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1. BACKGROUND

Since 1974, the Federation has maintained a database of oil spills from tankers, combined carriers and barges. This covers all accidental spillages except those resulting from acts of war.

The database contains information on both the spill itself (amount and type of oil spilt, cause and location) and the vessel involved. For historical reasons, spills are generally categorised by size (<7 tonnes, 7-700 tonnes and >700 tonnes) although the actual amount spilt is also recorded. Information is now held on nearly 10,000 incidents, the vast majority of which (85%) fall into the smallest category i.e. <7 tonnes.

Information is gathered from both published sources, such as the shipping press and other specialist publications, and also from vessel owners and their insurers. Not surprisingly, information from published sources generally relates to large spills, often resulting from collisions, groundings, structural damage, fires and explosions, whereas the majority of individual reports relate to small operational spillages. Complete reporting of this latter type of spill is clearly difficult to achieve.

It should be noted that the figures for amount of oil spilt in an incident include all oil lost to the environment, including that which is burnt or remains in a sunken vessel. There is considerable annual variation in both the incidence of oil spills and the amounts of oil lost and so the figures in the following tables, and any averages derived from them should be viewed with caution.

2. NUMBERS AND AMOUNTS SPILT

2.1. NUMBER OF OIL SPILLS

The incidence of large spills is relatively low and detailed statistical analysis is rarely possible, consequently emphasis is placed on identifying trends. Thus, it is apparent from the table below that the number of large spills (>700 tonnes) has decreased significantly during the last thirty years. The average number of large spills per year during the 1990s was about a third of that witnessed during the 1970s.

TABLE 1: NUMBER OF SPILLS OVER 7 TONNES

| Year | 7-700 tonnes | >700 tonnes |
|------|--------------|-------------|
| 1970 | 6 | 29 |
| 1971 | 18 | 14 |
| 1972 | 49 | 24 |
| 1973 | 25 | 32 |
| 1974 | 91 | 26 |
| 1975 | 97 | 19 |
| 1976 | 67 | 25 |
| 1977 | 65 | 16 |
| 1978 | 54 | 23 |
| 1979 | 59 | 34 |
| 1980 | 51 | 13 |
| 1981 | 49 | 6 |
| 1982 | 44 | 3 |
| 1983 | 52 | 11 |
| 1984 | 25 | 8 |
| 1985 | 29 | 8 |
| 1986 | 25 | 7 |
| 1987 | 27 | 10 |
| 1988 | 11 | 10 |
| 1989 | 32 | 13 |
| 1990 | 50 | 13 |
| 1991 | 27 | 8 |
| 1992 | 31 | 9 |
| 1993 | 30 | 11 |
| 1994 | 27 | 7 |
| 1995 | 20 | 3 |
| 1996 | 20 | 3 |
| 1997 | 27 | 10 |
| 1998 | 22 | 4 |
| 1999 | 19 | 5 |
| 2000 | 18 | 3 |
| 2001 | 16 | 3 |

2.2. QUANTITIES OF OIL SPILT

The vast majority of spills are small (i.e. less than 7 tonnes) and data on numbers and amounts is incomplete. However in most years it is probable that they make a relatively small contribution to the total quantity of oil spilled into the marine environment as a result of tanker accidents.

Reliable data on spills of over 7 tonnes is held and the amounts of oil spilt during these incidents have been added to give a series of annual estimates of the total quantity spilled for the years 1970-2001.

TABLE 2: ANNUAL QUANTITY OF OIL SPILT

| Year | Quantity ('000 tonnes) |
|------|------------------------|
| 1970 | 301 |
| 1971 | 167 |
| 1972 | 311 |
| 1973 | 166 |
| 1974 | 169 |
| 1975 | 342 |
| 1976 | 369 |
| 1977 | 298 |
| 1978 | 395 |
| 1979 | 608 |
| 1980 | 103 |
| 1981 | 44 |
| 1982 | 11 |
| 1983 | 384 |
| 1984 | 28 |
| 1985 | 88 |

| Year | Quantity ('000 tonnes) |
|------|------------------------|
| 1986 | 19 |
| 1987 | 30 |
| 1988 | 198 |
| 1989 | 178 |
| 1990 | 61 |
| 1991 | 435 |
| 1992 | 162 |
| 1993 | 144 |
| 1994 | 105 |
| 1995 | 9 |
| 1996 | 79 |
| 1997 | 67 |
| 1998 | 10 |
| 1999 | 29 |
| 2000 | 12 |
| 2001 | 8 |

