

THE COST OF OIL SPILLS FROM TANKERS: AN ANALYSIS OF IOPC FUND INCIDENTS

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ABSTRACT: *The 1971 and 1992 International Oil Pollution Compensation Funds ("IOPC Funds") provide compensation to the victims of oil spills from tankers in countries which have ratified the 1971 and 1992 Fund Conventions. Since 1978, they have dealt with more than 100 incidents, paying compensation in 68 of these. Details of the individual incidents are given together with the total cost for each, expressed in US\$. The numbers, sizes and costs of the incidents are analysed in detail and compared with the incidence of all tanker spills in Fund countries, using data from ITOPF's Oil Spill Database. This analysis reveals a number of trends relating to the size of tankers; the amount and type of oil spilled; and the geographical location.*

The 1971 IOPC Fund has undoubtedly proved highly effective, but recent incidents have tested the limits of compensation available. The 1992 Fund Convention entered into force in May 1996, providing both higher limits and a broader scope. However, the threshold at which it comes into effect is also higher, thereby excluding many of the less expensive spills which would previously have been covered by the 1971 Fund Convention. The significance of this for the numbers and costs of incidents likely to be dealt with by both the 1971 and the 1992 IOPC Funds is examined.

69 and Fund 71 came into force in 1975 and 1978 respectively. They were updated by CLC 92 and Fund 92 which came into force on 30th May 1996, providing both higher compensation limits and a broader scope of application. This marked the beginning of the "transitional period" during which the old system, CLC 69 and Fund 71, operated in tandem with the new system, CLC 92 and Fund 92. The transitional period ended on 15th May 1998, since when the two systems have functioned independently.

Together, the Conventions create an international system which is unique in the field of marine pollution, whereby the reasonable costs of cleanup and damages are met, first by the individual tanker owner up to the relevant CLC limit through a system of compulsory insurance, and then, if necessary, supplemented, by international funds administered by the 1971 and 1992 IOPC Funds. These international funds are contributed to by companies ("oil receivers") which receive crude oil and fuel oil after sea transport ("contributing oil").

Countries that ratify the Fund Conventions automatically become members of the relevant IOPC Fund. Figure 1 shows the total numbers of 1971 and 1992 IOPC Fund member countries.

Introduction

Compensation for oil pollution damage caused by tankers is governed by four international Conventions: the 1969 and 1992 International Conventions on Civil Liability for Oil Pollution Damage ("CLC 69" and "CLC 92") and the 1971 and 1992 International Conventions on the Establishment of an International Fund for Compensation for Oil Pollution Damage ("Fund 71" and "Fund 92"). CLC

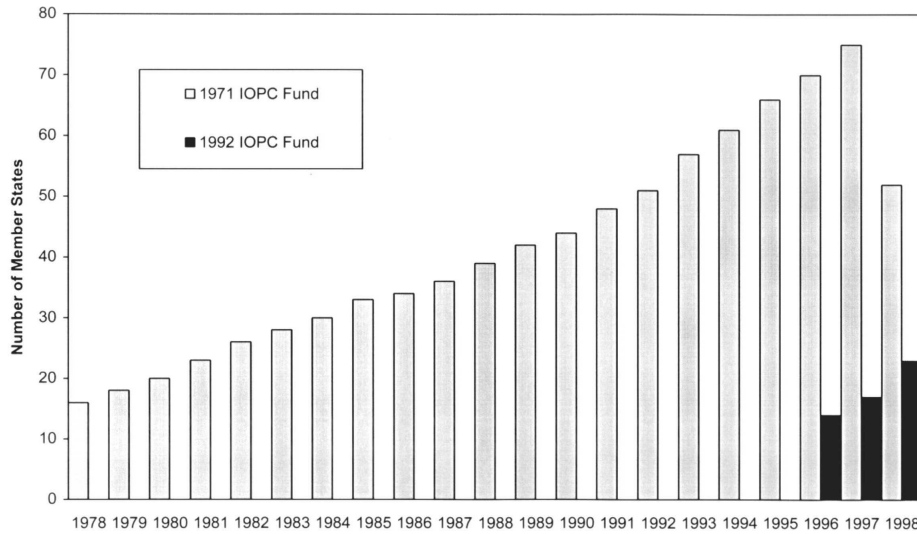


Figure 1. Numbers of 1971 and 1992 IOPC Fund Member States, 1978–16th May 1998.

The number of Fund 92 countries has risen steadily since the Convention came into force in 1996. The number of Fund 71 countries, however, dropped from a peak of 76 on 15th May 1998 to just 52 on the 16th May 1998, as a result of a requirement that countries which ratify Fund 92

denounce CLC 69 and Fund 71 at the end of the transitional period. Figure 2 shows the status of countries with respect to Fund 71 and Fund 92 immediately after the end of the transitional period.

The maximum compensation currently available under each of the four Conventions is shown in Figure 3.



Figure 2. Membership of the 1971 (light grey) and 1992 (dark grey) IOPC Funds at 16th May 1998.

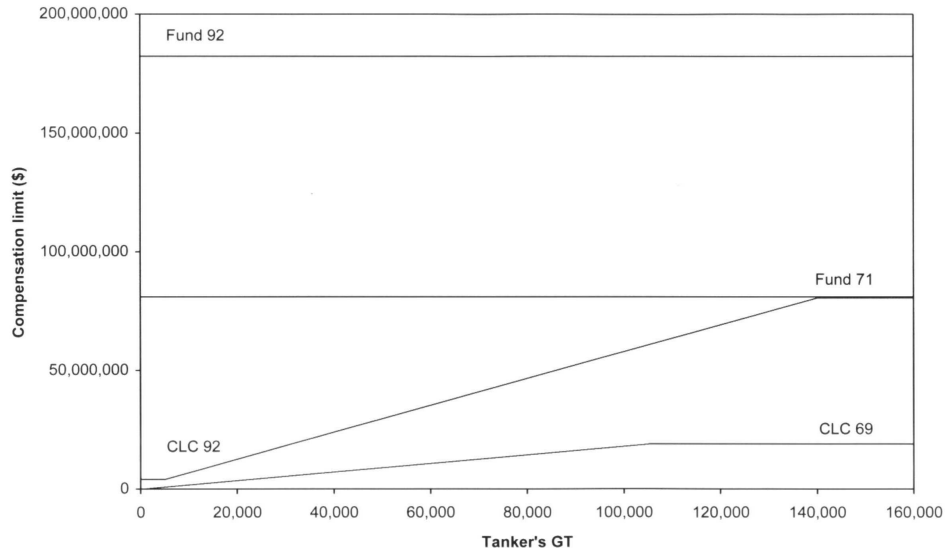


Figure 3. Compensation limits under the Civil Liability and Fund Conventions.

