}_3$ LOT 897789
 20 ml SO_4 - 6/93 STOCK SOLUTION
 10 ml NO_3 - 6/93 "
 2 ml F^- - 6/93 "

+ DI WATER TO 1000 ml STOCK SOLUTIONS

P 260 T = 95°C Hg THERMO 1238004

DEAERATED WITH NITROGEN

START PH 8.219

END PH 9.014

POTENTIAL STAT ESC 440 #1 CHANNEL #3 DATA

SAVED AS REPTIM 48.DAT USING REPTIMER.WBB

REFERENCE SCE 13-620-S1 SN 9214083

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 400 mV FOR

REPASSIVATION 20 mV

E_{CORR} -679 mV REITHLEY 614E_{PT} -225 mV " 7/27/94SPECIMEN STARTED ~~6/10/93~~ 6:30 pm 6/9/93

SPECIMEN STOPPED 6/11/93 3:50 pm

RUNTIME 163,000

REPASSIVATION TIME 421 sec

CHARGE DENSITY 233 C/cm²
 6/11/93

6/9/93

REPTIM 49 REPASSIVATION TIME

SPECIMEN ALLOY 825 NH4371FG 600 S.C

PREPARED SAME AS REPTIM 21 P160

L = 1.913 ~~1.913~~ ^{1.913} d = 0.248 WET AREA = 8.0 cm²

START WT 11.57905g

END WT 11.21971g

SOLUTION 500 PPM Cl⁻ 85 PPM HCO₃⁻ 20 PPM SO₄⁻10 PPM NO₃⁻ 2 PPM F⁻ 1000 ml AS FOLLOWS

0.82572 g NaCl LOT 922649A

0.11920 g NaHCO₃ LOT 89778920 ml SO₄ - 6/93 STOCK SOLUTION10 ml NO₃ - 6/93 "2 ml F⁻ - 6/93

+ DI WATER TO 1000 ml STOCK

SOLUTIONS P260 T=95°C H₂ THERMO 0323007

DEAERATED WITH NITROGEN

START PH 8.278

END PH 9.247

POTENTIOSTAT ESC 440 #3 CHANNEL #4 DATA

SAVED AS REPTIM 49.DAT USING REPTIMER.WBS

REFERENCE SCE 13-620-S1 SN 8211163

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 400 mV FOR

REPASSIVATION 25 mV

E_{CORR} -560 mV KEITHLEY 614E_{PT} -273 mV "

SPECIMEN STARTED 6/9/93 6:30 pm

SPECIMEN STOPPED 6/11/93 3:50 pm

RUNTIME 162,000 SEC

REPASSIVATION TIME 656 SEC

CHARGE DENSITY 175 C/cm²

Daniel D 6/11/93

6/9/93

REPTIM 50

REPASSIVATION TIME.

SPECIMEN ALLOY 825 NH4371 FG 600 S.C

PREPARED SAME AS REPTIM 21 P160

L = 1.913 d = 0.250 WET AREA = 8.0 cm²

START WT 11.96580

END WT 11.49795g

SOLUTION 500 PPM Cl⁻ 85 PPM HCO₃⁻ 20 PPM SO₄⁻10 PPM NO₃⁻ 2 PPM F⁻ 1000 ml AS FOLLOWS.

0.82688 g NaCl LOT 922649A

0.12067 g NaHCO₃ LOT 89778920 ml SO₄ - 6/93 STOCK SOLUTION10 ml NO₃ - 6/932 ml F⁻ - 6/93

+ DI WATER TO 1000 ml

P260 T=95°C H₂ THERMO 0323005

DEAERATED WITH NITROGEN

START PH 8.380

END PH 9.221

POTENTIOSTAT ESC 440 #3 CHANNEL #5 DATA

SAVED AS REPTIM 50.DAT USING REPTIMER.WBS

REFERENCE SCE 13-620-S1 SN 0165415

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 400 mV FOR

REPASSIVATION ~~25 mV~~ ^{50 mV} 50 mVE_{CORR} -561 mV KEITHLEY 614E_{PT} -281 mVSPECIMEN STARTED ~~6/10/93~~ ^{6/9/93} 6:30 pm

SPECIMEN STOPPED 6/11/93 3:50 pm

RUNTIME 162,000 SEC

REPASSIVATION TIME 850 SEC

CHARGE DENSITY 226 C/cm²

Daniel D 6/11/93

6/6/93

STOCK SOLUTIONS

1000 ppm F^- AS NaF STOCK SOLUTION F^- - 6/932.21303 g NaF LOT 896405 / 1000 ml

6/6/93

1000 ppm NO_3^- AS $NaNO_3$ STOCK SOLUTION NO_3^- - 6/931.37871 g $NaNO_3$ LOT 897183 +

DI WATER TO 1000 ml 6/6/93

1000 ppm SO_4 AS Na_2SO_4 STOCK SOLUTION SO_4 - 6/931.48509 g Na_2SO_4 LOT 901213

+ DI WATER TO 1000 ml 6/6/93

2 MOLE/LITER Cl^- AS $NaCl$ STOCK SOLUTION 2m Cl^- - 6/93 MADE 6/5/93116.88220 g $NaCl$ LOT 922649A + DI WATER TO 1000 ml1 MOLE/LITER Cl^- AS $NaCl$ STOCK SOLUTION 1m Cl^- - 6/93 MADE 6/5/9358.44077 g $NaCl$ LOT 922649A + DI WATER TO 1000 ml0.5 MOLE/LITER Cl^- AS $NaCl$ STOCK SOLUTION 0.5m Cl^- - 6/93 MADE 6/5/9329.22509 g $NaCl$ LOT 922649A + DI WATER TO 1000 ml1000 ppm Cl^- AS $NaCl$ STOCK SOLUTION 1000 Cl^- - 6/93 MADE 6/5/933.29644 g $NaCl$ LOT 922649A + DI WATER TO 2000 ml100 ppm Cl^- AS $NaCl$ STOCK SOLUTION 100 Cl^- - 6/93 MADE 6/5/93100 ml STOCK SOLUTION 1000 Cl^- - 6/93 + 900 ml DI WATER

J. D. 6/12/93

6/16/93

POTENTIOSTATIC POLARIZATION CR825N8

SPECIMEN

ALLOY 825 NN4371FC MILL

FINISHED SURFACES = 4.5 cm^2 TOTAL SURFACE AREA = 14.2 cm^2

START WT 32.36937 g

END WT 31.76154

SOLUTION

1000 ppm Cl^- 85 ppm HCO_3^- 20 ppm SO_4^{2-} 10 ppm NO_3^- 2 ppm F^- 1000 ml AS FOLLOWS1.64975 g $NaCl$ LOT 926368A0.11819 g $NaHCO_3$ LOT 89778920 ml SO_4 - 6/93 STOCK SOLUTION10 ml NO_3 - 6/932 ml F^- - 6/93

+ DI WATER TO 1000 ml STOCK SOLUTIONS

P260 T=95°C N_2 THERMO 1238004

DEAERATED WITH NITROGEN

START PH 8.094

END PH 8.856 @ 7/27/94

POTENTIOSTAT ESC 440#3 CHANNEL #2 DATA SAVED

AS CR825N8.DAT USING REPRSS4F.WBB

REFERENCE SCE 13-620-S1 SN 8211163

 E_{CORR} - 609 mV REGISTRY 617 E_{PT} - 176 mV $E_{APPLIED}$ 300 mV E_{RP} NOT RECORDED

SPECIMEN STARTED 6/16/93 6:11 PM

SPECIMEN STOPPED 6/23/93 3:20 PM

RUNTIME 595,000 SEC

CHARGE DENSITY 290 C/ cm^2

SPECIMEN PITTED ON MILL FINISHED SURFACES

J. D. 6/23/93

6/16/93

POTENTIOSTATIC POLARIZATION CR825N9

SPECIMEN ALLOY 825 HN4371FG MILL FINISH
 SURFACE AREA = 4.5 cm^2 TOTAL SURFACE
 AREA = 14.2 cm^2

START WT 31.23162g

END WT 31.20632g

SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-} DD 7/27/94
 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS

1.64957 g NaCl LOT 926368A
 0.11832 g NaHCO_3 LOT 897789

20 ml SO_4 - 6/93 STOCK SOLUTION
 10 ml NO_3 - 6/93 "
 2 ml F^- - 6/93 "

+ DI WATER TO 1000 ml STOCK SOLUTIONS

P260 T=95°C N_2 THERMO 1238001

DEAERATED WITH NITROGEN

START PH 8.143

END PH 9.036

POTENTIOSTAT ESC440 #3 CHANNEL #3 DATA

SAVED AS CR825N9.DAT USING REPASS 4F.WBB

REFERENCE SC6 FISHER 13-620-51 SN 0169033

 E_{CORR} -539 mV KEITNLEY 617 E_{PT} -81 mV E_{APP} 275 mV SC6 E_{RP} NO PITTINGSPECIMEN STARTED 6/16/93 DD 7/27/94
 TH 6:11 PM

SPECIMEN STOPPED 6/23/93 3:00 PM

RUNTIME 594,000

CHARGE DENSITY 4.8 C/cm²

SPECIMEN DID NOT PIT AT THIS POTENTIAL

David D. 6/23/93

6/16/93

POTENTIOSTATIC POLARIZATION CR825N10

SPECIMEN ALLOY 825 HN4371FG MILL FINISH
 SURFACE AREA = 4.5 cm^2 TOTAL SURFACE
 AREA 14.2 cm^2

START WT 28.67006

END WT 28.64765

SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS

1.64883 g NaCl LOT 926368A
 0.12031 g NaHCO_3 LOT 897789

20 ml SO_4 - 6/93 STOCK SOLUTION
 10 ml NO_3 - 6/93 "
 2 ml F^- - 6/93 "

+ DI WATER TO 1000 ml STOCK SOLUTIONS

P260 T=95°C N_2 THERMO 0323005

DEAERATED WITH NITROGEN

START PH 8.097

END PH 9.046

POTENTIOSTAT ESC440 #3 CHANNEL #4 DATA SAVED
 AS CR825N10.DAT USING REPASS 4F.WBB

REFERENCE SC6 FISHER 13-620-51 SN 0165415

 E_{CORR} -609 mV KEITNLEY 617 E_{PT} -229 mV E_{APPLIED} 250 mV SC6 $E_{\text{REPASSIVATION}}$ NO PITTING

SPECIMEN STARTED 6/16/93 6:11 PM

SPECIMEN STOPPED 6/23/93 3:00 PM

RUNTIME 594,000

CHARGE DENSITY 3.6 C/cm²

SPECIMEN DID NOT PIT AT THIS POTENTIAL

David D. 6/23/93

6/16/93

POTENTIOSTATIC POLARIZATION CR82SN11

SPECIMEN ALLOY 825 NN4371FC MILL FINISHED
SURFACES = 4.5 cm^2 TOTAL SURFACE AREA = 14.2 cm^2

START WT 31.41461g

END WT 31.39374g

SOLUTION 1000 PPM Cl^- 85 PPM NaCO_3 20 PPM SO_4^{2-} 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS

1.64819 g NaCl LOT 926368A

0.11836 g NaHCO_3 LOT 89778920 ml SO_4 - 6/93 STOCK SOLUTION10 ml NO_3 - 6/932 ml F^- - 6/93

+ DI WATER TO 1000 ml STOCK SOLUTIONS

P 260 N₂ THERMO 0323007 T = 95°C

DEAERATED WITH NITROGEN

START PH 8.127

END PH 9.065

POTENTIOSTAT ESC 440 #3 CHANNEL #5 DATA

SAVED AS CR82SN11.DAT USING REPASS 4F.WBB

REFERENCE SCE FISHER 13-620-S1 SN 9214083

 E_{CORR} -28 -584 mV KEITHLEY 617 E_{PT} -28 mV E_{APPLIED} 225 mV SCE E_{RP} NO PITTING

SPECIMEN STARTED 6/16/93 6:11 PM

SPECIMEN STOPPED 6/23/93 3:00 PM

RUNTIME 594,000

CHARGE DENSITY 3.2 C/cm²

SPECIMEN DID NOT PIT AT THIS POTENTIAL

Dried On 6/23/93

6/14/93

CREVICE CORROSION 304L-5

SPECIMEN 304L HT# T0954 600 SiC FINISH

CLEANED IN ULTRASONIC BATH RINSED

WITH DI WATER, ACETONE AND DRIED

 $l = 2.502$ $w = 0.498$ $c = 0.124$ AREA = 20.8773 cm^2

START WT 21.31411g

END WT 21.31266g

SOLUTION 1000 PPM Cl^- 85 PPM NaCO_3 20 PPM SO_4^{2-} 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS

1.64831 g NaCl LOT 926368A

0.11813 g NaHCO_3 LOT 89778920 ml SO_4 - 6/93 STOCK SOLN10 ml NO_3 - 6/932 ml F^- - 6/93

+ DI WATER TO 1000 ml STOCK

SOLUTIONS P260

START PH 8.109

END PH 8.268

SETUP SPECIMEN PLACED IN PLEXIGLASS CELL

WITH TWO PORTS AND TORQUES TO 20 IN OZ

USING PROTO 6103 CAL DUG 7/20/93

PORT #1 AT TIA

MI 200 CI IS6 FLEXABLE # 47228

MI 402/403 DOUBLE JUNCTION Ag/AgCl # 44629

MI 506 GLASS PH # 43720

MI 402/403 DOUBLE JUNCTION Ag/AgCl # 41436MI 402/403 DOUBLE JUNCTION Ag/AgCl # 41402

PORT #2 AT MOUTH

MI 200 CI IS6 FLEXABLE # 44447

MI 402/403 DOUBLE JUNCTION Ag/AgCl # 44671

MI 506 GLASS PH # 43717

MI 402/403 DOUBLE JUNCTION Ag/AgCl # 44628MI 402/403 DOUBLE JUNCTION Ag/AgCl # 43636

6/11/93

CREVIC CORROSION 304L-S

BULK ELECTRODES

MI 200 Cl^- ISE #42998
 MI 402 Ag/AgCl #43647
 MI 506 GLASS PH #44817
 MI 402 Ag/AgCl #45860
 FISHER 13-620-53 SN 8118182 Ag/AgCl

Cl TIP TO ORION EA 920 SN 3001A AND ABB SE 120 0515265
 Cl MOUTH TO ORION ^{DO 112194} EA 720A ID 5885 AND ABB SE 120 0049616
 Cl BULK TO ORION EA 920 SN 3001A AND ABB SE 120 0515265

PH TIP TO ORION EA 940 SN 2330 AND ABB SE 120 0515265
 PH MOUTH TO ORION 720A 003368 AND ABB SE 120 0049616
 PH BULK TO ORION EA 940 SN 2330 AND ABB SE 120 0515265

FISHER 13-620-53 SN 8118182 TO CHANNEL #1
 OF ESC 440 #2

TIP REFERENCE MI 402/403 #41402 TO
 CHANNEL #3 OF ESC 440 #2

MOUTH REFERENCE MI 402/403 #43636 TO
 CHANNEL #2 OF ESC 440 #2

Pt COUNTER ELECTRODE AND SPECIMEN
 CONNECTED TO ESC 440 #2 CHANNEL #1

PLEXIGLASS CELL WITH SPECIMEN PLACED IN
 GLASS CELL WITH PLEXIGLASS LID ENTIRE
 ASSEMBLY PLACED IN FARADAY CAGE ON
 6/11/93 AT 4:00 PM SOLUTION WAS NOT DEAERATED

PRIOR TO ASSEMBLY ELECTRODES WERE CALIBRATED
 Cl ELECTRODES USING 100 PPM Cl^- 1000 PPM Cl^-
 0.5 M Cl^- 1.0 M Cl^- 2.0 M Cl^- STOCK SOLUTIONS P 260
 PH ELECTRODES IN STANDARD BUFFERS 1.00, 4.00, 7.00, 10.00

6/11/93

CREVIC CORROSION 304L-S

PH TIP MI 506/MI 403 43720/41436
 PH = -17.9(V) + 6.84
 PH MOUTH MI 506/MI 403 43717/44628
 PH = -17.2(V) + 6.85
 PH BULK MI 506/MI 403 44817/45860
 PH = -17.0(V) + 6.57
 Cl TIP MI 200/MI 403 47228/44629
 PPM Cl^- = EXP [-0.0469 mV + 11.9377]
 Cl MOUTH MI 200/MI 403 44447/44671
 PPM Cl^- = EXP [-0.0483 mV + 12.0653]
 Cl BULK MI 200/MI 403 42998/43647
 PPM Cl^- = EXP [-0.0436 mV + 11.7832]

INITIAL VALUES AT 2:00 PM 6/12/93

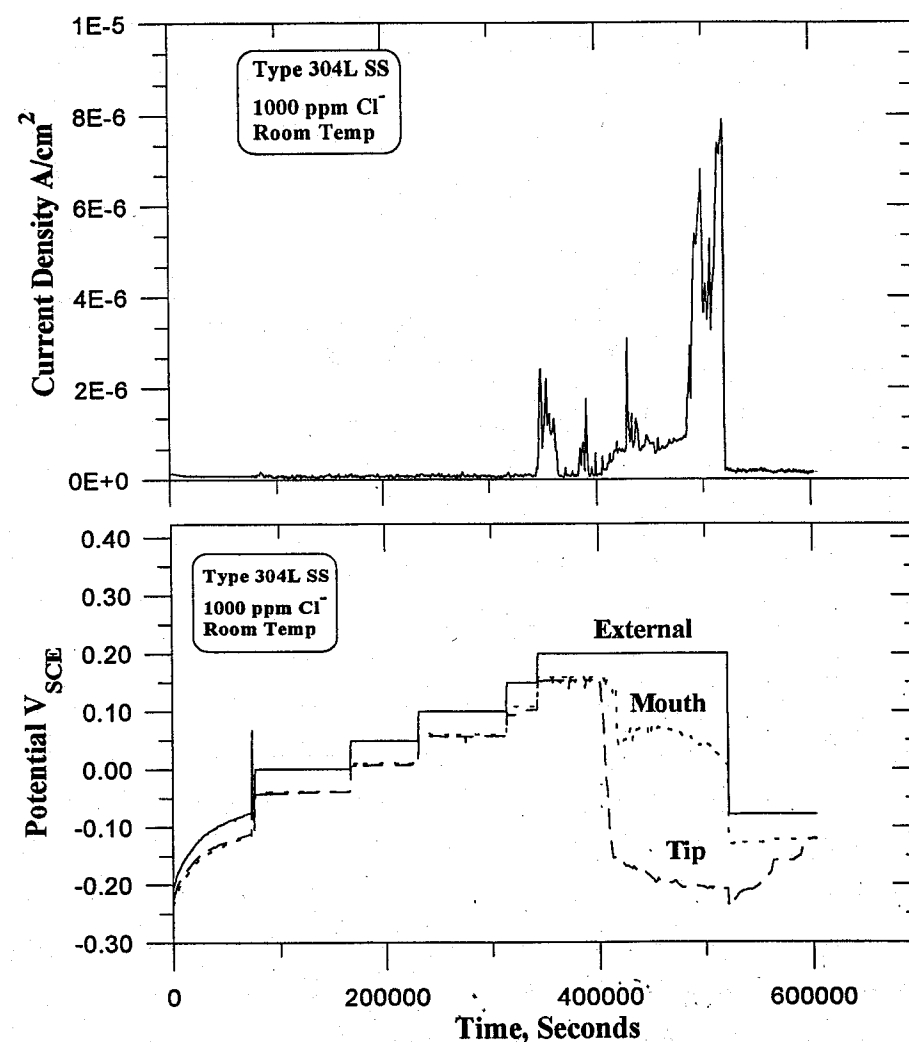
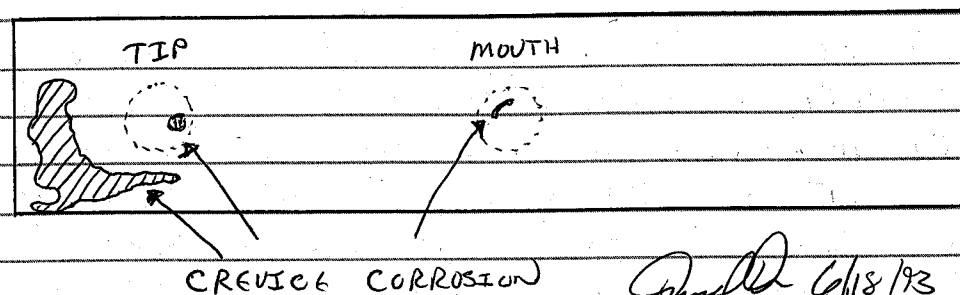
$E_{\text{PT}} = +425 \text{ mV}$
 $E_{\text{EXT}} = -0.074 \text{ V}$
 $E_{\text{TIP}} = -0.111 \text{ V}$
 $E_{\text{MOUTH}} = -0.114 \text{ V}$
 PH TIP -97.2 mV
 PH MOUTH -89 mV
 PH BULK -123 mV
 Cl TIP 87 mV
 Cl MOUTH 105.6 mV
 Cl BULK 111 mV

6/12/93 $t = 75600 \text{ SEC}$ $V_{\text{SET}} = 0.0 \text{ V}$
 6/13/93 $t = 165600 \text{ SEC}$ $V_{\text{SET}} = 0.050 \text{ V}$
 6/14/93 $t = 230400 \text{ SEC}$ $V_{\text{SET}} = 0.100 \text{ V}$
 6/15/93 $t = 313200 \text{ SEC}$ $V_{\text{SET}} = 0.150 \text{ V}$
 6/15/93 $t = 342000 \text{ SEC}$ $V_{\text{SET}} = 0.200 \text{ V}$
 6/17/93 $t = 520,000 \text{ SEC}$ $V_{\text{SET}} = -0.080 \text{ V}$
 6/18/93 $t = 603,000 \text{ SEC}$ TEST STOPPED
 CELL DISASSEMBLED