It is notable that a few very large spills are responsible for a high percentage of the oil spilt. For example, in the ten-year period 1990-1999 there were 346 spills over 7 tonnes, totalling 1096 thousand tonnes, but 830 thousand tonnes (75%) were spilt in just 10 incidents (just over 1%). The figures for a particular year may therefore be severely distorted by a single large incident. This is clearly illustrated by 1979 (Atlantic Empress - 287,000 tonnes), 1983 (Castillo de Bellver - 252,000 tonnes) and 1991 (ABT Summer - 260,000 tonnes).

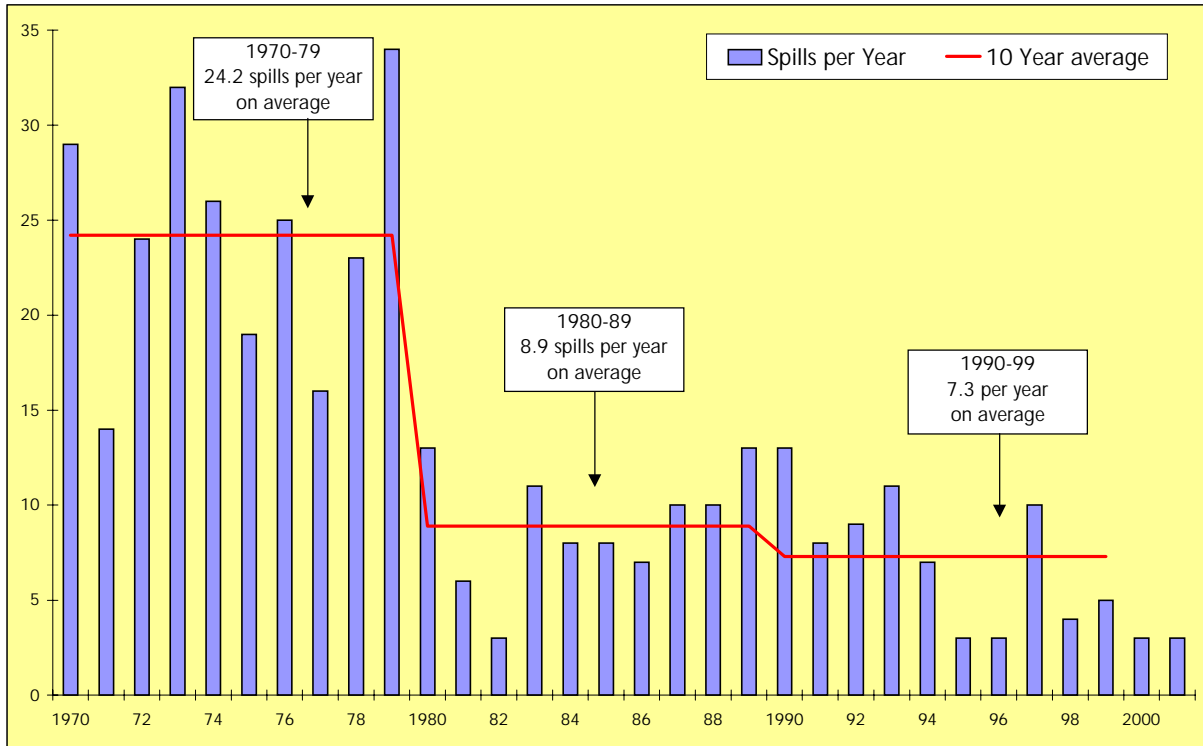


FIGURE 1: NUMBERS OF SPILLS OVER 700 TONNES

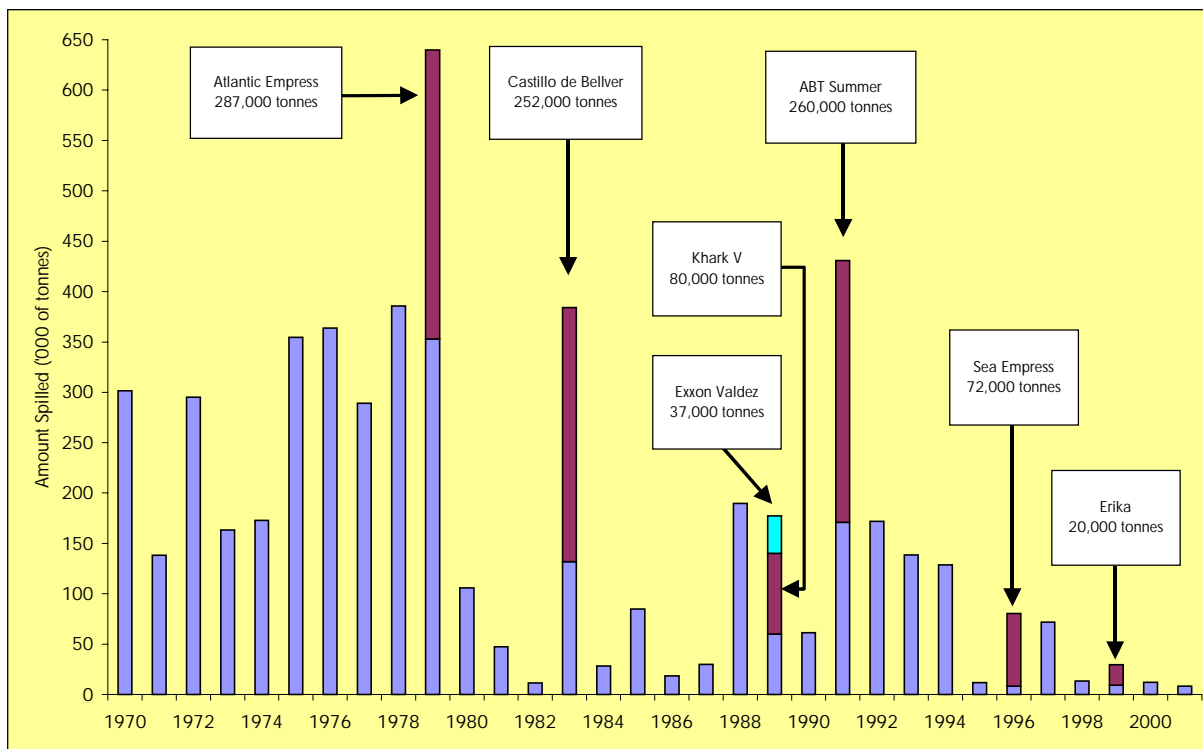


FIGURE 2: QUANTITIES OF OIL SPILT

3. MAJOR OIL SPILLS

The table below gives a brief summary of 20 major oil spills, and the map overleaf shows where they occurred. A number of these incidents, despite their large size, caused little or no environmental damage as the oil did not impact coastlines, which is why some of the names will be unfamiliar to the general public. The Exxon Valdez is included because it is so well known although it is not the twentieth largest spill of all time but rather about number 34.

TABLE 3: SELECTED MAJOR OIL SPILLS

| Shipname | Year | Location | Oil lost (tonnes) |
