

Dirty Tanker Supply Outlook

15 October 2015



Makai Marine Advisors LLC

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Summary



Dirty Tankers: Once again, owners ordering too much tonnage

Owners have over-ordered amid OPEC earnings frenzy

- With OPEC overproduction adding 6% to tonne-mile demand in 2015, resulting earnings riot has sparked over-ordering
- Owners convinced that this is start of long-awaited cyclical recovery

Orderbook is moderate only by historical standards

- Current dirty orderbook, at 18.6% of fleet, is well below 48.5% peak in 2008
- Has supported "manageable orderbook" narrative from brokers
- Orderbook is damaging under weaker-than-expected demand prospects

Ordering pace accelerated during course of 2015

- Dirty contracting jumped by 36% in 3q15 from 1h15 pace
- Rush to avoid Tier III costs may have boosted mid-year ordering
- Owners have ordered 62 VLCCs, 41 Suezmaxes and 49 Afras to date

Shorter yard delivery lags bringing on faster supply

- Collapse in dry bulk & offshore ordering has provided earlier yard capacity
- Lag between order & delivery date has slid to 2.2 years, from 2.7 yrs in 2012
- Orders in 2015 are predominantly 2017 deliveries, with several in 4q16

Release of Iranian storage boosting operating fleet

- Gradual release of 40 MB of Iranian floating storage would boost operating fleet growth by 1.5% during 2016 and early-2017
- With accelerating deliveries in 2016, operating fleet growth hits 6% in 1q17

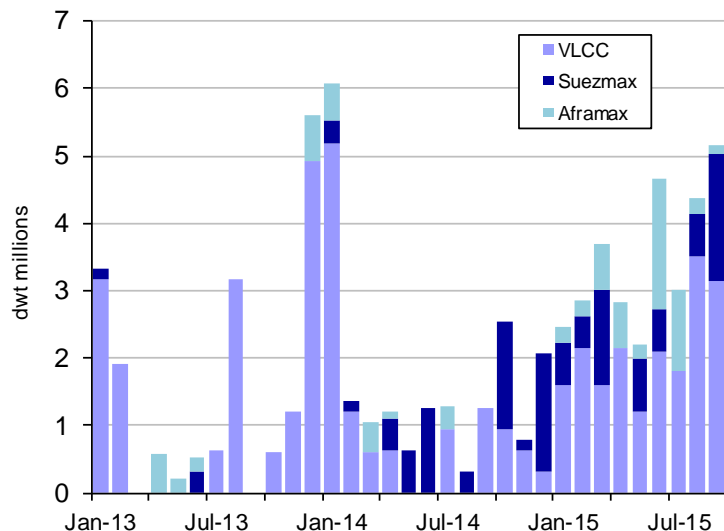
Younger fleet offering fewer 20-yr old demo candidates

- Single-hull demo has left few tankers above 20 years of age and few fourth special survey candidates until late in decade
- Any aggressive demolition would require scrapping of 17-18 year old vessels



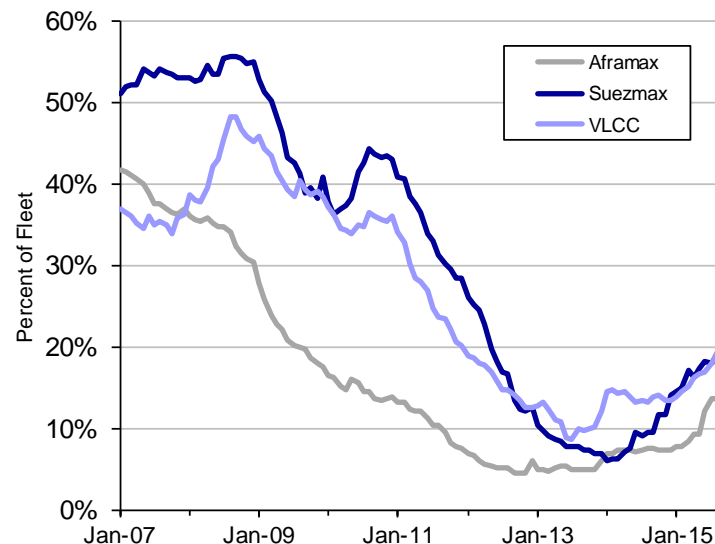
With owners enjoying a robust earnings environment, dirty tanker ordering has accelerated during 2015

