

ANALYSIS OF SHIPPING CASUALTIES ON THE MAIN AREAS OF NAVIGATION

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1. SOURCES OF INFORMATION NECESSARY FOR ANALYSIS OF NAVAL CASUALTIES

Of the total cargo traffic worldwide, three quarters is done on sea, a large proportion of this belonging to the maritime traffic.

The ancient Greeks said about people that fall into three categories: living, death and left on the sea. Although the safety of life at sea is different today, naval casualties danger should not be neglected.

Study the causes of shipping casualties is essential for developing and implementing safety measures. Analysis of the causes of the disaster can take years, the result of investigations is extremely important in view of the enormous costs to remove their consequences.

Statistics has published on the ship by Lloyd's. Official website of the IMO (International Maritime Organization) details naval casualties and publish the results, but the latest research refer to year 2003, because research sometimes takes several years and the results will be published only after final decision on the nature of casualties and the establishment of guilt.

Owing to a lack of complete data for one full year, statistics of casualties will be exemplified by the last fully published year at this time being the 2006 in Lloyd's Maritime Atlas.

The data are analyzed on geographical areas. To draw a conclusion about the dangerousness of a certain areas it is necessary that the data on casualties to be read in conjunction with appropriate naval traffic.

Statistical studies of naval casualties it is necessary for the implementation of regulations which in time will lead to reducing their number and to minimize the effects if they still occur.

The analyses may lead to the implementation of techniques and means of monitoring the passage of ships so as to reduce the period of investigation and to determine what

type of data must be recorded in naval black boxes: VDR (Voyage Data Recorder – naval black box). Implementation of maritime black boxes over the past decade has led to a better analysis of naval casualties but their development continues, seeking all the time to introduce new data to be recorded, so that certainty of conclusions to rise.

Recording of data in black boxes is closely linked to all navigation equipment. Certain events cannot be analyzed solely in accordance with the registered databases from other on-board equipment.

For example: wrong voyage planning may be one of the causes of a naval casualty. Although the record of the last hours of ECDIS (Electronic Chart Display and Information System) may show a certain portion of the voyage plan, the whole planning is not registered in the VDR (Voyage Data Recorder).

Because maritime traffic and the number of vessels are provided on other areas than are supplied data on naval casualties, analysis will compare only regions Europe, North America, South America and Australia.

Shipping casualties data refers to all regions of the globe. The differences can be explained by:

- The requirements of naval records of classification of the regions concerned;
- The requirements of port safety legislation;
- Provision of equipment and hydrographic and navigation systems of the waterway areas;
- Technological development;
- Company security policy;
- Other causes.

2. NAVAL CASUALTIES ANALYSIS IN NORTH AMERICA

Percentages are similar to those at the global level. There is a lower rate of collisions between ships (about half compared with the average). This may be a consequence of systems of higher-performing traffic control VTS (Vessel Traffic Services-traffic surveillance systems).

Table 2.1 Naval casualties in North America for 2006

North America		
Grounding	105	17.44%
Piracy	0	0.00%
Disappearances	0	0.00%
Other causes	72	11.96%
Damage to the propulsion and Steering	167	27.74%
Employment disputes	1	0.17%
Body vessel defects	37	6.15%
Sinking	39	6.48%
Fires, explosions	56	9.30%
Collision (with other structures)	69	11.46%
Collision (by ship)	56	9.30%
Total	602	

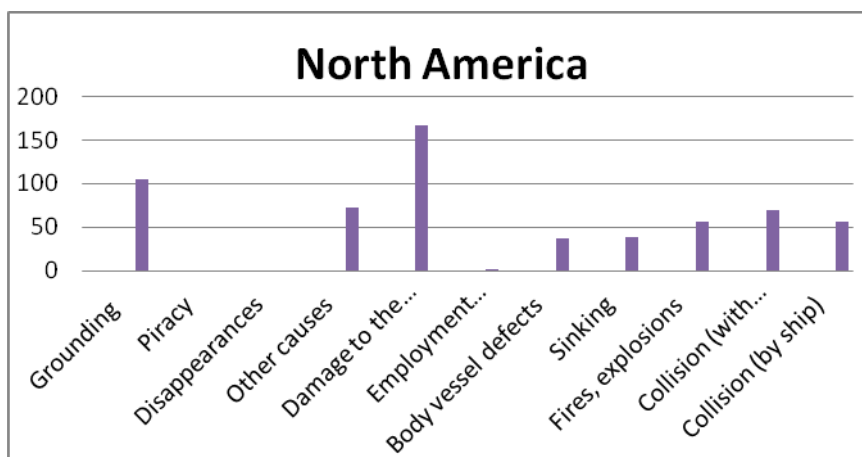


Fig. 2.1 Naval casualties in North America for 2006

3. NAVAL CASUALTIES' ANALYSIS IN SOUTH AMERICA

It is observed a very high percentage of grounding. These can be caused mainly by weak study of depths in the area, the study being done by the hydrographic organizations

