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Coastal Tank Vessel Market Snapshot, 2007

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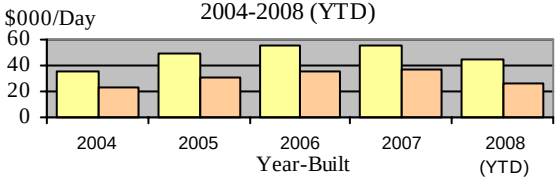
Introduction

The double-hulling of the coastal tank vessel fleets, which is required by the Oil Pollution Act of 1990 (OPA-90), will be virtually complete over the next 3 years.[1] The double-hulling process accelerated over the last five years as non-double-hull vessels built during the 1978-1983 boom period reached their OPA-90 phase-out dates. From 2004 to 2007 tank vessel charter rates increased significantly as old, non-double-hull tank vessels were removed from service. However, the deployment of new double-hull vessels and the continuing decline in coastal tanker trades have contributed to a recent decline in rates (Figure 1).

Figure 1. Time Charter Equivalent (TCE) Rates, Coastal ATBs and Product Tankers, 2004-2008 (YTD)



TCE rate = (voyage revenues - voyage costs)/voyage days.
Source: Overseas Shipholding Group, 10-Q reports.

Trades

U.S. coastal tank vessel trades are served by crude carriers, product tankers and tank barges (including articulated tug/barge units (ATBs)). Crude carriers serve the Alaska/West coast crude oil trades; product tankers serve the coastal and inter-coastal petroleum product and chemical trades, but also supplement crude carriers in the Alaska/West coast crude oil trade; and tank barges move petroleum products and chemicals in the coastal and short-haul (Gulf/South Atlantic) inter-coastal trades. Over the last

[1] 46 U.S.C. 3703a. (2005).

five years, crude carrier and product tanker trades (metric tons) have declined while tank barge trades have been relatively stable (Table 1). The decline in tanker trades was due largely to import substitution in the petroleum trades. In 2007, imports accounted for 65 percent of U.S. consumption of petroleum products, up from 58 percent five years before (Table 2). The stability of the tank barge trades reflects the fact that tank barges complement imports by redistributing products in the intra-coastal trades.

Table 1. U.S. Coastal Tank Vessel Trades, 2002-2007

							% Ch.
Vessel Type	2002	2003	2004	2005	2006	2007e	002-07
Prod. Tankers							
Mil. Metric Tons	48.0	45.8	44.6	41.4	38.0	35.6	-25.8
Bil. Ton-Miles	68.5	63.9	64.5	58.6	44.1	44.7	-34.7
Average Miles	1,428	1,395	1,447	1,416	1,161	1,256	-12.0
Crude Carriers							
Mil. Metric Tons	38.5	41.5	39.6	36.2	30.4	27.8	-27.8
Bil. Ton-miles	71.8	76.2	73.0	64.7	51.3	44.9	-37.5
Average Miles	1,860	1,834	1,844	1,789	1,688	1,615	-13.2
Tank Barges							
Mil. Metric Tons	67.6	68.2	69.8	65.7	67.4	67.4	-0.3
Bil. Ton-miles	32.8	33.1	31.6	28.3	30.3	30.1	-8.2
Average Miles	486	486	452	431	449	447	-8.0
Total							
Mil. Metric Tons	154.1	155.5	154	143.3	135.8	130.8	-11.9
Bil. Ton-miles	173.1	173.2	169.1	151.6	125.7	119.7	-27.4
Average Miles	1,123	1,114	1,098	1,058	926	915	-17.6

e Estimate.
Source: U.S. Army Corps of Engineers, Waterborne Commerce of the United States, detail files.

Table 2. U.S. Petroleum Products Supplied (Consumption) and Imports, 2002-2007
(Million Barrels)

							% Ch.
	2002	2003	2004	2005	2006	2007	2002-07
Domestic	3,004	2,835	2,777	2,587	2,547	2,632	-12.4
Imports	4,209	4,477	4,811	5,006	5,003	4,916	16.8
Total	7,213	7,312	7,588	7,593	7,550	7,548	4.6

Source: Energy Information Agency, Petroleum Supply Annual.

Over the same period the average length of haul for coastal tank vessel shipments declined by 18 percent due to:

- A decline in the long-haul, U.S. Gulf/Northeast and U.S. Gulf/West Coast, product tanker trades.
- An increase in the share of Alaska crude oil production shipped to Pacific Northwest refineries versus California refineries; and
- An increase in crude-oil lightering by product tankers and tank barges.

