



# TANKERS

Fueling American Life

A wide-angle photograph of a massive, white, billowing wave cresting against a blue sky. The wave is the central focus, with its white foam contrasting sharply with the blue of the sky and the darker blue of the water below. The sky is filled with soft, white clouds, and the overall scene conveys a sense of power and natural beauty.

*The art of the sailor is to  
leave nothing to chance.*

– Annie Van De Wiele



## Tankers move **AMERICA** forward.

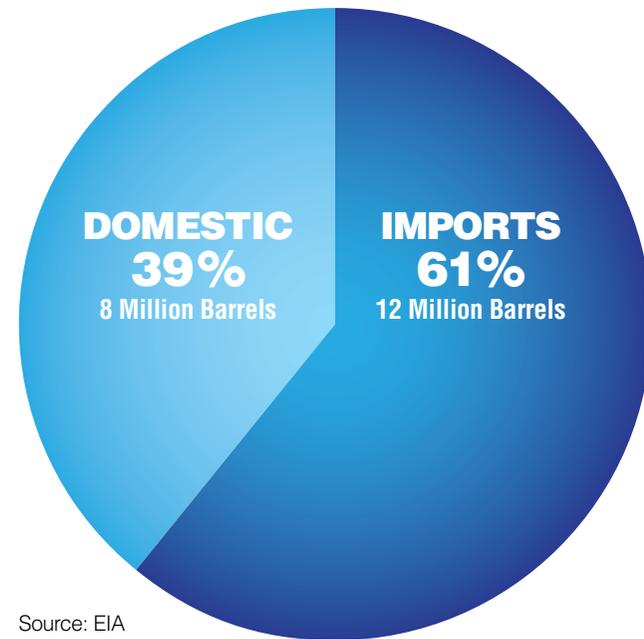


It's hard to imagine modern life without petroleum. From the gas in our cars to the asphalt on the road, from bicycle helmets to medical equipment, almost everything we use today is in some way made from a barrel of oil. And how does that oil reach America? By tanker.

Over 60% of the energy we require daily is brought from great distances to American homes by the men and women working around the clock and around the world on oil tankers.

## Total Daily U.S. Petroleum Consumption

1 Barrel = 42 Gallons



Source: EIA

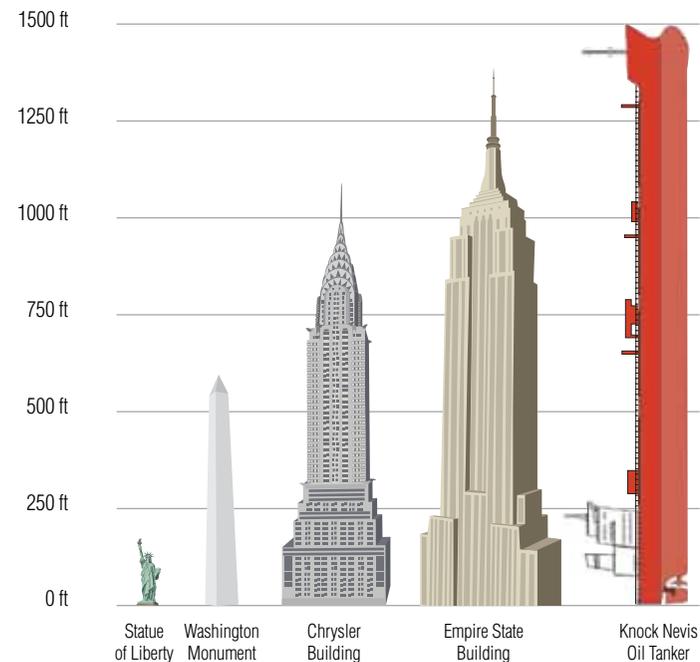
America's economy, and the goods on which every American's life depends, are directly connected to readily available oil supplies. To meet the demands of our daily lives, we require more than 20 million barrels of petroleum products a day.

The United States daily imports roughly 12 million barrels of crude and refined products from foreign sources. That's over 5,800 gallons per second. These vital imports provide the energy we need to live, prosper and enjoy the everyday things essential to our way of life. Many of these necessary resources arrive by tankers.



