

RFP FOR
SPECIAL PURPOSE CRAFT – ICE RESCUE TRANSPORT
(SPC-IRT)

FUNCTIONAL CAPABILITIES	
Mission Type	Capable of but not limited to; use in ice rescue, flood, and shallow water missions

ENVIRONMENTAL CAPABILITIES	
Operational Environment: Sea State	Fully capable of operating in open water (fully loaded condition) and conducting missions in Sea State 3 (2ft Significant Wave Height (SWH)). Capable of surviving in Sea State 3 (3 ft SWH).
Operational Environment	Able to traverse all ice conditions (solid, broken, snow covered). Ability to traverse ice compression ledges of 4 ft.
Range	Operate up to 12 NM offshore in soft water, on hard water, and a combination of both.
Air Temperatures	Capable of withstanding, and operating continuously in air temperatures ranging from -30F up to 115F
Water Temperatures	Able to operate in water temps ranging from 28F up to 95F
Winds	Capable on ice of operating in and sustaining effects of true wind speeds of 35kts sustained and capable of surviving up to 45kt gusts.
Visibility	Able to operate in reduced visibility down to 1/10NM. Caused by all forms of heavy precipitation (rain, snow, sleet, fog)
Humidity	Able to Operate in 0% to 100% relative humidity
Day/Night Ops	Able to conduct missions in day or night.
Water Type	Able to operate in fresh and salt water
Waterways Operation	Able to operate in navigable waterways
Electrification Resistant	Able to insulate operators against electrified water in flooded downed power line scenario

Trailer	Boat is deployable and recoverable from land, water, and ice using the trailer.
Transition	Able to transition from land to soft water via the trailer on an embankment/ramp grade up to 15 degrees.
Ice	Specifically designed to operate in all ice conditions, including but not limited to: Solid Clear/Snow Ice, Broken Pack/Candle Ice, and mixed condition ice flows.
Swift Water	Capable of operating on swift water of 5 knots.
Transition	Able to safely enter and depart the water from land (not on trailer) at angles up to 20 degrees, bow up without plunging or damage, under its own power.
Transition	Capable of transitioning from soft water to ice over compression ridges of up to 2.5 ft in a fully loaded condition, including personnel.
Transition	Capable of transitioning from an ice shelf to soft water with up to a 2ft drop without submerging / plunging the bow, in a fully loaded condition, including personnel.
Transition	Capable of transiting through ice compression ridges and brash ice conditions at 2.5ft above the ice shelf, without damage to the vessel.
Icing	Fully operable with 1.25in of icing on external structures.
Towing	Capable of being towed or towing another vessel.
Transition	Capable of transitioning over 4.5ft compression ridges from ice to ice.

BASIC CAPABILITIES	
Length	24 feet
Beam	7.5 feet
Draft	Less than 12" of draft in fresh water when fully loaded
Speed	Able to maintain a speed of at least 20 kts in seas up to 6 inches
Capacity: Personnel	MAX POB:12
Capacity: Useful Load	2900 lbs.
Stopping	Able to come to a complete stop from full speed in less than 7 vessel lengths while operating on snow covered ice

ELECTRIC SYSTEM DESIGN & CAPABILITIES
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Battery System	Battery system is controlled by Blue Sea 1147B switch Panel with Momentary rocker switches which include slide locks and back lighted labels.
Battery System	Blue Sea Remote ML-7700B 500 amp Battery switches with manual Override Knob
Battery System	Blue Sea ML-7622B 300 amp Auto Charge Relay with manual Override Knob and Start Isolation for sensitive house electronics during engine starting. Auto Charge Relay combines House and Start Batteries when engine or Battery charging is sensed. The combined Batteries will remain until Battery Bank voltage drops below a predetermined voltage at which time the Auto Charge Relay will disconnect the start battery preventing it from a low voltage condition. Auto Charge Relay can also force a combine of batteries or force a separation. Auto position of control switch allows auto connect and disconnect of batteries.
Protection	Front and rear Distribution areas provide discrete circuit protection for all devices. All circuit protection is of the Auto Reset type. All Auto Reset Type Breakers are protected inside water tight enclosures.
Electrical Harness	All wiring is type GPTM where possible. For use in SAE J-1128 and J-378C applications at 105 degree Centigrade for Marine use. GPTM is a PVC jacket tin plated multi-strand wire. Harness wiring is hot stamped every three inches for length of wire. Hot stamp includes circuit number, function code, and wire size.
Electrical Harness	All internal wire harness splices to be sealed adhesive lined splices.
Electrical Harness	All harness wiring enclosed within convoluted conduit where possible. Conduit type is High temp (257 deg f) split Nylon type.
Electrical Harness	All connector wire terminals to be Tin, Nickle, or gold plated where possible.
Electrical Harness	All non connector type terminals to be of the heat shrink type where possible. All heat shrink type terminals to be adhesive lined.
Electrical Harness	All connectors to be sealed type where possible.
Electrical Harness	All harness external splice blocks to be sealed. All none sealed Power Distribution busbars to be stainless.
Documentation	Master Circuit Directory and Harness prints to be provided.

