Substantiation Testing on Automotive Impressed Current Protection (ICP) Corrosion Protection System

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REPORT TITLE:
Substantiation Testing on Automotive (ICP) Corrosion Protection System

DATE:	**03-04-2007**	**PROJECT NO:**	**015-05015**
CUSTOMER:	**Warren Camp**	**P.O.**	**N/A**
COMPANY:	**Auto Saver Systems, Inc.**	**CUSTOMER JOB NO:**	**N/A**
ADDRESS:	**112 Erie Blvd**	**SPECIMEN SOURCE:**	**A.S.S.I.**
	Schenectady, NY 12305		
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DESCRIPTION OF WORK REQUESTED:

Conduct laboratory controlled substantiation testing on automotive corrosion systems using impressed current protection ("ICP") in accordance with the methodology provided by the Canadian Competition Law Division by letter addressed to Vincent Gallo dated April 13th 2005.

SUMMARY OF RESULTS:

It can be concluded based on the laboratory experiments conducted on both galvanized and non-galvanized steel panels, with and without the 'Environmental Paint Sealant', that the Auto Saver System corrosion protection system clearly provides an adequate level of cathodic protection required to retard the onset of oxidation or rust of exposed metal to aqueous salt solution. The potential values measured from the electrochemical corrosion process closely resemble that of similar published results.

R. Scott Briody: _____ **James Roselle:** _____
Original Copy Signed in Blue Ink **Original Copy Signed in Blue Ink**

I HEREBY CERTIFY THAT THE DATA CONTAINED IN THIS REPORT HAVE BEEN GENERATED IN ACCORDANCE WITH AND MEET THE REQUIREMENTS OF THE PURCHASE ORDER.

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Table of Content

INTRODUCTION:

This report is the final supplement of two earlier ITS reports (ITS-05015-1, Rev 1 & ITS-05015 Potential Data Addendum) furnished January 27th, 2006 and October 30th, 2006 respectively, in an effort to substantiate the overall effectiveness of cathodic protection through the installation of corrosion protection devices intended for use in a typical automotive environment.

For successful protection there must be sufficient applied potential to overcome local anodes on the surface of the material. All testing through out this report was performed on ICP modules in a controlled laboratory experiment at Innovative Test Solutions' lab utilizing a localized salt solution bath in accordance with the test methodology provided by the Canada Competition Bureau.

Table 1: Standard Reduction Potentials E°/V (25 $^{\circ}C$). The more positive the E°, the more likely the reduction reaction is to occur at standard conditions (1 *M*, 1 atm., 25°C). Ref: D.C. Harris: Quantitative Chemical Analysis, 3rd ed., Appendix H, W.H. Freeman and Co., 1991.

Redox Equations	Reduction Pot.
$Au^{+}_{(aq)} + e^{-} \Leftrightarrow Au_{(s)}$	+1.69 V
$Ag^{+}_{(aq)} + e^{-} \Leftrightarrow Ag_{(s)}$	+0.80 V
$Cu^{2+}_{(aq)} + 2e^{-} \Leftrightarrow Cu_{(s)}$	+0.34 V
$Fe^{2+}_{(aq)} + 2e^{-} \Leftrightarrow Fe_{(s)}$	-0.44 V
$Al^{3+}_{(aq)} + 3e^{-} \Leftrightarrow Al_{(s)}$	-1.68 V
$O_{2(g)} + 4H^{+}_{(aq)} + 4e^{-} \Leftrightarrow 2H_2O$	+1.23 V
$Fe^{3+}_{(aq)} + e^{-} \Leftrightarrow Fe^{2+}$	+0.77 V
$2\ H^{+}_{(aq)} + 2e^{-} \Leftrightarrow H_{2(g)}$	0 V
$Zn^{2+}_{(aq)} + 2e^{-} \Leftrightarrow Zn_{(s)}$	-0.76 V
$Na^{+}_{(aq)} + e^{-} \Leftrightarrow Na_{(s)}$	-2.71 V

PROCEDURE:

Twenty Four-(24), three-(3) foot by four-(4) foot panels were produced with representative automotive finishes on galvanized and non-galvanized sheet metal. Each of the panels went through the following automotive preparation procedure;

Sample Preparation

Step-1: Washed down with paint thinner, primer sanded, then final wash & degreasing.

Step-2: Primed with POR-15 self-etching primer.

Step-3: Primed surface sealed with DuPont Nason Ful-Seal Select (422-23).

Step-4: Two coats of DuPont ChromaBase paint (Base Coat)

Step-5: Two coats of DuPont Nason Select Clear (496-00)

Step-6: Each panel was then baked for ~(30) minutes at 180ºF.

Following the sample preparation procedure above and baking to cure the paint fully, the painted surfaces were then scribed in the lower test region ~12" from the bottom with one straight line ~12" long using a carbide scribing tool (Photos provided in the Appendix). The scribe was made such that it penetrated all the painted surfaces a long with cutting through the galvanic coating in order to expose the raw metal (if applicable). The scribed sections of the panels were then submerged in a 5% liquid solution of NaCl that was maintained at 75ºF ±2ºF. The upper region of each test panel remained outside the chamber with both the control module and the remote anode attached, remaining in a dry condition thirty-four-(34) inches from potential measurement region (Figure-1, pg-6; 'I.T.S. (ICP) Corrosion Protection System Test Schematic').

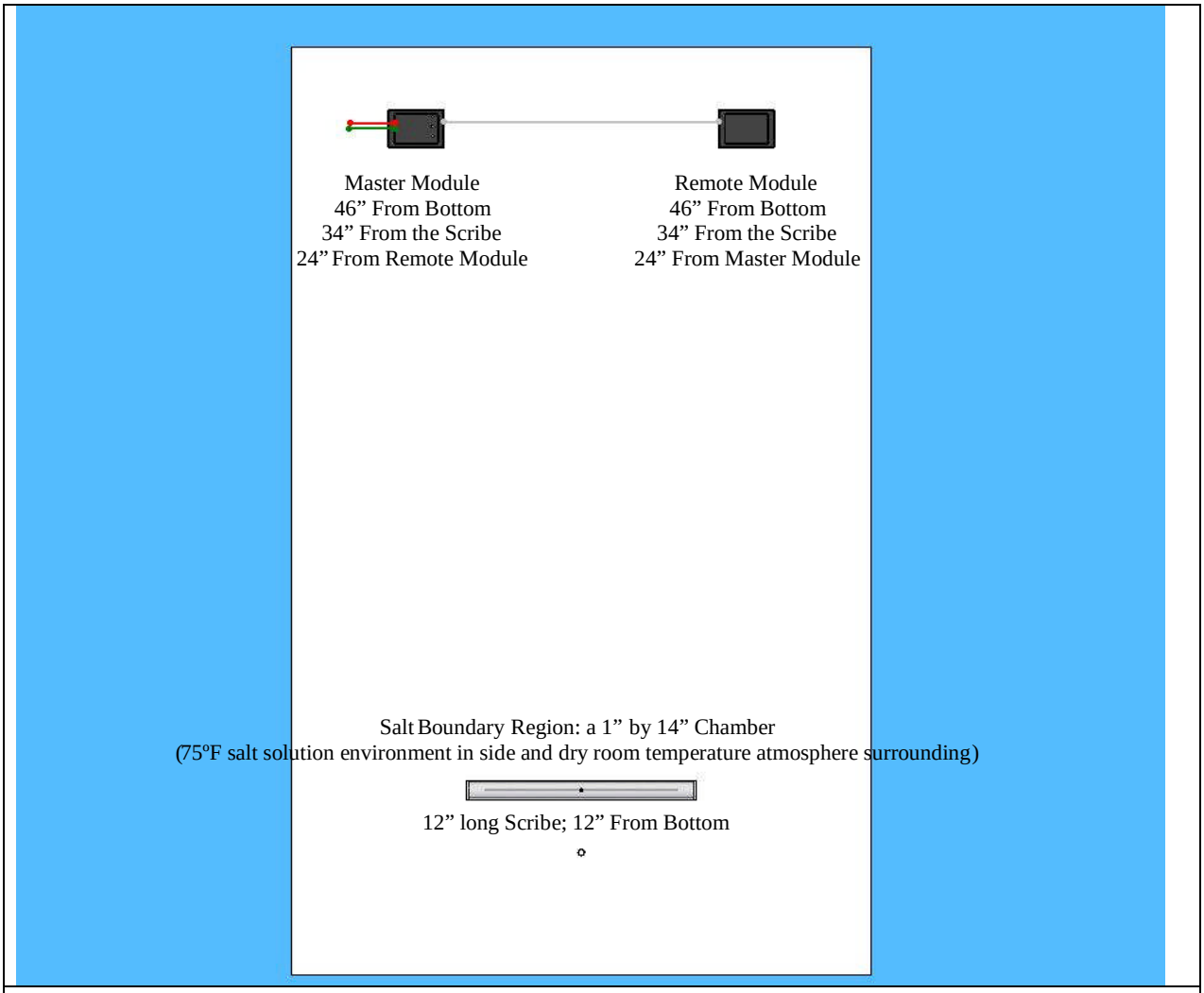
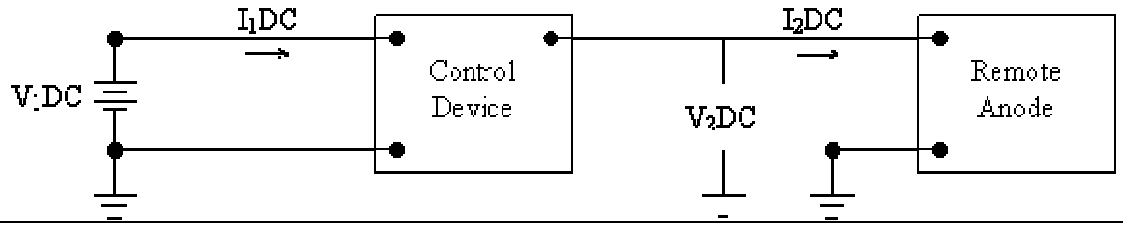
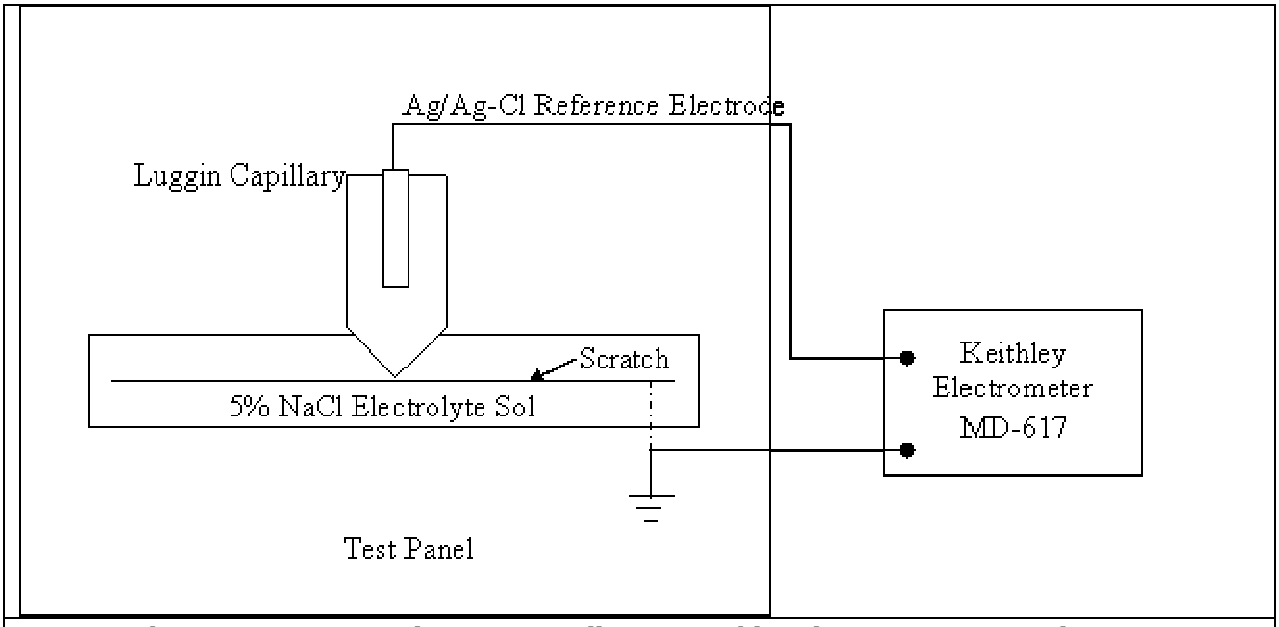


Figure-1: I.T.S. (ICP) Corrosion Protection System Test Schematic

The ICP modules were provided a constant 12.2 VDC ±0.5 V @ 73.4 mA, for which the potential across the panel was derived using a Ag/Ag-Cl reference electrodes in a Luggin Capillary across a salt bridge (Schematic-1 & 2; ‘Auto Saver System control module and remote anode wiring diagram’, ‘Ag/Ag-Cl Luggin Capillary & Keithley electrometer wiring diagram’, Figure-2; ‘Electrochemical Potential Voltage Electrode Model’, & Figure-3; ‘Front View Close-up of Test Chamber, Luggin Capillary and Electrode’).



Schematic-1: Auto Saver System control module and remote anode wiring diagram



Schematic-2: Ag/Ag-Cl Luggin Capillary & Keithley electrometer wiring diagram

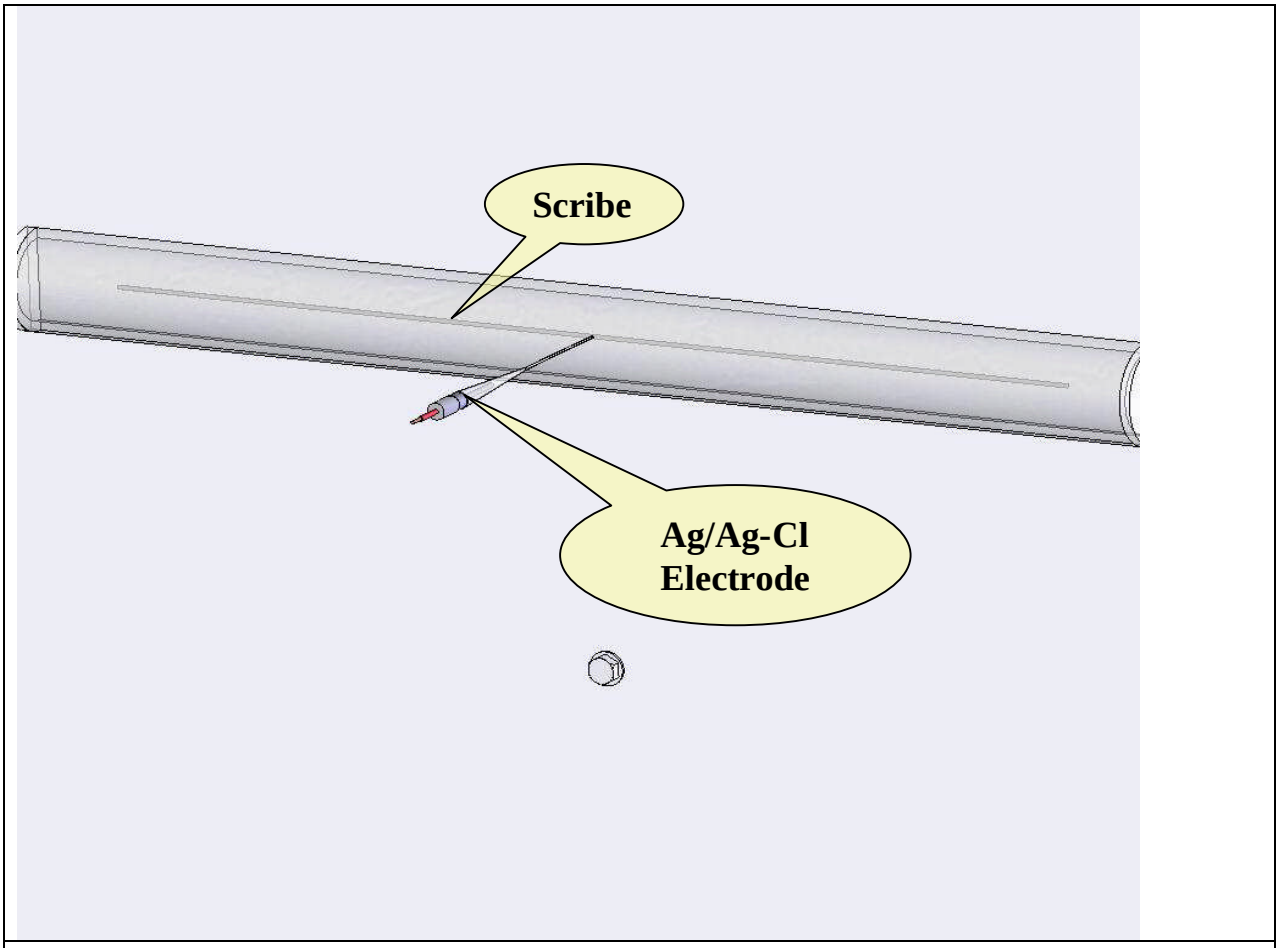


Figure-2: Electrochemical Potential Voltage Electrode Model

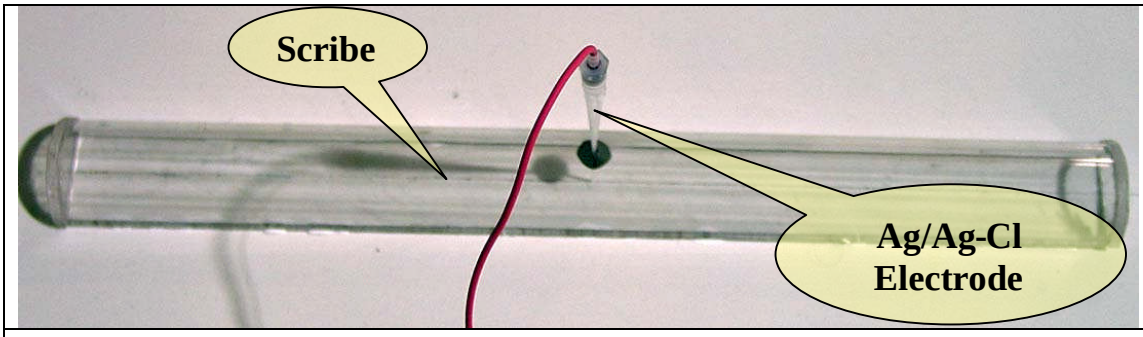


Figure-3: Front View Close-up of Test Chamber, Luggin Capillary and Electrode

The chamber was designed to surround the scratch region with the 5% NaCl solution, as well as provide a rigid mounting platform for the Luggin Capillary to in sure accuracy in the measurements throughout the exposure. This Lexan chamber was vented for the presence of air (oxygen) during the entire corrosion experiment. The Ag/Ag-Cl electrode resided inside the Luggin Capillary which was filled with 5% NaCl solution that was from the same stock as that used in the test chamber to complete the bridge. The probe has a 0.118 inch diameter capillary that was positioned directly over the scribe with a ~0.005 inch bridge between the end of the capillary and the scribe itself.

ITS recorded the electrochemical potential for each panel using a single channel Keithley Electrometer in conjunction with a switch box arrangement manually several times a day (~ 5x) Monday thru Friday over a period of 600 hours, and photos of each panel were taken pre and post testing only [included in the Appendix].

In an effort to assure no deviation due to the power supply in the readings, ITS recorded the voltage source and current output with respect to time at each and every reading, which has been included as well in the appendix. There were no significant changes or fluctuations in the power supply and or the current output that would produce artificial shifts in the potential data being collected.

TEST MATRIX:

1.) ASSI ICP Module on a Galvanized Panel ***without*** Environmental Sealant – Qty-(3)

2.) ASSI ICP Module on a Galvanized Panel ***with*** Environmental Sealant – Qty-(3)

3.) Galv. Panel ***without*** ICP Module & Environmental Sealant "Control" – Qty-(3)

4.) Galv. Panel ***without*** ICP Module & ***with*** Environmental Sealant "Control" – Qty-(3)

5.) ASSI ICP Module on a Non-Galvanized Steel Panel ***without*** Environmental Sealant – Qty-(3)

6.) ASSI ICP Module on a Non-Galvanized Steel Panel ***with*** Environmental Sealant – Qty-(3)

7.) Non-Galvanized Steel Panel ***without*** ICP Module & Environ. Sealant "Control" – Qty-(3)

8.) Non-Galvanized Steel Panel ***without*** ICP Module & ***with*** Environ. Sealant "Control" – Qty-(3)

RESULTS:

The subsequent data collected from this laboratory experiment lends itself favorably in the substantiation, by providing the supporting physical evidence, that the panels installed with the Auto Saver Systems ICP device is clearly impressed with the necessary potential to retard the on set of corrosion or 'rusting'.

The ICP modules were supplied a current of ~73.4 mA each from the power supply and the current reference on the panel at the scribe location was measured to be ~54.3 mA, thirty-six (36) inches from the control module and the remote anode.

The panel's electrochemical corrosion potential was periodically measured [up to five times a day] in close proximity to the scribe line in the salt solution region using Ag/Ag-Cl electrodes through out the exposure time. A chart representing the corrosion potential has been assembled for each of the test panel scenarios described in the Test Matrix section on the previous page of this report (Chart-1; 'Galvanized Steel Panels without Environmental Paint Sealant Electrochemical Corrosion Potential Data (0-600 Hrs.)', Chart-2; 'Galvanized Steel Panels with Environmental Paint Sealant Electrochemical Corrosion Potential Data (0-600 Hrs.)', Chart-3; 'Non-Galvanized Steel Panels without Environmental Paint Sealant Electrochemical Corrosion Potential Data (0-600 Hrs.)', Chart-4; 'Non-Galvanized Steel Panels with Environmental Paint Sealant Electrochemical Corrosion Potential Data (0-600 Hrs.)').

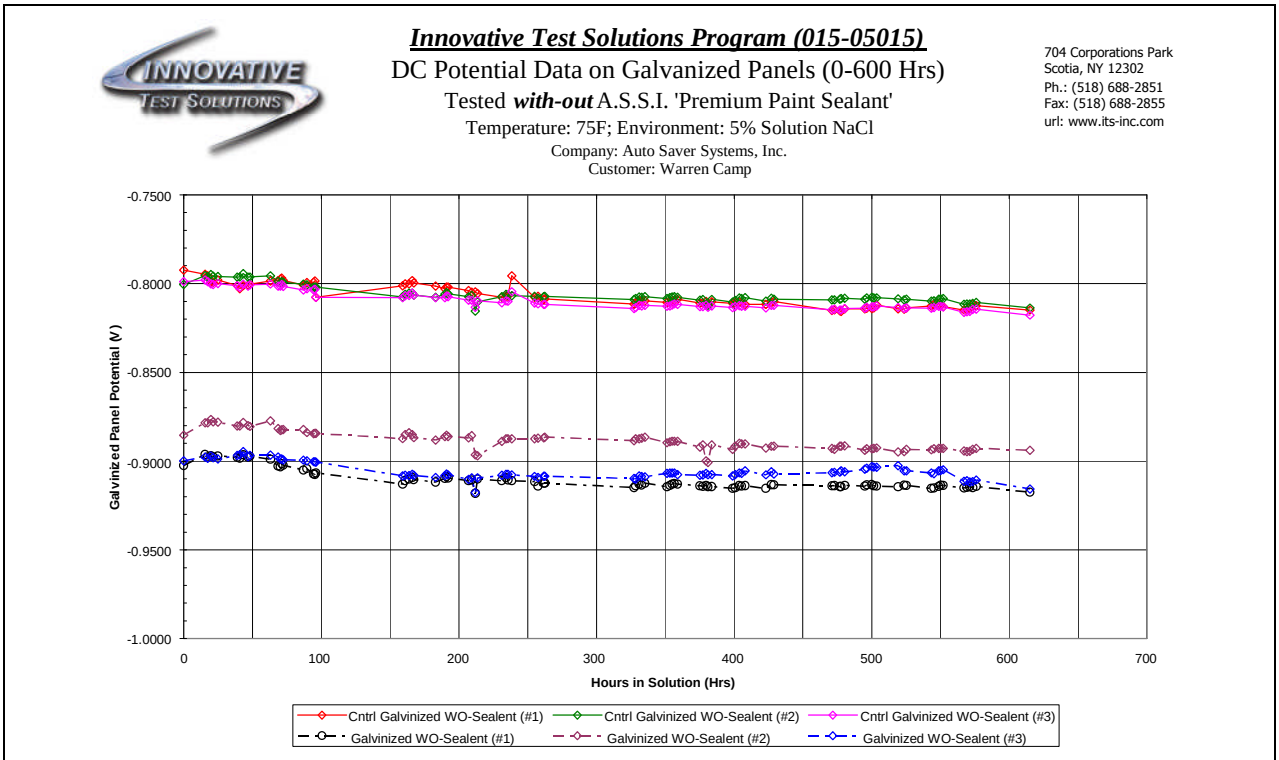


Chart-1: 'Galvanized Panels without Environmental Paint Sealant Electrochemical Corrosion Potential Data (0-600 Hrs.)

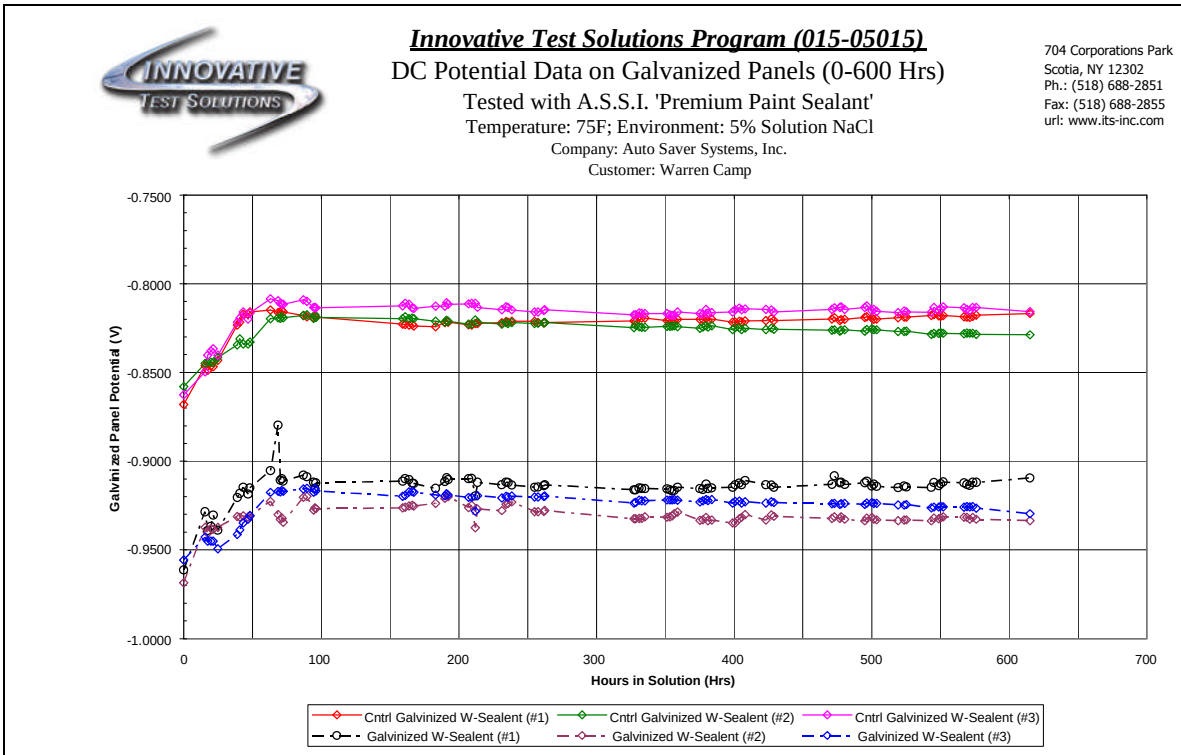


Chart-2: 'Galvanized Panels with Environmental Paint Sealant
Electrochemical Corrosion Potential Data (0-600 Hrs.)