Tankers make it **POSSIBLE**  
for us to keep doing the  
things we do.

## Tanker Size Relative to Popular U.S. Landmarks

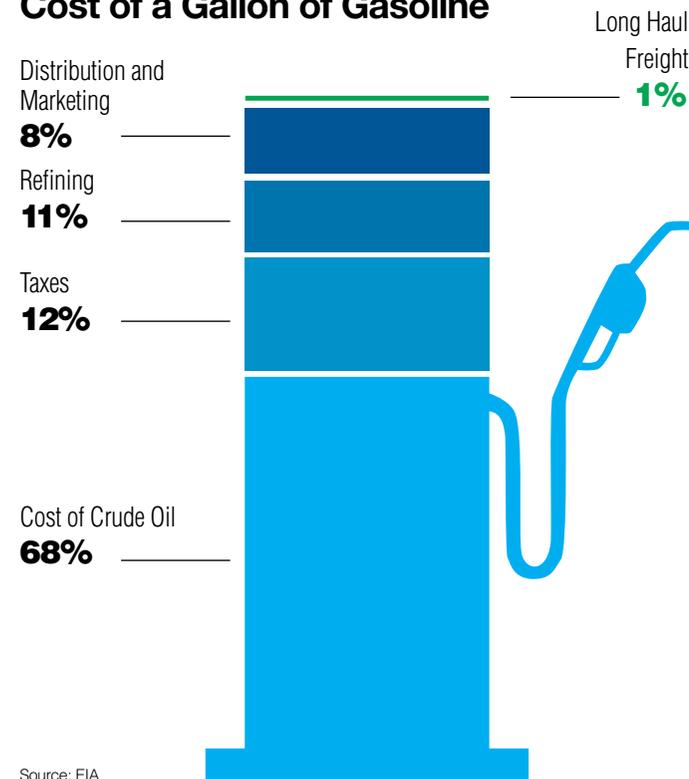


Tankers operate all over the world to safely deliver petroleum and other hydrocarbons to ports in the United States and beyond, making more than 20,000 calls into American ports each year.<sup>1</sup>

The Knock Nevis, the world's largest ship measuring 1,504 ft, is longer than the height of the Empire State Building. The largest tankers trading today are comparable in size and can carry up to 2 million barrels of oil. That's equivalent to 84 million gallons, or enough petroleum to fill over 5 million average sized automobile gas tanks.

<sup>1</sup> According to MARAD's latest Vessel Call Snapshot, 21,944 tankers 10,000 dwt or greater made port calls to the United States last year.

## Cost of a Gallon of Gasoline



Source: EIA

Tankers remain the most flexible and efficient means of transport known today. An average-sized product tanker is able to carry as much gasoline, diesel fuel or home heating oil as are 1,700 tanker trucks.

Due to this economy of scale, transporting oil by tanker is incredibly cost-effective. Freight costs account for only a tiny fraction of the total cost of a gallon of gasoline. For the past 25 years, it has cost only pennies per gallon to ship crude oil and its product by tanker.

America's economy and the lifestyles we lead rely on access to affordable energy.

Our concern for the  
**ENVIRONMENT**  
runs deep.



Oceans cover over 75% of our planet. Mariners and marine professionals, who live and recreate in our precious coastal areas, recognize the vulnerability of marine ecosystems and are committed to their protection.

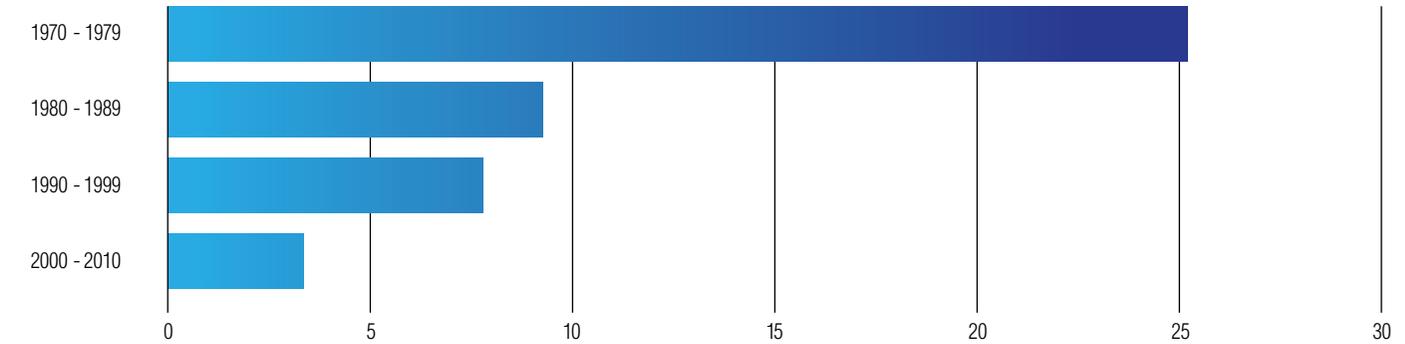
These professionals are dedicated to ensuring that oil is delivered safely and in an environmentally responsible manner.