|---------------------|------|---|-------------------|
| Atlantic Empress | 1979 | off Tobago, West Indies | 287,000 |
| ABT Summer | 1991 | 700 nautical. miles off Angola | 260,000 |
| Castillo de Bellver | 1983 | off Saldanha Bay, South Africa | 252,000 |
| Amoco Cadiz | 1978 | off Brittany, France | 223,000 |
| Haven | 1991 | Genoa, Italy | 144,000 |
| Odyssey | 1988 | 700 nautical. miles off Nova Scotia, Canada | 132,000 |
| Torrey Canyon | 1967 | Scilly Isles, UK | 119,000 |
| Urquiola | 1976 | La Coruna, Spain | 100,000 |
| Hawaiian Patriot | 1977 | 300 nautical. miles off Honolulu | 95,000 |
| Independenta | 1979 | Bosphorus, Turkey | 95,000 |
| Jakob Maersk | 1975 | Oporto, Portugal | 88,000 |
| Braer | 1993 | Shetland Islands, UK | 85,000 |
| Khark 5 | 1989 | 120 nautical. miles off Atlantic coast of Morocco | 80,000 |
| Aegean Sea | 1992 | La Coruna, Spain | 74,000 |
| Sea Empress | 1996 | Milford Haven, UK | 72,000 |
| Katina P. | 1992 | off Maputo, Mozambique | 72,000 |
| Assimi | 1983 | 55 nautical. miles off Muscat, Oman | 53,000 |
| Metula | 1974 | Magellan Straits, Chile | 50,000 |
| Wafra | 1971 | off Cape Agulhas, South Africa | 40,000 |
| Exxon Valdez | 1989 | Prince William Sound, Alaska, USA | 37,000 |