Whilst the CLC 69 and 92 limits are linked to the gross tonnage ("GT") of the tanker suffering the spill, the Fund 71 and 92 limits (which include the amounts paid by tanker owners under CLC 69 or 92) are fixed, irrespective of the size of the tanker. Recognising that incidents involving small tankers can prove disproportionately expensive, CLC 92 includes a "small ship limit" for tankers up to 5,000 GT, of approximately \$4 million. The small ship limit was intended to restrict the number of cases covered by Fund 92 and to enhance the availability of adequate compensation in countries which have only ratified CLC 92.

This paper seeks to illustrate a number of aspects of the international system of compensation by analysing the numbers and costs of oil spills from tankers in countries party to the Fund Conventions. Incidents dealt with by the 1971 and 1992 IOPC Funds up to the end of the transitional period are reviewed in detail and the significance of the ending of the transitional period is then explored. It should be emphasised that the conclusions relate solely to incidents dealt with under the Fund Conventions and do not apply to incidents dealt with wholly under the Civil Liability Conventions or, indeed, to oil spills in general. No attempt has been made to provide a comprehensive description of the international system of compensation, further details of which can be obtained by reference to the complete texts of the Conventions or to explanatory publications produced by the IOPC Funds.

Note: The paper builds on a more detailed review (ITOPF, 1998) and details of the methodology used have not been repeated here. All tanker tonnages are given in gross tons ("GT") which have been treated as equivalent to limitation tons, which apply in the case of CLC 69. Compensation limits are expressed in Special Drawing Rights ("SDR") in the Conventions and have been converted to US\$ at a fixed rate of 1 SDR = \$ 1.35. Costs of incidents have been converted to US\$ and then index-

linked to 1997 values (IMF, 1998) which, for simplicity, are used consistently throughout all text and figures. However, it should be noted that currency conversion and index-linking can introduce significant distortion to both costs of incidents and the relevant compensation limits.

The past

The 1971 and 1992 IOPC Funds dealt with 104 and 6 incidents respectively before the ending of the transitional period, a number of which have not yet been settled. In order to determine whether or not they would ultimately exceed the relevant CLC limit, and thus result in payments of compensation by the IOPC Funds, it was necessary to estimate the likely total cost of each of these incidents. These estimates have been made purely for the purpose of this analysis, without prejudice to the position of the IOPC Funds or the claimants; the figures clearly involve a high degree of uncertainty and should be treated with considerable caution.

Table 1 lists a total of 68 incidents ("Fund incidents") which occurred in Fund 71 countries before the ending of the transitional period, in which oil was spilled into the sea and where the total cost exceeded, or is expected to exceed, the CLC 69 limit. Only two incidents in Fund 92 countries are expected to exceed the CLC 92 limit. These are both also Fund 71 cases and are marked with an asterisk in the table.

