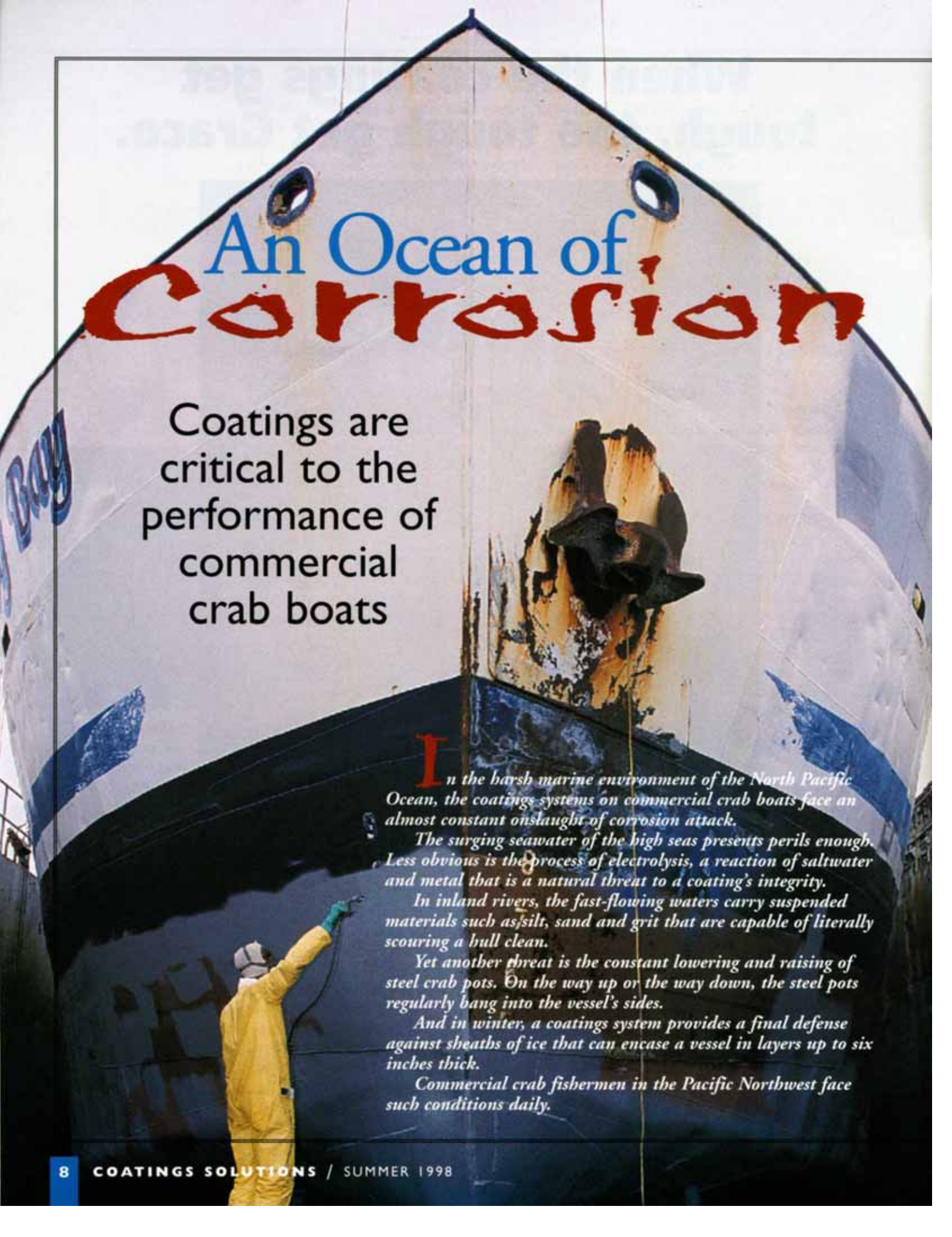
An Ocean of Corrosion

Coatings are critical to the performance of commercial crab boats



In the harsh marine environment of the North Pacific Ocean, the coatings systems on commercial crab boats face an almost constant onslaught of corrosion attack.

