Localized Corrosion

C-22 Propagation Rate Measurement

Alloy/Specimen: ~~Hastelloy® C-22 alloy with heat 2316-1-8122~~ three Alloy 622, Heat # XX197785-11 X.H. 5/23/05

Specimen preparation: Four 1-mm wires were sealed in resin. Specimen surfaces polished to 600 grit finish using SiC paper. Specimen cleaned in acetone and rinsed in DI water. PTFE crevice forming bolt presses against specimen using torque screwdriver to 50 in-oz. X.H 3/25/05

Torque screw driver: PROTO® 1604 MFD USA **SN:** 139072 **Cal:** 9/29/2004 **Due:** 3/29/2005

Test ID: C22PR025

Solution: 5 M NaCl
584.83 g NaCl Lot# 642966 + DI water to 2000 ~~mls~~ mLs X.H 5/23/05

Reagents measured with	**Model:** OHAUS	**SN:** 2883
	Cal: 1/14/05	**Due:** 7/14/05
Initial pH: 7.123 **Final pH:** 6.018	**Model:** Orion EA 940	**SN:** 2330
	Cal: 7/21/04	**Due:** 7/21/05
	PH probe: #13-620-296	**SN:** ~~4079126P~~ 4065196P X.H 6/7/05
Test temperature: 95°C	Measured with thermocouple	**SN:** 333
	Cal: 2/7/05	**Due:** 8/15/05

Multi-channel Potentiostat: SI1480 **Cal:** 11/23/04 **Due:** 5/23/05 SN: 0028055

Cell set up: Two channels for each electrode, one channel to measure the coupling current, the other channel to measure the potential.

Wire color coded in red wire #3 X.H 5/23/05

Channels 1 & 2

Counter Electrode: Alloy 22 plate with surface area of 36.0 cm²

Reference Electrode: Fisher 13-620-52
SN: 9252105

Data Files: C22PR0311Ia, C22PR0311Ea, C22PR0311Ib, C22PR0311Eb, C22PR0312Ia, C22PR0312E, C22PR0314I, C22PR0314E, C22PR0317I, C22PR0317E, C22PR0320I, C22PR0320E, C22PR0323E, C22PR0323I, C22PR0326E, C22PR0326I, C22PR0329I, C22PR0329E X.H 3/11/05

Test dates: 3/11/05 ~ 3/30/05
Test length: 1.56×10^6 seconds
Crevice area: 0.00785 cm²
Maximum penetration depth: 2.89 mm into crevice between resin and C22 wire
Specimen examination:
Front face is etched. but corrosion is preferentially around the edge (next page)

Q = 28.7 coulombs

Xihua He 3/25/2005

Wire color coded in Orange wire #1 X.H 5/23/05

Channels 3&4

Counter Electrode: Pt foil with surface area of 0.2 cm²

Reference Electrode: Fisher 13-620-52
SN: 9250078

Data Files: C22PR0314I, C22PR0314E, C22PR0317I, C22PR0317E, C22PR0320I, C22PR0320E, C22PR0323E, C22PR0323I, C22PR0323bE, C22PR0323cI, C22PR0323cE, C22PR0326I, C22PR0326E, C22PR0329I, C22PR0329E

Test dates: 3/14/05 ~ 3/30/05
Test length: 1.33×10^6 seconds
Crevice area: 0.00785 cm²
Maximum penetration depth: 2.66 mm into edge
Specimen examination:

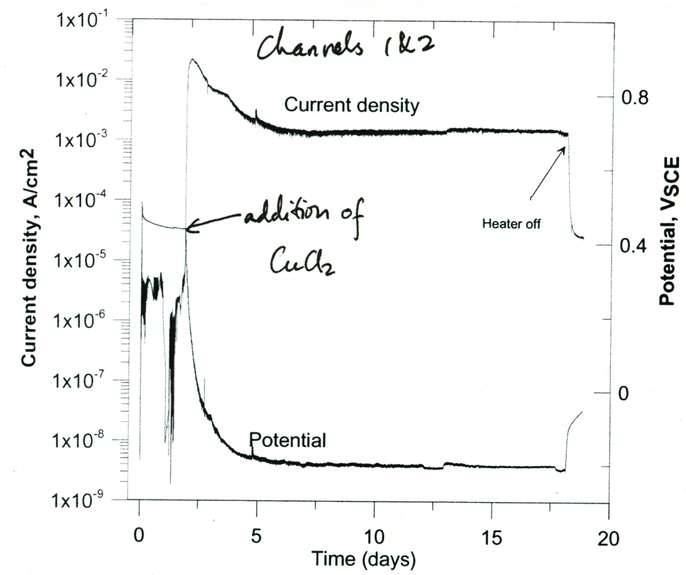
Q = 10.83 coulombs

Cupric chloride solution

20.041 g $CuCl_2 \cdot 2H_2O$ Lot # 897713 + 100 mls DI water } final pH = 2.469 c = 1.175 mol/L

