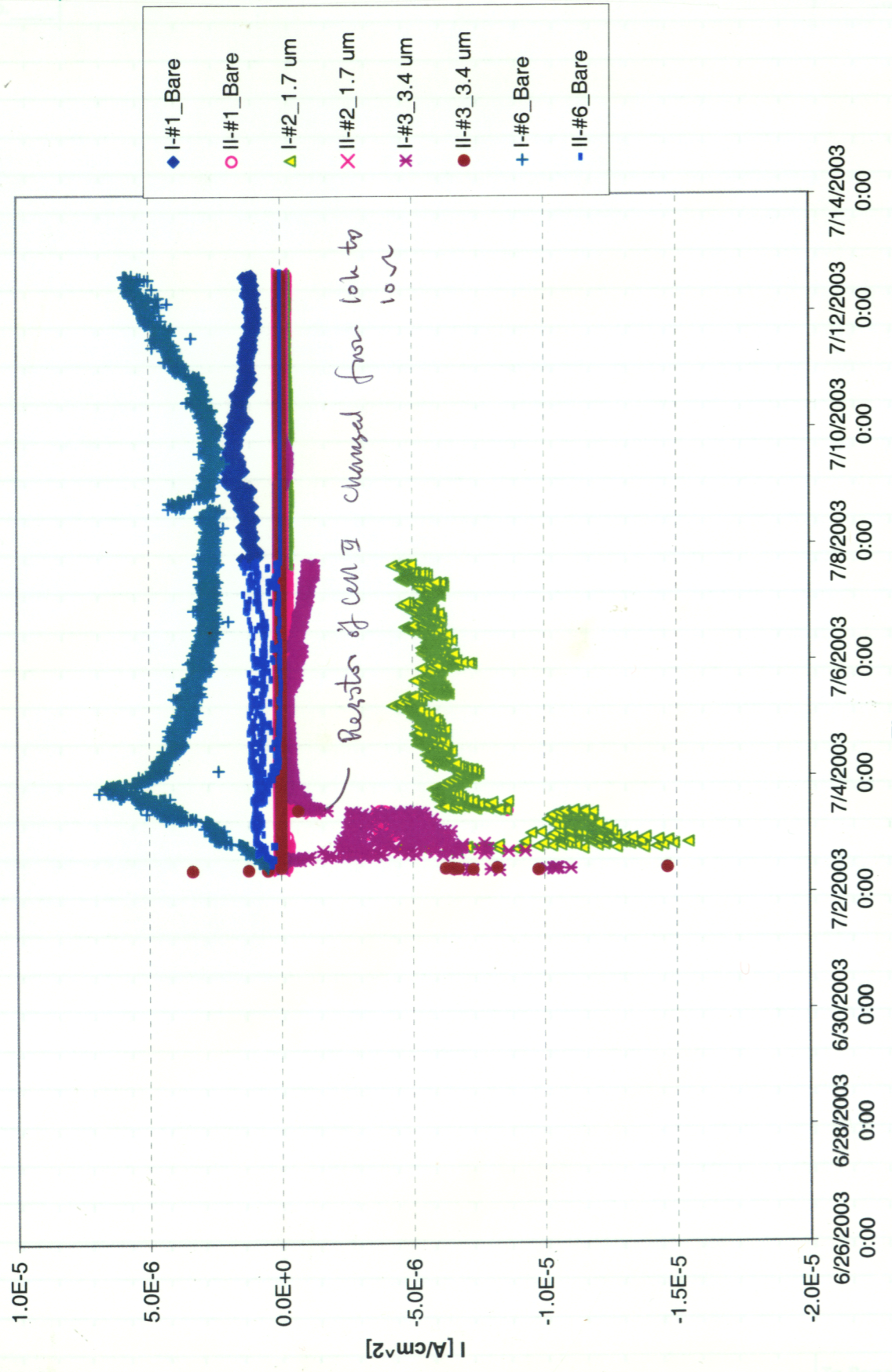


File: Zr\_03\_June0604\_July02a02 /Tab: Chart\_Current2

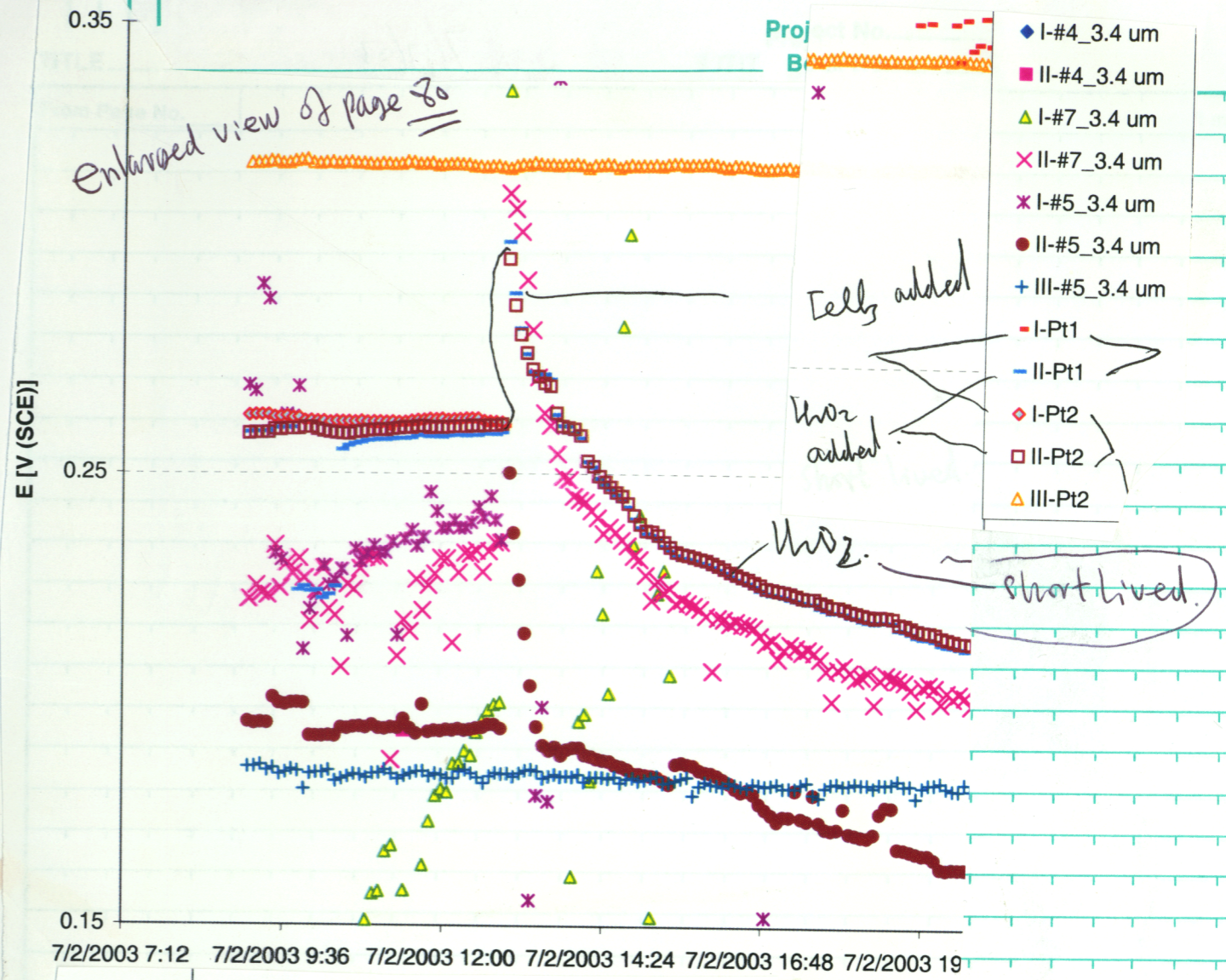


- ◆ I-#1\_Bare
- II-#1\_Bare
- ▲ I-#2\_1.7 um
- × II-#2\_1.7 um
- × I-#3\_3.4 um
- II-#3\_3.4 um
- + I-#6\_Bare
- II-#6\_Bare