The surging seawater of the high seas presents perils enough. Less obvious is the process of electrolysis, a reaction of saltwater and metal that is a natural threat to a coating's integrity.

In inland rivers, the fast-flowing waters carry suspended materials such as silt, sand and grit that are capable of literally scouring a hull clean.

Yet another threat is the constant lowering and raising of steel crab pots. On the way up or the way down, the steel pots regularly bang into the vessel's sides.

And in winter, a coatings system provides a final defense against sheaths of ice that can encase a vessel in layers up to six inches thick.

Commercial crab fishermen in the Pacific Northwest face such conditions daily.

Ralph Hansen and his Tri-Star Marine team are familiar with the needs of commercial fishermen, many of whom refurbish their shallow-draft commercial vessels on a regular two-year cycle.

The 11-year-old Tri-Star Marine, Inc., shipyard, a Seattle-based year-round facility for tugs, work boats and fishing vessels up to 200 feet long, provides conversions, repair work, dry dock facilities and turnkey new ship construction from the keel up. It's one of the few remaining yards in the Pacific Northwest with covered building ways, 200 feet long, that eliminate dealing with the vagaries of weather and keep projects on time and on budget while maintaining the highest quality.

ICY BAY

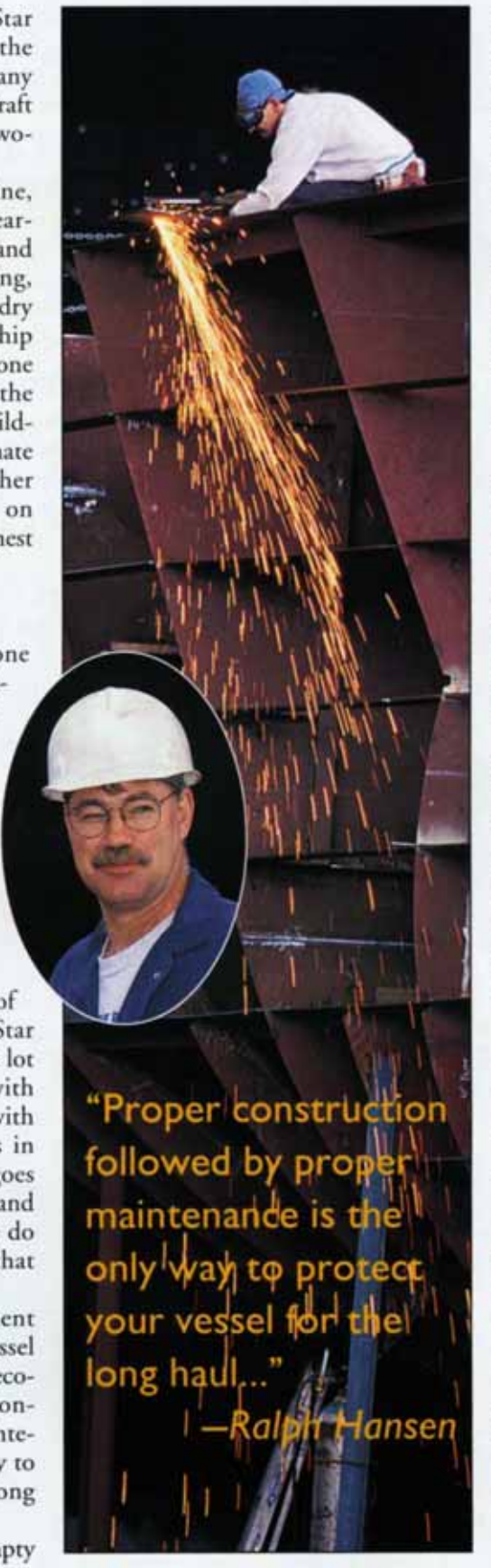
The 140-foot vessel Icy Bay, one of three crabbing vessels of Seattle-based Eagle Fisheries, is in for recoating work in Tri-Star's 180-foot, 1,100-ton dry dock. A new 140-foot crab boat is also being constructed from the keel up under the covered ways. This is typical of the activity level at Tri-Star, which has built about one new vessel each year since its inception.