Table 1. Fund incidents

No.	Date	Name	Flag	GT	Location	Oil type	Tonnes	Total Cost		1997 \$ /tonne
								\$	1997 \$	
1	27/02/79	Antonio Gramsci	Russian	27,694	Russia	Crude	5,500	21,495,416	34,865,565	C 6,339
2	22/03/79	Miya Maru No 8	Japanese	997	Japan	Heavy fuel oil	540	756,675	1,227,327	2,273
3	21/06/79	Tarpenbek	West German	999	UK	Lubricating oil	10	691,924	1,122,301	112,230
4	08/12/79	Mebaruzaki Maru No 5	Japanese	19	Japan	Heavy fuel oil	10	46,952	76,156	7,616
5	09/01/80	Showa Maru	Japanese	199	Japan	Heavy fuel oil	100	473,304	672,092	6,721
6	07/03/80	Tanio	Malagasy	18,048	France	Heavy fuel oil	13,500	54,430,411	77,291,184	C 5,725
7	03/06/80	Furenas	Swedish	999	Sweden	Heavy fuel oil	200	570,038	809,454	4,047
8	21/08/80	Hosei Maru	Japanese	983	Japan	Heavy fuel oil	270	1,059,938	1,505,112	5,574
9	21/11/81	Suma Maru No 11	Japanese	199	Japan	Heavy fuel oil	10	58,821	76,585	7,659
10	03/03/82	Ondina	Netherlands	31,030	Germany	Crude	300	9,010,436	11,506,327	38,354
11	31/03/82	Shiota Maru No 2	Japanese	161	Japan	Heavy fuel oil	20	329,357	420,589	21,029
12	03/04/82	Fukutoko Maru No 8	Japanese	499	Japan	Heavy fuel oil	85	1,636,473	2,089,776	24,586
13	21/06/83	Shinkai Maru No 3	Japanese	48	Japan	Heavy fuel oil	3.5	12,449	15,699	4,485
14	13/08/83	Eiko Maru No 1	Japanese	999	Japan	Heavy fuel oil	357	276,846	349,103	978
15	22/12/83	Koei Maru No 3	Japanese	82	Japan	Heavy fuel oil	49	129,724	163,583	3,338
16	26/08/84	Tsunehisa Maru No 8	Japanese	38	Japan	Heavy fuel oil	30	69,878	86,020	2,867
17	05/11/84	Koho Maru No 3	Japanese	199	Japan	Heavy fuel oil	20	395,602	486,986	24,349
18	05/03/85	Koshun Maru No 1	Japanese	68	Japan	Heavy fuel oil	80	139,911	173,210	2,165
19	02/08/85	Jan	West German	1,400	Denmark	Heavy fuel oil	300	1,236,164	1,530,371	5,101
20	03/01/86	Brady Maria	Panamanian	996	Germany	Heavy fuel oil	200	1,842,479	2,347,318	11,737
21	18/12/86	Oued Gueterini	Algerian	1,576	Algeria	Bitumen	15	499,810	636,758	42,451
22	21/12/86	Thuntank 5	Swedish	2,866	Sweden	Heavy fuel oil	200	3,842,714	4,895,617	24,478
23	06/02/87	Antonio Gramsci	Russian	27,706	Finland	Crude	700	7,132,799	8,858,936	C 12,656
24	25/08/87	Akari	Panamanian	1,345	UAE	Heavy fuel oil	1,000	659,914	819,613	820
25	18/12/87	Hinode Maru No 1	Japanese	19	Japan	Heavy fuel oil	25	20,229	25,124	1,005
26	31/01/88	Amazzone	Italian	18,325	France	Heavy fuel oil	2,000	3,398,885	4,054,870	2,027
27	12/03/88	Taiyo Maru No 13	Japanese	86	Japan	Heavy fuel oil	6	68,932	82,235	13,706
28	10/12/88	Kasuga Maru No 1	Japanese	480	Japan	Heavy fuel oil	1,100	3,540,999	4,224,412	3,840
29	15/05/89	Fukkol Maru No 12	Japanese	94	Japan	Heavy fuel oil	0.5	18,724	21,289	42,578
30	28/06/89	Kifuku Maru No 103	Japanese	59	Japan	Heavy fuel oil	1	69,670	79,214	79,214
31	05/04/90	Daito Maru No 3	Japanese	93	Japan	Heavy fuel oil	3	58,579	64,319	21,440
32	11/04/90	Kazuei Maru No. 10	Japanese	121	Japan	Heavy fuel oil	30	388,180	426,221	14,207
33	12/04/90	Fuji Maru No 3	Japanese	199	Japan	Heavy fuel oil	1	39,966	43,882	43,882
34	14/05/90	Volgoneft 263	Russian	3,566	Sweden	Waste oil	800	3,403,384	3,736,916	4,671
35	16/10/90	Rio Orinoco	Cayman Is.	5,999	Canada	Medium fuel oil	185	12,012,436	13,189,655	71,295
36	05/11/90	Portfield	British	481	UK	Medium fuel oil	110	631,008	692,847	6,299
37	07/03/91	Vistabella	Trin. & Tob.	1,090	Lesser Antilles	Heavy fuel oil	2,000	1,695,216	1,857,957	929
38	05/04/91	Hokunan Maru No.12	Japanese	209	Japan	Heavy fuel oil	1	76,894	84,276	84,276
39	11/04/91	Haven	Cypriot	109,977	Italy	Crude	144,000		96,000,000	E 667
40	12/04/91	Kaiko Maru No 86	Japanese	499	Japan	Heavy fuel oil	25	856,778	939,029	37,561
41	27/12/91	Kumi Maru No.12	Japanese	113	Japan	Heavy fuel oil	5	32,728	35,870	7,174
42	03/12/92	Aegean Sea	Greek	57,801	Spain	Crude	73,500		60,000,000	E 816
43	05/01/93	Braer	Liberian	44,989	UK	Crude	84,000		60,000,000	E 714
44	16/01/93	Kihnu	Estonian	949	Russia	Heavy fuel oil	140	330,000	354,090	2,529
45	12/04/93	Sambo No 11	South Korean	520	South Korea	Heavy fuel oil	4	368,582	395,488	98,872
46	31/05/93	Taiko Maru	Japanese	699	Japan	Heavy fuel oil	520	10,056,785	10,790,930	20,752
47	23/07/93	Ryoyo Maru	Japanese	699	Japan	Heavy gas oil	500	327,394	351,294	703
48	27/09/93	Keumdong No. 5	South Korean	481	South Korea	Heavy fuel oil	1,280		33,000,000	E 25,781
49	09/10/93	Iliad	Greek	33,837	Greece	Crude	200		15,000,000	E 75,000
50	11/06/94	Daito Maru No 5	Japanese	116	Japan	Heavy fuel oil	0.5	45,844	48,595	97,190
51	17/10/94	Toyotaka Maru	Japanese	2,960	Japan	Crude	560	7,793,538	8,261,151	14,752
52	08/11/94	Sung Il No 1	South Korean	150	South Korea	Heavy fuel oil	18	77,083	81,708	4,539
53	23/07/95	Sea Prince	Cypriot	144,567	South Korea	Crude	5,035		45,000,000	E 8,937
54	03/08/95	Yeo Myung	South Korean	138	South Korea	Heavy fuel oil	40		6,000,000	E 150,000
55	04/08/95	Shinryu Maru No 8	Japanese	198	Japan	Heavy fuel oil	0.5		90,000	E 180,000
56	03/09/95	Senyo Maru	Japanese	895	Japan	Heavy fuel oil	94	1,600,000	1,636,800	17,413
57	21/09/95	Yuil No 1	South Korean	1,591	South Korea	Heavy fuel oil	2,870		36,000,000	E 12,544
58	15/02/96	Sea Empress	Liberian	77,356	UK	Crude	72,360		60,000,000	E 829
59	06/03/96	Kugenuma Maru	Japanese	57	Japan	Heavy fuel oil	0.3	27,194	27,194	90,648
60	15/08/96	Yung Jung No 1	South Korean	560	South Korea	Medium fuel oil	28		1,000,000	E 35,714
61	02/01/97	Nakhodka *	Russian	13,159	Japan	Medium fuel oil	17,500		180,000,000	E 10,286
62	25/01/97	Tsubame Maru No 31	Japan	89	Japan	Heavy fuel oil	0.6		60,000	E 100,000
63	28/02/97	Nissos Amorgos	Greek	50,563	Venezuela	Crude	3,600		20,000,000	E 5,556
64	27/03/97	Daiwa Maru No 18	Japanese	186	Japan	Heavy fuel oil	1		140,000	E 140,000
65	01/04/97	Jeong Jin No 101	South Korean	896	South Korea	Heavy fuel oil	124		300,000	E 2,419
66	03/04/97	Osung No 3 *	South Korean	786	South Korea	Heavy fuel oil	1,700		4,000,000	E 2,353
67	07/11/97	Kyungnam No 1	South Korean	168	South Korea	Heavy fuel oil	20		250,000	E 12,500

Key: * Joint Fund 71/Fund 92 case C Corrected E Estimated

The "total cost" for each incident given in Table 1 is a theoretical amount representing the actual or estimated total admissible claims for each incident. Thus, it is not simply the amount paid, or expected to be paid by the IOPC Funds, but includes the tanker owner's liability under CLC 69 and CLC 92. For three incidents (marked in the table with a "C") the total cost has been corrected - in one case, to reflect the fact that admissible claims exceeded the total amount of compensation then available, and in two cases, to reflect admissible claims in countries which had not ratified Fund 71. Where it was necessary to estimate the

total cost (marked in the table with an "E"), the estimates were made at 1997 values and have therefore not been index-linked.