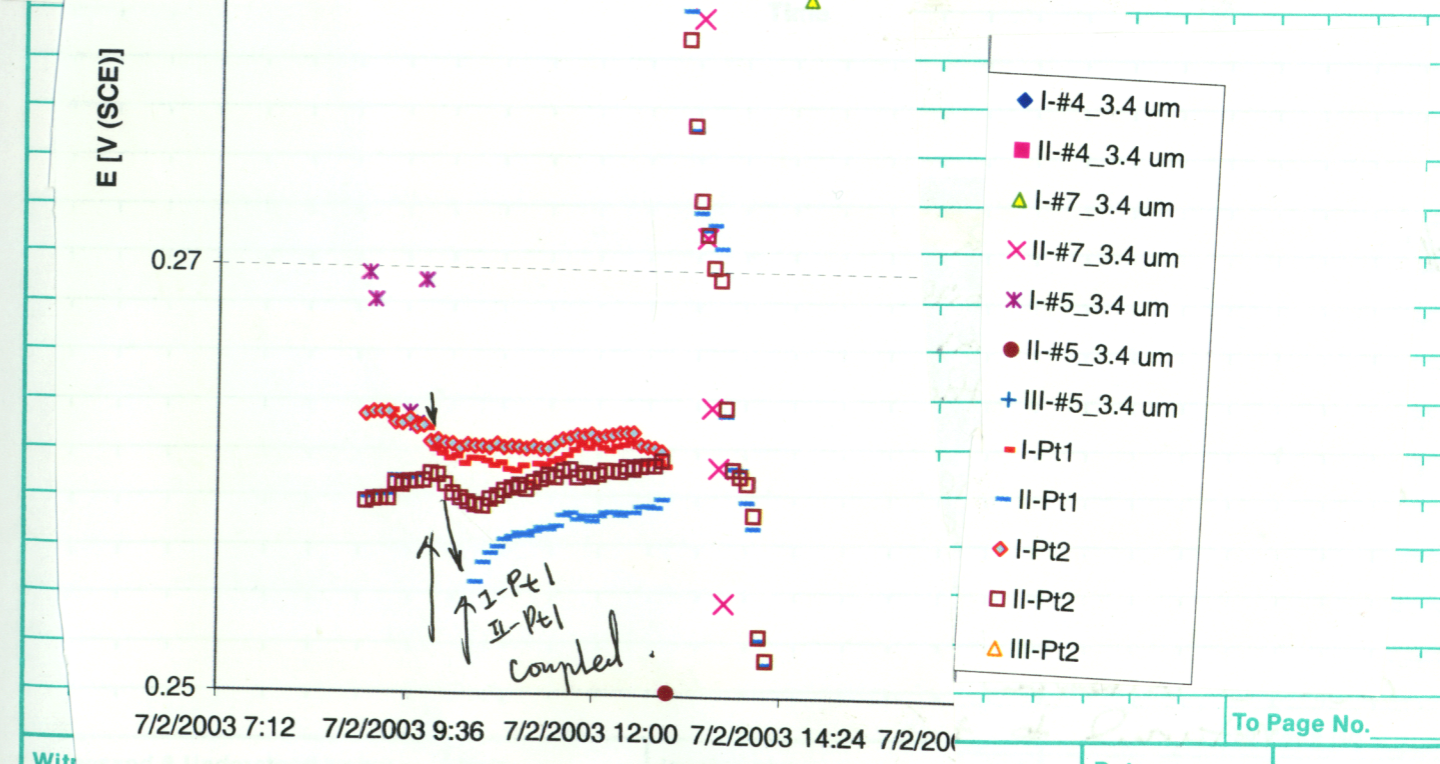
Witnessed & Understood by me, \_\_\_\_\_ Date \_\_\_\_\_

Invented by \_\_\_\_\_ Date \_\_\_\_\_

Recorded by *John F.* Date *7/14/06*



- ◆ I-#4\_3.4 um
- II-#4\_3.4 um
- ▲ I-#7\_3.4 um
- × II-#7\_3.4 um
- × I-#5\_3.4 um
- II-#5\_3.4 um
- + III-#5\_3.4 um
- I-Pt1
- II-Pt1
- ◇ I-Pt2
- II-Pt2
- △ III-Pt2



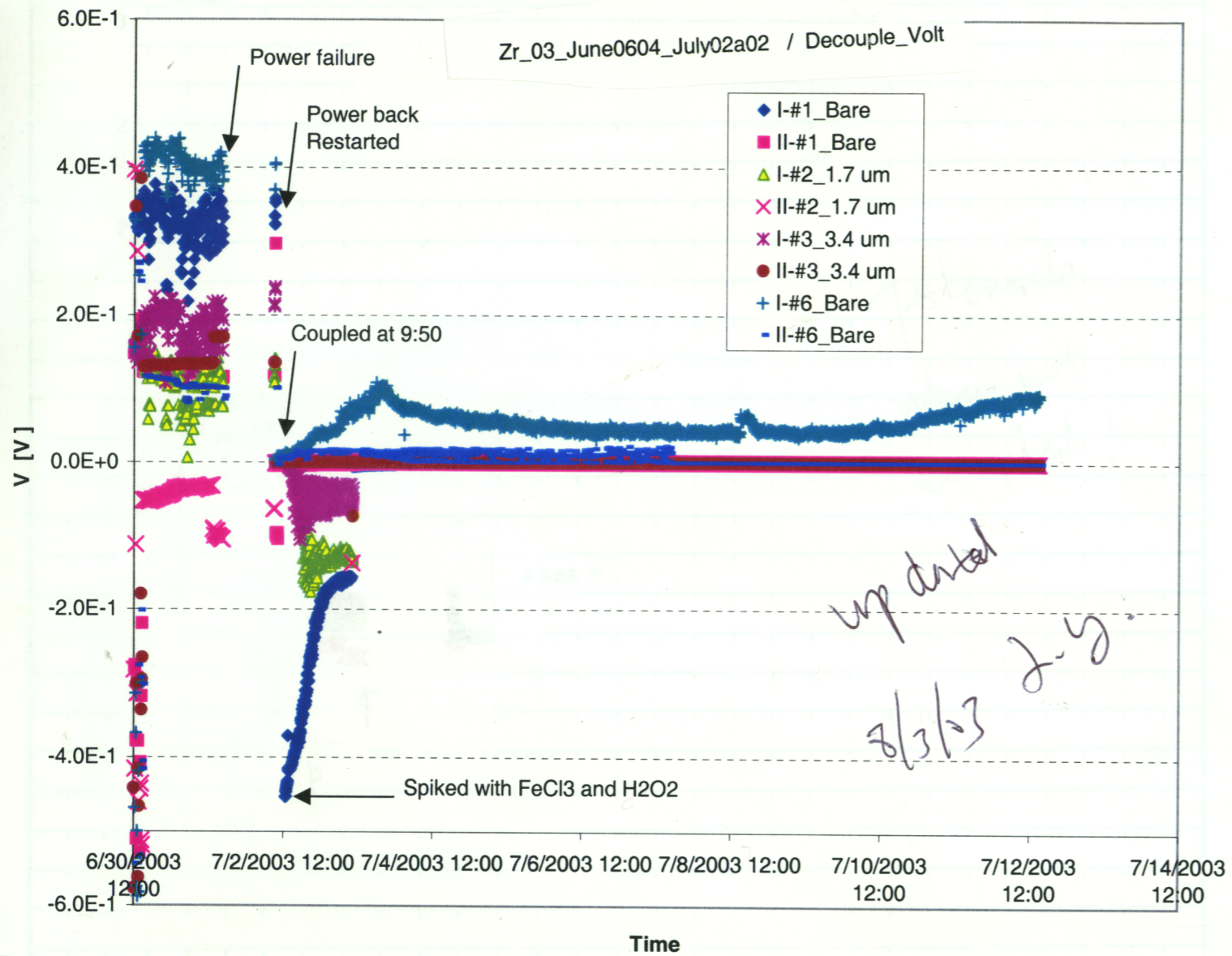
- ◆ I-#4\_3.4 um
- II-#4\_3.4 um
- ▲ I-#7\_3.4 um
- × II-#7\_3.4 um
- × I-#5\_3.4 um
- II-#5\_3.4 um
- + III-#5\_3.4 um
- I-Pt1
- II-Pt1
- ◇ I-Pt2
- II-Pt2
- △ III-Pt2