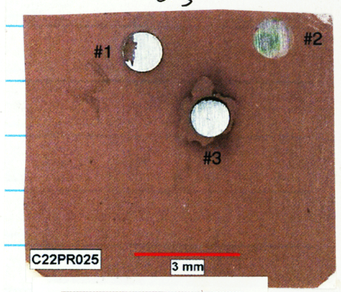
Test ID: C22PR025 wire # 3 X.H 5/23/05

5 M NaCl, 95°C, Coupled to Alloy 22 plate with addition of 21 µL $CuCl_2$

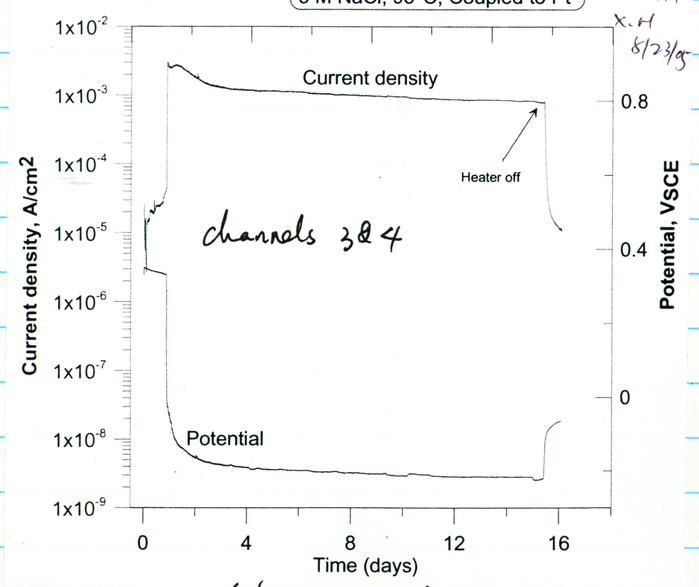


Concentration of $CuCl_2$ in 300 ml test solution:

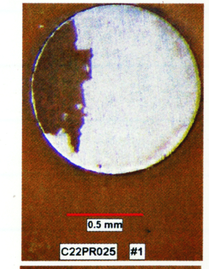
$$\frac{1.175 \times 21 \times 10^{-6}}{0.3} = 0.82 \times 10^{-4}\ M$$



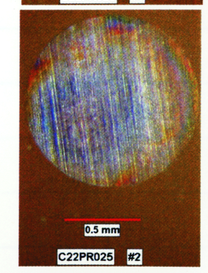
Test ID: C22PR025 5 M NaCl, 95°C, Coupled to Pt wire #1 X.H 5/23/05



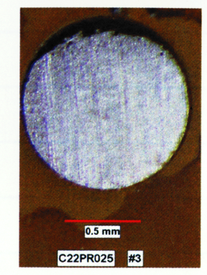
Xihua He 4/1/2005



orange



blue (not used) X.H 5/23/05



red

Wire #3 was lost while pushing it out from the resin. X.H 5/23/05

Localized Corrosion

C-22 Propagation Rate Measurement

Alloy/Specimen: ~~Hastelloy alloy with heat 2316-1-8122~~ Alloy 622, Heat # XX1977B611 X.H 5/23/05

Specimen preparation: Four 1-mm wires were sealed in resin. Specimen surfaces polished to 600 grit finish using SiC paper. Specimen cleaned in acetone and rinsed in DI water. PTFE crevice forming bolt presses against specimen using torque screwdriver to 50 in-oz.

Torque screw driver: PROTO® 1604 MFD USA **SN:** 139072 **Cal:** 9/29/2004 **Due:** 3/29/2005

Test ID: C22PR026

Solution: 5 M NaCl
584.83 g NaCl Lot# 642966 + DI water to 2000 ~~mls~~ mLs X.H 5/23/05

Reagents measured with	**Model:** OHAUS	**SN:** 2883
	Cal: 1/14/05	**Due:** 7/14/05
Initial pH: 7.123	**Model:** Orion EA 940	**SN:** 2330
Final pH: 5.430	**Cal:** 7/21/04	**Due:** 7/21/05
	PH probe: #13-620-296	**SN:** ~~4079126P~~ 4065186P X.H 6/7/05
Test temperature: 95°C	Measured with thermocouple	**SN:** 333
	Cal: 2/7/05	**Due:** 8/5/05

Multi-channel Potentiostat: SI1480 **Cal:** 11/23/04 **Due:** 5/23/05 SN: 0024055

Cell set up: Two channels for each electrode, one channel to measure the coupling current, the other channel to measure the potential.

Wire color coded in yellow	Wire color coded in blue
Channels 5&6	Channels 7&8
Counter Electrode: Alloy 22 plate with surface area of 40.99 cm²	**Counter Electrode:** Alloy 22 plate with surface area of 20 cm²
Reference Electrode: Fisher 13-620-52 **SN:** 8238321	**Reference Electrode:** Fisher 13-620-52 **SN:** 9250074
Data Files: C22PR0323Ia, C22PR0323Ea, C22PR0323Ib, C22PR0323Eb, C22PR0326I, C22PR0326E, C22PR0329I, C22PR0329E	**Data Files:** C22PR0323Ib, C22PR0323Eb, C22PR0323Ic, C22PR0323Ec, C22PR0324I, C22PR0324E, C22PR0326E, C22PR0326I, C22PR0329I, C22PR0329E
Test dates: 3/23/05 ~ 3/30/05	**Test dates:** 3/23/05 ~ 3/30/05
Test length: 5.24×10^5 seconds	**Test length:** 5.83×10^5 seconds
Crevice area: 0.785 mm²	**Crevice area:** 0.785 mm²
Maximum penetration depth: 0 μm	**Maximum penetration depth:** no obvious penetration
Specimen examination: Surface is etched. no obvious penetration.	**Specimen examination:** Surface is slightly etched. difficult to decide penetration depth
Q = 1.34 coulombs	Q = 0.088 coulombs

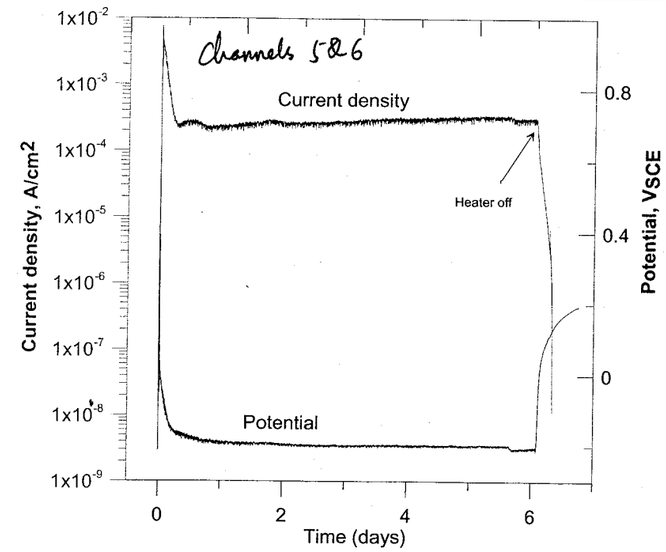
Xi'hua He 3/25/2005

Note: probe was repolished for other following test.

