



MARITIME HISTORY

A BRIEF HISTORY OF PETROLEUM

In the United States of America, petroleum was first discovered in Pennsylvania. Ever since, refineries and petrochemical terminals have been a major industry in Pennsylvania and New Jersey. The history of petroleum is not of recent origin but the invention of the internal combustion engine was a major influence in the rise in the importance of petroleum. It is currently an integral component of politics, society, and technology.

The first evidence of the use of a petrochemical product dates back to more than four thousand years ago when asphalt was used in the construction of the walls and towers of Babylon (city whose remains exist in Iraq). The streets of Baghdad were first paved with tar. The earliest known oil wells were drilled in China in 347 AD or earlier. They had depths of up to about 800 feet and were drilled using bits attached to bamboo poles. Due to the use of oil in burning brine to produce salt, extensive bamboo pipelines connected oil wells with salt springs in China. Petroleum was given the name of "Shiyou", meaning "Rock Oil", in China. The term "Rock Oil" was widely used for petroleum all over the world. The earliest reference to the word "petroleum" is found in the 10th century English sources. The word petroleum comes from the Greek word "petra" for rocks and "elaion" for oil.

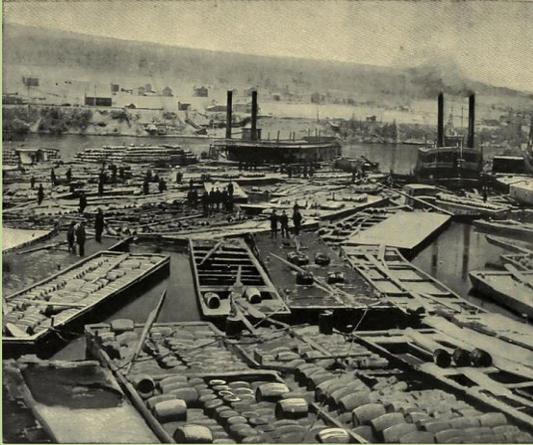
First record of distilling petroleum goes back to the 9th century when a Persian alchemist, Muhammad Ibn Zakariya Rāzi, produced kerosene from petroleum. In 1745 under the Empress Elisabeth of Russia the first oil well and refinery were built in Ukhta, Russia. However, the first modern refinery was built in 1857 in Antar, France. Romania is the first country to officially record its oil production in the international market of 275 tonnes. By the end of 19th century, the Russian Empire had taken a lead in oil production.

Until the mid-1950s coal was still the world's foremost fuel, but after this time oil quickly took over. Today, about 90% of vehicular fuel needs are met by oil. Petroleum also makes up 40% of total energy consumption in the United States. Petroleum's worth as a portable, dense energy source powering the vast majority of vehicles and as the base of many industrial chemicals makes it one of the world's most important commodities.



MR. PETER LUDAS

ANCHOR CONSULTANTS, LLC is pleased to announce that Mr. Peter Ludas has joined our team. Mr. Ludas comes to Anchor with over three (3) years of experience in Structural Design and Engineering. Mr. Ludas obtained his Bachelor's Degree in Civil Engineering from Duke University. He is also an NBIS Bridge Inspector. Prior to joining Anchor, Mr. Ludas was employed with KS Engineers in Philadelphia, Pennsylvania. At Anchor, Mr. Ludas will be involved with the design and engineering of marine, heavy industrial and foundation projects. He will also be involved with the underwater inspections and construction management.



**FLEETS OF OIL FRESHETS, OIL CITY,
PA IN 1964**

The top three oil producing countries are Saudi Arabia, Russia, and the United States. About 80% of the world's readily accessible reserves are located in the Middle East, with 62.5% coming from the Arab 5 (Saudi Arabia, UAE, Iraq, Qatar and Kuwait). However, with high oil prices, Venezuela has larger reserves than Saudi Arabia due to its crude reserves derived from bitumen

MODERN HISTORY OF PETROLEUM IN THE UNITED STATES

The modern US petroleum industry is considered to have begun with Edwin Drake's drilling of a 69 ft. deep oil well in 1859 on Oil Creek near Titusville, Pennsylvania, for the Seneca Oil Company. The well yielded 25 barrels per day. By the end of the year output of the well dropped to a rate of 15 barrels per day. Edwin Drake's well is considered the first modern well in U.S. Drake's well is singled out because it was drilled, not dug; because it used a steam engine; because there was a company associated with it; and because it initiated a major "oil boom" in the U.S. The industry grew through the 1800s, driven by the demand for kerosene and oil lamps. Earliest crude production in the U.S. is recorded as 2,000 barrels in 1859.

In the first years of the oil rush, high overland shipping costs in Pennsylvania drove many well owners to float their product down Oil Creek to the Allegheny River as lumber producers did. For decades, logs were transported using man-made floats known as "pond freshets". These freshets could carry up to 800 skiffs filled with crude oil downstream at once. Most skiffs held between seven hundred and eight hundred barrels of oil, but one third of that leaked out of the skiffs before they were even launched and another third were lost by the time the skiffs reached its destination. Furthermore, only three in five of the flimsy vessels survived the trip down river without being destroyed by collisions with rocks, fallen trees, or other skiffs.

Early finds in Pennsylvania were quickly outpaced by demand, leading to oil boom in Ohio, Texas, Oklahoma, and California. With discovery of oil in Texas, California and Wyoming the nation's attention shifted from Pennsylvania to other locations. By 1901, the Pennsylvania oil boom was over. Pennsylvania continued to be a significant producer of petroleum for much of the 20th century, but the Oil Creek Valley had been permanently eclipsed.