Dirty Tanker Ordering, Monthly, by Sector



Source: Makai

Dirty Tanker Orderbook as Percent of Fleet



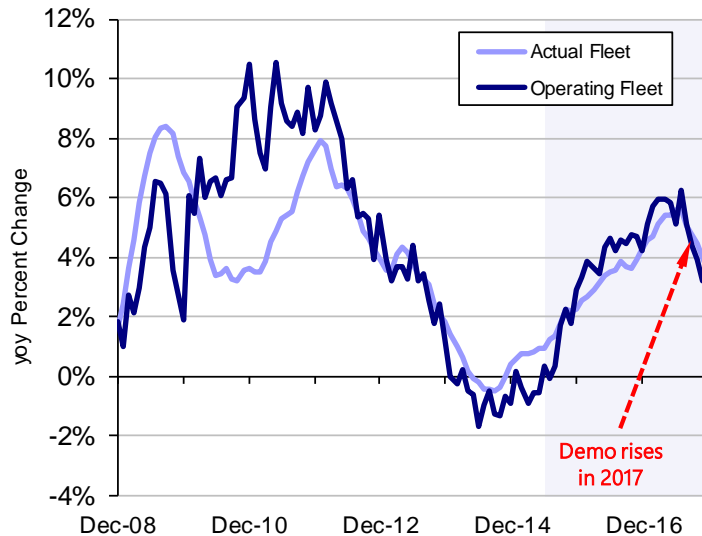
Source: Makai

- Convinced that this is the beginning of a broad cyclical recovery, owners continue to order, bringing VLCC contracting year-to-date to 62 units, followed by 41 Suezmaxes and 49 Afras
- Rush to order ahead of IMO Tier II deadline (keel laid/blocks formed by 31Dec15) may have accelerated contracting during the Summer, to avoid extra cost of Tier III-compliant vessels
- VLCC and Suezmax orderbooks have hit 20% of fleet, but well below previous peaks, supporting the consensus view that the orderbook is "manageable"



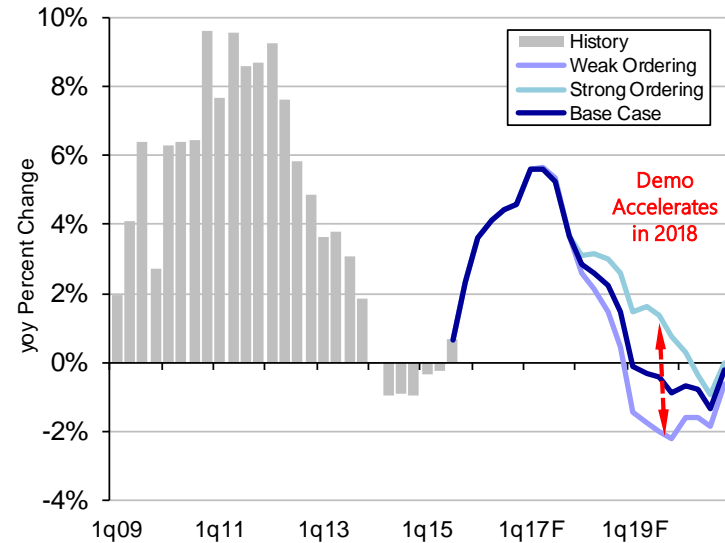
Ordering in 2015 has established 2016-17 fleet growth rates; near-term ordering to determine 2018-19 pain levels