Total cost of incidents. Figure 4 shows the total cost of these Fund incidents compared with the GT of the tanker involved and the compensation limits under CLC 69 and Fund 71. Fund 71 has undoubtedly proved highly effective, since the estimated total costs of only two incidents, the *Haven* and the *Nakhodka* (a joint Fund 71/Fund 92 case), exceed the total compensation of approximately \$81 million currently available under Fund 71.

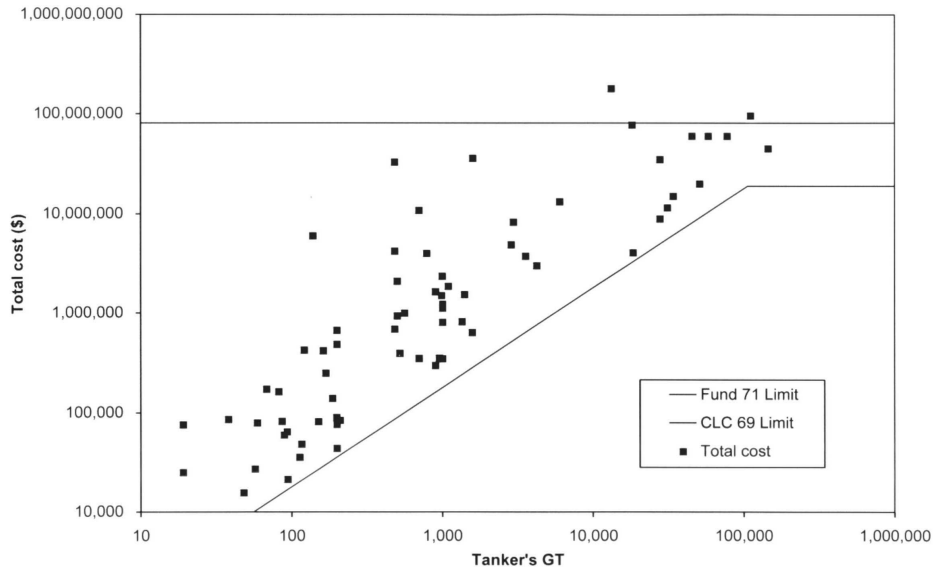


Figure 4. Total cost of Fund incidents by tanker's GT, compared with the CLC 69 and Fund 71 limits.

Time. The total cost of a number of recent incidents has approached the Fund 71 limit. Figure 5 shows the number of Fund incidents per year in a series of cost ranges, showing that there has been a marked increase in the

numbers of spills with a total cost in excess of \$10 million. Since the total cost of each of the incidents has already been corrected to 1997 values, this effect is due to factors other than inflation.

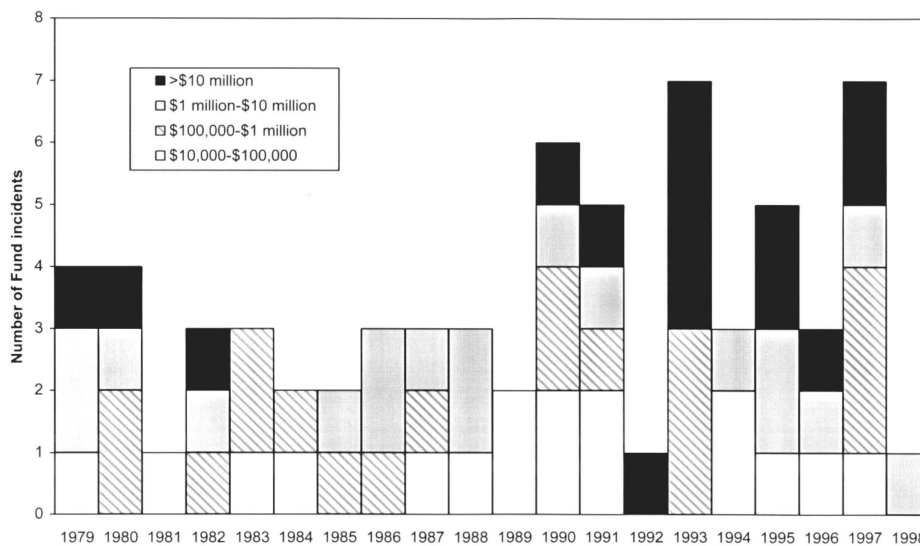


Figure 5. Numbers of Fund incidents per year, by Total cost range.

Size of spill. Figure 6 shows the number of Fund incidents as a proportion of all tanker spills in Fund countries for

three different size ranges, based on information from ITOPF's Oil Spill Database.