Fleets

Over the last five years, seventy-nine single-hull vessels were removed from service, but only 64 new or rebuilt double-hull vessels entered service, a reflection of productivity gains and declining trades (Table 3).

Crude Carriers As of year-end 2007, the coastal crude carrier fleet amounted to thirteen vessels of 2.1 million deadweight tons (DWT).[1] Of these, twelve (1.9 million DWT) were equipped with double hulls. Over the last five years, the major oil companies took delivery of seven

Table 3. Coastal Tank Vessel Fleets, Additions and Removals, 2002-2007
(DWT in Thousands)

	Additions		Removals		2007 Fleet		2007 DH		Orders	
Type	No.	DWT	No.	DWT	No.	DWT	No.	DWT	No.	DWT
Tank Barges	52	895	51	897	116	2,045	99	1,831	30	830
Tankers	12	1,437	28	2,326	57	3,977	35	2,819	21	993
Crude	7	1,198	12	1,696	13	2,068	12	1,853	0	0
Product	5	239	16	630	44	1,909	23	966	21	993
Total	64	2,332	79	3,223	173	6,022	134	4,650	51	1,823

Sources: Clarkson Research Studies for tankers, U.S. Army Corps of Engineers, Marine Log and ABS for barges.

[1] Deadweight (DWT) is the total weight (metric tons) of cargo, fuel, fresh water, stores and crew which a ship can carry when immersed to its load line.

double-hull crude carriers (1.2 million DWT) for the Alaska/West Coast crude oil trades.[1] Over the same period, 12 single-hull crude carriers of 1.7 million DWT were removed from the trade.

Product Tankers The coastal product tanker fleet amounted to 44 product tankers of 1.9 million DWT as of year-end 2007. Twenty-three of these (1.0 million DWT) were equipped with double hulls. Five double-hull product tankers were added to the fleet since 2002. Over the same period 16 (0.6 million DWT) product tankers were removed from the coastal trades. As of year-end 2007, twenty-one double-hull product tankers amounting to 52 percent of the existing fleet capacity were on order.

Tank Barges As of year-end 2007, the coastal tank barge fleet amounted to 116 vessels of 2 million DWT. Of these, 99 (1.8 million DWT) were equipped with double hulls. Over the last five years, 52 new/rebuilt double-hull tank barges amounting to 0.9 million DWT were added to the fleet, while 51 tank barges amounting to 0.9 million DWT were removed from service. Thirty tank barges amounting to 41 percent of the existing fleet capacity were scheduled for delivery over the next 3 years.

Productivity, Attrition and Orders

New tank vessels are more productive than those they replace because they require less maintenance and dry-docking time than older vessels; new tankers have 2-3 times more pumping capacity (less load/discharge time) than older tankers, and new ATBs are about 20 percent faster than traditional tug/barge units.[2]

[1] As the crude carriers were delivered, three of the six product tankers in the Alaska crude oil trades returned to the coastal product trades.

[2] Articulated tug/barge units (ATBs) are large, 10,000+ DWT tank barges with hinge-like connections between the tug and the barge that increases the stability, speed and maneuverability of the tug barge unit compared to traditional units.

In 2006, for example, tank barges 10 years old or less produced 17,576 ton-miles per DWT, while older barges averaged 13,855 ton-miles per DWT (Table 4). Product tankers 10 years old or less produced 26,898 ton-miles per DWT compared to 22,463 for older tankers. The figures in Table 4 suggest that five new crude carriers are equivalent in productivity to about 7 traditional (10+ years, similar type and size) vessels; five new product tankers are equivalent to six traditional vessels, and four new ATBs are equivalent to 5 traditional units.

Another factor that has contributed to the productivity of new barges is the tendency to deploy them in longer trades (Table 5). Assuming 3 port days and 10 knots, a fully-employed tank barge is about 42 percent more productive in a 500-mile trade than in a 250-mile trade.[1]

Table 4. Tank Vessel Productivity, 2006
(Ton-Miles Per DWT)

Fleet/ Age	Thous. DWT	Million Ton-Miles	Ton-Miles/ DWT
Crude Carriers			
>10 Years	1,350	21,330	15,805
<=10 Years	1,339	29,971	22,381
Total	2,689	51,301	19,078
Prod. Tankers			
>10 Years	1,492	33,511	22,463
<=10 Years	395	10,628	26,898
Total	1,887	44,140	23,392
Tank Barges			
>10 Years	1,028	14,238	13,855
<=10 Years	912	16,029	17,576
Total	1,940	30,267	15,605

* Active fleet.
Source: U.S. Army Corps of Engineers, Waterborne Commerce of the United States, detailed files.