20.041 g $CuCl_2 \cdot 2H_2O$ Lot # 897713 } Preparation of Cupric Chloride solution
100 mls DI water pH = 2.469 C = 1.175 mol/L

Test ID: C22PR026

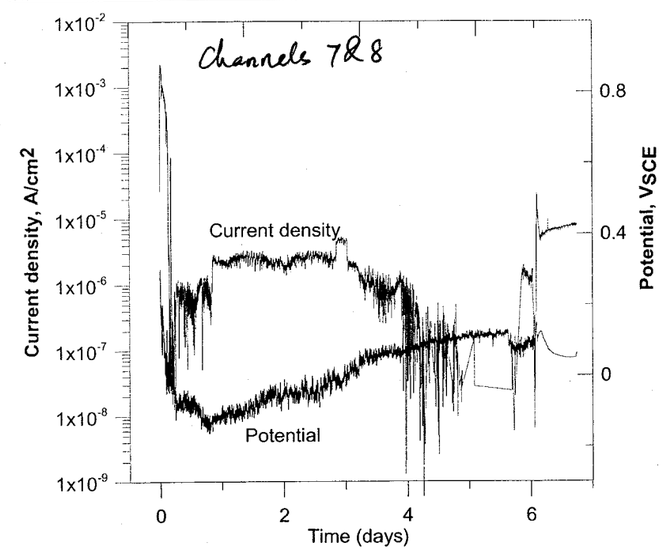
5 M NaCl, 95°C, Coupled to large Alloy 22 plate with addition of 21 μL $CuCl_2$



Concentration of $CuCl_2$ in 300 ml test solution: 0.82×10^{-4} M

Test ID: C22PR026

5 M NaCl, 95°C, Coupled to small Alloy 22 plate with addition of 21 μL $CuCl_2$



Xi'hua He 4/1/2005

Xi'hua He 6/22/06

C-22 Localized Corrosion Propagation Rate Measurement

Alloy/Specimen: Alloy 622 filler wire Alloy 622, Heat # XX197186 11 X.H 5/23/05

Specimen preparation: Four 1-mm wires were sealed in resin. Specimen surfaces polished to 600 grit finish using SiC paper. Specimen cleaned in acetone and rinsed in DI water. PTFE crevice forming bolt presses against specimen using torque screwdriver to 50 in-oz.

Torque screw driver: **PROTO 6104 MFD USA** **SN:** 139072
Cal: 9/29/2004 **Due:** 3/29/2005

Test ID: C22PR027

Solution: 4 M $MgCl_2$
2033.1 g $MgCl_2.6H_2O$ Lot# 041703 + D.I. water to 2.5 L

Reagents measured with	**Model:** OHAUS	**SN:** 2883
	Cal: 1/14/05	**Due:** 7/14/05
Initial pH: 2.31	**Model:** Orion EA 940	**SN:** 2330
	Cal: 7/21/04	**Due:** 7/21/05
Final pH: N.A	**PH probe:** #13-620-296	**SN:** ~~4079126P~~ 4065186P X.H 6/7/05
Test temperature: 110°C Measured with thermocouple/Thermocouple meter	Thermocouple **SN:** 331	
	Cal: 12/3/2004 **Due:** 6/3/2005 recalibrate SN: 331 Cal: 5/26/2005 Due: 11/25/2005	
	Thermocouple meter **SN:** T-94140 Omega Model HH22	
	Cal: 11/4/2004 **Due:** 5/4/2005 recalibrate	
	Cal: 5/12/05 **Due:** 11/11/05	

Potentiostat: SI1287 **Cal:** 10/6/04 **Due:** 4/6/05

Experiment was interrupted on 5/20/05 for 40 minutes to recalibrate the potentiostat. Cal: 5/20/05 Due 11/20/05

Cell set up: WE+RE2 = Alloy 22 specimen, RE1 to SCE, Ground to Pt, CE unused

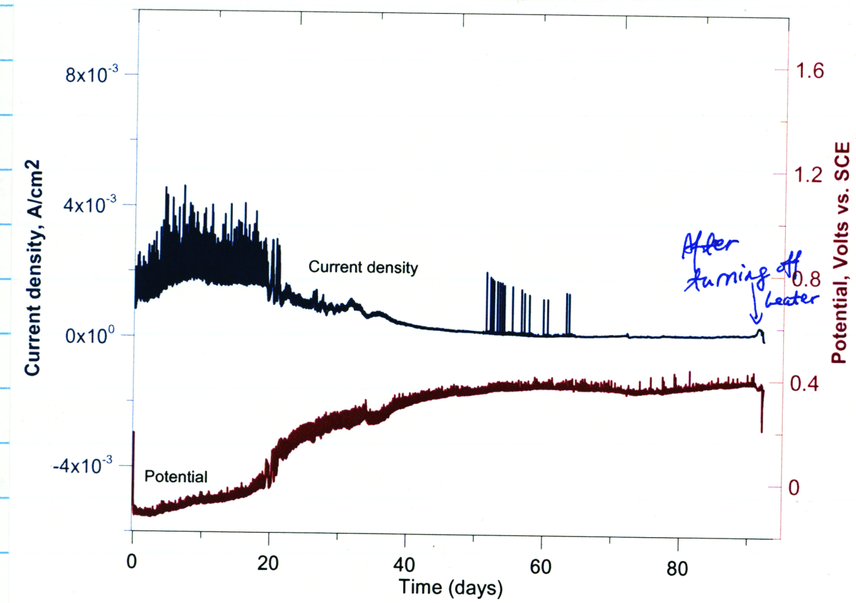
Wire color coded in yellow **used as working electrode**
Counter Electrode: Pt foil with surface area of cm^2
Reference Electrode: Fisher 13-620-52 **SN:**
Data Files: C22Prop-0323a, C22Prop-0323b, C22Prop-0325, C22Prop-0328, C22Prop-0401, C22Prop-0404, C22Prop-0407, C22Prop-0410, C22Prop-0413, C22Prop-0416, C22Prop-0419, C22Prop-0422, C22Prop-0422b, C22Prop-0425, C22Prop-0428, C22Prop-0501, C22Prop-0504, C22Prop-0507, C22Prop-0510, C22Prop-0513, C22Prop-0516, C22Prop-0519, C22Prop-0520, C22Prop-0523, C22Prop-0526, C22Prop-0529, C22Prop-0601, C22Prop-0604, C22Prop-0607, C22Prop-0610, C22Prop-0613, C22Prop-0616, C22Prop-0619, C22Prop-0622 X.H 6/23/05