of countries with very low economic potential in relation to the seaside in responsibility.

One percent below average you can find also in collisions between vessels, mainly due to lower maritime traffic in the area.

Table 3.1 Naval casualties in South America for 2006

South America		
Grounding	22	26.19%
Piracy	3	3.57%
Disappearances	0	0.00%
Other causes	7	8.33%
Damage to the propulsion and Steering	29	34.52%
Employment disputes	0	0.00%
Body vessel defects	0	0.00%
Sinking	5	5.95%
Fires, explosions	4	4.76%
Collision (with other structures)	3	3.57%
Collision (by ship)	11	13.10%
Total	84	

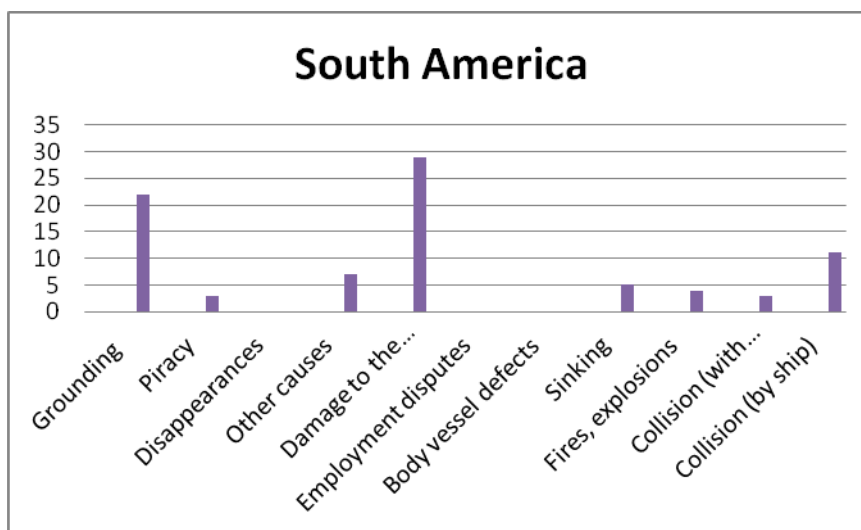


Fig. 3.1 Naval casualties in South America for 2006

4. ANALYSIS OF NAVAL CASUALTIES IN EUROPE

Europe is very close to the world average to almost all indicators. This is mainly due to the important share of

European maritime traffic within the global (almost four times higher than the next zone in the list: North America). Practically Europe establishes the global percentages.

Table 4.1 Naval casualties in Europe for 2006

Europe		
Grounding	176	16.73%
Piracy	0	0.00%
Disappearances	4	0.38%
Other causes	103	9.79%
Damage to the propulsion and Steering	320	30.42%
Employment disputes	2	0.19%
Body vessel defects	48	4.56%
Sinking	36	3.42%
Fires, explosions	70	6.65%
Collision (with other structures)	112	10.65%
Collision (by ship)	181	17.21%
Total	1052	

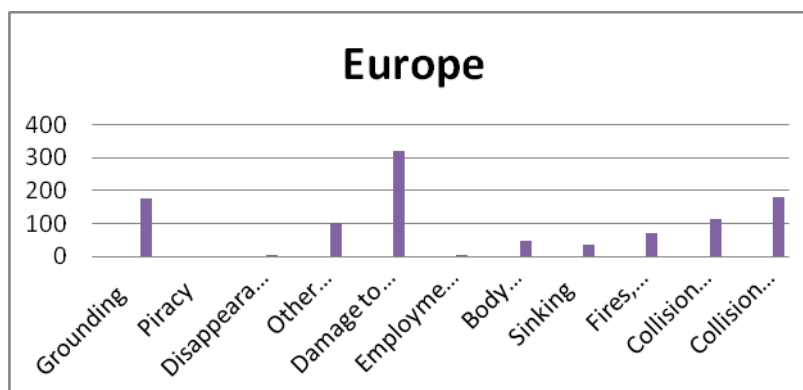


Fig. 4.1 Naval casualties in Europe for 2006

5. ANALYSIS OF NAVAL CASUALTIES IN ASIA

The Asian region is characterized by the large number of collisions between ships (over twice the average of the world). Here you can differentiate two main causes:

- Low level of technical equipment for control of maritime traffic;
- Poor training of personnel on watch what traffic the area.