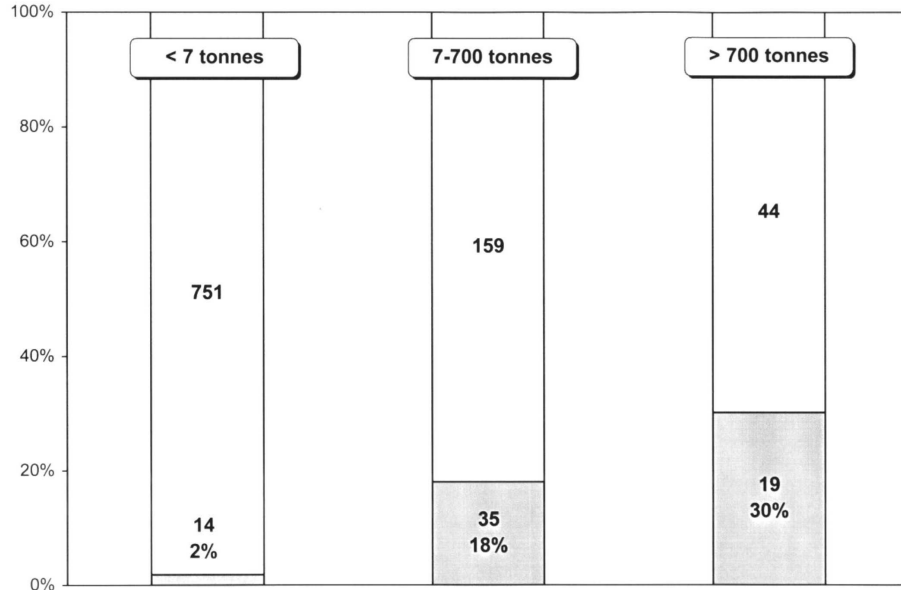
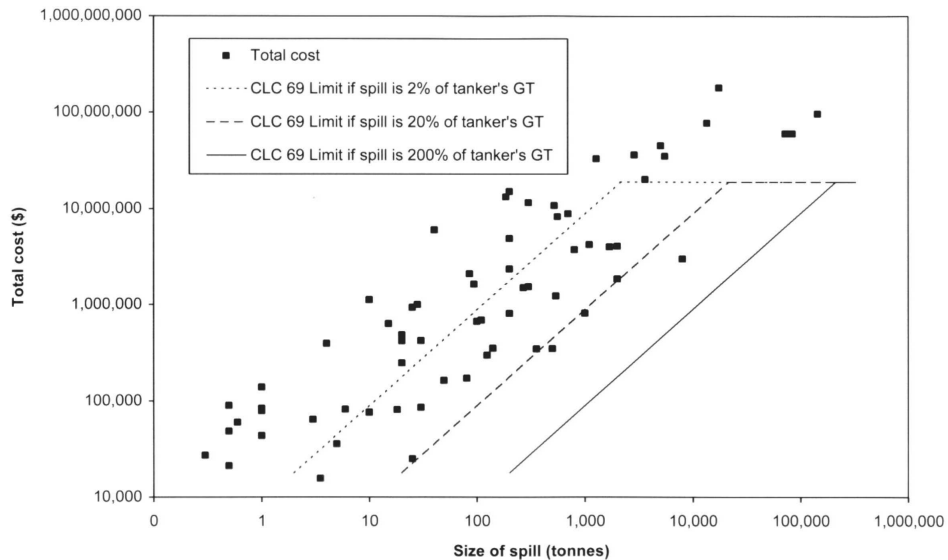


Figure 6. Number of Fund incidents (grey) as a proportion of tanker spills in Fund countries (white)

Whilst the total number of Fund incidents in each size range (under 7 tonnes, 7–700 tonnes, and over 700 tonnes) is broadly similar at 14, 35 and 19 respectively, the percentage of incidents resulting in Fund cases rises steadily from less than 2% through 18% to 30%. Although there have been a significant number of Fund incidents resulting from spills of under 7 tonnes, they represent a tiny proportion of all spills in this size range since the costs of most fall below the relevant CLC limit. Not surprisingly, larger spills are more likely to exceed the CLC limit and thus result in Fund incidents.

However, the relationship between the total cost of a spill, the amount of oil spilled and the size of the tanker for Fund incidents is complex. For example, the maximum potential spill of cargo from a tanker is equal to its cargo capacity, which is approximately equal to twice the tanker's GT. Spills of 100% of the cargo are, however, unusual, with most spills constituting a much smaller proportion. In addition, the total cost for Fund incidents must, by definition, exceed the CLC limit, which is also related to the tanker's GT. Figures 7a and 7b show the size of the spill for the Fund incidents compared with the total cost and cost/tonne.



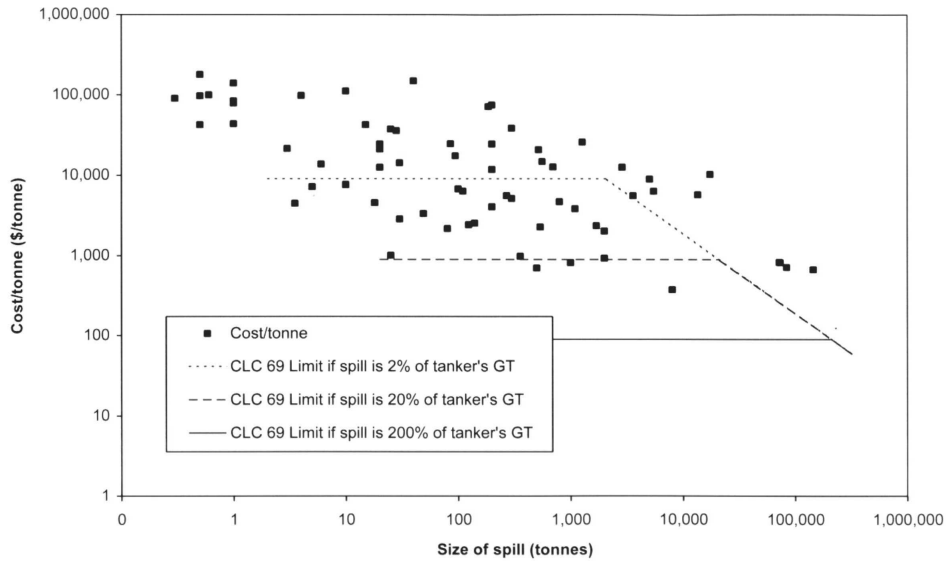


Figure 7. A. Total cost and B. Cost/tonne of Fund incidents by size of spill, compared with the CLC 69 limit.

They also show the relationship between the CLC 69 limit and the spill size as a percentage of the tanker's GT. The impact of this relationship on the dataset can be demonstrated by considering the example of a spill of 1000 tonnes of oil resulting in a total cost of \$1,000,000. If this spill were from a tanker of 500 GT (200% of the tanker's GT), it would be a Fund incident since the cost would exceed the CLC 69 limit of \$90,000. However, if this spill were from a tanker of 50,000 GT (2% of the tanker's GT), the total cost would fall below the CLC 69 limit of \$9,000,000 and it would therefore not be included in this dataset. It cannot be emphasised enough that any conclusions drawn from this dataset relate specifically to Fund incidents and not to spills in general. Any attempt to derive a general relationship between the size of a spill and the total cost or cost/tonne from this data is therefore completely invalid.