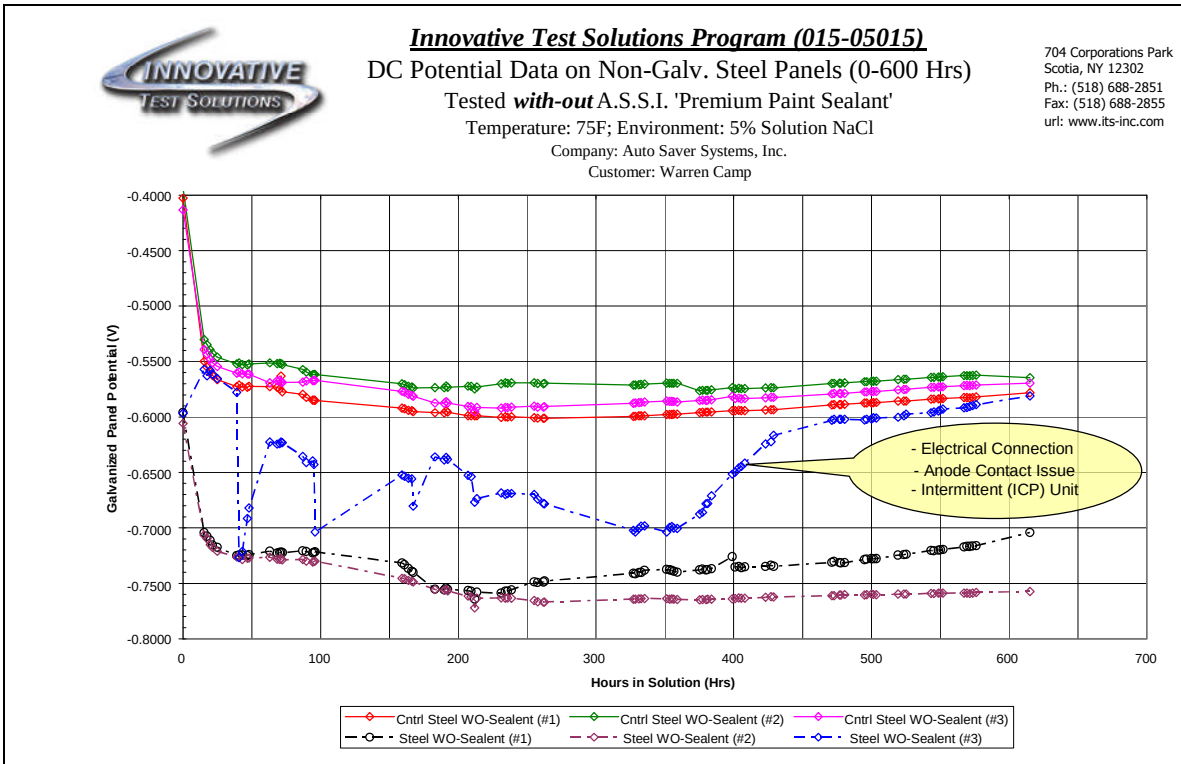


Chart-3: 'Non-Galvanized Steel Panels without Environmental Paint Sealant
Electrochemical Corrosion Potential Data (0-600 Hrs.)

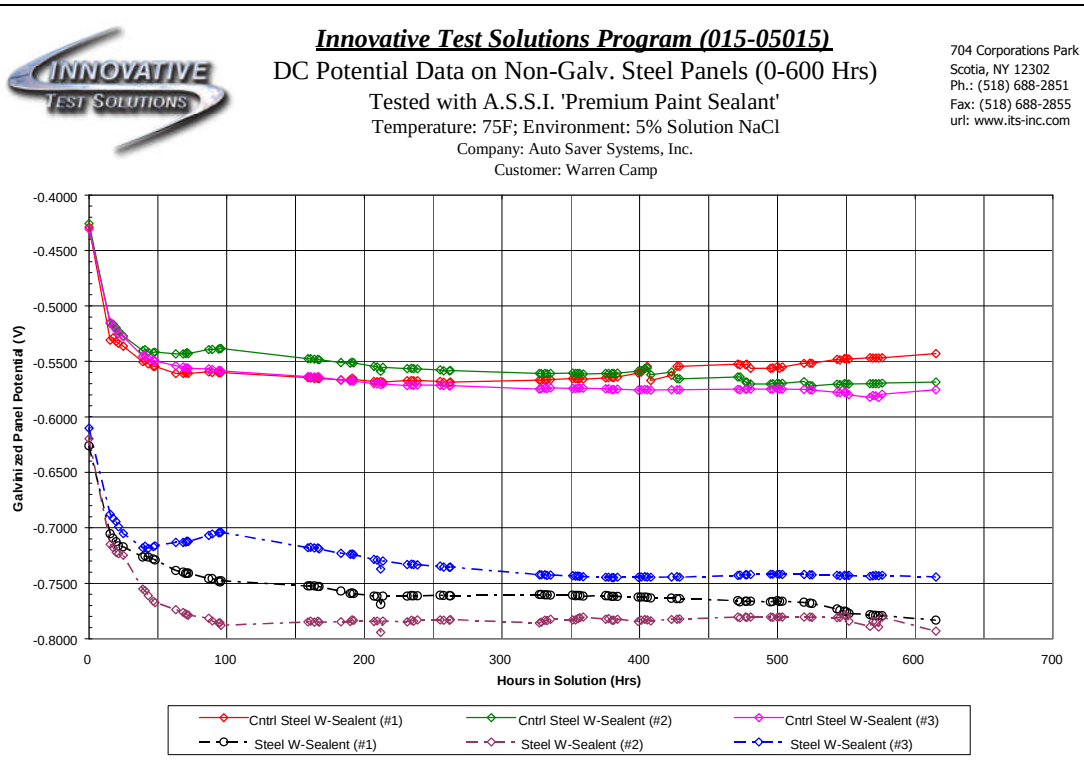


Chart-4: 'Non-Galvanized Steel Panels with Environmental Paint Sealant Electrochemical Corrosion Potential Data (0-600 Hrs.)

DISCUSSION:

In conclusion, for successful cathodic protection there must be sufficient potential applied to overcome local anodes on the surface of the material. For example, the potential for just raw iron (Fe^2) to corrode to common rust is specified in published literature to be ~(-)0.44 V. For zinc as found in the galvanized panels, the oxidation potential lies near (-)0.78 V. In order to protect both the steel substrate in both galvanized and non-galvanized panels without consuming excessive current in electrolysis the potential would have to fall between (-)0.45 to (-)0.75 V for non-galvanized steel and (-)0.85 to (-)1.15 V for galvanized steel.

Case-A

The Auto Saver System ICP devices on a galvanized steel panels without the Environmental Paint Sealant data depict on average (-)0.905 VDC at a current of ~54.3 mA over a distance from the modules to the scribe line of thirty-six (36) inches, compared to an average on the corresponding control panel without the Environmental Paint Sealant of (-)0.813 VDC.

Case-B

The Auto Saver System ICP devices on a galvanized steel panel with the Environmental Paint Sealant data depicts on average (-)0.924 VDC at a current of ~54.3 mA over a distance from the modules to the scribe line of thirty-six (36) inches, compared to an average on the corresponding control panel with the Environmental Paint Sealant of (-)0.820 VDC.

Case-C

The Auto Saver System ICP devices on a non-galvanized steel panel without the Environmental Paint Sealant data depicts on average (-)0.739* VDC at a current of ~54.3 mA over a distance from the modules to the scribe line of thirty-six (36) inches, compared to an average on the corresponding control panel without the Environmental Paint Sealant of (-)0.574 VDC.

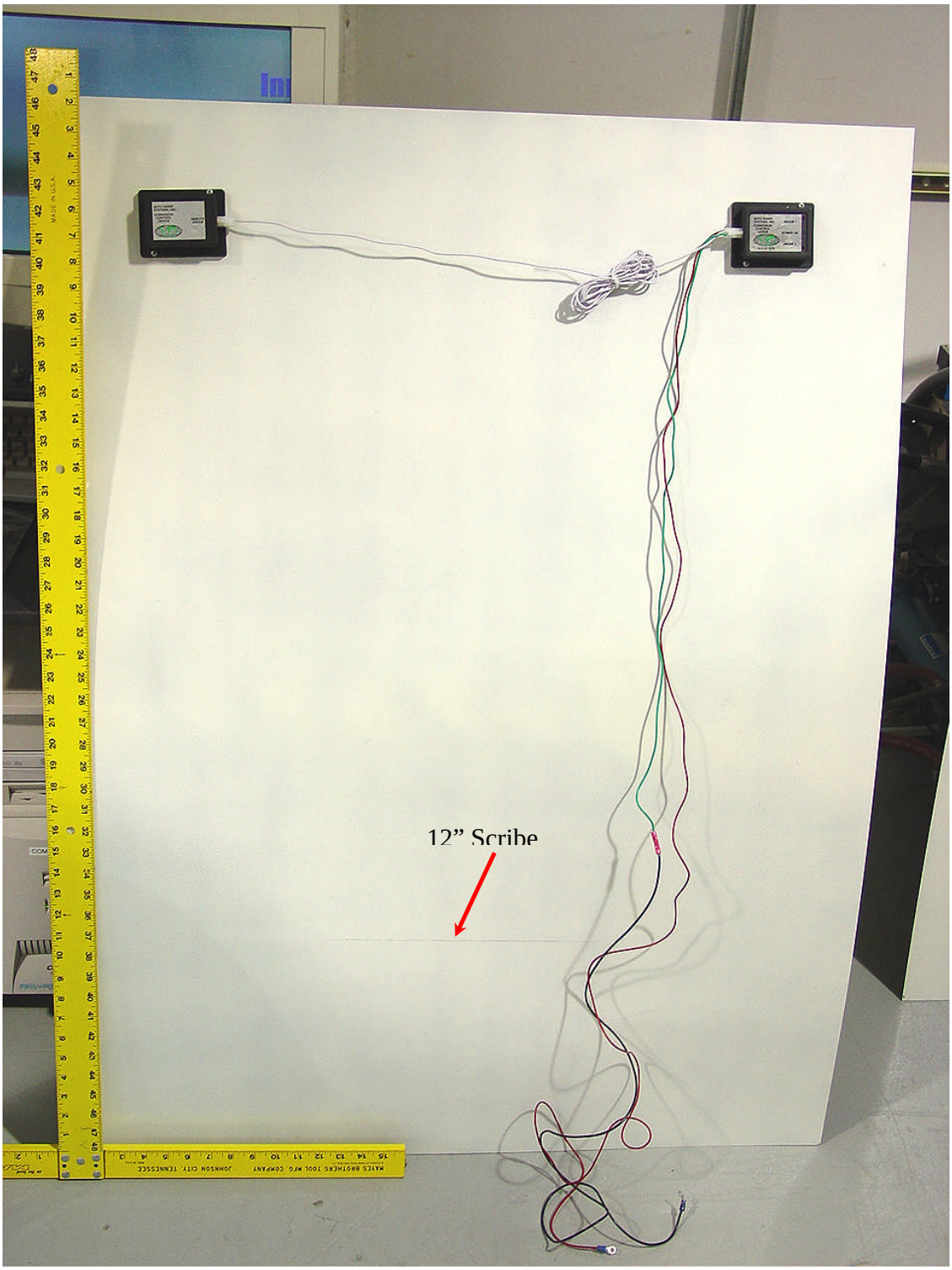
(Case-D)

The Auto Saver System (ICP) devices on a non-galvanized steel panel with the Environmental Paint Sealant data depicts on average (-)0.767 VDC at a current of ~54.3 mA over a distance from the modules to the scribe line of thirty-six (36) inches, compared to an average on the corresponding control panel with the Environmental Paint Sealant of (-)0.566 VDC.

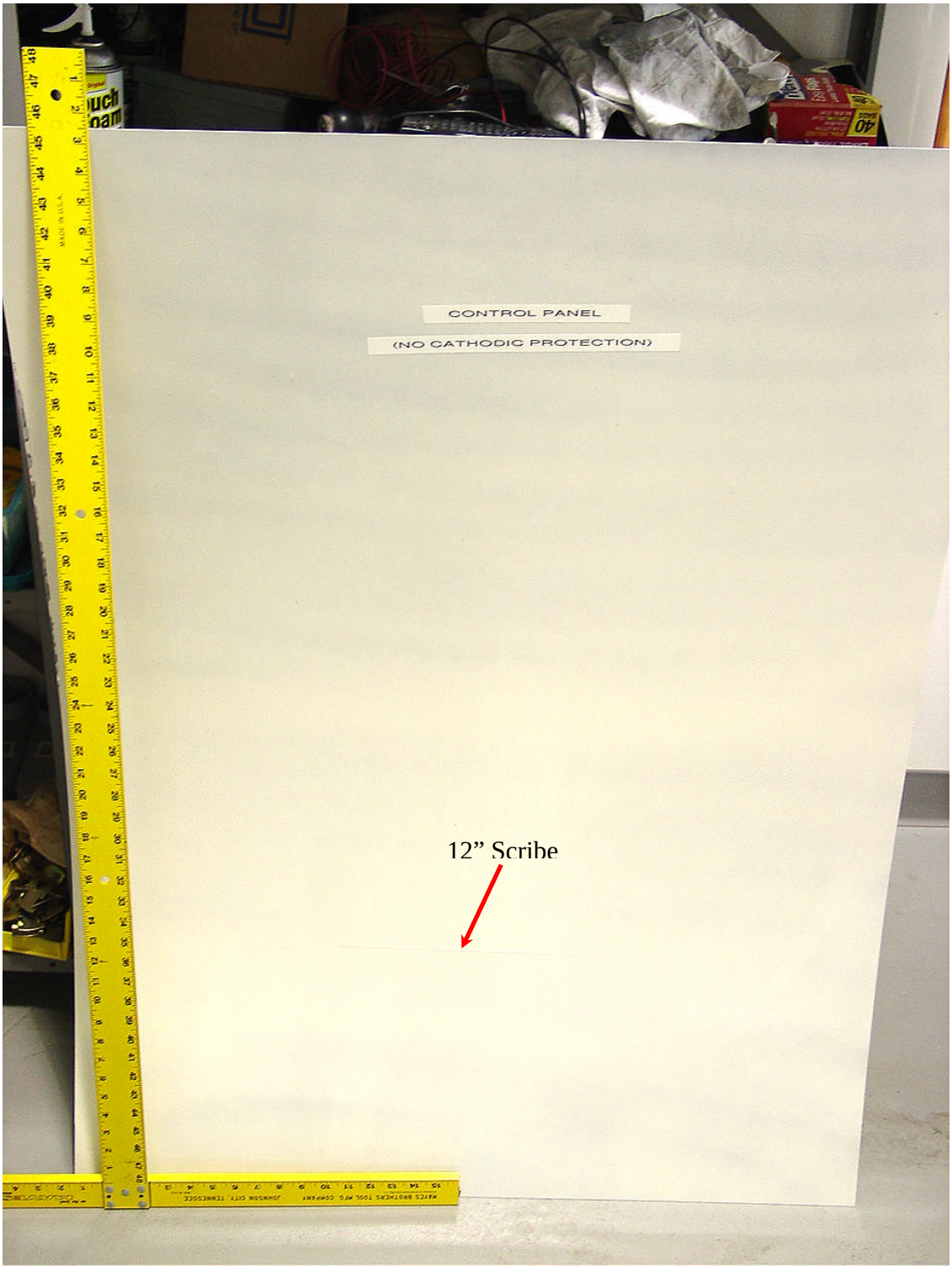
* Footnote to value; only steel panels #1 & 2 were used to calculate the average
[This was due to not having root cause for the variations seen on steel panel #3].

APPENDIX

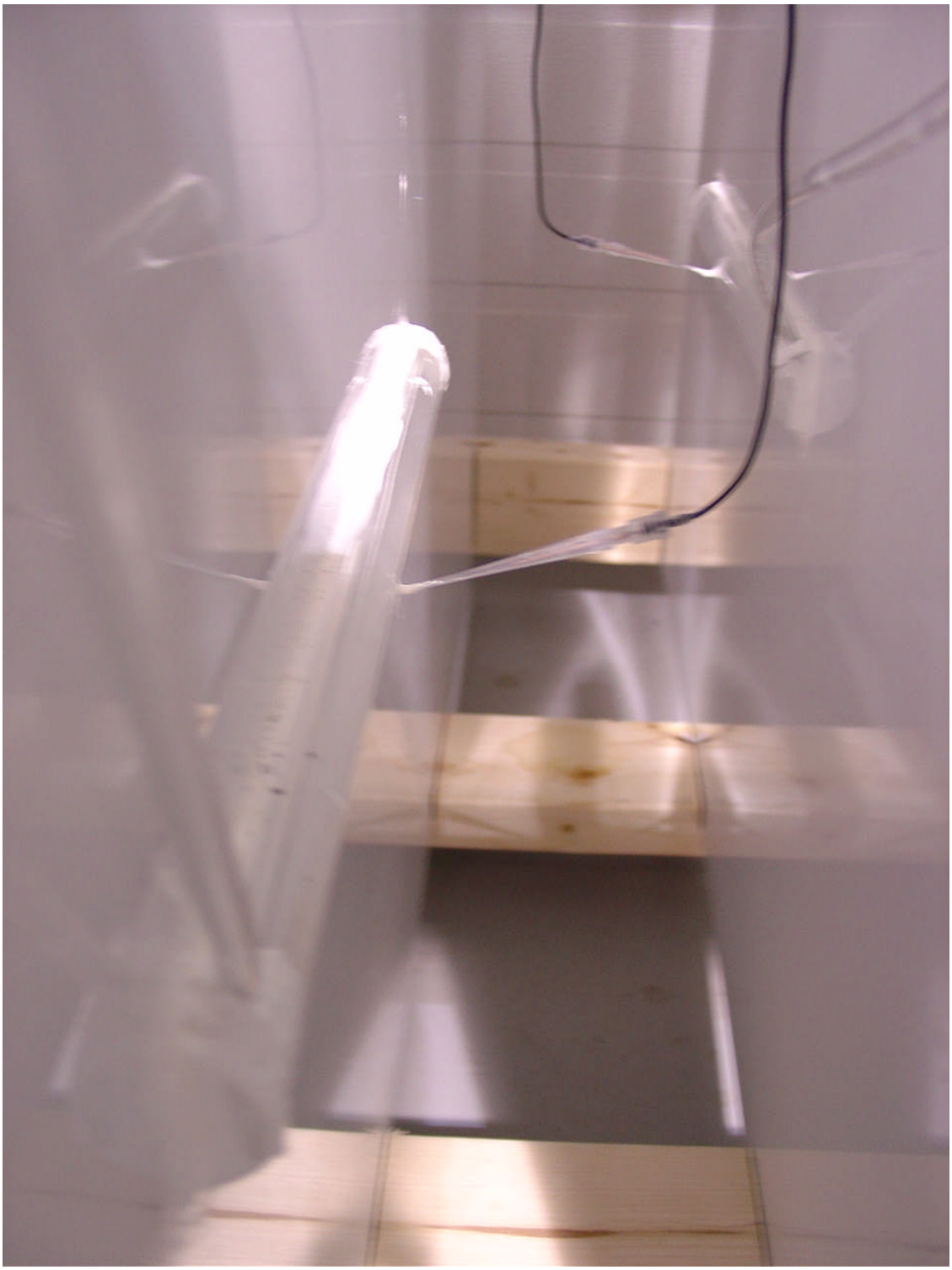
Three-(3) Foot by Four-(4) Foot Test Panel with (ICP) Device Installed



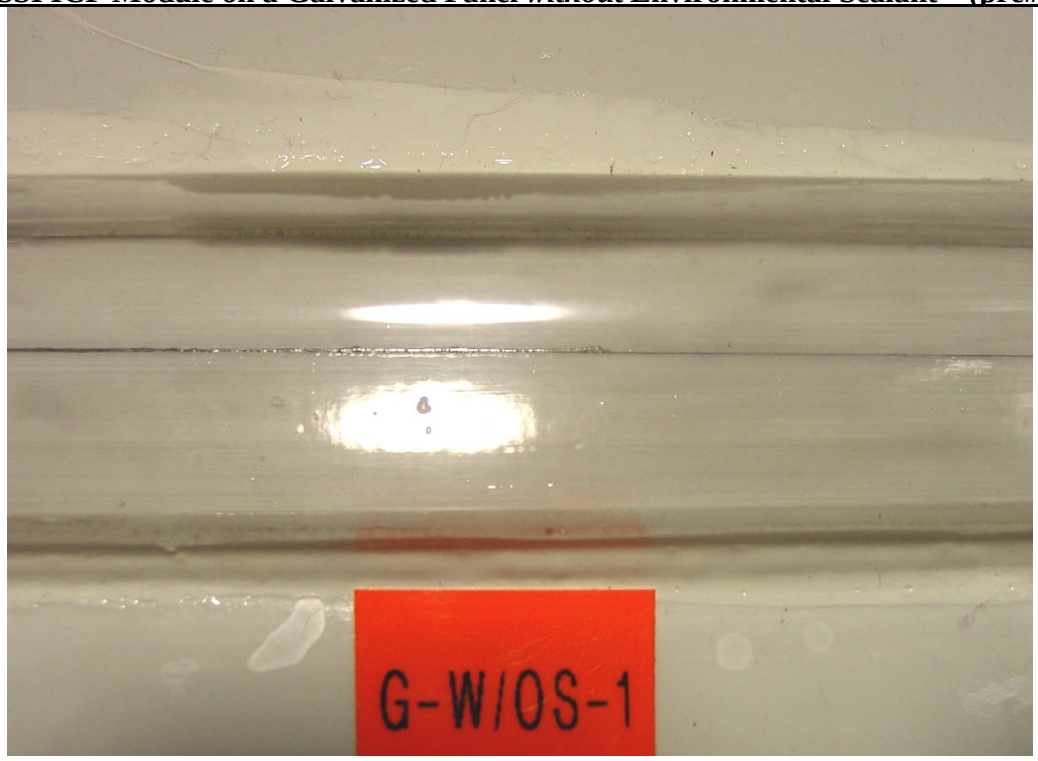
Three-(3) Foot by Four-(4) Foot Control Panel without (ICP) Device



Test Panel with (ICP) Device & Luggin Capillary Installed



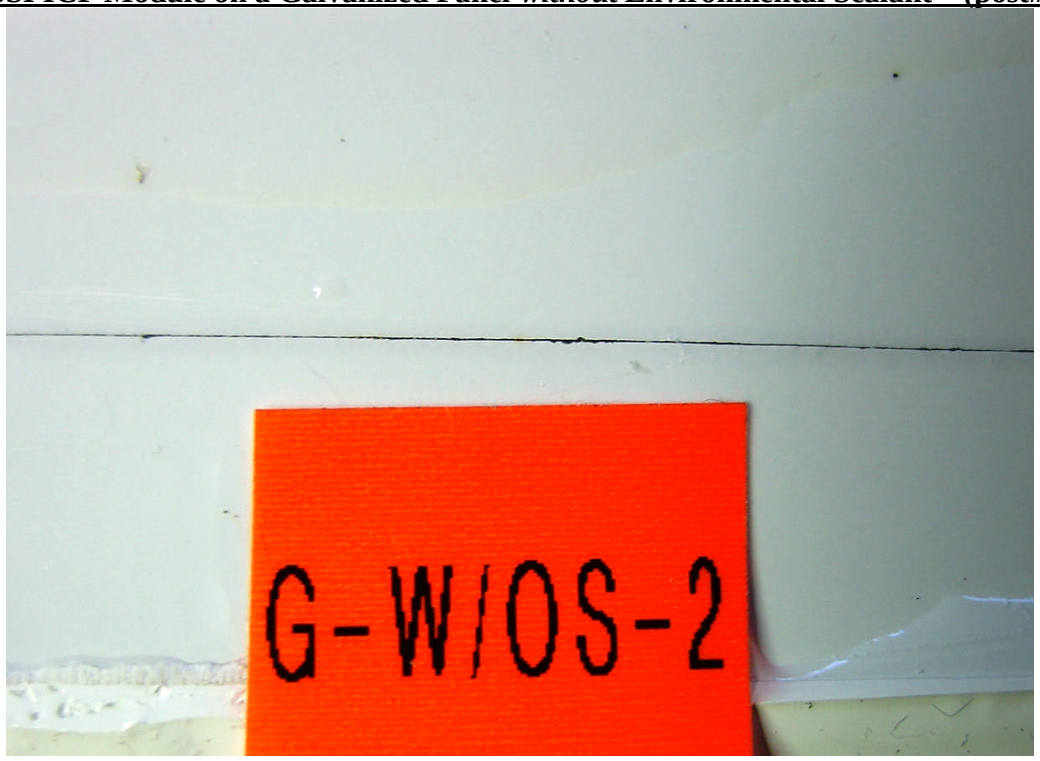
ASSI ICP Module on a Galvanized Panel *without* Environmental Sealant – (pre#1)



ASSI ICP Module on a Galvanized Panel *without* Environmental Sealant – (post#1)

ASSI ICP Module on a Galvanized Panel *without* Environmental Sealant – (pre#2)

ASSI ICP Module on a Galvanized Panel *without* Environmental Sealant – (post#2)



