IGP&I International Group of P&I Clubs

Report on P&I claims involving vessels under pilotage **1999-2019**

CONTENTS

WELCOME

On behalf of the International Group of P&I Clubs (the IGP&I), it is my pleasure to present the updated IGP&I report on incidents for the period 1999 – 2019 that have given rise to P&I liabilities in excess of US$100,000 occurring when vessels are under pilotage, and where it is considered that actions of the assisting pilot have caused or contributed to the casualty.

Through the unique structure of the International Group, the member Clubs share between them their large loss exposures and their respective knowledge and expertise on matters relating to shipowners liabilities and the insurance and reinsurance of such liabilities, including where liabilities arise when vessels are under pilotage.

The report recognises that there is generally a shared responsibility for such incidents and, whilst the number and overall cost of the incidents covered by the report are significant, when viewed with reference to the number of shipping movements in and out of ports worldwide in any one year, the frequency of such incidents is low. Notwithstanding advancement in training and technology, it is nonetheless likely that there will continue to be incidents of loss or damage that arise with vessels under pilotage. When such incidents occur, the report recommends that there should be more specific follow-up action than has generally occurred to date. The need for engagement of both pilotage bodies and port authorities in this regard cannot be overstated. Collaborative engagement of all relevant parties in investigating the causes of more serious incidents can only be of benefit to industry, and society as a whole, when identifying measures that will assist in achieving sustainable risk mitigation and loss prevention.

The report reflects both the unique and invaluable forum that the International Group provides for sharing information on such matters of concern to Clubs and their Members, and the unparalleled source of knowledge and expertise which can be brought to bear in exploring and developing solutions and loss prevention measures. This resource will be increasingly important in providing support in the challenging and evolving times ahead for the shipping industry.

Paul Jennings
International Group Chairman

EXECUTIVE SUMMARY

This report on incidents involving vessels under pilotage, is an update on that issued in 2006. The IG's first report examined five years of data between 1999 and 2004. This report covers a twenty-year period between 1999 and 2019 in which there were 1,046 incidents and resulting liabilities in excess of US$1.82bn

Whilst there is volatility in the number and severity of incidents in each year, the yearly average of 52 incidents equates to one incident per week, and the average value per incident is approximately US$1.74m. Whilst the overall cost is substantial, the number of incidents is however very small in comparison with the overall number of acts of pilotage undertaken every year.

The report considers incidents in four categories – Allision/Contact with Fixed or Floating Objects (FFO), Collision, Grounding, and Navigation, the latter category encompassing incidents such as those caused by the wash of a vessel.

As may be expected, incidents in the Allision/FFO category constitute the majority – 60% of the total number – and cost in excess of US$1.14bn. Collision incidents represent 31% of the total number and cost in excess of US$479m.

Although the report is focused upon data in the Clubs' underwriting years up to and including 2018, there is comment upon some limited data for 2019. This is because of the severity of three incidents in that year, all of which involve contacts between container vessels and gantry cranes. There have in addition been two more recent incidents of a similar nature notified to the IG Pool for the 2020 underwriting year. The berthing of large container vessels is identified as an area of focus for further work.

The yearly average of **52 incidents** equates to one incident per week, and the average value per incident is approximately **US$1.74m**

When accidents occur whilst a vessel is under pilotage the cause is generally a collective under-performance of the bridge team and it is recognised that the ships' masters and officers will also have played a part. Consequently, the report recognises the importance to safe navigation under pilotage of an effective Master-Pilot Information Exchange (MPX) at the commencement of the pilotage, and good Bridge Resource Management (BRM) during the pilotage passage. The need to reinforce training in these areas is recommended.

These are not new issues and there is nothing ground-breaking in this recommendation, but there are several areas of P&I liability exposure; such as entry to enclosed spaces, and accidents involving lifeboats, where the underlying risk is long established and well recognised, and yet the risk continues to be the cause of repeated casualties. Enhanced and repeated training is an appropriate response to such issues.

It is also suggested that navigational audits or reviews can be of value in improving the quality of BRM, and that generic pilotage passage plans can help to facilitate the understanding of the pilotage approaches to unfamiliar ports and facilitate the preparation of berth to berth passage plans.

It is not considered appropriate or feasible to seek the establishment of regimes under which significant liability, backed by insurance, should attach to pilots or the appropriate pilotage body as a means of transferring liability exposure from the IG Clubs. Instead, a collaborative approach is preferred whereby coordinated efforts are made by all stakeholders to investigate and determine the root causes of these incidents when they occur in order to then identify and implement remedial measures that will prevent recurrence.

Many of the accidents giving rise to the claims that are included in this report do not appear to have been investigated by the relevant flag states. Consequently, the report recommends the establishment of more structured arrangements to facilitate fact-finding, root cause analysis and risk mitigation measures, particularly for the more serious incidents.

It is recommended that consideration be given to the establishment of a Memorandum of Understanding arrangement with the entities responsible for pilotage in various ports or countries, pursuant to which there should be a commitment to cooperate with the IG Clubs in investigating the causes of the more serious incidents for the purpose of identifying measures that will assist in preventing further loss. Such an arrangement could initially and usefully focus upon the pilotage bodies involved with the most serious container vessel/gantry crane accidents, and the berthing arrangements for such vessels generally given the frequency and severity of these claims. The Suez Canal is also an appropriate area of initial focus given the frequency of groundings in that waterway.

