

TEST REPORT NO.: 1E120523-S1 10 Aug 2012
DATE TESTED: 14 May 2012 to 28 June 2012
PAGE 1 OF 10**MASTER TEST FILE: B4.59**
PROJECT: N/A
TEST REQUEST No: E12-05-23

Item Tested: Samples of pipe as supplied by Frank Queen-Foundation Technologies Inc.
Test Description: 8 small sections of 2-7/8 pipe sections
Sample A (1) section is black pipe. (Control sample)
Sample B (1) section is plain galvanized pipe. (Control sample)
Samples C, D, & E (3) section is black pipe with "slick coat".
Samples F, G, & H (3) section is galvanized pipe with "slick coat".
Each sample with slick coat has a different thickness of "slick coat".

Sample #	"Slick Coat" Thickness (mils)						Average
C	3.5	3.5	3.0	3.0	4.5	2.5	3.333
D	4.5	5.0	4.5	4.5	4.0	3.5	4.333
E	5.5	6.5	8.0	8.0	7.0	6.0	6.833
F	4.0	6.0	4.5	5.0	7.5	5.0	5.333
G	6.0	5.5	6.5	6.5	6.5	8.5	6.583
H	7.5	8.5	6.5	7.0	6.0	6.0	6.916

Type of Test: Salt Fog Test**Tested for:** Kelly Hawkins, Hubbell Power Systems
210 N. Allen Street
Centralia MO 65240**Applicable Standards:** ASTM B117-2009

The numbers in parenthesis are instrument control numbers. Refer to the record of performance for instrument details.¹

¹

- * Reproduce this report in its entirety only.
- * Test data presented is within $\pm 3\%$ unless otherwise specified.
- * Sample identification was provided by the Customer Identified Above
- * This report applies only to the item(s) tested, as representatives of current product design.
- * All instruments and recording devices used in this testing program are within a valid calibration period.
- * All samples were new and in excellent condition when tested, except as otherwise noted in the "Item Tested:" section above.
- * Data from tests performed for HPS shall not be released to non-HPS personnel unless it has been reviewed, converted to an S1, signed by the Laboratory Manager and Engineering Manager of the subject product line.

Tested by: Travis Turnbough, & Ron Azdell
Report by: Kelly Hawkins – NPD Engineer**Approval**
Laboratory Mgr: 
Engineering Mgr: **Date**
08/22/2012
08/20/2012

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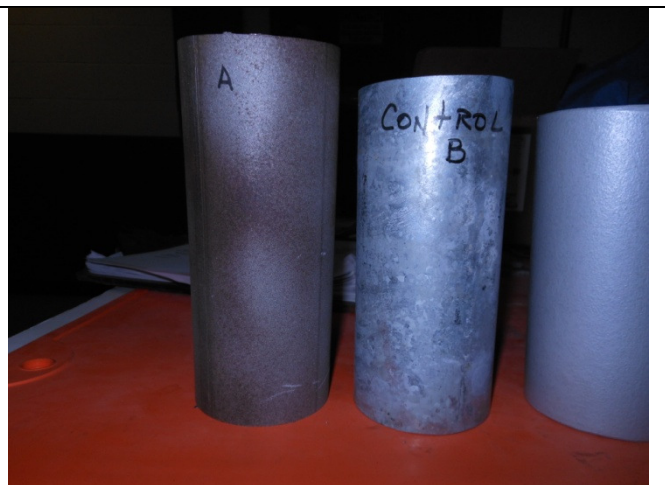
Equipment: Autotech Salt Fog Chamber (5-3-048)
Environmental Laboratory

Procedure: The pipe samples were placed in the Salt Fog chamber suspended on non-metallic supports as shown in the photographs. Photographs of the samples were taken initially, after 330.5 hrs, 542.2 hrs, 778.5 hrs, and at 1013.8 hrs.

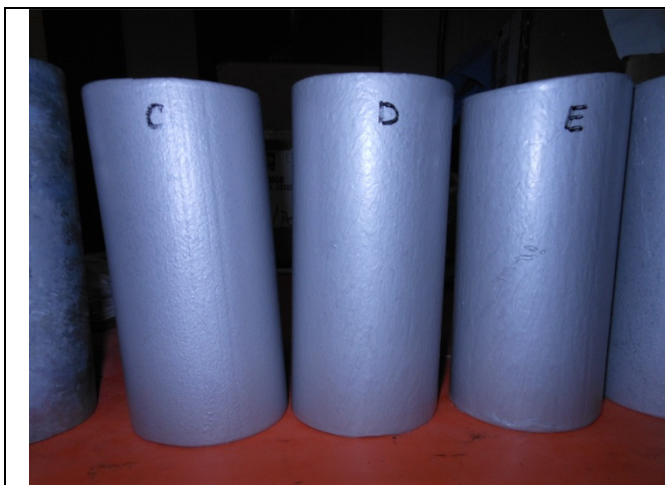
Results/Photographs:



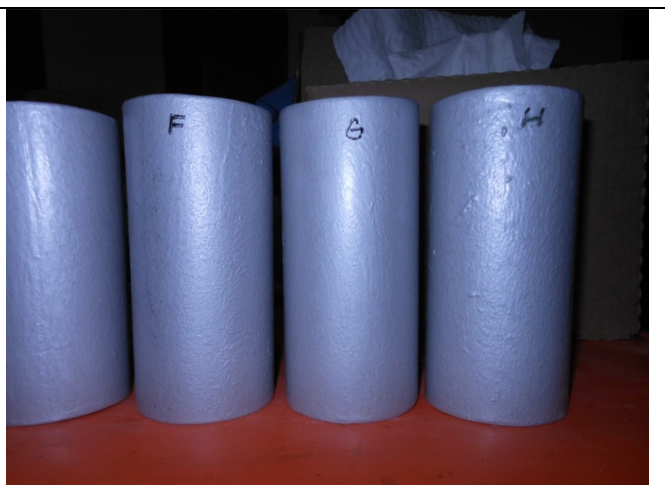
Initial at startup.



Samples A & B at startup.



Samples C, D, & E at startup.



Samples F, G, & H at startup.

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Results/Photographs:



@ 330.5 hrs



Sample A & B @ 330.5 hrs



Samples C, D, & E @ 330.5 hrs.



Samples F, G, & H @ 330.5 hrs.

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Results/Photographs:



@ 542.2 hrs



Samples A & B @ 542.2 hrs



Sample A @ 542.2 hrs



Sample B @ 542.2 hrs

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Results/Photographs:



Sample C @ 542.2 hrs



Samples D & E @ 542.2 hrs



Sample F @ 542.2 hrs



Samples G & H @ 542.2 hrs

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Results/Photographs:



Samples A, B, & F @ 778.8 hrs



Samples C, D, E, G, & H @ 778.8 hrs



Samples @ 1013.8 hrs



Samples A @ 1013.8 hrs

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Results/Photographs:



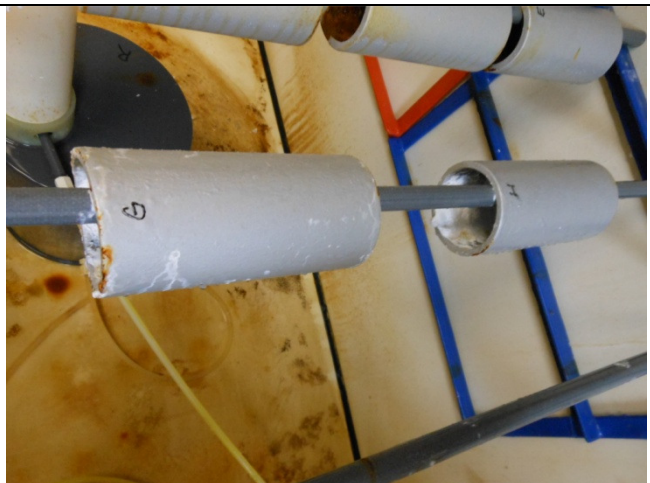
Samples B, & C @ 1013.8 hrs



Samples C, D, E, & H @ 1013.8 hrs



Samples F @ 1013.8 hrs



Samples G & H @ 1013.8 hrs

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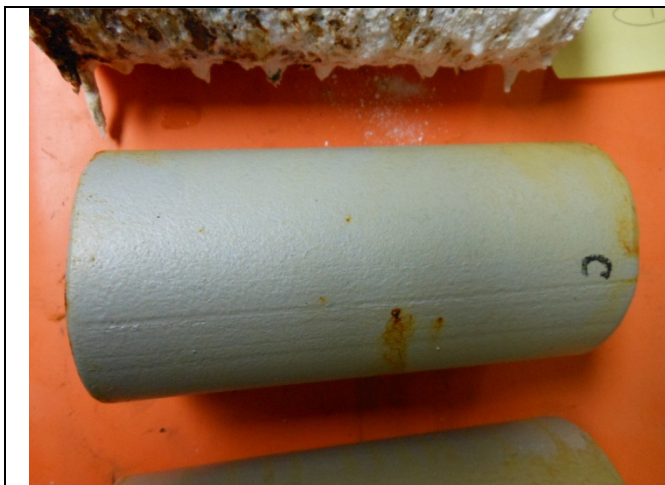
Results/Photographs:



Samples A @ 1013.8 hrs



Samples B @ 1013.8 hrs



Samples C @ 1013.8 hrs

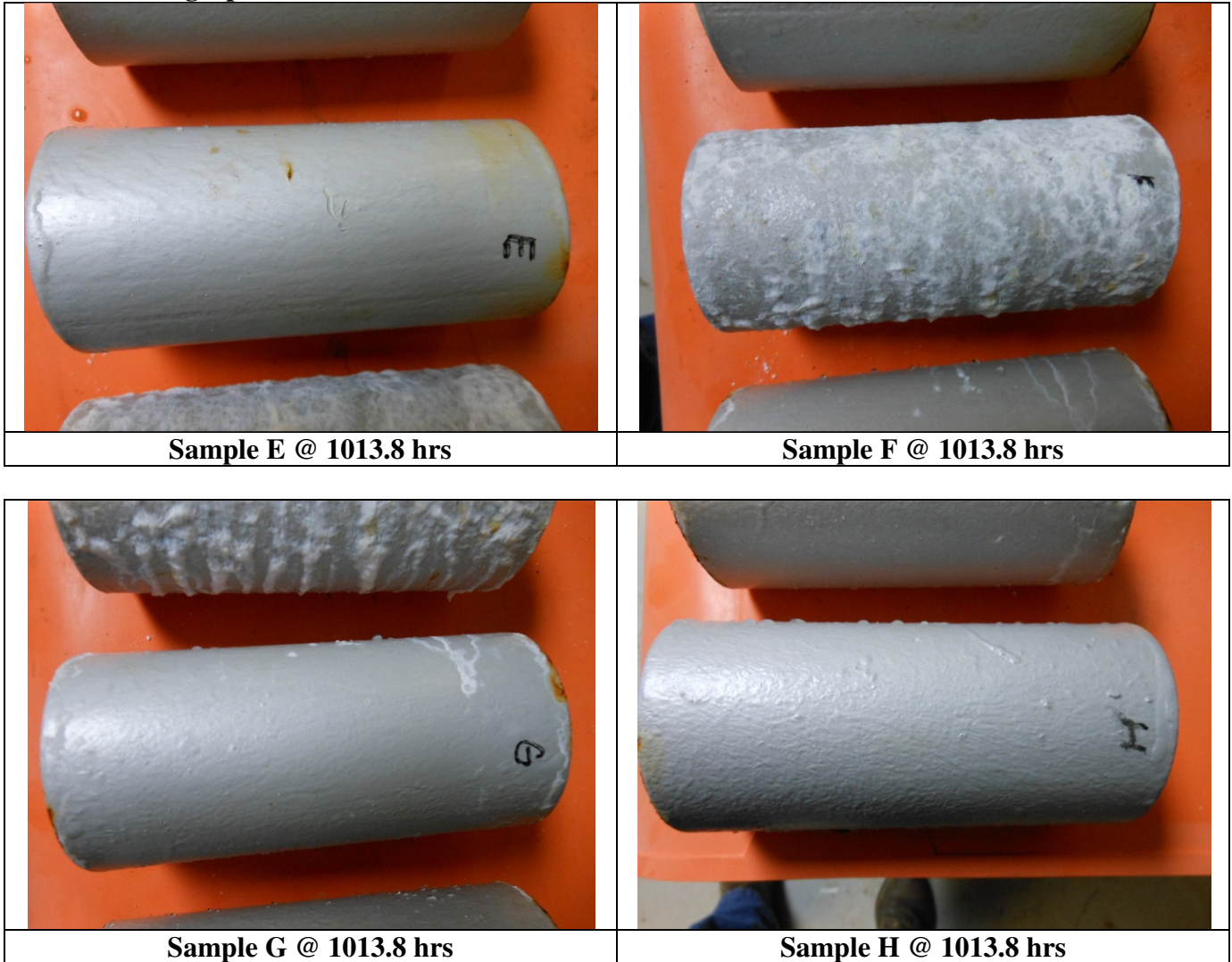


Samples D @ 1013.8 hrs

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Results/Photographs:



Samples @ 1013.8 hrs

Conclusion: The best results were obtained from Samples F, G, and H, which were hot dip galvanized before application of the Slick Coat. Samples C, D, and E performed nearly well, except in the places where the Slick Coat had been damaged / chipped. Red rust appeared on the outer diameter of the pipe where the coating had been removed. The different thickness of Slick Coat did not appear to affect the corrosion resistance of any of the samples, black or galvanized.