Xi'hua He 3/23/2005

Test dates: 3/23/2005 ~ 6/23/2005
Test length: 7.9658×10^6 seconds
Crevice area: 0.785 mm^2
Maximum penetration depth: 700 μm
Specimen examination:
The entire wire has receded. Severe corrosion.

After test, it was found that part of the solution has evaporated. After temperature cools down to room temperature, only solid with small amount of water has left. So pH after test was not taken.

Xi'hua He 6/23/05



Xi'hua He 6/23/05

Xi'hua He 6/9/06

C-22 Localized Corrosion Propagation Rate Measurement

Alloy/Specimen: ~~Hastelloy® C-2000 alloy~~ X.H 5/23/05 Alloy 622, Heat # XX1977BG11, see entry form (Page # 36) X.H 5/23/05

Specimen preparation: Four 1-mm wires were sealed in resin. Specimen surfaces polished to 600 grit finish using SiC paper. Specimen cleaned in acetone and rinsed in DI water. PTFE crevice forming bolt presses against specimen using torque screwdriver to 50 in-oz.

Torque screw driver: **Snap-on USA** **SN:** 1001200319
Cal: 09/03/04 **Due:** 3/03/05

Test ID: C22PR028

During test, 750 ml $CuCl_2$ was added to 300 ml test solution

Solution: 5 M NaCl
584.83 g NaCl Lot# 642966 + DI water to 2000 mL

Reagents measured with	**Model:** OHAUS	**SN:** 2883
	Cal: 1/14/05	**Due:** 7/14/05
Initial pH: 7.12	**Model:** Orion EA 940	**SN:** 2330
Final pH: 5.67	**Cal:** 7/21/04	**Due:** 7/21/05
	PH probe: #13-620-296	**SN:** 4065196P
Test temperature: 95°C	Measured with thermocouple	**SN:** 328
	Cal: 2/7/05	**Due:** 8/5/05

Multi-channel Potentiostat: SI1480 **SN:** 00240551 **Cal:** 11/23/04 **Due:** 5/23/05 ~~X.H~~ X.H 4/8/05

Cell set up: Two channels for each electrode, one channel to measure the coupling current, the other channel to measure the potential

Wire color coded in red	**Wire color coded in** blue
Channels 1 & 2	Channels 3 & 4
Counter Electrode: Alloy 22 plate with surface area of 40 cm^2	**Counter Electrode:** Alloy 22 plate with surface area of 40 cm^2
Reference Electrode: Fisher 13-620-52 **SN:** 9250078	**Reference Electrode:** Fisher 13-620-52 **SN:** 9252105
Data Files: C22PR0331Id, C22PR0331Ed, C22PR0401I, C22PR0401E, C22PR0403I, C22PR0403E, C22PR0406I, C22PR0406E	**Data Files:** C22PR0331Ed, C22PR0331Id, C22PR0401E, ~~C22PR0401I~~ C22PR0403E, C22PR0403I, C22PR0406E, C22PR0406I X.H 4/8/05
Test dates: 4/1/05 ~ 4/8/05	**Test dates:** 4/1 ~ 4/8/05
Test length: 6.74×10^5 seconds	**Test length:** 6.74×10^5 seconds
Crevice area: 0.785 mm^2	**Crevice area:** 0.785 mm^2
Maximum penetration depth: 0 μm	**Maximum penetration depth:** 0 μm
Specimen examination: Minor etching, no visible damage	**Specimen examination:** Minor etching without visible corrosion