Prior to publication, the draft of this report has been shared with the International Maritime Pilots' Association (IMPA) given the direct interest of their membership, and also the International Chamber of Shipping (ICS) in light of the 2016 ICS Pilotage, Towage and Mooring Survey and their feedback has been taken into consideration.

INTRODUCTION

For many years the ship owning members of the Boards of Directors of the IG Clubs have expressed concern about the apparent frequency and severity of P&I liabilities which arise whilst vessels are under pilotage. As a response to that concern it was agreed in October 2004 that data should be collected from all IG Clubs to determine whether the frequency and severity of such claims was increasing. This involved a requirement for Clubs to provide details of claims exceeding US$100,000 where it was considered that an error or errors on the part of an assisting pilot had caused or contributed to the casualty giving rise to the claim. That exercise resulted in the publication of the IG Pilotage Sub-Committee's first report on pilot error related claims in 2006. This was based upon claims data for five underwriting years between 20th February 1999 and 20th February 2004.

In the last 20 years there were a total of **1,046 incidents** in which pilot error either caused or contributed to those events. The total cost of those incidents was over **US$1.82 billion**

INTRODUCTION

Since then data collection has continued and this report consolidates claims information from 20th February 1999 to 20th February 2019. There are some limitations that apply to the data. In particular, the information has not been updated to a date that is consistent for the entire IG and it is not possible to resolve that. Further, there can also be no certainty that all qualifying claims have been captured in the data, because for individual Clubs the identification of claims to be included in the data frequently involves a subjective selection. Notwithstanding the limitations however, there is a substantial body of data available as will be apparent from the content of the report.

The overall data collected by the IG includes some claims information for the 2019 underwriting year. This however is not included in the overall analysis in this report because it relates to information from a small number of Clubs and for less than a full underwriting year. However, there are some points of interest in the 2019 data and these will be commented upon separately.

Summary of Data **1999 – 2018**

It can be seen from the data in **Table 1** that in the 20 years to 20th February 2019 there were a total of 1,046 incidents in which pilot error either caused or contributed to those events. The total cost of those incidents was over US$1.82 billion. On average this represents 52 incidents per year, or one per week. There were four years in which the number of incidents were significantly greater than that average:-

Four years in which the number of incidents were significantly greater than average

2001 — **70** INCIDENTS

2012 — **74** INCIDENTS

2014 — **79** INCIDENTS

2015 — **70** INCIDENTS

The average cost per incident over the 20 years is approximately US$1.74m. There were three years in which the average cost per incident was significantly greater than that figure:

It is notable that the high average cost per incident figures in each of the above years is driven by a very small number of high value claims.

In 2007 there were six incidents that resulted in claims each in excess of US$5m, and those claims constituted over 88% of the total exposure for that year – just over US$270.7m. One of those claims involved a total cost of over US$200m, and one over US$20m.

In 2009 there were five incidents involving liabilities of more than US$5m and those claims constituted almost 74% of the total for that year – just over US$110m. There was one claim in excess of US$50m.

In 2013 there were two incidents where the cost of each was in excess of US$5m and those claims constituted over 74% of the total – just under US$79.5m. Each claim was in excess of US$35m.

Table 1

UW Year	No. of Incidents	Total Cost	Average Cost per Incident	Allision and FFO	Collision	Grounding	Navigation
1999	33	$21,761,748	$659,447	26	6	1	0
2000	47	$35,371,471	$752,584	29	13	5	0
2001	70	$51,090,973	$729,871	45	21	4	0
2002	52	$41,662,008	$801,192	38	9	4	1
2003	56	$106,305,096	$1,898,305	35	16	3	2
2004	59	$76,596,850	$1,298,252	29	20	10	0
2005	46	$39,563,866	$860,084	20	20	5	1
2006	54	$112,306,540	$2,079,751	29	20	5	0
2007	57	$306,538,481	$5,377,868	30	20	6	1
2008	57	$50,811,280	$891,426	31	22	4	0
2009	38	$149,212,660	$3,926,649	26	10	2	0
2010	32	$70,436,063	$2,201,127	23	7	2	0
2011	59	$76,077,997	$1,271,310	32	25	2	0
2012	74	$130,646,688	$1,765,496	49	21	4	0
2013	42	$107,118,832	$2,550,448	25	13	4	0
2014	79	$144,241,993	$1,825,848	39	32	7	1
2015	70	$134,125,800	$1,916,083	40	25	4	1
2016	42	$66,593,613	$1,585,562	27	9	6	0
2017	45	$42,425,808	$942,796	32	10	2	1
2018	34	$58,769,271	$1,728,507	25	8	1	0
Totals	**1,046**	**$1,821,657,039**	**$1,741,545**	**630**	**327**	**81**	**8**

In the categorisation of the incidents in **Table 1**, Allision and Fixed and Floating Object (FFO) denotes damage to a structure other than a vessel. This includes damage to docks, fenders, bridges, cranes and other similar structures. As may be expected given the fact that a pilot is generally onboard a vessel to assist with its arrival at or departure from a berth, incidents in the Allision/FFO category constitute the majority – 60% of the total.