PH AND Cl^- ISE CALIBRATION DATA
 SAVED AS 304L.SCAL.DAT ON IWP025
 6/18/93 4/28/94

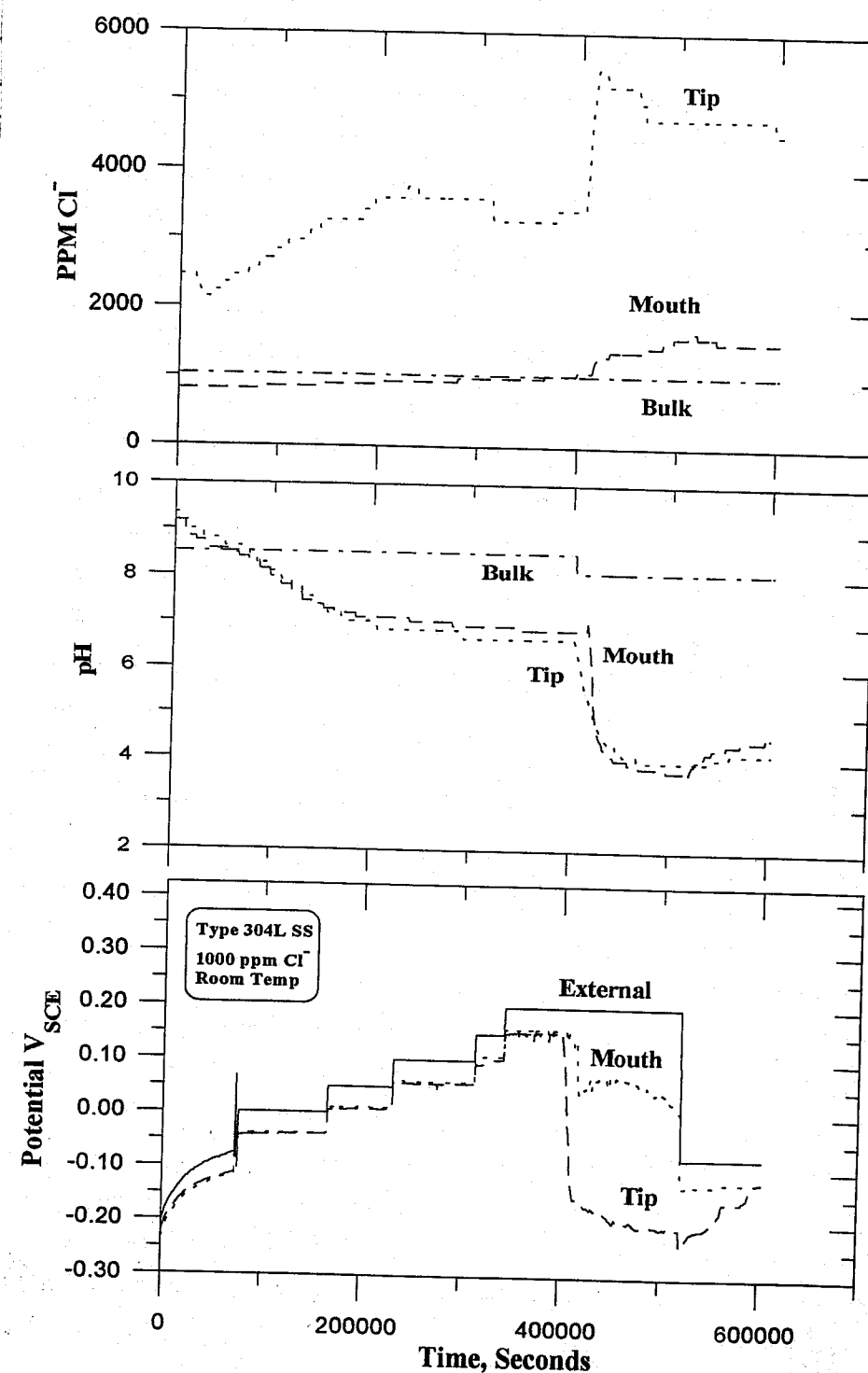
CREVICE CORROSION 304L-S

SPECIMEN HAS SMALL REGION OF CREVICE CORROSION ON TOP SIDE NEAR TIP SMALL BUT DEEP REGION OF CREVICE CORROSION AT MOUTH ELECTRODE PORT SCALE = 2:1



David D. 6/25/93

CREVICE CORROSION 304L-S



David D. 6/25/93

David D. 6/25/93

6/25/93

REPTIM 51

REPASSIVATION TIME

SPECIMEN ALLOY 825 H4371FG 600SiC

PREPARED SAME AS REPTIM 21 P160

 $l = 1.913$ $d = 0.248$ WET AREA = 8.0 cm^2

START WT 12.07524g

END WT 12.05121g

SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS

1.64839 g NaCl LOT 926368A

0.11838 g NaHCO_3 LOT 89778920 ml SO_4 - 6/93 STOCK SOLUTION10 ml NO_3 - 6/93 "2 ml F^- - 6/93 "

+ DI WATER TO 1000 ml STOCK SOLUTIONS

P 260 $T = 95^\circ\text{C}$ H_2 THERMO 1238001

DEAERATED WITH NITROGEN

START PH 8.104

END PH 9.211

POTENTIOSTAT ESC 440 #1 CHANNEL #2 DATA

SAVED AS REPTIM 51.DAT USING REPTIMER.WBB

REFERENCE SCE 13-620-S1 SN 016S403

PIT INITIATION 600mV FOR 30 min

PIT GROWTH 400mV FOR 6 HOURS

REPASSIVATION 128mV

 $E_{\text{CORR}} = -626 \text{ mV}$ KEITHLEY 614 $E_{\text{PT}} = -174 \text{ mV}$ "

SPECIMEN STARTED 6/25/93 12:45 PM

SPECIMEN STOPPED 6/26/93 9:16 AM

RUNTIME 74,000

REPASSIVATION TIME 187 SEC

CHARGE DENSITY 11.7 C/ cm^2

SAMPLE MOUNTED IN BAKELITE AND SECTIONED

D. J. D. 6/26/93

6/25/93

REPTIM 52

REPASSIVATION TIME

SPECIMEN ALLOY 825 H4371FG 600SiC

PREPARED SAME AS REPTIM 21 P160

 $l = 1.913$ $d = 0.251$ WET AREA = 8.0 cm^2

START WT 12.03471

END WT 11.96337g

SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS

1.65117 g NaCl LOT 926368A

0.11812 g NaHCO_3 LOT 89778920 ml SO_4 - 6/93 STOCK SOLUTION10 ml NO_3 - 6/93 "2 ml F^- - 6/93 "

+ DI WATER TO 1000 ml STOCK SOLUTIONS

P 260 $T = 95^\circ\text{C}$ H_2 THERMO 0323005

DEAERATED WITH NITROGEN

START PH 8.044

END PH 9.302

POTENTIOSTAT ESC 440 #1 CHANNEL #3 DATA SAVED
AS REPTIM 52.DAT USING REPTIMER.WBB

REFERENCE SCE FISHER 13-620-S1 SN 0169033

PIT INITIATION 600mV FOR 30 min

PIT GROWTH 400mV FOR 6 HOURS

REPASSIVATION 96mV

 $E_{\text{CORR}} = -561 \text{ mV}$ KEITHLEY 614 $E_{\text{PT}} = -63 \text{ mV}$ "

SPECIMEN STARTED 6/25/93 12:45 PM

SPECIMEN STOPPED 6/26/93 9:16 AM

RUNTIME 74,000

REPASSIVATION TIME 457 SEC

CHARGE DENSITY 34.9 C/ cm^2

SAMPLE MOUNTED IN BAKELITE AND SECTIONED

D. J. D. 6/26/93

272

6/25/93

REPTIM 53 REPASSIVATION TIME

SPECIMEN ALLOY 82S NN4371FG 600SIC

PREPARED SAME AS REPTIM 21 P160

 $l = 1.913$ $d = 0.248$ WET AREA $\approx 8.0 \text{ cm}^2$

START WT 11.9887L g

END WT 11.94978 g

SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-} 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS.

1.64815 g NaCl LOT 926368A

0.11839 g NaHCO_3 LOT 89778920 ml SO_4^{2-} 6/93 STOCK SOLUTION10 ml NO_3^- 6/93 "2 ml F^- 6/93 "

+ DI WATER TO 1000 ml STOCK SOLUTIONS

P260 $T = 95^\circ\text{C}$ H_2 THERMO 0323007

DEAERATED WITH NITROGEN

START PH 8.085

END PH 9.493

POTENTIOSTAT ESC440#1 CHANNEL #4 DATA

SAVED AS REPTIM 53.DAT USING REPTIMER.WBB

REFERENCE SCE 13-620-SI SN 8211163

PIT INITIATION 600mV FOR 30 min

PIT GROWTH 400mV FOR 6 HOURS

REPASSIVATION 4.9 mV

 $E_{\text{CORR}} - 540 \text{ mV}$ KEITHLEY 614 $E_{\text{PT}} - 195 \text{ mV}$ "

SPECIMEN STARTED 6/25/93 12:45 PM

SPECIMEN STOPPED 6/26/93 9:16 AM

RUNTIME 73,700 SEC

REPASSIVATION TIME 91 SEC

CHARGE DENSITY 18.7 C/cm^2

Dred Dred 6/26/93

273

6/25/93

REPTIM 54 REPASSIVATION TIME

SPECIMEN ALLOY 82S NN4371FG 600SIC

PREPARED SAME AS REPTIM 21 P160

 $l = 1.913$ $d = 0.247$ ^{BP} START WET AREA \approx

START WT 11.87157 g

END WT 11.83235 g

SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-} 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS.

1.64813 g NaCl LOT 926368A

0.11974 g NaHCO_3 LOT 89778920 ml SO_4^{2-} 6/93 STOCK SOLUTION10 ml NO_3^- 6/93 "2 ml F^- 6/93 "

+ DI WATER TO 1000 ml STOCK SOLUTIONS

P260 $T = 95^\circ\text{C}$ H_2 THERMO 1238004

DEAERATED WITH NITROGEN

START PH 8.108

END PH 9.521

POTENTIOSTAT ESC440#1 CHANNEL #5 DATA SAVED

AS REPTIM 54.DAT USING REPTIMER.WBB

REFERENCE SCE 13-620-SI SN 0165415

PIT INITIATION 600mV FOR 30 min

PIT GROWTH 400mV FOR 6 HOURS

REPASSIVATION 8 mV

 $E_{\text{CORR}} - 619 \text{ mV}$ KEITHLEY 614 $E_{\text{PT}} - 5 \text{ mV}$ "

SPECIMEN STARTED 6/25/93 12:45 PM

SPECIMEN STOPPED 6/26/93 9:16 AM

RUNTIME 73,300 SEC

REPASSIVATION TIME 165 SEC

CHARGE DENSITY 19.4 C/cm^2

Dred Dred 6/26/93

6/25/93

CREVICE CORROSION 304L-6

SPECIMEN 304L HT# T0954 600 S.C FINISH

CLEANED IN ULTRASONIC BATH RINSED IN

DI WATER, ACETONE AND DRIED

L = 2.500 W = 0.499 t = 0.124

AREA = 20.89512

START WT NOT RECORDED

END WT 21.31454g

SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-} 10 PPM NO_3^- 2 PPM F- 1000 ml AS FOLLOWS

1.64854 g NaCl LOT 926368A

0.11931 g NaHCO_3 LOT 89778920 ml ~~DI~~ ^{7/12/94} ~~7/93~~ 304-6/93 STOCK SOLUTION10 ml ~~DI~~ ^{7/12/94} ~~7/93~~ NO_3^- -6/93 "2 ml ~~DI~~ ^{7/12/94} ~~7/93~~ F-6/93 "

START PN 8.169

END PN:

SETUP SPECIMEN PLACED IN PLEXIGLASS CELL

USING TWO PORTS AND TORQUED TO 20 IN OZ

USING PROTO 6103 CAL DUE 7/20/93

PORT # 1 AT TIP

MI 200 CI ISE FLEXABLE # 47228

MI 402/403 DOUBLE JUNCTION Ag/AgCl # 44629

MI 506 GLASS PH # 43720

MI 402/403 DOUBLE JUNCTION Ag/AgCl # 41436MI 402/403 DOUBLE JUNCTION Ag/AgCl # 41402

PORT # 2 AT MOUTH

MI 200 CI ISE FLEXABLE # 44447

MI 402/403 DOUBLE JUNCTION Ag/AgCl # 44671

MI 506 GLASS PH # 43717

MI 402/403 DOUBLE JUNCTION Ag/AgCl # 44628MI 402/403 DOUBLE JUNCTION Ag/AgCl # 43636

Daniel Dan 6/25/93

6/25/93

CREVICE CORROSION: 304L-6

BULK ELECTRODES

MI 200 CI ISE # 47228

MI 402 Ag/AgCl # 43647

MI 506 GLASS PH # 44817

MI 402 Ag/AgCl # 45860FISHER ~~940~~ ^{7/12/94} 13-620-53 SN 8118182 Ag/AgCl

CITIP TO ORION EA 920 SN 5001A AND ABB SE120 OS15265 RECORDER
 CI MOUTH TO ORION 720A IN SF85 AND ABB SE120 0049616 RECORDER
 CI BULK TO ORION EA 920 SN 5001A AND ABB SE120 OS15265 RECORDER.

940 ~~SN~~ ^{7/12/94} SN 2330 AND ABB SE120 OS15265
 PN TIP TO ORION EA 920 SN 2330 AND ABB SE120 OS15265

PN MOUTH TO ORION 720A 003368 AND ABB SE120 0049616

PN BULK TO ORION EA 940 SN 2330 AND ABB SE 120 OS15265

FISHER 13-620-53 SN 8118182 TO CHANNEL #1
 OF ESC 440#2

TIP REFERENCE MI 402/403 # 41402 TO CHANNEL
 #3 OF ESC 440#2

MOUTH REFERENCE MI 402/403 # 43636 TO
 CHANNEL #2 OF ESC 440#2

PT COUNTER ELECTRODE AND SPECIMEN CONNECTED
 TO ESC 440#2 CHANNEL #1

PLEXIGLASS CELL WITH SPECIMEN PLACED IN
 GLASS CELL WITH PLEXIGLASS LTD. ENTIRE
 ASSEMBLY PLACED IN FARADAY CAGE ON
 6/25/93 3:00 PM

PRIOR TO ASSEMBLY ELECTRODES WERE CALIBRATED
 CI ELECTRODES USING 100 PPM Cl^- 1000 PPM Cl^-
 0.5 M Cl^- 1.0 M Cl^- 2.0 M Cl^- STOCK SOLUTIONS
 P260 PN ELECTRODES IN STANDARD BUFFERS
 1.00, 4.00, 7.00, 10.00 Daniel Dan 6/25/93

6/25/93

CREVICE CORROSION 304L-6

PN TIP MI 506 / MI 403 43720 / 41436

PN = $-18.3(V) + 7.10$

PN MOUTH MI 506 / MI 403 43717 / 44628

PN = $-17.4(V) + 6.90$

PN BULK MI 506 / MI 402 44817 / 45860

PN = $-17.1(V) + 6.61$

CI TIP MI 200 / MI 403 47228 / 44629

PPM $Cl^- = \text{EXP}[-0.0511(mV) + 12.316]$

CI BULK MI 200 / MI 402 42998 / 43647

PPM $Cl^- = \text{EXP}[-0.0475(mV) + 12.42]$

CI MOUTH MI 200 / MI 403 44447 / 44671

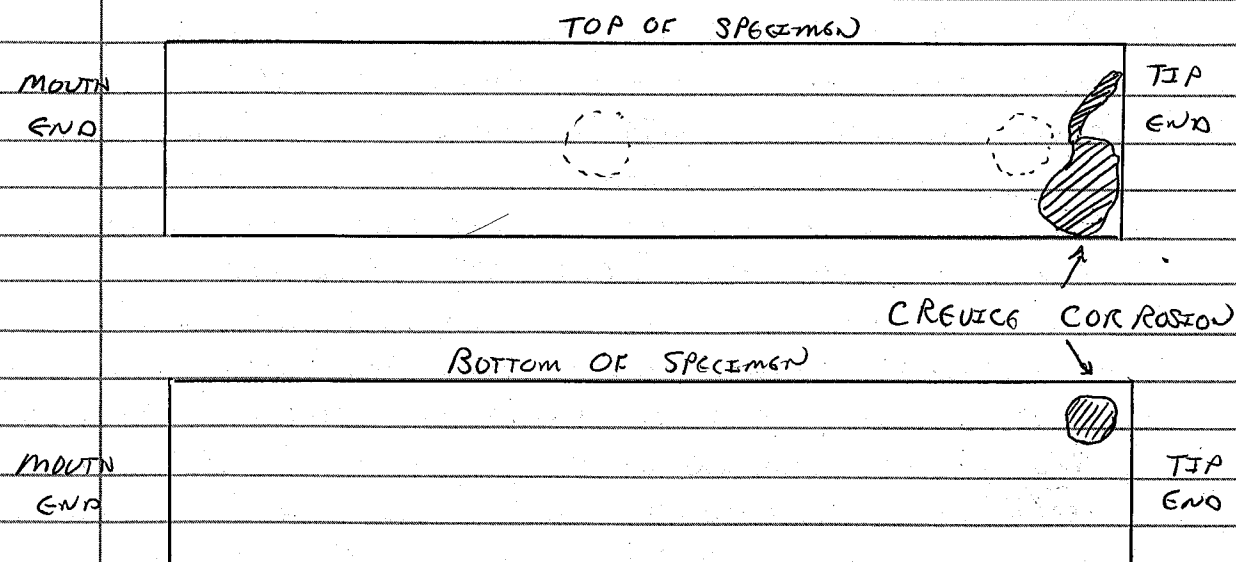
PPM $Cl^- = \text{EXP}[-0.0528(mV) + 11.895]$ *Amel*

6/25/93

6/30/93

AT THE CONCLUSION OF THE TEST THE SPECIMEN WAS EXAMINED. A SMALL REGION OF CREVICE CORROSION WAS FOUND AT THE TIP ON BOTH THE TOP AND BOTTOM OF THE SPECIMEN.

SCALE 2:1



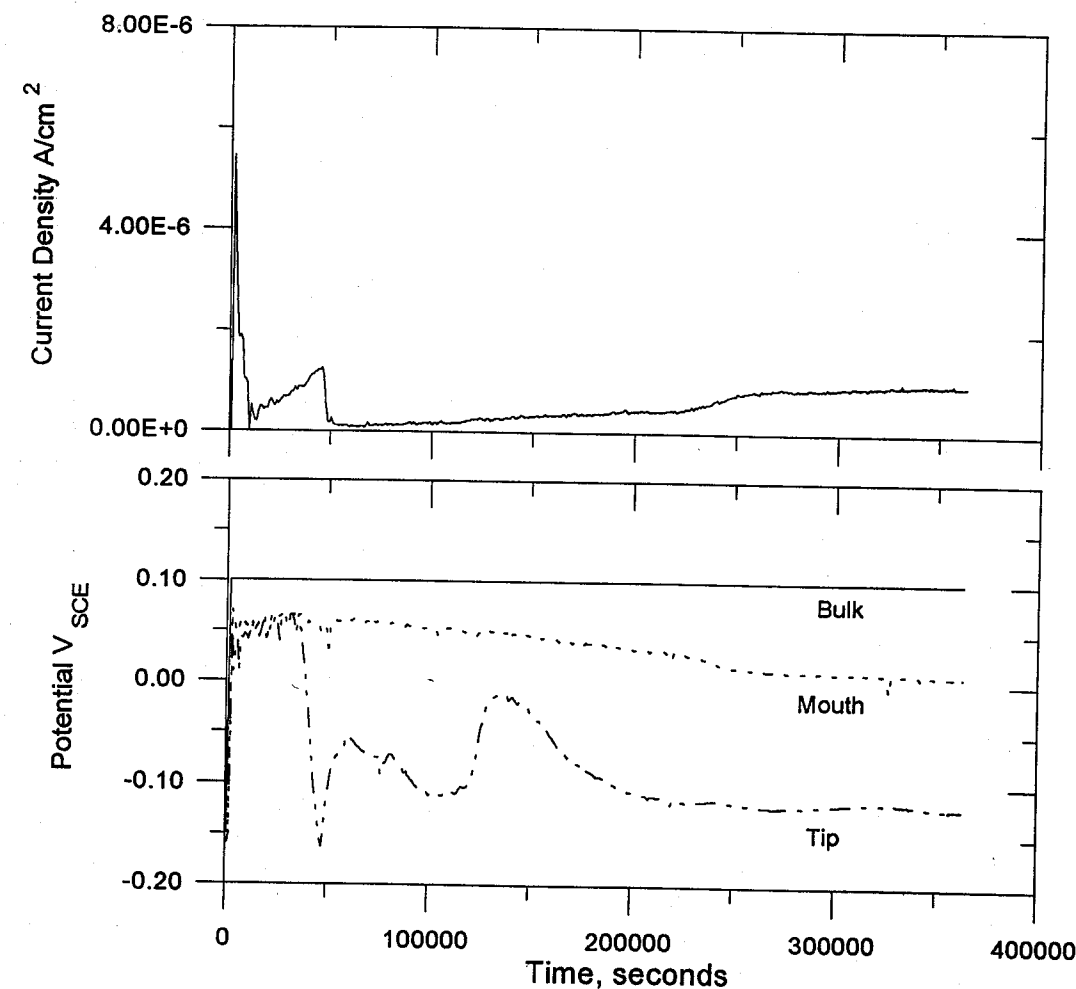
Amel 4/30/93 6/30/93

PH AND Cl^- ISE CALIBRATION DATA SAVED AS 304L6CAL.DAT ON IWPE-025 DISK

Amel 4/28/94

6/30/93

CREVICE CORROSION 304L-6



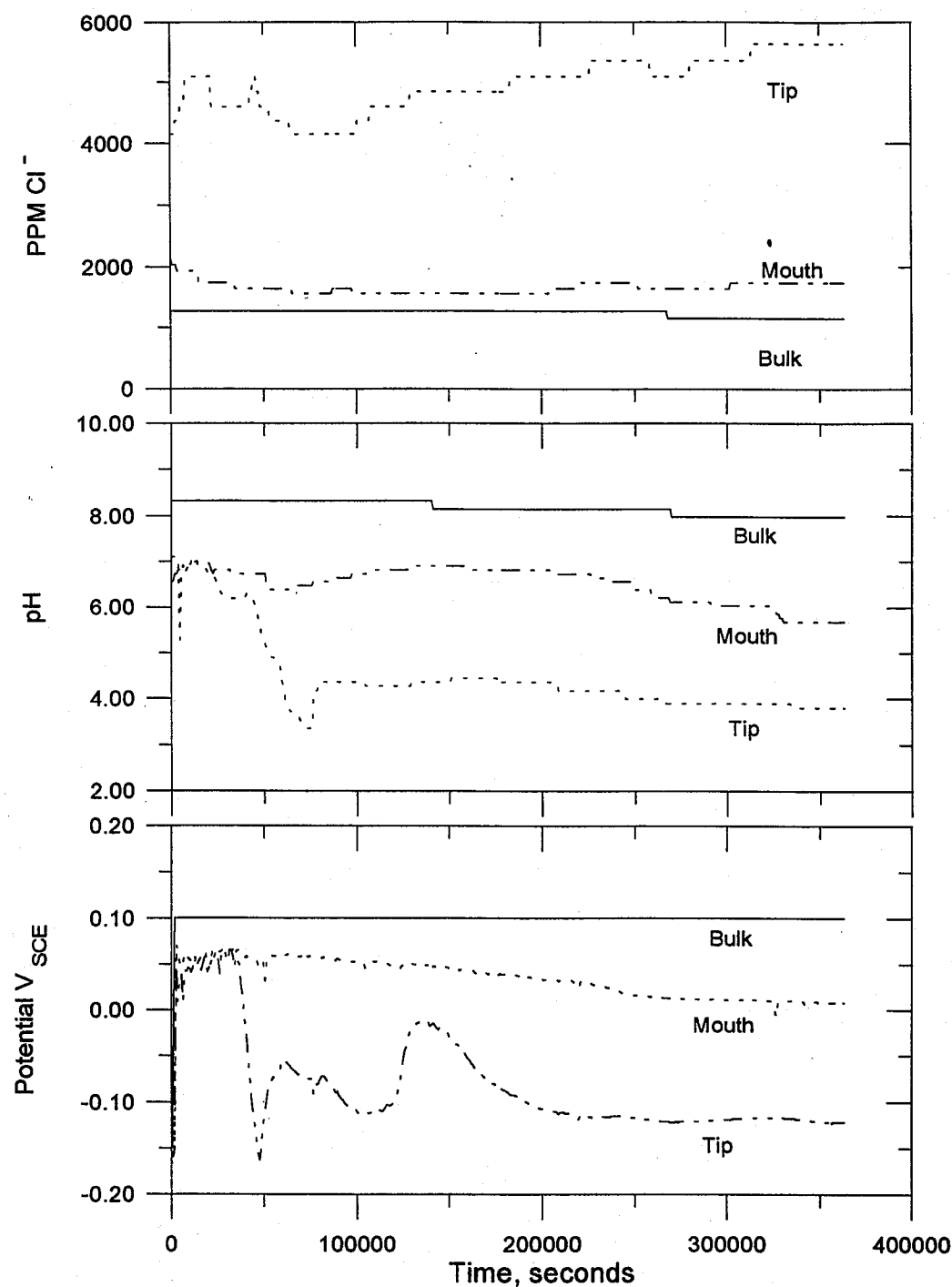
Crevice Corrosion Expt 304L-6

POTENTIAL AND CURRENT WRITTEN DIRECTLY TO DISC FILE 304L-6.DAT USING CREVICE.WRB. PN AND PPM Cl^- DATA WERE INPUT TO FILE FROM CHART RECORDER STRIPS.