Table 5.1 Naval casualties in Asia for 2006

Asia		
Grounding	40	11.40%
Piracy	1	0.28%
Disappearances	1	0.28%
Other causes	26	7.41%
Damage to the propulsion and Steering	50	14.25%
Employment disputes	0	0.00%
Body vessel defects	10	2.85%
Sinking	37	10.54%
Fires, explosions	32	9.12%
Collision (with other structures)	18	5.13%
Collision (by ship)	136	38.75%
Total	351	

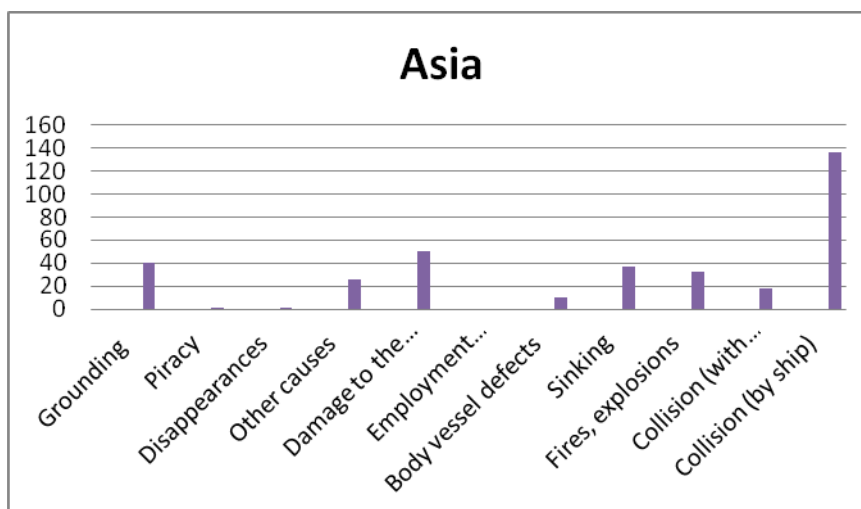


Fig. 5.1 Naval casualties in Asia for 2006

6. NAVAL CASUALTY’S ANALYSIS IN THE MIDDLE EAST

In the Middle East are explosions and fires are at double the average, caused especially by the major share of the transport of petroleum and petroleum products. Note a

large number of grounding as a result of a poor means of signaling and navigation, but also because the poor depth polls.

Table 6.1 Naval casualties in Middle East for 2006

Middle East		
Grounding	18	22.22%
Piracy	1	1.23%
Disappearances	1	1.23%
Other causes	4	4.94%
Damage to the propulsion and Steering	17	20.99%
Employment disputes	0	0.00%
Body vessel defects	1	1.23%
Sinking	8	9.88%
Fires, explosions	14	17.28%
Collision (with other structures)	4	4.94%
Collision (by ship)	13	16.05%
Total	81	

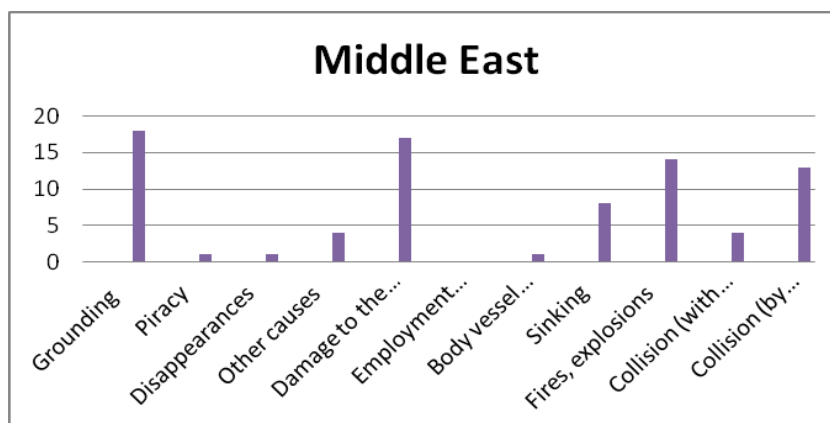


Fig. 6.1 Naval casualties in Middle East for 2006

7. NAVAL CASUALTIES ANALYSIS IN THE INDIAN OCEAN

The area is characterized by a double number of ship collisions, attributable mainly to more precarious training

for watch personal on deck but also lacking control of maritime traffic in the area.