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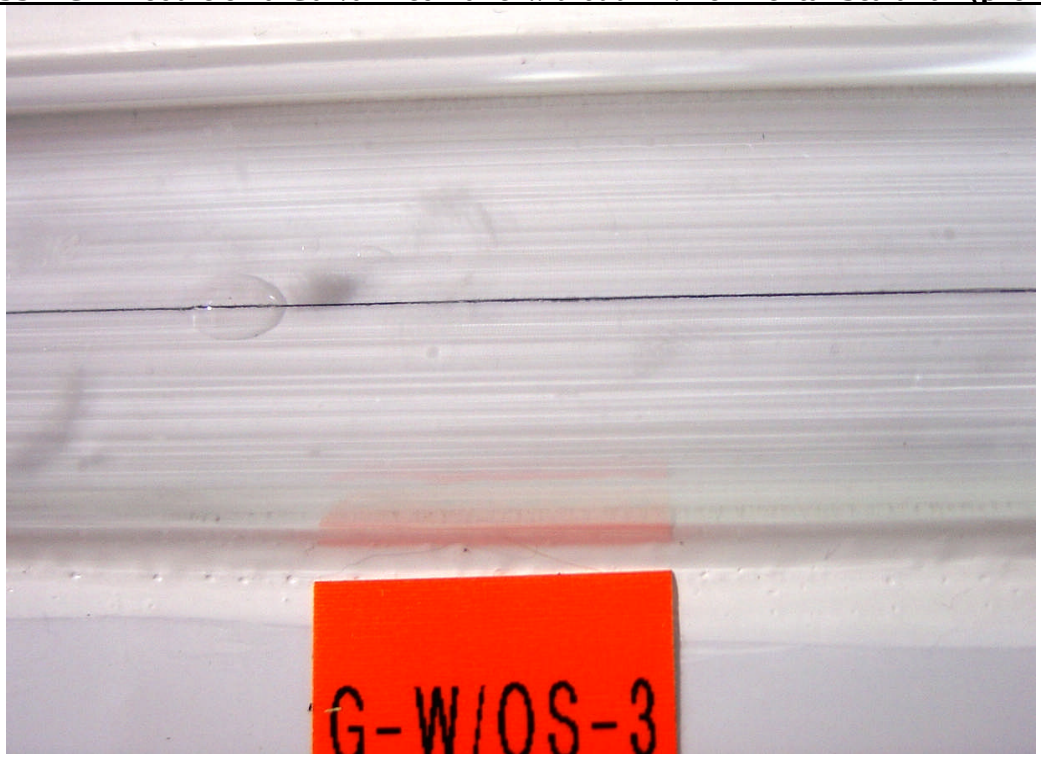

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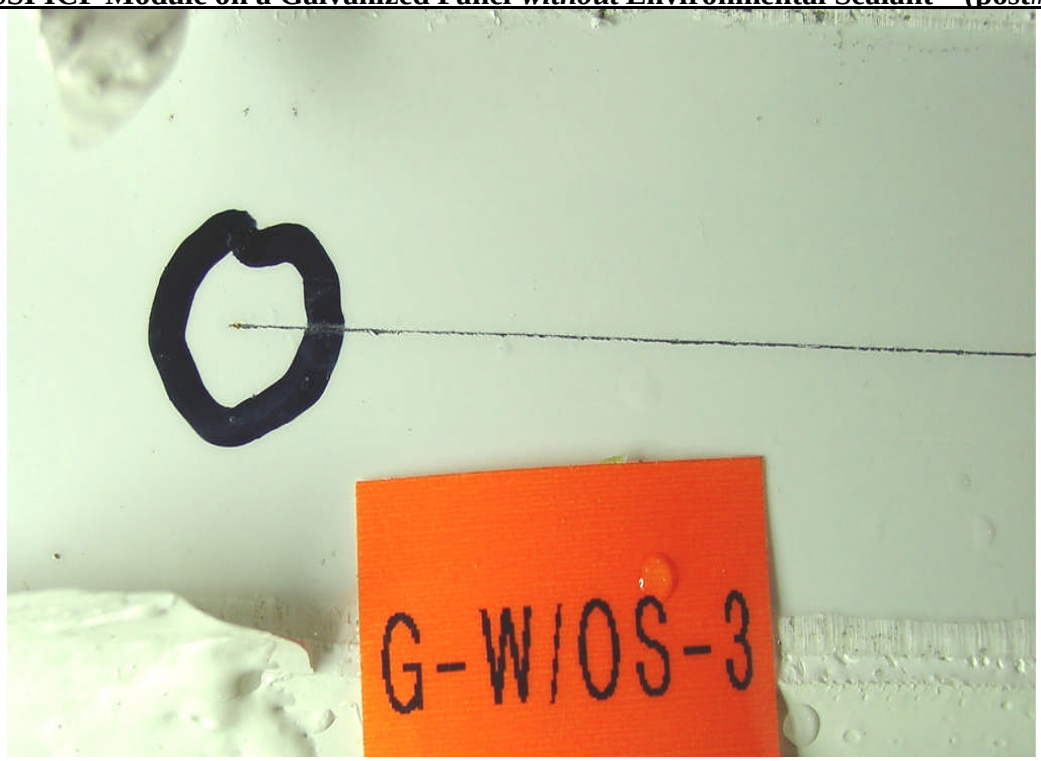

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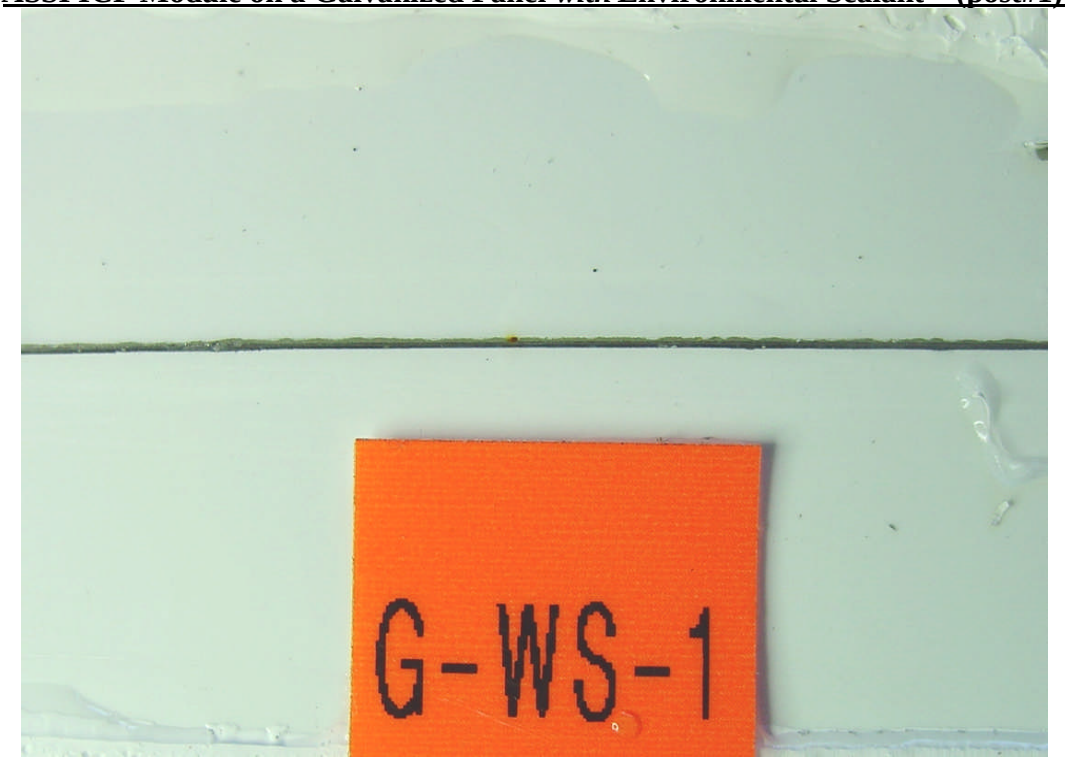

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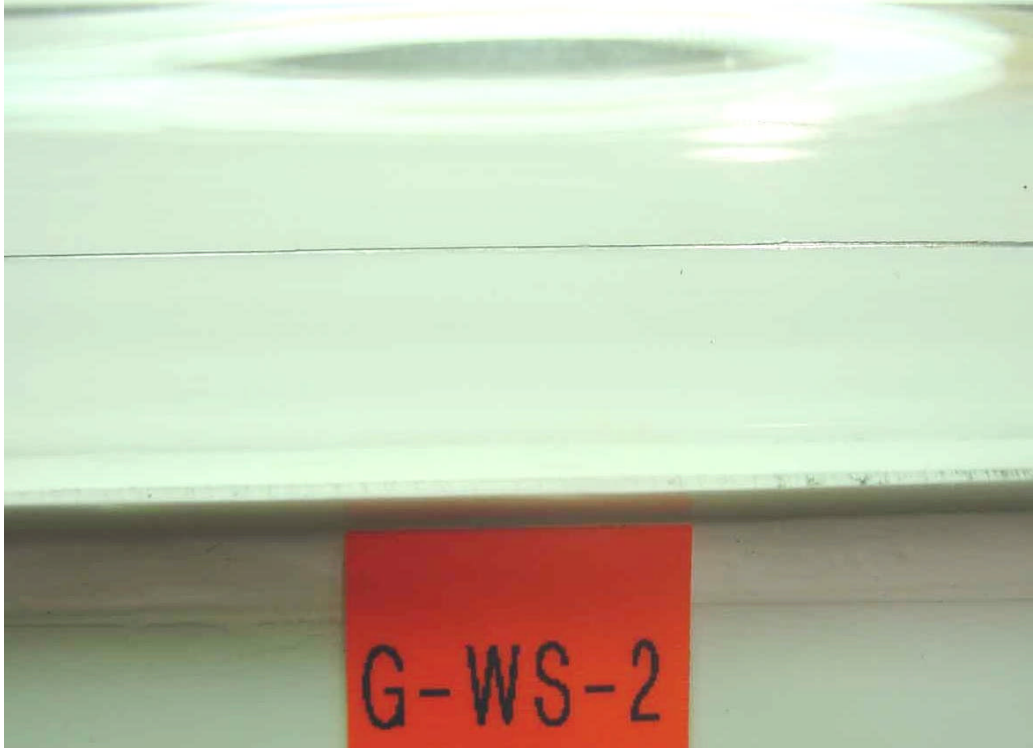

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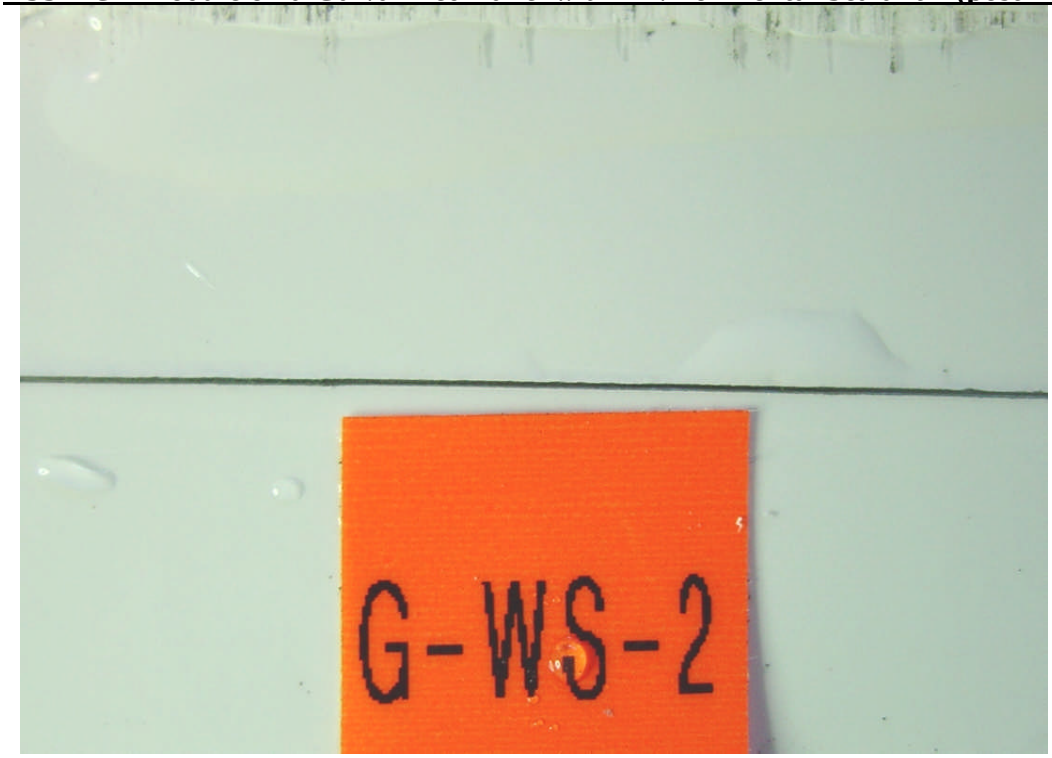
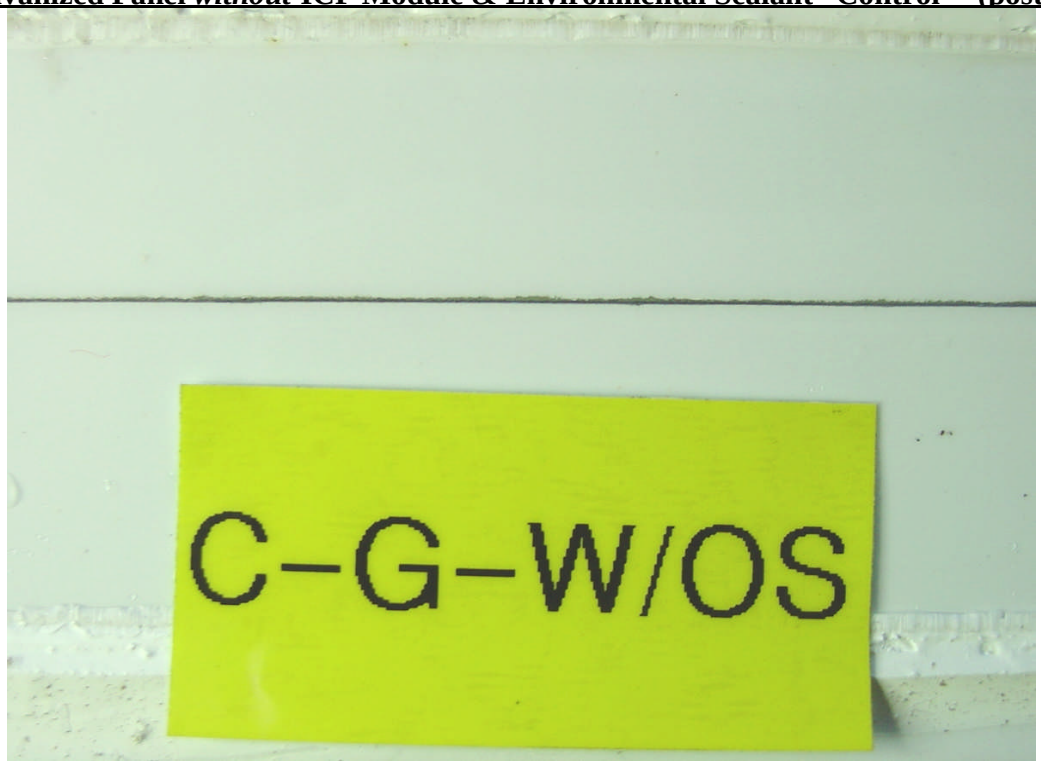


ASSI ICP Module on a Galvanized Panel *with* Environmental Sealant – (pre#3)

ASSI ICP Module on a Galvanized Panel *with* Environmental Sealant – (post#3)

Galvanized Panel *without* ICP Module & Environmental Sealant "Control"– (pre#1)

Galvanized Panel *without* ICP Module & Environmental Sealant "Control"– (post#1)



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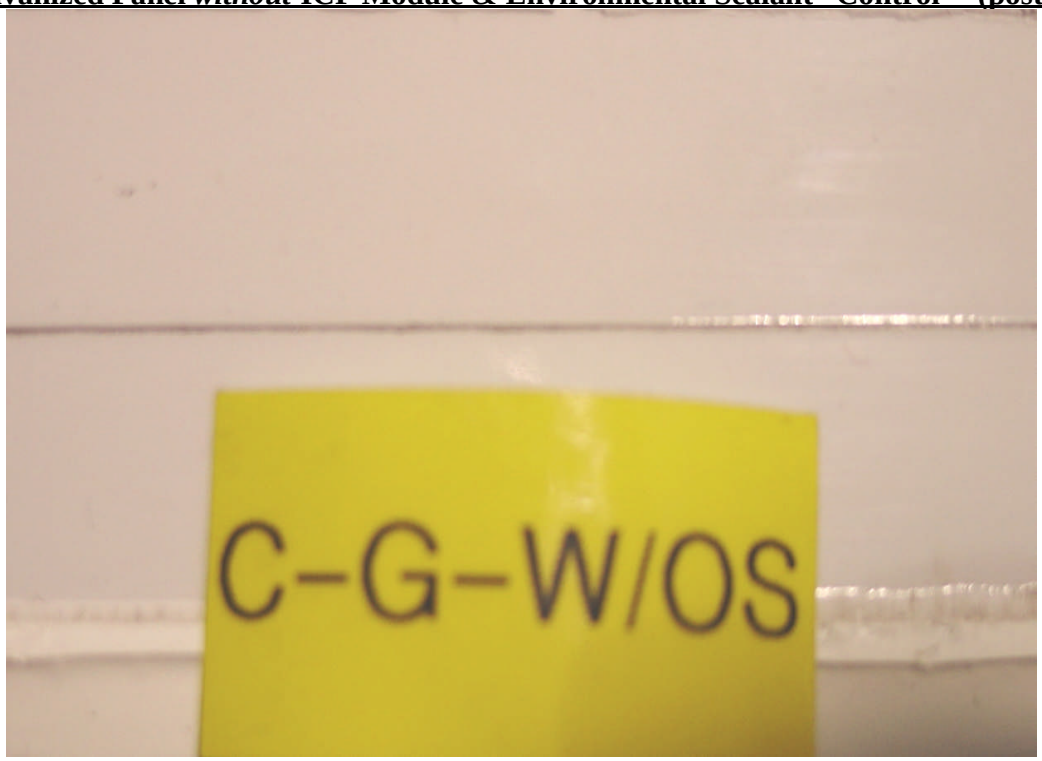

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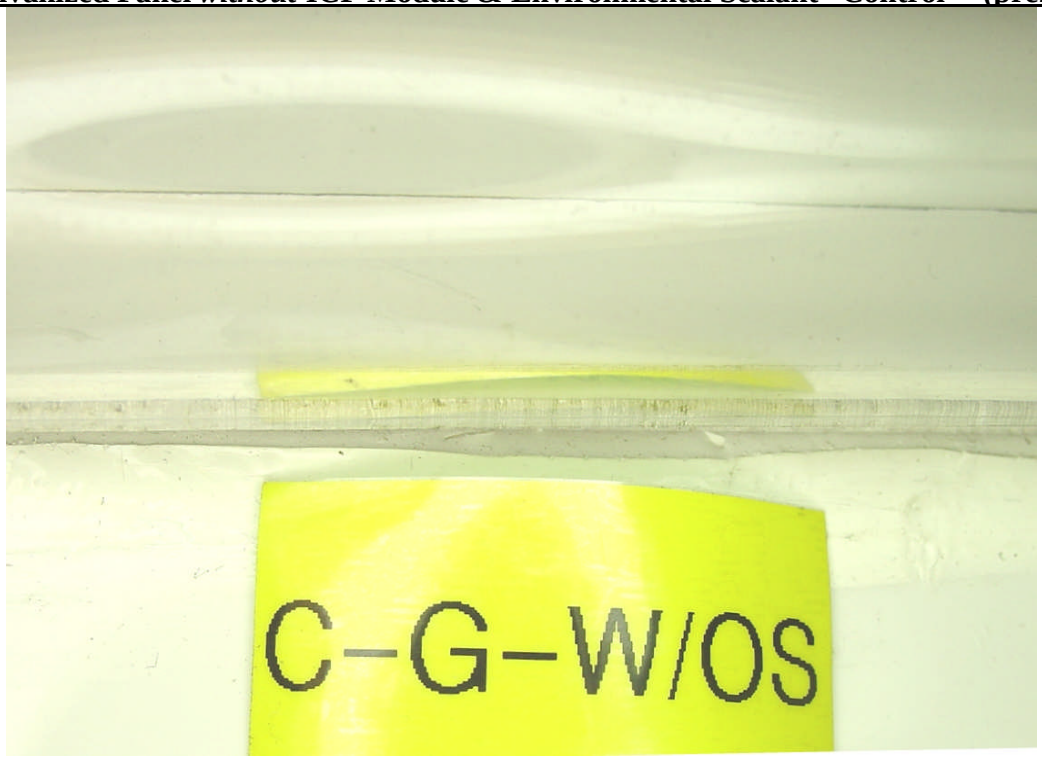

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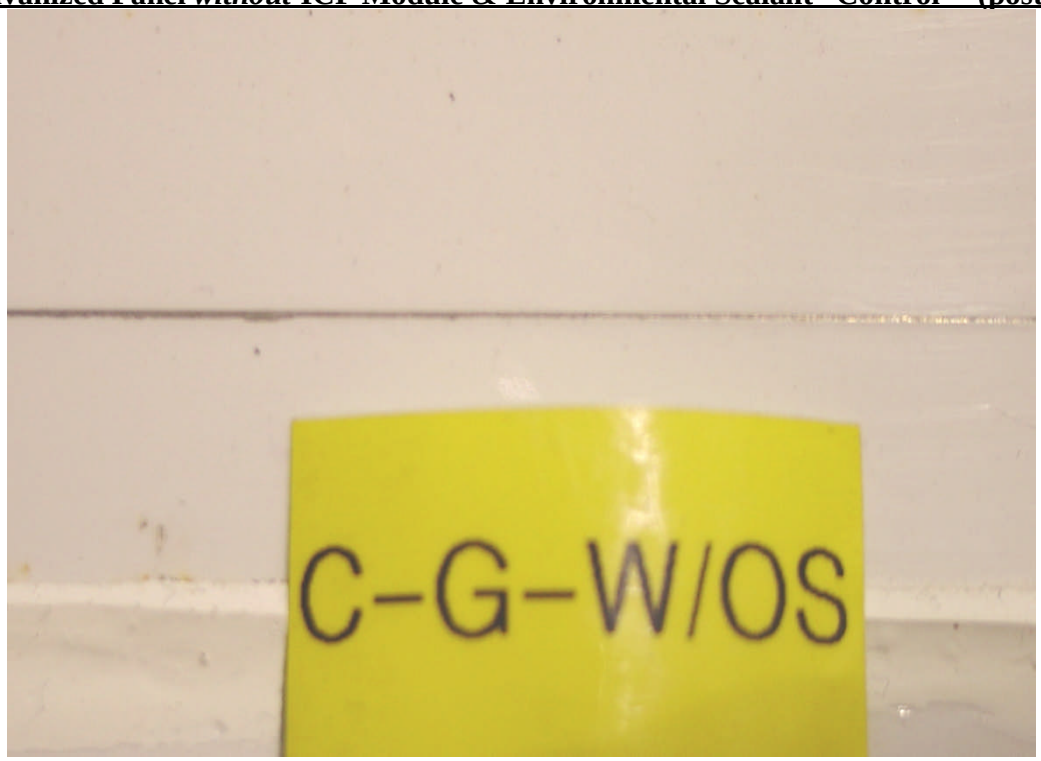

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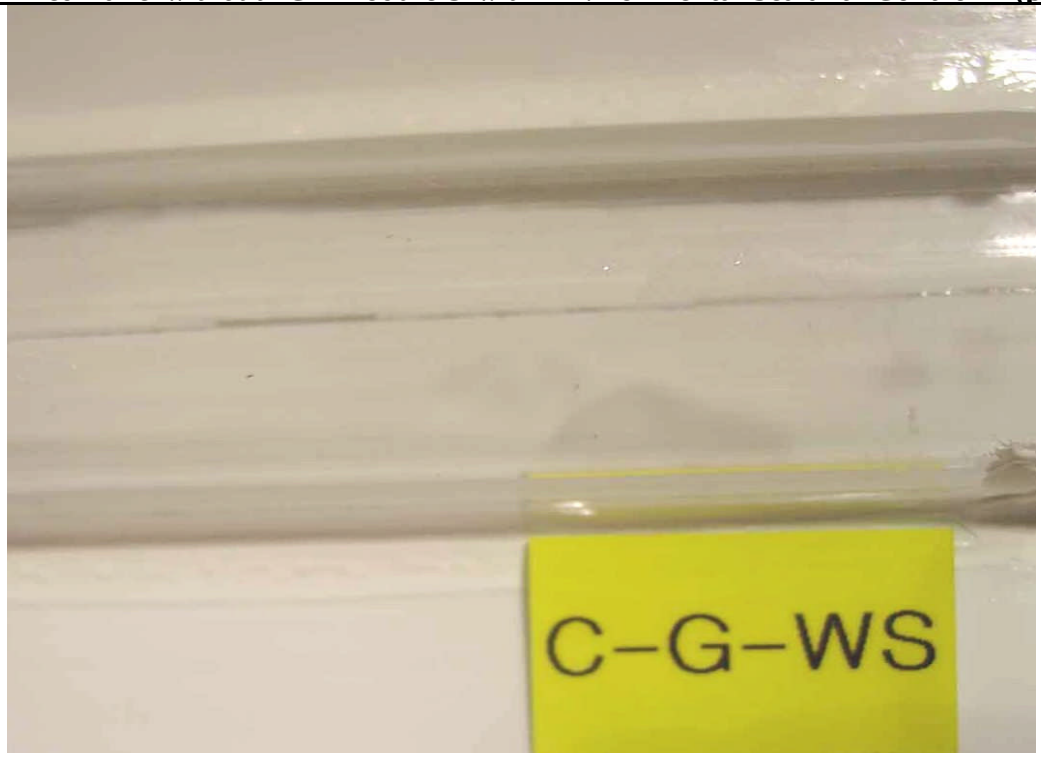