Amel 4/30/93 6/30/93

6/30/93

CREVICE CORROSION 304L-6



Crevice Corrosion Expt 304L-6

PP
 6/30/93
 Paul D. H.

REPTIM SS REPASSIVATION TIME.

SPECIMEN ALLOT 825 HN437IFG 600S;C

PREPARED SAME AS REPTIM 21 P160

 $L = 1.912$ $d = 0.249$ WET AREA = 8.0 cm^2

START WT 11.89646

END WT 11.861089

SOLUTION 500-1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS.

0.82454 g NaCl LOT 926368A

0.12028 g NaHCO_3 LOT 89778920 ml SO_4^{2-} 6/93 STOCK SOLN10 ml NO_3^- 6/93 "2 ml F^- 6/93 "+ DI WATER TO 1000 ml STOCK SOLUTIONS
 P260 $T = 95^\circ\text{C}$ DEAERATED WITH NITROGEN.

START PH 8.245

END PH 9.341

POTENTIAL STAT ESE 440-1 CHANNEL #2 DATA

SAVED AS REPTIM SS.DAT USING REPTIMOR.WBB

REFERENCE SCE FISHER 13-620-S1 SN 2134032

PIT INITIATION 600mV FOR 30m.

PIT GROWTH 7127/94 500mV FOR 6 HOURS

REPASSIVATION 129mV

E_{corr} -632E_{pt} -107

SPECIMEN STARTED 6/29/93 10:48 AM

SPECIMEN STOPPED 6/30/93 8:00 AM

RUNTIME 62700

REPASSIVATION TIME 126 SEC

CAPACITANCE DENSITY 16 C/cm²

SPECIMEN RESTARTED AT 12:50 AM 6/29/93 AND

PITS INITIATED AT 750mV FOR 1 HOUR

Paul D. H. 6/30/93

6/29/93

REPTIM 56

REPASSIVATION TIME

SPECIMEN ALLOY 825 NH4371FG 600S.C

PREPARED SAME AS REPTIM 21 P 160

 $L = 1.913$ $d = 0.247$ WGT AREA = 8.0 cm^2

START WT 12.02371 g

END WT 11.98060 g

SOLUTION 500 ppm Cl^- 85 ppm HCO_3^- 20 ppm SO_4^{2-} 10 ppm NO_3^- 2 ppm F^- 1000 ml AS FOLLOWS.

9 NaCl LOT 926368A

9 NaHCO_3 LOT 89778920 ml SO_4^{2-} - 6/93 STOCK SOLUTION10 ml NO_3^- - 6/93 "2 ml F^- - 6/93 "

+ DI WATER TO 1000 ml STOCK SOLUTIONS

P 260 $T = 95^\circ\text{C}$ DEAERATED WITH NITROGEN

START PH 8.235

END PH 9.299

POTENTIOSTAT ESC 440-1 CHANNEL #3 DATA

SAVED AS REPTIM 56.DAT USING REPTIMER.WBB

REFERENCE SCE FISHER 13-620-S1 SN 3106337

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 500 mV FOR 6 HOURS

REPASSIVATION 157 mV

 $E_{\text{CORR}} = -589$ KEITHLEY 614 $E_{\text{AT}} = -1$ "

SPECIMEN STARTED 10:51 AM 6/29/93

SPECIMEN STOPPED 6/30/93 8:00 AM

RUNTIME 62,300 SEC

REPASSIVATION TIME 370 SEC

CHARGE DENSITY 21 C/cm^2

SPECIMEN RESTARTED AT 12:50 PM 6/29/93

PITS INITIATED AT 750 mV FOR 1 HOUR

D. D. 6/30/93

6/29/93

REPTIM 57

REPASSIVATION TIME

SPECIMEN ALLOY 825 NH4371 FG 600S.C

PREPARED SAME AS REPTIM 21 P 160

 $L = 1.914$ $d = 0.248$ WGT AREA = 8.0 cm^2

START WT 11.86898 g

END WT 11.83687 g

SOLUTION 500 ppm Cl^- 85 ppm HCO_3^- 20 ppm SO_4^{2-} 10 ppm NO_3^- 2 ppm F^- 1000 ml AS FOLLOWS.

9 NaCl LOT 926368A

9 NaHCO_3 LOT 89778920 ml SO_4^{2-} - 6/93 STOCK SOLUTION10 ml NO_3^- - 6/93 "2 ml F^- - 6/93 "

+ DI WATER TO 1000 ml STOCK SOLUTIONS

P 260 $T = 95^\circ\text{C}$ DEAERATED WITH NITROGEN

START PH 8.239

END PH 9.453

POTENTIOSTAT ESC 440 #1 CHANNEL #4 DATA

SAVED AS REPTIM 57.DAT USING REPTIMER.WBB

REFERENCE SCE FISHER 13-620-S1 SN 0169033

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 500 ⁴⁰⁰ mV FOR 6 HOURS

REPASSIVATION 180 mV

 $E_{\text{CORR}} = -604$ KEITHLEY 614 $E_{\text{AT}} = -149$

SPECIMEN STARTED 6/29/93 10:54 AM

SPECIMEN STOPPED 6/30/93 8:00 AM

RUNTIME 62,100 SEC

REPASSIVATION TIME 345 SEC

CHARGE DENSITY 14 C/cm^2

SPECIMEN RESTARTED AT 12:50 PM 6/29/93

PITS INITIATED AT 750 mV FOR 1 HOUR

SAMPLE MOUNTED IN BAKELITE AND SECTIONED

D. D. 6/30/93

REPTIM 58 REPASSIVATION TIME

SPECIMEN ALLOY 825 HN4371FG 600S.C

 $L = 1.912$ $d = 0.249$ WGT AREA = 8.0 cm^2

PREPARED SAME AS REPTIM 21 P160

START WT 11.82009 g

END WT 11.78679 g

SOLUTION 500 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS.

9 NaCl LOT 926368A

9 NaHCO_3 LOT 89778920 ml SO_4 - 6/93 STOCK SOLUTION10 ml NO_3 - 6/93 "2 ml F^- - 6/93 "

+ DI WATER TO 1000 ml STOCK SOLUTIONS

P 260 $T = 95^\circ\text{C}$ DEAERATED WITH NITROGEN

START PH 8.257

END PH 9.226

POTENTIAL STAT ESC 440 #1 CHANNEL #5 DATA

SAVED AS REPTIM 58.DAT USING REPTIMER.WRB

REFERENCE SCE FISHER 13-620-S1 SN

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 500 mV FOR 6 HOURS

REPASSIVATION 198 mV

 $E_{\text{CORR}} - 560 \text{ mV}$ $E_{\text{PT}} 0 \text{ mV}$

SPECIMEN STARTED 10:55 AM 6/29/93

SPECIMEN STOPPED 8:00 AM 6/30/93

RUNTIME 62500 SEC

REPASSIVATION TIME 340 SEC

CHARGE DENSITY 16 C/ cm^2

SPECIMENS RESTARTED AT 12:50 PM 6/29/93

PITS INITIATED AT 750 mV FOR 1 HOUR.

Dwight D 6/30/93

7/9/93

REPTIM 59 REPASSIVATION TIME

SPECIMEN ALLOY 825 HN4371FG 600S.C

PREPARED SAME AS REPTIM 21 P160

START WT 11.73490 g

END WT 11.23136 g

 $L = 1.915$ $d = 0.245$ WGT AREA = 8.0 cm^2 SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
10 PPM NO_3^- 2 PPM F^- 1000 ml MARK AS FOLLOWS

1.64890 g NaCl LOT 926368A

0.11965 g NaHCO_3 LOT 89778920 ml SO_4 - 7/93 STOCK SOLUTION10 ml NO_3 - 7/93 "2 ml F^- - 7/93 "

+ DI WATER TO 1000 ml STOCK SOLUTIONS P 287

 $T = 95^\circ\text{C}$ DEAERATED WITH NITROGEN

START PH = 8.189

END PH = 9.071

POTENTIAL STAT ESC 440 #1 CHANNEL #2 DATA SAVED
USING ~~AS~~ REPTIMER.WRB AS REPTIM 59.DAT

REFERENCE SCE FISHER 13-620-S1 SN 2134032

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 400 mV FOR 32.5 HOURS

REPASSIVATION 29 mV

 $E_{\text{CORR}} - 658$ KEITHLEY 614 $E_{\text{PT}} - 75 \text{ mV}$ "

SPECIMEN STARTED 7/9/93 11:30 AM

SPECIMEN STOPPED 7/12/93 7:40 AM

RUNTIME 245082

REPASSIVATION TIME 1348 SEC

CHARGE DENSITY 24.5 COUL/ cm^2

248.4

5/20/94

Dwight D 7/12/93

7/9/93

REPTIM 60 REPASSIVATION TIME

SPECIMEN ALLOY 825 NH4371FG 600 S.C
 $l = 1.912$ $d = 0.246$ WGT AREA = 8.0 cm^2
 PREPARED SAME AS REPTIM 21 P160
 START WT 11.74671 g
 END WT 11.68915 g
 SOLUTION 500 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F- 1000 ml MADE AS FOLLOWS:
 0.82652 g NaCl LOT 926368A
 0.11792 g NaHCO_3 LOT 897789
 20 ml SO_4 - 7/93 STOCK SOLUTION
 10 ml NO_3 - 7/93 "
 2 ml F - 7/93 "
 + DI WATER TO 1000 ml STOCK SOLUTIONS P287
 $T = 95^\circ\text{C}$ DEAERATED WITH NITROGEN
 START PH 8.247
 END PH 9.126
 POTENTIOSTAT ESC 440 #1 CHANNEL #3 DATA
 SAVED AS REPTIM 60.DAT USING REPTIMER.WAB
 REFERENCE SCE FISHER 13-620-SI SN 3106337
 PIT INITIATION 750 mV FOR 1 hour
 PIT GROWTH 500 mV FOR 3.5 hr
 REPASSIVATION 245 mV
 $E_{\text{CORR}} = -629$ KEITHLEY 614
 $E_{\text{PT}} +21$ "
 SPECIMEN STARTED 7/9/93 12:42 pm
 SPECIMEN STOPPED 7/12/93 7:40 pm
 RUNTIME 241278 ~~OP~~ 7/27/94
 REPASSIVATION TIME ~~17997 SEC~~ 71913 SEC
 CHARGE DENSITY 30.0 C/cm²
 SAMPLE MOUNTED IN BARELITE AND SECTIONED

D. J. D. 7/12/93

7/14/93

REPTIM 61 REPASSIVATION TIME

SPECIMEN ALLOY 825 NH4371FG 600 S.C
 $l = 1.912$ $d = 0.245$ WGT AREA = 8.0 cm^2
 PREPARED SAME AS REPTIM 21 P160
 START WT 11.85988 g
 END WT 11.39194 g
 SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F- 1000 ml MADE AS FOLLOWS:
 1.64925 g NaCl LOT 926368A
 0.11779 g NaHCO_3 LOT 897789
 20 ml SO_4 - 7/93 STOCK SOLUTION
 10 ml NO_3 - 7/93 "
 2 ml F - 7/93 "
 + DI WATER TO 1000 ml STOCK SOLUTIONS P 287
 $T = 95^\circ\text{C}$ DEAERATED WITH NITROGEN
 START PH 8.014
 END PH 8.836
 POTENTIOSTAT ESC 440 #1 CHANNEL #4 DATA
 SAVED AS REPTIM 61.DAT USING REPTIMER.WAB
 REFERENCE SCE FISHER 13-620-SI SN 0169033
 PIT INITIATION ~~OP~~ 7/27/94 ~~250 mV FOR 1 HOUR~~ 600 mV FOR 30 min
 PIT GROWTH ~~OP~~ 7/27/94 ~~500 mV FOR 3.5 HOURS~~ 400 mV FOR 33 HOURS
 REPASSIVATION ~~OP~~ 7/27/94 245 mV 49 mV
 $E_{\text{CORR}} -702$ mV KEITHLEY 614
 $E_{\text{PT}} -155$ mV "
 SPECIMEN STARTED 7/12/93 ~~12:42 pm~~ 1:07 pm
 SPECIMEN STOPPED 7/14/93 ~~7:40 am~~ 1:20 pm
 RUNTIME ~~OP~~ 7/27/94 241278 SEC ~~OP~~ 7/27/94 173757 SEC
 REPASSIVATION TIME ~~OP~~ 7/27/94 17997 SEC
 CHARGE DENSITY ~~OP~~ 7/27/94 30.0 C/cm² 229 C/cm²

D. J. D. 7/14/93

7/13/93

REPTIM 62 REPASSIVATION TIME.

SPECIMEN ALLOY 825 NN4371FG 600S.B
 $\ell = 1.913$ $d = 0.247$ NET AREA: 8.0 cm^2
 PREPARED SAME AS REPTIM 21 P160
 START WT 11.77588g
 END WT 11.72268g
 SOLUTION 500 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-} ^{DO 7/27/94}
 10 PPM NO_3^- 2 PPM F^- 1000 ml MAKE AS FOLLOWS
 0.82407 g NaCl LOT 926368A
 0.11803 g NaHCO_3 LOT 897789
 20 ml SO_4^{2-} - 7/93 STOCK SOLUTION
 10 ml NO_3^- - 7/93 "
 2 ml F^- - 7/93 "
 + DI WATER TO 1000 ml STOCK SOLUTION P 287
 $T = 95^\circ\text{C}$ DEGASSED WITH NITROGEN
 START PH 8.119
 END PH 8.997
 POTENTIostat ESC440 #1 CHANNEL #5 DATA
 SAVER AS REPTIM 62.DAT USING REPTIMER 1000
 REFERENCE SCE FISHER 13-620-S1 SN 9214083
 PIT INITIATION 750 mV FOR 1 HOUR
 PIT GROWTH 500 mV FOR ~~39.5 HOURS~~ ^{DO 7/27/94} 3.0 HOURS
 REPASSIVATION 222 mV
 E_{corr} -717 mV
 E_{pt} -84 mV
 SPECIMEN STARTED 7/12/93 1:08 PM
 SPECIMEN STOPPED 7/13/93 6:40 AM
 RUNNING 63273 SEC
 REPASSIVATION TIME 24873
 CHARGE DENSITY 25.9 C/cm²

Dund D 7/13/93

STOCK SOLUTIONS: MAKE 7/7/93

F- 7/93

1000 PPM F^- AS NaF
 2.21219 g NaF LOT 896405 + DI WATER
 TO 1000 ml EXP 8/7/93

SO₄ - 7/93

1000 PPM SO_4^{2-} AS Na_2SO_4
 1.48346 g Na_2SO_4 LOT 901213 + DI WATER
 TO 1000 ml EXP 8/7/93

NO₃ - 7/93

1000 PPM NO_3^- AS NaNO_3
 1.37207 g NaNO_3 LOT 897183 + DI WATER
 TO 1000 ml EXP 8/7/93

2 MCl - 7/93

2 MOLES / LITER Cl^-
 116.89692 g NaCl LOT 926368A
 + DI WATER TO 1000 ml EXP 8/7/93

1 MCl - 7/93

1 MOLE / LITER Cl^-
 58.45118 g NaCl LOT 926368A
 + DI WATER TO 1000 ml EXP 8/7/93

0.5 MCl - 7/93

0.5 MOLE / LITER Cl^-
 29.22222 g NaCl LOT 926368A
 + DI WATER TO 1000 ml EXP 8/7/93

1000 Cl - 7/93

1000 PPM Cl^-
 3.29606 g NaCl LOT 926368A
 + DI WATER TO 2000 ml EXP 8/7/93

100 Cl - 7/93

100 PPM Cl^-
 100 ml 1000 Cl - 7/93 + 900 ml DI WATER
 EXP 8/7/93

Dund D 7/14/93

7/20/93

REPTIM 63 REPASSIVATION TIME

SPECIMEN ALLOY 825 NH437IFG 600S.C

PREPARED SAME AS REPTIM 21 P160

 $l = 1.913$ $d = 0.246$ WET AREA = 8.0

START WT 11.71320 7/21/94

END WT ~~11.71320~~ NOT RECORDEDSOLUTION 1000 PPM Cl^- 85 PPM $NaCO_3$ 20 PPM SO_4^{2-}
10 PPM NO_3^- 2 PPM F- 2000 ml AS FOLLOWS

3.30080 g NaCl LOT 926368A

0.23591 g $NaHCO_3$ LOT 89778940.20 ml SO_4^{2-} 7/93 STOCK SOLUTION20 ml NO_3^- 7/93

4.2 ml F- 7/93

+ DI WATER TO 2000 ml STOCK SOLUTIONS

P 287 T = $95^\circ C$ N₂ THERMO 1238001

DEAERATED WITH NITROGEN

START PH ~~8.216~~ 8.216

END PH 8.986

POTENTIAL STAT ESC 440 #1 CHANNEL #2 DATA
SAVED AS REPTIM 63.DAT USING REPTIMER.WBB

REFERENCE SCE FISHER 13-628-S1 SN 0169033

PIT INITIATION 600 mV FOR 30 min

PIT GROWTH 400 mV FOR 45 hr

REPASSIVATIONS 61 mV

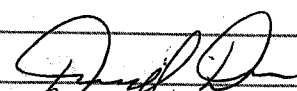
 E_{CORR} -725 mV KEITHLEY 614 E_{PT} -34 mV

SPECIMEN STARTED 3:30 PM 7/20/93

SPECIMEN STOPPED 3:11 PM 7/22/93

RUNTIME 171960 SEC

REPASSIVATION TIME 1321 SEC

CHARGE DENSITY 178 C/cm²

7/22/93

7/20/93

REPTIM 64 REPASSIVATION TIME

SPECIMEN ALLOT 825 NH437IFG 600S.C

PREPARED SAME AS REPTIM 21 P160

 $l = 1.913$ $d = 0.246$ WET AREA = 8.0 cm^2

START WT 11.80035

END WT 11.74369

SOLUTION 500 PPM Cl^- 85 PPM $NaCO_3$ 20 PPM SO_4^{2-}
10 PPM NO_3^- 2 PPM F- 1000 ml AS FOLLOWS

0.82456 g NaCl LOT 926368A

0.12001 g $NaHCO_3$ LOT 89778920 ml SO_4^{2-} 7/93 STOCK SOLUTION10 ml NO_3^- 7/93

2 ml F- 7/93

+ DI WATER TO 1000 ml STOCK SOLUTIONS

P 287 T = $95^\circ C$ N₂ THERMO 0323007

DEAERATED WITH NITROGEN

START PH 8.14

END PH 9.321

POTENTIAL STAT ESC 440 #1 CHANNEL #3 DATA

SAVED AS REPTIM 64.DAT USING REPTIMER.WBB

REFERENCE SCE FISHER 13-620-S1 SN 9214083

PIT INITIATION 750 mV FOR 1 hr

PIT GROWTH 500 mV FOR 4.5 HOURS

REPASSIVATION 21 mV

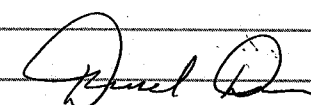
 E_{CORR} -594 mV KEITHLEY 614 E_{PT} -128 mV

SPECIMEN STARTED 3:34 PM 7/20/93

SPECIMEN STOPPED 7:03 AM 7/21/93

RUNTIME 55770 SEC

REPASSIVATION TIME 125 SEC

CHARGE DENSITY 28.4 C/cm²

7/21/93

7/20/93 REPTIM 65 REPASSIVATION TIME.

