

May 2, 2018

The following guidelines have been developed to determine adequate tug assistance for docking and undocking in the Port of Houston. Similar docks have been grouped and coupled with vessel size and draft information. Assist tugs are then designated by the circumstances of the docking or undocking maneuver. Tugs are categorized by “bollard pull” as provided by area operators. Bollard pull is used rather than horsepower to rate tugs effectiveness. Additionally, the tug’s design type, tractor or conventional has a definite bearing on effectiveness and desirability.

**Tug Class Ratings:
Minimum Bollard Pull (in pounds)**

| Class | ahead | astern |
|----------------------------|--------------|---------------|
| S (Small; compact) | 35,000 | 20,000 |
| M (Medium; diamond class) | 60,000 | 45,000 |
| L (Large; twin-screws) | 90,000 | 60,000 |
| T (Tractor) | 100,000 | 90,000 |
| C (Mini ZTECH) 2460 series | 125,000 | 112,500 |
| Z (Big ZTECH) 3075 series | 160,000 | 150,000 |

Big ZTECH can substitute for any class except small

Mini ZTECH can substitute for T, L, M, S

T can substitute for S, M or L

L can substitute for S or M

M can substitute for S except arrivals less than 30'

A widebody is defined as any vessel with a beam of 120' or greater.

All vessels requiring tug escort will be of tractor tug design (T, C, or Z). With the exception of Tug/Barges which can use a Twin Screw (L).

Assignment of Escort Tugs

Any vessel that is required to have an escort tug due to draft or deadweight tonnage, will be assigned an escort tug according to the following table:

| <u>Ship Size</u> | <u>Draft</u> | <u>DWT</u> | <u>Assigned Tug</u> |
|------------------|--------------------|--------------|---------------------|
| 550-750 | > 40-0 | 65k-80k MT | T |
| 751-850 | > 40-0 | 80k-100k MT | Z/C |
| ≥ 851 | > 35-0(with cargo) | 100k-130k MT | Z |

Note: A partially loaded Suez Max with a draft of 35-0 has an approximate dwt of 109,000 MT's, which is more weight than a fully loaded widebody.

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BOW THRUSTER SUBSTITUTIONS

Bow thruster substitutes for smallest tug

Thrusters must meet the following minimum requirement of available horsepower to substitute for a tug. (1 KW equals 1.35 HP)

| Vessel LOA | Thruster Horsepower |
|--|----------------------------|
| More than 900' | 2,500 |
| More than 900' <i>(Bayport and Barbours Cut Only)</i> | 2,400 |
| 751' – 900' | 2,000 |
| 551' – 750' | 980 |
| 501' – 550' | 730 |
| 451' – 550' | 565 |
| 350' – 450' | 400 |
| Less than 350' | 200 |

As always any vessel specific concerns should be discussed with the Houston Pilots because the ultimate decision falls to the pilot. Ships and the waters in which they operate represent a dynamic, ever-changing environment. Firm rules addressing every possible scenario are not possible. The individual pilot on board is best situated to evaluate the specific docking and/or undocking evolution contemplated by the vessel and the prevailing weather, current, and traffic situation affecting the vessel. These guidelines are recommendations only. It is recognized that the on-scene discretion of the pilot and master should not be hindered. The following guidelines regarding tug assistance for docking and undocking are in no way intended to limit, hinder, or override the on-scene discretion of the pilot. We realize that there will be situations where actions that conflict with these recommendations may be necessary to address specific situations or special circumstances that confront a specific vessel. Further, it is recognized that the vessel, tug design, and terminal configuration may change requiring a departure from the current tug assistance for docking and undocking guidelines.

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Bayport- Odfjell

| Vessel size | Draft | Arrival | Departure | Notes |
|-------------|-------|---------|-----------|-------------------|
| <400' | Any | LS | LS | |
| <500' | <30' | LS | LS | |
| <500' | ≥30' | LS | LS | |
| <550' | <30' | - | L | *head out sailing |
| 501'-650' | <30' | LL | LS | |
| 501'-650' | ≥30' | LL | LM | |
| >650' | <30' | LL | LL | |
| >650' | ≥30' | LL | LL | |

LBC 1,2,3,4,5

| Vessel size | Draft | Arrival | Departure | Notes |
|--------------------|-------|---------|-----------|-------------------------|
| <400' | Any | LS | LS | |
| <500' | <30' | LS | LS | |
| <500' | ≥30' | LS | LS | |
| 501'-650' | <30' | LS | LS | |
| 501'-650' | ≥30' | LL | LM | |
| >650' Non Widebody | <30' | LL | LL | |
| >650' Non Widebody | ≥30' | TL | TL | *No thruster substitute |
| Widebody | <34 | ZT | ZT | *No thruster substitute |
| Widebody | ≥34 | ZZT | ZZT | *No thruster substitute |