It is remarkable to note how little the amount of natural resources are consumed in transporting millions of gallons of petroleum products by tanker. International shipping accounts for only 2.7% of carbon dioxide emissions worldwide. This clearly illustrates the negligible environmental

footprint produced by these vessels. By comparison, transportation by truck, rail and aircraft account for a combined 21.3% of global CO<sub>2</sub> emissions. Barrel for barrel, tankers today represent the most efficient means of transportation of energy.

## Worldwide Average Number of Oil Spills From Tankers

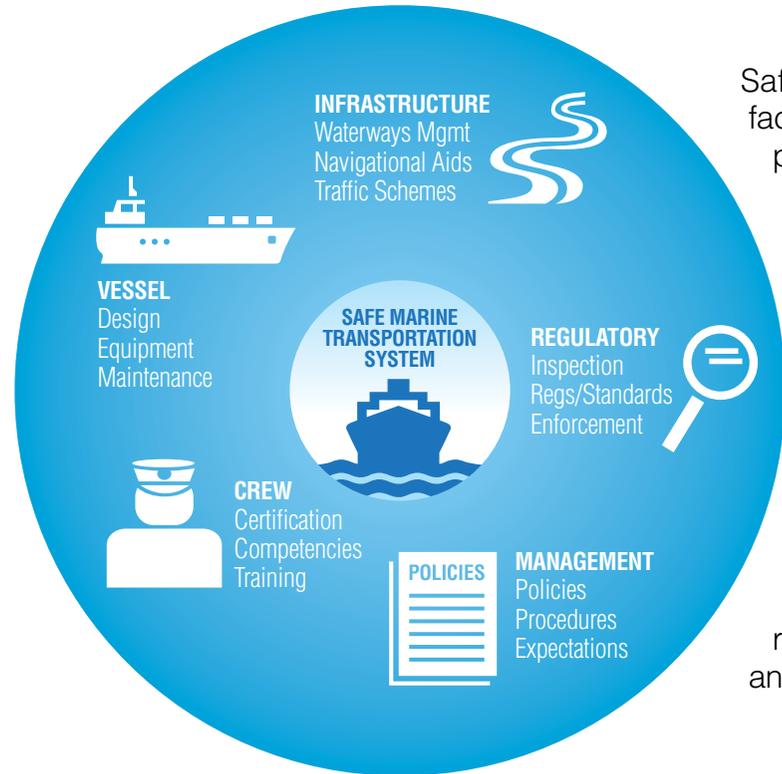


Source: ITOPF

Over the last decade, 99.999954% of oil delivered to the United States by tanker reached its destination without incident. **That's over 46 trillion barrels of oil carried across the world and safely delivered to port.** According to the International Tanker Owners Pollution Federation (ITOPF), oil spills from tankers

reached their lowest level on record in 2008, even as oil transport continues to expand. Significant pollution incidents from tankers have been steadily decreased in severity and frequency over the past four decades. The quantity of oil spilled since 1991 has dropped more than 90%, even though the demand for oil transport continues to grow.