Collision denotes contact with another vessel, and this constitutes the next most frequent category of incident – 31% of the total.

Groundings represented approximately 8% of the total incidents. The Navigational category denotes incidents where there has been no physical contact with the vessel - typically damages arising from the wash of a vessel. These incidents constituted approximately 1% of the total.

It can be seen from **Table 2** that there is some correlation within each category with reference to the percentages of the totals for each category by number of incidents and their value. It is notable however that there is a slight adverse skew for the Allision/FFO and Grounding categories with those incidents being proportionately more costly.

Table 2

Category	No. of Incidents	Approx. Value US$	% of No.	% of Value
Allision/FFO	630	1,148,762,868	60%	63%
Collision	327	479,620,178	31%	26%
Grounding	81	190,532,761	8%	10%
Navigation	8	2,741,232	1%	1%
Total	**1,046**	**1,821,657,039**		

PILOTAGE DATA

TOTAL INCIDENTS

2019 INCIDENTS

As mentioned in the Introduction, the pool of data collected by the IG includes some limited information for the 2019 underwriting year. There are 16 incidents reported with a total value of US$61,534,216. The majority of those incidents (11) fall within the Allision/FFO category. The average value per incident for 2019 is US$3,845,888 which is the third highest average overall since the peak of US$5,377,868 in 2007.

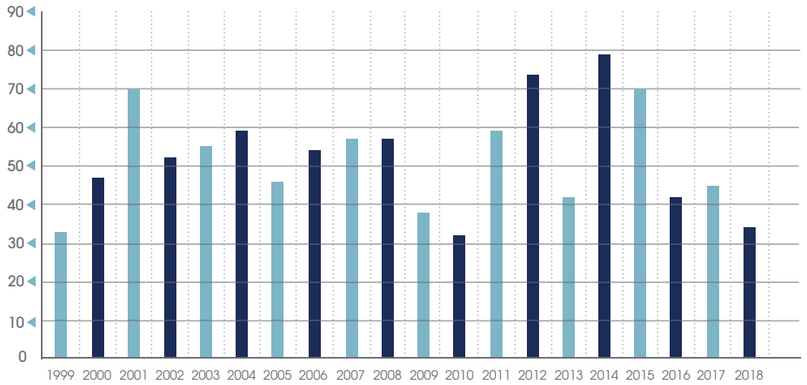
Of the total exposure in 2019, two incidents have a total value of US$45,503,400 which is 74% of the total. Although not in the data that has been collected, there is a further incident in 2019 that has given rise to a claim notification to the IG Pool which brings the total value for 2019 to US$83,729,216. On the basis of these revised figures, the average cost per incident in 2019 rises to US$4,925,248 (see Chart 3) – i.e. close to the previous maximum in 2007 – and these three incidents constitute over 80% of the total exposure. It is also notable that all three incidents involve container vessels and damages to gantry cranes.

It is also of interest to note that there have already been two claims of a similar nature – contact between a container vessel and gantry cranes - notified to the IG Pool in the 2020 underwriting year.

At its face value, Chart 1 below indicates a gradually rising trend in the period 1999-2014. In marked contrast though, since 2014 the trend line is distinctly downwards. However, there is a need for some caution in placing too much reliance upon that trend.

Chart 1

Number of incidents per underwriting year



It is not inevitable that every IG Club will experience a qualifying claim in every underwriting year. However, in the period 2010 to 2016 inclusive, claims notifications were received from a consistent overall proportion of the 13 IG Clubs. In 2017 and 2018, that proportion declined and therefore the total numbers of incidents in those years should be regarded with some caution. It is self-evident from the commentary above in respect of both 2019 and 2020 that as an issue, the risk exposure from incidents that are the subject of this report remains clearly visible.

Chart 2

Total cost of incidents per underwriting year (US$1,000,000)

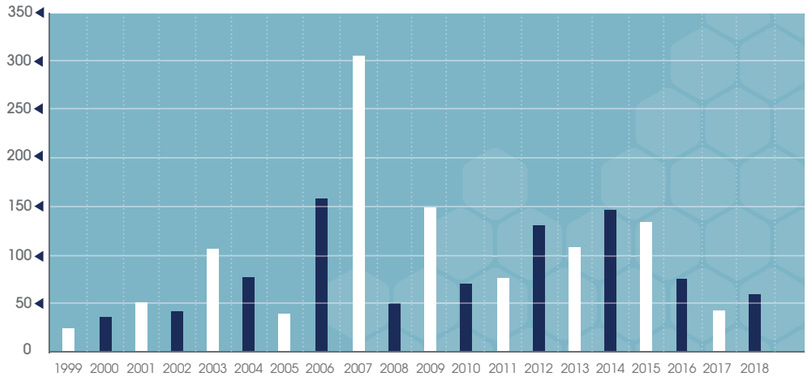


Chart 2 above depicts an upward trend in the total cost of these incidents in the period 1999-2014 inclusive. The spike in 2007 is notable and as mentioned earlier in this report, that is attributable to a single incident in that year which cost in excess of US$200m. Without that incident, the record for 2007 would have been comparable to that of the preceding year.

The decline in the total cost of incidents from 2016 onwards should similarly be viewed with caution for the same reasons that were outlined in the commentary to **Chart 1**.

