

## TUG TOWING EXPLAINED

The aim is to emulate real ship handling assisted with tugs within confined harbour spaces, in common with the real world a berth in a harbour is set up with buoyed channel markers to be navigated without collision. This has an international following with many national and international events.

Model tug towing is normally conducted with a "Dead ship" eg. The towed vessels engine/s not employed thus all motion comes from the tugs applying force. Ships normally use their own power to move backwards and forwards along side a berth and the tugs provide the sideways and turning movements.

A tug skipper starts with no points and aim to finish a run with no points. Every time a tug or a ship hits a buoy they gain a point, going of course gains 5 points. (if working in pairs)both skippers take the points and enter them on the score sheet. At the end of the season the skipper with least points is awarded a large paper weight and becomes "Tug Master"

It sounds easy but to be effective first learn to control your tug stopping, starting and turning in any direction with out delay, directional control ideally needs to become instinctive also be careful of the tow rope wrapping round your prop when turning alongside the towed ship. The dead ship takes time to start moving with the tugs and this inertia has to be taken into account when stopping/turning.

The bow tug skipper is in control and principally tows while the aft tug provides brake and steering , communication between the tug skippers is key to a clear run. If there is a significant difference between two tugs the lower powered /less manoeuvrable tug takes the bow.

Usually the ship is pulled sideways from the berth both tugs have to apply equal force to keep the tow parallel to the berth when sufficiently clear of the berth the ship is often turned through 180 degrees to point it the course. The bow tug will hold the bow of the ship while the aft tug pulls the stern through an arc and brings the ship to a stop facing the course.

The bow tug now tows towards the middle of the first channel buoys the aft tug keeps the stern in line, if the line of travel looks good they proceed if not power comes off the bow tug and the aft tug slows/stops the ship even towing the ship backwards away from the buoys to permit re alignment for another attempt. (Ship and tug owners don't like dents in their expensive vessels)

Repeat this through the course and end up back at the harbour to again turn the ship through 180 degrees and in position stationary opposite the berth, now the tugs have to move from the ends of the ship to positions where they can push the ship sideways towards the harbour wall working together to keep the ship parallel and arrive gently. don't forget to watch your towing rope as you manoeuvre as it loves to wind it self round your propellers.

If you have mastered all this on a quiet windless day try it again with even a moderate breeze, you have to anticipate the effect of the wind pushing the tugs and tow off course but the wind doesn't blow in a nice constant speed and direction, it gets very interesting trying to get through the parallel tubes without a scrape and now the berth has been reached you have to turn the ship line it up parallel and stopped opposite the berth, then

the breeze interjects and starts to move the tow so that you have to check its drift and push it to the berth, it always happens just as you have got your tug into position for the sideways push.

All are welcome to have a go, if you don't have a tug there will soon be a club tug available or try with one in use on the day, any model can be used with a strong point to attach a tow rope but ensure any removable superstructure is either fastened down or attached with a cord to the hull in case the tow rope dislodges it.

We also enjoy piloting the tow ships around on their own power with radio control. (A must as even tugs have failures and require assistance to get back to the bank) Available tows:  
The large coaster "Challenger" is 10' 6" long and ballasted to between 180lbs to 260 lbs.  
Ship "Hudson bay" 5' long and ballasted to approx 40 to 50 lbs

Barge 4" long ballasted to approx. 20 lbs.

To provide more flexibility in tow sizes and number of events that can be operated I hope to add more barges this hopefully will draw in the pusher tugs.

"Youtube" has many clips of model tug towing completion and meetings, below is a sample of viewing available: "321 Tug towing at Balne Moor June 2008"

"Tug towing at Balne Moor" 16 minutes. This is large ship handling.

"Balne moor tug towing" 47 minutes Also large ship handling the first few minutes give the idea.

## **RECOMMENDATIONS TUGS**

These come in all shapes and sizes but ideally should have been built for towing if they are to be used for towing. The towing bollards/winches/ structures on the tug must be built in the most robust manner possible. Decks or bulkheads carrying the towing equipment should also be strengthened, 6mm ply sheet as decking is useful here, and should be firmly glued into the hull of the tug with the joints being reinforced if necessary. The idea is to build in strength so that any shock loading is transmitted to the hull of the tug, moving the tug through the water, instead of allowing the load to be absorbed by a small structure which may eventually fail if it is shocked frequently enough.

Towing from a removable superstructure is not recommended.

Batteries, motors, propulsion and control systems should also be strengthened to cope with the extra workload they will be asked to carry. A 1 2v motor produces the power without putting as much strain on the electronics as would a 6v motor doing the same amount of work. Larger batteries give longer endurance ie use 8-10 Ah batteries instead of 4Ah.

The use of a gog (or gob) rope is recommended especially on older narrower beamed tugs. The gog rope is fastened into the stern of the tug and controls the position of the tow rope preventing the rope moving to a beam on position and thence the possibility of capsizing the tug. The book Tugs and Towing by M.J.Gaston, published by PSL (Patrick Stephens Limited) includes illustrations of gog rope installations.

Some people have already built tugs to scale standards but may now want to tow with the tug. The problem here is doing the work to provide a strong towing structure without necessitating a complete rebuild of the tug. Unfortunately because of the diversity of

building techniques and standards it is impossible to give any detailed guidance in how to do this, except to say (again) that the towing structure needs to be made as strong as possible. Tugs originating as scale boats would probably be better suited (it may be that the owner is happier) on lighter tows such as single towing or in the novice class of team towing. However a small tug is

still capable of moving the largest of tows, don't be intimidated by size, thinking ahead and working as a team count for more than raw power.

Areas where the tow rope may fall when slack must be kept clear of unnecessary clutter. Twin screw tugs with independent motor control have an advantage over single screw tugs, however if you have a single screw tug try forming a three tug team instead of a two tug team and use the extra tug's freedom of movement to compensate for the relative lack of manoeuvrability of the single screw tug.

In team towing the tugs should ideally be closely matched in their performance. However when this is not the case the more powerful tug should be on the stem of the tow. The rear tug is used not only to help control the tow but also to get the lead tug and tow out of trouble should the need arise, If the weaker tug is on the stern it may not be able to control the situation when things start to get out of hand.