Type of oil and geographical location. The proportion of spills resulting in Fund incidents varies considerably depending on the type of oil spilled and the location of the spill. Figure 8 shows the proportion of spills resulting in Fund incidents for four combinations of type of oil and location, for each of three spill size ranges. In the smallest size range, less than 7 tonnes, 23% of fuel oil cargo spills in Asia resulted in Fund incidents whereas none of the spills in the other three groups did. In the intermediate size range, 7–700 tonnes, the proportion of spills in this group rises to 66% and is still much higher than for the other groups at between 4–14%. By the largest size category, over 700 tonnes, however, the difference between Asia and the rest of the world largely disappears, with the two fuel oil categories at 56–71% contrasting with the two non-fuel oil categories at 8–24%.

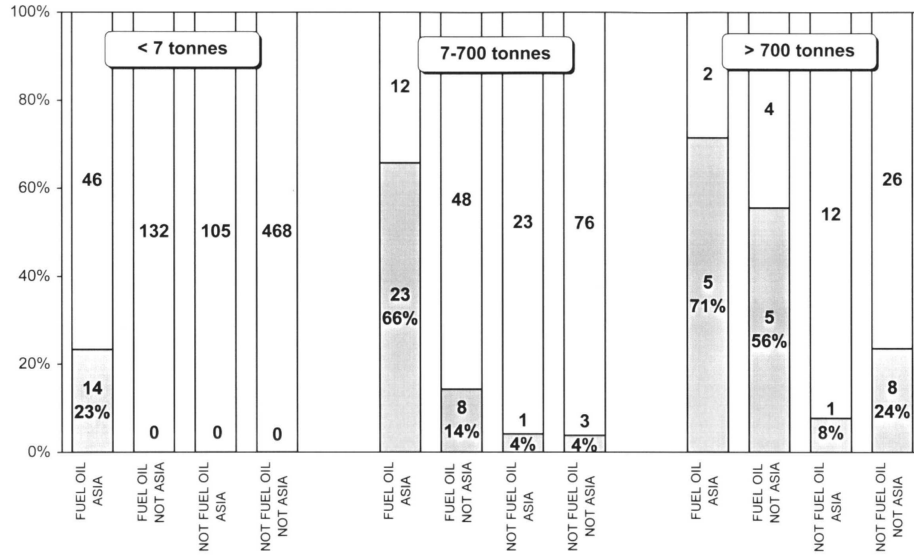


Figure 8. Numbers of Fund incidents (grey) as a proportion of tanker spills in Fund countries (white) by type of oil and geographical region

The high percentage of Fund incidents resulting from small spills in Asia is a reflection of the high number of small coastal tankers with low CLC limits trading in these waters. These smaller tankers are likely to carry oil products, including fuel oil, and to trade in the coastal waters of their flag country. In contrast, larger tankers

typically carry crude oil internationally. This is illustrated by Figure 9 which compares Japanese-flagged tankers as a proportion of the world fleet with the proportion of Fund claims resulting from incidents in Japan, in a series of GT size ranges.

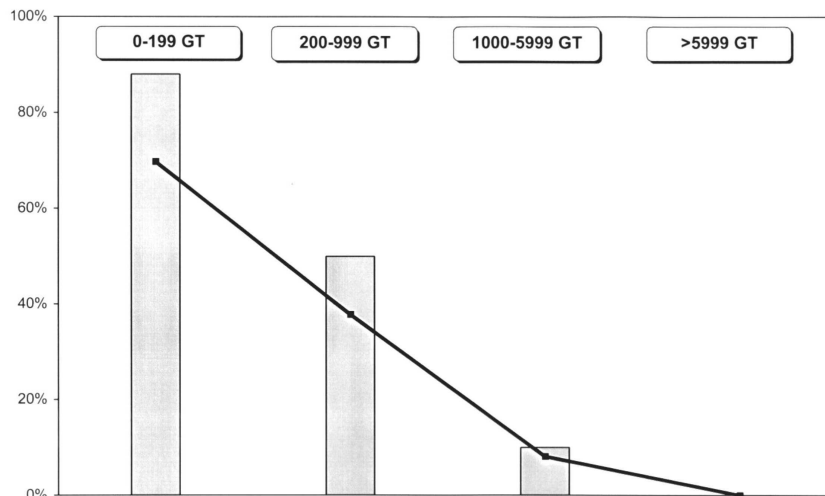


Figure 9. Proportion of Fund incidents in Japan (bar) compared with proportion of Japanese-flagged tankers in world fleet (line)

Spills of fuel oil, particularly heavy fuel oil, are, however, more likely to exceed the CLC limit and thus result in a Fund incident than spills of crude oil of a similar size. Heavy fuel oil has the potential to cause widespread contamination and difficult cleanup problems because of its persistent nature.

Contributions. Oil receivers located in Japan were, in total, by far the largest contributor to the 1971 IOPC Fund,

followed by Italy, South Korea and the Netherlands. At the other end of the spectrum, oil receivers in the majority of Fund 71 countries have been required to pay little or nothing because of their low receipts of contributing oil. Figure 10 shows the relative amounts of contributing oil for Fund 71 countries at 15th May 1998 i.e. immediately prior to the ending of the transitional period.