[1] A 20,000 DWT tank barge generates 488 million ton-miles per year on a 500 mile route (49 voyages x 20,000 metric tons x 500 miles), while the same barge generates 344 million ton-miles on a 250 mile route (69 voyages x 20,000 metric tons x 250).

Table 5. Tank Barge Traffic by Age of Vessel and Route Miles, 2006

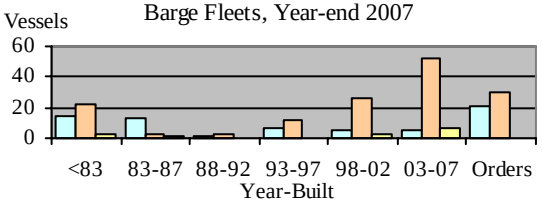
(Million Metric Tons)

Age/Miles	>= 500 mi.	< 500 mi.	Total
> 10 Years	9.9	25.4	35.3
<=10 Years	13.9	18.2	32.0
Total	23.8	43.6	67.4

Source: U.S. Army Corps of Engineers, Waterborne Commerce of the United States, detailed files.

As of year-end 2007, 67 percent of the tank barges were less than ten years old, while only 18 percent of the product tankers were less than ten years old. (Figure 2). The year-end 2007 orders for double-hull product tankers and tank barges are at record levels and are more than sufficient to replace the transportation capacity of existing 25+ year-old fleets.[1] By 2010, the double-hulling of the coastal tank vessel fleets will be virtually complete.

Figure 2. Age Profiles for Tanker and Tank Barge Fleets, Year-end 2007



Sources: Clarkson Research Studies for tankers, U.S. Army Corps of Engineers, Marine Log and ABS for barges.

The surge in tank vessel orders was due largely to an increase in charter rates for both product tankers and large tank barges. For the period 2004-2007, the average time charter equivalent (TCE) rate for a 45,000 DWT double-hull product tanker increased by 58 percent to $56,000 per

[1] As of year-end 2007 the coastal fleets included 21 non-double-hull product tankers and 17 non-double-hull tank barges.

day, while the average TCE rate for a 30,000 DWT double-hull ATB increased by 59 percent to $36,400 per day (Table 6)[1]. Assuming new-build prices of $100 million and $55 million, respectively, the TCE rates, if sustained, would generate a 12 percent return on investment for new product tankers and a 15 percent return on investment for new ATBs.[2]

However, product tankers and ATBs are typically delivered 2-3 years after the contract date, and tank vessel earnings can fall significantly before new vessels are delivered. For example, for the second quarter of 2008, ATB earnings were $21,400 per day, down 49 percent from a year earlier. At $21,400 per day, the return on a $55 million ATB would

Table 6. Time Charter Equivalent (TCE) Rates, Coastal ATBs and Product Tankers, 2004-2008 (YTD)*
($000/Day)

Year/Quarter	ATB, 30,000 DWT	Product Tanker 45,000 DWT
2004	22.9	35.5
2005	30.6	48.7
2006	35.3	54.8
1	32.4	50.1
2	32.6	50.5
3	37.5	58.2
4	38.6	60.2
2007	36.4	56.1
1	41.9	64.8
2	37.0	56.7
3	33.2	51.1
4	33.6	51.8
2008 (YTD)	26.5	45.0
1	31.5	51.0
2	21.4	38.9

*TCE rate = (voyage revenues-voyage costs)/voyage days.
Source: Overseas Shipholding Group, 10-Q reports.

[1] Overseas Shipholding Group, 10 K and 10 Q reports.
[2] The estimates of return are based on a 25-year asset life and daily operating costs of $12,000 for an ATB and $20,000 for a product tanker.

be only 3 percent, well below long term bond rates.

The upgraded product tanker and tank barge fleets will be able to generate a combined 87 billion ton-miles of service. To keep vessel utilization and charter rates from declining further, the respective coastal trades (ton-miles) would have to increase by about 16 percent, which is unlikely given continued competition from offshore sources. Also, given the limited number of vessels built from 1988 to 1992, there is little potential for additional tank vessel removals (market correction) for at least five years after delivery of the new vessels.

Conclusion

The year-end 2007 orders for double-hull tank barges and product tankers are at record levels and exceed the existing 25-year-old single-hull fleets. Given the expected upgrade and expansion of the coastal product tanker and tank barge fleets, tank vessel operators will face a significant risk of underutilized vessels and reduced earnings.

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