Chart 3

Average Cost per incident (US$100,000)

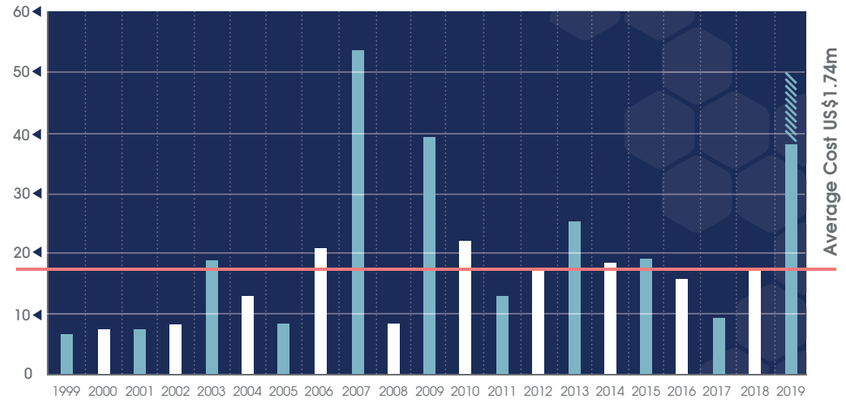


Chart 3 depicts the average cost per incident in each year, and the average cost per incident over the 20 years covered by this report. Information is included in this chart for 2019 in order to illustrate the points made earlier in the report about the impact of the small number of severe claims incurred in that year. The hatched area of the 2019 column reflects the impact of the incident that is known from IG Pool claim notifications but is not included in the IG's data. The peaks in average cost in 2007 and 2009 are clearly evident and commentary on the reasons for those has already been made on page 8.

PILOTAGE DATA

ALLISION AND FFO INCIDENTS

ALLISION AND FFO INCIDENTS

As can be seen from Table 2 on page 9 Allision and FFO incidents represented the majority by number and value, constituting 60% of the former and 63% of the latter. This adverse bias in respect of value highlights the financial severity of these incidents when they occur. It is to be expected that this category of incident will represent the majority since pilots are most frequently onboard for the purpose of assisting a vessel with its arrival at or departure from a berth.

The summary of data in respect of Allision and FFO incidents is set out in Table 3.

Table 3

Policy Year	ALLISION & FFO		
	No	Total Cost	Average Cost
1999	26	$14,044,835	$540,186
2000	29	$18,284,833	$630,511
2001	45	$35,911,612	$798,036
2002	38	$21,513,648	$566,149
2003	35	$17,994,755	$514,136
2004	29	$50,534,871	$1,742,582
2005	20	$23,394,526	$1,169,726
2006	29	$59,190,629	$2,041,056
2007	30	$256,496,584	$8,549,886
2008	31	$21,503,942	$693,676
2009	26	$73,354,824	$2,821,339
2010	23	$53,570,597	$2,329,156
2011	32	$33,391,985	$1,043,500
2012	49	$115,645,671	$2,360,116
2013	25	$96,665,027	$3,866,601
2014	39	$85,698,817	$2,197,406
2015	40	$56,366,253	$1,409,156
2016	27	$29,500,981	$1,092,629
2017	32	$35,493,831	$1,109,182
2018	25	$50,204,645	$2,008,185
2018	25	$50,204,645	$2,008,185
Totals	**630**	**$1,148,762,868**	**$1,823,433**

In the 20 years since 1999 there have been 630 Allision and FFO incidents costing a total of almost US$1.149bn. The average number of these incidents per year is 31, and the average cost per incident over that period is just over US$1.82m. There were eight years in which the number of incidents exceeded that average and the most occurred in 2012 (49). There were seven years in which the average cost of each incident exceeded the overall average, the most notable being in 2007 when the average cost per incident was approximately US$8.55m - almost 5 times the 20 year average. This however was attributable to two incidents in that year costing over US$200m and US$20m respectively.

It is appropriate to make mention here of the small amount of data submitted for 2019 because this principally involves this incident category. There were 11 incidents reported with a total value of US$57,287,216 – an average per incident of US$5.21m. If the further incident in 2019 that is not currently in the data but which is the subject of a Pool claim notification is included (see page 11) the total for this category in 2019 increases to US$79,437,216, an average per incident of US$6.62m. It is notable that this is approaching the peak average in 2007 and that it is based upon substantially fewer incidents overall – 12 in 2019 as compared with 30 in 2007.

Chart 4 depicts the number of Allision and FFO incidents per year. Although there are some peaks of volatility, notably in 2001 and 2012, over the period 1999-2017 there appears to be little in the way of a discernible trend and general stability around the average of about 30 incidents per year. The downward trend that is evident from 2015 should be viewed with caution for the reasons set out earlier in the report.

