

LifeGuard

Active Rust Primer

The Rust Cure for Rust

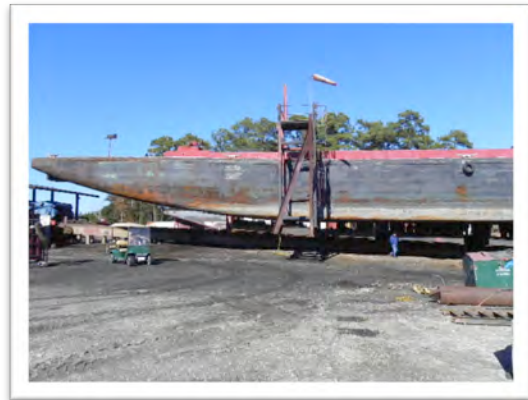
CASE STUDY OF HULL PAINT OVERHAUL USING WATER
BLASTING IN SURFACE PREPARATION

Norwegian Surface Tolerant Primer Applied Directly Over Heavy
Flash Rust and Tightly Adhering Paint on 300 Foot Barge
“Margaret Belle” at Stevens Shipyard in South Carolina

January 2011



Mark Wilkerson, Paint Supervisor of Stevens Shipyard, and Ed Griffin, the owner, plan the hull paint overhaul using LifeGuard Active Rust Primer. Robert Hope, Shipyard Manager, oversaw the innovative project.



The 292 foot tanker barge began work in dry dock in December 2010. LifeGuard Active Rust Primer was applied on January 3, 2011 when the high temperature was 54 F. LifeGuard can be applied as low as 33 F and 1 degree above the dew point.



The hull had barnacles, extensive rust, pitting and large areas of tightly adhering epoxy paint. The goal was full hull restoration without damaging the steel. The owner had conducted long term tests of LifeGuard confirming its properties before specifying it as the primer over the slurry blasted surface.



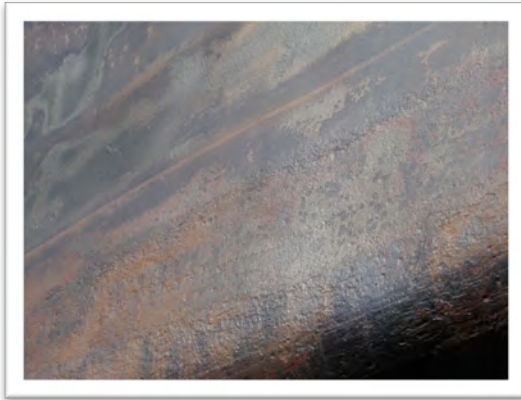
Stevens Shipyard first removed salts by fresh water pressure washing at the request of the owner prior to slurry blasting the surface. Tests reveal LifeGuard tolerates embedded salts better than other coatings - up to 300mg/m².



Loose rust, loose paint and surface contaminants were removed by commercial slurry blast sweep to SSPC-SP 7/NACE 4. Slurry blasting and ultra-high pressure water jetting eliminates airborne dust, reducing costs due to the elimination of the need for dust containment. Many shipyards are converting to UHPWJ and/or slurry blasting, with dry blasting used only where necessary.



The prepared hull is now ready to apply LifeGuard Active Rust Primer following fresh water rinsing of the slurry blasted surface. Unlike standard preparation methods for epoxy primers which require destructive blasting to achieve a particular surface profile to ensure good adhesion, no steel thickness is lost in surface preparation for LifeGuard, thereby extending vessel life indefinitely.



A detailed view of the first coat of LifeGuard shows deep penetration of the surface, converting iron oxide to iron tannate and encapsulating it in strong acrylic copolymer binders that adhere well to existing paint, clean steel and rust. LifeGuard uses existing rust to its advantage in creating a deep and permanent tight bond to the steel.



Stevens Shipyard's crew used its standard spray equipment with no special training. This waterborne 2% VOC acrylic copolymer primer provides simple application with sprayer, roller or brush. Application rate is 2 to 3 mils wet film thickness, drying to 1 to 1.5 mils dry film thickness. The spread rate is approximately 500 SF per gallon per coat and two coats are recommended.



As a universal surface tolerant metal primer with over 15 years history in the demanding Norwegian shipping industry without any coating failure with any standard marine topcoat, two coats of primer provide long-term thin film barrier coat protection. Drying time is 2-3 hours between the first and second coats. Curing time is 24 to 72 hours before applying the topcoat.



LifeGuard controls flash rust in all areas in one simple efficient step. No costly and time consuming additional steps are required to control flash rust prior to priming, such as using mechanical drying or applying rust inhibitors or chloride reducers. LifeGuard adheres to damp surfaces, permitting the first coat to be applied immediately after the water blasting or rinsing.



Two coats of a Sherwin-Williams coal tar epoxy were applied as the topcoat. Stevens Shipyard had 2 weeks to observe LifeGuard on the steel during a cold snap prior to applying the epoxy topcoat. After 7 months, inspection of the topcoat in late July 2011 confirms perfect adhesion between the topcoat and LifeGuard, and between LifeGuard and the hull. All marine topcoats adhere well to LifeGuard.

The Margaret Belle in Charleston, SC is the first vessel in the US to apply LifeGuard to its hull in a shipyard using water in its blasting operations, which always results in flash rust. For over 15 years, Norwegian ship owners have used Active Rust Primer to protect their vessels, using 5,000 to 10,000 PSI pressure washing as the sole preparation method to achieve SP7/NACE 4 surface preparation conditions.

APPLICATION ATMOSPHERIC DATA

Coating Applied	Date Applied	Temp F	Humidity	Dew Point	Wet Bulb Temp
LifeGuard Rust Primer	1/3/11	54	34%	26	41
LifeGuard Rust Primer	1/4/11	52	73%	44	47
Coal Tar Epoxy	1/19/11	60	87%	56	57
Coal Tar Epoxy	1/21/11	54	48%	35	44

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