1971 IOPC Fund - 15th May 1998

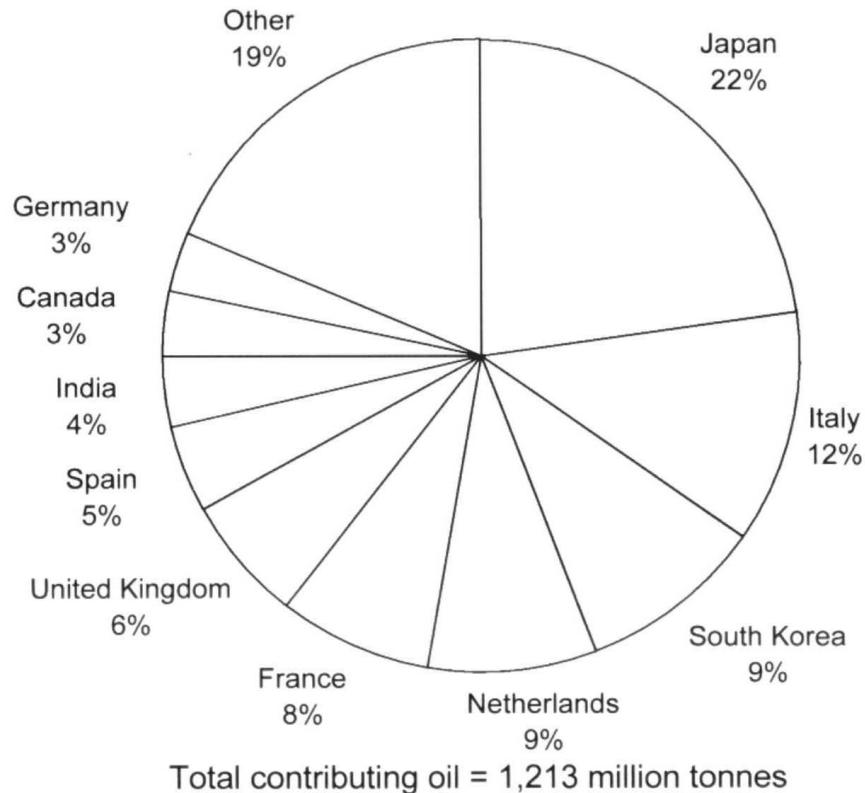


Figure 10. Relative amounts of contributing oil at May 15th 1998 for Fund 71 countries (based on data for 1996 calendar year).

The future

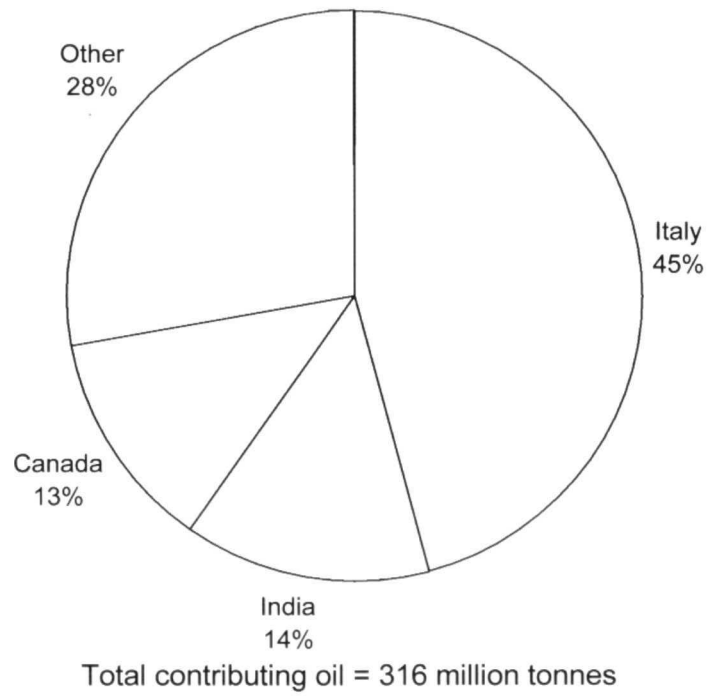
The ending of the transitional period will mean significant changes for the 1971 and 1992 IOPC Funds both for the numbers and types of spills handled, and for the costs to contributors in individual Fund countries.

1971 IOPC Fund. The compulsory denunciation of Fund 71 at the end of the transitional period by countries party to Fund 92 has reduced the membership of the 1971 IOPC Fund significantly, with the total number of countries falling from a peak of 76 to just 52 on 16th May 1998.

Comparison of Table 1 with Figure 2 shows that virtually all incidents handled by the 1971 IOPC Fund to date have occurred in countries which are no longer party to Fund 71. Conversely, although a large number of countries are still members of the 1971 IOPC Fund, historically very few incidents have occurred in these countries. In the future, therefore, the 1971 IOPC Fund is likely to have to deal with only a few incidents.

The aggregate cost to the 1971 IOPC Fund should therefore be considerably less after the ending of the transitional period, although the compensation available under Fund 71 for any individual incident remains the same. However, the majority of countries which were previously major contributors to the 1971 IOPC Fund are now only members of Fund 92 and so contributors in the remaining Fund 71 countries will bear a much larger proportion of any future costs since these will be spread among far fewer oil receivers. Thus, the risk of a major incident affecting the 1971 IOPC Fund is much lower now, but if one did occur the remaining contributors would be exposed to a significantly increased financial burden. Figure 11a shows the relative amounts of contributing oil for the countries remaining in Fund 71 at 16th May 1998.

1971 IOPC Fund - 16th May 1998



1992 IOPC Fund - 16th May 1998

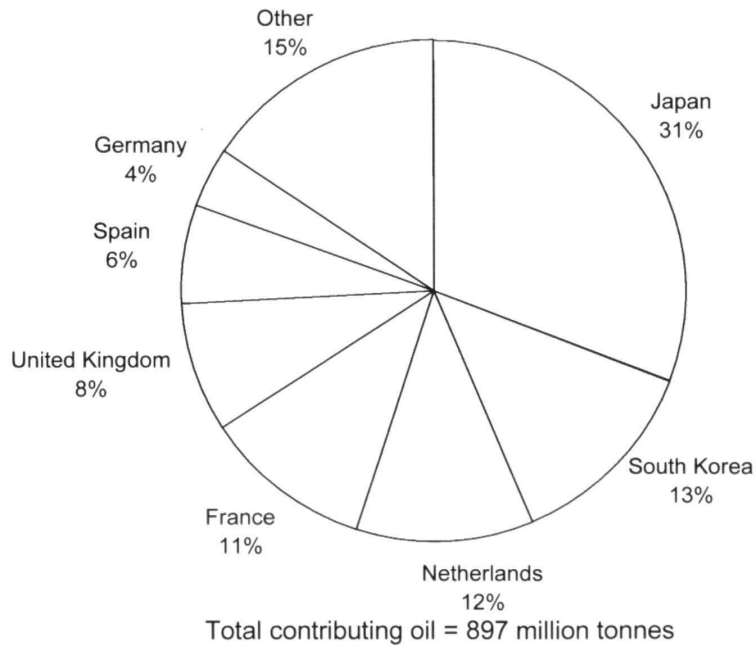


Figure 11. A and B. Relative amounts of contributing oil at May 16th 1998 for a. Fund 71 countries and b. Fund 92 countries (based on data for 1996 calendar year)

Comparison with Figure 10 shows a four-fold increase for individual countries in the relative proportions of contributing oil immediately following the ending of the transitional period. This trend will continue as more countries leave Fund 71, which should encourage the remaining 1971 IOPC Fund members to ratify Fund 92 in the very near future.