Barbours Cut / Bayport Container Terminal, ETMP

| Vessel size | Draft | Arrival | Departure | Notes |
|------------------------|-------|---------|-----------|-------------------------|
| >550' and <650' | Any | LL | LL | *ETMP – LPG only |
| >650' | Any | TT | TT | *ETMP – LPG only |
| <600' | Any | LL | MM | |
| 601'-749' | <30' | LL | LL | |
| 601'-749' | Any | LL | LL | |
| 750'-999' | <30' | ZC | CC | |
| 750'-999' | ≥30' | ZC | ZC | |
| <900' (widebody) | Any | TT | TT | *ETMP = EM 7 + 8 |
| 900' – 999' (widebody) | Any | ZZ/ZTT | ZZ/ZTT | *no thruster substitute |
| ≥1000' | Any | ZZZ | ZZ | *no thruster substitute |
| ≥1100' | Any | ZZZZ | ZZZ | |

NOTICE: Thruster substitution exception for Barbours Cut/ Bayport Container Terminal: Container vessels with 35' draft or more and more than 120' beam must have at least two tugs. Container vessels of 750' LOA or more must have at least two tugs if turning.

ExxonMobil Baytown Berth 1 & 2

| Vessel size | Draft | Arrival | Departure | Notes |
|-------------|-------|---------|-----------|--------------------------|
| <500' | <30' | SS | S | * no thruster substitute |
| <500' | ≥30' | MS | M | * no thruster substitute |
| 501'-650' | <30' | LM | MS | * no thruster substitute |
| 501'-650' | ≥30' | LL | LM | * no thruster substitute |
| >650' | <30' | LL | LM | * no thruster substitute |
| >650' | ≥30' | LL | LL | * no thruster substitute |

ExxonMobil Baytown Berth 3,4,5,6

| Vessel size | Draft | Arrival | Departure | Note |
|--------------------------|-------|---------|-----------|--------------------------|
| <500' | <30' | SS | SS | * no thruster substitute |
| <500' | ≥30' | MM | MS | * no thruster substitute |
| 501'-650' | <30' | LM | MS | * no thruster substitute |
| 501'-650' | ≥30' | LL | LM | * no thruster substitute |
| >650' | <30' | LL | LM | * no thruster substitute |
| >650' | ≥30' | TLL | LL | * no thruster substitute |
| Widebody (Berth 6) | <34' | CTL | LL | * no thruster substitute |
| Widebody (Berth 6) | ≥34' | ZCL | TT/TL | * no thruster substitute |
| Widebody ≥ 150 (Berth 6) | <34' | ZZT | TT | * no thruster substitute |
| Widebody ≥ 150 (Berth 6) | ≥34' | ZZT | ZT | * no thruster substitute |
| Widebody (Berth 4 & 5) | <34' | ZZT | LL | * no thruster substitute |
| Widebody (Berth 4 & 5) | ≥34' | ZZT | TT | * no thruster substitute |
| Widebody ≥ 150 (Bth 4-5) | <34' | ZZT | TT | * no thruster substitute |
| Widebody ≥ 150 (Bth 4-5) | ≥34' | ZZT | ZT | |

Bostco

| Vessel size | Draft | Arrival | Departure | Notes |
|----------------|-------|---------|-----------|----------------------|
| <500' | <30' | LS | LS | |
| <500' | ≥30' | LS | LS | |
| 501'-650' | <30' | LL | LL | |
| 501'-650' | ≥30' | LL | LL | |
| >650' | <30' | TL | LL | |
| >650' | ≥30' | ZT | LL | |
| >650' | ≥34' | ZC | ZC | |
| Widebody | <34' | ZC | ZC | *aft tug 2460 series |
| Widebody | ≥34' | ZCC | ZCC | *aft tug 2460 series |
| Widebody > 150 | <34' | ZCC | ZC | *aft tug 2460 series |
| Widebody > 150 | ≥34' | ZCC | ZCC | *aft tug 2460 series |

Cemex, Cargil, Houston Ammonia, Georgia Gulf Agrifos

| Vessel size | Draft | Arrival | Departure | Notes |
|-------------|-------|---------|-----------|-------|
| <400' | Any | S | S | |
| <500' | <30' | SS | SS | |
| <500' | ≥30' | SS | SS | |
| 501'-650' | <30' | LL | LS | |
| 501'-650' | ≥30' | LL | LM | |
| >650' | <30' | LL | LL | |
| >650' | ≥30' | LL | LL | |