# SAFETY is built into the system.

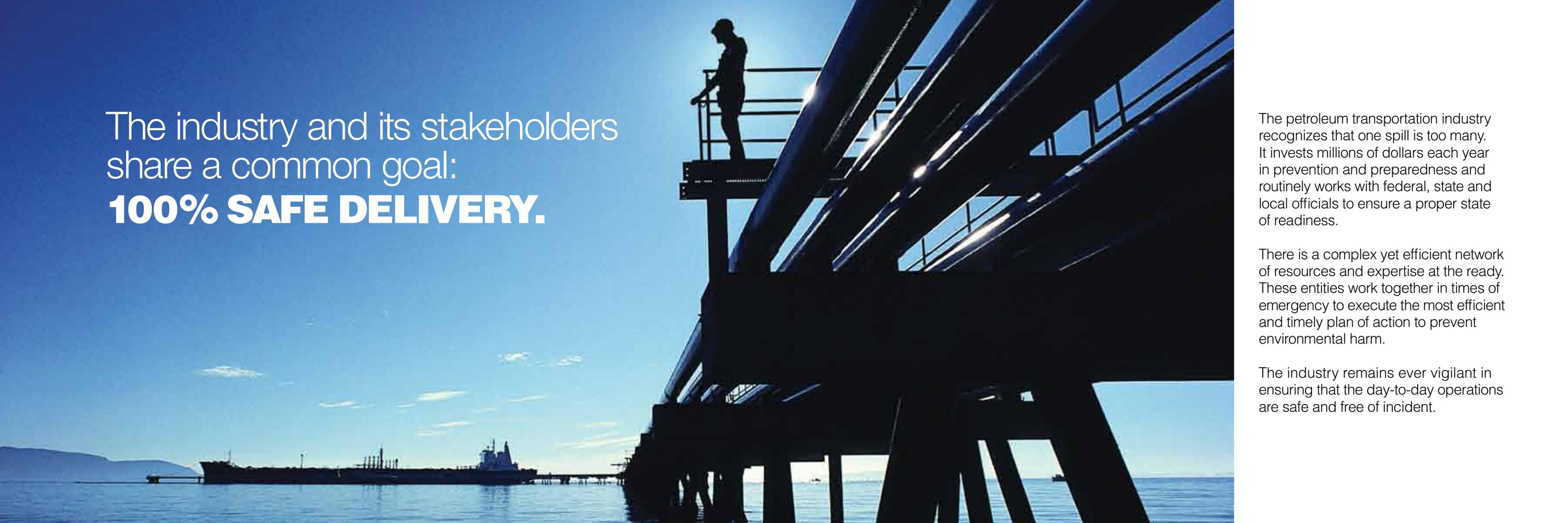


Safe marine transportation involves many factors. Among these include management policies and procedures, crew training and competencies, vessel design and maintenance, port infrastructure and regulatory oversight. Every component plays a vital role in achieving success.

Tanker operators have additional procedures in place to ensure secure, reliable and environmentally responsible operations.

Collectively, these standards and requirements are integrated to form a robust marine transportation system with an unprecedented commitment to safety.





The industry and its stakeholders  
share a common goal:  
**100% SAFE DELIVERY.**

The petroleum transportation industry recognizes that one spill is too many. It invests millions of dollars each year in prevention and preparedness and routinely works with federal, state and local officials to ensure a proper state of readiness.

There is a complex yet efficient network of resources and expertise at the ready. These entities work together in times of emergency to execute the most efficient and timely plan of action to prevent environmental harm.

The industry remains ever vigilant in ensuring that the day-to-day operations are safe and free of incident.



**TECHNOLOGY  
ADVANCEMENTS**  
mean a continued  
commitment to safety.

Over the past century, shipbuilding technologies and system advancements have improved, incorporating new solutions to enhance the safety and efficiency of petroleum transportation.

Today's tankers represent advancements in every component of the ship, from anti-fouling hull coatings to main engines that generate fewer emissions than their predecessors, from sophisticated navigation and communication equipment to double hull protection.