1992 IOPC Fund. Fund 92 provides higher limits of compensation and a wider scope of application. However, the threshold at which it comes into effect, the CLC 92 limit, is also higher.

Figure 12 shows the total costs of all the Fund incidents up to the end of the transitional period, together with the CLC 92 and Fund 92 limits.

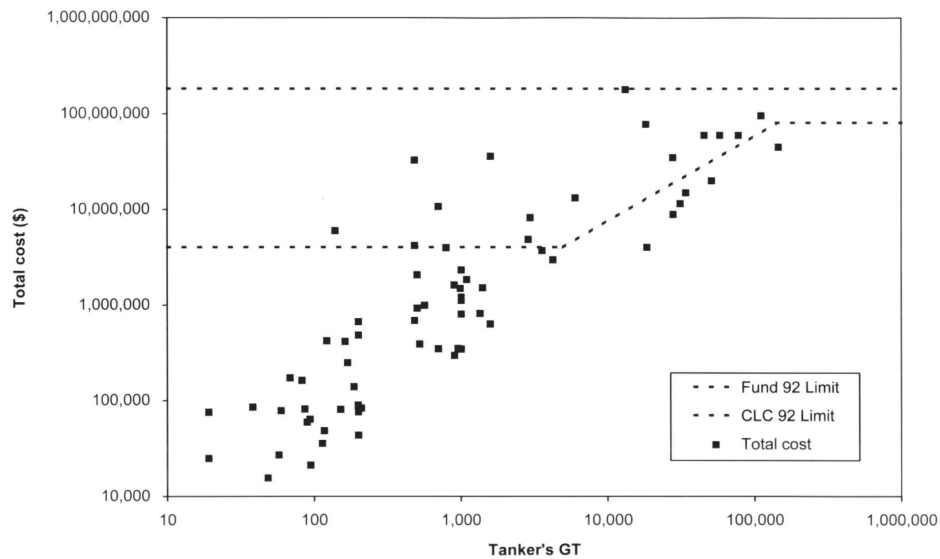


Figure 12. Total cost of Fund incidents, compared with the CLC 92 and Fund 92 limits

Of the 68 incidents dealt with by the 1971 IOPC Fund, only 15 would have exceeded the CLC 92 limit. This suggests that, in the future, many of the less expensive spills, which would previously have been covered by Fund 71, will be dealt with by the individual tanker owner and his pollution insurer under CLC 92. The 1992 IOPC Fund is therefore likely to have only a small number of the larger and more expensive incidents to deal with. In particular, the number of incidents involving tankers under 5,000 GT is likely to be low. The combination of increased compensation limits together with the small ship limit should therefore achieve the intended effects referred to earlier. The total amount of compensation available under Fund 92 should be sufficient to deal with the vast majority of cases, provided the costs of individual incidents do not continue to increase. The impact of the broader scope of application of Fund 92 compared with Fund 71 is harder to predict, but seems unlikely to result in more than a small number of additional cases.

The ending of the transitional period should have less financial significance for Fund 92 countries than for the countries remaining in Fund 71. Whilst there are likely to be many fewer incidents, historically the cost of the least expensive incidents has only constituted a small part of the aggregate cost. For example, just 10 out of the total of 68 Fund incidents (15%) account for some 83% of the sum of the total cost. The aggregate cost is therefore unlikely to fall significantly. Indeed, in the short term, the proportion potentially payable by contributors in each of the 1992 IOPC Fund member countries will increase slightly, as shown in Figure 11b, because the total amount of contributing oil is still slightly less than under Fund 71 at

its peak. Thus, for example, the proportion of contributing oil received in Japan rose to 31% under Fund 92 after the ending of the transitional period, compared with 22% under Fund 71 immediately before.

Conclusions

The international system of compensation provides a straightforward mechanism whereby the costs of cleanup measures and pollution damage can be recovered on a strict liability ("no fault") basis from the individual tanker owner and pollution insurer involved in an incident and from international funds maintained through levies imposed on oil cargo receivers in IOPC Fund member countries.

CLC 69 and Fund 71 have undoubtedly proved highly effective, although recent cases have tested the limits of compensation available. Analysis of incidents occurring up to the end of the transitional period shows that the likelihood of a spill resulting in a Fund incident is related to the size of the spill and the type of oil spilled, with the proportion of fuel oil spills being significantly higher than for other types of oil, such as crude. It is, however, not possible to draw any conclusions from the data on Fund incidents about the costs of spills in general, because of the complex relationship between the size of the spill, the CLC 69 limit and the tanker's GT.

The total amount of compensation available under the 1992 Conventions (approximately \$182 million) should be sufficient to deal with the vast majority of future cases, but the ending of the transitional period will have significant implications for the operation of the IOPC Funds. The 1971

IOPC Fund is likely to have very few cases to deal with but the contributors in the remaining member countries will face potentially significant increases in costs for any incidents which do occur. The 1992 IOPC Fund is also likely to have fewer cases to deal with, compared with the 1971 IOPC Fund before the end of the transitional period, largely as a result of the small ship limit in CLC 92. The impact on contributors, however, should be less marked, provided that the costs of Fund incidents do not continue to increase.

Biography

Catherine Grey joined ITOPF in 1988 and is currently Head of Information Systems. Previously she worked at the

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References

1. ITOPF, 1998. The cost of oil spills from tankers: an analysis of IOPC Fund incidents.
2. International Monetary Fund, 1998. International Financial Statistics Yearbook.