Dirty Tanker Operating Fleet Growth



Source: Makai

Oper Fleet Growth under Ordering Scenarios



Source: Makai

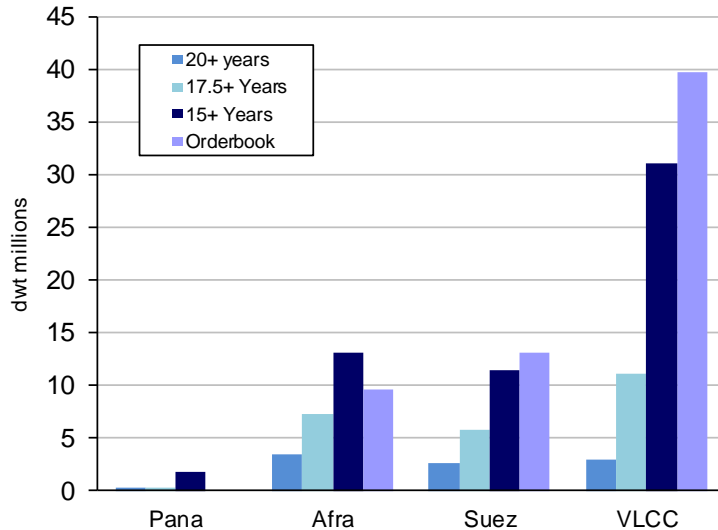
- Weak offshore and dry bulk sectors providing opportunity for earlier yard slots for tanker construction
- Although 2015 contracting focused on 2017 slots, owners were able to secure several 2h16 slots
- Including slippage and demolition, operating fleet growth to hit 4.2% in 2016, and 5.0% in 2017
- Variations in ordering pace in 4q15 and 2016 to provide majority of influence on 2018-19 fleet growth
- Base Case ordering assumes that 4q15 ordering falls to 86% of 2015 ytd pace, and that 2016 contracting falls to 44% of total 2015 level -- Strong/Weak Cases +45%/-40% of Base

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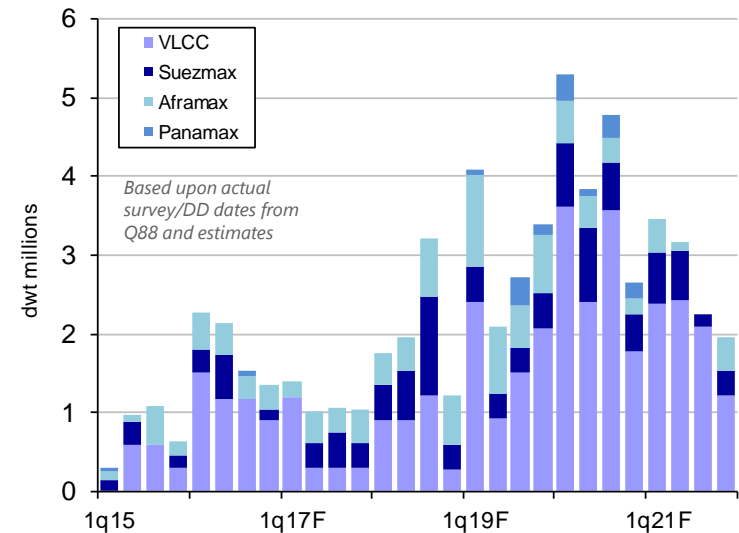
Owners point to 15+ year olds versus orderbook as salve, but few 20-year old demo candidates available near term

