

these vessels without having to reinforce bulkheads and related structures.

Opportunity costs were estimated to account for the onetime cost tank vessels would be out of service as a result of being retrofitted. This cost was estimated by subtracting from the daily

time charter rate the daily operating cost that would be saved as a result of being out of service as well as crew cost savings if the retrofit would take more than two weeks since crews would be flown home. For pre-MARPOL vessels, the number of days the tank vessel would be laid up was estimated by

deadweight ton range. A summary of the onetime costs and opportunity costs for the measures is presented in Table 7. For MARPOL 73 and MARPOL 78 vessels, no disruption in service was assumed. Therefore, no opportunity costs were considered.

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Table 7
Summary of Onetime and Opportunity Costs

Pre-MARPOL Vessels DWT Ranges (DWT x 1,000)		Opportunity Costs						Onetime Refit Costs (ROM)
		Timecharter Rates (\$/day)	Avoided Op. Cost Exc. Crew (\$/day)	Crew Costs (\$/day)	Time Out of Service (days)	Lost Daily Operating Contrib. (\$/day)	Total Annual Opportunity Cost	
International Fleet	5-29	13,000	2,500	2,400	6	10,600	\$63,000	\$328,000
	30-49	15,000	2,800	2,700	7	12,300	\$84,000	\$552,000
	50-64	17,000	3,530	3,000	7	13,600	\$93,000	\$702,000
	65-89	19,000	3,910	3,570	7	15,200	\$104,000	\$803,000
	90-144	19,000	4,700	3,600	7	14,400	\$99,000	\$988,000
	145-199	19,000	5,490	4,000	8	13,600	\$107,000	\$1,183,000
	200-299	23,000	6,890	4,700	8	16,000	\$125,000	\$1,474,000
	300+	32,000	8,280	5,000	8	23,600	\$185,000	\$1,792,000
U.S. Coastal Fleet	5-29	25,000	3,650	5,600	6	21,400	\$128,000	\$340,000
	30-49	30,000	5,250	6,600	7	24,700	\$170,000	\$600,000
	50-64	35,000	6,050	7,200	7	28,900	\$199,000	\$780,000
	65-89	40,000	6,320	7,200	7	33,700	\$231,000	\$930,000
	90-199	50,000	8,450	8,000	7	43,600	\$299,000	\$1,330,000
	200+	62,000	7,930	7,100	8	54,100	\$424,000	\$1,710,000

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The affected fleet was also analyzed to determine whether a vessel owner or operator would replace the vessel with a double hull vessel rather than implement the measures researched in this regulatory assessment. The key consideration underlying the decision about whether to "replace" or "retrofit" depends on whether the amortized costs to purchase and operate a double hull tank vessel are less than the annualized incremental cost for a single hull vessel to comply with the proposed measure. The existing single hull tank vessel is assumed to be replaced if the amortized cost of purchasing and operating a new double hull vessel earlier than required is less expensive than retrofitting the existing tank vessel with the proposed measure. This analysis dependent on several factors, including the onetime retrofit costs of the measures; the annual costs related to cargo shutout; the

number of years remaining until the existing single hull vessel must be replaced by a double hull vessel; the price the vessel owner would receive if the single hull vessel was replaced (scrap or secondhand price); and the capital costs and operating costs of a double hull vessel. The analysis indicated that none of the fleet of existing single hull vessels would be replaced early by double hull vessels due to the measures in this phase of the regulatory assessment. The primary reason for this outcome is that the compliance costs for the measures, including the onetime capital costs, are relatively low in comparison to the annualized cost to purchase and operate double hull vessels.

3. Government Costs

The majority of tank vessels owned or operated by the Federal Government, such as oil tank vessels used by the U.S.

Navy, qualify as public vessels under OPA 90 and are not subject to this rulemaking. The National Defense Reserve Fleet/Ready Reserve Force (NDRF/RRF) currently does not qualify for the public vessel exemption and has ten tank vessels available for service that would be affected by this rulemaking. Because the NDRF/RRF is composed of vessels similar to those used in this analysis, costs and benefits would be similar. However, there is legislation being discussed that would exempt these vessels from the OPA 90 double hull phase-in requirements. Because these vessels may not be subject to this rulemaking and no specific regulatory language is proposed in this SNPRM, this analysis did not include costs to the NDRF/RRF.

The burden of implementing structural measures may require the Coast Guard to conduct plan review for those vessels refitting their tanks or