Chart 4

Number of Allision and FFO Incidents per underwriting year

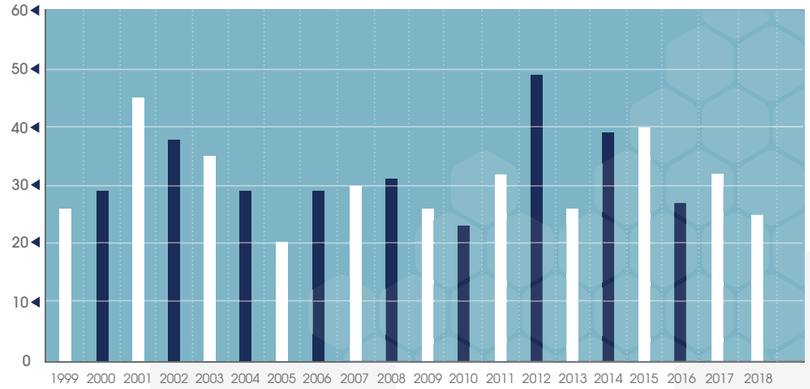


Chart 5

Total cost of Allision and FFO incidents per underwriting year (US$1,000,000)

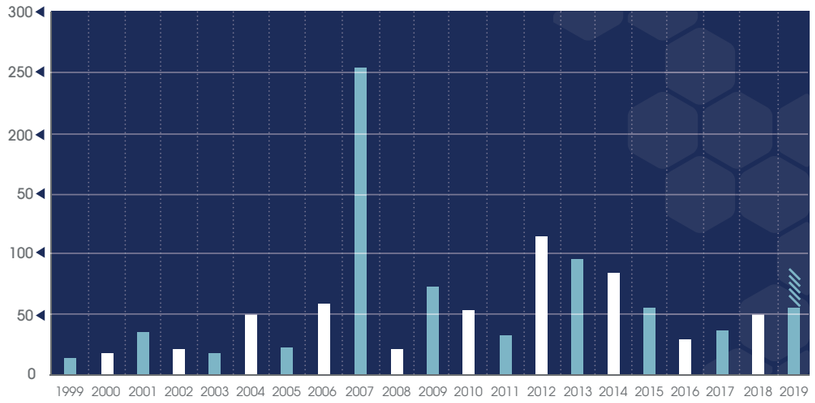


Chart 5 depicts the overall cost of Allision and FFO incidents each year. Information for 2019 has been included because of the substantial cost of such claims in that year. The hatched area in the column for 2019 reflects the known claims experience for that year which is not yet included in the data reported to the IG. The volatility in 2007 has already been commented upon. Between 1999 and 2012 there is an upward trend which then declines markedly between 2012 and 2016. Since 2016 the trend has been upwards, and that trend is particularly marked if the more complete total for 2019 is included.

Chart 6

Average cost of Allision incidents per underwriting year (US$100,000)

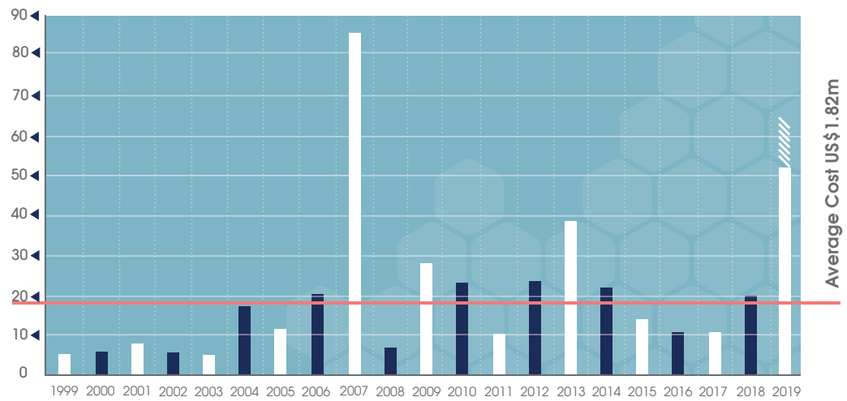


Chart 6 depicts the average value of Allision and FFO incidents each year. The peaks of volatility in 2007 and 2019, and to a lesser extent in 2013, are clearly evident. The marked effect of incorporating known additional data for 2019 can also be seen. The average cost per incident is just over US$1.9m when including the more comprehensive 2019 data. There have been 8 years since 2006 when the record has been above the 20-year average. In the period 1999- 2006 average incident values were significantly lower than is generally the case from 2006 onwards. The higher figures in more recent years results from a combination of factors including larger ships, more sophisticated and expensive port infrastructure, and cost inflation.

PILOTAGE DATA

COLLISION INCIDENTS

Incidents falling into this category are those which involve contact with another vessel. Details of the data in respect of Collision incidents are set out in Table 4.

Table 4 **SUMMARY OF DATA FOR COLLISION INCIDENTS**

Policy Year	COLLISION		
	No	Total Cost	Average Cost
1999	6	$5,582,749	$930,458
2000	13	$15,098,573	$1,161,429
2001	21	$9,538,710	$454,224
2002	9	$5,821,959	$646,884
2003	16	$22,229,654	$1,389,353
2004	20	$16,550,971	$827,549
2004	20	$13,573,926	$678,696
2006	20	$30,437,682	$1,521,884
2007	20	$44,727,012	$2,236,351
2008	22	$19,470,277	$885,013
2009	10	$74,954,972	$7,495,497
2010	7	$16,009,207	$2,287,030
2011	25	$41,289,186	$1,651,567
2012	21	$11,649,961	$554,760
2013	13	$6,306,102	$485,085
2014	32	$48,458,801	$1,514,338
2015	25	$68,745,269	$2,749,811
2016	9	$15,829,170	$1,758,797
2017	10	$5,281,371	$528,137
2018	8	$8,064,626	$1,008,078
Totals	**327**	**$479,620,178**	**$1,466,728**