Older Dirty Tonnage vs. Orderbook



Source: Makai

Timing of 4th Special Survey



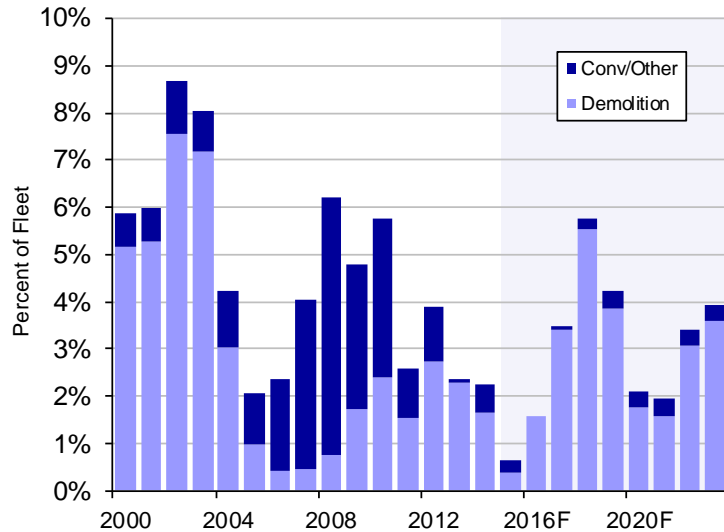
Sources: Q88, Makai

- With single-hull deliveries ending in early/mid-1990s, removal under IMO regulations has left few dirty vessels above 20 years (2.7% of fleet), or above 17.5 years (7.3% of fleet)
- As a result, age profile of dirty tanker fleet does not provide large volume of fourth special survey candidates until later in the decade -- only 4.2% of fleet reaching this age from 2h16 through 2018
- With lack of older vessels, any significant market weakness would require scrapping of 17-18 year olds
- During expected 2017-18 market weakness, 8.0% of the fleet would come due for its fourth intermediate survey



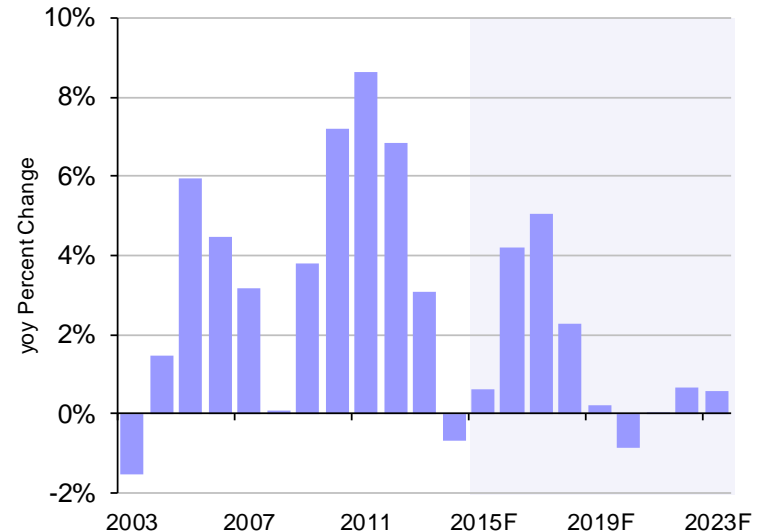
Demolition may need to return to levels before the single-hull conversion boom, to shrink the fleet and balance market

Dirty Tanker Removal, as Percent of Fleet



Source: Makai

Operating Fleet Growth, Average Basis



Source: Makai

- Dry bulk conversion craze and strong demand for FPSOs provided a welcome outlet for single-hull tonnage ahead of IMO regulation in December 2010
- Otherwise, demolition has not risen above 2.7% of the fleet for the past decade
- Scrapping may need to rise above 5% of fleet in 2018 to keep market balanced, as FPSO conversion demand fades in low oil price environment
- Combined with lower ordering, average operating fleet growth would slip below zero in 2020