Witnessed & Understood by me, \_\_\_\_\_ Date \_\_\_\_\_

Invented by \_\_\_\_\_ Date \_\_\_\_\_

Recorded by *John F.* Date *7/14/06*

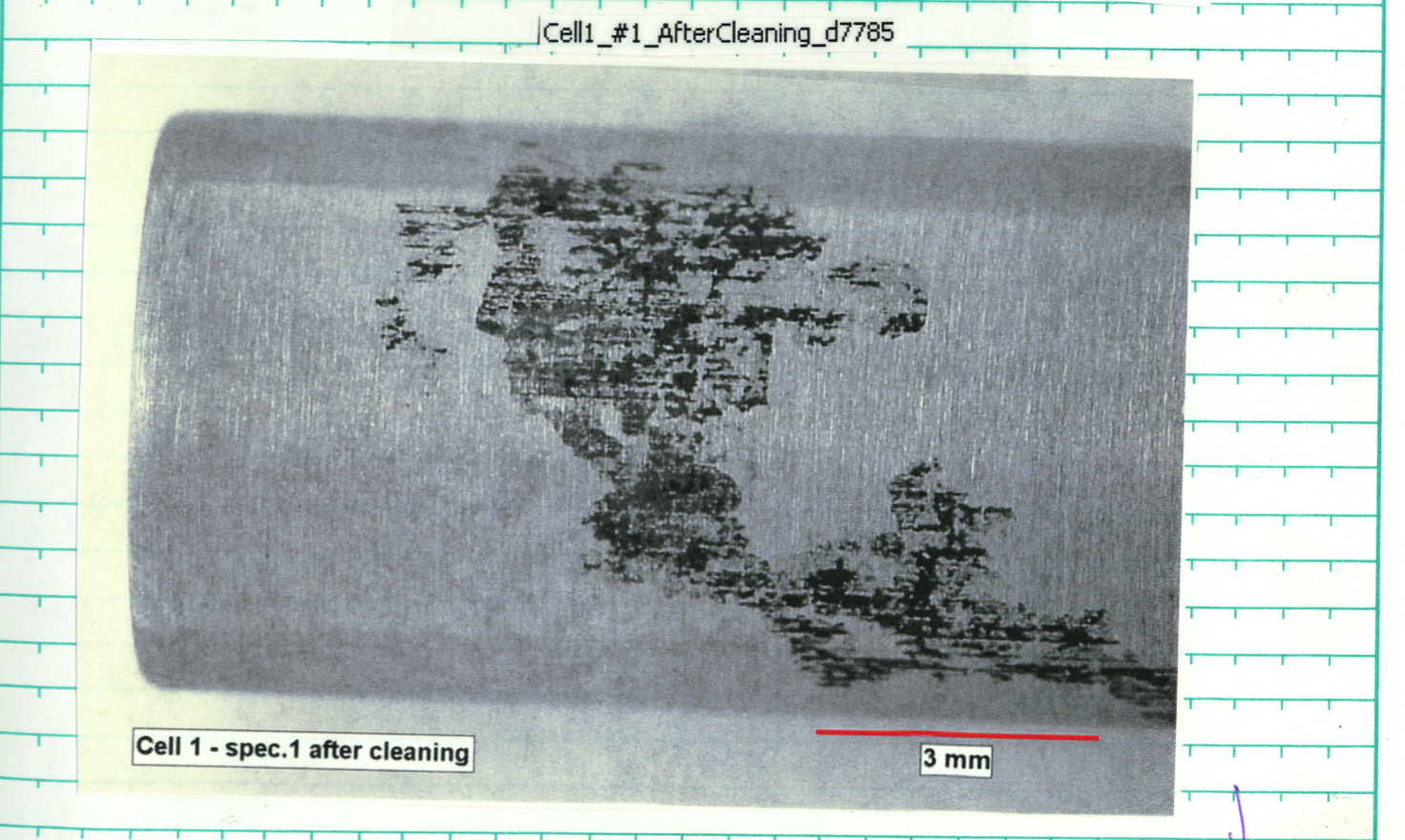
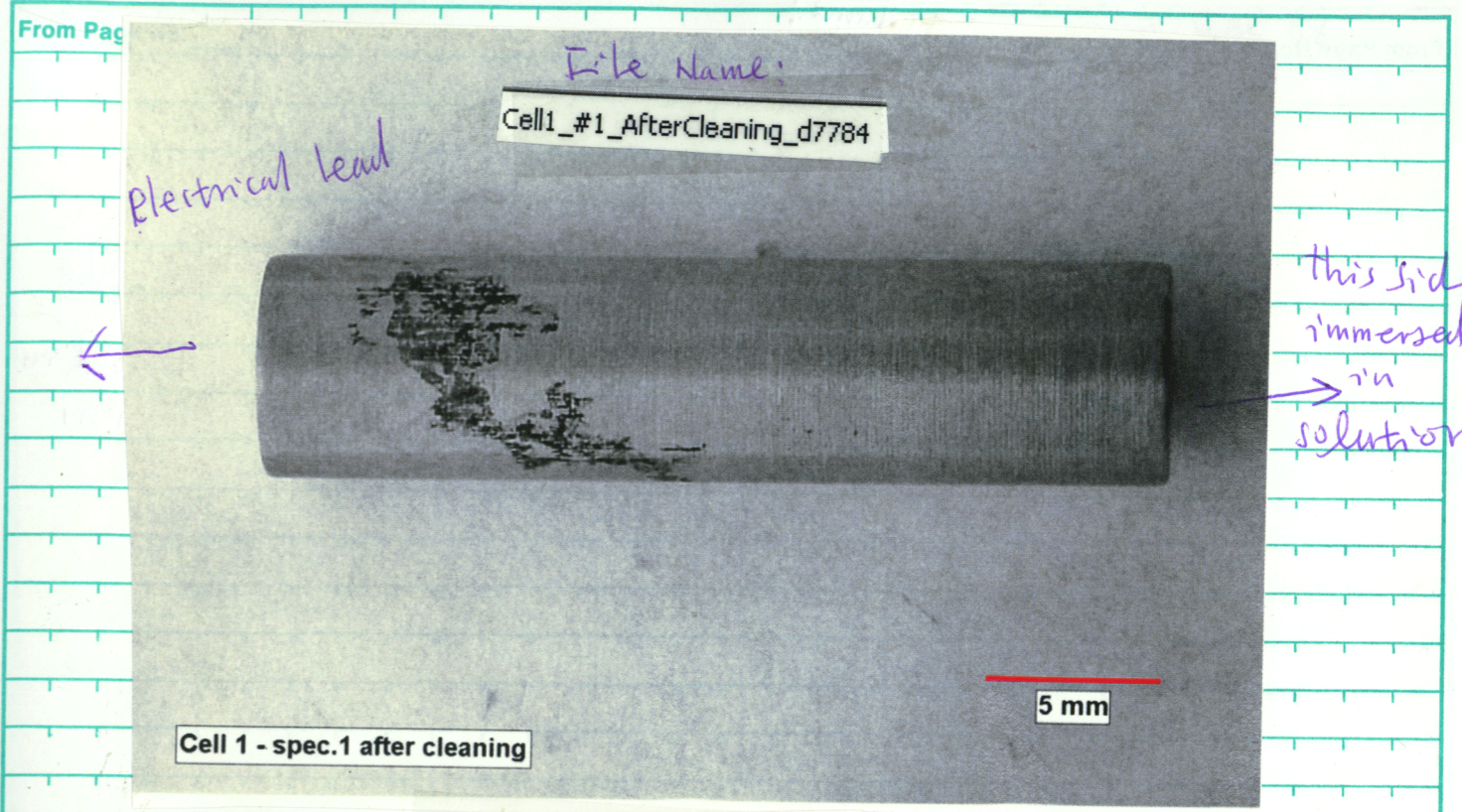
J.Y. 7/7/03



7/7/03 spiked both cells #1 & #2  
 Cell #1 spiked with 2.719g  $FeCl_3 \cdot 6H_2O$  lot# 897791  
 with approx 100 ml of test solution pH = 1.807  
 Added  $FeCl_3$  then returned to cell once  $FeCl_3$  was  
 soluble  
 cell #2 spiked with 1080ul of Hydrogen peroxide 30%  
 lot# 010839. Before spike withdrew a 40ml  
 of test solution pH = 5.481. returned solution  
 to test cell along with Hydrogen peroxide.  
 cell #3 withdrew 40ml pH = 5.719  
 returned to test cell.

