A major oil company recently asked me to supervise and execute the repainting of its heliport, located 100+ miles (161 km) from the coast in the Gulf of Mexico. The work had to be done at night. Painting at night in the Gulf is not a common practice, for obvious reasons. The coating system that had recently been applied was failing. Blistering and cracking were prevalent, causing detached, loose coating and exposing the substrate to the offshore elements. The oil company and the U.S. Coast Guard were concerned about personnel safety because of the possibility of flying paint debris and significant metal loss. The coating system was beyond repair and would require complete removal. The structure is the world’s largest semi-submersible and is in ~6,000 ft (1,829 m) of water. The heliport on this very large structure is 7,500+ ft² (697 m²). Abrasive blasting was out of the question because of the large number of craftsmen and rotating equipment on the heliport.

I agreed with the client that work could not possibly be performed during daylight hours because of a very busy and crucial flight schedule, as well as safety concerns for the workers from paint debris and metal loss. This article describes the methods and materials used to perform the work during nighttime hours. The job was successfully completed in two weeks.

The heliport on a very large offshore structure required complete coating removal and replacement. The work could not be performed during daylight hours because of a very busy and crucial flight schedule, as well as safety concerns for the workers from paint debris and metal loss. This article describes the methods and materials used to perform the work during nighttime hours. The job was successfully completed in two weeks.

**PHORGOTTEN PHENOMENA**

**Painting at Night in the Gulf of Mexico**

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Remembering the excellent performance of this product, I proposed it as the solution for this night-time work. The client decided that they did not have much to lose and took a chance.

I rewrote the coating specification to include ultra-high pressure water-jetting (UHPWJ) at 35,000+ psi for surface preparation. Epoxy manufactured for use over water-jetted surfaces will tolerate moderate surface rust and is durable enough for use on heavy-wear deck surfaces using non-skid additives. It requires a WJ-2 (M) degree of cleanliness but the specification was written to require WJ-1 (M), which exceeded the manufacturer’s recommendation. Salt testing was also incorporated per NACE No. 5/SSPC-SP 12, Table A1, and NV-2 on the water-jetted surfaces. The water used for cleaning was also checked frequently using similar acceptance criteria. Finally, to ensure adequate adhesion, the specification required three adhesion tests (randomly selected) for every 3,000 ft² (279 m²) of water-jetted and primed surface, with a minimum requirement of 500 psi for every dolly pulled.

We averaged 1,000 ft² (93 m²) a night, using walk-behind mowers on the flat deck surfaces, with hand-held lances to remove coating and scale around hard-to-reach areas. We needed to water-jet the surface and apply the primer as soon as possible each night to allow the product to set up enough (~4 h at 70°F [21°C]) for the helicopters to land without damaging the newly applied coating. The first flight landed at 7:30 a.m. each day (Figure 1).

Temporary containment barricades were erected using scaffolding materials and tarps each afternoon, immediately following the departure of the last flight of the day, and taken down each morning after painting was finished. This containment (Figure 2) was designed to be taken down quickly (within 40 min) in case of an emergency flight. Water run-off was captured by the open drain system on board after being filtered to capture all loose paint particles.

Salt levels on the water-jetted surfaces were never found to exceed 2.7 µg/cm², well below the required 7 µg/cm². UHPWJ at 35,000+ psi, along with a discharge temperature of 200°F (93°C) at the water jet nozzles, gave us a degree of cleanliness on the surface that I had not experienced before (Figure 3).
Twelve days later, the heliport was completed and all that remained was stenciling. We finished the urethane topcoat and markings during the daytime, when ambient conditions were favorable. On weekends, the last flight left at 11:30 a.m.; this allowed plenty of time for the urethane to be applied and cure without blushing before high humidity set in.

The adhesion test results were excellent. Every dolly we glued pulled at least 1,800 psi, with many of them exceeding the instrument maximum of 3,500 psi. The entire heliport coating was completed in 14 days.

Reference

1 NACE No. 5/SSPC-SP 12, “Surface Preparation and Cleaning of Steel and Other Hard Materials by High- and Ultrahigh-Pressure Water Jetting” (Houston, TX: NACE International).