Dirty Tanker Fleet, Period End

	VLCC		Suezmax		Aframax		Panamax		Total Dirty		Year-over-year Growth				
	No	kdwt	No	kdwt	No	kdwt	No	kdwt	No	kdwt	VLCC	Suez	Afra	Pana	Total
1q14	619	190,076	425	66,644	642	68,967	84	5,937	1,770	331,623	1.4%	0.7%	-2.2%	-4.2%	0.4%
2q14	622	191,172	424	66,503	636	68,416	84	5,937	1,766	332,028	0.8%	-0.4%	-2.8%	-4.2%	-0.3%
3q14	621	190,869	422	66,186	635	68,336	81	5,710	1,759	331,101	0.5%	-0.9%	-2.6%	-7.9%	-0.6%
4q14	626	192,515	422	66,209	633	68,156	80	5,647	1,761	332,527	2.0%	-0.6%	-2.1%	-5.9%	0.5%
1q15	629	193,526	425	66,675	632	68,070	77	5,440	1,763	333,711	1.8%	0.0%	-1.3%	-8.4%	0.6%
2q15	633	194,796	428	67,151	633	68,200	77	5,440	1,771	335,587	1.9%	1.0%	-0.3%	-8.4%	1.1%
3q15	640	196,999	429	67,301	636	68,538	77	5,440	1,782	338,278	3.2%	1.7%	0.3%	-4.7%	2.2%
4q15F	648	199,443	430	67,459	635	68,466	77	5,440	1,790	340,808	3.6%	1.9%	0.5%	-3.7%	2.5%
1q16F	657	202,238	431	67,637	638	68,871	77	5,440	1,803	344,186	4.5%	1.4%	1.2%	0.0%	3.1%
2q16F	661	203,588	434	68,159	643	69,504	77	5,440	1,815	346,691	4.5%	1.5%	1.9%	0.0%	3.3%
3q16F	670	206,399	435	68,328	646	69,889	76	5,371	1,827	349,987	4.8%	1.5%	2.0%	-1.3%	3.5%
4q16F	682	210,195	450	70,717	650	70,372	74	5,224	1,856	356,508	5.4%	4.8%	2.8%	-4.0%	4.6%
1q17F	690	212,724	468	73,570	657	71,214	73	5,150	1,888	362,658	5.2%	8.8%	3.4%	-5.3%	5.4%
2q17F	701	216,173	474	74,532	658	71,407	72	5,076	1,905	367,188	6.2%	9.4%	2.7%	-6.7%	5.9%
3q17F	700	215,899	470	73,910	656	71,231	71	5,002	1,897	366,043	4.6%	8.2%	1.9%	-6.9%	4.6%
4q17F	708	218,366	472	74,242	661	71,825	69	4,855	1,910	369,288	3.9%	5.0%	2.1%	-7.1%	3.6%
2010	532	161,331	351	54,678	639	67,691	99	6,969	1,621	290,670	3.5%	6.3%	3.3%	-9.3%	3.6%
2011	579	176,205	385	60,189	658	70,133	94	6,617	1,716	313,144	9.2%	10.1%	3.6%	-5.1%	7.7%
2012	602	184,239	411	64,463	659	70,512	90	6,337	1,762	325,551	4.6%	7.1%	0.5%	-4.2%	4.0%
2013	615	188,755	425	66,627	649	69,646	85	6,000	1,774	331,028	2.5%	3.4%	-1.2%	-5.3%	1.7%
2014	626	192,515	422	66,209	633	68,156	80	5,647	1,761	332,527	2.0%	-0.6%	-2.1%	-5.9%	0.5%
2015F	648	199,443	430	67,459	635	68,466	77	5,440	1,790	340,808	3.6%	1.9%	0.5%	-3.7%	2.5%
2016F	682	210,195	450	70,717	650	70,372	74	5,224	1,856	356,508	5.4%	4.8%	2.8%	-4.0%	4.6%
2017F	708	218,366	472	74,242	661	71,825	69	4,855	1,910	369,288	3.9%	5.0%	2.1%	-7.1%	3.6%
2018F	714	220,544	485	76,403	660	71,901	61	4,264	1,920	373,112	1.0%	2.9%	0.1%	-12.2%	1.0%
2019F	711	219,967	483	76,182	652	71,139	55	3,855	1,901	371,143	-0.3%	-0.3%	-1.1%	-9.6%	-0.5%
2020F	709	219,821	479	75,573	653	71,315	51	3,610	1,892	370,319	-0.1%	-0.8%	0.2%	-6.4%	-0.2%
2021F	711	220,778	485	76,527	652	71,240	49	3,460	1,897	372,005	0.4%	1.3%	-0.1%	-4.2%	0.5%
2022F	712	221,225	498	78,643	659	72,076	43	3,019	1,912	374,964	0.2%	2.8%	1.2%	-12.7%	0.8%
2016-20	61	20,378	49	8,114	18	2,850	(26)	(1,830)	102	29,511	2.0%	2.3%	0.8%	-7.9%	1.7%