Witnessed & Understood by me,	Date	Invented by	Date
		Recorded by J.Y.	2/4/06

From page 68



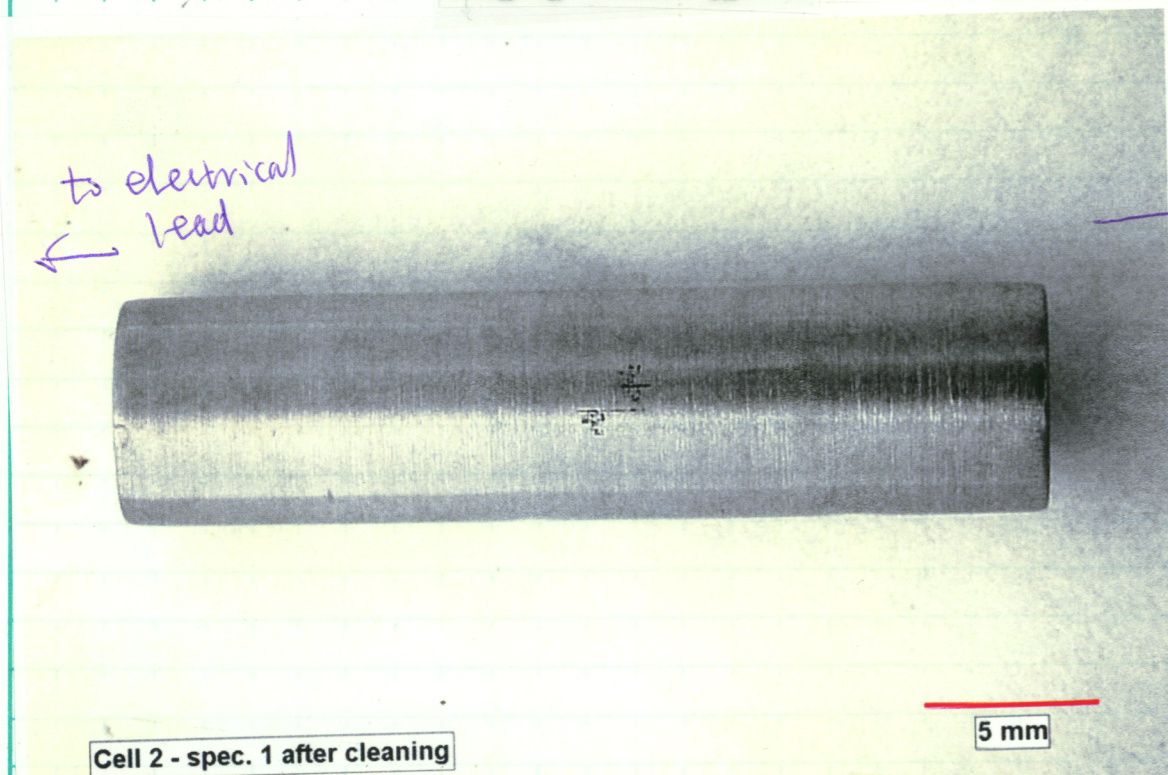
Witnessed & Understood by me,	Date	Invented by	Date
		Recorded by J.Y.	8/1/03

From Page No. \_\_\_\_\_

File Name: \_\_\_\_\_

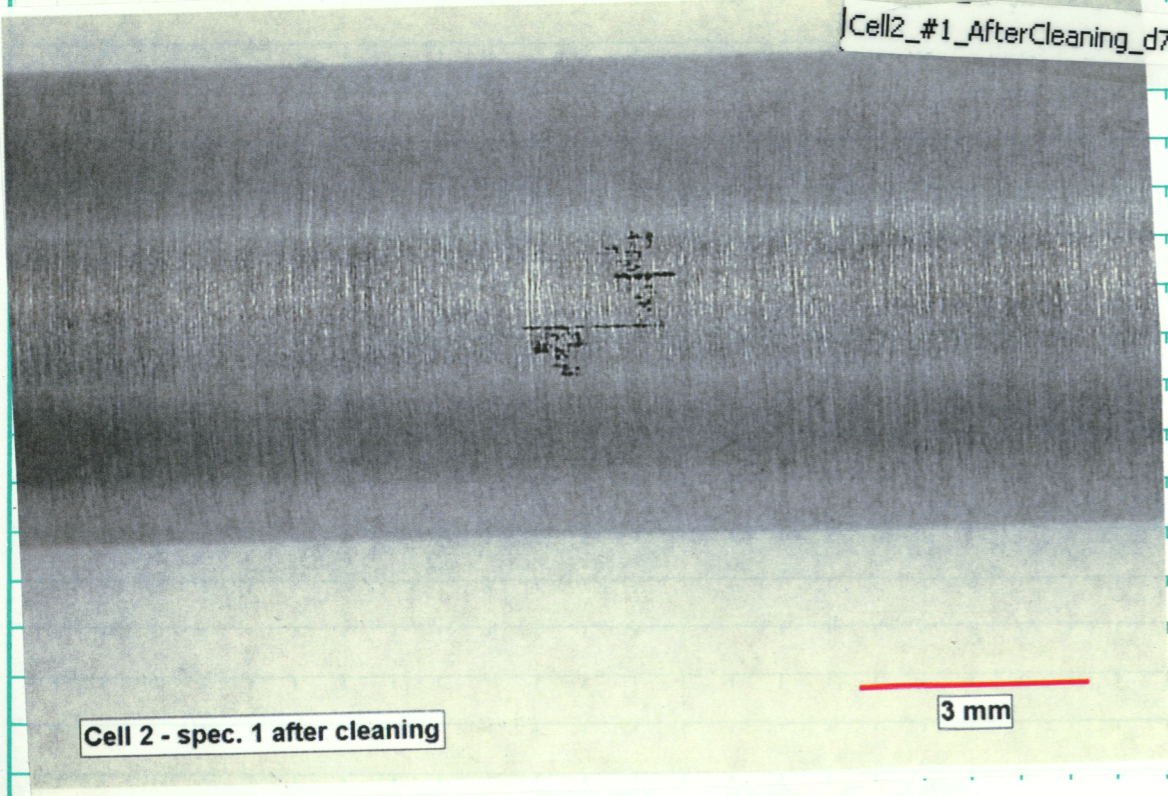
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Cell2\_#1\_AfterCleaning\_d7790