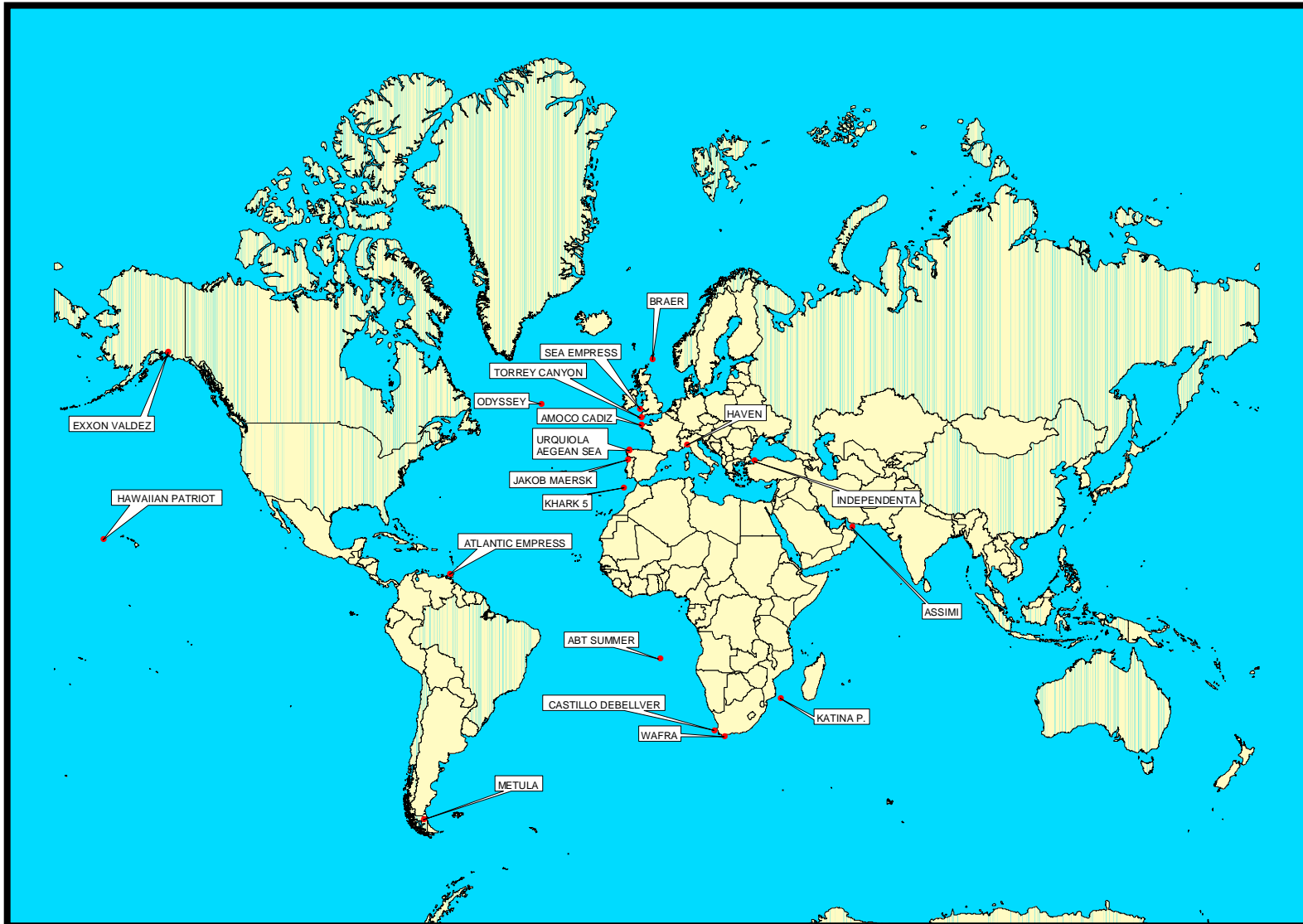


FIGURE 3: LOCATION OF SELECTED SPILLS

4. CAUSES OF SPILLS

Most incidents are the result of a combination of actions and circumstances, all of which contribute in varying degrees to the final outcome. The following analysis explores the incidence of spills of different sizes in terms of the primary event or operation in progress at the time of the spill. These "causes" have been grouped into "Operations" and "Accidents". Spills for which the relevant information is not available or where the cause was not one of those given are listed under "Other".

It is apparent from the table that:

- most spills from tankers result from routine operations such as loading, discharging and bunkering which normally occur in ports or at oil terminals;
- the majority of these operational spills are small, with some 92% involving quantities of less than 7 tonnes;
- accidents involving collisions and groundings generally give rise to much larger spills, with almost a fifth involving quantities in excess of 700 tonnes.

TABLE 4: INCIDENCE OF SPILLS BY CAUSE, 1974-2001

| | < 7 tonnes | 7-700 tonnes | > 700 tonnes | Total |
|----------------------|------------|--------------|--------------|-------|
| OPERATIONS | | | | |
| Loading/discharging | 2767 | 299 | 17 | 3083 |
| Bunkering | 541 | 25 | 0 | 566 |
| Other operations | 1167 | 47 | 0 | 1214 |
| | | | | |
| ACCIDENTS | | | | |
| Collisions | 163 | 254 | 87 | 504 |
| Groundings | 222 | 200 | 106 | 528 |
| Hull failures | 562 | 77 | 43 | 682 |
| Fires & explosions | 150 | 16 | 19 | 185 |
| | | | | |
| OTHER/Unknown | 2221 | 165 | 37 | 2423 |
| | | | | |
| TOTAL | 7793 | 1083 | 309 | 9185 |