Note: Excludes shuttle tankers

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Dirty Tanker Operating Fleet Balance, dwt millions

	Total Fleet		Avg yoy	Survey/ Drydock	Floating Storage	Inactive	Trading Fleet		Combis in Wet	Clean in Dirty	Operating Fleet		
	Ending	Average					Average	yoy			Average	yoy	Average
1q14	331.62	331.24	1.0%	8.83	4.15	3.01	315.25	0.7%	3.66	16.61	335.52	0.0%	-6.7%
2q14	332.03	331.58	0.0%	7.20	3.47	3.02	317.89	-0.5%	3.66	16.59	338.14	-0.9%	3.2%
3q14	331.10	331.64	-0.5%	7.42	4.43	3.10	316.69	-0.9%	3.66	16.78	337.14	-0.9%	-1.2%
4q14	332.53	332.14	0.0%	6.83	4.68	3.12	317.51	-1.0%	3.61	16.92	338.04	-1.0%	1.1%
1q15	333.71	333.52	0.7%	9.55	8.20	1.83	313.94	-0.4%	3.34	17.01	334.30	-0.4%	-4.4%
2q15	335.59	334.57	0.9%	7.49	8.97	1.58	316.53	-0.4%	3.13	17.65	337.31	-0.2%	3.6%
3q15	338.28	336.42	1.5%	9.01	8.21	1.58	317.63	0.3%	2.70	19.07	339.40	0.7%	2.5%
4q15F	340.81	339.57	2.2%	7.15	7.00	1.60	323.82	2.0%	2.70	19.37	345.90	2.3%	7.9%
1q16F	344.19	342.51	2.7%	9.18	7.16	1.78	324.39	3.3%	2.70	19.28	346.37	3.6%	0.6%
2q16F	346.69	345.79	3.4%	7.63	6.63	1.83	329.70	4.2%	2.58	19.01	351.28	4.1%	5.8%
3q16F	349.99	348.86	3.7%	9.46	4.57	1.85	332.98	4.8%	2.45	18.98	354.42	4.4%	3.6%
4q16F	356.51	353.03	4.0%	7.15	3.40	1.87	340.61	5.2%	2.38	18.73	361.72	4.6%	8.5%
1q17F	362.66	358.93	4.8%	7.86	2.59	3.24	345.24	6.4%	2.12	18.41	365.77	5.6%	4.6%
2q17F	367.19	364.84	5.5%	7.97	1.94	3.56	351.36	6.6%	1.96	17.75	371.07	5.6%	5.9%
3q17F	366.04	366.81	5.1%	8.13	1.52	3.60	353.55	6.2%	1.96	17.58	373.09	5.3%	2.2%
4q17F	369.29	367.19	4.0%	6.54	1.15	3.61	355.90	4.5%	1.96	17.17	375.03	3.7%	2.1%
2010	290.67	287.36	4.2%	6.05	8.97	6.54	265.81	6.3%	3.39	14.62	283.82	7.2%	
2011	313.14	302.79	5.4%	5.73	5.76	4.35	286.96	8.0%	4.21	17.23	308.39	8.7%	
2012	325.55	320.64	5.9%	6.15	3.71	4.25	306.53	6.8%	4.24	18.75	329.53	6.9%	
2013	331.03	331.22	3.3%	7.43	2.56	3.01	318.22	3.8%	3.68	17.73	339.63	3.1%	
2014	332.53	331.65	0.1%	7.57	4.18	3.06	316.84	-0.4%	3.65	16.73	337.21	-0.7%	
2015F	340.81	336.02	1.3%	8.30	8.09	1.65	317.98	0.4%	2.97	18.28	339.23	0.6%	
2016F	356.51	347.55	3.4%	8.36	5.44	1.83	331.92	4.4%	2.53	19.00	353.45	4.2%	
2017F	369.29	364.44	4.9%	7.63	1.80	3.50	351.51	5.9%	2.00	17.73	371.24	5.0%	
2018F	373.11	372.43	2.2%	6.97	0.83	3.58	361.05	2.7%	1.96	16.73	379.74	2.3%	
2019F	371.14	374.73	0.6%	8.57	0.83	2.76	362.57	0.4%	1.67	16.23	380.47	0.2%	
2020F	370.32	370.32	-1.2%	8.83	0.82	2.14	358.53	-1.1%	1.52	17.02	377.08	-0.9%	
2021F	372.01	370.15	0.0%	9.06	0.81	2.40	357.88	-0.2%	1.52	17.82	377.22	0.0%	
2022F	374.96	373.83	1.0%	9.97	0.82	2.86	360.17	0.6%	1.52	18.05	379.74	0.7%	
2015-20	29.51	34.30	2.0%	0.54	(7.28)	0.49	40.55	2.4%	(1.45)	(1.25)	37.85	2.1%	

