

Los Angeles/Long Beach Harbor Safety Committee  
**CERTIFIED BOLLARD PULL TEST RESULTS**

As of 22 June 2020

**AMNAV MARTIME CORP.\*\*\***

| <b>Name</b>    | <b>Total HP (Adv)</b> | <b>Ahead Short Tons</b> | <b>Astern Short Tons</b> | <b>Prop</b> | <b>Length</b> | <b>Test Port</b> | <b>Bollard Pull Issued Date (and ETIP extension status when applicable)</b> |
|----------------|-----------------------|-------------------------|--------------------------|-------------|---------------|------------------|---|
| INDEPENDENCE   | 5080                  | 65.4                    | 67.9                     | Z           | 78            | Longview, WA     | 04/09/07<br>(ETIP extension)  |
| LIBERTY        | NR                    | 39.2                    |                          | Z           | 94.7          | NR               | 08/15/05<br>(ETIP extension)  |
| PATRIOT        | NR                    |                         | 33                       | T           | 68.9          | NR               | 10/06/09<br>(ETIP extension)  |
| REVOLUTION     | 5080                  |                         | 60.9                     | Z           | 73.4          | Oakland, CA      | 12/18/18  |
| SANDRA HUGH    | NR                    | 66.4                    | 67.5                     | Z           | 78            | NR               | 07/31/07<br>(ETIP extension)  |
| FREEDOM        | 4400                  |                         | 50                       | Z           | 86            | Oakland, CA      | 11/25/15  |
| SARAH          | 4732                  |                         | 61                       | Z           | 81.5          | Oakland, CA      | 6/23/16   |
| TERESA BRUSCO  | 4732                  |                         | 61.79                    | Z           | 81.6          | Oakland, CA      | 12/18/18  |
| DR HANK KAPLAN | 5350                  | 68.3                    | 64                       | Z           | 76.3          | Oakland, CA      | 09/24/2019  |

Los Angeles/Long Beach Harbor Safety Committee  
**CERTIFIED BOLLARD PULL TEST RESULTS**

As of 1 July 2019

**BAYDELTA MARTIME CORP.\*\*\***

| <b>Name</b>   | <b>Total HP (Adv)</b> | <b>Ahead Short Tons</b> | <b>Astern Short Tons</b> | <b>Prop</b> | <b>Length</b> | <b>Test Port</b> | <b>Bollard Pull Issued Date (and ETIP extension status when applicable)</b> |
|---------------|-----------------------|-------------------------|--------------------------|-------------|---------------|------------------|---|
| DELTA BILLIE  | NR                    | 93.7                    | 93.7                     | Z           | 100           | NR               | 04/04/09<br>(ETIP extension)  |
| DELTA CATYRUN | NR                    | 92.3                    | 91.6                     | Z           | 100           | NR               | 01/05/2011<br>(ETIP extension)  |
| DELTA TERESA  | 7,032                 | 90.31                   | 88.68                    | Z           | 100           | Everett, WA      | 04/19/2019  |

Los Angeles/Long Beach Harbor Safety Committee  
**CERTIFIED BOLLARD PULL TEST RESULTS**

As of 10 April 2020

**CROWLEY MARINE SERVICES, INC.\*\*\***

| <b>Name</b>                  | <b>Total HP (Adv)</b> | <b>Ahead Short Tons</b> | <b>Astern Short Tons</b> | <b>Prop</b> | <b>Length</b> | <b>Test Port</b>    | <b>Bollard Pull Issued Date (and ETIP extension status when applicable)</b> |
|------------------------------|-----------------------|-------------------------|--------------------------|-------------|---------------|---------------------|---|
| SCOUT                        | 4730                  | 52                      |                          | T           | 103           | Richmond, CA        | 12/07/09<br>(ETIP extension)  |
| MASTER                       | 4730                  | 52.3                    | 43.8                     | TR          | 103           | Treasure Island, CA | 5/10/10<br>(ETIP extension)   |
| LEADER                       | 4730                  | 58.9                    |                          | TR          | 103           | Richmond, CA        | 9/29/09<br>(ETIP extension)   |
| ADMIRAL                      | 4730                  | 54.4                    |                          | TR          | 103           | Richmond, CA        | 11/2/09<br>(ETIP extension)   |
| VALOR                        | 6772                  | 91                      | 90.3                     | Z           | 100           | Everett, WA         | 7/20/07<br>(ETIP extension)   |
| GOLAIH                       | 5000                  | 55                      | 51.8                     | Z           | 98.9          | Everett, WA         | 12/13/14  |
| GUARD                        | NR                    | 50.3                    | 47.4                     | TR          | 120           | NR                  | 07/23/07<br>(ETIP extension)  |
| RESOLUTE                     | NR                    |                         | 78.6                     | Z           | 110           | NR                  | 02/26/04<br>(ETIP extension)  |
| TIOGA                        | NR                    | 54.1                    | 52.9                     | Z           | 78.7          | NR                  | 10/31/13  |
| VETERAN                      | NR                    | 89.2                    | 90.5                     | Z           | 100           | Everett, WA         | 6/19/14<br>(ETIP extension)   |
| HERCULES<br>(NÉE<br>NOYDENA) | 6008                  | 88.19                   | 84.77                    | Z           | 82            | Everett, WA         | 4/9/20  |