SPECIMEN ALLOY 82S HN4371FG 600SiC
 PREPARED SAME AS REPTIM 21 P160
 $L = 1.912$ $d = 0.250$ $WGT AREA = 8.00 cm^2$
 START WT 11.79730
 END WT NOT RECORDED
 SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 1000 ml AS FOLLOWS
~~0.82456~~ ~~1.65008~~ g NaCl LOT 926368A
 0.12011 g $NaHCO_3$ LOT 897789
 20 ml SO_4 - 7/93 STOCK SOLUTION P287
 10 ml NO_3 - 7/93 "
 2 ml F^- - 7/93 "
 + DI WATER TO 1000 ml $T = 95^\circ C$
 N₂ THERMO 0323005 DEAERATED WITH NITROGEN
 START PH 8.132
 END PH 9.146
 POTENTIOSTAT ESC 440 #1 CHANNEL 4 DATA
 SAVER AS REPTIM 65.DAT USING REPTIMER.WBB
 REFERENCE SCE FISHER 13-620-S1 SN 0165403
 PIT INITIATION 600 mV FOR 30 min
 PIT GROWTH 400 mV FOR 33 HOURS
 REPASSIVATION 61 mV
 $E_{CORR} = -667 mV$ KEITHLEY 614
 $E_{PT} = -193 mV$ "
 SPECIMEN STARTED 9:16 PM 7/20/93
 SPECIMEN STOPPED 5:16 AM 7/22/93
 RUNTIME ~~11~~ 12600 SEC 7/27/94
 REPASSIVATION TIME ~~12600 SEC~~ 1081 SEC
 CHARGE DENSITY 90.3 C/cm²

Paul D 7/22/93

7/19/93 CREVICE CORROSION 304L-7

SPECIMEN 304L HT# T0954 60 SiC
 CLEANED IN ULTRASONIC BATH RINSED
 IN DI WATER, ACETONE AND DRIED
 $L = 2.502$ ~~1.4~~ $d = 0.498$ $t = 0.121$
 $AREA = 20.754$ 7/27/94
 START WT 20.87586 g
 END WT 20.87534 g
 SOLUTION 1000 PPM Cl^- 85 PPM HCO_3^- 20 PPM SO_4^{2-}
 10 PPM NO_3^- 2 PPM F^- 2000 ml AS FOLLOWS
 3.30080 g NaCl LOT 926368A
 0.23591 g $NaHCO_3$ LOT 897789
 40 ml SO_4 - 7/93 STOCK SOLUTION P287
 20 ml NO_3 - 7/93 "
 4 ml F^- - 7/93 "
 START PH 8.216
 END PH 8.203
 SETUP SPECIMEN PLACED IN PLEXIGLASS CELL WITH
 TWO PORTS AND TORQUED TO 20 INOZ USING
 PROTO 6103 CAL DUE 7/20/93 PLEXIGLASS
 CELL WITH ELECTRODES AND SPECIMEN PLACED
 IN GLASS CELL WITH PLEXIGLASS LID AT
 8:00 PM 7/19/93
 ELECTRODES #'S SAME AS CREVICE CORROSION
 304L-6 P274 LOCATION OF ALL ELECTRODES
 WERE KEPT THE SAME AS P274.
 CONNECTION OF ELECTRODES WITH ORION PH
 METERS SAME AS CREVICE CORROSION 304L-6 P274
 STRIP CHART RECORDERS FOR PH AND Cl^- CONCENTRATION
 MEASUREMENTS SAME AS CREVICE CORROSION 304L-6 P274
 BULK $Ag/AgCl$ TIP $Ag/AgCl$ AND MOUTH $Ag/AgCl$
 REFERENCE ELECTRODES CONNECTED TO ESC 440 #2
 DATA SAVER AS 304L-7.DAT USING CREVICE.WBB
 ELECTRODES CALIBRATED USING Cl^- STOCK SOLUTIONS
 P287 AND STANDARD BUFFERS

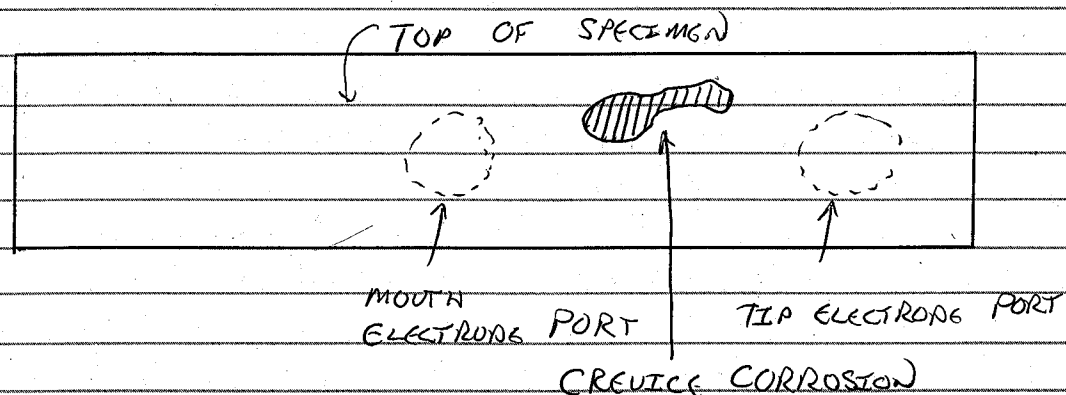
Paul D 7/19/93

7/30/93

CREVICE CORROSION 304L-7

PA TIP MI 506 # 43720 / A_9/A_9Cl REF # 41436
 pH = $-18.3(V) + 7.08$
 PA MOUTH MI 506 # 43717 / A_9/A_9Cl REF # 44628
 pH = $-17.2(V) + 6.96$
 PA BULK MI 506 # 44817 / A_9/A_9Cl REF # 45860
 pH = $-17.1(V) + 6.67$
 CI TIP MI 200 # 47228 / A_9/A_9Cl REF # 44629
 ppm Cl^- = EXP $[-0.0521(mV) + 12.14]$
 CI MOUTH MI 200 # 47226 / A_9/A_9Cl REF # 44621
 ppm Cl^- = EXP $[-0.0533(mV) + 12.17]$
 CI BULK MI 200 # 42998 / A_9/A_9Cl REF # 43647
 ppm Cl^- = EXP $[-0.0479(mV) + 12.24]$

AT THE CONCLUSION OF THE TEST THE SPECIMEN WAS OBSERVED TO HAVE SMALL REGIONS OF CREVICE CORROSION BETWEEN THE TWO ELECTRODE PORTS. NO CREVICE CORROSION WAS OBSERVED ON THE BOTTOM OF THE SPECIMEN. 2:1 SCALE



CURRENT DENSITY AND POTENTIAL WERE WRITTEN DIRECTLY TO DISC TO FILE 304L-7.DAT USING CREVICE.WBB. pH AND ppm Cl^- WERE ADDED FROM CHART RECORDER TRACES. DATA (COMPLETE) SAVED AS 304L-7.WK1 USING QPRO

PLOTS P 293 & 294

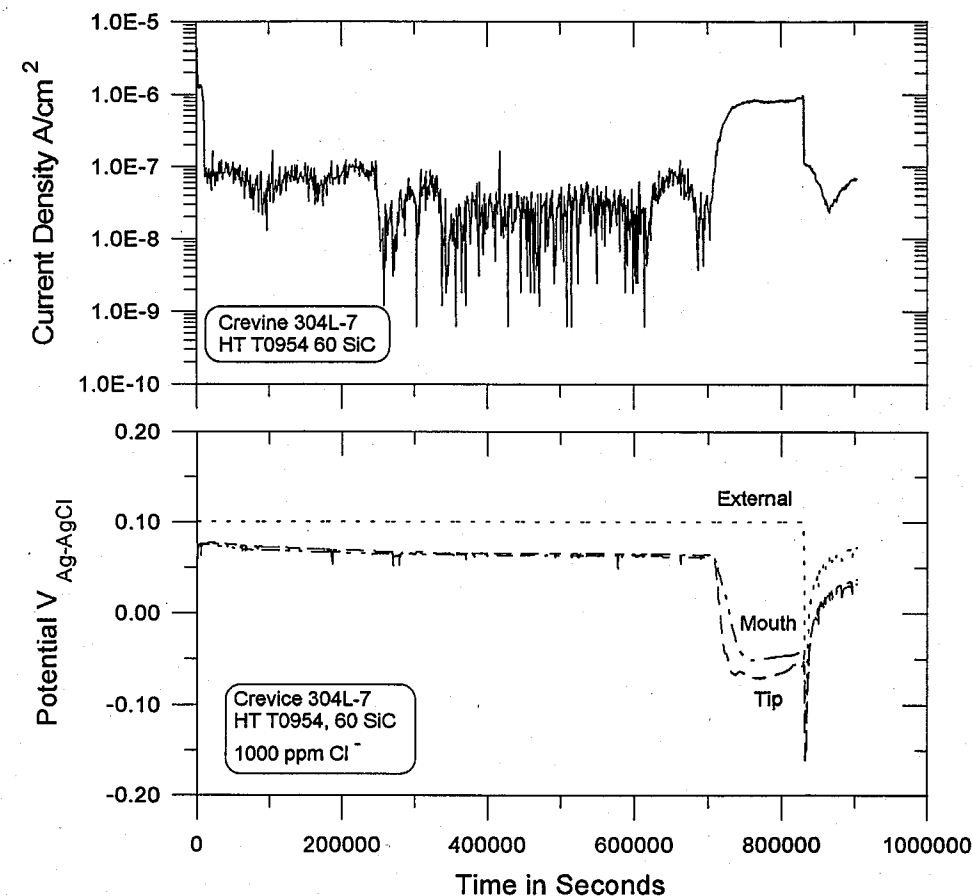
7/30/93

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CREVICE CORROSION 304L-7

DATA FOR CREVICE TIP POTENTIAL IN THE TIME SPAN OF 500,000 - 600,000 SECONDS CORRECTED FOR ELECTRONIC NOISE INTERFERENCE

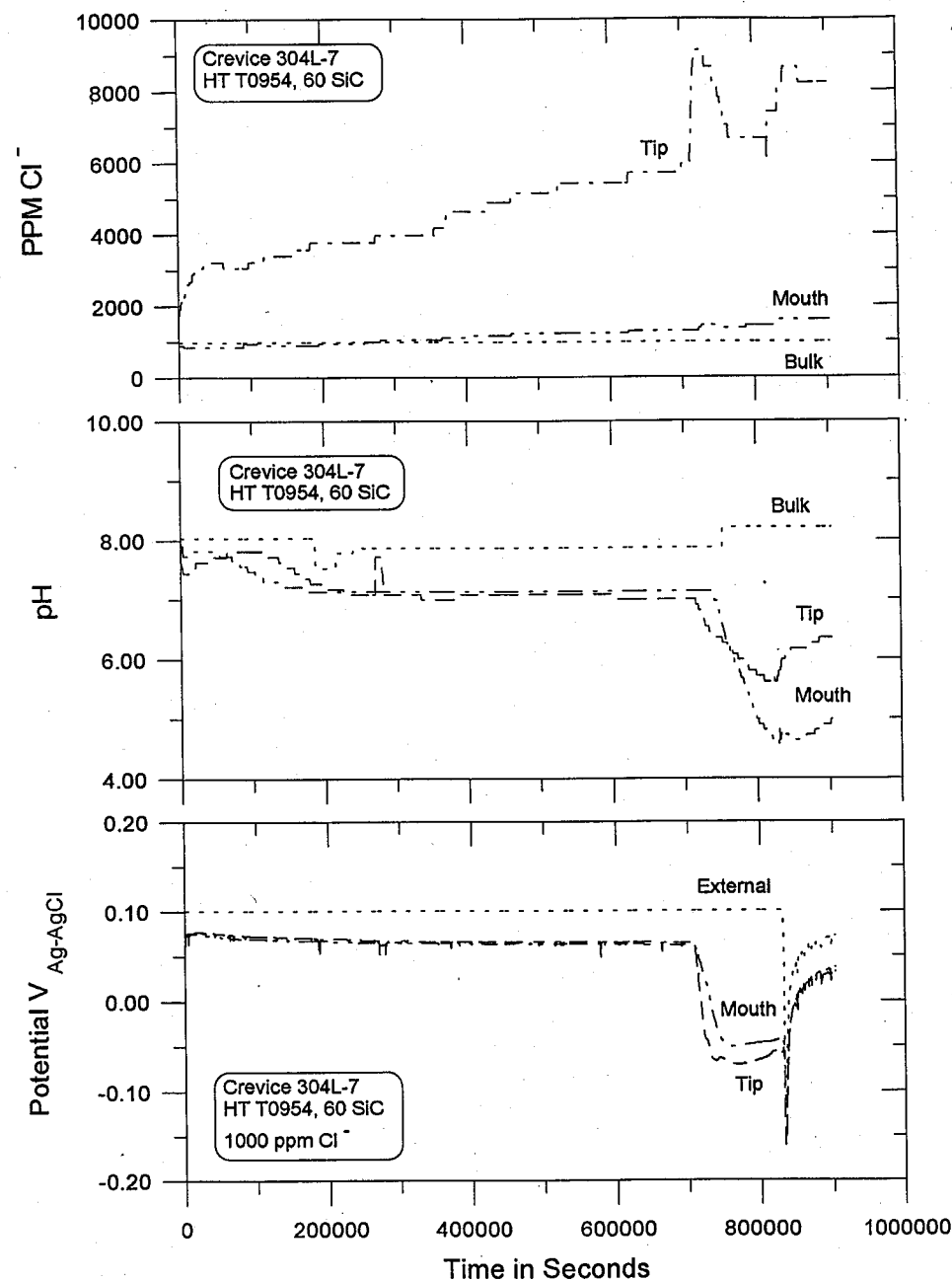
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PH AND Cl^- ISE CALIBRATION DATA SAVED AS 304L7CAL.DAT ON INAG 025 DISK

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OBJECTIVES

● Verify/Validate Model Predictions

- ☐ Qualitatively
- ☐ Quantitatively

● Understand Repassivation

● Develop Techniques to Study Local Environments

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JUSTIFICATION

- 1) Models currently predict that pCl/pH decreases first followed by increase in current
- 2) Models for stainless alloys independent of external potential.
- 3) Models predict that change in pH & pCl depend on surface roughness (crevice gap)
- 4) Models predict that pCl increases first and then repassivation occurs.

Approach

The above predictions will be verified/tested by simultaneously monitoring current, potential and pH and pCl inside a controlled crevice.

Microelectrodes of the flexible kind will be used. Plexiglas crevice will be used to provide a tight crevice. Tests will be done at near RT so pH electrodes of the flexible variety from Microelectrodes can be used.

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Worksheet Name: REPASS4F.WBB
 Hardware list:

Name	AI's	AO's	DIO's	CT's	DI's	DO's
STI ACPC-16	16	0	16	0	0	0
STI ACAO-12	0	8	8	0	0	0

Maximum icons: 608
 Grid size: 16
 Snap to grid: < disabled >
 Report Unsynch: < disabled >
 Fast Mode: enabled
 Fast Mode samples: 1000
 Fast Mode rate: 1.0 Kilohertz
 Trigger level: -10.0
 Trigger source: Positive
 Trigger slope: Analog
 Trigger mode: None
 Pre-trigger samples: 0
 Com ports: 2

Port: COM 1
 Comment: Mouse connected

Port: COM 2
 Baud rate: 9600
 Data bits: 8
 Stop bits: 1
 Duplex: Half
 Parity: None
 XonXoff: < disabled >
 Echo wait: < disabled >
 Line delay: < disabled >

IEEE: < disabled >

Type: Analog Input

Name: AI:3 current ch. 2
 Card Type: STI ACPC-16
 Channel Number: 3
 Range: +/-Auto V
 Resolution: Lo Noise (17ms)
 Output Type: Voltage
 Sample rate: 10.0 Hertz
 Fast Mode: < disabled >
 Inputs: < None >
 Outputs: CA2 c.d. ch.2

Name: AI:4 Measured Pot
 Card Type: STI ACPC-16
 Channel Number: 4
 Range: +/-Auto V
 Resolution: Lo Noise (17ms)
 Output Type: Voltage
 Sample rate: 10.0 Hertz
 Fast Mode: < disabled >
 Inputs: < None >
 Outputs: CA13 Invert

Name: AI:5 current ch.3
 Card Type: STI ACPC-16

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Channel Number: 5
 Range: +/-Auto V
 Resolution: Lo Noise (17ms)
 Output Type: Voltage
 Sample rate: 10.0 Hertz
 Fast Mode: < disabled >
 Inputs:
 < None >
 Outputs:
 CA1 c.d. ch.3

Name: AI:6 Measured Pot
 Card Type: STI ACPC-16
 Channel Number: 6
 Range: +/-Auto V
 Resolution: Lo Noise (17ms)
 Output Type: Voltage
 Sample rate: 10.0 Hertz
 Fast Mode: < disabled >
 Inputs:
 < None >
 Outputs:
 CA7 Invert

Name: AI:7 current ch.4
 Card Type: STI ACPC-16
 Channel Number: 7
 Range: +/-Auto V
 Resolution: Lo Noise (17ms)
 Output Type: Voltage
 Sample rate: 10.0 Hertz
 Fast Mode: < disabled >
 Inputs:
 < None >
 Outputs:
 CA21 c.d. ch.4

Name: AI:8 Measured Pot
 Card Type: STI ACPC-16
 Channel Number: 8
 Range: +/-Auto V
 Resolution: Lo Noise (17ms)
 Output Type: Voltage
 Sample rate: 10.0 Hertz
 Fast Mode: < disabled >
 Inputs:
 < None >
 Outputs:
 CA26 Invert

Name: AI:9 current ch.5
 Card Type: STI ACPC-16
 Channel Number: 9
 Range: +/-Auto V
 Resolution: Lo Noise (17ms)
 Output Type: Voltage
 Sample rate: 10.0 Hertz
 Fast Mode: < disabled >
 Inputs:
 < None >
 Outputs:
 CA32 c.d. ch.5

Name: AI:10 Measured Pot
 Card Type: STI ACPC-16
 Channel Number: 10

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Range: +|-Auto V
 Resolution: Lo Noise (17ms)
 Output Type: Voltage
 Sample rate: 10.0 Hertz
 Fast Mode: < disabled >
 Inputs:
 < None >
 Outputs:
 CA37 Invert

Type: Timer

Name:	TI1	Timer		
Inputs:	PL1	Trigger start		
Outputs:	SP1	initial time	SP5	Set Point
	LO1	RPN2.DAT	MT7	ch3 time
Name:	TI2	Timer		
Inputs:	PL2	Pulse		
Outputs:	SP3	initial time	SP6	Set Point
	LO2	RPN1.DAT	MT8	ch 2 time
Name:	TI3	Timer		
Inputs:	PL7	Trigger start		
Outputs:	SP7	initial time	SP9	Set Point
	LO3	RPN3.DAT	MT14	ch4 time
Name:	TI4	Timer		
Inputs:	PL10	Trigger start		
Outputs:	SP10	initial time	SP12	Set Point
	LO4	RPN4.DAT	MT20	ch5 time

Type: Pulse

Name:	PL1	Trigger start
High Duration:	10000.0	Hours
Low Duration:	0.1	Minutes
Start Value:	Low	
Reset on exit	< disabled >	
Inputs:	< None >	
Outputs:	TI1	Timer
Name:	PL2	Pulse
High Duration:	10000.0	Hours
Low Duration:	0.1	Minutes
Start Value:	Low	
Reset on exit	< disabled >	
Inputs:	< None >	
Outputs:	TI2	Timer

Name:	PL3	step time
High Duration:	0.1	Seconds
Low Duration:	2.0	Seconds
Start Value:	Low	

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Reset on exit enabled

Inputs:

SP1 initial time

Outputs:

LG3 And

Name:

PL4 Step time

High Duration:

0.1 Seconds

Low Duration:

2.0 Seconds

Start Value:

Low

Reset on exit

enabled

Inputs:

SP3 initial time

Outputs:

LG4 And

Name:

PL5 Pulse

High Duration:

1.0 Minutes

Low Duration:

3.0 Hours

Start Value:

Low

Reset on exit

enabled

Inputs:

< None >

Outputs:

SY1 System

Name:

PL6 Pulse

High Duration:

1.0 Minutes

Low Duration:

3.0 Hours

Start Value:

Low

Reset on exit

enabled

Inputs:

< None >

Outputs:

SY2 System

Name:

PL7 Trigger start

High Duration:

10000.0 Hours

Low Duration:

0.1 Minutes

Start Value:

Low

Reset on exit

< disabled >

Inputs:

< None >

Outputs:

TI3 Timer

Name:

PL8 step time

High Duration:

0.1 Seconds

Low Duration:

2.0 Seconds

Start Value:

Low

Reset on exit

enabled

Inputs:

SP7 initial time

Outputs:

LG6 And

Name:

PL9 Pulse

High Duration:

1.0 Minutes

Low Duration:

3.0 Hours

Start Value:

Low

Reset on exit

enabled

Inputs:

< None >

Outputs:

SY3 System

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Name: PL10 Trigger start
 High Duration: 10000.0 Hours
 Low Duration: 0.1 Minutes
 Start Value: Low
 Reset on exit: enabled
 Inputs: < None >
 Outputs: TI4 Timer

Name: PL11 step time
 High Duration: 0.1 Seconds
 Low Duration: 2.0 Seconds
 Start Value: Low
 Reset on exit: enabled
 Inputs: SP10 initial time
 Outputs: LG8 And

Name: PL12 Pulse
 High Duration: 1.0 Minutes
 Low Duration: 3.0 Hours
 Start Value: Low
 Reset on exit: enabled
 Inputs: < None >
 Outputs: SY4 System

Type: Calculation

Name: CA1 c.d. ch.3
 Function: aX / bY
 X input: AI:5 current ch.3
 Y input: 8.0
 "a" constant: -1.0
 "b" constant: 10.0
 "c" constant: 0.0
 Inputs: AI:5 current ch.3
 Outputs: MT1 C.d. Ch.3 CH3 c.d. ch3 CA5 Charge
 CA11 Scale-up LO1 RPN2.DAT

Name: CA2 c.d. ch.2
 Function: aX / bY
 X input: AI:3 current ch. 2
 Y input: 8.0
 "a" constant: -1.0
 "b" constant: 10.0
 "c" constant: 0.0
 Inputs: AI:3 current ch. 2
 Outputs: MT4 c.d. ch.2 CH4 C D ch 2 CA10 Charge
 CA14 Scale-up LO2 RPN1.DAT

Name: CA3 Set Pot
 Function: aX + bY + c
 X input: LG1 and
 Y input: CA16 Reverse scan
 "a" constant: -0.01
 "b" constant: 1.0
 "c" constant: 0.275
 Inputs:

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LG1 and	CA16 Reverse scan
Outputs:	
CA6 fback s1	MT9 CH3 Vset
Name:	CA4 minimum
Function:	Min(X) for last (a) seconds
X input:	CA11 Scale-up
Y input:	0.0
"a" constant:	2.0
"b" constant:	0.0
"c" constant:	0.0
Inputs:	
CA11 Scale-up	
Outputs:	
SP2 Set Point	
Name:	CA5 Charge
Function:	Integral X dt
X input:	CA1 c.d. ch.3
Y input:	SP5 Set Point
"a" constant:	0.0
"b" constant:	0.0
"c" constant:	0.0
Inputs:	
CA1 c.d. ch.3	SP5 Set Point
Outputs:	
MT2 Charge/cm2	LO1 RPN2.DAT
Name:	CA6 fback s1
Function:	Global Feedback(a:address)
X input:	CA3 Set Pot
Y input:	0.0
"a" constant:	1.0
"b" constant:	0.0
"c" constant:	0.0
Inputs:	
CA3 Set Pot	
Outputs:	
< None >	
Name:	CA7 Invert
Function:	aX + bY
X input:	AI:6 Measured Pot
Y input:	0.0
"a" constant:	-1.0
"b" constant:	0.0
"c" constant:	0.0
Inputs:	
AI:6 Measured Pot	
Outputs:	
MT3 Pot Ch.3	LO1 RPN2.DAT
Name:	CA8 Set Pot
Function:	aX + bY + c
X input:	LG2 and
Y input:	CA18 Reverse scan
"a" constant:	-0.01
"b" constant:	1.0
"c" constant:	0.3
Inputs:	
LG2 and	CA18 Reverse scan
Outputs:	
AO:2 pot ch 2	CA12 fback s1
Name:	CA9 minimum
Function:	Min(Y) for last (a) seconds

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X input: CA14 Scale-up
 Y input: 0.0
 "a" constant: 2.0
 "b" constant: 0.0
 "c" constant: 0.0