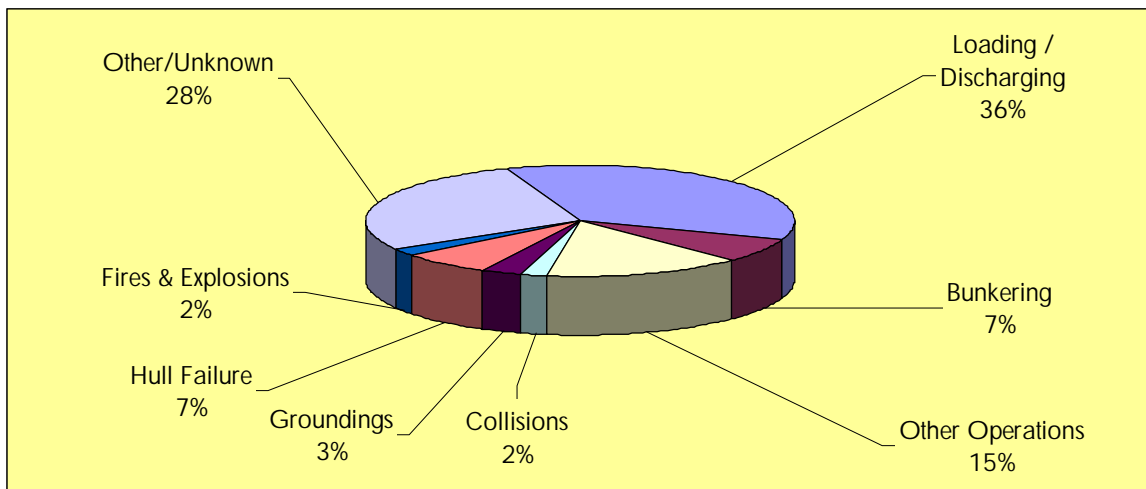


FIGURE 4: INCIDENCE OF SPILLS < 7 TONNES BY CAUSE, 1974-2001

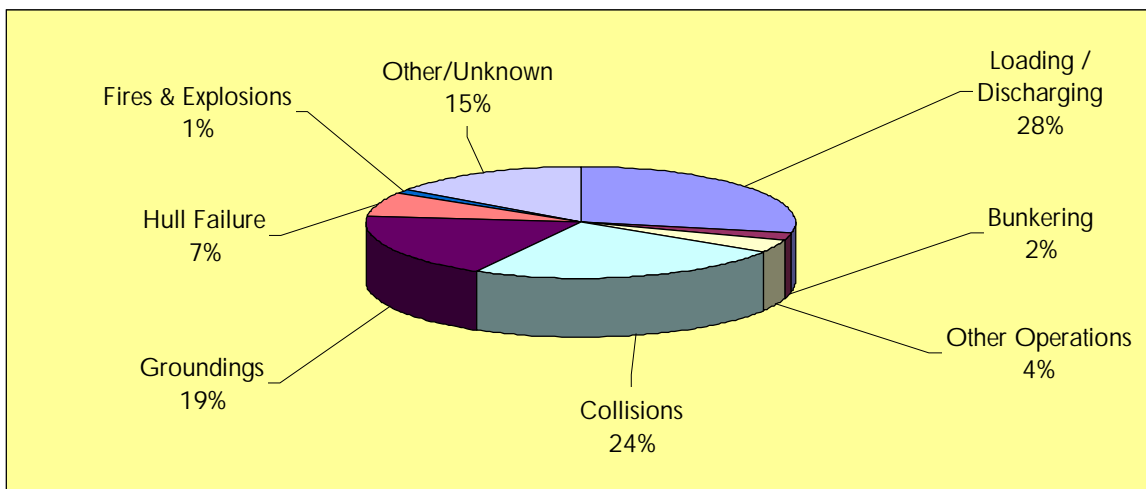