ANCHOR CONSULTANTS, LLC is pleased to announce that Mr. Peter Grinnell has joined Anchor as a Staff Engineer. Mr. Grinnell graduated recently from Lehigh University with a Bachelor of Science degree in Civil Engineering. As an intern Mr. Grinnell was involved with the design of foundations including micropiles. He obtained his Engineer in Training certification in year 2012. We look forward to a bright future with Mr. Grinnell and his active participation in the design, permitting and construction inspection of marine and heavy industrial projects.



MR. PETER GRINNELL



ANCHOR PROJECT NEWS UPDATE....

ANCHOR CONSULTANTS, LLC has been selected for the underwater inspection, evaluation, permitting and design of rehabilitation to a 400 linear feet waterfront facility in Bayonne, New Jersey. The scope of our work includes the underwater inspection of the facility; evaluation and assessment replacement structure for the entire facility. The inspections have been completed and design is underway.

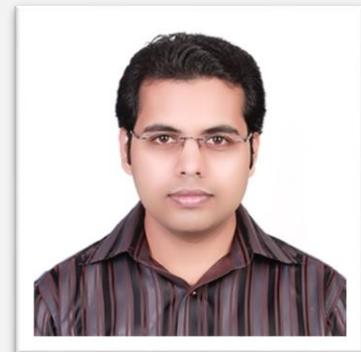
ANCHOR CONSULTANTS, LLC has been selected for the underwater inspection and evaluation of a wharf to sustain the loads imposed by the installation of new container cranes. Our scope includes the underwater inspection of approximately 1,500 linear feet of wharf including the piles supporting the existing crane rails; review and evaluation of the wharf structure to sustain the loads imposed by the proposed container cranes.

ANCHOR CONSULTANTS, LLC has been selected for the underwater inspection and evaluation of approximately 3,500 linear feet of wharf in south New Jersey. The scope also includes structural analysis of the dock to evaluate its capacity for access by vacuum trucks and cranes.

ANCHOR CONSULTANTS, LLC has recently completed the design of anchors for an approximately 390 linear feet combi-wall bulkhead piles in Bayonne, NJ. The bulkhead has an unsupported design height of 60 ft. and is most likely one of the tallest bulkhead in the north east region. The bulkhead piles are 5 ft. in diameter. Based on conventional design methods, large and expensive steel stingers were being proposed originally to anchor the bulkhead piles into the bedrock. Anchor analyzed the bulkhead piles using a more sophisticated spring model which considers the soil structure interaction and accounts for the stiffness of soil. This advanced method of analysis results in less conservative design as compared to the conventional design methods. This approach allowed Anchor to refine and reduce the calculated design stresses in the bulkhead and design the bulkhead pile anchors as drilled reinforced concrete shafts. We were able to save approximately \$600,000 in construction cost for our client.

ANCHOR CONSULTANTS, LLC has been selected for the preliminary design of a new tugboat fuelling facility in Philadelphia area. The scope includes underwater inspection, evaluation, preliminary design of the proposed facility and providing opinion of probable costs for the construction of this facility.

ANCHOR CONSULTANTS, LLC has been selected for the preliminary design of the expansion of an existing dock in south New Jersey. To benefit from the ongoing channel deepening project, this terminal would like to accommodate larger ships.



MR. HITESH PANDEY

ANCHOR CONSULTANTS, LLC welcomes Hitesh Pandey to our team as a Staff Structural Engineer. Mr. Pandey graduated from the State University of New York, University at Buffalo with a Master of Science Degree in Civil Engineering with specialization in Structural and Earthquake Engineering. He has three years of experience in the design of heavy industrial structures. At Anchor, Mr. Pandey will be involved with the design of marine and heavy industrial projects. We look forward to working with Mr. Pandey and utilization of his specialized education and experience in designing complex projects.



Anchor Celebrates first anniversary



As always, we thank you for the exciting opportunities you provide and we realize that we could not have achieved what we have without your friendship, help and support. I and our team members look forward to continue providing responsive and the highest quality of engineering services through attention to your specific needs.

At Anchor, you can expect prompt responses to your engineering inquiries and accomplish your engineering projects with quality and trust.

- *Ahmad Nadeem*



ANCHOR CONSULTANTS, LLC has been selected for the design of rehabilitation to a wharf in the Philadelphia area. The scope of our work includes the underwater inspection and structural evaluation of this approximately 900 ft. long wharf; design of a new fender system at this facility to accommodate barges ranging from 310 ft. LOA to up to 640 ft. LOA and the rehabilitation design of marginal wharf structure.

ANCHOR CONSULTANTS, LLC was selected for the preliminary design of a new heavy lift waterfront facility in Bayonne, New Jersey. A new slip was designed to receive barges loaded with pre-fabricated concrete blocks weighing up to 125 tons, each. A straddle carrier was proposed to unload the barges. Our scope included the planning, layout and design of new slip and the design of foundation for the straddle carrier.

ANCHOR CONSULTANTS, LLC was selected for updating the Dock Operations Manual and COA for a petrochemical facility in Staten Island, NY

MARINE JARGON

Mooring refers to any permanent structure to which a vessel may be secured. Examples include quays, wharfs, jetties, piers, anchor buoys, and mooring buoys. A ship is secured to a mooring to restrict free movement of the ship on the water. As a verb, mooring refers to the act of attaching a vessel to a mooring. The term stems from the Dutch verb meren (to moor), which has been used in English since the end of the 15th century.

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