"While we welcome our share of new customers every year," Tri-Star Vice President Hansen explains, "a lot of our work is repeat business with owner-operators that have been with us since we opened for business in 1987. My professional career goes back over 25 years here in Seattle and many of the people for whom we do work have also known us for that long.

"We truly believe the investment an owner makes in his or her vessel today has got to make even better economic sense tomorrow. Proper construction followed by proper maintenance in all aspects is the only way to protect that investment for the long haul."

Tri-Star's dry-dock is seldom empty for more than a few hours as owners sandwich necessary maintenance and refurbishing work between fishing season openers and anticipated runs in the highly competitive commercial fishing business of the Pacific Northwest.

"We work two eight-hour shifts a day, five days a week," Hansen points out. "It takes an average of five working days to get the vessel into dry-dock, make the necessary repairs and get it underway again.



OFTEN RECOAT HULLS

"Recoating hulls is almost always a part of our dry-dock work," Hansen adds. "Our Sherwin-Williams marine sales rep, Frank Brady, works closely with us, taking into account our tight production schedules, helping us analyze preparation and coatings needs and making sure we have the necessary product available when we need it."

Brady, who like Hansen has a long work history in the shipyards along Puget Sound, handles Tri-Star's coatings needs, along with many other of the waterfront's shipyards. He examines hulls for the effects of scouring, electrolysis, adhesion failures and marine organism growth. He then makes his recommendations and delivers the coatings.

"The first thing Ralph's crew does once the vessel is secured in dry-dock," Brady notes, "is to do a 4,000 psi water wash of the hull, then dry it, so we can have a close look at the surface. Usually that wash, plus spot repairs on the hull, is all the work that's needed before the hull coatings are applied. Sometimes brush blasting to achieve an SP7 surface preparation level is required."

For the Icy Bay, after Brady's inspection and Hansen's concurrence, coatings work includes — below the waterline — first a spot coating of bare areas with Dura-Plate® 235 Multi-Purpose Epoxy. That's followed by a full coat of 1080 Anti-Fouling Red brush and roll applied at 8.0 to

The Icy Bay (above and lower right) receives a coatings system designed to withstand the rigors facing a commercial crab boat.

9.0 mils wet film thickness (WFT) drying to 3.0 to 4.0 mils dry film thickness (DFT) per coat. All welds are brush-blasted and zinc-coated before other coatings work below the waterline is begun.

Topside, the Icy Bay receives a full, light tack coat (4.0 to 5.0 WFT drying to 2.0 to 3.0 DFT) of Dura-Plate 235 Epoxy. Then the entire vessel is topcoated with a single coat of urethane applied at 3.0 to 4.0 mils WFT to yield a final DFT of 2.0 mils.

In addition to special care exercised in applying coatings materials, Tri-Star takes extensive steps to comply with stringent environmental protection regulations.

All water and materials removed from the hull through the 4,000 psi water wash are captured. The water is cleaned and the solid materials separated and handled according to prescribed regulatory procedures. Only then is the cleansed water returned to the Sound. Any blasting that needs to be performed in dry-dock or with new construction is encapsulated so the blast medium is fully contained. Similarly, all blasting medium is recaptured and recycled before the dry dock is flooded and the vessel returned to service.

"Our livelihood and the ultimate satisfaction of our customers depends on our ability to fully comply with all environmental considerations," Hansen stresses. "Along with the safe operation of our facilities, compliance with environmental regulations is our highest priority."

BY DESIGN

Marine architects create new vessel designs, which today are simply digitized. Employing CAD-CAM, any one of several local steel suppliers cuts the steel using digitized templates. Each of the steel components, cut exactly to size and properly marked, is trucked to the Tri-Star facility where assembly of the new vessel occurs. All of them are primed in the shop.

The new 140-foot crab boat Tri-Star has under construction is valued at between $4 million and $5 million. Once completed, it will receive a full complement of heavy-duty marine coatings. Normal cycle time for a new vessel is about 12 months.

"Whatever the vessel," Hansen says, "we offer the highest level of today's technology, whether that means equipment, processes or coatings, combined with the best customer service we can provide.

"We also take a great deal of pride in our work. And we think we've got some awfully good-looking boats out there."