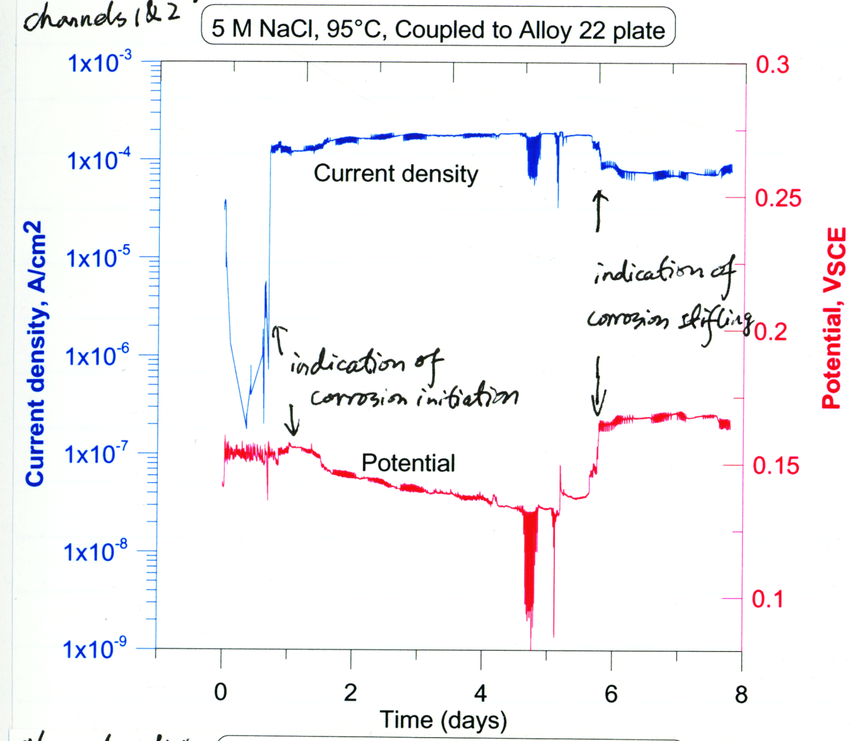
X.H 4/8/05

Note: The torque screwdriver used here was overdue because the Cal Lab at SwRI accidently broke their standard for calibrating this. The torque was recalibrated on 5/4/05 and was found that the overdue doesn't affect the test. X.H 5/23/05

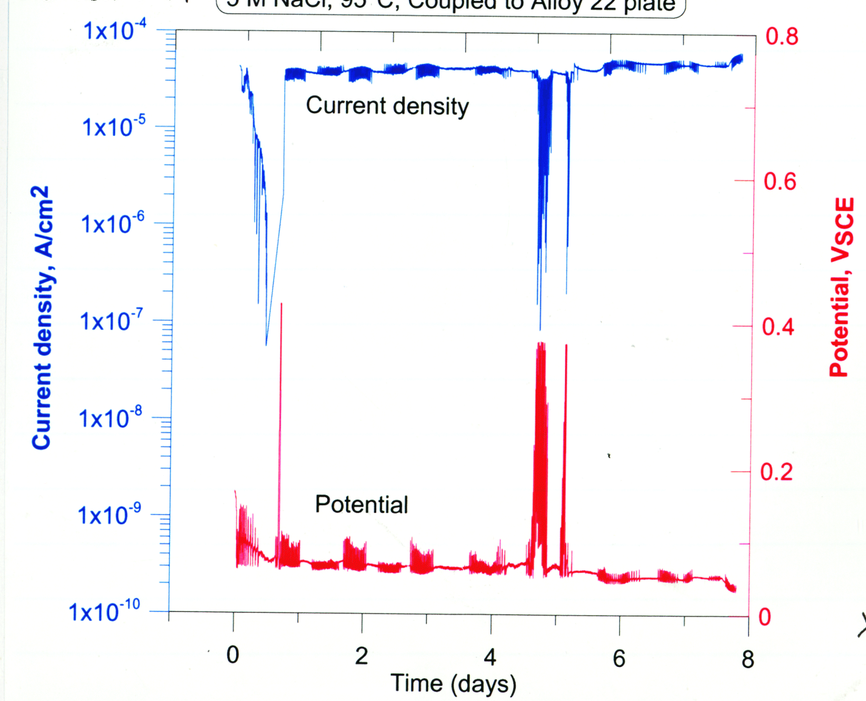
Xihua He 4/8/2005

Concentration of $CuCl_2$ in 300 ml test solution: 2.94×10^{-3} M

Channels 1&2



Channels 3&4



Channels 3&4: Compared to the signals observed from channels 1&2, the current is smaller and no potential drop observed. It seems that no initiation on this electrode.

Xihua He 4/10/2005

C-22 Localized Corrosion Propagation Rate Measurement

Alloy/Specimen: ~~Hastelloy alloy with heat 2316-1-8122~~ Alloy 622, Heat # XX 1977B611 (page #36) X.H 4/8/05

Specimen preparation: Four 1-mm wires were sealed in resin. Specimen surfaces polished to 600 grit finish using SiC paper. Specimen cleaned in acetone and rinsed in DI water. PTFE crevice forming bolt presses against specimen using torque screwdriver to 50 in-oz.

Torque screw driver: Snap-on USA **SN:** 10012 00319 X.H 4/8/05
Cal: 09/03/04 **Due:** 3/3/04

Test ID: C22PR029

Solution: 5 M NaCl + 4×10^{-5} M $CuCl_2$
584.83 g NaCl Lot# 642966 + DI water to 2000 mL

Reagents measured with	**Model:** OHAUS	**SN:** 2883
	Cal: 1/14/05	**Due:** 7/14/05
Initial pH: 7.12	**Model:** Orion EA 940	**SN:** 2330
Final pH: 7.15	**Cal:** 7/21/04	**Due:** 7/21/05
	PH probe: #13-620-296	**SN:** ~~4079126P~~ 4065196 X.H 6/7/05
Test temperature: 95°C	Measured with thermocouple	**SN:** 333
	Cal: 2/7/05	**Due:** 8/5/05

Multi-channel Potentiostat: SI1480 **SN:** 00240551 **Cal:** 11/23/04 **Due:** 5/23/05

Cell set up: Two channels for each electrode, one channel to measure the coupling current, the other channel to measure the potential