There were 327 Collision incidents in the 20 years covered by this report costing US$479.6m. There were on average 16 incidents per year and the average cost of each was approximately US$1.47m. There were 10 years in which the number of incidents were in excess of the average, and 10 years when they were below. The highest number of Collision incidents occurred in 2014 when the number was twice the average, although the average cost of the incidents in that year remained close to the overall average. The most expensive years were 2009 and 2015 where the totals were US$74.9m and US$68.7m respectively. There were however far fewer incidents in 2009 than in 2015, 10 and 25 respectively with the result that the average cost per incident in 2009 – US$7.49m – was the highest overall.

In the last 20 years there were on average **16 incidents** per year and the average cost of each was approximately **US$1.47m**

Chart 7

Total number of Collision incidents per underwriting year

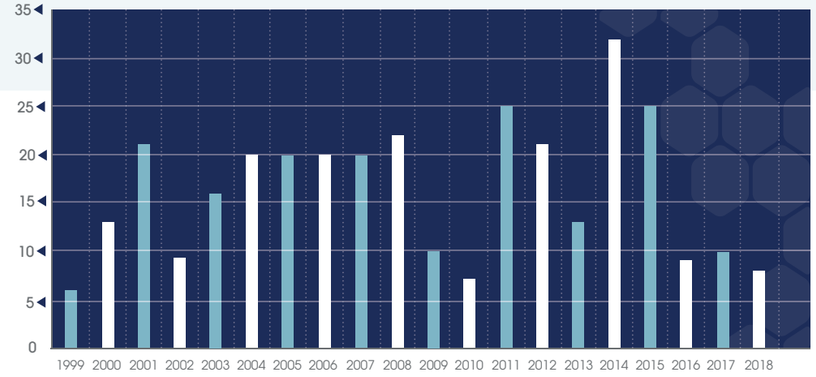


Chart 7 shows the total number of collision incidents per underwriting year. The average is just over 16 incidents per year. The trend has been upward between 1999 and 2003, followed by a very stable experience for the next five years until 2008. Thereafter the record has been much more volatile but with a generally upward trend between 2009 and 2015, and a peak of 32 incidents in 2014. The downward trend from 2015 onwards should be regarded with caution for the reasons outlined earlier in this report.

Chart 8

Total cost of Collision incidents per underwriting year (US$100,000)

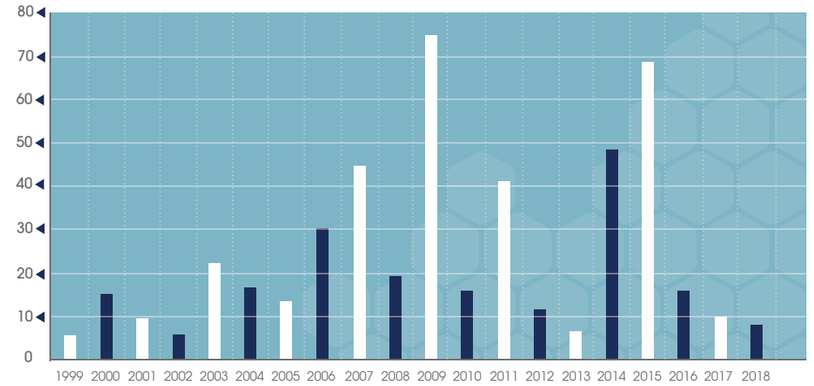


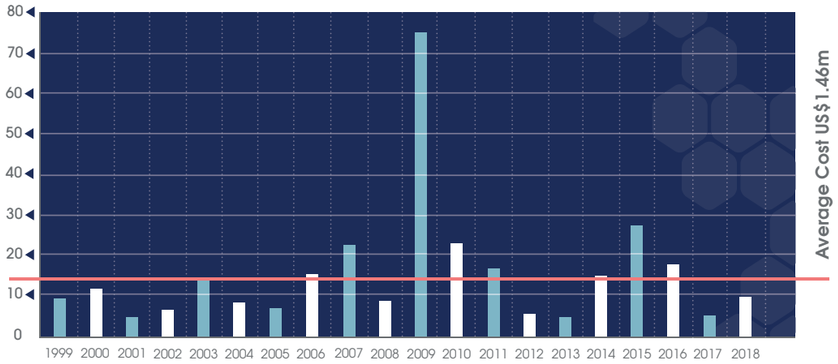
Chart 8 depicts the total cost of collision incidents per underwriting year. Whilst there is year on year volatility, the trend between 1999 and 2015 is generally upwards. The downward trend from 2015 onwards should be regarded with caution for the reasons that have already been outlined. There are two peaks of severity in 2009 and 2015. As is generally the case with claims experience, volatility is usually associated with small numbers of high value claims. This also applies here. There was one serious incident in 2009 for which the cost was almost 84% of the total for that year. In 2015 there were three serious incidents which resulted in two claims in excess of US$8m and one in excess of $20m. Those three incidents – 12% of the total number in that year - accounted for 57% of overall value.

