blister and crack parallel to the scribe becomes visually apparent.

Figure 7 shows the test panel following removal of coating suffering from creepage damage and blistering of the coating. The physical damage at segments 2, 4, and 5 with minor damage at 6 correlate well with the observations from the current data. The low currents and lack of damage at segments 1 and 3 also correlate. The area of blistering, anodic undermining, and a cathodic delamination front beyond the anodic undermining are clearly observable.

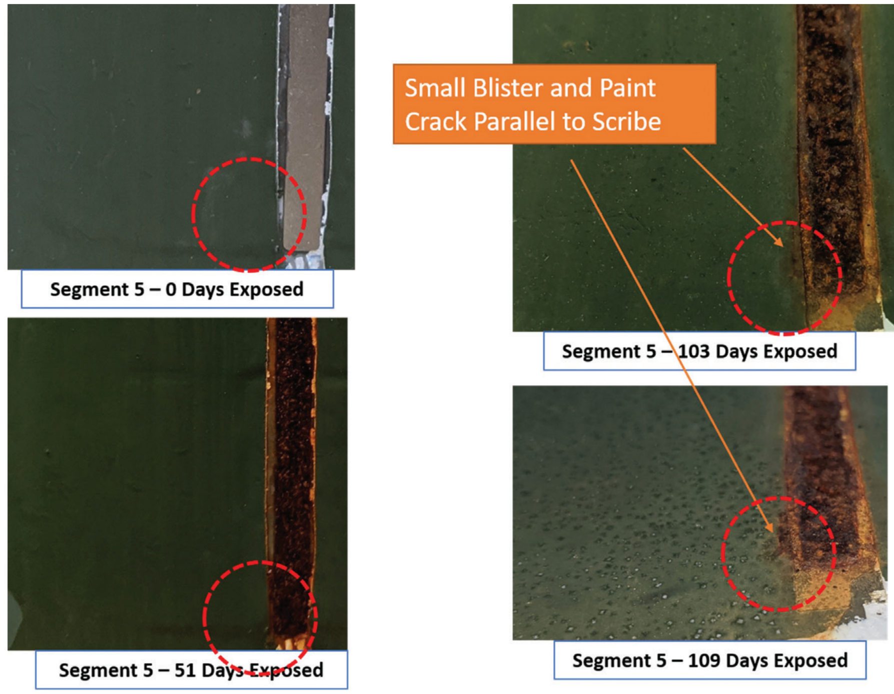

FIGURE 6 Visual appearance of epoxy/urethane coated steel adjacent to scribe in testing.

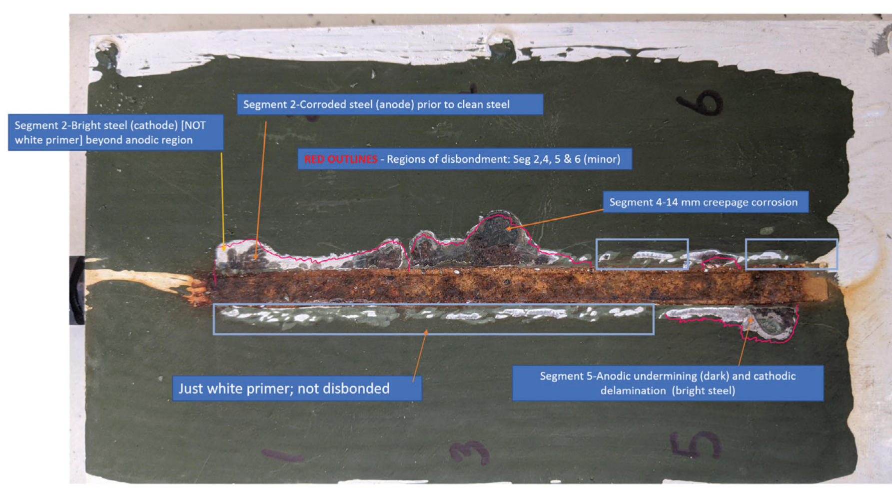

FIGURE 7 Visual appearance of epoxy/urethane coated steel adjacent to scribe in testing after removal of the coating.

Conclusions

1. A segmented cell approach offers a viable method to study the performance of protective coating systems applied over a variety of metallic substrates. The current exchange data offer insight into the protective properties of the coating system prior to the onset of any visual indication and may provide critical data on coating performance without the confounding concerns over the effects of an accelerated environment.
2. The currents can vary as a function of the local environment, absent any changes in the coating. Developing such relationships may allow one to extrapolate the present results to other exposure environments via comparison of the magnitude and frequency of different exposure environments.

Reference

1 J.A. Ellor, P. Cassidy, "Evaluating Coatings for Immersion Service via Electrochemical Activity," SSPC 2015 paper (Pittsburgh, PA: SSPC, 2015). *MP*

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