Cell 2 - spec. 1 after cleaning

5 mm



Cell 2 - spec. 1 after cleaning

3 mm

Witnessed & Understood by me, \_\_\_\_\_

Date \_\_\_\_\_

Invented by \_\_\_\_\_

Date \_\_\_\_\_

Recorded by \_\_\_\_\_

J. Y. G.

3/1/03

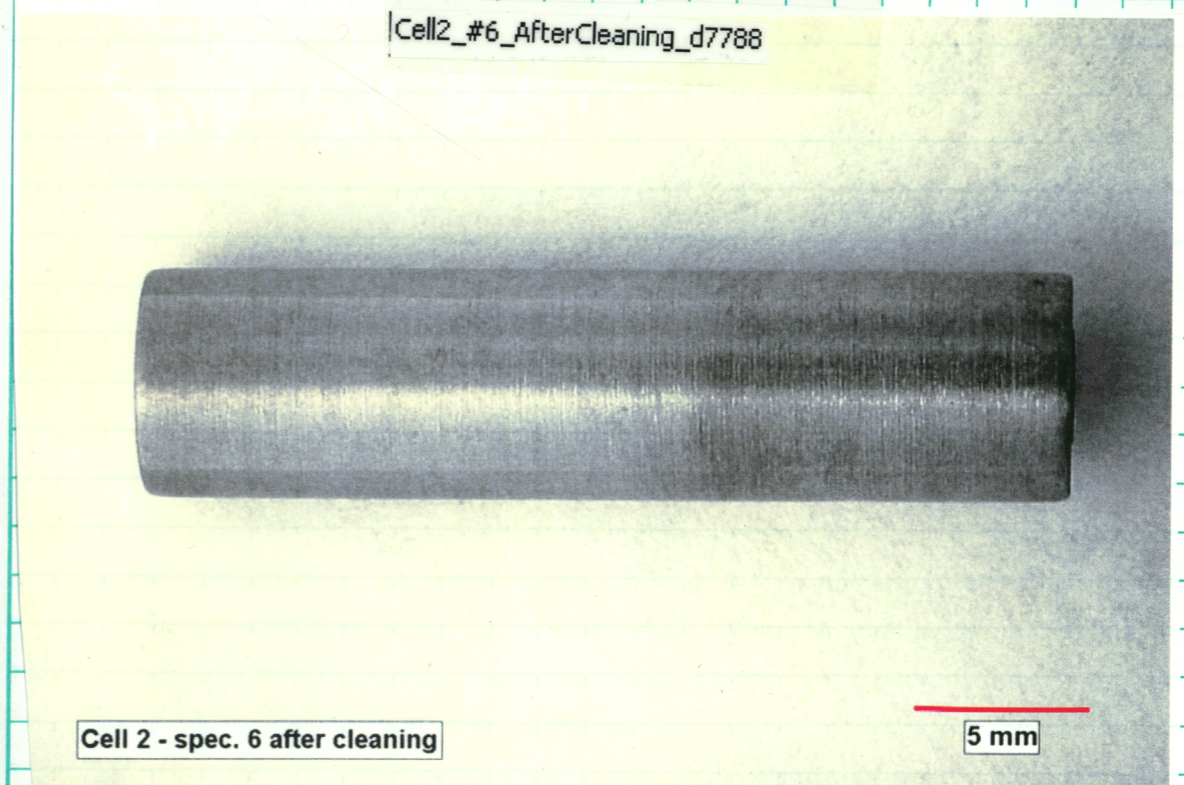
To Page No. \_\_\_\_\_

From Page No. \_\_\_\_\_

File Name: \_\_\_\_\_

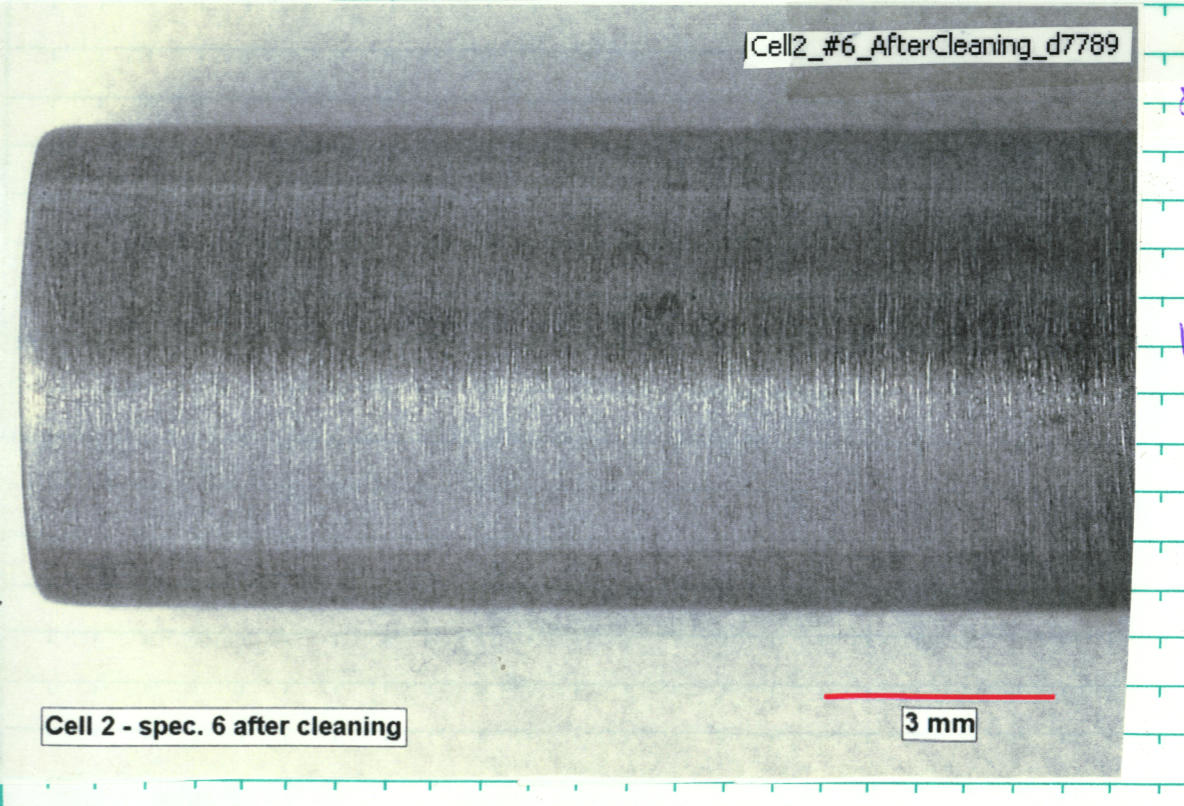
From page 68

Cell2\_#6\_AfterCleaning\_d7788



Cell 2 - spec. 6 after cleaning

5 mm



Cell 2 - spec. 6 after cleaning

3 mm

Witnessed & Understood by me, \_\_\_\_\_

Date \_\_\_\_\_

Invented by \_\_\_\_\_

Date \_\_\_\_\_

Recorded by \_\_\_\_\_

J. Y. G.

3/1/03

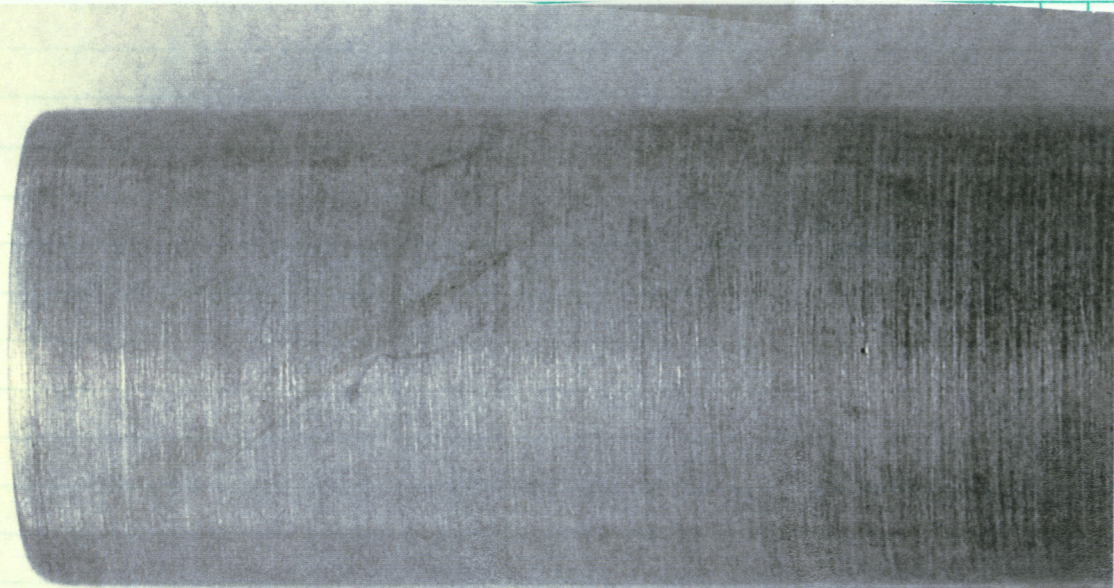
To Page No. \_\_\_\_\_

From Page No. \_\_\_\_\_

File Name:

From page 68

Cell1\_#6\_AfterCleaning\_d7787



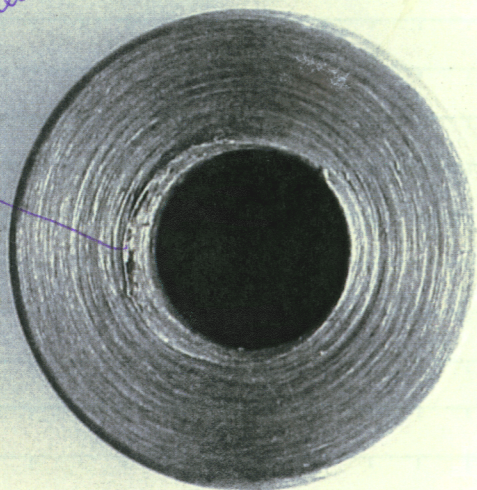
No apparent pitting

Cell 1 - spec. 6 after cleaning

3 mm

Cell1\_#1\_AfterCleaning\_EndView\_d7794

Corroded too!



this end to electrical lead

Cell 1 - Spec. 1 after cleaning

3 mm

To Page No. \_\_\_\_\_

Witnessed & Understood by me, \_\_\_\_\_

Date \_\_\_\_\_

Invented by \_\_\_\_\_

Date \_\_\_\_\_

Recorded by \_\_\_\_\_

*[Signature]*

2/1/03

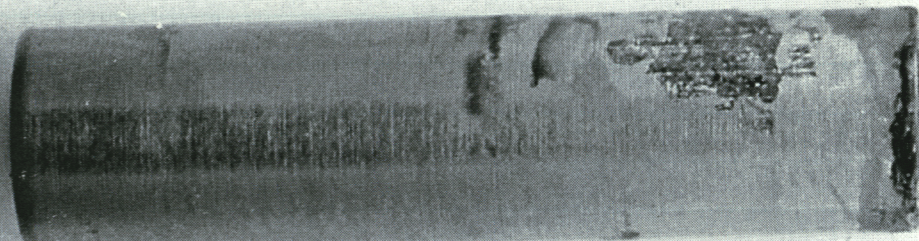
TITLE \_\_\_\_\_

From Page No. \_\_\_\_\_

from page 68

File:

Cell1\_#1\_BeforeCleaning\_d7775



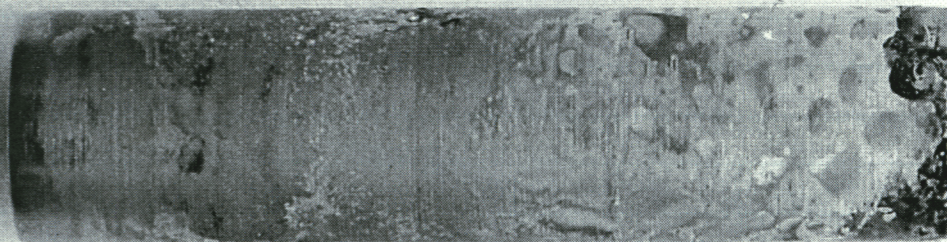
electrical lead

Cell 1 - spec. 1

5 mm

File:

Cell2\_#1\_BeforeCleaning\_d7780



electrical lead

Cell 2 - spec. 1

5 mm

To Page No. \_\_\_\_\_

Witnessed & Understood by me, \_\_\_\_\_

Date \_\_\_\_\_

Invented by \_\_\_\_\_

Date \_\_\_\_\_

Recorded by \_\_\_\_\_

*[Signature]*

2/1/03

From Page No. \_\_\_\_\_

7/04/03. I-#6 current is positive!

checked connections, No unusual found.

I-#6 is deumped (not connected to anywhere)

measure  $\phi_{I-#6} - \phi_{I-#4} = +98.4 \text{ mV}$ !

$\phi_{I-#4} - \phi_{ref} = -258 \text{ mV}_{SCE}$

$\phi_{I-#6} - \phi_{ref} = -160 \text{ mV}_{SCE}$

deouple I-#4 from I-#6.

$\phi_{I-#4} - \phi_{ref} = -20 \text{ mV}_{SCE}$  (within 30 sec)

$\phi_{I-#6} - \phi_{ref} = -320 \text{ mV}_{SCE}$ ! why so low!!

$\phi_{I-#7} - \phi_{ref} = -448 \text{ mV}_{SCE}$

$\phi_{I-#4} - \phi_{ref} = -370 \text{ mV}_{SCE}$

connected to common of I-2 (to I-#4)

I-#6 connected to I-#4 (and I-#4 too), back.

8/6/03.

I-#7 = -618 mV<sub>SCE</sub>, not stable, remove pin #7  
connector does not make difference

I-#7 = +242 mV<sub>SCE</sub>, but dropped to +142 mV<sub>SCE</sub> in 5 min.

disconnect pin #8 has no effect

To Page No. \_\_\_\_\_

Witnessed & Understood by me, \_\_\_\_\_

Date \_\_\_\_\_

Invented by \_\_\_\_\_

Date \_\_\_\_\_

Recorded by \_\_\_\_\_

J. Yang 8/6/03

From Page No. \_\_\_\_\_

From Page 79.

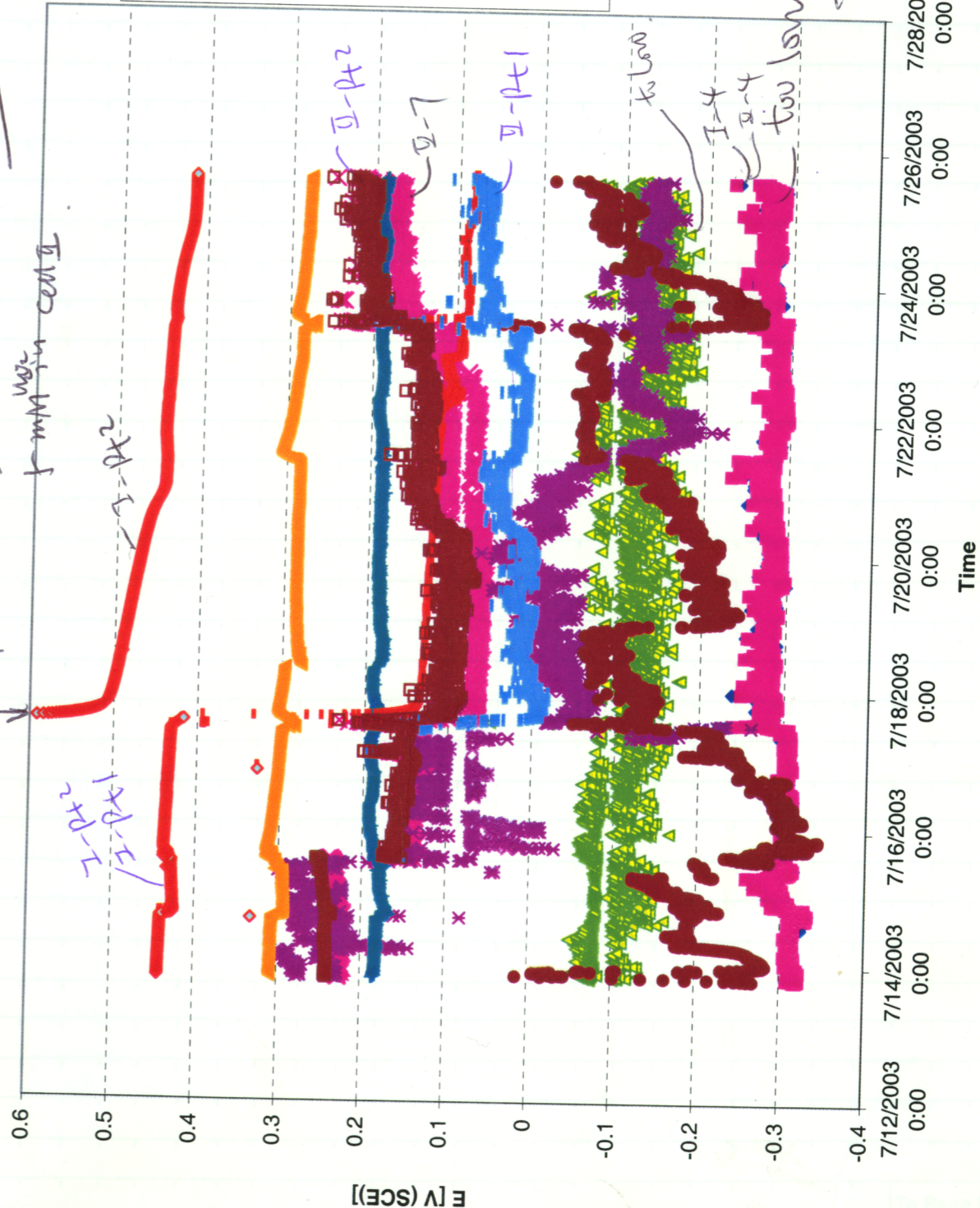
File: Zr\_03\_July13a00\_02 / Tab: Potential

Spilled with 5 ml in cell I.