Los Angeles/Long Beach Harbor Safety Committee  
**CERTIFIED BOLLARD PULL TEST RESULTS**

As of 22 June 2020

**FOSS MARITIME\*\*\***

| Name                                  | Total HP (Adv)           | Ahead Short Tons | Astern Short Tons | Prop | Length | Test Port      | Bollard Pull Issued Date (and ETIP extension status when applicable) |
|---------------------------------------|--------------------------|------------------|-------------------|------|--------|----------------|--|
| CAMPBELL FOSS                         | 5000                     | 63.5             | 68.6              | Z    | 78     | Portland, OR   | 12/21/11<br>(ETIP extension)   |
| BRYNN FOSS                            | 3000                     | 52.6             | 44.9              | Z    |        | Pt. Tacoma, WA | 8/3/07<br>(ETIP extension)   |
| ALTA JUNE                             | 5000                     | 66.8             | 64.8              | Z    | 73.4   | Pt. Tacoma, WA | 8/6/08<br>(ETIP extension)   |
| CAROLYN DOROTHY                       | 5080<br>*Non-hybrid mode | 64<br>53         | 62.7              | Z    | 78     | Pt. Tacoma, WA | 1/27/09<br>(ETIP extension)  |
| ARTHUR FOSS                           |                          |                  | 54.7              | TR   |        | Richmond, CA   | 12/19/08<br>(ETIP extension)   |
| LYNN MARIE                            | 6250                     |                  | 74.9              | Z    | 92     | Richmond, CA   | 9/30/04<br>(ETIP extension)  |
| EDITH FOSS                            | NR                       | 24.8             | 13.8              | T    | 73.3   | NR             | 06/23/11<br>(ETIP extension)   |
| MORGAN FOSS                           | NR                       | 64               | 60.9              | Z    | 78     | NR             | 08/31/05<br>(ETIP extension)   |
| PACIFIC ESCORT                        | NR                       | 36.8             | 32.3              | TR   | 100.2  | NR             | 3/12/03<br>(ETIP extension)  |
| PACIFIC KNIGHT                        | NR                       | 26.1             | 14                | T    | 77.2   | NR             | 04/06/02<br>(ETIP extension)   |
| PACIFIC QUEEN                         | NR                       | 24.6             | 13.7              | T    | 77.2   | NR             | 07/24/1997<br>(ETIP extension)                                       |
| DELTA LINDSEY<br>(Charter from AMNAV) | NR                       | 93.5             | 87.3              | Z    | 100    | NR             | 09/09/10<br>(Alternate Compliance)                                   |

| <b>FOSS Continued</b> |                       |                         |                          |             |               |                   |   |
|-----------------------|-----------------------|-------------------------|--------------------------|-------------|---------------|-------------------|---|
| <b>Name</b>           | <b>Total HP (Adv)</b> | <b>Ahead Short Tons</b> | <b>Astern Short Tons</b> | <b>Prop</b> | <b>Length</b> | <b>Test Port</b>  | <b>Bollard Pull Issued Date (and ETIP extension status when applicable)</b> |
| BO BRUSCO             | 4732                  | 62.79                   | 61.30                    | Z           | NA            | San Diego, CA     | 10/22/18  |
| LELA FRANCO           | 5150                  | 67.34                   | 60.3                     | Z           | 80            | San Diego, CA     | 8/5/2019  |
| RICH PADDEN           | 5350                  | 71                      | 63                       | Z           | 76.3          | San Francisco, CA | 02/12/2020  |
| JAMIE ANN             | 6866                  | 92.46                   | 90.68                    | Z           | 100           | Everett, WA       | 03/25/2020  |

\* Foss Maritime will notify the Marine Exchange and local pilots when operating in non-hybrid mode.