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Vopak, Deer Park

| Vessel size | Draft | Arrival | Departure | Notes |
|-------------|-------|---------|-----------|-------|
| <400' | Any | S | S | |
| <500' | <30' | SS | SS | |
| <500' | ≥30' | MS | SS | |
| 501'-650' | <30' | LL | LS | |
| 501'-650' | ≥30' | LL | LM | |
| >650' | <30' | LL | LM | |
| >650' | ≥30' | LL | LL | |
| Widebody | <34' | TT | LL | |
| Widebody | ≥34' | CC | LL | |

NOTICE: Vopak docks have a one tug minimum

ITC

| Vessel size | Draft | Arrival | Departure | Notes |
|---------------------|-------|---------|-----------|-------------------|
| <400' | Any | S | S | |
| <400' (Berth 3) | Any | SS | SS | |
| <400' (Berth 7 & 8) | Any | SS | SS | * boat men safety |
| <500' | <30' | SS | SS | |
| <500' | ≥30' | MS | SS | |
| <550' (Berth 1 & 2) | <30' | - | S | *head out sailing |
| 501'-650' | <30' | LL | MS | |
| 501'-650' | ≥30' | TL | LL | |
| >650' | <30' | TL | LL | |
| >650' | ≥30' | TT | LL | |
| Widebody | <34' | CT | LL | |
| Widebody | ≥34' | CC | TL | |

*ITC berth 3 restricted to (S) compact tugs per tow company

ITC Pasadena

| Vessel size | Draft | Arrival | Departure | Notes |
|-------------|-------|---------|-----------|--------------------|
| <400' | Any | S | S | |
| <500' | <30' | SS | SS | |
| <500' | ≥30' | LS | SS | |
| <550' | <30' | - | S | * head out sailing |
| 501'-650' | <30' | LL | LS | |
| 501'-650' | ≥30' | LL | LL | |
| >650' | <30' | TL | TL | |
| >650' | ≥30' | CT | CT | |

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Houston Fuel Oil Terminal

| Vessel size | Draft | Arrival | Departure | Notes |
|---------------------|-------|---------|-----------|-------|
| <500' | <30' | LS | SS | |
| <500' | ≥30' | LM | SS | |
| 501'-650' | <30' | LL | LM | |
| 501'-650' | ≥30' | LL | LL | |
| >650' | <30' | LL | LL | |
| >650' | ≥30' | TL | LL | |
| Widebody < 150 Beam | <34' | TT | TL | |
| Widebody < 150 Beam | ≥34' | CC | TL | |
| Widebody < 150 Beam | ≥40' | ZZ/ZC | ZC/CC | |
| Widebody (Dock 2) | Any | CT | CT | |
| Widebody ≥ 150 Beam | <34' | ZC/CCT | CC/CT | |
| Widebody ≥ 150 Beam | ≥34' | ZZ/ZCT | ZC | |

Shell Oil, Enterprise HSC, Stolthaven

| Vessel size | Draft | Arrival | Departure | Notes |
|---------------------|-------|---------|-----------|--|
| <400' | Any | S | S | * no thruster substitute (Shell) |
| <500' | <30' | SS | SS | |
| <500' | ≥30' | MS | SS | |
| <550' | <30' | - | S | * head out sailing * no thruster substitute (Shell) |
| 501'-650' | <30' | LM | LM | |
| 501'-650' | ≥30' | LL | LM | |
| >650' | <30' | LL | LM | |
| >650' | ≥30' | LL | LM | |
| Widebody < 150 Beam | <34' | TT | TL | * no thruster substitute (Shell) |
| Widebody < 150 Beam | ≥34' | TT | TL | * no thruster substitute (Shell) |
| Widebody < 150 Beam | ≥40' | ZZ/ZC | ZC/CC | * no thruster substitute (Shell) |
| Widebody ≥ 150 Beam | <34' | ZC/CCT | CT | * no thruster substitute (Shell) |
| Widebody ≥ 150 Beam | ≥34' | ZZ/ZCT | ZC | * no thruster substitute (Shell) |

*Vessels going to/from ET1 or ET4-8 must have two tugs minimum. No thruster substitution for tug arrangements of two or less.

*Tug/Tow vessels going to/from ET1 or ET4-8 require one large (L) tug.

Bulk Plant, Vulcan, Kinder-Morgan #3, #4

Houston Cement West, Valero

| Vessel size | Draft | Arrival | Departure | Notes |
|-------------|-------|---------|-----------|--------------------------|
| <400' | Any | S | S | * no thruster substitute |
| <500' | <30' | LS | SS | |
| <500' | ≥30' | LM | MM | |
| 501'-650' | <30' | LL | LM | |
| 501'-650' | ≥30' | TL | TL | |
| >650' | <30' | TL | LL | |
| >650' | ≥30' | TT | TL | * no thruster substitute |