Table 7.1 Naval casualties in Indian Ocean for 2006

Indian Ocean		
Grounding	3	6.00%
Piracy	0	0.00%
Disappearances	6	12.00%
Other causes	8	16.00%
Damage to the propulsion and Steering	0	0.00%
Employment disputes	2	4.00%
Body vessel defects	3	6.00%
Sinking	5	10.00%
Fires, explosions	7	14.00%
Collision (with other structures)	1	2.00%
Collision (by ship)	15	30.00%
Total	50	

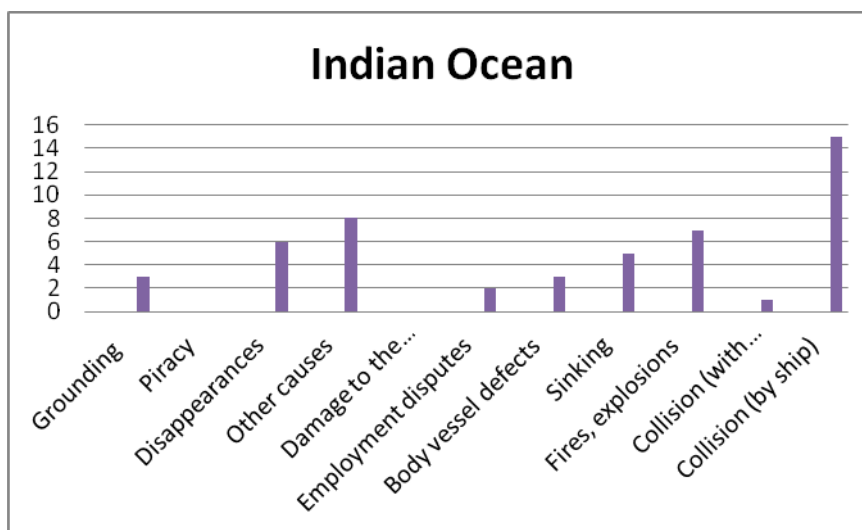


Fig. 7.1 Naval casualties in Indian Ocean for 2006

8. ANALYSIS OF NAVAL CASUALTIES IN AFRICA

African area is characterized by a large number of acts of piracy. To point out that piracy is even higher compared

to 2006 with main pole at Somali coast-Gulf of Aden. Currently it is taking action in the area of multinational escorts of convoys for merchant ships, shares specific for periods of war.

Table 8.1 Naval casualties in Africa for 2006

Africa		
Grounding	11	13.75%
Piracy	8	10.00%
Disappearances	0	0.00%
Other causes	7	8.75%
Damage to the propulsion and Steering	21	26.25%
Employment disputes	0	0.00%
Body vessel defects	5	6.25%
Sinking	9	11.25%
Fires, explosions	9	11.25%
Collision (with other structures)	2	2.50%
Collision (by ship)	8	10.00%
Total	80	

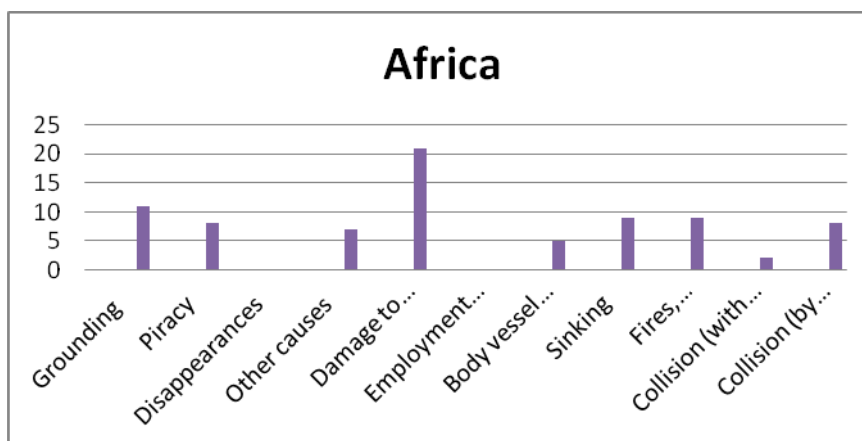


Fig. 8.1 Naval casualties in Africa for 2006

9. ANALYSIS OF NAVAL CASUALTIES IN AUSTRALIA

Australia is characterized by high percentage of grounding, which has a huge coastline and the specifics of the Great Barrier Reef. Note a rate of three times lower than the

average to collisions between vessels, mainly due to less dense maritime traffic in the area but also good training of the officers of the navigational watch keeping duties