Inputs:
 CA14 Scale-up
 Outputs:
 SP4 Set Point

Name: CA10 Charge
 Function: Integral X dt
 X input: CA2 c.d. ch.2
 Y input: SP6 Set Point
 "a" constant: 0.0
 "b" constant: 0.0
 "c" constant: 0.0

Inputs:
 CA2 c.d. ch.2 SP6 Set Point
 Outputs:
 MT5 Charge/cm2 LO2 RPN1.DAT

Name: CA11 Scale-up
 Function: $aX + bY$
 X input: CA1 c.d. ch.3
 Y input: 0.0
 "a" constant: 10000.0
 "b" constant: 0.0
 "c" constant: 0.0

Inputs:
 CA1 c.d. ch.3
 Outputs:
 CA4 minimum

Name: CA12 fback s1
 Function: Global Feedback(a:address)
 X input: CA8 Set Pot
 Y input: 0.0
 "a" constant: 2.0
 "b" constant: 0.0
 "c" constant: 0.0

Inputs:
 CA8 Set Pot
 Outputs:
 < None >

Name: CA13 Invert
 Function: $aX + bY$
 X input: AI:4 Measured Pot
 Y input: 0.0
 "a" constant: -1.0
 "b" constant: 0.0
 "c" constant: 0.0

Inputs:
 AI:4 Measured Pot
 Outputs:
 MT6 Pot Ch.2 LO2 RPN1.DAT

Name: CA14 Scale-up
 Function: $aX + bY$
 X input: CA2 c.d. ch.2
 Y input: 0.0
 "a" constant: 10000.0
 "b" constant: 0.0
 "c" constant: 0.0

Inputs:

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CA2 c.d. ch.2
 Outputs:
 CA9 minimum

Name: CA15 fback d1
 Function: Global Feedback(a:address)
 X input: 0.0
 Y input: 0.0
 "a" constant: 1.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs:
 < None >
 Outputs:
 CA16 Reverse scan

Name: CA16 Reverse scan
 Function: $c(X + a)(Y + b)$
 X input: CA15 fback d1
 Y input: SP1 initial time
 "a" constant: -0.25
 "b" constant: 0.0
 "c" constant: 1.0
 Inputs:
 CA15 fback d1 SP1 initial time
 Outputs:
 CA3 Set Pot

Name: CA17 fback d1
 Function: Global Feedback(a:address)
 X input: 0.0
 Y input: 0.0
 "a" constant: 2.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs:
 < None >
 Outputs:
 CA18 Reverse scan

Name: CA18 Reverse scan
 Function: $c(X + a)(Y + b)$
 X input: CA17 fback d1
 Y input: SP3 initial time
 "a" constant: -0.225
 "b" constant: 0.0
 "c" constant: 1.0
 Inputs:
 CA17 fback d1 SP3 initial time
 Outputs:
 CA8 Set Pot

Name: CA19 Calculation
 Function: $X + Y$
 X input: 0.275
 Y input: 0.0
 "a" constant: 0.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs:
 < None >
 Outputs:
 < None >

Name: CA21 c.d. ch.4
 Function: aX / bY

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X input: AI:7 current ch.4
 Y input: 8.0
 "a" constant: -1.0
 "b" constant: 10.0
 "c" constant: 0.0
 Inputs:
 AI:7 current ch.4
 Outputs:
 CH6 c.d. ch.4 MT11 C.d. Ch.4 CA24 Charge
 CA27 Scale-up LO3 RPN3.DAT

Name: CA22 Set Pot
 Function: $aX + bY + c$
 X input: LG5 and
 Y input: CA29 Reverse scan
 "a" constant: -0.01
 "b" constant: 1.0
 "c" constant: 0.25
 Inputs:
 LG5 and CA29 Reverse scan
 Outputs:
 CH5 set pot. ch.4 MT15 CH4 Vset CA25 fback s1

Name: CA23 minimum
 Function: Min(X) for last (a) seconds
 X input: CA27 Scale-up
 Y input: 0.0
 "a" constant: 2.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs:
 CA27 Scale-up
 Outputs:
 SP8 Set Point

Name: CA24 Charge
 Function: Integral X dt
 X input: CA21 c.d. ch.4
 Y input: SP9 Set Point
 "a" constant: 0.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs:
 CA21 c.d. ch.4 SP9 Set Point
 Outputs:
 MT12 Charge/cm2 LO3 RPN3.DAT

Name: CA25 fback s1
 Function: Global Feedback(a:address)
 X input: CA22 Set Pot
 Y input: 0.0
 "a" constant: 3.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs:
 CA22 Set Pot
 Outputs:
 < None >

Name: CA26 Invert
 Function: $aX + bY$
 X input: AI:8 Measured Pot
 Y input: 0.0
 "a" constant: -1.0
 "b" constant: 0.0
 "c" constant: 0.0

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Inputs:
AI:8 Measured Pot
Outputs:
MT13 Pot Ch.4

LO3 RPN3.DAT

Name: CA27 Scale-up
Function: $aX + bY$
X input: CA21 c.d. ch.4
Y input: 0.0
"a" constant: 10000.0
"b" constant: 0.0
"c" constant: 0.0

Inputs:
CA21 c.d. ch.4
Outputs:
CA23 minimum

Name: CA28 fback d1
Function: Global Feedback(a:address)
X input: 0.0
Y input: 0.0
"a" constant: 3.0
"b" constant: 0.0
"c" constant: 0.0

Inputs:
< None >
Outputs:
CA29 Reverse scan

Name: CA29 Reverse scan
Function: $c(X + a)(Y + b)$
X input: CA28 fback d1
Y input: SP7 initial time
"a" constant: -0.275
"b" constant: 0.0
"c" constant: 1.0

Inputs:
CA28 fback d1 SP7 initial time
Outputs:
CA22 Set Pot

Name: CA30 Calculation
Function: $X + Y$
X input: 0.25
Y input: 0.0
"a" constant: 0.0
"b" constant: 0.0
"c" constant: 0.0

Inputs:
< None >
Outputs:
< None >

Name: CA31 Calculation
Function: WB cycle time(msecs)
X input: 0.0
Y input: 0.0
"a" constant: 0.0
"b" constant: 0.0
"c" constant: 0.0

Inputs:
< None >
Outputs:
MT16 Cycle time

Name: CA32 c.d. ch.5

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Function: aX / bY
 X input: AI:9 current ch.5
 Y input: 8.0
 "a" constant: -1.0
 "b" constant: 10.0
 "c" constant: 0.0
 Inputs:
 AI:9 current ch.5
 Outputs:
 CH8 c.d. ch.5 MT17 C.d. Ch.5 CA35 Charge
 CA38 Scale-up LO4 RPN4.DAT

Name: CA33 Set Pot
 Function: aX + bY + c
 X input: LG7 and
 Y input: CA40 Reverse scan
 "a" constant: -0.01
 "b" constant: 1.0
 "c" constant: 0.225
 Inputs:
 LG7 and CA40 Reverse scan
 Outputs:
 CH7 set pot. ch.5 MT21 ch5 Vset CA36 fback s1

Name: CA34 minimum
 Function: Min(X) for last (a) seconds
 X input: CA38 Scale-up
 Y input: 0.0
 "a" constant: 2.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs:
 CA38 Scale-up
 Outputs:
 SP11 Set Point

Name: CA35 Charge
 Function: Integral X dt
 X input: CA32 c.d. ch.5
 Y input: SP12 Set Point
 "a" constant: 0.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs:
 CA32 c.d. ch.5 SP12 Set Point
 Outputs:
 MT18 Charge/cm2 LO4 RPN4.DAT

Name: CA36 fback s1
 Function: Global Feedback(a:address)
 X input: CA33 Set Pot
 Y input: 0.0
 "a" constant: 4.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs:
 CA33 Set Pot
 Outputs:
 < None >

Name: CA37 Invert
 Function: aX + bY
 X input: AI:10 Measured Pot
 Y input: 0.0
 "a" constant: -1.0
 "b" constant: 0.0

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"c" constant: 0.0

Inputs:

AI:10 Measured Pot

Outputs:

MT19 Pot Ch.5

LO4 RPN4.DAT

Name:

CA38 Scale-up

Function:

$aX + bY$

X input:

CA32 c.d. ch.5

Y input:

0.0

"a" constant:

10000.0

"b" constant:

0.0

"c" constant:

0.0

Inputs:

CA32 c.d. ch.5

Outputs:

CA34 minimum

Name:

CA39 fback d1

Function:

Global Feedback(a:address)

X input:

0.0

Y input:

0.0

"a" constant:

4.0

"b" constant:

0.0

"c" constant:

0.0

Inputs:

< None >

Outputs:

CA40 Reverse scan

Name:

CA40 Reverse scan

Function:

$c(X + a)(Y + b)$

X input:

CA39 fback d1

Y input:

SP10 initial time

"a" constant:

-0.275

"b" constant:

0.0

"c" constant:

1.0

Inputs:

CA39 fback d1

SP10 initial time

Outputs:

CA33 Set Pot

Name:

CA41 Calculation

Function:

$X + Y$

X input:

0.225

Y input:

0.0

"a" constant:

0.0

"b" constant:

0.0

"c" constant:

0.0

Inputs:

< None >

Outputs:

< None >

Type: Set Point

Name:

SP1 initial time

Function:

$X > Y$

X input:

TI1 Timer

Y input:

1.0e+07

Dead Band:

0.0

Inputs:

TI1 Timer

Outputs:

LG1 and

PL3 step time

CA16 Reverse scan

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Name: SP2 Set Point
 Function: X > Y
 X input: CA4 minimum
 Y input: 0.5
 Dead Band: 0.1
 Inputs:
 CA4 minimum
 Outputs:
 LG3 And

Name: SP3 initial time
 Function: X > Y
 X input: TI2 Timer
 Y input: 5.95e+05
 Dead Band: 0.0
 Inputs:
 TI2 Timer
 Outputs:
 LG2 and

PL4 Step time

CA18 Reverse scan

Name: SP4 Set Point
 Function: X > Y
 X input: CA9 minimum
 Y input: 0.5
 Dead Band: 0.01
 Inputs:
 CA9 minimum
 Outputs:
 LG4 And

Name: SP5 Set Point
 Function: X < Y
 X input: TI1 Timer
 Y input: 2.0
 Dead Band: 0.0
 Inputs:
 TI1 Timer
 Outputs:
 CA5 Charge

Name: SP6 Set Point
 Function: X < Y
 X input: TI2 Timer
 Y input: 2.0
 Dead Band: 0.0
 Inputs:
 TI2 Timer
 Outputs:
 CA10 Charge

Name: SP7 initial time
 Function: X > Y
 X input: TI3 Timer
 Y input: 1.0e+07
 Dead Band: 0.0
 Inputs:
 TI3 Timer
 Outputs:
 LG5 and

PL8 step time

CA29 Reverse scan

Name: SP8 Set Point
 Function: X > Y
 X input: CA23 minimum
 Y input: 0.5
 Dead Band: 0.0
 Inputs:

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CA23 minimum
Outputs:
LG6 And

Name: SP9 Set Point
Function: X < Y
X input: TI3 Timer
Y input: 2.0
Dead Band: 0.0
Inputs:
TI3 Timer
Outputs:
CA24 Charge

Name: SP10 initial time
Function: X > Y
X input: TI4 Timer
Y input: 1.0e+07
Dead Band: 0.0
Inputs:

TI4 Timer

Outputs:
LG7 and

PL11 step time

CA40 Reverse scan

Name: SP11 Set Point
Function: X > Y
X input: CA34 minimum
Y input: 0.5
Dead Band: 0.0
Inputs:
CA34 minimum
Outputs:
LG8 And

Name: SP12 Set Point
Function: X < Y
X input: TI4 Timer
Y input: 2.0
Dead Band: 0.0
Inputs:
TI4 Timer
Outputs:
CA35 Charge

Type: Logic

Name: LG1 and
Function: X AND Y
X input: SP1 initial time
Y input: LG3 And
Inputs:
SP1 initial time LG3 And
Outputs:
CA3 Set Pot

Name: LG2 and
Function: X AND Y
X input: SP3 initial time
Y input: LG4 And
Inputs:
SP3 initial time LG4 And
Outputs:
CA8 Set Pot

Name: LG3 And
Function: X AND Y

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X input: PL3 step time
 Y input: SP2 Set Point
 Inputs:
 PL3 step time SP2 Set Point
 Outputs:
 LG1 and

Name: LG4 And
 Function: X AND Y
 X input: PL4 Step time
 Y input: SP4 Set Point
 Inputs:
 PL4 Step time SP4 Set Point
 Outputs:
 LG2 and

Name: LG5 and
 Function: X AND Y
 X input: SP7 initial time
 Y input: LG6 And
 Inputs:
 SP7 initial time LG6 And
 Outputs:
 CA22 Set Pot

Name: LG6 And
 Function: X AND Y
 X input: PL8 step time
 Y input: SP8 Set Point
 Inputs:
 PL8 step time SP8 Set Point
 Outputs:
 LG5 and

Name: LG7 and
 Function: X AND Y
 X input: SP10 initial time
 Y input: LG8 And
 Inputs:
 SP10 initial time LG8 And
 Outputs:
 CA33 Set Pot

Name: LG8 And
 Function: X AND Y
 X input: PL11 step time
 Y input: SP11 Set Point
 Inputs:
 PL11 step time SP11 Set Point
 Outputs:
 LG7 and

Type: Log

Name: LO1 RPN2.DAT
 Log Status: < disabled >
 Sample Rate: 60.0 Seconds
 Gate: < None >
 Data Format:
 Heading: < None >
 File Path: C:\WB\DATA
 File Name: RPN2.DAT
 Date Stamp: enabled
 Time Stamp: enabled
 Inputs:
 T11 Timer CA7 Invert CA1 c.d. ch.3

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CA5 Charge

Outputs:

< None >

Name: LO2 RPN1.DAT
 Log Status: < disabled >
 Sample Rate: 60.0 Seconds
 Gate: < None >
 Data Format:
 Heading: < None >
 File Path: C:\WB\DATA
 File Name: RPN1.DAT
 Date Stamp: enabled
 Time Stamp: enabled

Inputs:

CA13 Invert

TI2 Timer

CA2 c.d. ch.2

CA10 Charge

Outputs:

< None >

Name: LO3 RPN3.DAT
 Log Status: < disabled >
 Sample Rate: 60.0 Seconds
 Gate: < None >
 Data Format:
 Heading: < None >
 File Path: C:\WB\DATA
 File Name: RPN3.DAT
 Date Stamp: enabled
 Time Stamp: enabled

Inputs:

TI3 Timer

CA26 Invert

CA21 c.d. ch.4

CA24 Charge

Outputs:

< None >

Name: LO4 RPN4.DAT
 Log Status: < disabled >
 Sample Rate: 60.0 Seconds
 Gate: < None >
 Data Format:
 Heading: < None >
 File Path: C:\WB\DATA
 File Name: RPN4.DAT
 Date Stamp: enabled
 Time Stamp: enabled

Inputs:

TI4 Timer

CA37 Invert

CA32 c.d. ch.5

CA35 Charge

Outputs:

< None >

Type: Meter

Name: MT1 C.d. Ch.3
 Output Type: Exponential
 Units: A/cm2
 Integer: 8
 Decimal: 1

Inputs:

CA1 c.d. ch.3

Outputs:

< None >

Name: MT2 Charge/cm2
 Output Type: Exponential

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Units: Coul/cm2
 Integer: 8
 Decimal: 1
 Inputs:
 CA5 Charge
 Outputs:
 < None >

Name: MT3 Pot Ch.3
 Output Type: Fixed Point
 Units: Volt
 Integer: 6
 Decimal: 3
 Inputs:
 CA7 Invert
 Outputs:
 < None >

Name: MT4 c.d. ch.2
 Output Type: Exponential
 Units: A/cm2
 Integer: 8
 Decimal: 1
 Inputs:
 CA2 c.d. ch.2
 Outputs:
 < None >

Name: MT5 Charge/cm2
 Output Type: Exponential
 Units: Coul/cm2
 Integer: 8
 Decimal: 1
 Inputs:
 CA10 Charge
 Outputs:
 < None >

Name: MT6 Pot Ch.2
 Output Type: Fixed Point
 Units: Volt
 Integer: 6
 Decimal: 3
 Inputs:
 CA13 Invert
 Outputs:
 < None >

Name: MT7 ch3 time
 Output Type: Fixed Point
 Units: < None >
 Integer: 9
 Decimal: 0
 Inputs:
 TI1 Timer
 Outputs:
 < None >

Name: MT8 ch 2 time
 Output Type: Fixed Point
 Units: sec
 Integer: 9
 Decimal: 0
 Inputs:
 TI2 Timer
 Outputs:

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< None >

Name: MT9 CH3 Vset
 Output Type: Fixed Point
 Units: < None >
 Integer: 6
 Decimal: 3
 Inputs: CA3 Set Pot
 Outputs: < None >

Name: MT10 CH2 Vset
 Output Type: Fixed Point
 Units: < None >
 Integer: 6
 Decimal: 3
 Inputs: < None >
 Outputs: < None >

Name: MT11 C.d. Ch.4
 Output Type: Exponential
 Units: A/cm2
 Integer: 8
 Decimal: 1
 Inputs: CA21 c.d. ch.4
 Outputs: < None >

Name: MT12 Charge/cm2
 Output Type: Exponential
 Units: Coul/cm2
 Integer: 8
 Decimal: 1
 Inputs: CA24 Charge
 Outputs: < None >

Name: MT13 Pot Ch.4
 Output Type: Fixed Point
 Units: Volt
 Integer: 6
 Decimal: 3
 Inputs: CA26 Invert
 Outputs: < None >

Name: MT14 ch4 time
 Output Type: Fixed Point
 Units: < None >
 Integer: 9
 Decimal: 0
 Inputs: TI3 Timer
 Outputs: < None >

Name: MT15 CH4 Vset
 Output Type: Fixed Point
 Units: < None >
 Integer: 6

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Type: Chart

Name: CH3 c.d. ch3
 Chart Color: White
 X Axis Label: Hours
 X Axis Min: 0.0
 X Axis Max: 24.0
 Y Axis Label: < None >
 Y Axis Min: 0.00001
 Y Axis Max: 0.005

Inputs:
 CA1 c.d. ch.3

Outputs:
 < None >

Name: CH4 C D ch 2
 Chart Color: White
 X Axis Label: Hours
 X Axis Min: 0.0
 X Axis Max: 24.0
 Y Axis Label: < None >
 Y Axis Min: 0.00001
 Y Axis Max: 0.005

Inputs:
 CA2 c.d. ch.2

Outputs:
 < None >

Name: CH5 set pot. ch.4
 Chart Color: White
 X Axis Label: Hours
 X Axis Min: 0.0
 X Axis Max: 24.0
 Y Axis Label: < None >
 Y Axis Min: 0.5
 Y Axis Max: 0.8

Inputs:
 CA22 Set Pot

Outputs:
 < None >

Name: CH6 c.d. ch.4
 Chart Color: White
 X Axis Label: Hours
 X Axis Min: 0.0
 X Axis Max: 24.0
 Y Axis Label: < None >
 Y Axis Min: 0.00001
 Y Axis Max: 0.005

Inputs:
 CA21 c.d. ch.4

Outputs:
 < None >

Name: CH7 set pot. ch.5
 Chart Color: White
 X Axis Label: Hours
 X Axis Min: 0.0
 X Axis Max: 24.0
 Y Axis Label: < None >
 Y Axis Min: 0.5
 Y Axis Max: 0.8

Inputs:
 CA33 Set Pot

Outputs:
 < None >

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Name: CH8 c.d. ch.5
 Chart Color: White
 X Axis Label: Hours
 X Axis Min: 0.0
 X Axis Max: 24.0
 Y Axis Label: < None >
 Y Axis Min: 0.00001
 Y Axis Max: 0.005

Inputs:
 CA32 c.d. ch.5

Outputs:
 < None >

Type: Analog Output

Name: AO:2 pot ch 2
 Card Type: STI ACAO-12
 Channel Number: 2
 Range: +/- 5 Volts
 Resolution: 0.024%

Inputs:
 CAB Set Pot

Outputs:
 < None >

Name: AO:3 Set Pot Ch.3
 Card Type: STI ACAO-12
 Channel Number: 3
 Range: +/- 5 Volts
 Resolution: 0.024%

Inputs:
 < None >

Outputs:
 < None >

Name: AO:4 Set Pot Ch.4
 Card Type: STI ACAO-12
 Channel Number: 4
 Range: +/- 5 Volts
 Resolution: 0.024%

Inputs:
 < None >

Outputs:
 < None >

Name: AO:5 Set Pot Ch.5
 Card Type: STI ACAO-12
 Channel Number: 5
 Range: +/- 5 Volts
 Resolution: 0.024%

Inputs:
 < None >

Outputs:
 < None >

Type: System

Name: SY1 System
 Enabled: Yes

Run Commands:
 Copy File ... C:\WB\DATA\RPNI.DAT
 To ... B:\RPNI.DAT

Inputs:
 PL5 Pulse

Outputs:

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< None >

Name: SY2 System
Enabled: Yes
Run Commands:
Copy File ... C:\WB\DATA\RPN2.DAT
To ... B:\RPN2.DAT
Inputs:
PL8 Pulse
Outputs:
< None >

Name: SY3 System
Enabled: Yes
Run Commands:
Copy File ... C:\WB\DATA\RPN3.DAT
To ... B:\RPN3.DAT
Inputs:
PL9 Pulse
Outputs:
< None >

Name: SY4 System
Enabled: Yes
Run Commands:
Copy File ... C:\WB\DATA\RPN4.DAT
To ... B:\RPN4.DAT
Inputs:
PL12 Pulse
Outputs:
< None >

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Decimal: 3
 Inputs: CA22 Set Pot
 Outputs: < None >

Name: MT16 Cycle time
 Output Type: Fixed Point
 Units: msec
 Integer: 9
 Decimal: 0
 Inputs: CA31 Calculation
 Outputs: < None >

Name: MT17 C.d. Ch.5
 Output Type: Exponential
 Units: A/cm2
 Integer: 8
 Decimal: 1
 Inputs: CA32 c.d. ch.5
 Outputs: < None >

Name: MT18 Charge/cm2
 Output Type: Exponential
 Units: Coul/cm2
 Integer: 8
 Decimal: 1
 Inputs: CA35 Charge
 Outputs: < None >

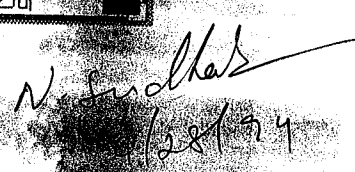
Name: MT19 Pot Ch.5
 Output Type: Fixed Point
 Units: Volt
 Integer: 6
 Decimal: 3
 Inputs: CA37 Invert
 Outputs: < None >

Name: MT20 ch5 time
 Output Type: Fixed Point
 Units: < None >
 Integer: 9
 Decimal: 0
 Inputs: TI4 Timer
 Outputs: < None >

