

# Landing Craft Becomes Crab Tender

## ***IMS Assembles Team to Provide Solution for Norton Sound Seafood Products***

### **Norton Sound Seafood Products – Quality Product**

In 1995, the Norton Sound Economic Development Corporation (NSEDC), one of six CDQ organizations in Alaska, established Norton Sound Seafood Products (NSSP). NSSP conducts the NSEDC's commercial seafood activities in the greater Norton Sound region including salmon, herring, halibut, king crab, bait fisheries and pink salmon.

Consistently delivering quality product is the primary focus at NSSP, and especially in the case of the smaller, fragile, Red King crab found in Norton Sound, extreme care in handling is used throughout their operation. Crab delivered by the tenders is sorted by size/condition and are either processed immediately or held in tanks. The tanks use a filtration system to physically remove the organic compounds from the water – like the ammonia that the crab produce, which can burn their gills. The live product is sold to customers in Alaska.

The rest of the crab is cooked promptly and then carefully frozen to be shipped to locations outside of Alaska. After cooking, NSSP uses a carefully-monitored process to ensure quality and taste: temperatures are lowered in stages until the product is brine frozen at 0° to -3°.

### **The Challenge from NSSP**

Start with a 77' landing craft based out of Nome named "*Inaliq*" (which is the Eskimo name for Little Diomed Island, at the edge of the NSEDC's geographical region). Create a holding tank system for crab on the deck. Keep the crab chilled, provide aeration and water circulation systems. Draw the incoming new water from well below the surface since the water on top is too brackish for the crab to tolerate. Then create a method to bring the crab to the surface of the tank to expedite off-loading at the dock – and avoid the negative impact that draining the tank would have on the crab. Drive the system with an existing 100 kW genset. And, make the entire system removable via a light-duty shoreside crane since the *T/V Inaliq* is to be used for hauling freight and supplies in the off-season.

### **Why NSSP Picked Integrated Marine Systems**

In 2002, IMS engineered a live holding system for NSSP on the 40-foot *T/V Norton Bay*. Based on the success of that project, Richard Ferry, Operations Manager for NSSP, says, "*IMS and Grant Seran did an excellent job building the crab RSW system on the T/V Norton Bay. When it became time to increase our tendering capacity, we naturally looked to IMS to design and install the RSW system.*" With over twenty years of experience at "Making Refrigeration Simple," IMS prides itself on providing innovative solutions for fishermen and processors that may be complex to design, but are simple to operate and maintain. IMS welcomed NSSP's exciting challenge.

### **IMS Assembles Design & Manufacturing Team**

The six primary participants brought over 130 years of combined experience to design, manufacture and install the system. IMS's Mark Burn assembled the team, served as technical director and designed the tanks/refrigeration system. Doug Short, IMS Senior Sales Engineer, shared expertise he's gained from working with crab and lobster fisheries on the East Coast. Based in Bend Oregon, Rip Carlton, consultant and partner in a crab boat with NSSP, had recommended IMS for the job. He helped with the general layout and he brought first hand knowledge from working with NSSP in Norton Sound to the design team.

### **Putting the Pieces Together**

The IMS refrigeration system uses two 18-ton titanium chillers. The chilling system is configured in such a way as to be a single removable assembly. Grant Seran (former owner of Seran Boat Repair and now with IMS) worked on the design: general layout, tanks, refrigeration and plumbing. He provided construction expertise, including the four 2200 gallon tanks, and installation assistance. The false bottom that brings the crab to the surface of the tanks for off-loading is attached to the boat's hydraulic crane via a pipe. Worker fatigue is reduced since they are standing upright outside of the holding tanks.

## Making the Vessel Ready for Double-Duty

Monty Gaiser is the owner of Coastal Fluid Power in Woodinville WA, a hydraulic marine service company that provides services in Ballard, Everett and Alaska. The on-deck mounting design, welding and installation of on-deck systems, structural supports for the tanks, genset placement, design and fabrication of the catwalks, installation of the chiller assembly, thru-hull fittings and piping, fell to Monty and an engineer from Anacortes, Tom Giacalone. All on-deck equipment had to be secured in a way that is structurally sound, yet modular for removal by crane. Monty built a davit on the side of the **Inaliq** for the seawater suction intake via a “snorkel.” The intake system is weighted down with anchor chain to pull water from 20’ below the surface and salinity testing is done as it comes in. (And, yes, it is placed so as not to become entangled in the prop.) Monty commented that, *“Positioning of the tanks was critical in order to maintain stability of the vessel since there is no ballast tank. What a fun project to be involved with!”* Before the vessel headed back to Nome, the final installation of the components and testing of the systems were completed by Monty, Tom, Mark and Grant. Tom was pleased with the outcome ... *“Custom projects always require snap decisions during final assembly and the time frame didn’t allow for any mistakes. I was thrilled when IMS asked me to be part of this ‘A’ team and particularly enjoyed helping with the flawless start up.”*



## The Outcome? Happy Crab and Tender...

According to Rip Carlton, *“The new system will provide increased survivability for the crab by reducing stress and keeping them in better physical condition. It will also increase the size of the load the tender can carry, as well as the time it can stay out. The tenders currently being used are limited to 7,000-8,000 lbs. per trip. The estimated capacity of the new system is 15,000–20,000 lbs. and the **Inaliq** should be able to stay out for two days or longer.”*



Photos: Coastal Fluid Power