5 ml in cell II.

I-#4  
I-#7

- I-#4\_3.4 um
- II-#4\_3.4 um
- I-#7\_3.4 um
- II-#7\_3.4 um
- I-#5\_3.4 um
- II-#5\_3.4 um
- III-#5\_3.4 um
- I-Pt1
- II-Pt1
- I-Pt2
- II-Pt2
- III-Pt2



Witnessed & Understood by me, \_\_\_\_\_

Date \_\_\_\_\_

Invented by \_\_\_\_\_

Date \_\_\_\_\_

Recorded by \_\_\_\_\_

J. Yang 8/6/03

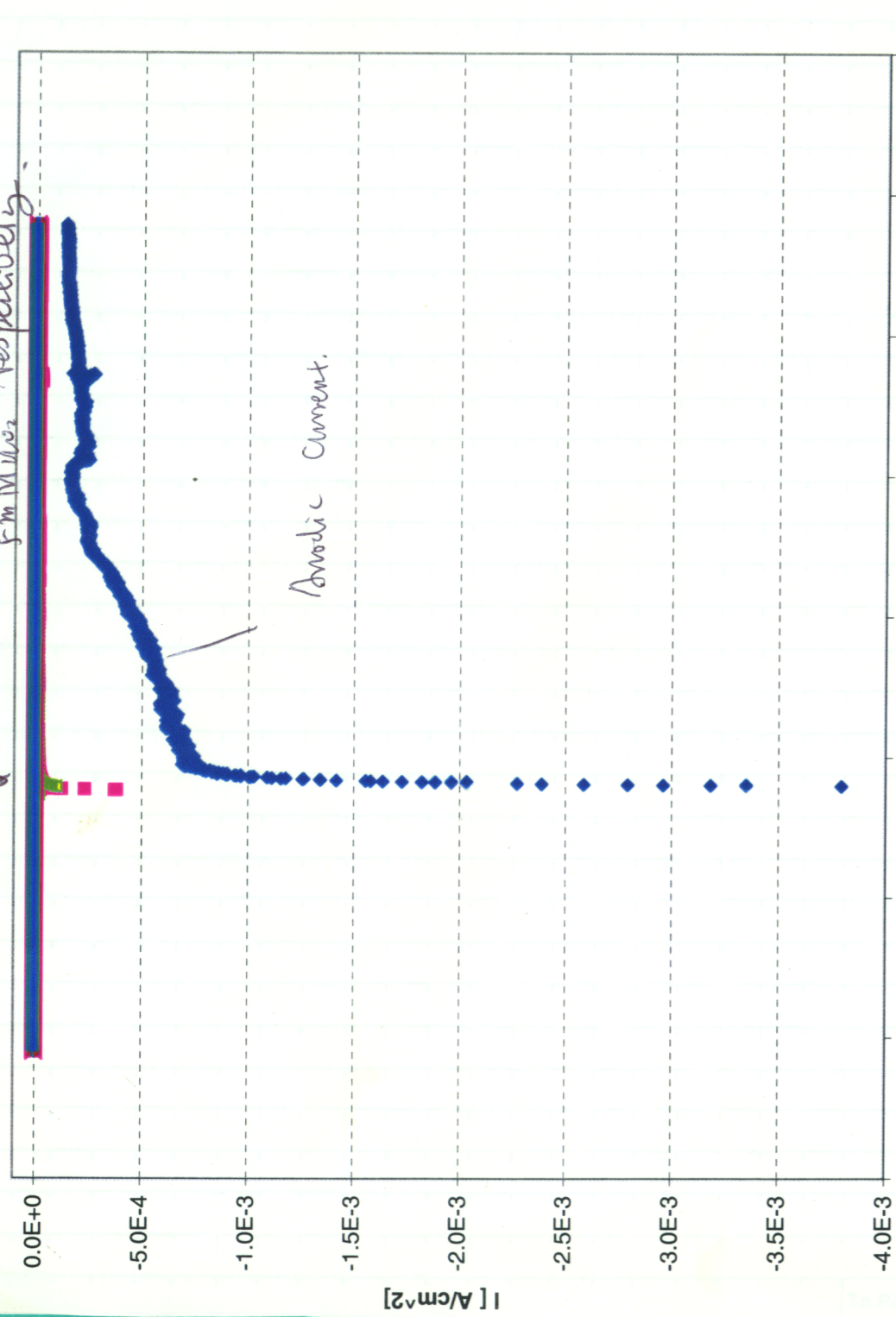
From Page No. \_\_\_\_\_

From page 79

File: Zr\_03\_July13a00\_02 /Tab: Chart\_Current

spiked with 5mM Fe<sup>3+</sup>  
5mM UO<sub>2</sub> respectively

Anodic Current.



- ◆ I-#1\_Bare
- II-#1\_Bare
- ▲ I-#2\_1.7 um
- × II-#2\_1.7 um
- × I-#3\_3.4 um
- II-#3\_3.4 um
- + I-#6\_Bare
- II-#6\_Bare