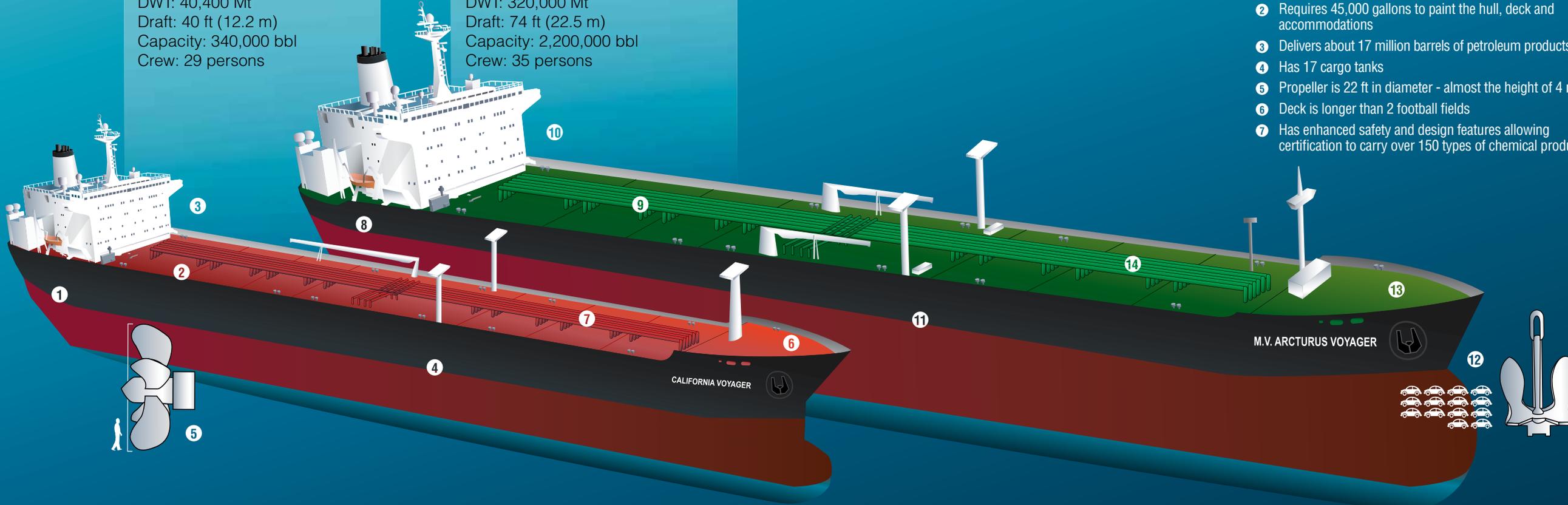
Even the newest ships with the most advanced equipment can't run themselves. This is the irreplaceable role of the mariner. Today's mariners are highly trained and skilled professionals.

**CALIFORNIA VOYAGER**  
Product Carrier

Length: 620 ft (189 m)  
Speed: 16 knots (18.41 mph)  
LWT: 12,200 Mt  
DWT: 40,400 Mt  
Draft: 40 ft (12.2 m)  
Capacity: 340,000 bbl  
Crew: 29 persons

**M.V. ARCTURUS VOYAGER**  
Very Large Product Carrier (VLCC)

Length: 1,100 ft (335.28 m)  
Speed: 16.7 knots (19.2 mph)  
LWT: 47,000 Mt  
DWT: 320,000 Mt  
Draft: 74 ft (22.5 m)  
Capacity: 2,200,000 bbl  
Crew: 35 persons



**SAFETY** is in the numbers.

**CALIFORNIA VOYAGER**

- 1 Travels 17,000 nautical miles without refueling
- 2 Requires 45,000 gallons to paint the hull, deck and accommodations
- 3 Delivers about 17 million barrels of petroleum products per year
- 4 Has 17 cargo tanks
- 5 Propeller is 22 ft in diameter - almost the height of 4 men
- 6 Deck is longer than 2 football fields
- 7 Has enhanced safety and design features allowing certification to carry over 150 types of chemical products

**M.V. ARCTURUS VOYAGER**

- 8 Travels 25,500 nautical miles without refueling
- 9 Requires 135,000 gallons to paint the hull, deck and accommodations
- 10 Delivers about 8.8 million barrels of petroleum products per year
- 11 Largest cargo tank holds 8.6 million gallons
- 12 Each of the 2 anchors on board weigh 17.25 Mt - about the weight of 14 Volkswagen Beetles
- 13 Deck is longer than 3.5 football fields
- 14 Has about 4 miles of cargo piping on board

**TERMS**

**Lightweight Tonnes (LWT):** measures the actual weight of the ship with no fuel, passengers, cargo, water, etc. on board