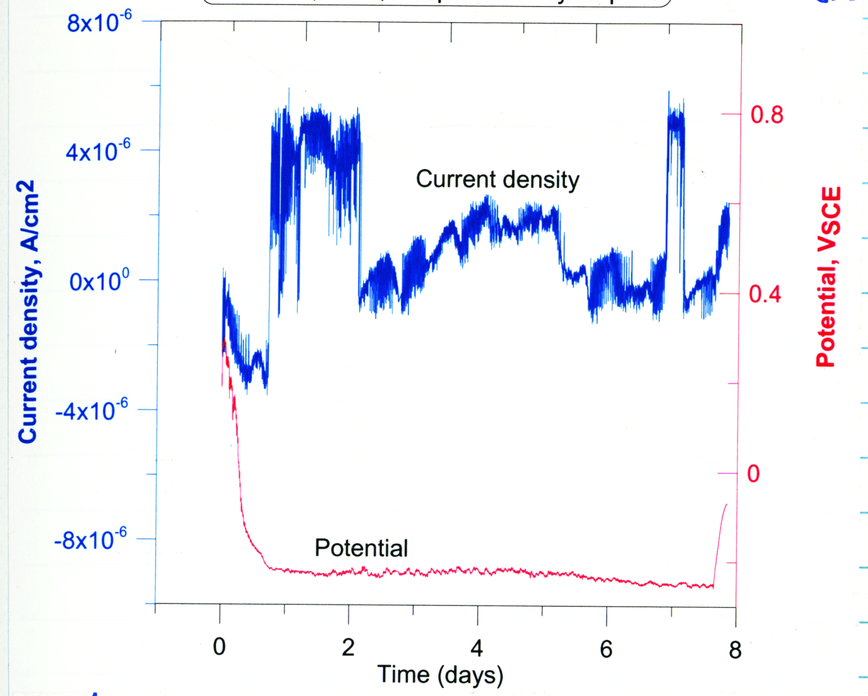
Wire color coded in orange	**Wire color coded in** red
Channels 5 & 6	Channels 7 & 8
Counter Electrode: Alloy 22 plate with surface area of 40 cm^2	**Counter Electrode:** Alloy 22 plate with surface area of 20 cm^2
Reference Electrode: Fisher 13-620-52 **SN:** 9250074	**Reference Electrode:** Fisher 13-620-52 **SN:** 8238321
Data Files: C22PR0331Ic, C22PR0331Ec, C22PR0331Id, C22PR0331Ed, C22PR0401E, C22PR0401I, C22PR0403E, C22PR0403I, C22PR0406E, C22PR0406I	**Data Files:** C22PR0331Ec, C22PR0331~~E~~Ic, C22PR0331Ed, C22PR0331Id, C22PR0401E, C22PR0401I, C22PR0403E, C22PR0403I, C22PR0406I, C22PR0406E X.H 4/8/05
Test dates: 4/1/05 ~ 4/8/05	**Test dates:** 4/1/05 ~ 4/8/05
Test length: 6.77×10^5 seconds	**Test length:** 6.77×10^5 seconds
Crevice area: 0.00785 cm^2	**Crevice area:** 0.00785 cm^2
Maximum penetration depth: 0 μm	**Maximum penetration depth:** 0 μm
Specimen examination: Minor etching without any visible corrosion	**Specimen examination:** Minor etching without any visible corrosion

Note: The torque screwdriver used here was overdue because the Cal Lab at SwRI broke their standard accidently and was waiting for their standard to calibrate this torque screwdriver. It was recalibrated on 5/14/05 and was found that the overdue doesn't affect the test

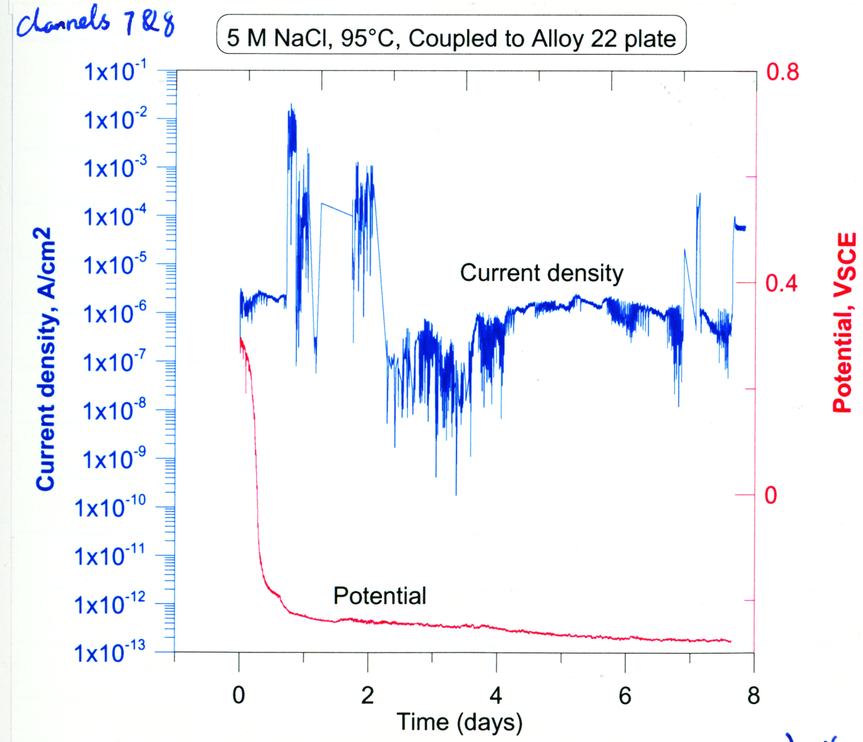
Xihua He 4/8/2005

X.H 5/23/05

Channels 5&6



Channels 7&8



Xihua He 4/11/2005

C-22 Propagation Rate Measurement

Localized Corrosion X.H 4/21/05

Alloy/Specimen: C22 with Heat # 2277-3-3266

Specimen Preparation: Specimen machined to dimensions 1.917"*0.250"specified in CNWRA Drawing #20.0402571.09 Specimen surfaces polished to 600 Grit finish using SiC paper. Specimen cleaned in acetone and rinsed in DI water. PTFE crevice forming bolt pressed against specimen using torque screwdriver to 50 in-oz. X.H 11/3/05

Torque Screwdriver: **Snap-on USA** **SN:** 1001200319
Cal: 09/03/04 **Due:** 3/03/05