Name: MT21 ch5 Vset
 Output Type: Fixed Point
 Units: < None >
 Integer: 6
 Decimal: 3
 Inputs: CA33 Set Pot
 Outputs: < None >

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N. Smith
4/28/84



N. Swickas 4/26/94

Worksheet Name:

REPASS3B.WEB

Hardware list:

Name	AI's	AO's	DIO's	CT's	DI's	DO's
STI ACPC-16	16	0	16	0	0	0
STI ACAO-12	0	6	8	0	0	0

Maximum icons: 608
 Grid size: 16
 Snap to grid: < disabled >
 Report Unsynch: < disabled >
 Fast Mode: enabled
 Fast Mode samples: 1000
 Fast Mode rate: 1.0 KiloHertz
 Trigger level: -10.0
 Trigger source: Positive
 Trigger slope: Analog
 Trigger mode: None
 Pre-trigger samples: 0
 Com ports: 2

Port:

COM 1

Comment:

Mouse connected

Port:

COM 2

Baud rate:

9600

Data bits:

8

Stop bits:

1

Duplex:

Half

Parity:

None

XonXoff:

< disabled >

Echo wait:

< disabled >

Line delay:

< disabled >

IEEE:

< disabled >

Type: Analog Input

Name:

AI:3 current ch. 2

Card Type:

STI ACPC-16

Channel Number:

3

Range:

+/-Auto V

Resolution:

Lo Noise (17ms)

Output Type:

Voltage

Sample rate:

10.0 Hertz

Fast Mode:

< disabled >

Inputs:

< None >

Outputs:

CA2 c.d. ch.2

Name:

AI:4 Measured Pot

Card Type:

STI ACPC-16

Channel Number:

4

Range:

+/-Auto V

Resolution:

Lo Noise (17ms)

Output Type:

Voltage

Sample rate:

10.0 Hertz

Fast Mode:

< disabled >

Inputs:

< None >

Outputs:

CA13 Invert

Name:

AI:5 current ch.3

Card Type:

STI ACPC-16

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Channel Number: 5
 Range: +/-Auto V
 Resolution: Lo Noise (17ms)
 Output Type: Voltage
 Sample rate: 10.0 Hertz
 Fast Mode: < disabled >
 Inputs:
 < None >
 Outputs:
 CA1 c.d. ch.3

Name: AI:6 Measured Pot
 Card Type: STI ACPC-16
 Channel Number: 6
 Range: +/-Auto V
 Resolution: Lo Noise (17ms)
 Output Type: Voltage
 Sample rate: 10.0 Hertz
 Fast Mode: < disabled >
 Inputs:
 < None >
 Outputs:
 CA7 Invert

Type: Timer

Name: TI1 Timer
 Inputs: PL1 Trigger start
 Outputs: SP1 initial time SP5 Set Point MT7 ch3 time
 LO1 RP825P7.DAT

Name: TI2 Timer
 Inputs: PL2 Pulse
 Outputs: SP3 initial time SP6 Set Point MT8 ch 2 time

Type: Pulse

Name: PL1 Trigger start
 High Duration: 496.0 Hours
 Low Duration: 0.1 Minutes
 Start Value: Low
 Reset on exit: enabled
 Inputs:
 < None >
 Outputs: TI1 Timer

Name: PL2 Pulse
 High Duration: 496.0 Hours
 Low Duration: 0.1 Minutes
 Start Value: Low
 Reset on exit: enabled
 Inputs:
 < None >
 Outputs: TI2 Timer

Name: PL3 step time
 High Duration: 0.1 Seconds
 Low Duration: 180.0 Seconds
 Start Value: Low
 Reset on exit: enabled

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Inputs:
SP1 initial time

Outputs:
LG3 And

Name: PL4 Step time
High Duration: 0.1 Seconds
Low Duration: 180.0 Seconds
Start Value: Low
Reset on exit enabled

Inputs:
SP3 initial time

Outputs:
LG4 And

Name: PL5 Pulse
High Duration: 1.0 Minutes
Low Duration: 1.0 Hours
Start Value: Low
Reset on exit enabled

Inputs:
< None >

Outputs:
SY1 System

Name: PL6 Pulse
High Duration: 1.0 Minutes
Low Duration: 1.0 Hours
Start Value: Low
Reset on exit enabled

Inputs:
< None >

Outputs:
SY2 System

Type: Calculation

Name: CA1 c.d. ch.3
Function: aX / bY
X input: AI:5 current ch.3
Y input: 7.5
"a" constant: -1.0
"b" constant: 10.0
"c" constant: 0.0

Inputs:
AI:5 current ch.3

Outputs:
MT1 C.d. Ch.3 CH3 c.d. ch3 CA5 Charge
CA11 Scale-up LO1 RP825P7.DAT

Name: CA2 c.d. ch.2
Function: aX / bY
X input: AI:3 current ch. 2
Y input: 7.2
"a" constant: -1.0
"b" constant: 10.0
"c" constant: 0.0

Inputs:
AI:3 current ch. 2

Outputs:
CH4 C.D. ch.2 MT4 c.d. ch.2 CA10 Charge
CA14 Scale-up LO2 RP825P8.DAT

Name: CA3 Set Pot
Function: aX + bY + c
X input: LG1 and

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Y input: CA16 Reverse scan
 "a" constant: -0.01
 "b" constant: 1.0
 "c" constant: 0.2
 Inputs:
 LG1 and CA16 Reverse scan
 Outputs:
 CH1 set pot. ch3 AO:3 Set Pot Ch.3 CA6 fback s1
 MT9 Meter

Name: CA4 minimum
 Function: Min(X) for last (a) seconds
 X input: CA11 Scale-up
 Y input: 0.0
 "a" constant: 180.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs:
 CA11 Scale-up
 Outputs:
 SP2 Set Point

Name: CA5 Charge
 Function: Integral X dt
 X input: CA1 c.d. ch.3
 Y input: SP5 Set Point
 "a" constant: 0.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs:
 CA1 c.d. ch.3 SP5 Set Point
 Outputs:
 MT2 Charge/cm2 LO1 RP825P7.DAT

Name: CA6 fback s1
 Function: Global Feedback(a:address)
 X input: CA3 Set Pot
 Y input: 0.0
 "a" constant: 1.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs:
 CA3 Set Pot
 Outputs:
 < None >

Name: CA7 Invert
 Function: $aX + bY$
 X input: AI:6 Measured Pot
 Y input: 0.0
 "a" constant: -1.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs:
 AI:6 Measured Pot
 Outputs:
 MT3 Pot Ch.3 LO1 RP825P7.DAT

Name: CA8 Set Pot
 Function: $aX + bY + c$
 X input: LG2 and
 Y input: CA16 Reverse scan
 "a" constant: -0.01
 "b" constant: 1.0
 "c" constant: 0.2
 Inputs:

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LG2 and CA18 Reverse scan
 Outputs: CH2 Set Pot. Ch.2 AO:2 pot ch 2 MT10 Meter
 CA12 fback s1

Name: CA9 minimum
 Function: Min(X) for last (a) seconds
 X input: CA14 Scale-up
 Y input: 0.0
 "a" constant: 180.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs: CA14 Scale-up
 Outputs: SP4 Set Point

Name: CA10 Charge
 Function: Integral X dt
 X input: CA2 c.d. ch.2
 Y input: SP6 Set Point
 "a" constant: 0.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs: CA2 c.d. ch.2 SP6 Set Point
 Outputs: MT5 Charge/cm2 LO2 RP825P8.DAT

Name: CA11 Scale-up
 Function: aX + bY
 X input: CA1 c.d. ch.3
 Y input: 0.0
 "a" constant: 10000.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs: CA1 c.d. ch.3
 Outputs: CA4 minimum

Name: CA12 fback s1
 Function: Global Feedback(a:address)
 X input: CA8 Set Pot
 Y input: 0.0
 "a" constant: 2.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs: CA8 Set Pot
 Outputs: < None >

Name: CA13 Invert
 Function: aX + bY
 X input: AI:4 Measured Pot
 Y input: 0.0
 "a" constant: -1.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs: AI:4 Measured Pot

Outputs: MT6 Pot Ch.2 LO2 RP825P8.DAT

Name: CA14 Scale-up

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Function: $aX + bY$
 X input: CA2 c.d. ch.2
 Y input: 0.0
 "a" constant: 10000.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs:
 CA2 c.d. ch.2
 Outputs:
 CA9 minimum

Name: CA15 fback d1
 Function: Global Feedback(a:address)
 X input: 0.0
 Y input: 0.0
 "a" constant: 1.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs:
 < None >
 Outputs:
 CA16 Reverse scan

Name: CA16 Reverse scan
 Function: $c(X + a)(Y + b)$
 X input: CA15 fback d1
 Y input: SP1 initial time
 "a" constant: -0.2
 "b" constant: 0.0
 "c" constant: 1.0
 Inputs:
 CA15 fback d1 SP1 initial time
 Outputs:
 CA3 Set Pot

Name: CA17 fback d1
 Function: Global Feedback(a:address)
 X input: 0.0
 Y input: 0.0
 "a" constant: 2.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs:
 < None >
 Outputs:
 CA18 Reverse scan

Name: CA18 Reverse scan
 Function: $c(X + a)(Y + b)$
 X input: CA17 fback d1
 Y input: SP3 initial time
 "a" constant: -0.2
 "b" constant: 0.0
 "c" constant: 1.0
 Inputs:
 CA17 fback d1 SP3 initial time
 Outputs:
 CA8 Set Pot

Name: CA19 Calculation
 Function: $X + Y$
 X input: -2.0
 Y input: 0.0
 "a" constant: 0.0
 "b" constant: 0.0
 "c" constant: 0.0

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Inputs:

< None >

Outputs:

< None >

Name: CA20 Calculation

Function: $X + Y$

X input: 0.4

Y input: 0.0

"a" constant: 0.0

"b" constant: 0.0

"c" constant: 0.0

Inputs:

< None >

Outputs:

< None >

Type: Set Point

Name: SP1 initial time

Function: $X > Y$

X input: TI1 Timer

Y input: 1800.0

Dead Band: 0.0

Inputs:

TI1 Timer

Outputs:

LG1 and

PL3 step time

CA16 Reverse scan

Name:

SP2 Set Point

Function: $X > Y$

X input: CA4 minimum

Y input: 0.5

Dead Band: 0.0

Inputs:

CA4 minimum

Outputs:

LG3 And

Name:

SP3 initial time

Function: $X > Y$

X input: TI2 Timer

Y input: 45000.0

Dead Band: 0.0

Inputs:

TI2 Timer

Outputs:

LG2 and

PL4 Step time

CA18 Reverse scan

Name:

SP4 Set Point

Function: $X > Y$

X input: CA9 minimum

Y input: 0.5

Dead Band: 0.01

Inputs:

CA9 minimum

Outputs:

LG4 And

Name:

SP5 Set Point

Function: $X < Y$

X input: TI1 Timer

Y input: 2.0

Dead Band: 0.0

Inputs:

TI1 Timer

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Outputs:
CA5 Charge

Name: SP8 Set Point
Function: X < Y
X input: TI2 Timer
Y input: 2.0
Dead Band: 0.0

Inputs:
TI2 Timer

Outputs:
CA10 Charge

Type: Logic

Name: LG1 and
Function: X AND Y
X input: SP1 initial time
Y input: LG3 And
Inputs:
SP1 initial time LG3 And
Outputs:
CA3 Set Pot

Name: LG2 and
Function: X AND Y
X input: SP3 initial time
Y input: LG4 And
Inputs:
SP3 initial time LG4 And
Outputs:
CA8 Set Pot

Name: LG3 And
Function: X AND Y
X input: PL3 step time
Y input: SP2 Set Point
Inputs:
PL3 step time SP2 Set Point
Outputs:
LG1 and

Name: LG4 And
Function: X AND Y
X input: PL4 Step time
Y input: SP4 Set Point
Inputs:
PL4 Step time SP4 Set Point
Outputs:
LG2 and

Type: Log

Name: LO1 RP825P7.DAT
Log Status: < disabled >
Sample Rate: 1.0 Minutes
Gate: < None >
Data Format:
Heading: < None >
File Path: C:\WB\DATA
File Name: RP825P7.DAT
Data Stamp: enabled
Time Stamp: enabled
Inputs:
TI2 Timer CA7 Invert CA1 o.d. ck
CA5 Charge

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Outputs:

< None >

Name: LO2 RP825P8.DAT
 Log Status: enabled
 Sample Rate: 1.0 Minutes
 Gate: < None >
 Data Format:
 Heading: < None >
 File Path: C:\WB\WEBB
 File Name: RP825P8.DAT
 Date Stamp: enabled
 Time Stamp: enabled

Inputs:

CA13 Invert

CA2 c.d. ch.2

CA10 Charge

Outputs:

< None >

Type: Meter

Name: MT1 C.d. Ch.3
 Output Type: Exponential
 Units: A/cm2
 Integer: 8
 Decimal: 1

Inputs: CA1 c.d. ch.3
 Outputs:

< None >

Name: MT2 Charge/cm2
 Output Type: Exponential
 Units: Coul/cm2
 Integer: 8
 Decimal: 1

Inputs:

CA5 Charge

Outputs:

< None >

Name: MT3 Pot Ch.3
 Output Type: Fixed Point
 Units: Volt
 Integer: 6
 Decimal: 3

Inputs:

CA7 Invert

Outputs:

< None >

Name: MT4 c.d. ch.2
 Output Type: Exponential
 Units: A/cm2
 Integer: 8
 Decimal: 1

Inputs:

CA2 c.d. ch.2

Outputs:

< None >

Name: MT5 Charge/cm2
 Output Type: Exponential
 Units: Coul/cm2
 Integer: 8
 Decimal: 1

Inputs:

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CA10 Charge

Outputs:
< None >

Name: MT6 Pot Ch.2
Output Type: Fixed Point
Units: Volt
Integer: 8
Decimal: 3
Inputs: 3

CA13 Invert

Outputs:
< None >

Name: MT7 ch3 time
Output Type: Fixed Point
Units: < None >
Integer: 9
Decimal: 0
Inputs: 0

TI1 Timer

Outputs:
< None >

Name: MT8 ch 2 time
Output Type: Fixed Point
Units: sec
Integer: 9
Decimal: 0
Inputs: 0

TI2 Timer

Outputs:
< None >

Name: MT9 Meter
Output Type: Fixed Point
Units: < None >
Integer: 6
Decimal: 3
Inputs: 3

CA3 Set Pot

Outputs:
< None >

Name: MT10 Meter
Output Type: Fixed Point
Units: < None >
Integer: 8
Decimal: 3
Inputs: 3

CA8 Set Pot

Outputs:
< None >

Type: Chart

Name: CH1 set pot. ch3
Chart Color: White
X Axis Label: Hours
X Axis Min: 0.0
X Axis Max: 24.0
Y Axis Label: < None >
Y Axis Min: 0.5
Y Axis Max: 0.8
Inputs: 0.8

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Outputs:
< None >

Name: CH2 Set Pot. Ch.2
Chart Color: White
X Axis Label: Hours
X Axis Min: 0.0
X Axis Max: 24.0
Y Axis Label: < None >
Y Axis Min: 0.0
Y Axis Max: 0.8

Inputs:
CA8 Set Pot

Outputs:
< None >

Name: CH3 c.d. ch3
Chart Color: White
X Axis Label: Hours
X Axis Min: 0.0
X Axis Max: 24.0
Y Axis Label: < None >
Y Axis Min: 1.0e-07
Y Axis Max: 0.01

Inputs:
CA1 c.d. ch.3

Outputs:
< None >

Name: CH4 C.D. ch.2
Chart Color: White
X Axis Label: Hours
X Axis Min: 0.0
X Axis Max: 24.0
Y Axis Label: < None >
Y Axis Min: 1.0e-07
Y Axis Max: 0.01

Inputs:
CA2 c.d. ch.2

Outputs:
< None >

Type: Analog Output

Name: AO:2 pot ch 2
Card Type: STI ACAO-12
Channel Number: 2
Range: +/- 5 Volts
Resolution: 0.024%

Inputs:
CA8 Set Pot

Outputs:
< None >

Name: AO:3 Set Pot Ch.3
Card Type: STI ACAO-12
Channel Number: 3
Range: +/- 5 Volts
Resolution: 0.024%

Inputs:
CA3 Set Pot

Outputs:
< None >

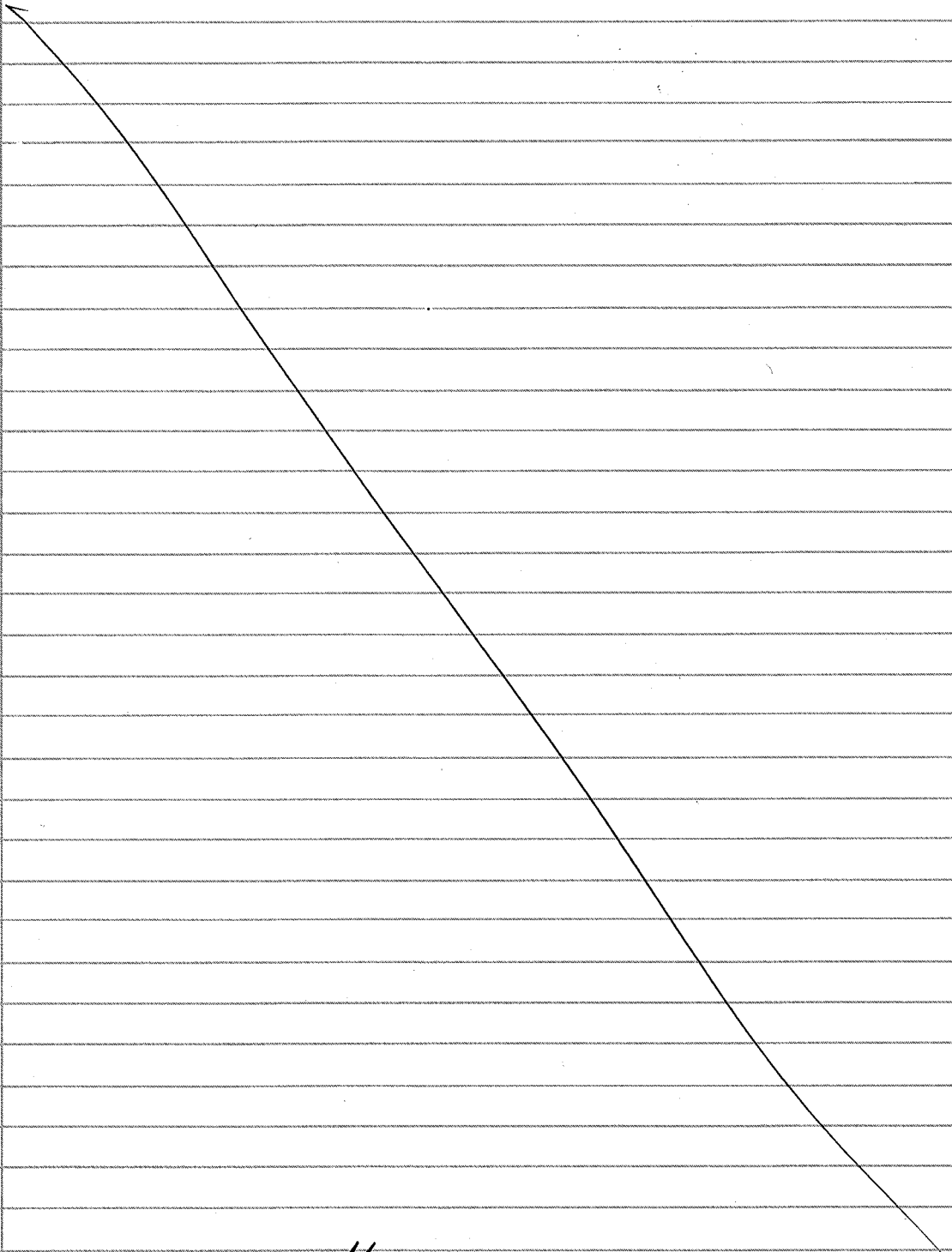
Type: System

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4/28/94

Name: SY1 System
Enabled: Yes
Run Commands: Copy File ... C:\WB\DATA\RP825P6.DAT
To ... B:\RP825P6.DAT
Inputs: PL5 Pulse
Outputs: < None >

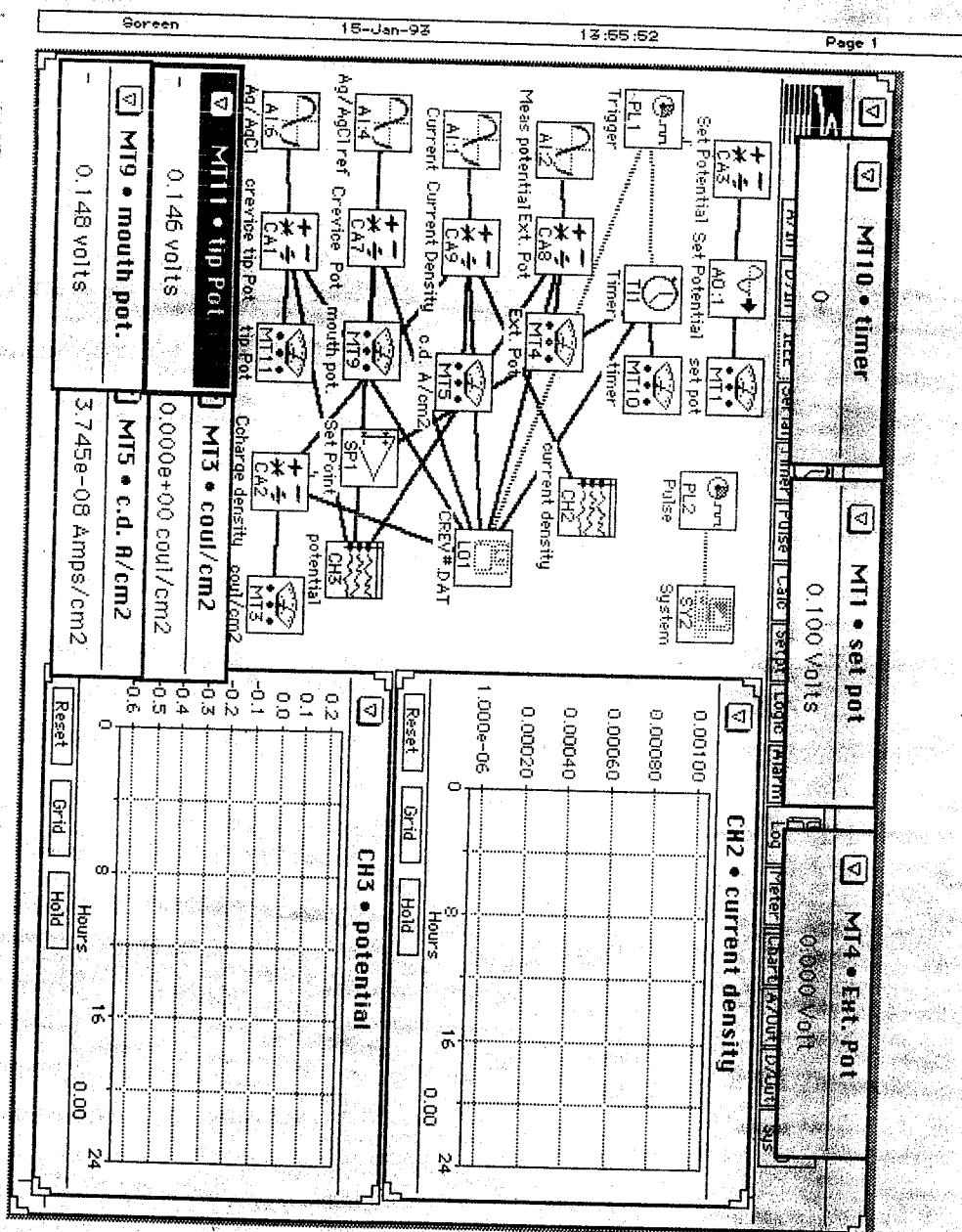
Name: SY2 System
Enabled: Yes
Run Commands: Copy File ... C:\WB\DATA\RP825P7.DAT
To ... B:\RP825P5.DAT
Inputs: PL6 Pulse
Outputs: < None >

