



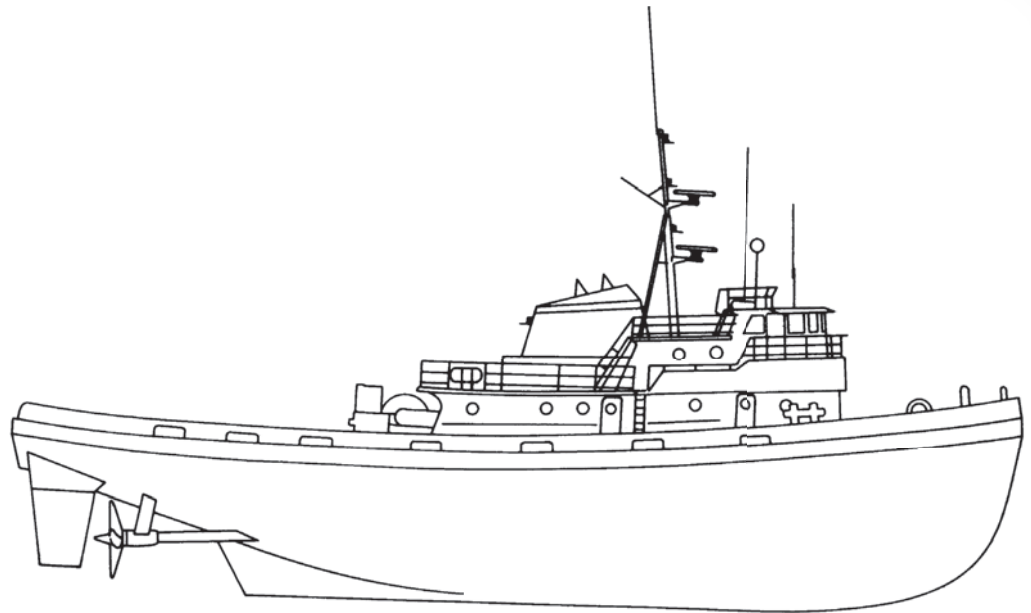
INVADER CLASS TUGBOATS

Crowley's Invader Class tugs are known for their versatility, maneuverability and towing capability. Operating in nearly every ocean of the world, these twin-screw tugs are outfitted with two turbo-charged, 20-cylinder diesel engines coupled to heavy-duty 5 blade, 132" diameter stainless steel propellers. Triple rudders provide extraordinary close quarters maneuverability and ample steering power to handle large and heavy tows.

Each Invader Class tug is outfitted with a diesel drive, double-drum towing winch for single or tandem towing. The winches are equipped with 2,800 feet of 2.25" towing wire on each drum. Due to their hull lines, deep draft, low center of gravity and excellent sea keeping ability these tugs can achieve higher towing speeds than other tugs in this size category.

Invader Class tugs are well suited for all types of ocean towing, including emergency response and towing of disabled vessels. Additionally, all company tugs are fully instrumented, with pilothouse-controlled engine rooms, and are equipped with the latest in navigational and communications technology.

Name	Official No.	Year Built
Explorer	563687	1975
Monitor	567988	1975
Navigator	562688	1975
Pioneer	566933	1975
Warrior	565291	1975
Adventurer	577697	1976
Bulwark	577084	1976
Defender	576314	1976
Guardman	572647	1976
Patriarch	578312	1976
Ranger	571909	1976
Sentinel	573426	1976
Stalwart	575052	1976
Ensign	581177	1977
Hunter	578655	1977
Sentry	579188	1977



GENERAL SPECIFICATIONS

Flag Registry

United States (U.S.)

Overall Dimensions

Length 136'2.5" • 41.516m
 Breadth 36.5' • 11.125m
 Depth 19'2" • 5.842m
 Loaded Draft . . . 20' • 6.096m
 Light Draft 17' • 5.1816m

Tonnage

199 gross
 135 net

Capacities

Fuel 155,000 gal.
 Potable Water . . 15,000 gal.
 Lube Oil 3,300 gal.

Engines

Main . . . 2 EMD 20-645-E5
 Aux. . . . 2 Caterpillar D3304

Propulsion

Twin-screw; 5-bladed stainless steel

Horsepower

7,200 maximum Continuous BHP

Bollard Pull

75 tons • 68.039 metric tons ahead
 60 tons • 54.431 metric tons astern
 (varies slightly by vessel)

Reduction Gear

2 Falk ratio 4.345:1

Double Drum Tow Winch

Markey TDSDW 36C

Tow Wire

Maximum 2@3,000f of 2 1/4" wire rope

Emergency Tow Gear

450' x 7.5" Spectra Lins (SK-75)
 Orville Hook and appropriate connecting gear • line throwing gun

Navigation Equipment

Dual Radars, ECS, AIS, SatCom, Email, Gyro, Autopilot, Single Side Band, Depth Sounder, Weather Fax, World Phone, EPIRB, (3) VHF, GPS, GMDDS, NAVTEX

Builder

J.R. McDermott & Co.

Certification

ABS + A1, AMS Machinery Class, Towing Service, All Oceans

*All information contained herein (including but not limited to any specifications, particulars, capacities, or capabilities) is believed to be correct, but is not guaranteed and is subject to change without notice.

15894 Diplomatic Plaza Drive • Houston, TX 77032 • O: 832-850-4111 / F: 832-850-4141

9487 Regency Square Blvd. • Jacksonville, FL 32225 • O: 904-727-2200