Witnessed & Understood by me, \_\_\_\_\_

Date \_\_\_\_\_

Invented by \_\_\_\_\_

Date \_\_\_\_\_

Recorded by \_\_\_\_\_

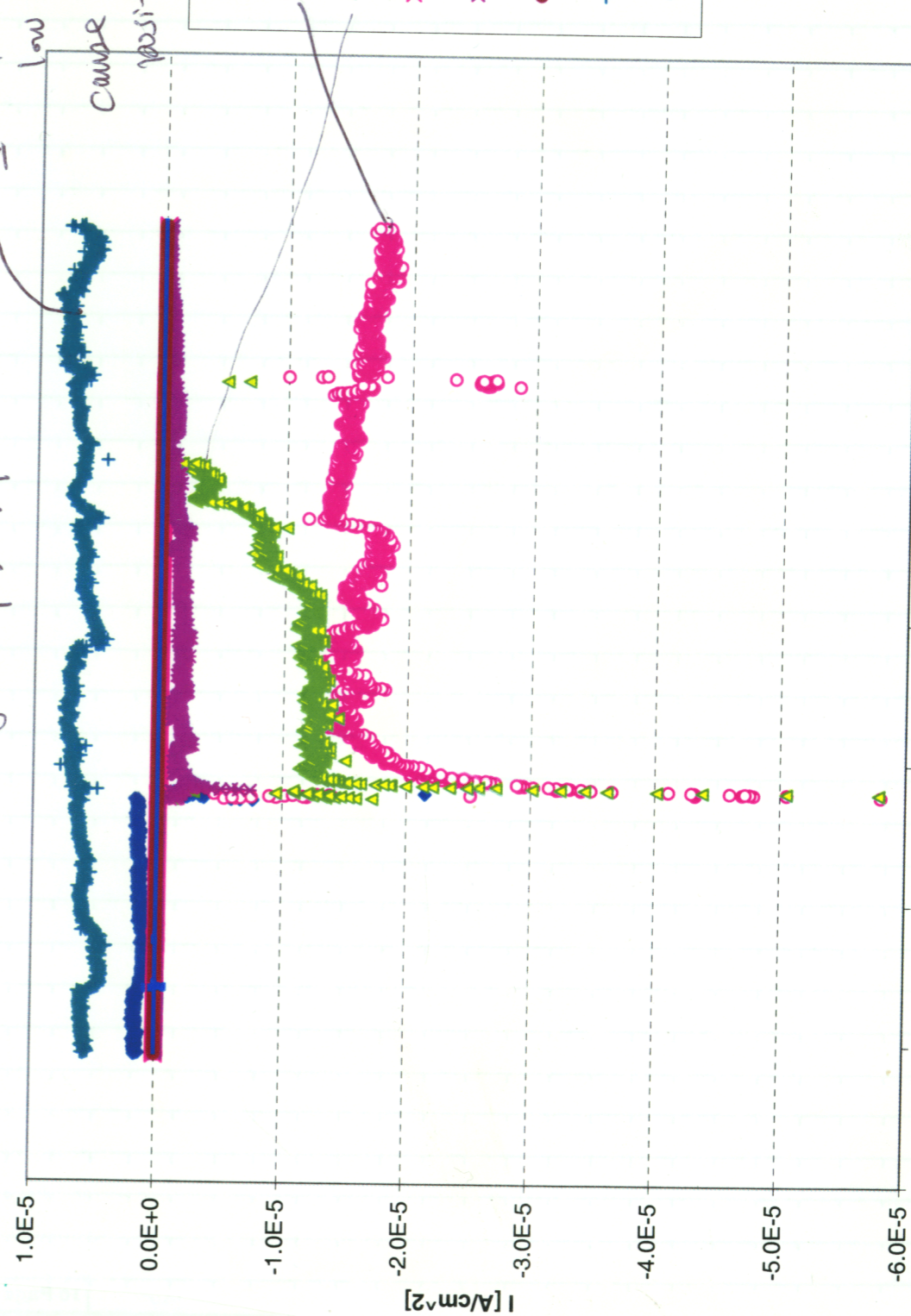
J. Y. 8/6/03

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File: Zr\_03\_July13a00\_02 /Tab: Chart\_Current2

from page 79

I-#4 is too low and cause this positive current!



- ◆ I-#1\_Bare
- II-#1\_Bare
- ▲ I-#2\_1.7 um
- × II-#2\_1.7 um
- × I-#3\_3.4 um
- II-#3\_3.4 um
- + I-#6\_Bare
- II-#6\_Bare

Witnessed & Understood by me, \_\_\_\_\_

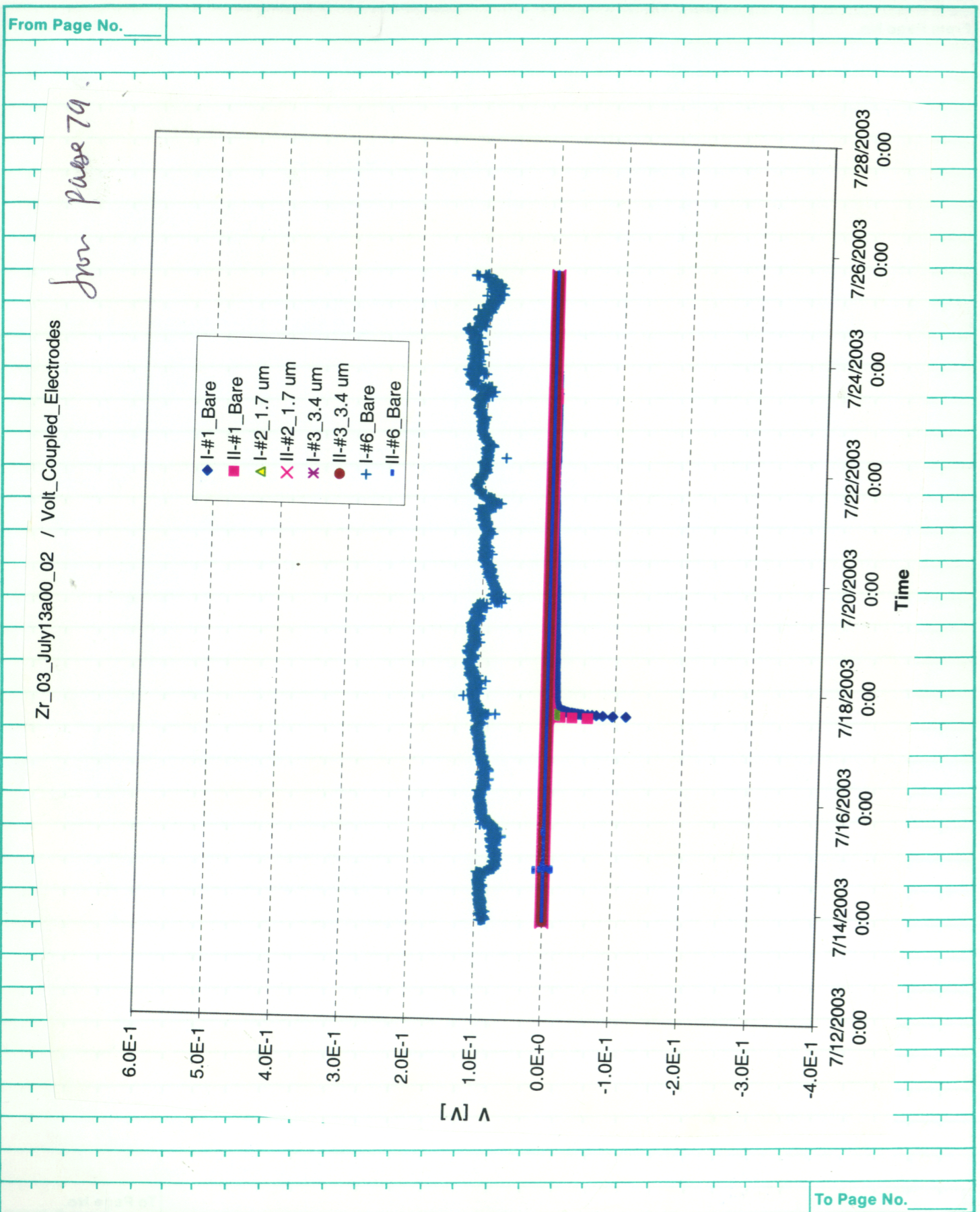
Date \_\_\_\_\_

Invented by \_\_\_\_\_

Date \_\_\_\_\_

Recorded by \_\_\_\_\_

J. Y. 8/6/03



Witnessed & Understood by me, \_\_\_\_\_

Date \_\_\_\_\_

Invented by \_\_\_\_\_

Date \_\_\_\_\_

Recorded by \_\_\_\_\_

*2 A. F.*

*5/19/03*

From Page No. \_\_\_\_\_

*8/18/03*

*9:33. Water levels in each cell good.  
Reference electrode <sup>connector</sup> found off the connection to  
other reference electrodes.*

*9/17/03*

*Noticed a lot of water at joints between  
leads and specimen for electrode I-7; II-7  
III-7*

*The joints of I-7, II-7 are 0.8 cm from  
liquid level; III-7 from liquid level = 2.4 cm*

*Raised I-7, II-7 joints above Teflon Drip  
and have 0.3 in of length in solution.*

*ch. I-3 found not connected.  
connected it to II-#3-3.4 um.*

*II-#6 Bare not connected.*

*Pages 44 to 95 copied for QA records  
J.Y.S. 10/3/03*

*Continued in Book 601 J.Y.S. 10/7/03*

To Page No. \_\_\_\_\_

Witnessed & Understood by me, \_\_\_\_\_

Date \_\_\_\_\_

Invented by \_\_\_\_\_

Date \_\_\_\_\_

Recorded by \_\_\_\_\_

*J.Y.S.*

*10/3/03*



From Page No. \_\_\_\_\_

Continue Testing in this Notebook.

No report or paper written based on

J. J. J.  
4/7/06 4/7/06

Notebook

# 605

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.

Hyun J. J. J. 4/24/06

To Page No. \_\_\_\_\_

Witnessed & Understood by me,

Date

Invented by

Date

Recorded by

*[Signature]*

4/24/06



**ADDITIONAL INFORMATION FOR SCIENTIFIC NOTEBOOK NO. 549**

<b>Document Date:</b>	10/07/2002
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<b>Operating System:</b> (including version number)	Windows
<b>Application Used:</b> (including version number)	Microsoft Excel, Word, PowerPoint
<b>Media Type:</b> (CDs, 3 1/2, 5 1/4 disks, etc.)	2 - CDs
<b>File Types:</b> (.exe, .bat, .zip, etc.)	xls, doc, txt, ppt, xls, jpg
<b>Remarks:</b> (computer runs, etc.)	Media contains: associated data files.