Note: Excludes shuttle tankers

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VLCC Observations & Key Points

Heavy ordering, as main beneficiary of OPEC largesse

- With 1.8 mbpd of OPEC over-supply centred on AG output, VLCCs demand has exploded, with rates hitting \$100,000
- Resulting enthusiasm for sector has prompted ordering of 61 units to date

VLCC orderbook too large under any demand view

- VLCC orderbook now 127 units, which could haul 5 mbpd AG-Asia
- Expect 2015 orders to hit 81 VLs, orderbook to peak at 149 by mid-2016
- Deliveries as percent of fleet to average 6.8% pa over three years 2016-18

Only narrow window for crude floating storage

- Crude contango remaining flat despite lower prices, given dire market view
- Floating storage economics only viable with dramatic seasonal decline in VL rates and wider contango on crashing prices in 1q16

Release of Iranian storage boosting operating fleet

- Gradual release of 40 MB of Iranian floating storage would boost VLCC operating fleet growth by 2.5% during 2h16 and 1q17
- With accelerating deliveries in 2016, operating fleet growth hits 8% in 1q17

Owners may need to shrink VLCC fleet again, after 13 yrs

- IMO single-hull purge allowed lower demolition (2% pa) during last cycle
- Demo required for balancing market may need 5-6% pa, and with painful decision to scrap 17-18 year olds, given lack of older tonnage

High operating fleet growth before demo takes hold

- Between accelerating deliveries & declining floating storage, VLCC operating fleet growth rises 6.4% for 2016-17
- Operating fleet growth could run 7.5-8.0% yoy during 2h16 and early-2017



Suezmax Observations & Key Points

Suezmax orders rebounded in 3q15 on Greek interest

- Suezmax 2015 contracting reached 41 units on 16-vessel rebound in 3q15
- Greek owners have represented 78% of this year's contracting

Orderbook highest in dirty sector, as percent of fleet

- Suezmax ordering pace in 2015 similar to VLs at 9.6% of fleet, but follows heavy contracting in 2014 of 42 units
- Suezmax orderbook of 91 vessels, at 21.4% of fleet, highest in sector