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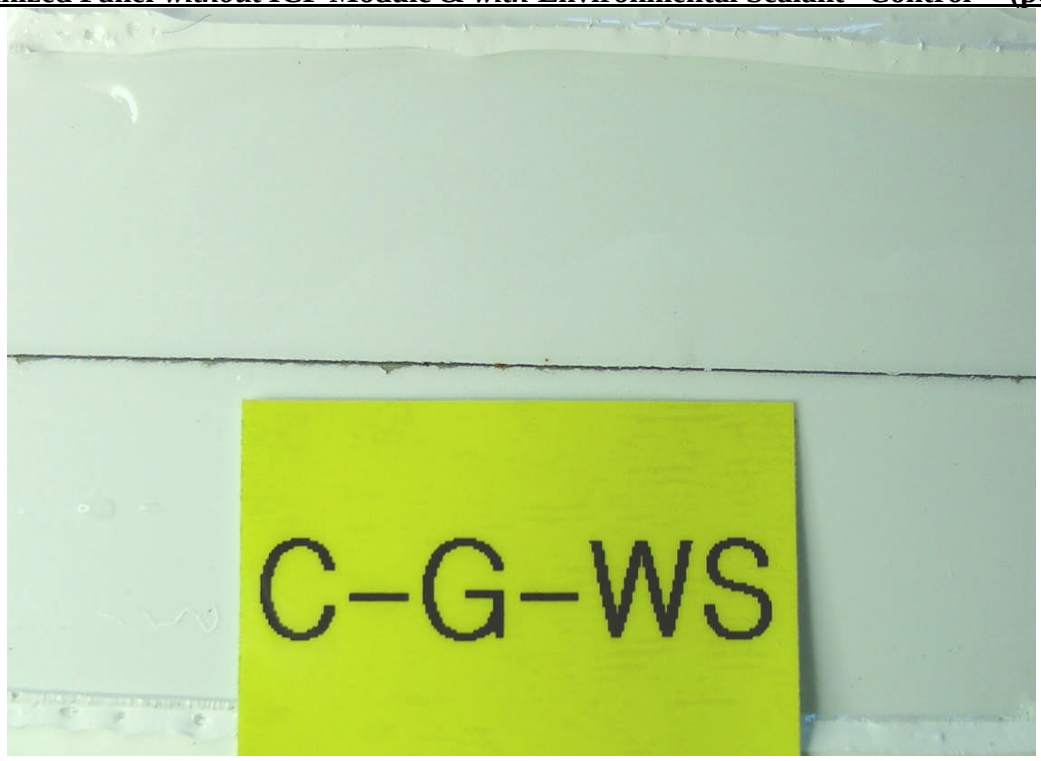

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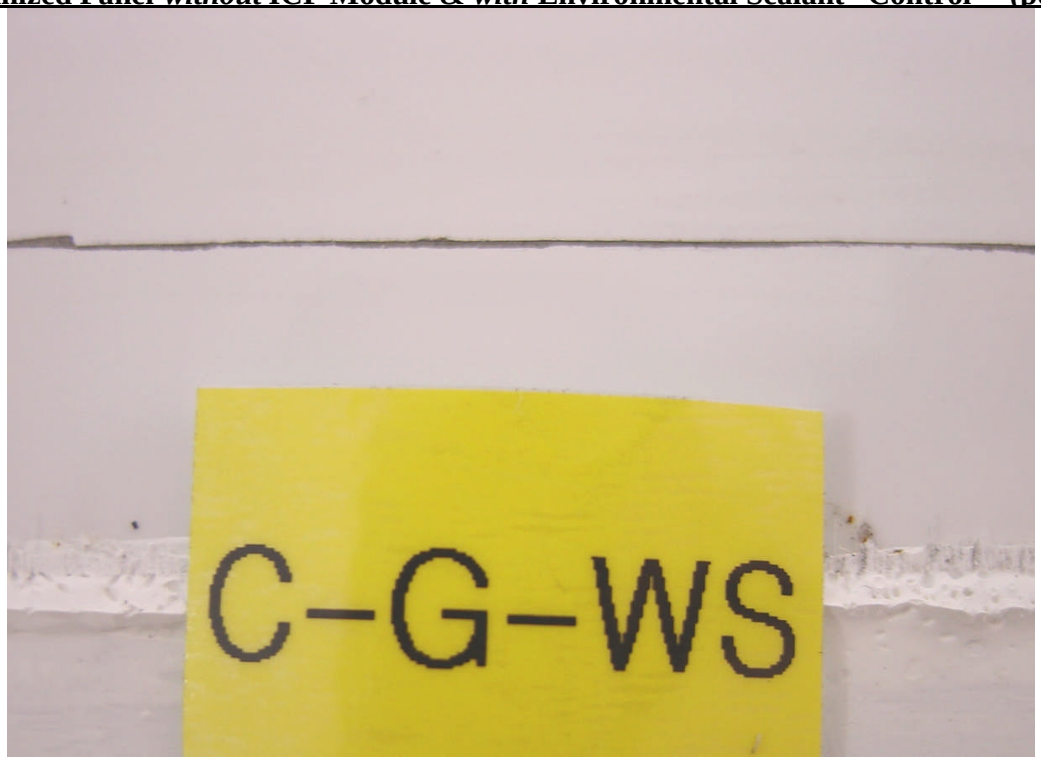

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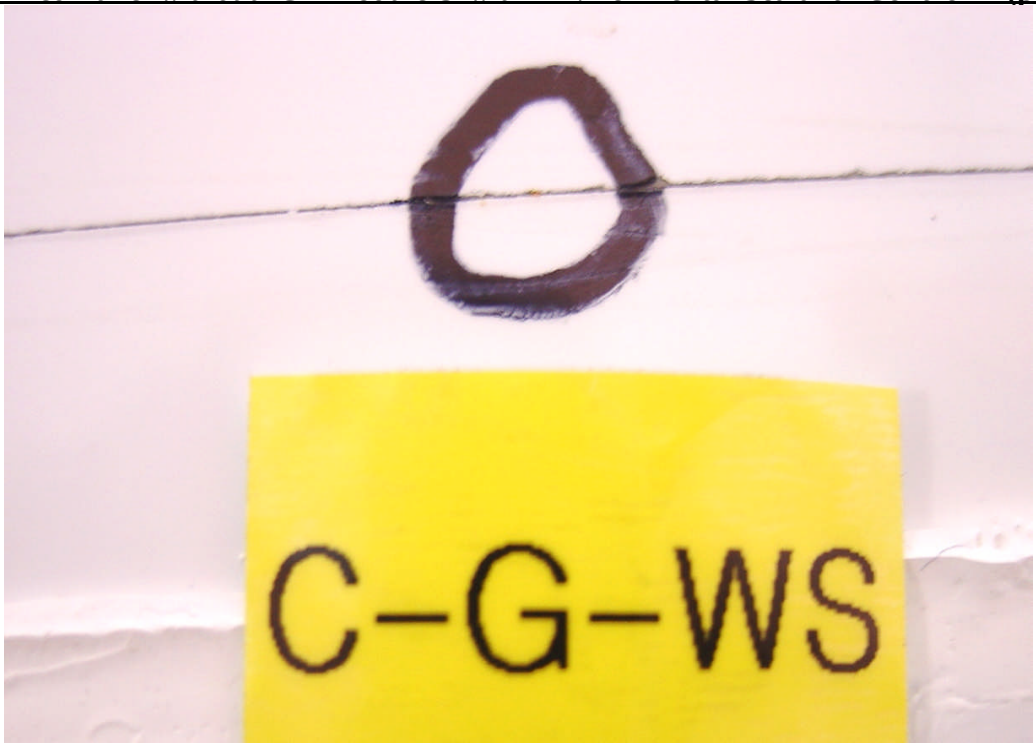
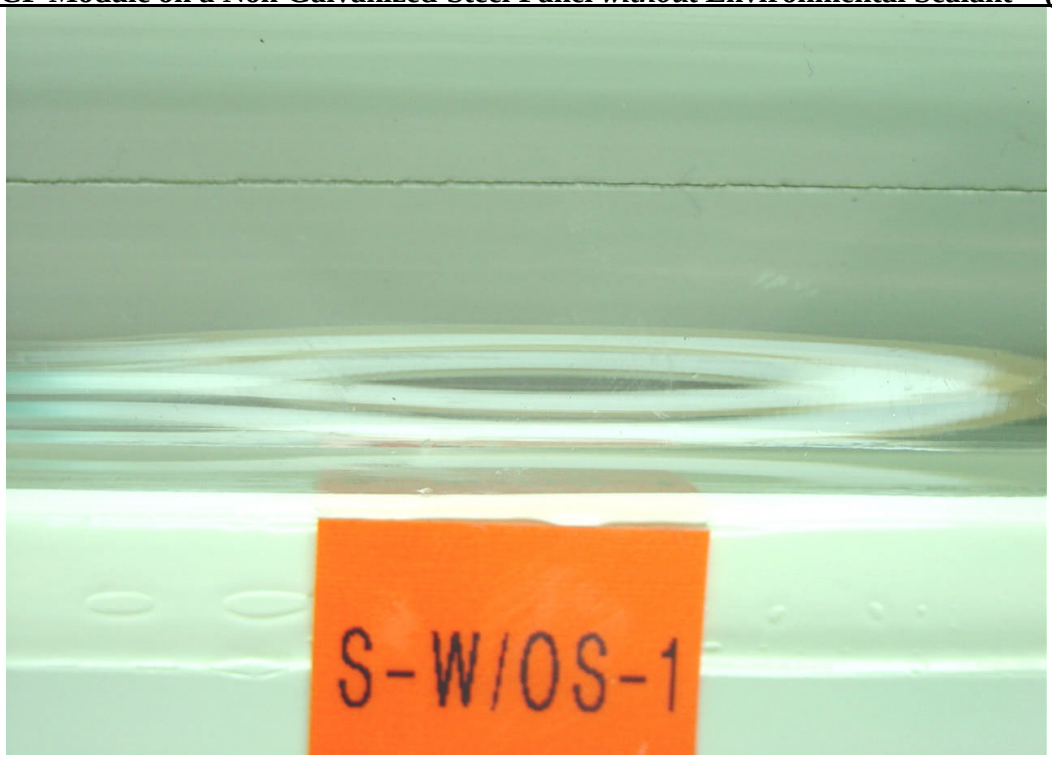


ASSI ICP Module on a Non-Galvanized Steel Panel *without* Environmental Sealant – (pre#1)



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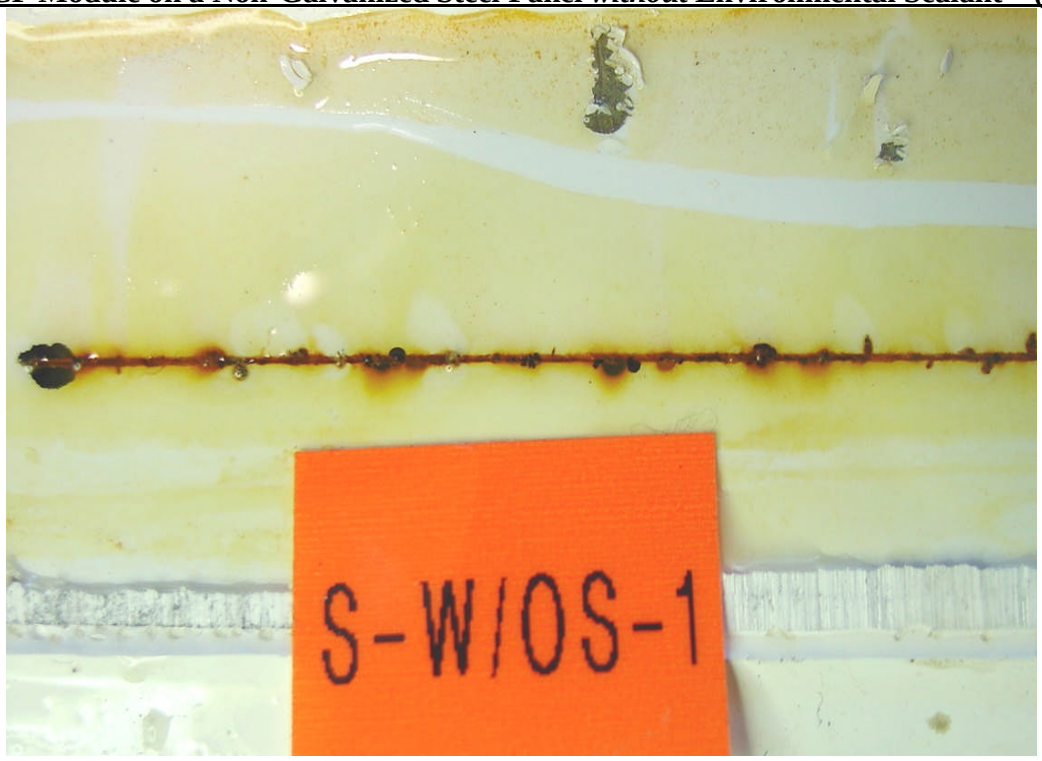

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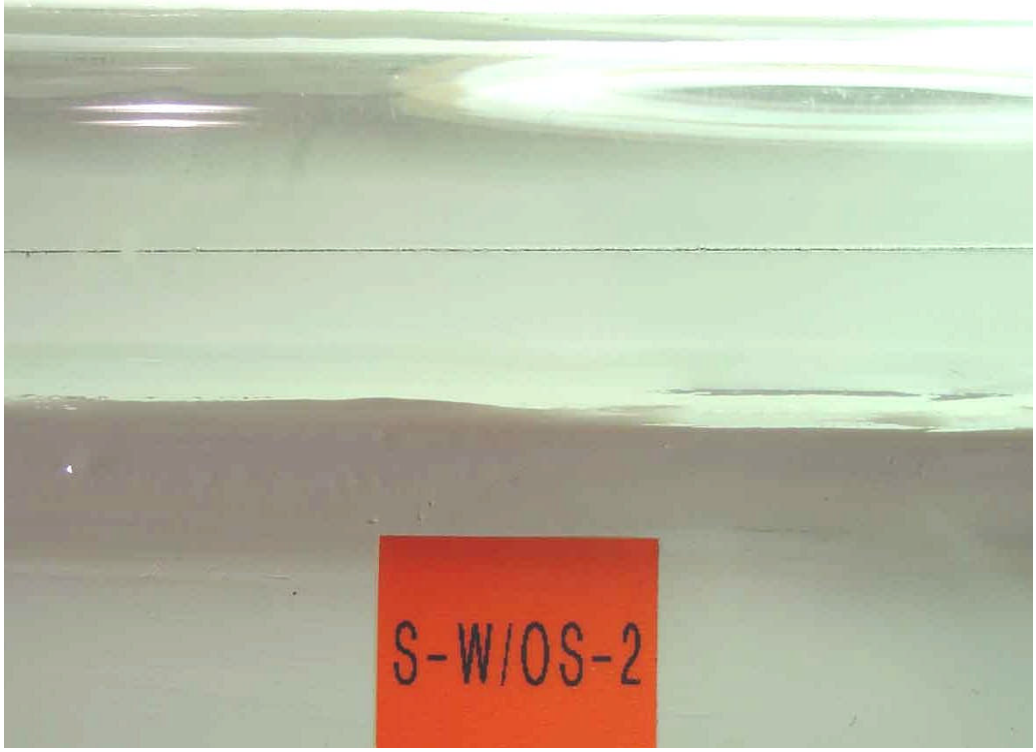

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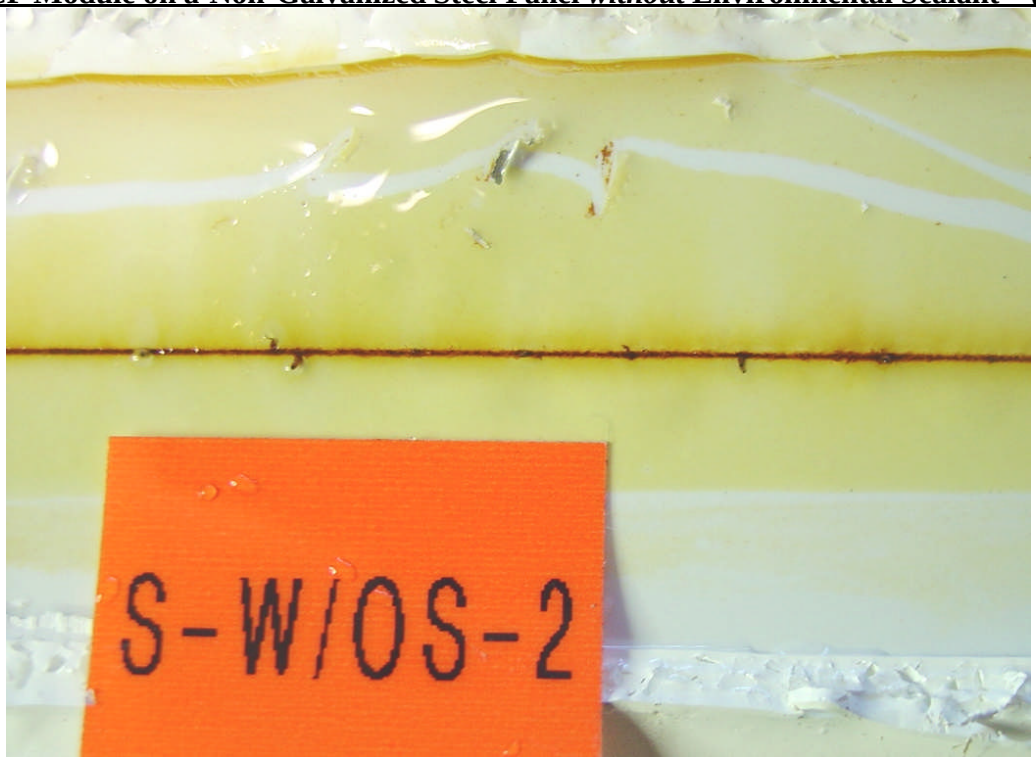
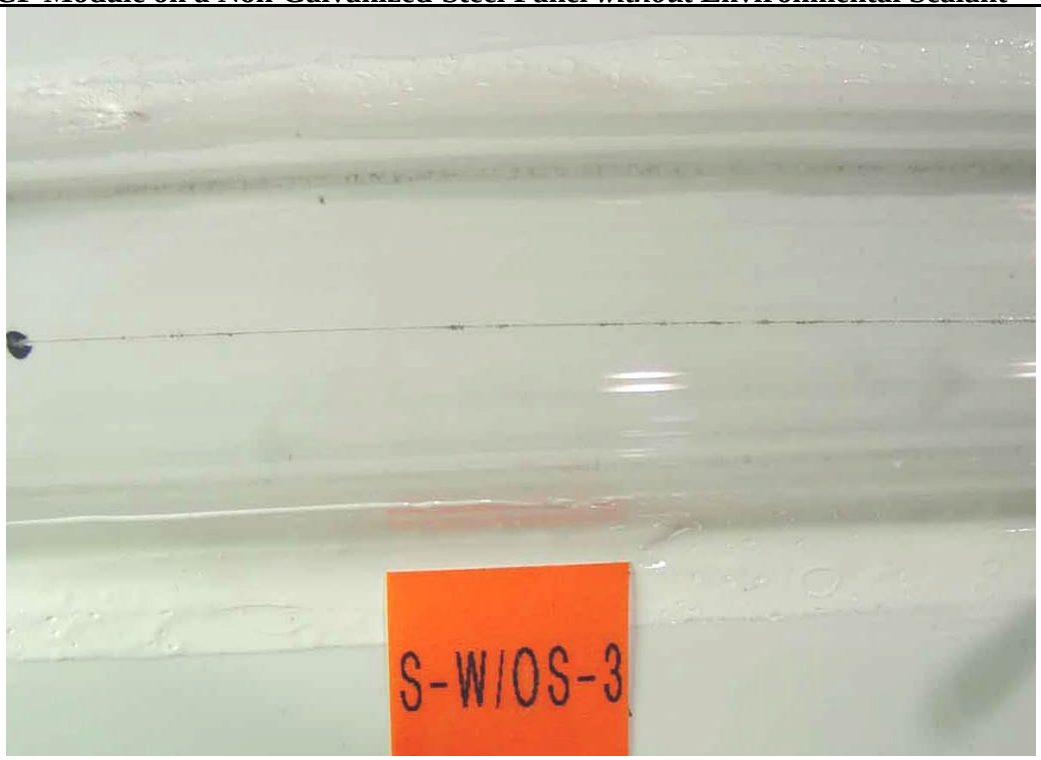
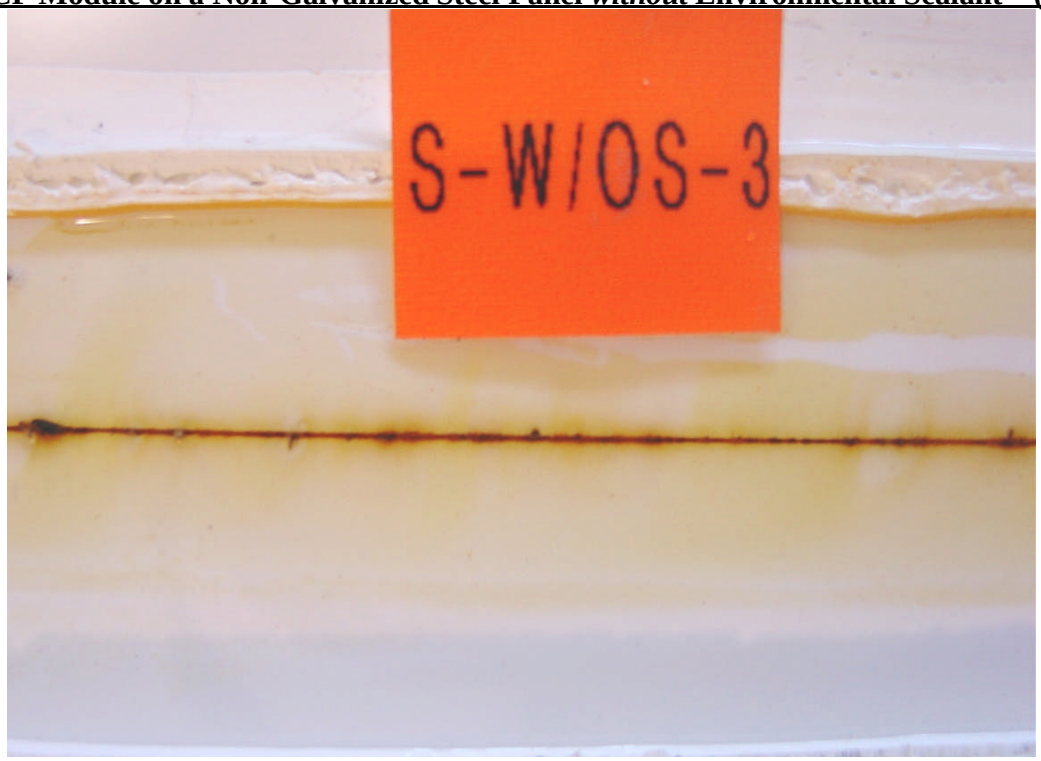


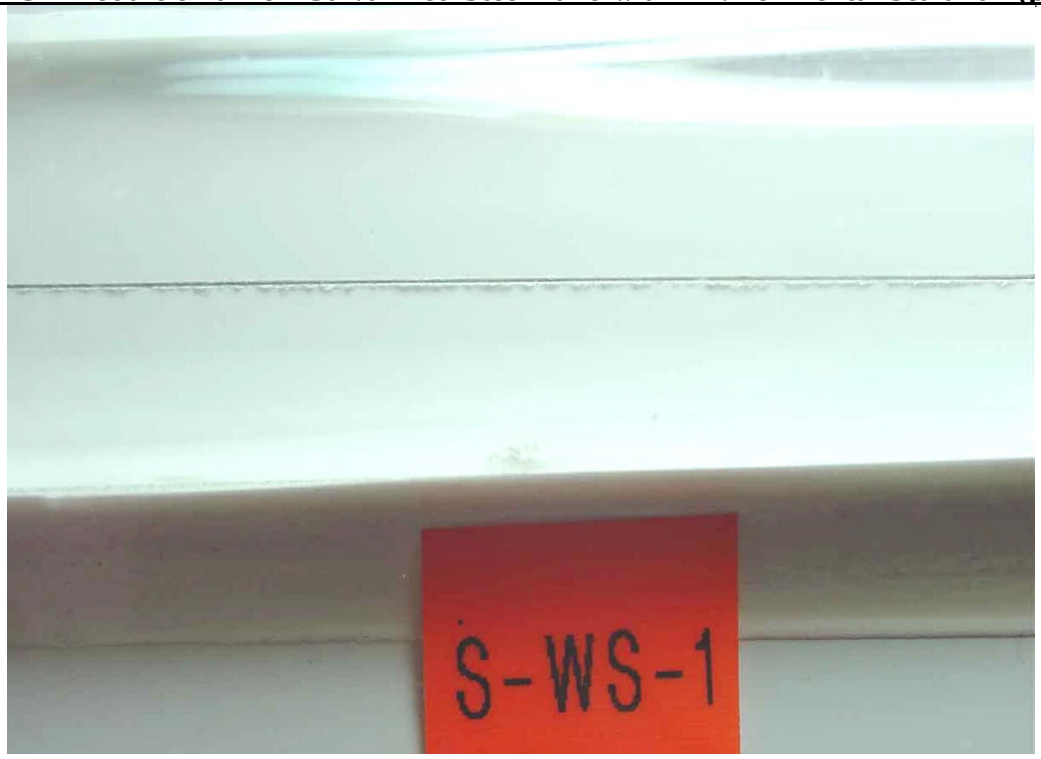
ASSI ICP Module on a Non-Galvanized Steel Panel *without* Environmental Sealant – (pre#3)