Table 9.1 Naval casualties in Australia for 2006

Australia		
Grounding	15	21.13%
Piracy	0	0.00%
Disappearances	0	0.00%
Other causes	15	21.13%
Damage to the propulsion and Steering	20	28.17%
Employment disputes	0	0.00%
Body vessel defects	1	1.41%
Sinking	3	4.23%
Fires, explosions	6	8.45%
Collision (with other structures)	7	9.86%
Collision (by ship)	4	5.63%
Total	71	

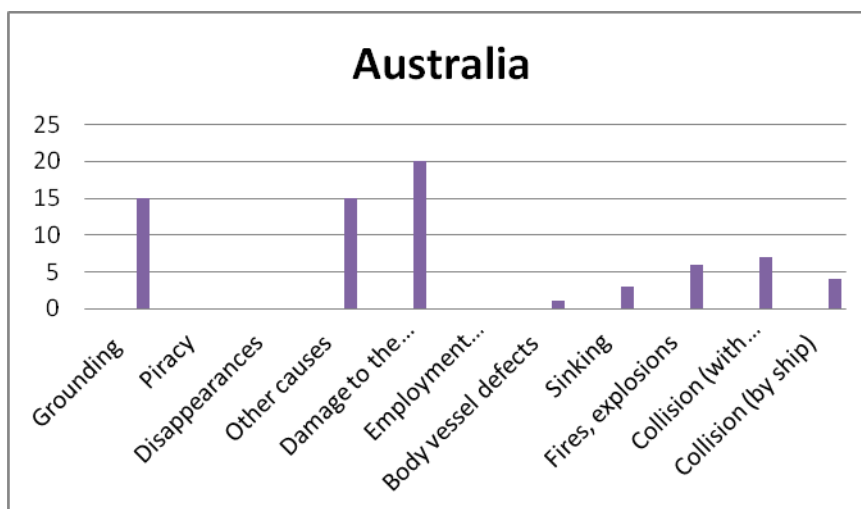


Fig. 9.1 Naval casualties in Australia for 2006

10. ANALYSIS OF CASUALTIES AT THE GLOBAL LEVEL

Table 10.1 Naval casualties at Global Level for 2006

Global Level		
Grounding	390	16.45%
Piracy	13	0.55%
Disappearances	12	0.51%
Other causes	242	10.21%
Damage to the propulsion and Steering	624	26.32%
Employment disputes	5	0.21%
Body vessel defects	105	4.43%
Sinking	142	5.99%
Fires, explosions	198	8.35%
Collision (with other structures)	216	9.11%
Collision (by ship)	424	17.88%
Total	2371	

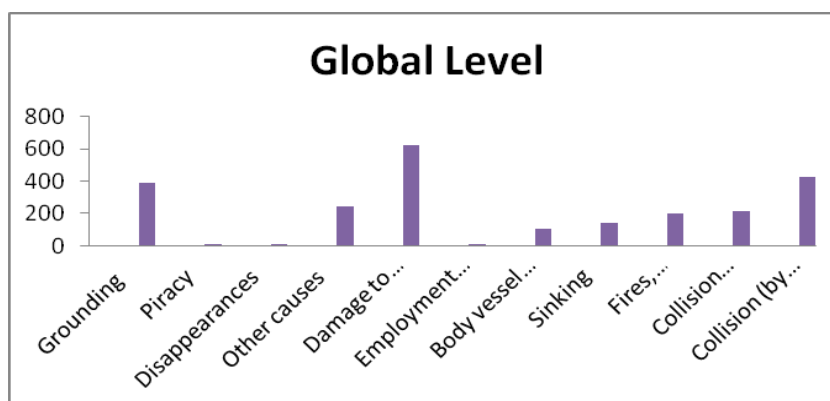


Fig. 10.1 Naval casualties at Global Level for 2006

A global analysis of the casualties can lead to the following conclusions:

- Casualties due to technical malfunctions and the related to the body of the ship are the most important. These can be reduced through technological development while respecting strictly by the maintainers of the reviews completed for each particular equipment.