**Deadweight Tonnes (DWT):** the sum of the weights of cargo, fuel, fresh water, ballast water, provisions and crew

**Draft:** Distance between the waterline and lowest point of the ship underwater

1 Knot = 1.15 MPH

1 Barrel (bbl) = 42 U.S. Gallons

1 Nautical Mile = 6,076 Feet (1,852 Meters)

1 Meter (m) = 3.28 Feet (ft)

1 Metric Tonnes (Mt) = 2,204.6 Pounds (1,000 Kilograms)



# U.S. Maritime academies train the **MARINERS** of the future.

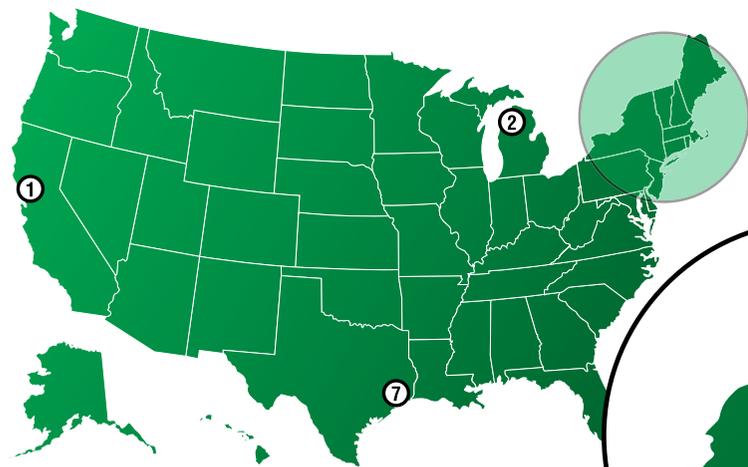


Before setting foot on a tanker, future marine officers spend thousands of hours in rigorous training and evaluation. Additionally, they must obtain a series of competencies and specialized credentials before they can even step foot aboard a tanker or vessel.

Maritime academies in the U.S. provide future mariners with comprehensive academic training in specific nautical and engineering studies that are essential for meeting the high standards of professionalism in the maritime industry.



## U.S. Maritime Academies



- 1 California Maritime Academy  
Vallejo, CA
- 2 Great Lakes Maritime Academy  
Traverse City, MI
- 3 Maine Maritime Academy  
Castine, ME
- 4 Massachusetts Maritime Academy  
Buzzards Bay, MA
- 5 SUNY Maritime College  
Fort Schuyler, NY
- 6 U.S. Merchant Marine Academy  
Kings Point, NY
- 7 Texas Maritime Academy  
Galveston, TX

These maritime programs emphasize skills necessary to ensure the safety of the crew, vessel and cargo. Rigorous training programs ensure mariners are outfitted for this challenging and rewarding profession.

Beyond their licensing credentials, mariners must also comply with a array and ever-expanding series of endorsements established by international, federal and sometimes local authorities.





Petroleum shipping  
creates American **JOBS**  
for the American economy.

Those working on our ships and in our harbors are the gatekeepers and guardians of international commerce. Tanker calls to U.S. ports have increased over 9% over the past five years.

As the world becomes smaller and international trade continues to increase, job prospects in the maritime sector continue to grow.

The men and women of the maritime industry work vigilantly around the clock, 24 hours a day, 7 days a week to ensure that Americans have access to the petroleum supplies they require.

# Tankers **DELIVER** quality of life.



Tankers and the people who run them work hard to provide the crude oil that powers American industries and fuels our domestic economy.

The many products we rely on in our daily lives are made possible with the help of tankers and the people who operate them.

They provide fuel for our cars, heat for our homes, fertilizer for our farms and toys for our children.

Tankers touch each life in many ways, consistently and affordably delivering the products needed to keep America moving forward.



## Routes that go **WORLDWIDE.**

\* Routes illustrated are primary trade routes only.

*Around the clock and across the world, the men and women of the tanker industry deliver the energy that fuels our lives.*





**U.S. Maritime Academies  
Contact Information**

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[www.nmc.edu/maritime](http://www.nmc.edu/maritime)

Maine Maritime Academy  
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Texas Maritime Academy  
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