The estimated incremental benefits of the measure in terms of the number of spilled barrels avoided was calculated by multiplying the effectiveness ratios by the accidental oil spill and operational discharge volumes estimated for the baseline fleet. As the existing single hull tank vessel fleet is phased out over time, the benefits are projected to decrease to zero at the beginning of 2015. The present value and annualized value of the number of barrels spilled that would be avoided were also estimated using a real discount rate of seven percent. Table 10 summarizes the number of spilled barrels avoided in selected years starting in 1999, by vessel category, for the international and U.S. coastal fleets. It also includes a break down of benefits by fleet categories. For this section of the table, small vessels are defined as all international and U.S. coastal tank vessels less than 30,000 dwt and large vessels are defined as all international and U.S. coastal tank vessels that are greater than or equal or 30,000 dwt. The Jones Act fleet numbers represent both small and large vessels numbers. Therefore, these three categories are not mutually exclusive.

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TABLE 10 Benefits of the Proposed Measures by Category

VESSEL CATEGORY		Total Spilled Barrels Avoided		YEAR				
		Present-Value	Annualized	1999	2001	2005	2010	2015
U.S. Coastal	Pre-MARPOL	848	80	87	261	108	0	0
	MARPOL '73	1,001	95	93	278	190	0	0
	MARPOL '78	1,286	121	137	411	196	0	0
International	Pre-MARPOL	94,873	8,955	10,014	30,042	11,855	1,435	0
	MARPOL '73	1,250	118	185	555	98	0	0
	MARPOL '78	31,901	3,011	2,228	6,685	4,933	2,631	. 0
Total		131,159	12,380	12,744	38,232	17,380	4,066	0
					·		 	<u></u>
Fleet Category				047	A54	404		<u> </u>
Jones Act		3.135	1 296	31/	921	494	U /	0

3,049

9,331

32,305

98,853

2,479

10,265

7.438

30,794

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Small Vessels

Large Vessels

5. Cost-benefits

The estimated cost per barrel of unspilled oil is categorized by international and U.S. coastal fleets in Table 11. These cost-effectiveness estimates were developed using a 7 percent real discount rate. The table also includes a breakdown of estimated cost per barrel of unspilled oil for small vessels, large vessels and Jones Act vessels. These fleet categories are not mutually exclusive. As shown in Table 11, there is a difference in the estimated cost-benefit for pre-MARPOL international tank vessels as compared to the U.S. coastal tank vessel fleet. The primary reason for this difference is that the measure reduces both accidental and operational oil outflow for the preMARPOL international fleet. The retrofit costs for these vessels to implement the measures are also greater for U.S. coastal tank vessels of a given deadweight tonnage because they would be required to have the retrofit work performed at U.S. shipyards, which historically have charged higher rates than foreign shipyards.

1.510

2,556

n

0

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4,496

12,884