FIGURE 5: INCIDENCE OF SPILLS 7-700 TONNES BY CAUSE, 1974-2001

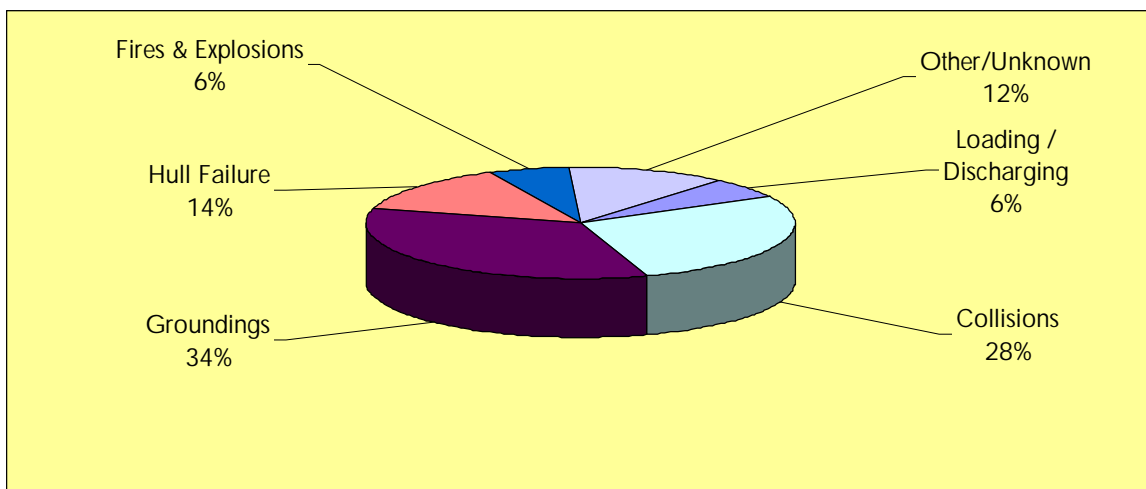


FIGURE 6: INCIDENCE OF SPILLS > 700 TONNES BY CAUSE, 1974-2001