Suezmax deliveries surging in 2017 on early yard slots

- Owners able to secure six delivery slots in 2h16 during 2015, with 21 in 2017
- Adjusted for slippage, 4q16/1q17 deliveries reaching combined 8.4% of fleet
- Ending fleet growth would spike to 9.4% yoy in 2q17

Suezmax owners embraced demo in 2012, need repeat

- With less dry bulk conversion interest, Suezmax demolition ran higher than VLs during last cycle, hitting 4.6% of fleet in 2012
- May need to return to or exceed those levels in 2017-18 to balance market

More 20-year old demo candidates than VLCCs

- In 2017-18, 24 Suezmaxes (5.3% of fleet) come due for 4th special survey
- Meets almost half of required demo over the period

Operating fleet growth to spike sharply in 2017

- Even with increased demo, average operating fleet growth jumps from 2.2% in 2016 to 7.9% during 2017
- Acceleration in Suezmax deliveries in 4q16 sends 2q17 growth to 9.0% yoy



Aframax Observations & Key Points

Aframax orders revive after quiet eight years

- Aframax ordering surged in 2015, reaching 49 units, highest pace since 2006
- During 2007-14, annual Aframax ordering averaged only 16 vessels

Despite ordering surge, orderbook relatively low

- Current Aframax orderbook at 81 vessels, or 13.5% of fleet
- Below 20% levels of VLCC & Suezmax orderbooks
- With slippage, deliveries to just reach 5% of fleet, half of previous peaks

Aframax owners have shown more demo discipline

- Limited dry conversion interest led Afra owners to scrap a consistent 2.7% of fleet during last demo cycle of 2012-14
- VLCC scrapping only averaged 1.9%, Suezmax 2.4% during period

Unlike other sectors, plenty of Afras turning 20-yrs old

- Aframax fleet 1.7 & 2.4 years older than Suezmax & VLCC fleets, respectively
- Total of 31 Aframax (4.8% of fleet) turning 20-yrs old in 2017-18, meeting more than 60% of required demo over the period

Recent shift in LR2s to dirty likely to reverse

- Despite high clean earnings, 18 LR2s switched to dirty trade in 2q15, adding 3-4% to operating fleet growth and pressuring Afra earnings
- LR2s in dirty now 15.4% of fleet, but set to drift lower, as dirty earnings fade

Operating fleet growth to slow then decline

- LR2 boosted 2015 operating fleet growth to 2.2%, versus -0.5% underlying
- With aggressive demo and LR2s migrating back to dirty, operating fleet growth to slide from 1.6% in 2016 to a 1.3% decline in 2019



Panamax Observations & Key Points

Panamax fleet continues to shrink, as LR1s favoured

- No dirty Panamax orders since 2006 and no deliveries after 2010
- Given nominal cost of coating & flexibility, owners have favoured LR1s

New Panama Canal locks to bring Aframax competition

- New Panama Canal locks in 2016 will allow fully-laden Aframaxes to transit
- Revised pricing structure not providing great incentives for Panas in old locks
- Sector to face lower-cost competition from Aframaxes in regional trade

Oldest dirty tanker fleet, but from lack of new tonnage

- Median Panamax age of 12.7 years well above dirty tanker fleet average of 8.8 years, but due to lack of deliveries since 2010
- Share of vessels over 15 years old is consistent with other sectors, at 17%

Next wave of Panamax demo to feature 17-18 year olds

- Remarkably, only two Panamaxes turning 20 years old before 2h19
- Demolition 2017-19 to focus on 26 vessels facing 4th intermediate survey

LR1s trading dirty dominate operating fleet

- LR1s trading dirty represent 147% of underlying dirty Panamax fleet
- Lower dirty earnings to send LR1s back to clean, but ratio of dirty-trading LR1s to uncoated to remain stable on declining underlying fleet

Operating fleet contraction set to accelerate

- With rising demolition and LR1 migration back to clean, decline in Panamax operating fleet to accelerate to above 9% for 2017-19



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