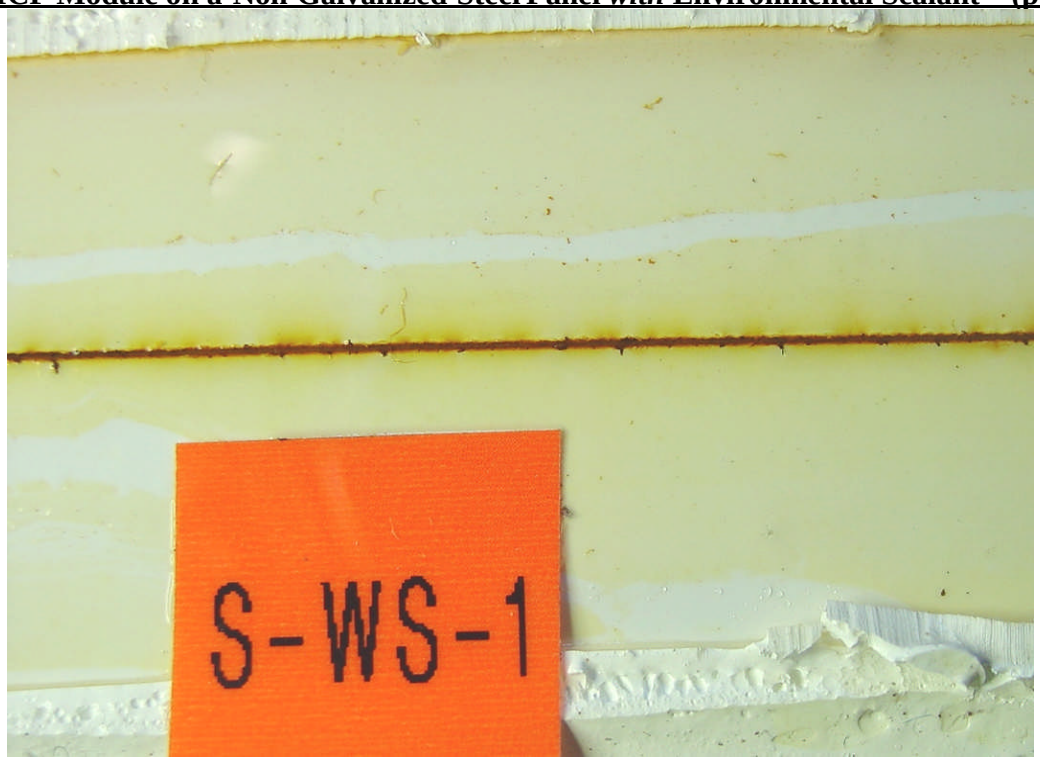
ASSI ICP Module on a Non-Galvanized Steel Panel *without* Environmental Sealant – (post#3)



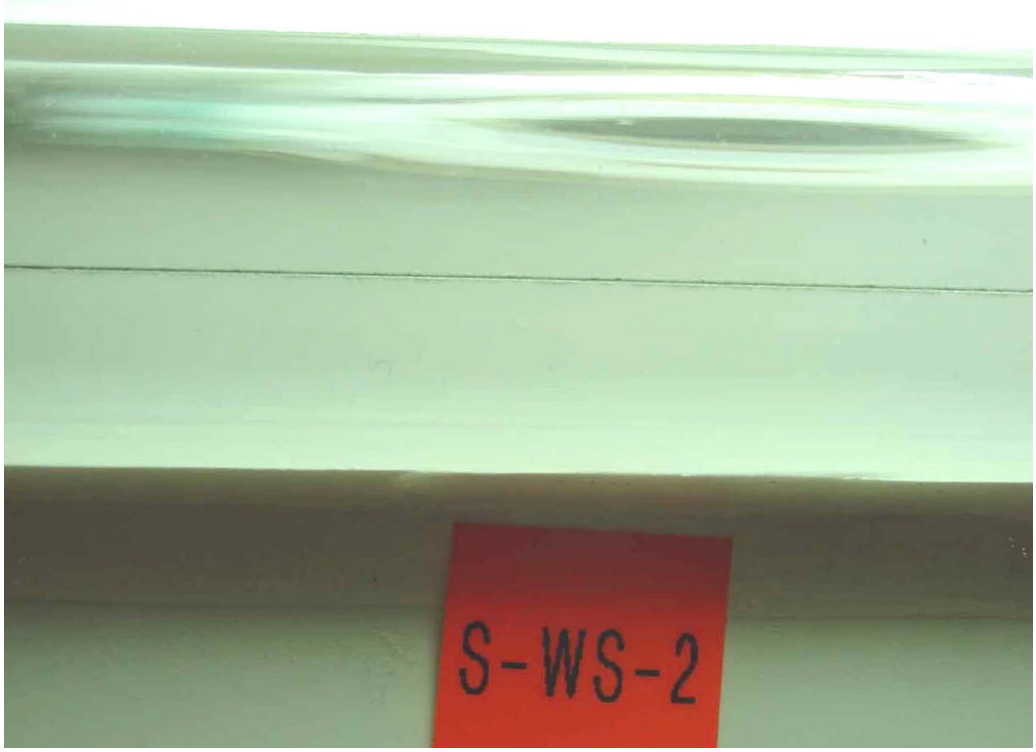
ASSI ICP Module on a Non-Galvanized Steel Panel *with* Environmental Sealant – (pre#1)



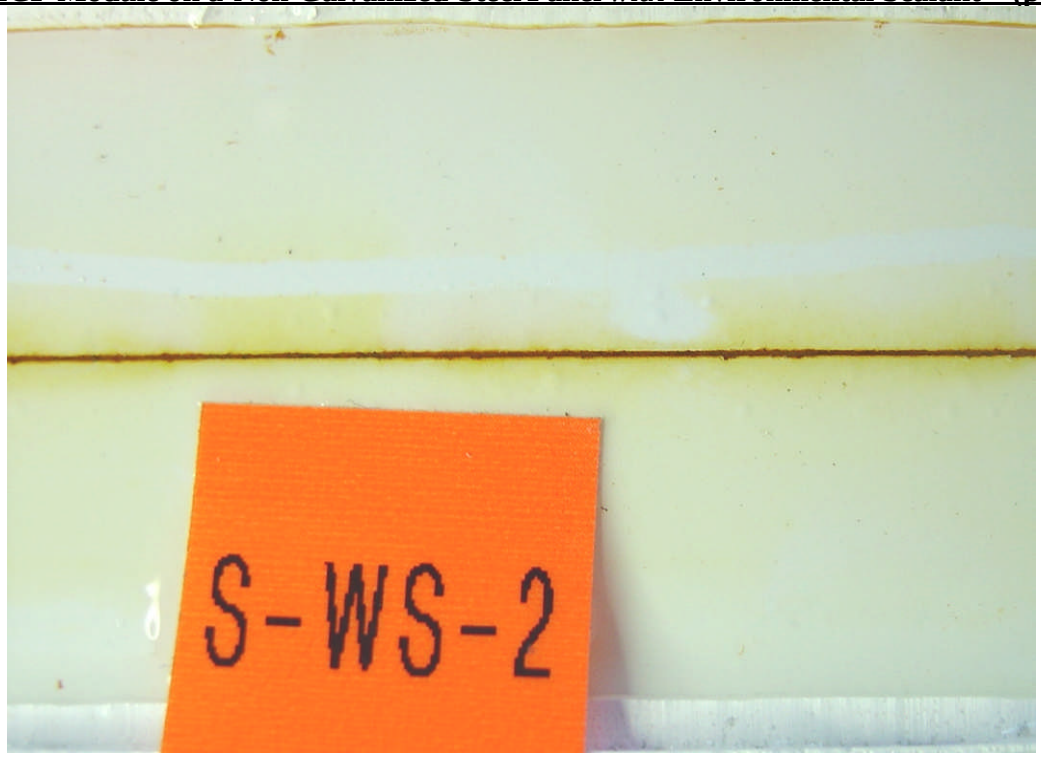
ASSI ICP Module on a Non-Galvanized Steel Panel *with* Environmental Sealant – (post#1)



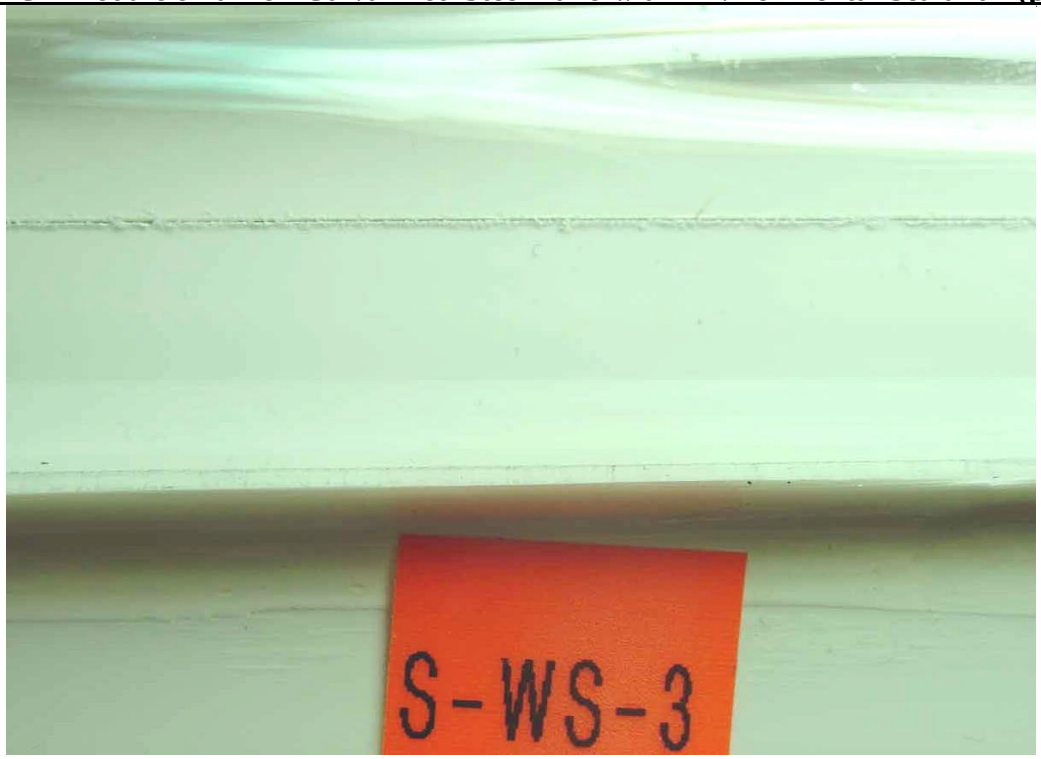
ASSI ICP Module on a Non-Galvanized Steel Panel *with* Environmental Sealant – (pre#2)



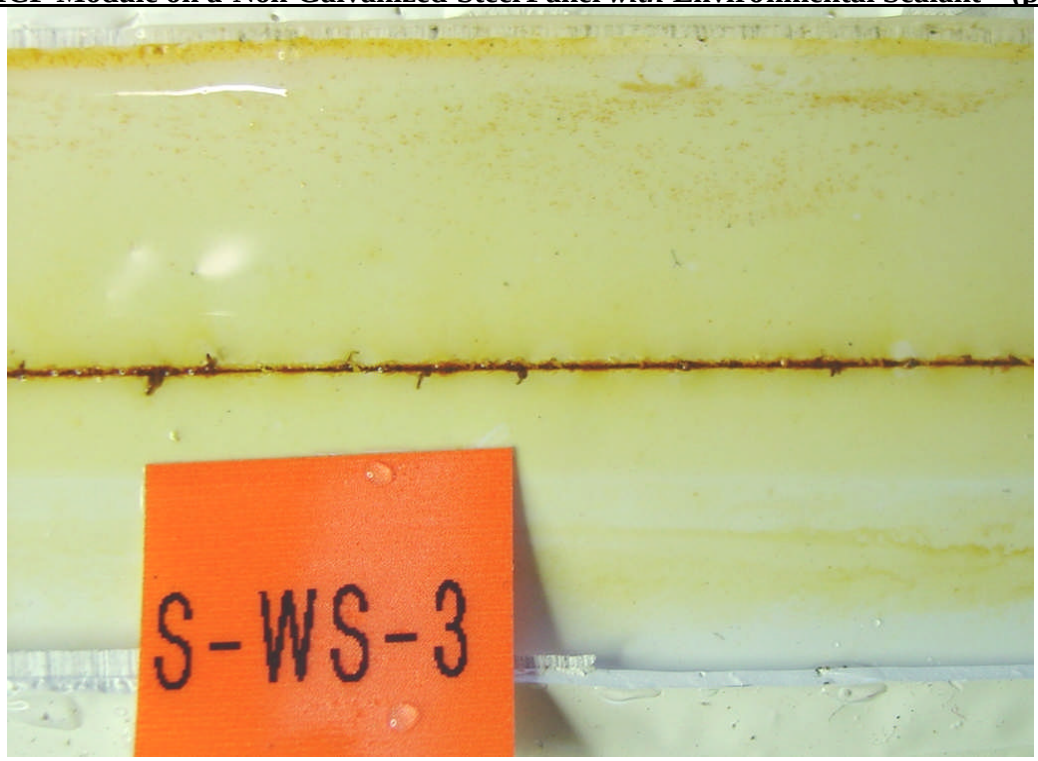
ASSI ICP Module on a Non-Galvanized Steel Panel *with* Environmental Sealant – (post#2)



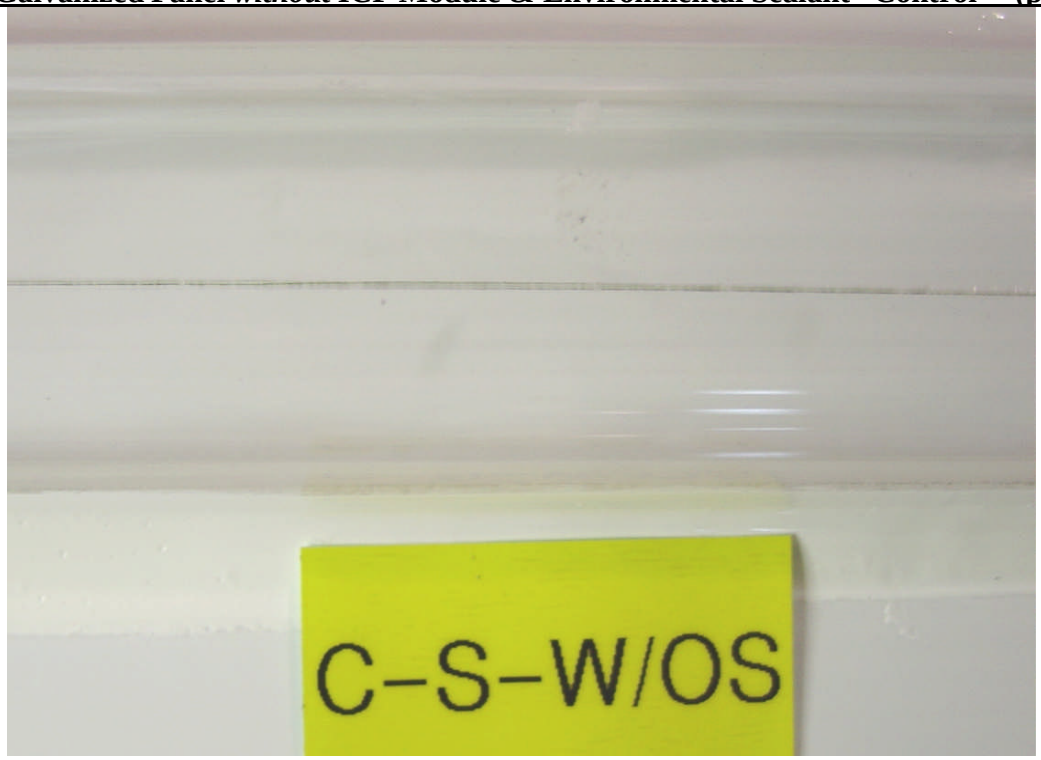
ASSI ICP Module on a Non-Galvanized Steel Panel *with* Environmental Sealant – (pre#3)



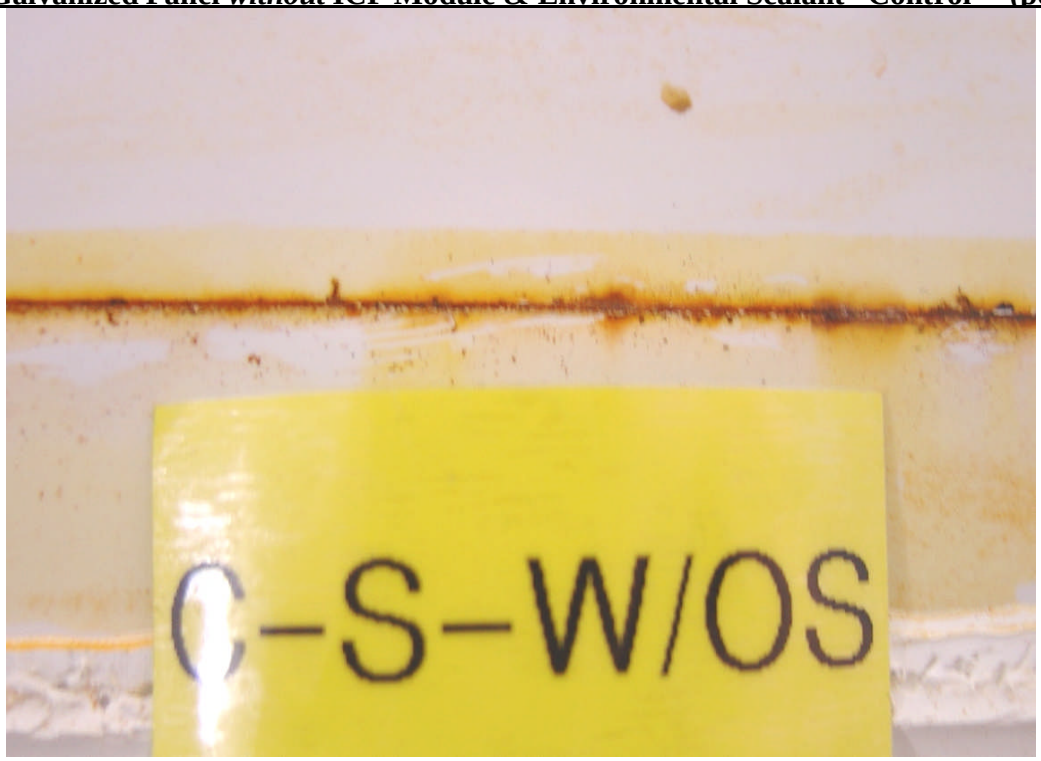
ASSI ICP Module on a Non-Galvanized Steel Panel *with* Environmental Sealant – (post#3)



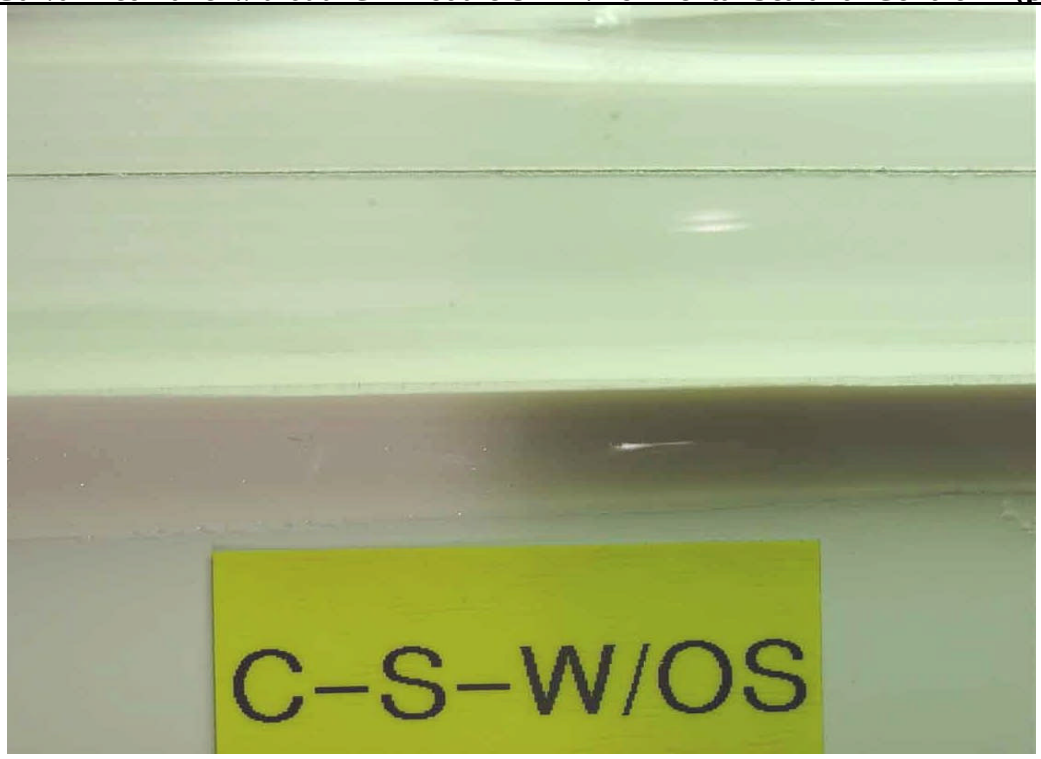
Non-Galvanized Panel *without* ICP Module & Environmental Sealant "Control"– (pre#1)



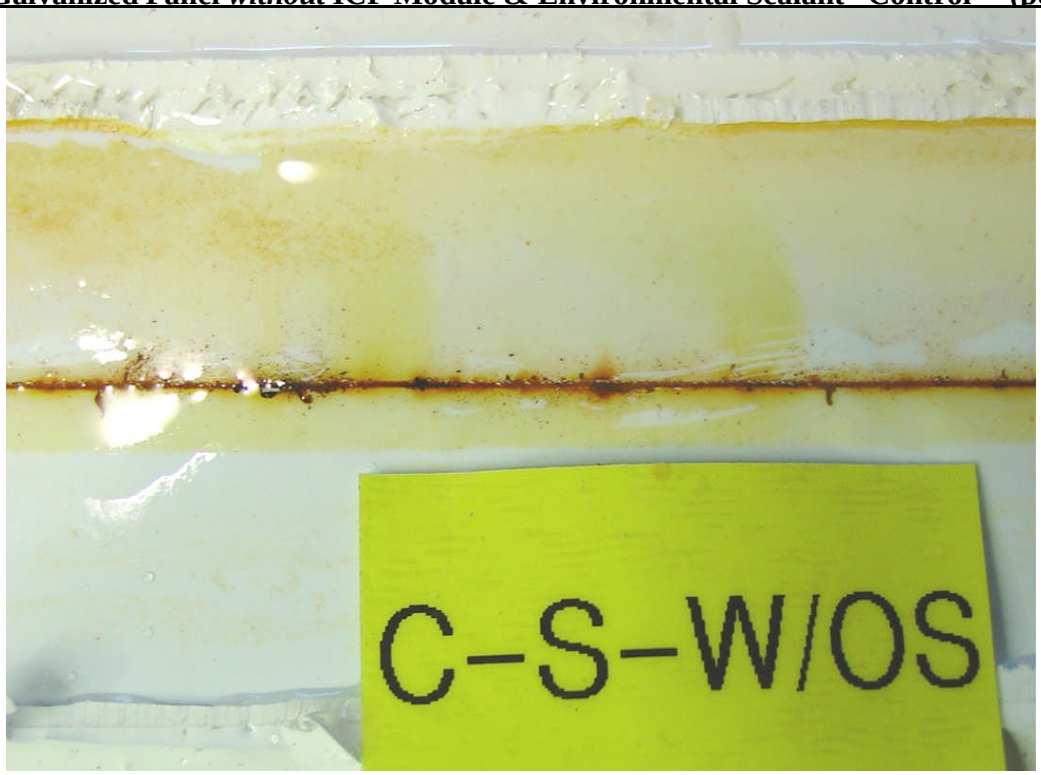
Non-Galvanized Panel *without* ICP Module & Environmental Sealant "Control"– (post#1)



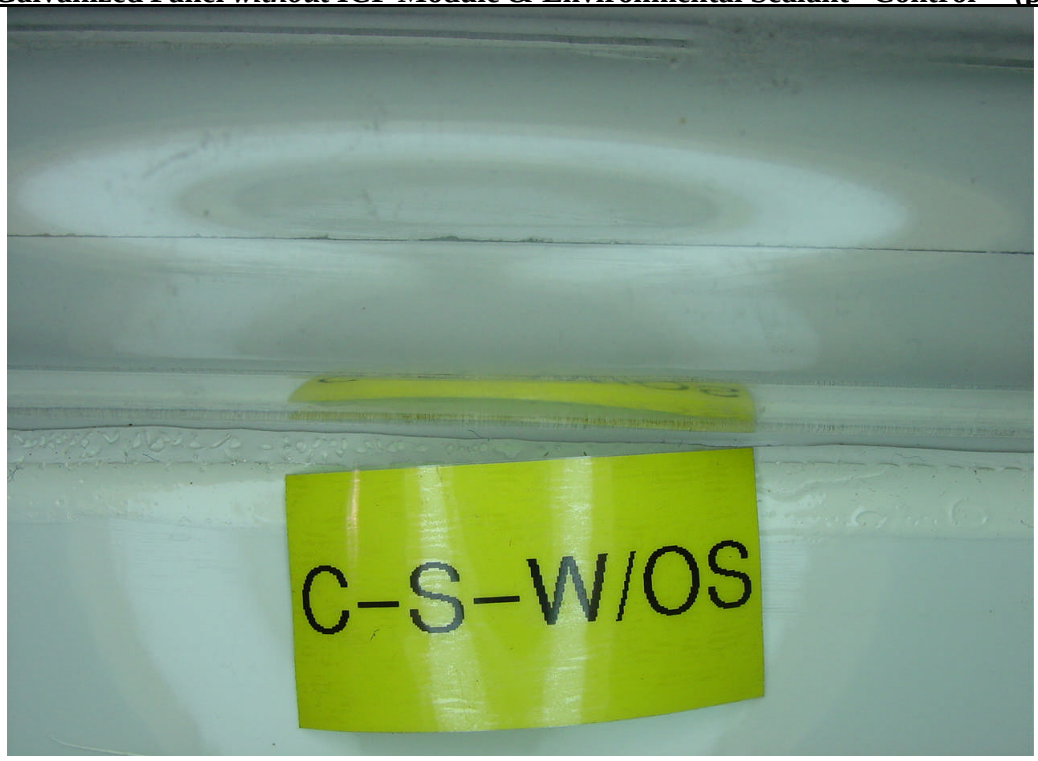
Non-Galvanized Panel *without* ICP Module & Environmental Sealant "Control"– (pre#2)