Los Angeles/Long Beach Harbor Safety Committee  
**CERTIFIED BOLLARD PULL TEST RESULTS**

As of 21 February 2020

**MILLENNIUM MARITIME\*\*\***

| <b>Name</b>                                 | <b>Total HP (Adv)</b> | <b>Ahead Short Tons</b> | <b>Astern Short Tons</b> | <b>Prop</b> | <b>Length</b> | <b>Test Port</b> | <b>Bollard Pull Issued Date (and ETIP extension status when applicable)</b> |
|---|-----------------------|-------------------------|--------------------------|-------------|---------------|------------------|---|
| MILLENNIUM MAVERICK                         | 4200                  | 51.7                    | 49.8                     | Z           | 100           | LA               | 12/11/12<br>(ETIP extension)  |
| TIM QUIGG                                   | 3600                  | 50                      | 52.6                     | Z           | 80            | LA               | 5/3/11<br>(ETIP extension)  |
| MILLENNIUM DAWN                             | 4400                  | 60.6                    | 56.3                     | Z           | 105           | SFO              | 1/25/11<br>(ETIP extension)   |
| JOHN QUIGG                                  | 4022                  | 52.3                    | 48.3                     | Z           |               | LA               | 11/7/12<br>(ETIP extension)   |
| ERNEST CAMPBELL                             | 3000                  | 39.9                    | 27                       | Z           | 107           | SFO              | 1 /25/2011  |
| BARBARA JEAN MULHOLLAND (NÉE ROBERT FRANCO) | 6850                  | 89                      | 91                       | Z           | 100           | Everett          | 4/4/2013  |
| MICHELLE SLOAN                              | 5150                  | 69                      | 65.4                     | TR          | 80            | LA               | 4/23/15   |
| JAMIE RENE A (NÉE AHBRA FRANCO)             | 6850                  | 91.6                    | 89.8                     | Z           | 103           | Seattle          | 6/13/2013<br>(ETIP extension)   |

Los Angeles/Long Beach Harbor Safety Committee  
**CERTIFIED BOLLARD PULL TEST RESULTS**

As of March 2018

**SAUSE BROTHERS\*\*\***

| <b>Name</b> | <b>Total HP (Adv)</b> | <b>Ahead Short tons</b> | <b>Astern Short tons</b> | <b>Prop</b> | <b>Length</b> | <b>Test Port</b> | <b>Bollard Pull Issued Date (and ETIP extension status when applicable)</b> |
|-------------|-----------------------|-------------------------|--------------------------|-------------|---------------|------------------|---|
| PONO        | 1600                  | 29.03                   | 21.65                    | T           | 75.3.         | LA               | 1/30/2018   |

\*\*\* Updated bollard pull information and Escort Tug Inspection Program (ETIP) information are available from the Marine Exchange of Southern California Web page: [www.mxsocal.org](http://www.mxsocal.org). ETIP compliant vessels have received an extension on their bollard pull date from the State of California.

Note: Pursuant to State Regulations, tugs must have their bollard pull re-tested every three years or be accepted into the ETIP to extend their bollard pull date.

- \* Equipped with Kort-type Nozzles
- \*\*\*\* Equipped with Flanking Rudders
- + Equipped with Kort-type Nozzles and Flanking Rudders
- ++ Sister tug to be tested within 6 months of relocation to LA/LB
- S Single Screw
- T Twin Screw
- TR Tractor Tug
- Z Z-Drive Tug
- NR Not reported

1. Due to its specific design, a tractor-type tug can, under certain circumstances, apply significantly increased tension on the tow line.
2. Flanking rudders can, under certain conditions, increase usefulness and effectiveness when the tug operates astern.
3. Kort-type nozzles increase bollard pull when going ahead (towing) but can reduce it when going astern (backing).
4. Z-Drive-type tugs have Kort-type nozzles, which increase the bollard pull when going ahead. Rotating nozzles give the vessel approximately 90% of ahead bollard pull when going astern.