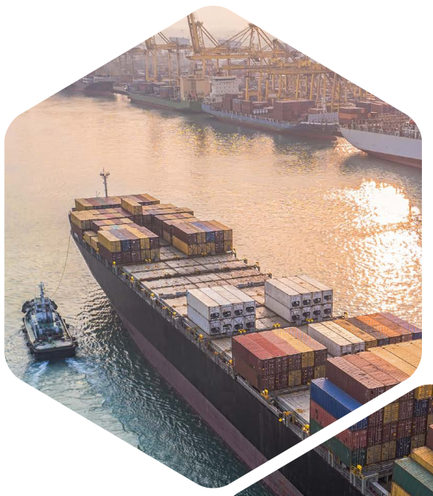
COLLISION INCIDENTS

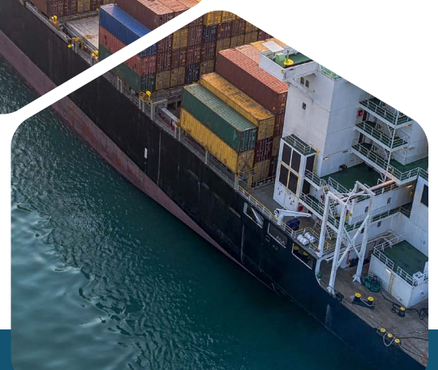
Chart 9 shows the average cost of Collision incidents per underwriting year. The abnormality of the experience in 2009 is clearly evident and is the result of one extremely costly incident in a year in which the number of incidents was well below the 20-year average. The converse effect can be seen in 2015. Although there were three serious incidents in 2015 – as shown in Chart 8 – the number of incidents in that year was above average, thus moderating the outcome to a level closer to the 20-year average.

Chart 9

Average cost of Collision incidents per underwriting year (US$100,000)







PILOTAGE DATA

GROUNDINGS

GROUNDINGS

The data in respect of Grounding incidents is set out in Table 5.

SUMMARY OF DATA FOR GROUNDING INCIDENTS

Table 5

Policy Year	GROUNDING		
	No	Total Cost	Average Cost
1999	1	$2,134,164	$2,134,164
2000	5	$1,988,065	$397,613
2001	4	$5,640,651	$1,410,163
2002	4	$14,157,494	$3,539,373
2003	3	$64,979,060	$21,659,687
2004	10	$9,511,008	$951,101
2005	5	$2,112,852	$422,570
2006	5	$22,678,229	$4,535,646
2007	6	$5,100,119	$850,020
2008	4	$9,837,061	$2,459,265
2009	2	$902,864	$451,432
2010	2	$856,259	$428,130
2011	2	$1,396,826	$698,413
2012	4	$3,351,056	$837,764
2013	4	$4,147,703	$1,036,926
2014	7	$9,961,006	$1,423,001
2015	4	$8,514,278	$2,128,570
2016	6	$21,263,462	$3,543,910
2017	2	$1,500,605	$750,303
2018	1	$500,000	$500,000
Totals	**81**	**$190,532,761**	**$2,352,256**

There were 81 groundings in the period 1999-2018, an average of 4 per year. These incidents cost US$190.5m – approximately 10% of the aggregate for all categories. The yearly average was approximately US$9.5m. As may be expected given the circumstances required for a grounding to occur, the frequency of these incidents is much lower than that for the Allision/FFO and Collision categories. However, notwithstanding the lower frequency, the average value of Grounding incidents - US$2.35m – is the highest of all and compares with averages of US$1.82m and US$1.47m for Allision/FFO and Collision respectively.

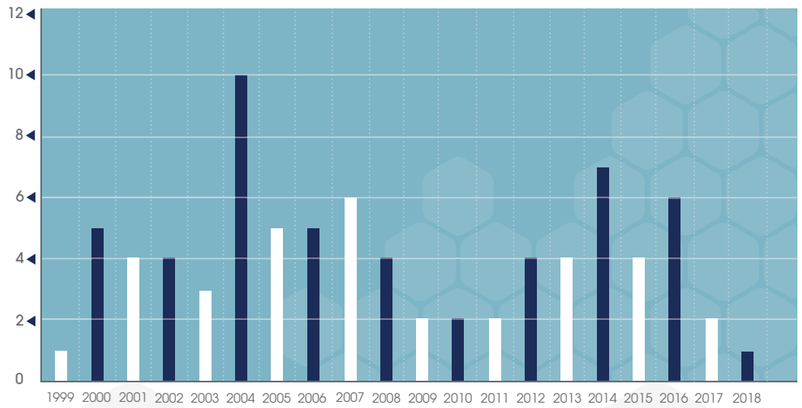
There were 20 incidents – **25%** of the total number – that occurred in the Suez Canal and cost a total of **US$49.3m**

There were five years in which the annual cost exceeded the average. The three costliest years were 2003, 2006, and 2016 with totals of US$64.9m, US$22.6m and US$21.2m respectively. These are all attributable to single serious casualties in each of those years which constituted 99%, 89%, and 76% respectively of the total for each year. Two of these incidents occurred in the Suez Canal.

For the Grounding category overall, there were 20 incidents – 25% of the total number – that occurred in the Suez Canal and cost a total of US$49.3m.