N. Sridhar
4/28/94



N. Smith

4/28/24



N. Swoboda
4/28/94

N. Swoboda
4/28/94

Worksheet Name:

CREVICE.WBB

Hardware list:

Name	AI's	AO's	DIO's	CT's	DI's	DO's
STI ACPC-16	16	0	16	0	0	0
STI ACAO-12	0	6	8	0	0	0

Maximum icons: 608
 Grid size: 16
 Snap to grid: < disabled >
 Report Unsynch: < disabled >
 Fast Mode: < disabled >
 Fast Mode samples: 1000
 Fast Mode rate: 1.0 Kilohertz
 Trigger level: -10.0
 Trigger source: Positive
 Trigger slope: Analog
 Trigger mode: None
 Pre-trigger samples: 0
 Com ports: 2

Port:

COM 1

Comment:

Mouse connected

Port:

COM 2

Baud rate:

9600

Data bits:

8

Stop bits:

1

Duplex:

Half

Parity:

None

XonXoff:

< disabled >

Echo wait:

< disabled >

Line delay:

< disabled >

IEEE:

< disabled >

Type: Analog Input

Name:

AI:1 Current

Card Type:

STI ACPC-16

Channel Number:

1

Range:

+/-Auto V

Resolution:

Lo Noise (17ms)

Output Type:

Voltage

Sample rate:

10.0 Hertz

Fast Mode:

< disabled >

Inputs:

< None >

Outputs:

CA9 Current Density

Name:

AI:2 Meas potential

Card Type:

STI ACPC-16

Channel Number:

2

Range:

+/-Auto V

Resolution:

Lo Noise (17ms)

Output Type:

Voltage

Sample rate:

10.0 Hertz

Fast Mode:

< disabled >

Inputs:

< None >

Outputs:

CA8 Ext. Pot

Name:

AI:4 Ag/AgCl ref

Card Type:

STI ACPC-16

N. Swadlow
4/28/94

Channel Number: 4
 Range: +/-Auto V
 Resolution: Lo Noise (17ms)
 Output Type: Voltage
 Sample rate: 10.0 Hertz
 Fast Mode: < disabled >
 Inputs:
 < None >
 Outputs:
 CA7 Crevice Pot

Name: AI:6 Ag/AgCl
 Card Type: STI ACPC-16
 Channel Number: 6
 Range: +/-Auto V
 Resolution: Lo Noise (17ms)
 Output Type: Voltage
 Sample rate: 10.0 Hertz
 Fast Mode: < disabled >
 Inputs:
 < None >
 Outputs:
 CA1 crevice tip Pot

Type: Timer

Name: TI1 Timer
 Inputs:
 PL1 Trigger
 Outputs:
 SP1 Set Point MT10 timer LO1 CREV#.DAT

Type: Pulse

Name: PL1 Trigger
 High Duration: 10000.0 Hours
 Low Duration: 0.1 Minutes
 Start Value: Low
 Reset on exit: enabled
 Inputs:
 < None >

Outputs:
 TI1 Timer CA3 Set Potential LO1 CREV#.DAT

Name: PL2 Pulse
 High Duration: 1.0 Minutes
 Low Duration: 2.0 Hours
 Start Value: Low
 Reset on exit: enabled
 Inputs:
 < None >

Outputs:
 SY2 System

Name: PL3 Pulse
 High Duration: 1.0 Minutes
 Low Duration: 1.0 Hours
 Start Value: Low
 Reset on exit: enabled
 Inputs:
 < None >

Outputs:
 SY1 copy to a:

Type: Calculation

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 4/28/94

Name: CA1 crevice tip Pot
 Function: aX + bY
 X input: AI:6 Ag/AgCl
 Y input: 0.0
 "a" constant: -1.0
 "b" constant: 0.0
 "c" constant: 0.0

Inputs:
 AI:6 Ag/AgCl
 Outputs:
 CH3 potential

MT11 tip Pot

LO1 CREV#.DAT

Name: CA2 Ccharge density
 Function: Integral X dt
 X input: CA9 Current Density
 Y input: SP1 Set Point
 "a" constant: 0.0
 "b" constant: 0.0
 "c" constant: 0.0

Inputs:
 CA9 Current Density
 Outputs:
 MT3 coul/cm2

SP1 Set Point

LO1 CREV#.DAT

Name: CA3 Set Potential
 Function: aX + bY
 X input: PL1 Trigger
 Y input: 0.0
 "a" constant: 0.1
 "b" constant: 0.0
 "c" constant: 0.0

Inputs:
 PL1 Trigger
 Outputs:
 AO:1 Set Potential

Name: CA7 Crevice Pot
 Function: aX + bY
 X input: AI:4 Ag/AgCl ref
 Y input: 0.0
 "a" constant: -1.0
 "b" constant: 0.0
 "c" constant: 0.0

Inputs:
 AI:4 Ag/AgCl ref
 Outputs:
 CH3 potential

MT9 mouth pot.

LO1 CREV#.DAT

Name: CA8 Ext. Pot
 Function: aX + bY
 X input: AI:2 Meas potential
 Y input: 0.0
 "a" constant: -1.0
 "b" constant: 0.0
 "c" constant: 0.0

Inputs:
 AI:2 Meas potential
 Outputs:
 CH3 potential

MT4 Ext. Pot

LO1 CREV#.DAT

Name: CA9 Current Density
 Function: aX + bY
 X input: AI:1 Current
 Y input: 20.689
 "a" constant: -1.0
 "b" constant: 10.0

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"c" constant: 0.0

Inputs:

AI:1 Current

Outputs:

CA2 Ccharge density

LO1 CREV#.DAT

CH2

current density

MT5

c.d. A/cm2

Type: Set Point

Name:

SP1 Set Point

Function:

X < Y

X input:

TI1 Timer

Y input:

2.0

Dead Band:

0.0

Inputs:

TI1 Timer

Outputs:

CA2 Ccharge density

Type: Log

Name:

LO1 CREV#.DAT

Log Status:

< disabled >

Sample Rate:

15.0 Minutes

Gate:

PL1 Trigger

Data Format:

Heading:

< None >

File Path:

C:\WB\DATA

File Name:

CREV#.DAT

Date Stamp:

enabled

Time Stamp:

enabled

Inputs:

TI1 Timer

CA9 Current Density

CA2 Ccharge density

CA8 Ext. Pot

PL1 Trigger

CA7 Crevice Pot

CA1 crevice tip Pot

Outputs:

< None >

Type: Meter

Name:

MT1 set pot

Output Type:

Fixed Point

Units:

Volts

Integer:

6

Decimal:

3

Inputs:

AO:1 Set Potential

Outputs:

< None >

Name:

MT3 coul/cm2

Output Type:

Exponential

Units:

coul/cm2

Integer:

6

Decimal:

3

Inputs:

CA2 Ccharge density

Outputs:

< None >

Name:

MT4 Ext. Pot

Output Type:

Fixed Point

Units:

Volt

Integer:

6

Decimal:

3

Inputs:

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CA8 Ext. Pot

Outputs:
< None >

Name: MT5 c.d. A/cm2
Output Type: Exponential
Units: Amps/cm2
Integer: 6
Decimal: 3
Inputs:

CA9 Current Density

Outputs:
< None >

Name: MT9 mouth pot.
Output Type: Fixed Point
Units: volts
Integer: 6
Decimal: 3
Inputs:

CA7 Crevice Pot

Outputs:
< None >

Name: MT10 timer
Output Type: Fixed Point
Units: < None >
Integer: 9
Decimal: 0
Inputs:

TI1 Timer

Outputs:
< None >

Name: MT11 tip Pot
Output Type: Fixed Point
Units: volts
Integer: 6
Decimal: 3
Inputs:

CA1 crevice tip Pot

Outputs:
< None >

Type: Chart

Name: CH2 current density
Chart Color: White
X Axis Label: Hours
X Axis Min: 0.0
X Axis Max: 24.0
Y Axis Label: < None >
Y Axis Min: 1.0e-06
Y Axis Max: 0.001

Inputs:

CA9 Current Density

Outputs:
< None >

Name: CH3 potential
Chart Color: White
X Axis Label: Hours
X Axis Min: 0.0
X Axis Max: 24.0
Y Axis Label: < None >
Y Axis Min: -0.6

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Y Axis Max: 0.2

Inputs:

CA7 Crevice Pot

CA1

crevice tip Pot

CA8

Ext. Pot

Outputs:

< None >

Type: Analog Output

Name:

AO:1 Set Potential

Card Type:

STI ACAO-12

Channel Number:

1

Range:

+/- 5 Volts

Resolution:

0.024%

Inputs:

CA3 Set Potential

Outputs:

MT1 set pot

Type: System

Name:

SY1 copy to a:

Enabled:

Yes

Run Commands:

Copy File ...

C:\WB\DATA\825-5.DAT

To ...

A:\825-5.DAT

Inputs:

PL3

Pulse

Outputs:

< None >

Name:

SY2 System

Enabled:

Yes

Run Commands:

Copy File ...

C:\WB\DATA\CREV#.DAT

To ...

A:\CREV#.DAT

Inputs:

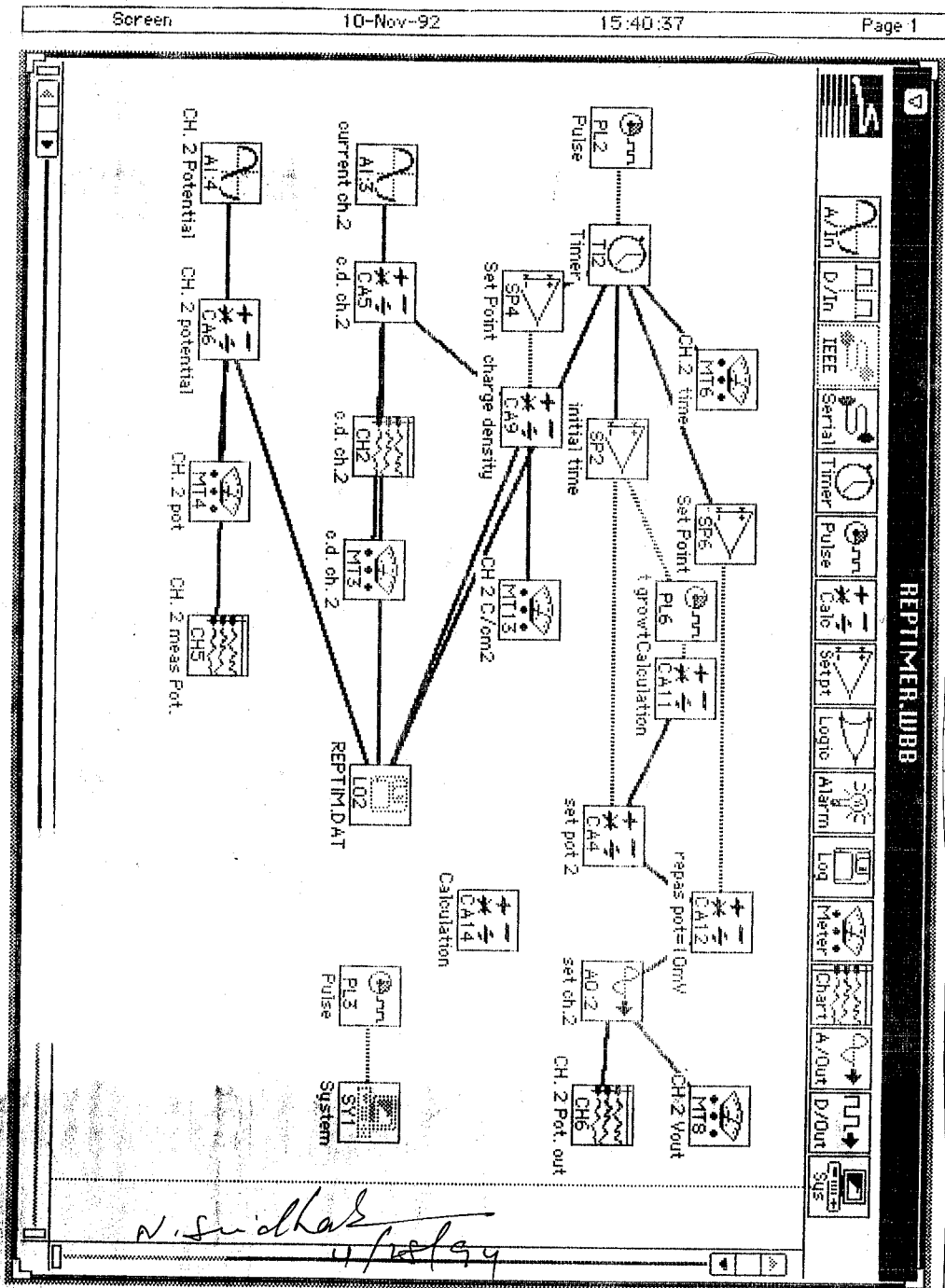
PL2

Pulse

Outputs:

< None >

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Worksheet Name: REPTIMER.WBB
 Hardware list:

Name	Als	AOs	DIOs	CTs	Dis	DOs
STI ACPC-16	16	0	16	0	0	0
STI ACAO-12	0	6	8	0	0	0

Maximum icons: 496
 Grid size: 20
 Snap to grid: enabled
 Report Unsynch: < disabled >
 Fast Mode: < disabled >
 Fast Mode samples: 1000
 Fast Mode rate: 1.0 Kilohertz
 Trigger level: -10.0
 Trigger source: Positive
 Trigger slope: Analog
 Trigger mode: None
 Pre-trigger samples: 0
 Com ports: 2

Port: COM 1
 Comment: Mouse connected

Port: COM 2
 Baud rate: 9600
 Data bits: 8
 Stop bits: 1
 Duplex: Half
 Parity: None
 XonXoff: < disabled >
 Echo wait: < disabled >
 Line delay: < disabled >

IEEE: < disabled >

Type: Analog Input

Name: AI:3 current ch.2
 Card Type: STI ACPC-16
 Channel Number: 3
 Range: +/-Auto V
 Resolution: Lo Noise (17ms)
 Output Type: Voltage
 Sample rate: 10.0 Hertz
 Fast Mode: < disabled >
 Inputs: < None >
 Outputs: CA5 c.d. ch.2

Name: AI:4 CH. 2 Potential
 Card Type: STI ACPC-16
 Channel Number: 4
 Range: +/-Auto V
 Resolution: Lo Noise (17ms)
 Output Type: Voltage
 Sample rate: 10.0 Hertz
 Fast Mode: < disabled >
 Inputs: < None >
 Outputs: CA6 CH. 2 potential

Name: AI:5 current ch. 3
 Card Type: STI ACPC-16

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Channel Number: 5
 Range: +/-Auto V
 Resolution: Lo Noise (17ms)
 Output Type: Voltage
 Sample rate: 10.0 Hertz
 Fast Mode: < disabled >
 Inputs:
 < None >
 Outputs:
 CA2 c.d. ch. 3

Name: AI:6 potential CH. 3
 Card Type: STI ACPC-16
 Channel Number: 6
 Range: +/-Auto V
 Resolution: Lo Noise (17ms)
 Output Type: Voltage
 Sample rate: 10.0 Hertz
 Fast Mode: < disabled >
 Inputs:
 < None >
 Outputs:
 CA3 potential CH. 3

Name: AI:7 current ch. 4
 Card Type: STI ACPC-16
 Channel Number: 7
 Range: +/-Auto V
 Resolution: Lo Noise (17ms)
 Output Type: Voltage
 Sample rate: 10.0 Hertz
 Fast Mode: < disabled >
 Inputs:
 < None >
 Outputs:
 CA16 c.d. ch. 4

Name: AI:8 potential CH. 4
 Card Type: STI ACPC-16
 Channel Number: 8
 Range: +/-Auto V
 Resolution: Lo Noise (17ms)
 Output Type: Voltage
 Sample rate: 10.0 Hertz
 Fast Mode: < disabled >
 Inputs:
 < None >
 Outputs:
 CA17 potential CH. 4

Name: AI:9 current ch. 5
 Card Type: STI ACPC-16
 Channel Number: 9
 Range: +/-Auto V
 Resolution: Lo Noise (17ms)
 Output Type: Voltage
 Sample rate: 10.0 Hertz
 Fast Mode: < disabled >
 Inputs:
 < None >
 Outputs:
 CA23 c.d. ch. 5

Name: AI:10 potential CH. 5
 Card Type: STI ACPC-16
 Channel Number: 10

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Range: +/-Auto V
 Resolution: Lo Noise (17ms)
 Output Type: Voltage
 Sample rate: 10.0 Hertz
 Fast Mode: < disabled >

Inputs:
 < None >

Outputs:
 CA24 potential CH. 5

Type: Timer

Name: TI1 Timer
 Inputs: PL1 Pulse
 Outputs: SP1 Initial time Set Point
 MT5 CH.3 time LO1 REPTIME.DAT SP5 Set Point

Name: TI2 Timer
 Inputs: PL2 Pulse
 Outputs: SP2 initial time Set Point
 MT6 CH.2 time LO2 REPTIM.DAT SP6 Set Point

Name: TI3 Timer
 Inputs: PL7 Pulse
 Outputs: SP7 Initial time Set Point
 MT11 CH.4 time LO3 REPTIMM.DAT SP9 Set Point

Name: TI4 Timer
 Inputs: PL10 Pulse
 Outputs: SP10 Initial time Set Point
 MT18 CH.5 time LO4 REPTIM#.DAT SP12 Set Point

Type: Pulse

Name: PL1 Pulse
 High Duration: 9600.0 Hours
 Low Duration: 1.0 Seconds
 Start Value: Low
 Reset on exit: enabled
 Inputs: < None >

Outputs:
 TI1 Timer

Name: PL2 Pulse
 High Duration: 9600.0 Hours
 Low Duration: 1.0 Seconds
 Start Value: Low
 Reset on exit: enabled
 Inputs: < None >

Outputs:
 TI2 Timer

Name: PL3 Pulse
 High Duration: 40.0 Seconds
 Low Duration: 3.0 Hours

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Reset on exit: enabled

Inputs:
< None >

Outputs:
SY1 System

Name: PL4 Pulse
High Duration: 40.0 Seconds
Low Duration: 3.0 Hours
Start Value: Low
Reset on exit: enabled

Inputs:
< None >

Outputs:
SY2 System

Name: PL5 growth
High Duration: 1.188e+05 Seconds
Low Duration: 9600.0 Hours
Start Value: High
Reset on exit: < disabled >

Inputs:
SP1 Initial time

Outputs:
CA7 Calculation

Name: PL6 t growth
High Duration: 1.188e+05 Seconds
Low Duration: 9600.0 Hours
Start Value: High
Reset on exit: < disabled >

Inputs:
SP2 initial time

Outputs:
CA11 Calculation

Name: PL7 Pulse
High Duration: 9600.0 Hours
Low Duration: 1.0 Seconds
Start Value: Low
Reset on exit: enabled

Inputs:
< None >

Outputs:
TI3 Timer

Name: PL8 growth
High Duration: 1.188e+05 Seconds
Low Duration: 9600.0 Hours
Start Value: High
Reset on exit: < disabled >

Inputs:
SP7 Initial time

Outputs:
CA18 Calculation

Name: PL9 Pulse
High Duration: 40.0 Seconds
Low Duration: 3.0 Hours
Start Value: Low
Reset on exit: enabled

Inputs:
< None >

Outputs:
SY3 System

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Name: PL10 Pulse
 High Duration: 9600.0 Hours
 Low Duration: 1.0 Seconds
 Start Value: Low
 Reset on exit: enabled

Inputs:
 < None >
 Outputs:
 TI4 Timer

Name: PL11 growth
 High Duration: 1.188e+05 Seconds
 Low Duration: 9600.0 Hours
 Start Value: High
 Reset on exit: < disabled >

Inputs:
 SP10 Initial time
 Outputs:
 CA25 Calculation

Name: PL12 Pulse
 High Duration: 40.0 Seconds
 Low Duration: 3.0 Hours
 Start Value: Low
 Reset on exit: enabled

Inputs:
 < None >
 Outputs:
 SY4 System

Type: Calculation

Name: CA1 Set Pot 1
 Function: $aX + bY + c$
 X input: SP1 Initial time
 Y input: CA7 Calculation
 "a" constant: -0.45
 "b" constant: 0.25
 "c" constant: 0.6

Inputs:
 SP1 Initial time CA7 Calculation
 Outputs:
 CA10 repas pot =20mV

Name: CA2 c.d. ch. 3
 Function: aX / bY
 X input: AI:5 current ch. 3
 Y input: 1.0
 "a" constant: -0.1
 "b" constant: 8.0
 "c" constant: 0.0

Inputs:
 AI:5 current ch. 3
 Outputs:
 MT1 c.d. ch 3 CH1 c.d. ch. 3 CA8 charge density
 LO1 REPTIME.DAT

Name: CA3 potential CH. 3
 Function: $aX + bY$
 X input: AI:6 potential CH. 3
 Y input: 0.0
 "a" constant: -1.0
 "b" constant: 0.0
 "c" constant: 0.0