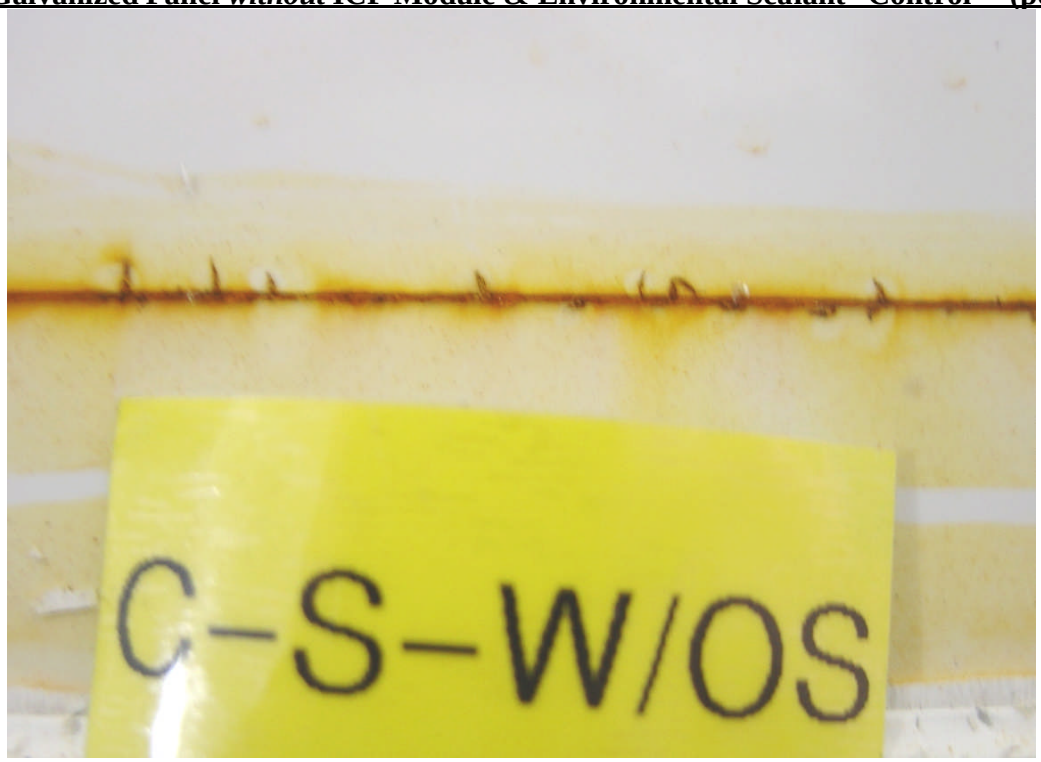
Non-Galvanized Panel *without* ICP Module & Environmental Sealant "Control"– (post#2)



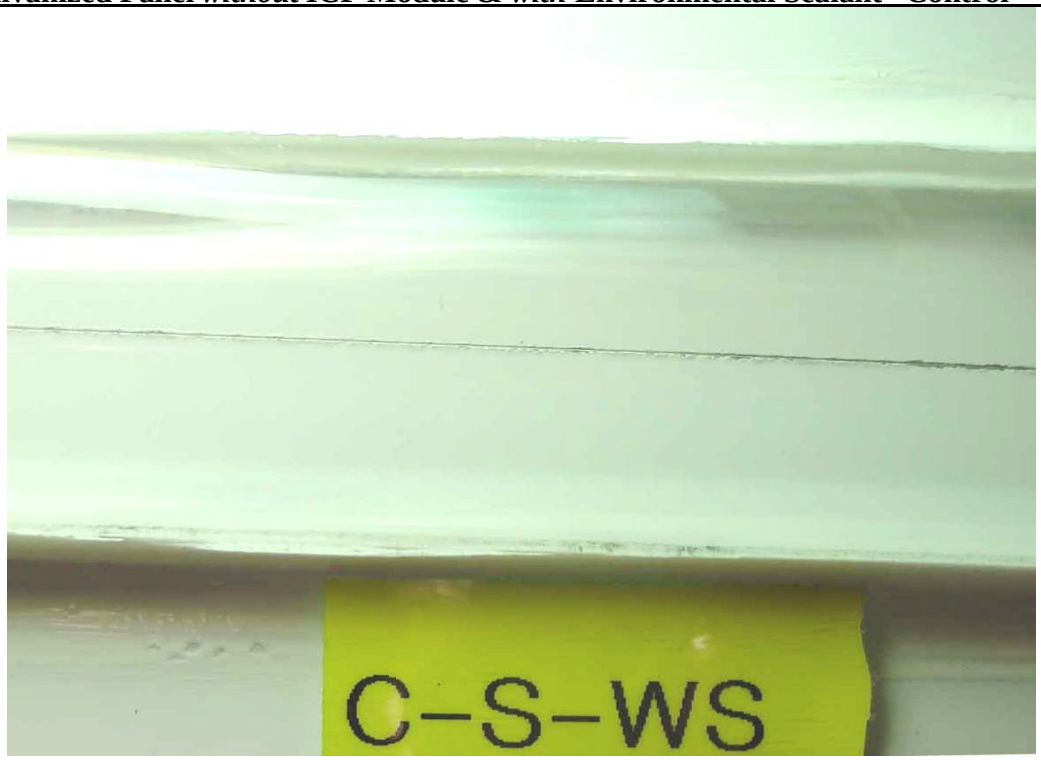
Non-Galvanized Panel *without* ICP Module & Environmental Sealant "Control"– (pre#3)



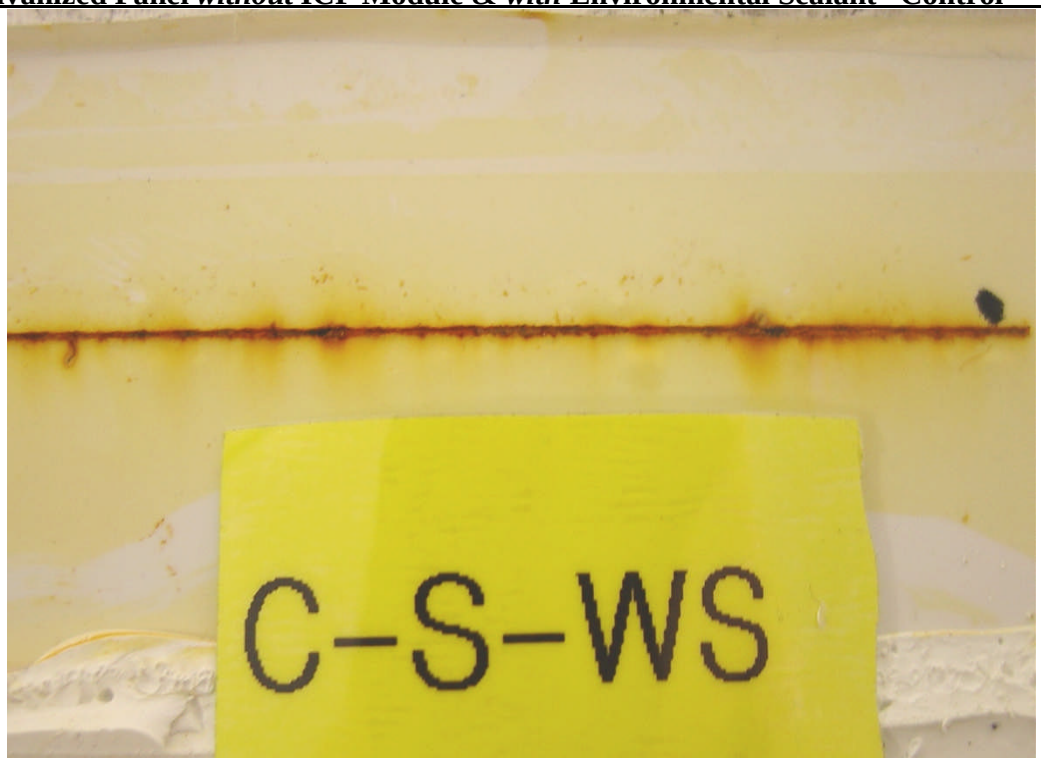
Non-Galvanized Panel *without* ICP Module & Environmental Sealant "Control"– (post#3)



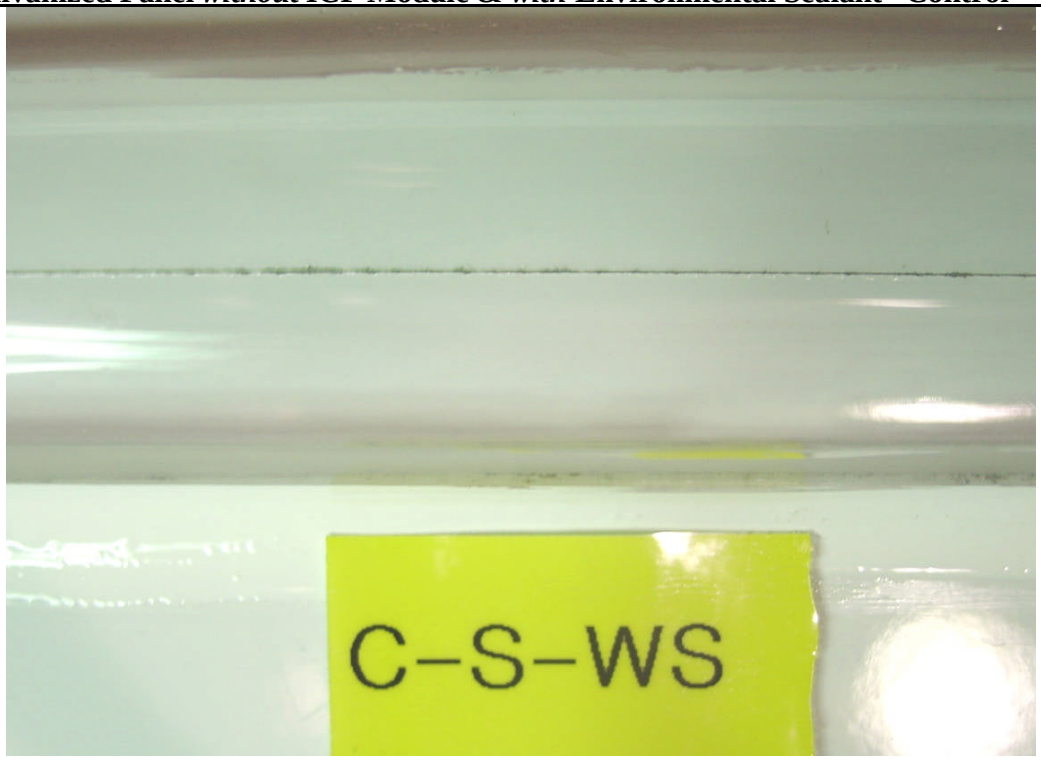
Non-Galvanized Panel *without* ICP Module & *with* Environmental Sealant "Control"– (pre#1)



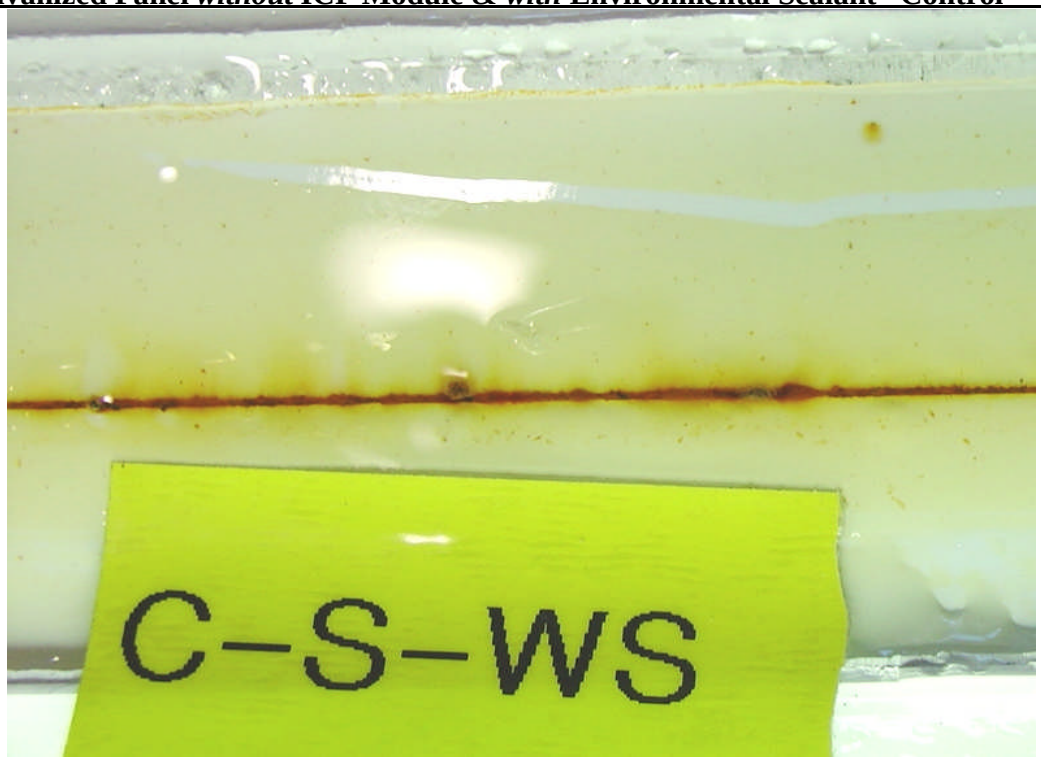
Non-Galvanized Panel *without* ICP Module & *with* Environmental Sealant "Control"– (post#1)



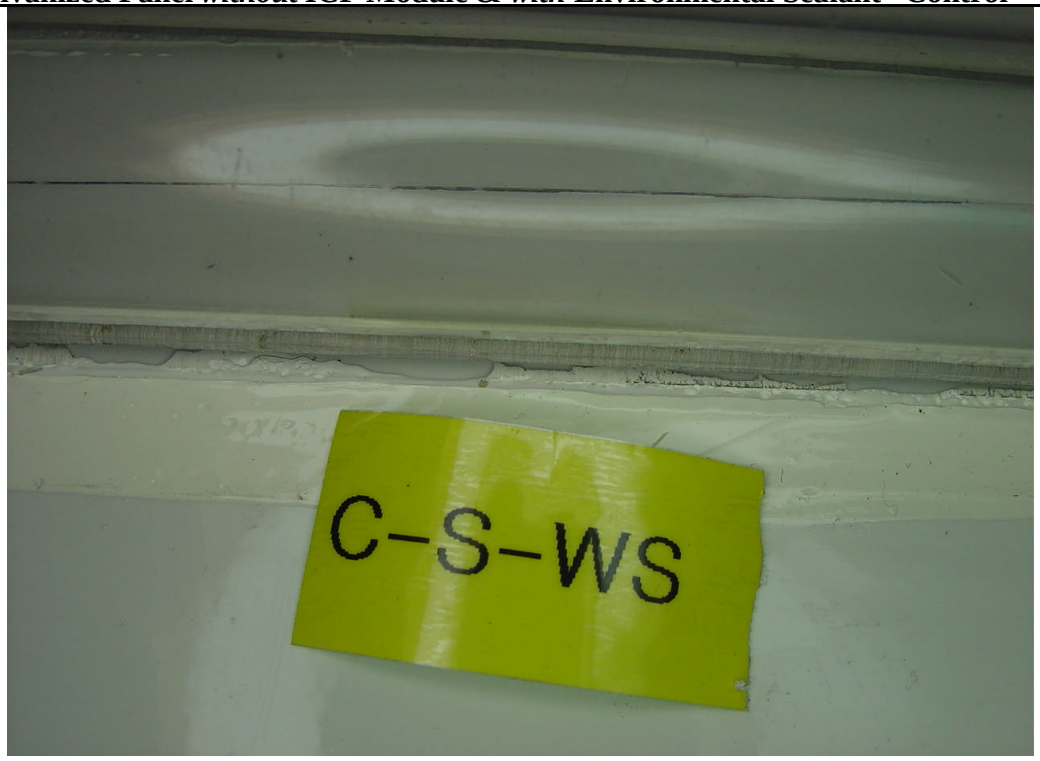
Non-Galvanized Panel *without* ICP Module & *with* Environmental Sealant "Control"– (pre#2)



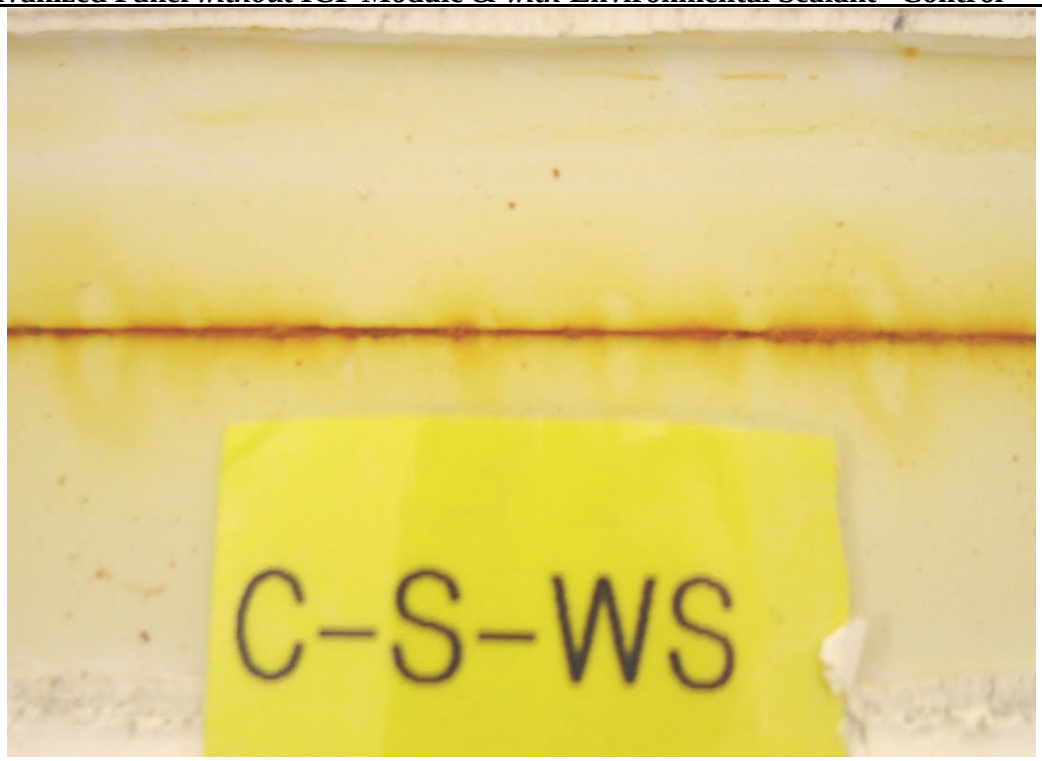
Non-Galvanized Panel *without* ICP Module & *with* Environmental Sealant "Control"– (post#2)



Non-Galvanized Panel *without* ICP Module & *with* Environmental Sealant "Control"– (pre#3)



Non-Galvanized Panel *without* ICP Module & *with* Environmental Sealant "Control"– (post#3)



Day	HRS:	Source		Panel #1	Panel #2	Panel #3	Panel #4	Panel #5	Panel #6
				Cntrl Galvinized WO-Sealent (#1)	Cntrl Galvinized WO-Sealent (#2)	Cntrl Galvinized WO-Sealent (#3)	Galvinized WO-Sealent (#1)	Galvinized WO-Sealent (#2)	Galvinized WO-Sealent (#3)
		(I) amps	Volts	Volts	Volts	Volts	Volts	Volts	Volts
1/22/2007	0	0.884	12.78	-0.7924	-0.8006	-0.7989	-0.9026	-0.8853	-0.8999
1/23/2007	15.5	0.882	12.8	-0.7947	-0.7955	-0.7979	-0.8964	-0.8784	-0.8978
1/23/2007	17.5	0.883	12.79	-0.7956	-0.7962	-0.7989	-0.8977	-0.8784	-0.8985
1/23/2007	19.75	0.883	12.79	-0.7992	-0.7949	-0.8002	-0.8970	-0.8765	-0.8972
1/23/2007	21.5	0.882	12.8	-0.7993	-0.7959	-0.8006	-0.8977	-0.8778	-0.8981
1/23/2007	24.83	0.883	12.79	-0.7979	-0.7960	-0.8000	-0.8971	-0.8780	-0.8988
1/24/2007	39	0.884	12.78	-0.8011	-0.7964	-0.8013	-0.8979	-0.8803	-0.8969
1/24/2007	40.75	0.883	12.79	-0.8029	-0.7963	-0.8022	-0.8983	-0.8801	-0.8965
1/24/2007	43.25	0.883	12.79	-0.8011	-0.7944	-0.8004	-0.8965	-0.8781	-0.8947
1/24/2007	46.75	0.883	12.79	-0.8009	-0.7964	-0.8013	-0.8978	-0.8799	-0.8976
1/24/2007	48.08	0.883	12.79	-0.8002	-0.7963	-0.8007	-0.8974	-0.8805	-0.8969
1/25/2007	63.08	0.882	12.8	-0.7986	-0.7957	-0.8003	-0.8990	-0.8773	-0.8967
1/25/2007	68.5	0.882	12.8	-0.7983	-0.7987	-0.8013	-0.9028	-0.8817	-0.8977
1/25/2007	70.25	0.883	12.79	-0.7975	-0.7996	-0.8013	-0.9032	-0.8827	-0.8989
1/25/2007	71.25	0.883	12.79	-0.7968	-0.7989	-0.8005	-0.9014	-0.8824	-0.8988
1/25/2007	72.25	0.883	12.79	-0.7983	-0.7993	-0.8016	-0.9023	-0.8822	-0.8993
1/26/2007	87	0.883	12.79	-0.8008	-0.8003	-0.8036	-0.9051	-0.8823	-0.8994
1/26/2007	89.5	0.884	12.78	-0.7995	-0.8007	-0.8028	-0.9042	-0.8839	-0.8999
1/26/2007	94.25	0.884	12.78	-0.7993	-0.8021	-0.8036	-0.9073	-0.8846	-0.9003
1/26/2007	95.25	0.883	12.79	-0.7985	-0.8021	-0.8033	-0.9075	-0.8844	-0.9005
1/26/2007	96	0.883	12.79	-0.8077	-0.8019	-0.8077	-0.9066	-0.8844	-0.9006
1/29/2007	159.17	0.883	12.79	-0.8012	-0.8075	-0.8080	-0.9130	-0.8873	-0.9083
1/29/2007	160.83	0.883	12.79	-0.8001	-0.8060	-0.8069	-0.9110	-0.8850	-0.9081
1/29/2007	163.75	0.883	12.79	-0.8001	-0.8054	-0.8067	-0.9102	-0.8839	-0.9082
1/29/2007	166.17	0.883	12.79	-0.7982	-0.8053	-0.8053	-0.9093	-0.8851	-0.9075
1/29/2007	167.17	0.883	12.79	-0.7996	-0.8064	-0.8065	-0.9104	-0.8868	-0.9081
1/30/2007	183.08	0.882	12.8	-0.8013	-0.8077	-0.8080	-0.9119	-0.8881	-0.9092
1/30/2007	189.75	0.882	12.8	-0.8028	-0.8061	-0.8079	-0.9098	-0.8862	-0.9082
1/30/2007	191.08	0.883	12.79	-0.8019	-0.8051	-0.8070	-0.9086	-0.8853	-0.9073
1/30/2007	192.25	0.883	12.79	-0.8020	-0.8058	-0.8073	-0.9095	-0.8861	-0.9077
1/31/2007	207.08	0.883	12.79	-0.8039	-0.8074	-0.8093	-0.9111	-0.8869	-0.9103
1/31/2007	209.17	0.883	12.79	-0.8048	-0.8066	-0.8095	-0.9106	-0.8856	-0.9095
1/31/2007	212	0.884	12.78	-0.8047	-0.8154	-0.8134	-0.9182	-0.8964	-0.9177
1/31/2007	213.5	0.885	12.77	-0.8056	-0.8102	-0.8097	-0.9101	-0.8970	-0.9095
2/1/2007	231.08	0.884	12.78	-0.8078	-0.8074	-0.8107	-0.9111	-0.8889	-0.9081
2/1/2007	234.25	0.884	12.78	-0.8070	-0.8061	-0.8098	-0.9094	-0.8875	-0.9075
2/1/2007	235.75	0.883	12.79	-0.8070	-0.8064	-0.8100	-0.9106	-0.8873	-0.9074
2/1/2007	238.5	0.883	12.79	-0.7957	-0.8068	-0.8046	-0.9111	-0.8874	-0.9078
2/2/2007	255.08	0.882	12.8	-0.8078	-0.8072	-0.8110	-0.9116	-0.8874	-0.9086
2/2/2007	257.5	0.882	12.8	-0.8071	-0.8082	-0.8115	-0.9142	-0.8871	-0.9093
2/2/2007	261.83	0.883	12.79	-0.8090	-0.8073	-0.8118	-0.9125	-0.8869	-0.9085
2/2/2007	262.5	0.883	12.79	-0.8087	-0.8071	-0.8116	-0.9124	-0.8865	-0.9085
2/5/2007	327.25	0.883	12.79	-0.8115	-0.8090	-0.8140	-0.9149	-0.8884	-0.9098
2/5/2007	328.5	0.884	12.78	-0.8109	-0.8085	-0.8135	-0.9140	-0.8873	-0.9102
2/5/2007	331	0.884	12.78	-0.8098	-0.8076	-0.8122	-0.9129	-0.8875	-0.9083
2/5/2007	332.75	0.884	12.78	-0.8099	-0.8078	-0.8125	-0.9135	-0.8871	-0.9087
2/5/2007	335.25	0.884	12.78	-0.8096	-0.8073	-0.8122	-0.9125	-0.8865	-0.9089
2/6/2007	351.17	0.882	12.8	-0.8107	-0.8084	-0.8128	-0.9145	-0.8897	-0.9070
2/6/2007	353.33	0.883	12.79	-0.8107	-0.8079	-0.8125	-0.9137	-0.8891	-0.9068
2/6/2007	355	0.882	12.8	-0.8102	-0.8075	-0.8121	-0.9130	-0.8888	-0.9068
2/6/2007	356.5	0.882	12.8	-0.8093	-0.8073	-0.8115	-0.9126	-0.8888	-0.9066
2/6/2007	359	0.882	12.8	-0.8089	-0.8078	-0.8116	-0.9130	-0.8889	-0.9076
2/7/2007	375.17	0.884	12.78	-0.8110	-0.8093	-0.8130	-0.9139	-0.8921	-0.9080
2/7/2007	377.25	0.883	12.79	-0.8109	-0.8090	-0.8130	-0.9143	-0.8909	-0.9079
2/7/2007	379.75	0.883	12.79	-0.8100	-0.8115	-0.8122	-0.9137	-0.8999	-0.9070
2/7/2007	381	0.883	12.79	-0.8117	-0.8123	-0.8135	-0.9145	-0.9007	-0.9078
2/7/2007	383.75	0.883	12.79	-0.8103	-0.8089	-0.8127	-0.9144	-0.8908	-0.9076
2/8/2007	399	0.883	12.79	-0.8112	-0.8104	-0.8136	-0.9154	-0.8934	-0.9084
2/8/2007	400.92	0.883	12.79	-0.8106	-0.8094	-0.8130	-0.9151	-0.8916	-0.9076
2/8/2007	403.75	0.883	12.79	-0.8106	-0.8081	-0.8125	-0.9138	-0.8899	-0.9067
2/8/2007	405.5	0.883	12.79	-0.8109	-0.8085	-0.8128	-0.9142	-0.8903	-0.9069
2/8/2007	408	0.883	12.79	-0.8117	-0.8079	-0.8127	-0.9138	-0.8903	-0.9055
2/9/2007	423	0.883	12.79	-0.8117	-0.8099	-0.8137	-0.9154	-0.8927	-0.9077
2/9/2007	427	0.884	12.78	-0.8109	-0.8083	-0.8123	-0.9133	-0.8917	-0.9060
2/9/2007	429	0.884	12.78	-0.8101	-0.8088	-0.8123	-0.9134	-0.8916	-0.9073
2/12/2007	471.17	0.884	12.78	-0.8151	-0.8091	-0.8147	-0.9140	-0.8929	-0.9065
2/12/2007	472.83	0.884	12.78	-0.8148	-0.8091	-0.8145	-0.9138	-0.8933	-0.9063
2/12/2007	476.92	0.884	12.78	-0.8153	-0.8087	-0.8148	-0.9144	-0.8916	-0.9062
2/12/2007	477.75	0.883	12.79	-0.8157	-0.8084	-0.8148	-0.9144	-0.8915	-0.9054
2/12/2007	480.5	0.883	12.79	-0.8142	-0.8084	-0.8141	-0.9137	-0.8913	-0.9061
2/13/2007	495	0.883	12.79	-0.8142	-0.8089	-0.8139	-0.9142	-0.8939	-0.9047
2/13/2007	496.5	0.882	12.8	-0.8139	-0.8081	-0.8133	-0.9134	-0.8930	-0.9040
2/13/2007	500	0.883	12.79	-0.8141	-0.8078	-0.8132	-0.9133	-0.8930	-0.9031
2/13/2007	501.5	0.883	12.79	-0.8137	-0.8081	-0.8132	-0.9140	-0.8928	-0.9034
2/13/2007	503.58	0.883	12.79	-0.8121	-0.8080	-0.8125	-0.9141	-0.8925	-0.9035
2/14/2007	519.25	0.883	12.79	-0.8142	-0.8086	-0.8134	-0.9145	-0.8947	-0.9025
2/14/2007	523.5	0.883	12.79	-0.8144	-0.8092	-0.8140	-0.9136	-0.8946	-0.9054
2/14/2007	525.25	0.884	12.78	-0.8137	-0.8088	-0.8137	-0.9137	-0.8934	-0.9054
2/15/2007	543.25	0.884	12.78	-0.8126	-0.8099	-0.8138	-0.9154	-0.8936	-0.9066
2/15/2007	545.25	0.883	12.79	-0.8119	-0.8098	-0.8136	-0.9152	-0.8930	-0.9072
2/15/2007	548.75	0.883	12.79	-0.8118	-0.8088	-0.8129	-0.9143	-0.8928	-0.9054
2/15/2007	550.17	0.882	12.8	-0.8123	-0.8086	-0.8129	-0.9136	-0.8928	-0.9053
2/15/2007	552	0.882	12.8	-0.8130	-0.8085	-0.8132	-0.9137	-0.8928	-0.9049
2/16/2007	567.25	0.883	12.79	-0.8149	-0.8116	-0.8161	-0.9152	-0.8943	-0.9114
2/16/2007	569.25	0.883	12.79	-0.8146	-0.8115	-0.8158	-0.9148	-0.8946	-0.9111
2/16/2007	571.25	0.883	12.79	-0.8143	-0.8115	-0.8157	-0.9144	-0.8944	-0.9117
2/16/2007	573.45	0.884	12.78	-0.8117	-0.8112	-0.8145	-0.9149	-0.8933	-0.9115
2/16/2007	576	0.883	12.79	-0.8124	-0.8106	-0.8145	-0.9143	-0.8928	-0.9106
2/19/2007	615	0.883	12.79	-0.8148	-0.8137	-0.8178	-0.9176	-0.8939	-0.9157