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Jacintoport 4, 5, Texas Terminal, Greensport, Kinder Morgan North, Kerley, Kinder Morgan Deepwater, Chevron Phillips, Industrial Terminals, South Central Cement, Kavanagh

| Vessel size | Draft | Arrival | Departure | Notes |
|-------------|-------|---------|-----------|--------------------|
| <400' | Any | S | S | |
| <500' | <30' | SS | SS | |
| <500' | ≥30' | SS | SS | |
| <550' | <30' | - | S | * head out sailing |
| 501'-650' | <30' | LL | LS | |
| 501'-650' | ≥30' | LL | LM | |
| >650' | <30' | LL | LM | |
| >650' | ≥30' | TL | LL | |

Magellan 2, Targa, KinderMorgan Pasadena, Pasadena Refinery, KinderMorgan 1,2, Galena Park, Vopak Galena Park, Lyondell, Texas Petro Chemical, KinderMorgan Export Terminal

| Vessel size | Draft | Arrival | Departure | Notes |
|-------------|-------|---------|-----------|----------------------------------|
| <400' | Any | S | S | * no thruster substitute (Targa) |
| <500' | <30' | LS | LS | |
| <500' | ≥30' | LL | LM | |
| <550' | <30' | - | S | * head out sailing (Ex. Targa) |
| 501'-650' | <30' | LL | LS | * no thruster substitute (Targa) |
| 501'-650' | ≥30' | LL | LL | * no thruster substitute (Targa) |
| >650' | <30' | TL | LL | * no thruster substitute (Targa) |
| >650' | ≥30' | TT | TL | * no thruster substitute (Targa) |

Woodhouse, Manchester

| Vessel size | Draft | Arrival | Departure | Notes |
|----------------------|-------|---------|-----------|----------------------------|
| <400' | Any | S | S | |
| <500' | <30' | SS | SS | |
| <500' | ≥30' | MS | SS | |
| 501'-650' | <30' | LL | MS | |
| 501'-650' | ≥30' | LL | MM | |
| >650' | <30' | LL | LM | |
| >650' | ≥30' | LL | LL | |
| Any (Berths D, E, F) | Any | S | S | * mandatory thruster + tug |

*Woodhouse Slip 3 & Sims Bayou restricted to (S) compact tugs. Per tow company. CAN USE C TUG IF: OVER BOW, OVER STERN, LASHED ALONGSIDE

*Woodhouse Slip 2 restricted to (S) compact tugs or (L) twin screw tugs depending on vessel size. Per tow company. CAN USE C TUG IF: OVER BOW, OVER STERN, LASHED ALONGSIDE

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Inbessa, Jacintoport 1-3

| Vessel size | Draft | Arrival | Departure | Notes |
|-------------|-------|---------|-----------|-------------------------|
| <400' | Any | S | S | |
| 401'-650' | <30' | TL | TL | |
| 401'-650' | ≥30' | TT | TL | |
| >650' | Any | TT | TT | *no thruster substitute |

Magellan 1 + 3

| Vessel size | Draft | Arrival | Departure | Notes |
|-------------|-------|---------|-----------|--------------------------|
| <400' | Any | S | S | * no thruster substitute |
| 401'-699' | <30' | CC | CT | * no thruster substitute |
| 401'-699' | ≥30' | CC | CT | * no thruster substitute |
| ≥700' | Any | CC | CC | * no thruster substitute |

City Docks, Old Manchester & all others above 610 Bridge

| Vessel size | Draft | Arrival | Departure | Notes |
|-------------|-------|---------|-----------|--------------------|
| <400' | Any | S | S | |
| <500' | <30' | LS | SS | |
| <500' | ≥30' | LS | SS | |
| <550' | <30' | - | S | * head out sailing |
| 501'-650' | <30' | LM | MS | |
| 501'-650' | ≥30' | LL | MM | |
| >650' | <30' | LL | LM | |
| >650' | ≥30' | TL | LL | |

New Terminals

| Vessel size | Draft | Arrival | Departure | Notes |
|-------------|-------|---------|-----------|-------|
| <500' | <30' | LS | SS | |
| <500' | ≥30' | LM | LS | |
| >500' | <30' | LL | LS | |
| >550' | ≥30' | LL | LM | |

Car Carriers, City Dock 24 to City Dock 32

| Vessel size | Draft | Arrival | Departure | Notes |
|------------------|-------|---------|-----------|-------------------|
| All Car Carriers | Any | TL | TL | *with thruster |
| All Car Carriers | Any | TT | TT | *without thruster |
| Bahri Ships | Any | TL | TL | |

Oceangoing tug barge units

| Vessel size | Draft | Arrival | Departure | Notes |
|-------------|-------|---------|-----------|-------|
| <600' | <20' | L | L | |
| <600' | ≥20' | L | L | |
| >600' | <20' | L | L | |
| >600' | ≥20' | L | L | |

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