

EMERGENCY TOW VESSEL CAPABILITY MATRIX (BOLLARD PULL IN TONS)

Study	Assisted Vessel Type/Size (deadweight tons)	Moderate Weather Seas 10-20', Winds 20-40 kts.	Very Rough Weather Seas > 20', Winds > 40 kts.
Washington State Office of Marine Safety (Allan) Emergency Towing System Task Force Report, 1994 ¹	All Types up to 180,000 Tons	100	150
Canadian Council of Ministers of the Environment (Allan & Dickins) A Review of Escort, Rescue and Salvage towing Capability in Canadian Waters, 1995 ²	265,000 Ton Tanker	42 (South BC) – 70 (North BC) South BC = West Coast of Vancouver Island North BC = Queen Charlottes & North	120 (South BC) – 220 (North BC)
Alaska Department of Environmental Conservation Best Achievable Technology, 1997 ³	265,000 Ton Tanker	Not Addressed	90-125
Enhanced Puget Sound International Tug of Opportunity System (ITOS), 1998 ⁴	<u>Tanker/Bulker</u> <40,000 40,000 – 75,000 75,000 – 125,000 125,000 – 250,000 <u>Container/Cruise/Car Carrier</u> <40,000 40,000 – 75,000 75,000 – 125,000 125,000 – 250,000 <u>Reefer/RORO/Log</u> <40,000 40,000 – 75,000 <u>Fishing</u> <40,000	35-39 40-59 >60 >60 >60 40-59 >60 >60 >60 >60 35-39 40-59 35-39	40-59 >60 >60 >60 >60 >60 40-59 >60 40-59
United Kingdom Emergency Towing System, 1998 ⁵	265,000 Ton Tanker	Not Addressed	125

¹ Worst Case Planning. Planning factor was the capability to effectively respond to 99% of vessels adrift in severe conditions (slightly less than Very Rough above).

² Worst Case Planning. Planning factor was the capability to effectively respond to 94% of vessels adrift in severe conditions (slightly less than Very Rough above).

³ Worst Case Planning. Planning factors based on tank vessel and tow vessel operator experience and actual towing tests.

⁴ All Case Planning. Planning factors based on tow vessel operator experience.

⁵ Worst Case Planning. Planning factors based on actual emergency towing experience.

Rescue Vessel Equipment Requirements and Procedures

The process of performing a successful rescue of a disabled vessel, whether its mission is to hook up and stabilize the vessel and arrest its drift, or to actually hook up and tow the disabled vessel, is dependent upon a multitude of factors including the type and size of disabled vessel to be rescued; the existing weather and sea conditions the size, horsepower (bollard pull), propulsions and standard towing equipment available, and the urgency of the situation in terms of location and distance from shore.

- The basic equipment requirements for performing a rescue would typically include:
 1. 600' of 8" polypropylene float line;
 2. a line throwing gun;
 3. 1 ea 150X2 ¼" wire pendants;
 4. Orville Hook or special towing shackle which could choke the ship's anchor chain;
 5. 250' X 14 " nylon shock line;
 6. 400' X 1 1/4" wire
 7. If all of the above equipment is not available, an oceangoing tugboat will typically have 7" to 7 ½": deck lines, a winch and tow wire , and/ or Orville Hook that can be used to hook up to a disabled vessel's anchor chain to provide interim assistance and arrest its drift, until such time as a suitable rescue vessel arrives to provide rescue towing assistance

- Providing the disabled vessel has a source of power and sea conditions allow, a rescue hook-up would involve the following steps:
 1. Ship passes an appropriate deck line to the tug and hoists up 1 ea 150' X2 ¼" wire pennant which is connected to the rescue vessel's surge chain which are connected to the rescue vessel's tow wire--- a 250' X 14" nylon shock line or the 10" shock lines can be used in addition to or in place of the rescue vessel's surge chain.
 2. If the disabled vessel doesn't have power and sea conditions allow, the rescue vessel will lay alongside the disabled vessel and pass the polypropylene line or hard wire utilizing the rescue vessel's winch, or;
 3. The rescue vessel will utilize an Orville Hook or a special towing shackle which can securely choke a ship's anchor chain to make a secure connection to the ship's anchor chain;
 4. If urgency is not an issue and there is an adequate amount of time, the rescue vessel running gear will be utilized to draw the ship's anchor chain to the work deck of the rescue tug and the tugs surge chain will be connected to the anchor chain which ultimately will be connected to the rescue vessel's tow wire.

Appendix I

Rescue Vessel Equipment Requirements and Procedures

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