- Fires, explosions and sinking, with a significant proportion may have technical causes, mainly with ways of prevention set forth in the preceding subparagraph or causes due to the human element.

- Very important Category is represented by the collision and grounding, which have mainly as the human factor.

Table 10.2 Naval casualties on geographical regions for 2006

Distribution by region of naval casualties	
North America	602
South America	84
Europe	1052
Asia	351
The Middle East	81
The Indian Ocean	50
Africa	80
Australia	71
Total	2371

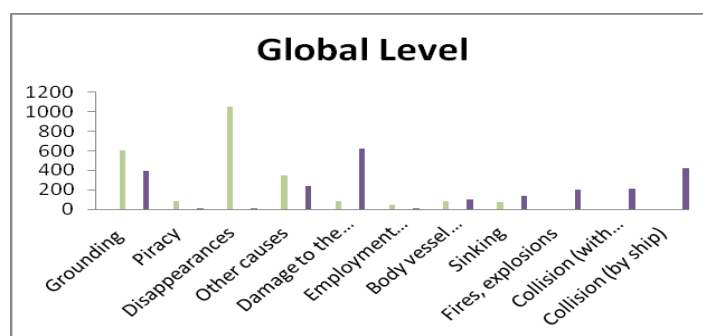


Fig. 10.2 Naval casualties on geographical regions for 2006

Table 10.3 Distribution by region of vessel tonnages and ship numbers for 2006

Distribution by region of ship tonnage and ship numbers	Tonnage (mil. TDW)	Ship numbers
North America	60	7723
South America	14	2148
Europe	485	27144
Australia	4	707

Taking into account the level of traffic and the number of casualties, reported to the number of vessels but mostly to the number of casualties reported to the carried tonnage, Europe is the most developed area and the safest.

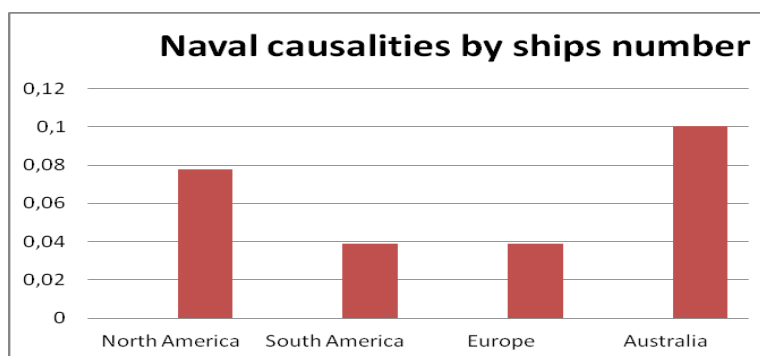


Fig. 10.3 The number of casualties by naval vessels for 2006

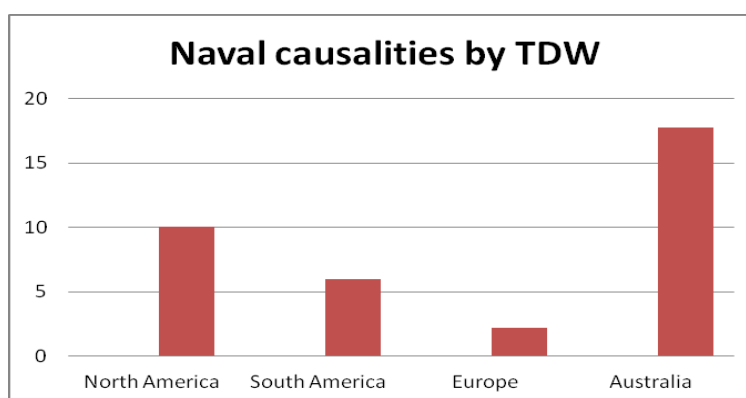


Figure 10.4 Naval casualties at million TDW for the year 2006

REFERENCES:

- [1] *** Lloyd's Maritime Atlas Edition 24, Ed. Lloyd's MIU 2007
- [2] *** Brown's Nautical Almanac, *Ud. Brown, Son & Ferguson*, Glasgow, 2010