Test ID: C22PR030

Initial weight: 12.56238 g **Model:** Sartorius Genius **SN:** 12809099

Final weight: 12.55911 g **Cal:** 11/10/04 **Due:** 5/10/05

Solution: 5 M NaCl + 1.37×10^{-4} M $CuCl_2$

584.83 g NaCl lot # 642966 + DI water to 2000 mLs

Reagents measured with **Model:** OHAUS **SN:** 2883
Cal: 1/14/05 **Due:** 7/14/05

Initial pH: 7.12 **Model:** Orion EA 940 **SN:**2330
Final pH: 5.13 **Cal:** 7/21/04 **Due:** 7/21/05
pH Probe: #13-620-296 **SN:** ~~4079126P~~ 4065196P X.H 4/21/05

Test Temperature: 95°C Measured with Thermocouple SN: 327
Cal: 2/7/05 **Due:** 8/5/05

Counter Electrode: Alloy 22 plate (Heat # 2277-1-3133) with surface area of 60 cm^2

Reference Electrode: Fisher 13-620-52 **SN:** 9252405
Potentiostat: Multi-channel SI1480
SN: 00186634 **Cal:** 12/3/04 **Due:** 6/3/05

Cell set up: Two channels for each electrode, one channel to measure the coupling current, the other to measure the coupling potential

Data Files: C22PR0401Ea, C22PR0401Ia, C22PR0401Eb, C22PR0401Ib, C22PR0404E, C22PR0404I, C22PR0407E, C22PR0408E, C22PR0408I, C22PR0410I, C22PR0413I, C22PR0413E, C22PR0416E, C22PR0416I, C22PR0419I, C22PR0419E

Test dates: 4/1/05 ~ 4/20/05

Test time: 1.64×10^6 seconds = 18.98 days charge = 8.576 coulombs

Creviced area: 10.9 mm^2

Estimated crevice corroded area: 10.8 mm^2

Maximum penetration depth: 104 μm Depth measured with Olympus Metallurgical Microscope PMB Cal: 5/23/05 Due: 11/23/05

Specimen examination:

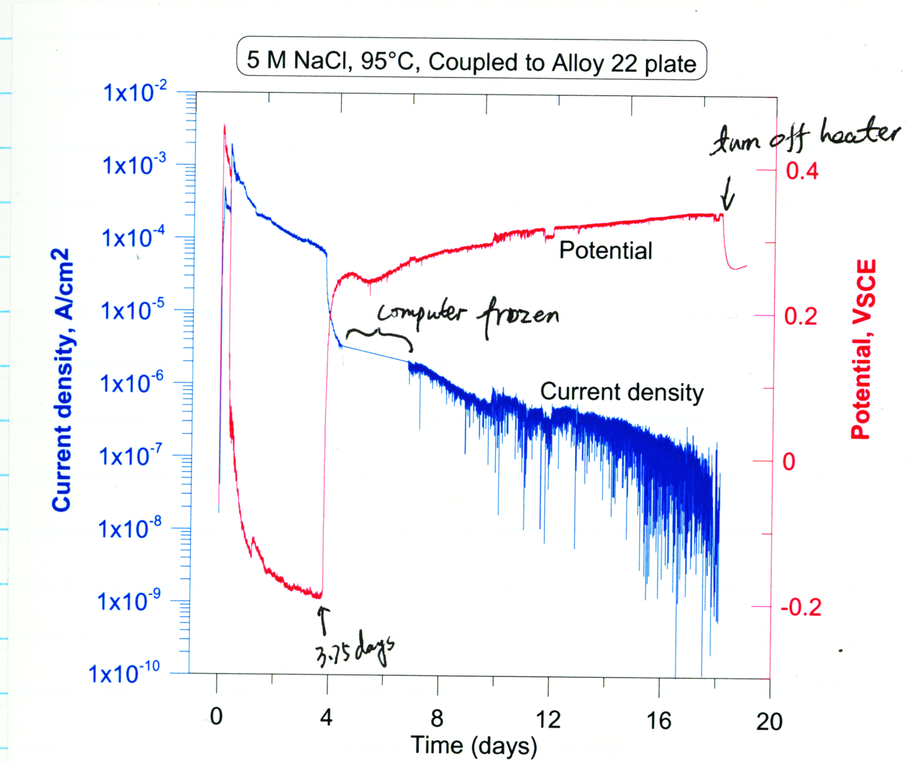
The entire creviced area is corroded. But the deeper sites are preferentially around the edge. Central region is etched and slightly corroded.

Xihua He 4/21/2005

Addition of 35 μL $CuCl_2$

Concentration of $CuCl_2$ in 300 ml test solution:

$$\frac{35\times10^{-6}\times1.175}{0.3} = 1.37\times10^{-4}\ M$$



Xihua He 4/21/05

Note: The torque wrench used in this test is overdue, because Cal Lab at SWRI was waiting for the standard to calibrate this. On May 4, 2005, this torque wrench was calibrated again and will continue to be included on the calibration recall.

Conclusion: The torque wrench doesn't affect the validity of the data. X.H 5/25/05

Localized Corrosion
C-22 Propagation Rate Measurement

Alloy/Specimen: C22 with Heat # 2277-3-3266
Specimen Preparation: Specimen machined to dimensions 1.917"*0.250"specified in CNWRA Drawing ~~#~~ 20.01402.571.019. X.H 11/3/05
Specimen surfaces polished to 600 Grit finish using SiC paper. Specimen cleaned in acetone and rinsed in DI water. PTFE crevice forming bolt pressed against specimen using torque screwdriver to 50 in-oz. 139072

Torque Screwdriver: **PROTO 6104 MFD USA** **SN:** ~~1001200319~~ X.H 4/11/05
Cal: ~~5/4/05~~ 4/11/05 X.H 4/11/05 **Due:** ~~11/4/05~~ 10/11/05 X.H 4/11/05