Day	HRS:	Source			Panel #7	Panel #8	Panel #9	Panel #10	Panel #11	Panel #12
					Cntrl Galvinized W-Sealent (#1)	Cntrl Galvinized W-Sealent (#2)	Cntrl Galvinized W-Sealent (#3)	Galvinized W-Sealent (#1)	Galvinized W-Sealent (#2)	Galvinized W-Sealent (#3)
		(I) amps	Volts		Volts	Volts	Volts	Volts	Volts	Volts
1/22/2007	0	0.884	12.78		-0.8681	-0.8580	-0.8626	-0.9613	-0.9685	-0.9558
1/23/2007	15.5	0.882	12.8		-0.8462	-0.8450	-0.8498	-0.9285	-0.9373	-0.9428
1/23/2007	17.5	0.883	12.79		-0.8488	-0.8442	-0.8404	-0.9391	-0.9406	-0.9450
1/23/2007	19.75	0.883	12.79		-0.8464	-0.8442	-0.8380	-0.9367	-0.9380	-0.9450
1/23/2007	21.5	0.882	12.8		-0.8468	-0.8444	-0.8366	-0.9304	-0.9385	-0.9452
1/23/2007	24.83	0.883	12.79		-0.8432	-0.8416	-0.8402	-0.9389	-0.9373	-0.9494
1/24/2007	39	0.884	12.78		-0.8234	-0.8346	-0.8218	-0.9205	-0.9312	-0.9413
1/24/2007	40.75	0.883	12.79		-0.8217	-0.8310	-0.8194	-0.9181	-0.9317	-0.9388
1/24/2007	43.25	0.883	12.79		-0.8172	-0.8339	-0.8160	-0.9147	-0.9309	-0.9347
1/24/2007	46.75	0.883	12.79		-0.8172	-0.8339	-0.8199	-0.9186	-0.9315	-0.9327
1/24/2007	48.08	0.883	12.79		-0.8159	-0.8328	-0.8164	-0.9151	-0.9310	-0.9306
1/25/2007	63.08	0.882	12.8		-0.8148	-0.8198	-0.8086	-0.9053	-0.9227	-0.9176
1/25/2007	68.5	0.882	12.8		-0.8162	-0.8192	-0.8096	-0.8797	-0.9301	-0.9170
1/25/2007	70.25	0.883	12.79		-0.8163	-0.8195	-0.8110	-0.9107	-0.9329	-0.9173
1/25/2007	71.25	0.883	12.79		-0.8150	-0.8187	-0.8113	-0.9100	-0.9320	-0.9165
1/25/2007	72.25	0.883	12.79		-0.8160	-0.8192	-0.8116	-0.9113	-0.9344	-0.9170
1/26/2007	87	0.883	12.79		-0.8180	-0.8179	-0.8091	-0.9078	-0.9204	-0.9157
1/26/2007	89.5	0.884	12.78		-0.8186	-0.8175	-0.8100	-0.9087	-0.9198	-0.9153
1/26/2007	94.25	0.884	12.78		-0.8189	-0.8197	-0.8133	-0.9120	-0.9276	-0.9175
1/26/2007	95.25	0.883	12.79		-0.8184	-0.8175	-0.8134	-0.9154	-0.9263	-0.9153
1/26/2007	96	0.883	12.79		-0.8188	-0.8190	-0.8136	-0.9123	-0.9268	-0.9168
1/29/2007	159.17	0.883	12.79		-0.8227	-0.8196	-0.8126	-0.9113	-0.9263	-0.9198
1/29/2007	160.83	0.883	12.79		-0.8230	-0.8186	-0.8111	-0.9098	-0.9260	-0.9192
1/29/2007	163.75	0.883	12.79		-0.8233	-0.8196	-0.8117	-0.9104	-0.9252	-0.9174
1/29/2007	166.17	0.883	12.79		-0.8229	-0.8193	-0.8137	-0.9124	-0.9249	-0.9171
1/29/2007	167.17	0.883	12.79		-0.8238	-0.8197	-0.8139	-0.9126	-0.9253	-0.9175
1/30/2007	183.08	0.882	12.8		-0.8243	-0.8212	-0.8127	-0.9154	-0.9238	-0.9190
1/30/2007	189.75	0.882	12.8		-0.8218	-0.8218	-0.8128	-0.9115	-0.9210	-0.9196
1/30/2007	191.08	0.883	12.79		-0.8209	-0.8206	-0.8107	-0.9094	-0.9186	-0.9184
1/30/2007	192.25	0.883	12.79		-0.8217	-0.8212	-0.8117	-0.9104	-0.9200	-0.9190
1/31/2007	207.08	0.883	12.79		-0.8232	-0.8227	-0.8113	-0.9100	-0.9261	-0.9205
1/31/2007	209.17	0.883	12.79		-0.8234	-0.8227	-0.8110	-0.9097	-0.9248	-0.9205
1/31/2007	212	0.884	12.78		-0.8224	-0.8204	-0.8110	-0.9197	-0.9375	-0.9282
1/31/2007	213.5	0.885	12.77		-0.8225	-0.8217	-0.8133	-0.9120	-0.9270	-0.9195
2/1/2007	231.08	0.884	12.78		-0.8219	-0.8229	-0.8147	-0.9134	-0.9279	-0.9207
2/1/2007	234.25	0.884	12.78		-0.8214	-0.8220	-0.8131	-0.9118	-0.9243	-0.9198
2/1/2007	235.75	0.883	12.79		-0.8216	-0.8225	-0.8134	-0.9121	-0.9239	-0.9203
2/1/2007	238.5	0.883	12.79		-0.8212	-0.8219	-0.8148	-0.9135	-0.9230	-0.9197
2/2/2007	255.08	0.882	12.8		-0.8212	-0.8224	-0.8160	-0.9147	-0.9284	-0.9202
2/2/2007	257.5	0.882	12.8		-0.8218	-0.8223	-0.8159	-0.9146	-0.9284	-0.9201
2/2/2007	261.83	0.883	12.79		-0.8221	-0.8221	-0.8151	-0.9138	-0.9283	-0.9199
2/2/2007	262.5	0.883	12.79		-0.8218	-0.8219	-0.8147	-0.9134	-0.9278	-0.9197
2/5/2007	327.25	0.883	12.79		-0.8209	-0.8248	-0.8175	-0.9162	-0.9325	-0.9236
2/5/2007	328.5	0.884	12.78		-0.8213	-0.8234	-0.8175	-0.9162	-0.9325	-0.9232
2/5/2007	331	0.884	12.78		-0.8185	-0.8242	-0.8165	-0.9152	-0.9323	-0.9220
2/5/2007	332.75	0.884	12.78		-0.8193	-0.8246	-0.8167	-0.9154	-0.9323	-0.9224
2/5/2007	335.25	0.884	12.78		-0.8194	-0.8246	-0.8168	-0.9155	-0.9313	-0.9224
2/6/2007	351.17	0.882	12.8		-0.8208	-0.8241	-0.8169	-0.9156	-0.9317	-0.9219
2/6/2007	353.33	0.883	12.79		-0.8204	-0.8241	-0.8175	-0.9162	-0.9314	-0.9219
2/6/2007	355	0.882	12.8		-0.8209	-0.8240	-0.8180	-0.9167	-0.9309	-0.9218
2/6/2007	356.5	0.882	12.8		-0.8208	-0.8238	-0.8178	-0.9165	-0.9295	-0.9216
2/6/2007	359	0.882	12.8		-0.8200	-0.8242	-0.8160	-0.9147	-0.9287	-0.9220
2/7/2007	375.17	0.884	12.78		-0.8200	-0.8252	-0.8168	-0.9155	-0.9333	-0.9230
2/7/2007	377.25	0.883	12.79		-0.8200	-0.8245	-0.8172	-0.9159	-0.9331	-0.9223
2/7/2007	379.75	0.883	12.79		-0.8195	-0.8238	-0.8144	-0.9131	-0.9317	-0.9216
2/7/2007	381	0.883	12.79		-0.8208	-0.8244	-0.8167	-0.9154	-0.9335	-0.9222
2/7/2007	383.75	0.883	12.79		-0.8199	-0.8238	-0.8163	-0.9150	-0.9332	-0.9216
2/8/2007	399	0.883	12.79		-0.8217	-0.8259	-0.8160	-0.9147	-0.9349	-0.9237
2/8/2007	400.92	0.883	12.79		-0.8217	-0.8249	-0.8147	-0.9134	-0.9349	-0.9227
2/8/2007	403.75	0.883	12.79		-0.8212	-0.8247	-0.8137	-0.9124	-0.9324	-0.9225
2/8/2007	405.5	0.883	12.79		-0.8215	-0.8259	-0.8147	-0.9134	-0.9316	-0.9237
2/8/2007	408	0.883	12.79		-0.8209	-0.8251	-0.8142	-0.9109	-0.9301	-0.9229
2/9/2007	423	0.883	12.79		-0.8207	-0.8259	-0.8146	-0.9133	-0.9332	-0.9237
2/9/2007	427	0.884	12.78		-0.8196	-0.8251	-0.8148	-0.9135	-0.9303	-0.9229
2/9/2007	429	0.884	12.78		-0.8207	-0.8256	-0.8160	-0.9147	-0.9311	-0.9234
2/12/2007	471.17	0.884	12.78		-0.8198	-0.8262	-0.8144	-0.9131	-0.9323	-0.9240
2/12/2007	472.83	0.884	12.78		-0.8191	-0.8260	-0.8136	-0.9083	-0.9313	-0.9238
2/12/2007	476.92	0.884	12.78		-0.8208	-0.8267	-0.8135	-0.9122	-0.9323	-0.9245
2/12/2007	477.75	0.883	12.79		-0.8202	-0.8262	-0.8131	-0.9118	-0.9313	-0.9240
2/12/2007	480.5	0.883	12.79		-0.8201	-0.8260	-0.8145	-0.9132	-0.9327	-0.9238
2/13/2007	495	0.883	12.79		-0.8189	-0.8267	-0.8135	-0.9122	-0.9336	-0.9245
2/13/2007	496.5	0.882	12.8		-0.8186	-0.8258	-0.8126	-0.9113	-0.9321	-0.9236
2/13/2007	500	0.883	12.79		-0.8193	-0.8255	-0.8152	-0.9139	-0.9318	-0.9233
2/13/2007	501.5	0.883	12.79		-0.8201	-0.8260	-0.8144	-0.9131	-0.9327	-0.9238
2/13/2007	503.58	0.883	12.79		-0.8198	-0.8260	-0.8156	-0.9143	-0.9331	-0.9238
2/14/2007	519.25	0.883	12.79		-0.8192	-0.8269	-0.8162	-0.9149	-0.9335	-0.9247
2/14/2007	523.5	0.883	12.79		-0.8187	-0.8270	-0.8153	-0.9140	-0.9332	-0.9248
2/14/2007	525.25	0.884	12.78		-0.8188	-0.8267	-0.8159	-0.9146	-0.9331	-0.9245
2/15/2007	543.25	0.884	12.78		-0.8178	-0.8285	-0.8161	-0.9148	-0.9336	-0.9263
2/15/2007	545.25	0.883	12.79		-0.8173	-0.8281	-0.8134	-0.9121	-0.9321	-0.9259
2/15/2007	548.75	0.883	12.79		-0.8181	-0.8281	-0.8151	-0.9138	-0.9324	-0.9259
2/15/2007	550.17	0.882	12.8		-0.8183	-0.8277	-0.8140	-0.9127	-0.9319	-0.9255
2/15/2007	552	0.882	12.8		-0.8179	-0.8280	-0.8130	-0.9117	-0.9313	-0.9258
2/16/2007	567.25	0.883	12.79		-0.8186	-0.8282	-0.8136	-0.9123	-0.9315	-0.9260
2/16/2007	569.25	0.883	12.79		-0.8188	-0.8278	-0.8145	-0.9132	-0.9317	-0.9256
2/16/2007	571.25	0.883	12.79		-0.8191	-0.8280	-0.8150	-0.9137	-0.9328	-0.9258
2/16/2007	573.45	0.884	12.78		-0.8185	-0.8279	-0.8133	-0.9120	-0.9318	-0.9257
2/16/2007	576	0.883	12.79		-0.8177	-0.8286	-0.8133	-0.9120	-0.9328	-0.9264
2/19/2007	615	0.883	12.79		-0.8167	-0.8288	-0.8158	-0.9095	-0.9335	-0.9296

Day	HRS:	Source			Panel #13	Panel #14	Panel #15	Panel #16	Panel #17	Panel #18
					Cntrl Steel W-Sealent (#1)	Cntrl Steel W-Sealent (#2)	Cntrl Steel W-Sealent (#3)	Steel W-Sealent (#1)	Steel W-Sealent (#2)	Steel W-Sealent (#3)
		(I) amps	Volts		Volts	Volts	Volts	Volts	Volts	Volts
1/22/2007	0	0.884	12.78		-0.4288	-0.4257	-0.4307	-0.6261	-0.6198	-0.6101
1/23/2007	15.5	0.882	12.8		-0.5309	-0.5157	-0.5147	-0.7054	-0.7148	-0.6880
1/23/2007	17.5	0.883	12.79		-0.5289	-0.5165	-0.5183	-0.7095	-0.7179	-0.6915
1/23/2007	19.75	0.883	12.79		-0.5320	-0.5195	-0.5218	-0.7127	-0.7222	-0.6945
1/23/2007	21.5	0.882	12.8		-0.5339	-0.5228	-0.5249	-0.7163	-0.7233	-0.6991
1/23/2007	24.83	0.883	12.79		-0.5363	-0.5271	-0.5278	-0.7172	-0.7250	-0.7053
1/24/2007	39	0.884	12.78		-0.5503	-0.5404	-0.5452	-0.7264	-0.7552	-0.7180
1/24/2007	40.75	0.883	12.79		-0.5496	-0.5394	-0.5449	-0.7252	-0.7568	-0.7167
1/24/2007	43.25	0.883	12.79		-0.5522	-0.5417	-0.5475	-0.7266	-0.7612	-0.7186
1/24/2007	46.75	0.883	12.79		-0.5546	-0.5421	-0.5491	-0.7282	-0.7661	-0.7171
1/24/2007	48.08	0.883	12.79		-0.5546	-0.5417	-0.5496	-0.7292	-0.7674	-0.7162
1/25/2007	63.08	0.882	12.8		-0.5609	-0.5433	-0.5539	-0.7386	-0.7738	-0.7132
1/25/2007	68.5	0.882	12.8		-0.5609	-0.5433	-0.5552	-0.7400	-0.7763	-0.7132
1/25/2007	70.25	0.883	12.79		-0.5606	-0.5431	-0.5559	-0.7412	-0.7775	-0.7130
1/25/2007	71.25	0.883	12.79		-0.5597	-0.5421	-0.5559	-0.7410	-0.7786	-0.7120
1/25/2007	72.25	0.883	12.79		-0.5609	-0.5429	-0.5561	-0.7411	-0.7788	-0.7124
1/26/2007	87	0.883	12.79		-0.5595	-0.5394	-0.5567	-0.7458	-0.7816	-0.7068
1/26/2007	89.5	0.884	12.78		-0.5601	-0.5392	-0.5572	-0.7458	-0.7840	-0.7057
1/26/2007	94.25	0.884	12.78		-0.5604	-0.5388	-0.5582	-0.7482	-0.7859	-0.7046
1/26/2007	95.25	0.883	12.79		-0.5601	-0.5385	-0.5583	-0.7490	-0.7857	-0.7043
1/26/2007	96	0.883	12.79		-0.5600	-0.5383	-0.5585	-0.7477	-0.7879	-0.7040
1/29/2007	159.17	0.883	12.79		-0.5647	-0.5477	-0.5639	-0.7525	-0.7850	-0.7181
1/29/2007	160.83	0.883	12.79		-0.5648	-0.5475	-0.5635	-0.7526	-0.7843	-0.7177
1/29/2007	163.75	0.883	12.79		-0.5653	-0.5480	-0.5640	-0.7526	-0.7851	-0.7182
1/29/2007	166.17	0.883	12.79		-0.5656	-0.5482	-0.5638	-0.7529	-0.7843	-0.7182
1/29/2007	167.17	0.883	12.79		-0.5654	-0.5485	-0.5644	-0.7530	-0.7851	-0.7191
1/30/2007	183.08	0.882	12.8		-0.5667	-0.5511	-0.5669	-0.7572	-0.7847	-0.7229
1/30/2007	189.75	0.882	12.8		-0.5666	-0.5515	-0.5679	-0.7593	-0.7846	-0.7239
1/30/2007	191.08	0.883	12.79		-0.5651	-0.5506	-0.5671	-0.7587	-0.7831	-0.7236
1/30/2007	192.25	0.883	12.79		-0.5662	-0.5515	-0.5678	-0.7595	-0.7836	-0.7242
1/31/2007	207.08	0.883	12.79		-0.5681	-0.5547	-0.5702	-0.7615	-0.7845	-0.7287
1/31/2007	209.17	0.883	12.79		-0.5683	-0.5550	-0.5704	-0.7619	-0.7841	-0.7291
1/31/2007	212	0.884	12.78		-0.5681	-0.5590	-0.5709	-0.7691	-0.7944	-0.7373
1/31/2007	213.5	0.885	12.77		-0.5685	-0.5555	-0.5706	-0.7617	-0.7841	-0.7299
2/1/2007	231.08	0.884	12.78		-0.5673	-0.5565	-0.5719	-0.7617	-0.7847	-0.7332
2/1/2007	234.25	0.884	12.78		-0.5672	-0.5563	-0.5712	-0.7613	-0.7834	-0.7329
2/1/2007	235.75	0.883	12.79		-0.5675	-0.5565	-0.5715	-0.7614	-0.7842	-0.7330
2/1/2007	238.5	0.883	12.79		-0.5674	-0.5567	-0.5713	-0.7614	-0.7831	-0.7334
2/2/2007	255.08	0.882	12.8		-0.5681	-0.5577	-0.5716	-0.7609	-0.7831	-0.7347
2/2/2007	257.5	0.882	12.8		-0.5690	-0.5585	-0.5720	-0.7610	-0.7834	-0.7355
2/2/2007	261.83	0.883	12.79		-0.5691	-0.5587	-0.5721	-0.7612	-0.7833	-0.7357
2/2/2007	262.5	0.883	12.79		-0.5687	-0.5583	-0.5719	-0.7614	-0.7828	-0.7354
2/5/2007	327.25	0.883	12.79		-0.5669	-0.5610	-0.5749	-0.7604	-0.7858	-0.7425
2/5/2007	328.5	0.884	12.78		-0.5673	-0.5612	-0.5747	-0.7603	-0.7852	-0.7425
2/5/2007	331	0.884	12.78		-0.5670	-0.5610	-0.5741	-0.7605	-0.7834	-0.7425
2/5/2007	332.75	0.884	12.78		-0.5667	-0.5611	-0.5744	-0.7605	-0.7837	-0.7429
2/5/2007	335.25	0.884	12.78		-0.5664	-0.5608	-0.5739	-0.7607	-0.7825	-0.7426
2/6/2007	351.17	0.882	12.8		-0.5655	-0.5607	-0.5743	-0.7607	-0.7830	-0.7433
2/6/2007	353.33	0.883	12.79		-0.5655	-0.5608	-0.5746	-0.7612	-0.7830	-0.7435
2/6/2007	355	0.882	12.8		-0.5659	-0.5610	-0.5742	-0.7610	-0.7820	-0.7436
2/6/2007	356.5	0.882	12.8		-0.5656	-0.5610	-0.5741	-0.7613	-0.7811	-0.7439
2/6/2007	359	0.882	12.8		-0.5660	-0.5613	-0.5741	-0.7618	-0.7805	-0.7441
2/7/2007	375.17	0.884	12.78		-0.5649	-0.5610	-0.5748	-0.7612	-0.7825	-0.7446
2/7/2007	377.25	0.883	12.79		-0.5647	-0.5609	-0.5746	-0.7614	-0.7819	-0.7446
2/7/2007	379.75	0.883	12.79		-0.5643	-0.5609	-0.5754	-0.7620	-0.7834	-0.7449
2/7/2007	381	0.883	12.79		-0.5646	-0.5610	-0.5754	-0.7619	-0.7833	-0.7449
2/7/2007	383.75	0.883	12.79		-0.5641	-0.5606	-0.5750	-0.7619	-0.7824	-0.7446
2/8/2007	399	0.883	12.79		-0.5606	-0.5589	-0.5759	-0.7625	-0.7844	-0.7447
2/8/2007	400.92	0.883	12.79		-0.5597	-0.5583	-0.5754	-0.7625	-0.7834	-0.7444
2/8/2007	403.75	0.883	12.79		-0.5567	-0.5566	-0.5750	-0.7625	-0.7826	-0.7440
2/8/2007	405.5	0.883	12.79		-0.5546	-0.5558	-0.5754	-0.7628	-0.7830	-0.7444
2/8/2007	408	0.883	12.79		-0.5672	-0.5621	-0.5759	-0.7634	-0.7838	-0.7445
2/9/2007	423	0.883	12.79		-0.5625	-0.5597	-0.5755	-0.7636	-0.7826	-0.7444
2/9/2007	427	0.884	12.78		-0.5546	-0.5656	-0.5754	-0.7638	-0.7824	-0.7441
2/9/2007	429	0.884	12.78		-0.5546	-0.5658	-0.5756	-0.7640	-0.7823	-0.7445
2/12/2007	471.17	0.884	12.78		-0.5524	-0.5640	-0.5750	-0.7656	-0.7805	-0.7430
2/12/2007	472.83	0.884	12.78		-0.5532	-0.5642	-0.5756	-0.7668	-0.7813	-0.7426
2/12/2007	476.92	0.884	12.78		-0.5529	-0.5688	-0.5750	-0.7664	-0.7805	-0.7422
2/12/2007	477.75	0.883	12.79		-0.5524	-0.5687	-0.5752	-0.7663	-0.7808	-0.7424
2/12/2007	480.5	0.883	12.79		-0.5561	-0.5704	-0.5749	-0.7661	-0.7805	-0.7421
2/13/2007	495	0.883	12.79		-0.5562	-0.5703	-0.5751	-0.7668	-0.7806	-0.7419
2/13/2007	496.5	0.882	12.8		-0.5560	-0.5703	-0.5752	-0.7666	-0.7809	-0.7420
2/13/2007	500	0.883	12.79		-0.5546	-0.5695	-0.5748	-0.7658	-0.7807	-0.7419
2/13/2007	501.5	0.883	12.79		-0.5562	-0.5703	-0.5750	-0.7666	-0.7804	-0.7419
2/13/2007	503.58	0.883	12.79		-0.5551	-0.5699	-0.5750	-0.7664	-0.7806	-0.7421
2/14/2007	519.25	0.883	12.79		-0.5517	-0.5682	-0.5753	-0.7673	-0.7806	-0.7421
2/14/2007	523.5	0.883	12.79		-0.5515	-0.5719	-0.5756	-0.7679	-0.7805	-0.7423
2/14/2007	525.25	0.884	12.78		-0.5518	-0.5722	-0.5758	-0.7683	-0.7807	-0.7425
2/15/2007	543.25	0.884	12.78		-0.5482	-0.5705	-0.5777	-0.7733	-0.7810	-0.7428
2/15/2007	545.25	0.883	12.79		-0.5488	-0.5711	-0.5783	-0.7747	-0.7808	-0.7433
2/15/2007	548.75	0.883	12.79		-0.5475	-0.5703	-0.5777	-0.7753	-0.7788	-0.7430
2/15/2007	550.17	0.882	12.8		-0.5473	-0.5701	-0.5782	-0.7759	-0.7797	-0.7429
2/15/2007	552	0.882	12.8		-0.5478	-0.5704	-0.5802	-0.7774	-0.7842	-0.7429
2/16/2007	567.25	0.883	12.79		-0.5466	-0.5702	-0.5824	-0.7784	-0.7891	-0.7437
2/16/2007	569.25	0.883	12.79		-0.5470	-0.5701	-0.5809	-0.7790	-0.7844	-0.7432
2/16/2007	571.25	0.883	12.79		-0.5470	-0.5700	-0.5810	-0.7791	-0.7848	-0.7430
2/16/2007	573.45	0.884	12.78		-0.5470	-0.5701	-0.5826	-0.7792	-0.7896	-0.7431
2/16/2007	576	0.883	12.79		-0.5466	-0.5697	-0.5795	-0.7792	-0.7806	-0.7428
2/19/2007	615	0.883	12.79		-0.5429	-0.5687	-0.5757	-0.7833	-0.7933	-0.7444