Inputs:
 AI:6 potential CH. 3

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Outputs:
 MT2 CH. 3 Pot. CH3 CH.3 meas pot. LO1 REPTIME.DAT
Name: CA4 set pot 2
Function: $aX + bY + c$
X input: SP2 initial time
Y input: CA11 Calculation
"a" constant: -0.45
"b" constant: 0.25
"c" constant: 0.6
Inputs:
 SP2 initial time CA11 Calculation
Outputs:
 CA12 repas pot=10mV
Name: CA5 c.d. ch.2
Function: aX / bY
X input: AI:3 current ch.2
Y input: 1.0
"a" constant: -0.1
"b" constant: 8.0
"c" constant: 0.0
Inputs:
 AI:3 current ch.2
Outputs:
 CH2 c.d. ch.2 MT3 c.d. ch. 2 CA9 charge density
 LO2 REPTIM.DAT
Name: CA6 CH. 2 potential
Function: $aX + bY$
X input: AI:4 CH. 2 Potential
Y input: 0.0
"a" constant: -1.0
"b" constant: 0.0
"c" constant: 0.0
Inputs:
 AI:4 CH. 2 Potential
Outputs:
 MT4 CH. 2 pot CH5 CH. 2 meas Pot. LO2 REPTIM.DAT
Name: CA7 Calculation
Function: $aX + bY$
X input: PL5 growth
Y input: 0.0
"a" constant: 1.0
"b" constant: 0.0
"c" constant: 0.0
Inputs:
 PL5 growth
Outputs:
 CA1 Set Pot 1
Name: CA8 charge density
Function: Integral $X dt$
X input: CA2 c.d. ch. 3
Y input: SP3 Set Point
"a" constant: 0.0
"b" constant: 0.0
"c" constant: 0.0
Inputs:
 CA2 c.d. ch. 3 SP3 Set Point
Outputs:
 MT15 CH 3 C/cm2 LO1 REPTIME.DAT
Name: CA9 charge density

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X input: CA5 c.d. ch.2
 Y input: SP4 Set Point
 "a" constant: 0.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs:
 CA5 c.d. ch.2 SP4 Set Point
 Outputs:
 MT13 CH 2 C/cm2 LO2 REPTIM.DAT
 Name: CA10 repas pot =20mV
 Function: aX + bY
 X input: CA1 Set Pot 1
 Y input: SP5 Set Point
 "a" constant: 1.0
 "b" constant: -0.13
 "c" constant: 0.0
 Inputs:
 CA1 Set Pot 1 SP5 Set Point
 Outputs:
 AO:3 Set CH. 3

Name: CA11 Calculation
 Function: aX + bY
 X input: PL6 t growth
 Y input: 0.0
 "a" constant: 1.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs:
 PL6 t growth
 Outputs:
 CA4 set pot 2

Name: CA12 repas pot=10mV
 Function: aX + bY
 X input: CA4 set pot 2
 Y input: SP6 Set Point
 "a" constant: 1.0
 "b" constant: -0.14
 "c" constant: 0.0
 Inputs:
 CA4 set pot 2 SP6 Set Point
 Outputs:
 < None >

Name: CA13 Calculation
 Function: a
 X input: 0.0
 Y input: 0.0
 "a" constant: -2.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs:
 < None >
 Outputs:
 < None >

Name: CA14 Calculation
 Function: a
 X input: 0.0
 Y input: 0.0
 "a" constant: -0.5
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs:

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< None >

Outputs:

AO:2 set ch.2

Name: CA15 Set Pot 1
 Function: $aX + bY + c$
 X input: SP7 Initial time
 Y input: CA18 Calculation
 "a" constant: -0.45
 "b" constant: 0.35
 "c" constant: 0.6
 Inputs:
 SP7 Initial time CA18 Calculation
 Outputs:
 CA20 repas pot=25mV

Name: CA16 c.d. ch. 4
 Function: aX / bY
 X input: AI:7 current ch. 4
 Y input: 1.0
 "a" constant: -0.1
 "b" constant: 8.0
 "c" constant: 0.0
 Inputs:
 AI:7 current ch. 4
 Outputs:
 CH7 c.d. ch. 4 MT9 c.d. ch 4 CA19 charge density
 LO3 REPTIMM.DAT

Name: CA17 potential CH. 4
 Function: $aX + bY$
 X input: AI:8 potential CH. 4
 Y input: 0.0
 "a" constant: -1.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs:
 AI:8 potential CH. 4
 Outputs:
 CH8 CH.4 meas pot. MT10 CH. 4 Pot. LO3 REPTIMM.DAT

Name: CA18 Calculation
 Function: $aX + bY$
 X input: PL8 growth
 Y input: 0.0
 "a" constant: 1.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs:
 PL8 growth
 Outputs:
 CA15 Set Pot 1

Name: CA19 charge density
 Function: Integral $X dt$
 X input: CA16 c.d. ch. 4
 Y input: SP8 Set Point
 "a" constant: 0.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs:
 CA16 c.d. ch. 4 SP8 Set Point
 Outputs:
 MT14 CH 4 C/cm2 LO3 REPTIMM.DAT
 Name: CA20 repas pot=25mV

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Function: $aX + bY$
 X input: CA15 Set Pot 1
 Y input: SP9 Set Point
 "a" constant: 1.0
 "b" constant: -0.125
 "c" constant: 0.0
 Inputs: CA15 Set Pot 1 SP9 Set Point
 Outputs: AO:4 Set CH. 4

Name: CA21 Calculation
 Function: a
 X input: 0.0
 Y input: 0.0
 "a" constant: -2.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs: < None >
 Outputs: < None >

Name: CA22 Set Pot 1
 Function: $aX + bY + c$
 X input: SP10 Initial time
 Y input: CA25 Calculation
 "a" constant: -0.45
 "b" constant: 0.35
 "c" constant: 0.6
 Inputs: SP10 Initial time CA25 Calculation
 Outputs: CA27 repas pot=50mV

Name: CA23 c.d. ch. 5
 Function: aX / bY
 X input: AI:9 current ch. 5
 Y input: 1.0
 "a" constant: -0.1
 "b" constant: 8.0
 "c" constant: 0.0
 Inputs: AI:9 current ch. 5
 Outputs: CH10 c.d. ch. 5 MT16 c.d. ch 5 CA26 charge density
 LO4 REPTIM#.DAT

Name: CA24 potential CH. 5
 Function: $aX + bY$
 X input: AI:10 potential CH. 5
 Y input: 0.0
 "a" constant: -1.0
 "b" constant: 0.0
 "c" constant: 0.0
 Inputs: AI:10 potential CH. 5
 Outputs: CH11 CH.5 meas pot. MT17 CH. 5 Pot. LO4 REPTIM#.DAT

Name: CA25 Calculation
 Function: $aX + bY$
 X input: PL11 growth
 Y input: 0.0
 "a" constant: 1.0
 "b" constant: 0.0

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"c" constant: 0.0
 Inputs:
 PL11 growth
 Outputs:
 CA22 Set Pot 1

Name: CA26 charge density
 Function: Integral X dt
 X input: CA23 c.d. ch. 5
 Y input: SP11 Set Point
 "a" constant: 0.0
 "b" constant: 0.0
 "c" constant: 0.0

Inputs:
 CA23 c.d. ch. 5 SP11 Set Point
 Outputs:
 MT20 CH 5 C/cm2 LO4 REPTIM#.DAT

Name: CA27 repas pot=50mV
 Function: aX + bY
 X input: CA22 Set Pot 1
 Y input: SP12 Set Point
 "a" constant: 1.0
 "b" constant: -0.1
 "c" constant: 0.0

Inputs:
 CA22 Set Pot 1 SP12 Set Point
 Outputs:
 AO:5 Set CH. 5

Name: CA28 Calculation
 Function: a
 X input: 0.0
 Y input: 0.0
 "a" constant: -2.0
 "b" constant: 0.0
 "c" constant: 0.0

Inputs:
 < None >
 Outputs:
 < None >

Type: Set Point

Name: SP1 Initial time
 Function: X > Y
 X input: TI1 Timer
 Y input: 1800.0
 Dead Band: 0.0

Inputs:
 TI1 Timer
 Outputs:
 CA1 Set Pot 1 PL5 growth

Name: SP2 initial time
 Function: X > Y
 X input: TI2 Timer
 Y input: 1800.0
 Dead Band: 0.0

Inputs:
 TI2 Timer
 Outputs:
 CA4 set pot 2 PL6 t growth

Name: SP3 Set Point
 Function: X < Y

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```

Name:          TI1  Timer
Y input:       2.0
Dead Band:     0.0
Inputs:
  TI1  Timer
Outputs:
  CA8  charge density

Name:          SP4  Set Point
Function:      X < Y
X input:       TI2  Timer
Y input:       2.0
Dead Band:     0.0
Inputs:
  TI2  Timer
Outputs:
  CA9  charge density

Name:          SP5  Set Point
Function:      X > Y
X input:       TI1  Timer
Y input:       1.206e+05
Dead Band:     0.0
Inputs:
  TI1  Timer
Outputs:
  CA10 repas pot =20mV

Name:          SP6  Set Point
Function:      X > Y
X input:       TI2  Timer
Y input:       1.206e+05
Dead Band:     0.0
Inputs:
  TI2  Timer
Outputs:
  CA12 repas pot=10mV

Name:          SP7  Initial time
Function:      X > Y
X input:       TI3  Timer
Y input:       1800.0
Dead Band:     0.0
Inputs:
  TI3  Timer
Outputs:
  PL8  growth          CA15 Set Pot 1

Name:          SP8  Set Point
Function:      X < Y
X input:       TI3  Timer
Y input:       2.0
Dead Band:     0.0
Inputs:
  TI3  Timer
Outputs:
  CA19 charge density

Name:          SP9  Set Point
Function:      X > Y
X input:       TI3  Timer
Y input:       1.206e+05
Dead Band:     0.0
Inputs:
  TI3  Timer
Outputs:

```

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constant:
CA20 repas pot=25mV

me: SP10 Initial time
nction: X > Y
input: TI4 Timer
input: 1800.0
ad Band: 0.0

puts:
TI4 Timer

tputs: PL11 growth CA22 Set Pot 1

me: SP11 Set Point
nction: X < Y
input: TI4 Timer
input: 2.0
ad Band: 0.0

puts:
TI4 Timer

tputs: CA26 charge density

me: SP12 Set Point
nction: X > Y
input: TI4 Timer
input: 1.206e+05
ad Band: 0.0

puts:
TI4 Timer

tputs: CA27 repas pot=50mV

pe: Log

me: LO1 REPTIME.DAT
g Status: < disabled >
mple Rate: 60.0 Seconds
te: < None >

ta Format:

ading: < None >

le Path: C:\WB\DATA

le Name: REPTIME.DAT

te Stamp: enabled

me Stamp: enabled

puts:

TI1 Timer
CA8 charge density

CA3 potential CH. 3 CA2 c.d. ch. 3

tputs:
< None >

me: LO2 REPTIM.DAT
g Status: < disabled >
mple Rate: 60.0 Seconds
te: < None >

ta Format:

ading: < None >

le Path: C:\WB\DATA

le Name: REPTIM.DAT

te Stamp: enabled

me Stamp: enabled

puts:

TI2 Timer
CA9 charge density

CA6 CH. 2 potential CA5 c.d. ch.2

tputs:

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Name: LO3 REPTIMM.DAT
 Log Status: < disabled >
 Sample Rate: 60.0 Seconds
 Gate: < None >
 Data Format:
 Heading: < None >
 File Path: C:\WB\DATA
 File Name: REPTIMM.DAT
 Date Stamp: enabled
 Time Stamp: enabled
 Inputs:
 TI3 Timer CA17 potential CH. 4 CA16 c.d. ch. 4
 CA19 charge density
 Outputs:
 < None >

Name: LO4 REPTIM#.DAT
 Log Status: < disabled >
 Sample Rate: 60.0 Seconds
 Gate: < None >
 Data Format:
 Heading: < None >
 File Path: C:\WB\DATA
 File Name: REPTIM#.DAT
 Date Stamp: enabled
 Time Stamp: enabled
 Inputs:
 TI4 Timer CA24 potential CH. 5 CA23 c.d. ch. 5
 CA26 charge density
 Outputs:
 < None >

Type: Meter

Name: MT1 c.d. ch 3
 Output Type: Exponential
 Units: A/cm2
 Integer: 6
 Decimal: 3
 Inputs:
 CA2 c.d. ch. 3
 Outputs:
 < None >

Name: MT2 CH. 3 Pot.
 Output Type: Fixed Point
 Units: < None >
 Integer: 6
 Decimal: 3
 Inputs:
 CA3 potential CH. 3
 Outputs:
 < None >

Name: MT3 c.d. ch. 2
 Output Type: Exponential
 Units: A/cm2
 Integer: 6
 Decimal: 3
 Inputs:
 CA5 c.d. ch.2
 Outputs:
 < None >

Name: MT4 CH. 2 pot
 Output Type: Fixed Point

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CA20. ranaa pot-25mV

Units: < None >
 Integer: 6
 Decimal: 3
 Inputs:
 CA6 CH. 2 potential
 Outputs:
 < None >

Name: MT5 CH.3 time
 Output Type: Fixed Point
 Units: sec
 Integer: 9
 Decimal: 0
 Inputs:
 TI1 Timer
 Outputs:
 < None >

Name: MT6 CH.2 time
 Output Type: Fixed Point
 Units: sec
 Integer: 9
 Decimal: 0
 Inputs:
 TI2 Timer
 Outputs:
 < None >

Name: MT7 CH. 3 Vout
 Output Type: Fixed Point
 Units: volts
 Integer: 6
 Decimal: 3
 Inputs:
 AO:3 Set CH. 3
 Outputs:
 < None >

Name: MT8 CH 2 Vout
 Output Type: Fixed Point
 Units: volts
 Integer: 6
 Decimal: 3
 Inputs:
 AO:2 set ch.2
 Outputs:
 < None >

Name: MT9 c.d. ch 4
 Output Type: Exponential
 Units: A/cm2
 Integer: 6
 Decimal: 3
 Inputs:
 CA16 c.d. ch. 4
 Outputs:
 < None >

Name: MT10 CH. 4 Pot.
 Output Type: Fixed Point
 Units: < None >
 Integer: 6
 Decimal: 3
 Inputs:
 CA17 potential CH. 4

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< None >

Name: MT11 CH.4 time
 Output Type: Fixed Point
 Units: sec
 Integer: 9
 Decimal: 0
 Inputs: TI3 Timer
 Outputs: < None >

Name: MT12 CH. 4 Vout
 Output Type: Fixed Point
 Units: volts
 Integer: 6
 Decimal: 3
 Inputs: AO:4 Set CH. 4
 Outputs: < None >

Name: MT13 CH 2 C/cm2
 Output Type: Fixed Point
 Units: C/cm2
 Integer: 6
 Decimal: 3
 Inputs: CA9 charge density
 Outputs: < None >

Name: MT14 CH 4 C/cm2
 Output Type: Fixed Point
 Units: C/cm2
 Integer: 6
 Decimal: 3
 Inputs: CA19 charge density
 Outputs: < None >

Name: MT15 CH 3 C/cm2
 Output Type: Fixed Point
 Units: C/cm2
 Integer: 6
 Decimal: 3
 Inputs: CA8 charge density
 Outputs: < None >

Name: MT16 c.d. ch 5
 Output Type: Exponential
 Units: A/cm2
 Integer: 6
 Decimal: 3
 Inputs: CA23 c.d. ch. 5
 Outputs: < None >

Name: MT17 CH. 5 Pot.
 Output Type: Fixed Point
 Units: < None >
 Integer: 6

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Decimal: 3
 Inputs:
 CA24 potential CH. 5
 Outputs:
 < None >

Name: MT18 CH.5 time
 Output Type: Fixed Point
 Units: sec
 Integer: 9
 Decimal: 0
 Inputs:
 TI4 Timer
 Outputs:
 < None >

Name: MT19 CH. 5 Vout
 Output Type: Fixed Point
 Units: volts
 Integer: 6
 Decimal: 3
 Inputs:
 AO:5 Set CH. 5
 Outputs:
 < None >

Name: MT20 CH 5 C/cm2
 Output Type: Fixed Point
 Units: C/cm2
 Integer: 6
 Decimal: 3
 Inputs:
 CA26 charge density
 Outputs:
 < None >

Type: Chart

Name: CH1 c.d. ch. 2
 Chart Color: White
 X Axis Label: Hours
 X Axis Min: 0.0
 X Axis Max: 96.0
 Y Axis Label: < None >
 Y Axis Min: 0.0
 Y Axis Max: 0.01
 Inputs:
 CA2 c.d. ch. 3
 Outputs:
 < None >

Name: CH2 c.d. ch.2
 Chart Color: White
 X Axis Label: Hours
 X Axis Min: 0.0
 X Axis Max: 96.0
 Y Axis Label: < None >
 Y Axis Min: 0.0
 Y Axis Max: 0.01
 Inputs:
 CA5 c.d. ch.2
 Outputs:
 < None >

Name: CH3 CH.3 meas pot.

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X Axis Label: Hours
 X Axis Min: 0.0
 X Axis Max: 24.0
 Y Axis Label: < None >
 Y Axis Min: 0.0
 Y Axis Max: 1.0

Inputs:
 CA3 potential CH. 3
 Outputs:
 < None >

Name: CH4 CH. 3 pot. out
 Chart Color: White
 X Axis Label: Hours
 X Axis Min: 0.0
 X Axis Max: 24.0
 Y Axis Label: < None >
 Y Axis Min: 0.0
 Y Axis Max: 1.0

Inputs:
 AO:3 Set CH. 3
 Outputs:
 < None >

Name: CH5 CH. 2 meas Pot.
 Chart Color: White
 X Axis Label: Hours
 X Axis Min: 0.0
 X Axis Max: 24.0
 Y Axis Label: < None >
 Y Axis Min: 0.0
 Y Axis Max: 1.0

Inputs:
 CA6 CH. 2 potential
 Outputs:
 < None >

Name: CH6 CH. 2 Pot. out
 Chart Color: White
 X Axis Label: Seconds
 X Axis Min: 0.0
 X Axis Max: 120.0
 Y Axis Label: < None >
 Y Axis Min: 0.0
 Y Axis Max: 1.0

Inputs:
 AO:2 set ch.2
 Outputs:
 < None >

Name: CH7 c.d. ch. 4
 Chart Color: White
 X Axis Label: Hours
 X Axis Min: 0.0
 X Axis Max: 96.0
 Y Axis Label: < None >
 Y Axis Min: 0.0
 Y Axis Max: 0.01

Inputs:
 CA16 c.d. ch. 4
 Outputs:
 < None >

Name: CH8 CH.4 meas pot.
 Chart Color: White
 X Axis Label: Hours
 Start Value: Low

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X Axis Min: 0.0
 X Axis Max: 24.0
 Y Axis Label: < None >
 Y Axis Min: 0.0
 Y Axis Max: 1.0

Inputs:

CA17 potential CH. 4

Outputs:

< None >

Name: CH9 CH. 4 pot. out
 Chart Color: White
 X Axis Label: Hours
 X Axis Min: 0.0
 X Axis Max: 24.0
 Y Axis Label: < None >
 Y Axis Min: 0.0
 Y Axis Max: 1.0
 Inputs:

AO:4 Set CH. 4

Outputs:

< None >

Name: CH10 c.d. ch. 5
 Chart Color: White
 X Axis Label: Hours
 X Axis Min: 0.0
 X Axis Max: 96.0
 Y Axis Label: < None >
 Y Axis Min: 0.0
 Y Axis Max: 0.01
 Inputs:

CA23 c.d. ch. 5

Outputs:

< None >

Name: CH11 CH.5 meas pot.
 Chart Color: White
 X Axis Label: Hours
 X Axis Min: 0.0
 X Axis Max: 24.0
 Y Axis Label: < None >
 Y Axis Min: 0.0
 Y Axis Max: 1.0
 Inputs:

CA24 potential CH. 5

Outputs:

< None >

Name: CH12 CH. 5 pot. out
 Chart Color: White
 X Axis Label: Hours
 X Axis Min: 0.0
 X Axis Max: 24.0
 Y Axis Label: < None >
 Y Axis Min: 0.0
 Y Axis Max: 1.0
 Inputs:

AO:5 Set CH. 5

Outputs:

< None >

Type: Analog Output

Name: AO:2 set ch.2
 Card Type: STI ACAO-12

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Range: +/- 5 Volts
 Resolution: 0.024%
 Inputs:
 CA14 Calculation
 Outputs:
 CH6 CH. 2 Pot. out MT8 CH 2 Vout

Name: AO:3 Set CH. 3
 Card Type: STI ACAO-12
 Channel Number: 3
 Range: +/- 5 Volts
 Resolution: 0.024%
 Inputs:
 CA10 repas pot =20mV
 Outputs:
 CH4 CH. 3 pot. out MT7 CH. 3 Vout

Name: AO:4 Set CH. 4
 Card Type: STI ACAO-12
 Channel Number: 4
 Range: +/- 5 Volts
 Resolution: 0.024%
 Inputs:
 CA20 repas pot=25mV
 Outputs:
 CH9 CH. 4 pot. out MT12 CH. 4 Vout

Name: AO:5 Set CH. 5
 Card Type: STI ACAO-12
 Channel Number: 5
 Range: +/- 5 Volts
 Resolution: 0.024%
 Inputs:
 CA27 repas pot=50mV
 Outputs:
 CH12 CH. 5 pot. out MT19 CH. 5 Vout

Type: System

Name: SY1 System
 Enabled: Yes
 Run Commands:
 Copy File ... C:\WB\DATA\REPTIM.DAT
 To ... B:\REPTIM.DAT

Inputs:
 PL3 Pulse
 Outputs:
 < None >

Name: SY2 System
 Enabled: Yes
 Run Commands:
 Copy File ... C:\WB\DATA\REPTIME.DAT
 To ... B:\REPTIME.DAT

Inputs:
 PL4 Pulse
 Outputs:
 < None >

Name: SY3 System
 Enabled: Yes
 Run Commands:
 Copy File ... C:\WB\DATA\REPTIMM.DAT
 To ... B:\REPTIMM.DAT

Inputs:
 Start Value: Low

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PL9 Pulse
Outputs:
< None >

Name: SY4 System
Enabled: Yes
Run Commands:
Copy File ... C:\WB\DATA\REPTIM#.DAT
To ... B:\REPTIM#.DAT

Inputs:
PL12 Pulse
Outputs:
< None >

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N. Snickhal
4/28/97

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.

N. Snickhal

2/14/97

The project has been closed & the scientific note computer is turned in for storage as Q.A. record.

N. Snickhal

ADDITIONAL INFORMATION FOR SCIENTIFIC NOTEBOOK #: 025

Document Date:	12/01/1993
Availability:	Southwest Research Institute® Center for Nuclear Waste Regulatory Analyses 6220 Culebra Road San Antonio, Texas 78228
Contact:	Southwest Research Institute® Center for Nuclear Waste Regulatory Analyses 6220 Culebra Road San Antonio, TX 78228-5166 Attn.: Director of Administration 210.522.5054
Data Sensitivity:	<input checked="" type="checkbox"/> "Non-Sensitive" <input type="checkbox"/> Sensitive <input type="checkbox"/> "Non-Sensitive - Copyright" <input type="checkbox"/> Sensitive - Copyright
Date Generated:	1997
Operating System: (including version number)	DOS
Application Used: (including version number)	Workbench, Version 2
Media Type: (CDs, 3 1/2, 5 1/4 disks, etc.)	1 - 8-mm tape
File Types: (.exe, .bat, .zip, etc.)	dat, binary
Remarks: (computer runs, etc.)	Media contains: corrosion data files