Test ID: C22PR031
Initial weight: 12.561899 g **Model:** Sartorius Genius **SN:** 12809099
Final weight: 12.548819 g **Cal:** 11/10/04 **Due:** 5/10/05
Solution: 5 M NaCl + 2×10^{-4} M $CuCl_2$ (page 83, this notebook)
584.4 g NaCl lot # 642966 + DI water to 2000 mLs
Reagents measured with **Model:** OHAUS **SN:** 2883
Cal: 1/14/05 **Due:** 7/14/05
Initial pH: 7.12 **Model:** Orion EA 940 **SN:** 2330
Final pH: 5.78 **Cal:** 7/21/04 **Due:** 7/21/05
pH Probe: #13-620-296 **SN:** ~~4079126P~~ 4065196P X.H 6/7/05

Test Temperature: 95°C Measured with Thermocouple/Thermocouple meter **Thermocouple** **SN:** 329
Cal: 2/2/2005 **Due:** 8/2/2005 X.H 6/7/05
Thermocouple meter **SN:** 3130900 **Cal:** 1/7/05
Due: 7/7/05

Counter Electrode: Alloy 22 plate (Heat # 2277-1-3133) with surface area of 60 cm^2
Reference Electrode: Fisher 13-620-52 **SN:** 8238321
Potentiostat: Multi-channel SI1480
SN: 00186634 **Cal:** 12/3/04 **Due:** 6/3/05
Cell set up: Two channels for each electrode, one channel to measure the coupling current, the other to measure the coupling potential
Data Files: C22PR0411Ia, C22PR0411Ea, C22PR0411Ib, C22PR0411Eb, C22PR0411Ic, C22PR0411Ec, C22PR0414I, C22PR0414E, C22PR0417I, C22PR0417E, C22PR0419E, C22PR0419I, C22PR0420I, C22PR0420E, C22PR0423E, C22PR0423I, C22PR0426I, C22PR0426E, C22PR0429I, C22PR0429E, C22PR0502E, C22PR0502I, C22PR0505I, C22PR0505E, C22PR0508I, C22PR0508E, C22PR0509I, C22PR0509E, C22PR0511E, C22PR0511I, C22PR0512I, C22PR0512E, C22PR0516I, C22PR0516E, C22PR0517I, C22PR0517E, C22PR0520E, C22PR0520I, C22PR0523I, C22PR0523E, C22PR0526I, C22PR0526E, C22PR0527I, C22PR0529E, C22PR0601E, C22PR0601I, C22PR0601bI, C22PR0601bE, C22PR0601cI, C22PR0601cE

Test dates: 4/11/2005 ~ 6/21/05
Test time: 6.129×10^{6} seconds = 70.94 days Total charge = 33.69 coulombs
Creviced area: 11.3 mm^2
Estimated crevice corroded area: 11.3 mm^2 Depth measured with Olympus Metallurgical Microscope PME3 Cal: 5/23/05 Due: 11/23/05
Maximum penetration depth: 313 μm
Specimen examination: One side of the creviced area is severely corroded. The other side is etched.

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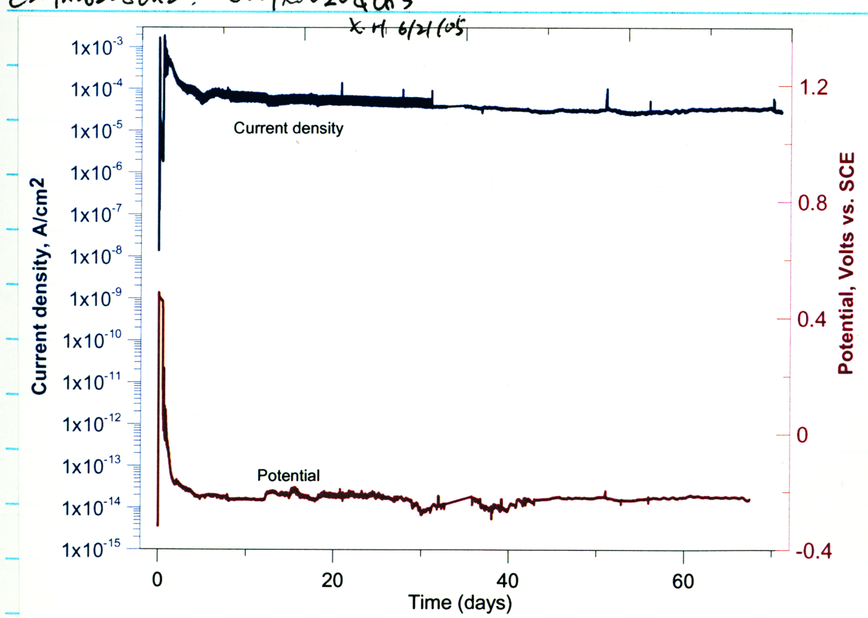
Addition of 51 μL $CuCl_2$ solution
Final concentration of $CuCl_2$ in 300 ml test soution. 2×10^{-4} M

Original $CuCl_2$ solution (prepared on 4/11/2005)
20.041 g $CuCl_2\cdot2H_2O$ Lot # 897713 + DI water
→ 100 ml, pH = 2.237 c = 1.175 mol/L

Note: On June 1, 2005, experiment was interrupted for 30 minutes to recalibrate the potentiostat Cal: 6/1/2005 Due: 12/1/2005

More data files:
C22PR0601dI, C22PR0601dE, C22PR0604I, C22PR0604E, C22PR0606I, C22PR0606E, C22PR0607I, C22PR0607E, C22PR0610I, C22PR0610E, C22PR0613I, C22PR0613E, C22PR0616I, C22PR0619I, C22PR0616E, C22PR0619E, C22PR0620E, C22PR0620I, C22PR0620Ich3, C22PR0620Echz, C22PR0620Echz, C22PR0620I&Ch3 X.H 6/21/05



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