Day	HRS:	Source			Panel #19	Panel #20	Panel #21	Panel #22	Panel #23	Panel #24
					Cntrl Steel WO-Sealent (#1)	Cntrl Steel WO-Sealent (#2)	Cntrl Steel WO-Sealent (#3)	Steel WO-Sealent (#1)	Steel WO-Sealent (#2)	Steel WO-Sealent (#3)
		(I) amps	Volts		Volts	Volts	Volts	Volts	Volts	Volts
1/22/2007	0	0.884	12.78		-0.4029	-0.3939	-0.4134	-0.5961	-0.6058	-0.5967
1/23/2007	15.5	0.882	12.8		-0.5499	-0.5302	-0.5392	-0.7044	-0.7065	-0.5570
1/23/2007	17.5	0.883	12.79		-0.5551	-0.5349	-0.5434	-0.7076	-0.7097	-0.5629
1/23/2007	19.75	0.883	12.79		-0.5595	-0.5394	-0.5479	-0.7113	-0.7152	-0.5580
1/23/2007	21.5	0.882	12.8		-0.5625	-0.5425	-0.5510	-0.7156	-0.7175	-0.5615
1/23/2007	24.83	0.883	12.79		-0.5665	-0.5462	-0.5544	-0.7174	-0.7212	-0.5654
1/24/2007	39	0.884	12.78		-0.5726	-0.5523	-0.5607	-0.7251	-0.7264	-0.5778
1/24/2007	40.75	0.883	12.79		-0.5712	-0.5512	-0.5598	-0.7245	-0.7262	-0.7267
1/24/2007	43.25	0.883	12.79		-0.5730	-0.5528	-0.5612	-0.7244	-0.7284	-0.7212
1/24/2007	46.75	0.883	12.79		-0.5734	-0.5531	-0.5613	-0.7250	-0.7274	-0.6917
1/24/2007	48.08	0.883	12.79		-0.5724	-0.5522	-0.5616	-0.7242	-0.7273	-0.6821
1/25/2007	63.08	0.882	12.8		-0.5728	-0.5513	-0.5693	-0.7211	-0.7266	-0.6225
1/25/2007	68.5	0.882	12.8		-0.5732	-0.5520	-0.5673	-0.7226	-0.7283	-0.6246
1/25/2007	70.25	0.883	12.79		-0.5748	-0.5516	-0.5671	-0.7222	-0.7284	-0.6240
1/25/2007	71.25	0.883	12.79		-0.5630	-0.5517	-0.5688	-0.7220	-0.7279	-0.6225
1/25/2007	72.25	0.883	12.79		-0.5774	-0.5529	-0.5690	-0.7222	-0.7288	-0.6233
1/26/2007	87	0.883	12.79		-0.5795	-0.5572	-0.5685	-0.7206	-0.7285	-0.6355
1/26/2007	89.5	0.884	12.78		-0.5823	-0.5596	-0.5675	-0.7213	-0.7301	-0.6411
1/26/2007	94.25	0.884	12.78		-0.5849	-0.5618	-0.5674	-0.7227	-0.7309	-0.6397
1/26/2007	95.25	0.883	12.79		-0.5849	-0.5617	-0.5671	-0.7221	-0.7304	-0.6427
1/26/2007	96	0.883	12.79		-0.5851	-0.5617	-0.5670	-0.7216	-0.7301	-0.7039
1/29/2007	159.17	0.883	12.79		-0.5922	-0.5703	-0.5769	-0.7317	-0.7455	-0.6523
1/29/2007	160.83	0.883	12.79		-0.5927	-0.5709	-0.5777	-0.7333	-0.7459	-0.6535
1/29/2007	163.75	0.883	12.79		-0.5940	-0.5725	-0.5795	-0.7366	-0.7474	-0.6554
1/29/2007	166.17	0.883	12.79		-0.5942	-0.5730	-0.5804	-0.7390	-0.7483	-0.6559
1/29/2007	167.17	0.883	12.79		-0.5951	-0.5739	-0.5813	-0.7401	-0.7487	-0.6804
1/30/2007	183.08	0.882	12.8		-0.5962	-0.5735	-0.5873	-0.7552	-0.7556	-0.6361
1/30/2007	189.75	0.882	12.8		-0.5963	-0.5737	-0.5877	-0.7559	-0.7562	-0.6387
1/30/2007	191.08	0.883	12.79		-0.5946	-0.5721	-0.5863	-0.7543	-0.7555	-0.6364
1/30/2007	192.25	0.883	12.79		-0.5957	-0.5732	-0.5874	-0.7553	-0.7568	-0.6383
1/31/2007	207.08	0.883	12.79		-0.5988	-0.5723	-0.5905	-0.7567	-0.7615	-0.6527
1/31/2007	209.17	0.883	12.79		-0.5988	-0.5725	-0.5907	-0.7571	-0.7622	-0.6537
1/31/2007	212	0.884	12.78		-0.5991	-0.5748	-0.5952	-0.7643	-0.7721	-0.6770
1/31/2007	213.5	0.885	12.77		-0.5991	-0.5730	-0.5915	-0.7581	-0.7635	-0.6735
2/1/2007	231.08	0.884	12.78		-0.6005	-0.5701	-0.5922	-0.7587	-0.7631	-0.6685
2/1/2007	234.25	0.884	12.78		-0.5997	-0.5693	-0.5914	-0.7570	-0.7633	-0.6700
2/1/2007	235.75	0.883	12.79		-0.6002	-0.5696	-0.5916	-0.7569	-0.7631	-0.6692
2/1/2007	238.5	0.883	12.79		-0.5998	-0.5692	-0.5913	-0.7559	-0.7635	-0.6689
2/2/2007	255.08	0.882	12.8		-0.6006	-0.5692	-0.5903	-0.7486	-0.7655	-0.6698
2/2/2007	257.5	0.882	12.8		-0.6011	-0.5698	-0.5910	-0.7493	-0.7666	-0.6741
2/2/2007	261.83	0.883	12.79		-0.6013	-0.5699	-0.5911	-0.7488	-0.7670	-0.6780
2/2/2007	262.5	0.883	12.79		-0.6012	-0.5697	-0.5908	-0.7479	-0.7668	-0.6784
2/5/2007	327.25	0.883	12.79		-0.5996	-0.5713	-0.5876	-0.7410	-0.7643	-0.7023
2/5/2007	328.5	0.884	12.78		-0.5993	-0.5712	-0.5876	-0.7415	-0.7643	-0.7039
2/5/2007	331	0.884	12.78		-0.5991	-0.5708	-0.5872	-0.7404	-0.7641	-0.7005
2/5/2007	332.75	0.884	12.78		-0.5991	-0.5708	-0.5871	-0.7402	-0.7638	-0.6986
2/5/2007	335.25	0.884	12.78		-0.5989	-0.5704	-0.5864	-0.7382	-0.7637	-0.6982
2/6/2007	351.17	0.882	12.8		-0.5978	-0.5695	-0.5858	-0.7375	-0.7639	-0.7037
2/6/2007	353.33	0.883	12.79		-0.5978	-0.5696	-0.5859	-0.7378	-0.7642	-0.6996
2/6/2007	355	0.882	12.8		-0.5978	-0.5696	-0.5860	-0.7383	-0.7640	-0.6988
2/6/2007	356.5	0.882	12.8		-0.5976	-0.5696	-0.5862	-0.7391	-0.7643	-0.7003
2/6/2007	359	0.882	12.8		-0.5975	-0.5696	-0.5864	-0.7400	-0.7645	-0.7004
2/7/2007	375.17	0.884	12.78		-0.5960	-0.5763	-0.5852	-0.7379	-0.7649	-0.6875
2/7/2007	377.25	0.883	12.79		-0.5958	-0.5760	-0.5848	-0.7372	-0.7645	-0.6859
2/7/2007	379.75	0.883	12.79		-0.5957	-0.5760	-0.5850	-0.7378	-0.7647	-0.6781
2/7/2007	381	0.883	12.79		-0.5957	-0.5760	-0.5849	-0.7377	-0.7644	-0.6780
2/7/2007	383.75	0.883	12.79		-0.5954	-0.5756	-0.5845	-0.7368	-0.7642	-0.6711
2/8/2007	399	0.883	12.79		-0.5945	-0.5736	-0.5813	-0.7259	-0.7641	-0.6517
2/8/2007	400.92	0.883	12.79		-0.5944	-0.5746	-0.5835	-0.7354	-0.7637	-0.6498
2/8/2007	403.75	0.883	12.79		-0.5940	-0.5742	-0.5830	-0.7349	-0.7631	-0.6459
2/8/2007	405.5	0.883	12.79		-0.5943	-0.5746	-0.5836	-0.7360	-0.7636	-0.6445
2/8/2007	408	0.883	12.79		-0.5942	-0.5744	-0.5833	-0.7352	-0.7634	-0.6416
2/9/2007	423	0.883	12.79		-0.5937	-0.5739	-0.5827	-0.7349	-0.7626	-0.6244
2/9/2007	427	0.884	12.78		-0.5935	-0.5735	-0.5822	-0.7337	-0.7619	-0.6224
2/9/2007	429	0.884	12.78		-0.5935	-0.5737	-0.5825	-0.7346	-0.7622	-0.6165
2/12/2007	471.17	0.884	12.78		-0.5891	-0.5698	-0.5791	-0.7312	-0.7611	-0.6031
2/12/2007	472.83	0.884	12.78		-0.5890	-0.5696	-0.5789	-0.7302	-0.7613	-0.6021
2/12/2007	476.92	0.884	12.78		-0.5887	-0.5695	-0.5788	-0.7313	-0.7606	-0.6022
2/12/2007	477.75	0.883	12.79		-0.5888	-0.5696	-0.5790	-0.7316	-0.7606	-0.6022
2/12/2007	480.5	0.883	12.79		-0.5886	-0.5693	-0.5787	-0.7314	-0.7601	-0.6022
2/13/2007	495	0.883	12.79		-0.5874	-0.5681	-0.5775	-0.7286	-0.7605	-0.6028
2/13/2007	496.5	0.882	12.8		-0.5875	-0.5682	-0.5774	-0.7282	-0.7604	-0.6020
2/13/2007	500	0.883	12.79		-0.5873	-0.5679	-0.5771	-0.7278	-0.7598	-0.6018
2/13/2007	501.5	0.883	12.79		-0.5871	-0.5678	-0.5771	-0.7280	-0.7601	-0.6007
2/13/2007	503.58	0.883	12.79		-0.5870	-0.5677	-0.5770	-0.7277	-0.7604	-0.6009
2/14/2007	519.25	0.883	12.79		-0.5858	-0.5664	-0.5755	-0.7246	-0.7598	-0.6002
2/14/2007	523.5	0.883	12.79		-0.5856	-0.5661	-0.5753	-0.7242	-0.7597	-0.5990
2/14/2007	525.25	0.884	12.78		-0.5855	-0.5660	-0.5751	-0.7238	-0.7596	-0.5975
2/15/2007	543.25	0.884	12.78		-0.5840	-0.5644	-0.5734	-0.7204	-0.7591	-0.5962
2/15/2007	545.25	0.883	12.79		-0.5838	-0.5643	-0.5734	-0.7207	-0.7592	-0.5954
2/15/2007	548.75	0.883	12.79		-0.5836	-0.5640	-0.5731	-0.7202	-0.7589	-0.5946
2/15/2007	550.17	0.882	12.8		-0.5837	-0.5640	-0.5730	-0.7197	-0.7587	-0.5937
2/15/2007	552	0.882	12.8		-0.5834	-0.5638	-0.5728	-0.7194	-0.7590	-0.5929
2/16/2007	567.25	0.883	12.79		-0.5825	-0.5628	-0.5717	-0.7171	-0.7588	-0.5918
2/16/2007	569.25	0.883	12.79		-0.5825	-0.5628	-0.5716	-0.7166	-0.7588	-0.5915
2/16/2007	571.25	0.883	12.79		-0.5827	-0.5630	-0.5718	-0.7167	-0.7592	-0.5905
2/16/2007	573.45	0.884	12.78		-0.5823	-0.5625	-0.5714	-0.7162	-0.7587	-0.5896
2/16/2007	576	0.883	12.79		-0.5821	-0.5623	-0.5712	-0.7161	-0.7583	-0.5890
2/19/2007	615	0.883	12.79		-0.5781	-0.5647	-0.5695	-0.7042	-0.7574	-0.5811

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Innovative Test Solutions Program (015-05015)

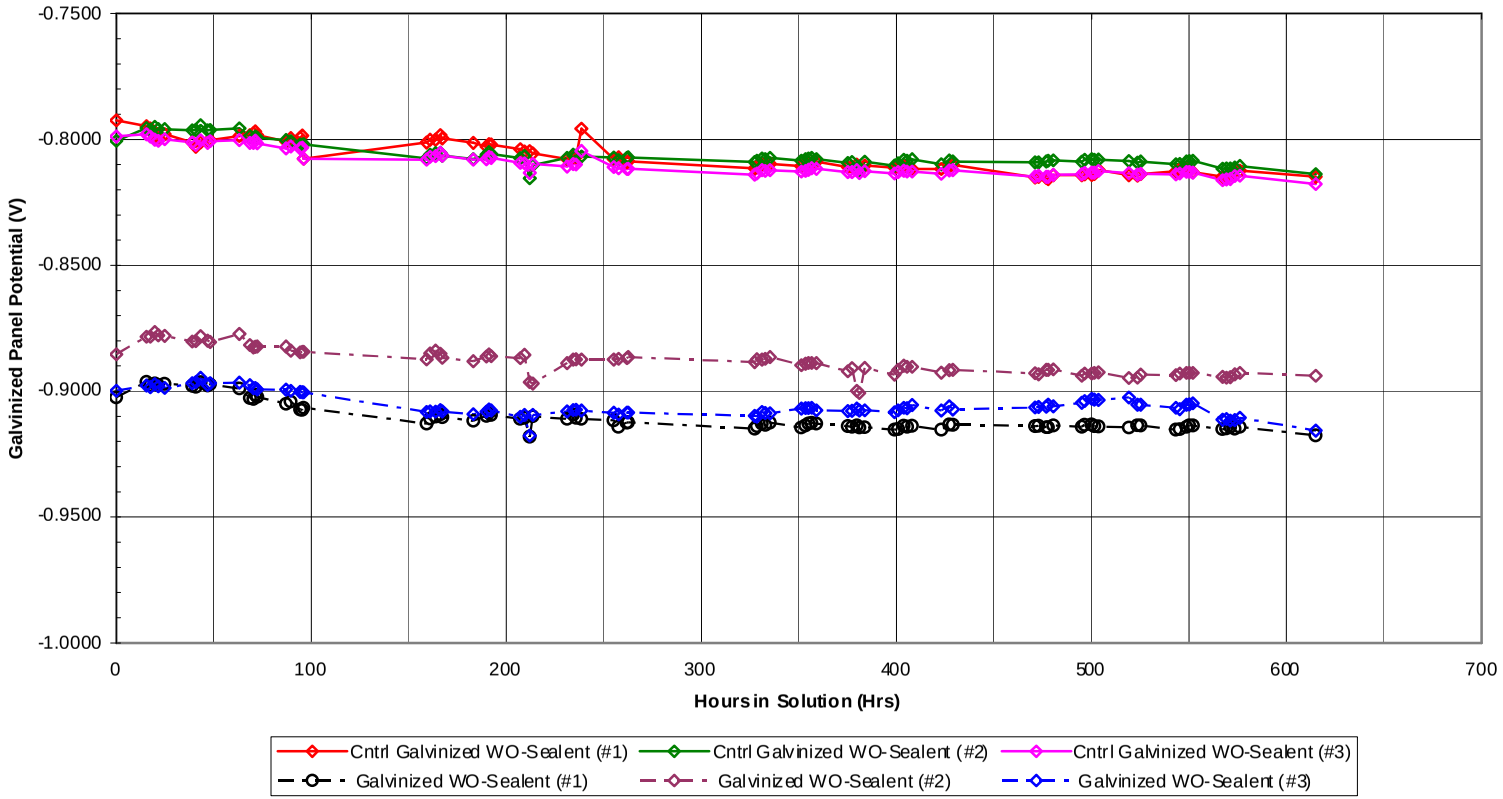
DC Potential Data on Galvanized Panels (0-600 Hrs)

Tested ***with-out*** A.S.S.I. 'Premium Paint Sealant'

Temperature: 75F; Environment: 5% Solution NaCl

Company: Auto Saver Systems, Inc.

Customer: Warren Camp



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Innovative Test Solutions Program (015-05015)

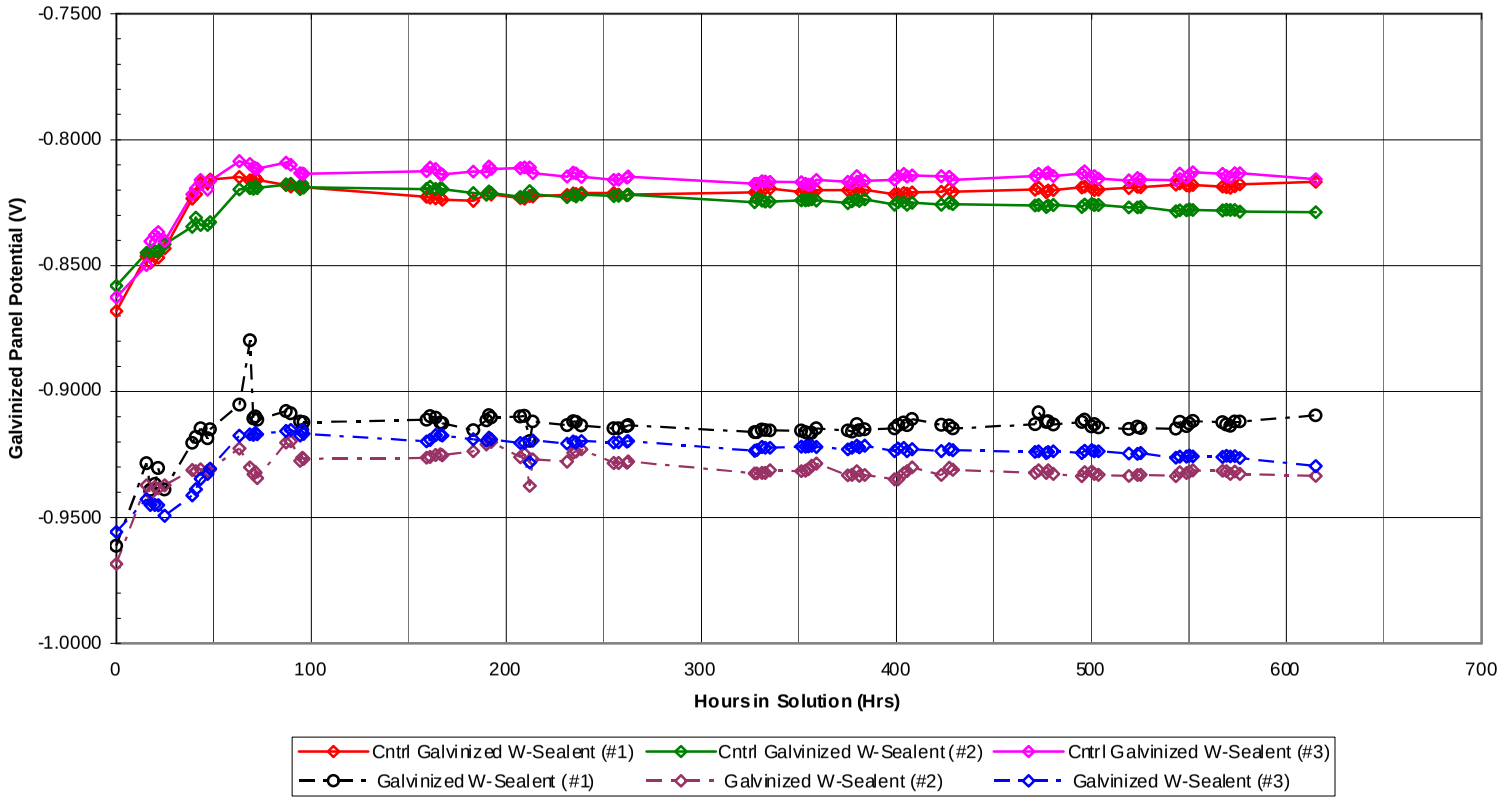
DC Potential Data on Galvanized Panels (0-600 Hrs)

Tested with A.S.S.I. 'Premium Paint Sealant'

Temperature: 75F; Environment: 5% Solution NaCl

Company: Auto Saver Systems, Inc.

Customer: Warren Camp



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Innovative Test Solutions Program (015-05015)

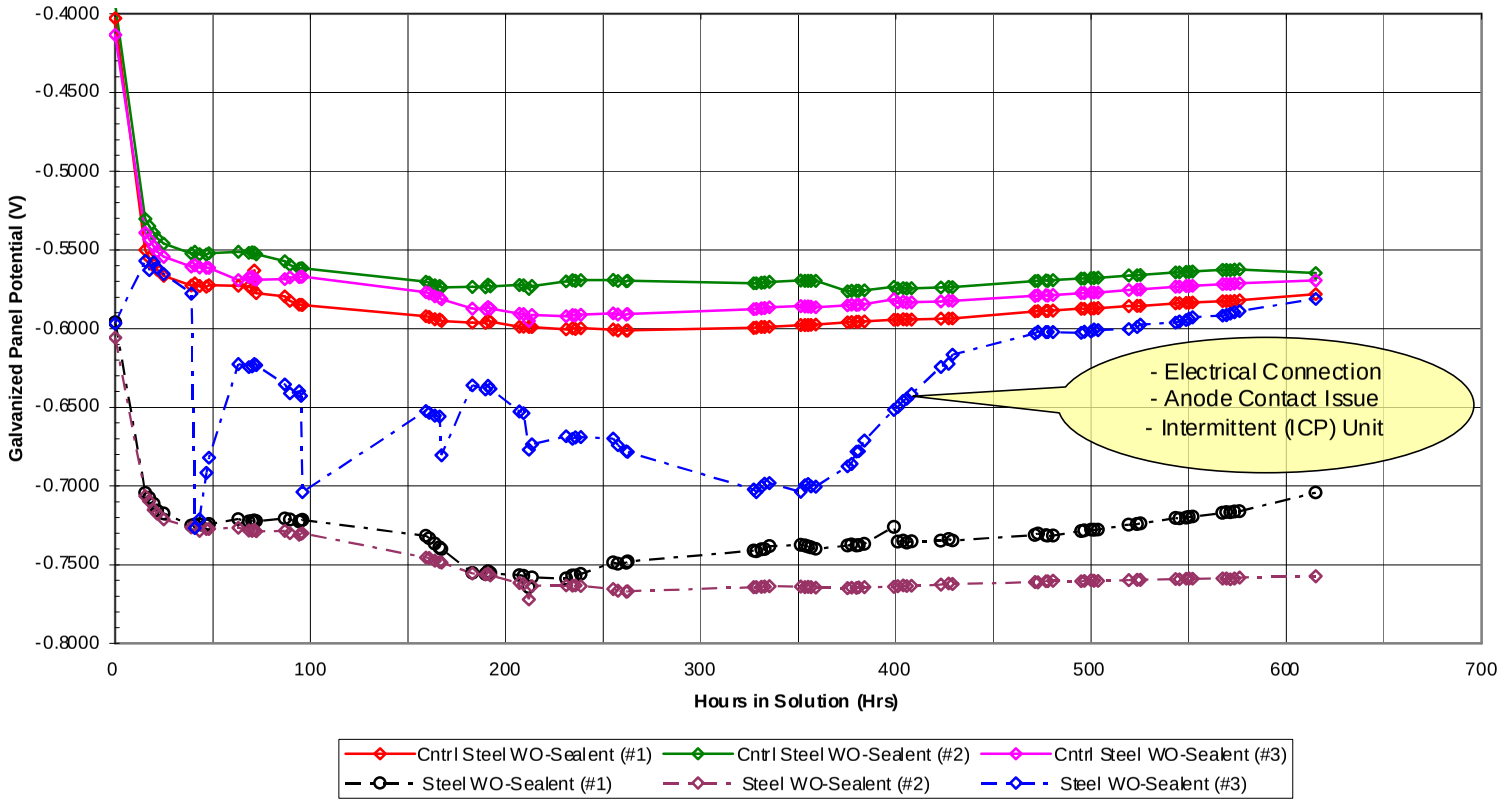
DC Potential Data on Non-Galv. Steel Panels (0-600 Hrs)

Tested ***with-out*** A.S.S.I. 'Premium Paint Sealant'

Temperature: 75F; Environment: 5% Solution NaCl

Company: Auto Saver Systems, Inc.

Customer: Warren Camp



704 Corporations Park
Scotia, NY 12302
Ph.: (518) 688-2851
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Innovative Test Solutions Program (015-05015)

DC Potential Data on Non-Galv. Steel Panels (0-600 Hrs)

Tested with A.S.S.I. 'Premium Paint Sealant'

Temperature: 75F; Environment: 5% Solution NaCl

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