COMMUNICATION CAPABILITIES

Internal Comms.	Internal Comms. requirements to be met based on <i>Request for Proposal</i>
External Comms	External Comms. requirements to be met based on <i>Request for Proposal</i>

LIGHTING CAPABILITIES	
External Lighting	Equipped with dual remote control rotating spot lights
External Lighting	Equipped with external flood lights covering 360 Degrees of arc around vessel's quarters
External Lighting	Equipped with forward facing flood lights of over 215,000 Candela (x2)
External Lighting	Mounted Blue Law Enforcement Lights
Internal Lighting	Equipped with interior cabin lighting (white and red)

NAVIGATION CAPABILITIES	
Navigation Lights	Equipped with navigation lights and sounds that comply with U.S. Navigation rules. Lights require minimal service during operations in all weather conditions (i.e. snow/ice removal)
Navigation Controls	Navigation controls and displays are easily accessible and viewed by Operator and Navigator.
Chart Plotters	Equipped with Raymarine AXIOM Chart Plotters and NEMA 2000 and J1939 Network Connecting System.
Navigation Equipment	Navigation Equipment requirements to be met based on <i>Request for Proposal</i>
FLIR	Remote Controlled FLIR Unit able to be installed on Tower (model number at customers choice)
Radar Dome	Raymarine Quantum compatible

DESIGN CAPABILITIES

System Design	Resistant to excessive icing and radiator ice damage
System Design	Ultra-strong hull is resistant to damage due to operation on ice and operation over ground. Use of <i>Coosa</i> structure and composite Hull.
System Design	Designed for the most optimal varying ice and water conditions and transitions.
System Design	Designed with a low center of gravity, wide beam and stable hull shape to safeguard against capsizing during operation.
Storage	Vessel has storage for all rescue gear including board.
System Design	Capable of freeing itself when becoming frozen in the ice (i.e. ice anchor w/ lifting capabilities)
System Design	Ability to brake and anchor on the ice.
System Design	Allows for easy access to all bilges and watertight areas for easy dewatering.
System Design	Able to clear windshields of both water build-up from mist, rain and sea-spray and ice buildup.
System Design	Ability to operate and recover persons from the water and from other vessels or structures, both able-bodied and incapacitated, and safely protect them for transit with only 1 Crew Member if required.
Alarms	Equipped with visual and audio engine alarms.
Maintenance	Design ensures maintenance and repair can be efficiently performed; provides maintenance cycles that reduce risk of component failures; provides maintenance procedures for its service life objective; Built with emphasis on more efficient, reliable equipment and components that require less maintenance; boat design provides maintainers with adequate physical and visual access to complete maintenance.

SUPPORT	
Boat Information Book (BIB)	The BIB provided, provides a description of the vessel's capacities and characteristics, including operating instructions for systems, equipment, and components installed.
Drawings	Electrical Systems drawings and other necessary documents will be available
Supporting Lists	Master Equipment List Provided: Recommended Spare parts List, List of Special Tools and Long Lead Parts.

RELIABILITY CAPABILITES

Durability	Constructed to withstand long-term shock and vibration during operations at full speed in seas of 6 inches or less and operations at minimum speed over rough ice up to 3 foot shelves.
System Protection	Has sufficient Protection for Propellers and cooling system to prevent damage from foreign objects.
Steering	Capable of full range of steering with over steering protection in place

SURVIVABILITY CAPABILITIES	
Design	Designed with positive buoyancy to prevent sinking in the event of hull damage or capsizing.
Egress	Has multiple exits from the cabin

HUMAN SYSTEMS ACCOMMODATIONS	
Human Systems	The SPC-IRT allows the crew to safely and efficiently conduct missions at all required speeds and sea states. This includes conveniently-placed displays and controls; maximum external visibility; handrail design that allow for safe movement in and around the boat. The ergonomics takes into account the difficulties imposed by boat motions as well as the limitations to personnel movement due to the wearing of required safety, survival, and law enforcement gear.
Cabin	Vessel has a Fully-enclosed cabin structure. Port and Starboard Entrances. Equipped with capability to easily bring patient on stretcher into cabin from either side
Crane	600 LBS davit crane for lifting persons or objects into vessel
Seating	8 seats total, 4 seats equipped with mechanical suspension for shock mitigation, forward and aft motion, pivot, weight adjustable.
Handholds	Each seat location is provided with dedicated handholds arranged in such a way that seated personnel's legs and knees are not impacted while underway, including the coxswain's position.
Windshield	Multiple De-icing means to ensure crew visibility

TRAILER CAPABILITES

Trailer	Able to transport on all standard U.S. roads and highways at speeds up to 75 mph. Electrical winch systems capable of recharging, self-contained within trailer assembly.
Trailer	SPC-IRT is capable of launch and recovery from trailer in soft water, hard (ice) water, and land with 1 Crew Member