Chart 10

Total number of Grounding incidents per underwriting year

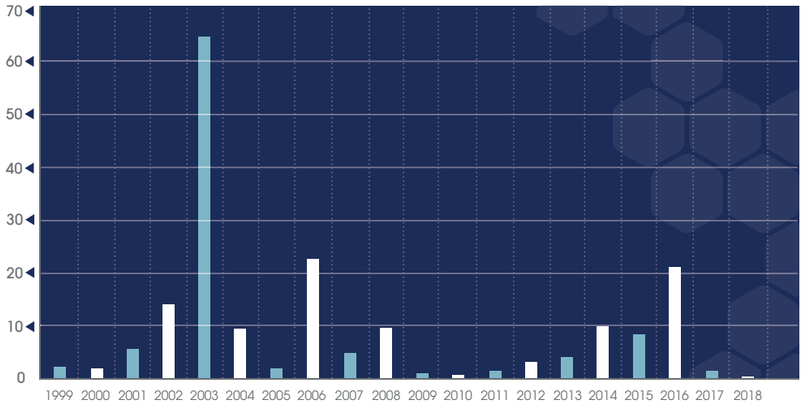


The average number of Grounding incidents is about 4 per year. There were thirteen years in which there were four or more incidents. The low frequency makes it difficult to draw any conclusions as to trend. 2004 was a particularly volatile year with 10 incidents, three of which occurred in Egypt and two in Saudi Arabia. The chart indicates a downward trend since 2014 but no firm conclusions should be drawn from this. The decline is from a low number and as previously mentioned, caution is required in respect of the data in the most recent years.

When viewed with reference to the overall average cost of grounding incidents of US$2.35m the volatility in this record is marked, particularly the variance to the peaks in 2003, 2006 and 2016. As noted earlier in this section of the report these peaks are associated with single severe incidents in each year. The incidents which occurred in the Suez Canal occurred in 2006 and 2016.

Chart 11

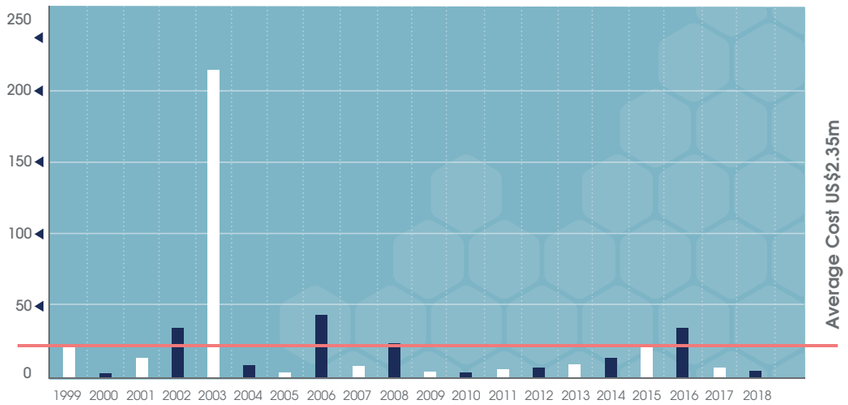
Total cost of Grounding incidents per underwriting year (US$1,000,000)



This chart is somewhat distorted by the severe experience in 2003. Less marked visually on this chart is the effect of the other two serious incidents in 2006 and 2016 respectively. It is noted earlier in this section that the average cost of Grounding incidents is the highest of all categories. There is an upward trend in average cost between 2009 and 2016, but because the number of incidents per year is relatively low, there is a need for caution in drawing any conclusion from this.

Chart 12

Average cost of Grounding incidents per underwriting year (US$100,000)



PILOTAGE DATA

NAVIGATION INCIDENTS

NAVIGATION INCIDENTS

This category of incident involves an absence of contact by the vessel and principally comprises claims arising from the wash of the vessel under pilotage.

For the sake of completeness, the same data table and charts for this category are included as for the others. However, there is no detailed commentary or analysis simply because the number of incidents and their overall cost is relatively small.

SUMMARY OF DATA FOR NAVIGATION INCIDENTS

Table 6

Policy Year	NAVIGATION		
	No	Total Cost	Average Cost
1999	0	$0	$0
2000	0	$0	$0
2001	0	$0	$0
2002	1	$168,907	$168,907
2003	2	$1,101,627	$550,814
2004	0	$0	$0
2005	1	$482,561	$482,561
2006	0	$0	$0
2007	1	$214,766	$214,766
2008	0	$0	$0
2009	0	$0	$0
2010	0	$0	$0
2011	0	$0	$0
2012	0	$0	$0
2013	0	$0	$0
2014	1	$123,369	$123,369
2015	1	$500,000	$500,000
2016	0	$0	$0
2017	1	$150,000	$150,000
2018	0	$0	$0
Totals	**8**	**$2,741,232**	**$342,654**

There were eight incidents in the 20 -year period. The total cost was US$2.74m, an overall average of approximately US$137,000 per year. If the years in which there were zero incidents are excluded, the yearly average cost becomes approximately US$392,000. The most incidents occurred in 2003 when there were two which constituted 40% of the total exposure over the entire period. The average cost per incident is approximately US$343,000.

Chart 13

Total number of Navigation incidents per underwriting year

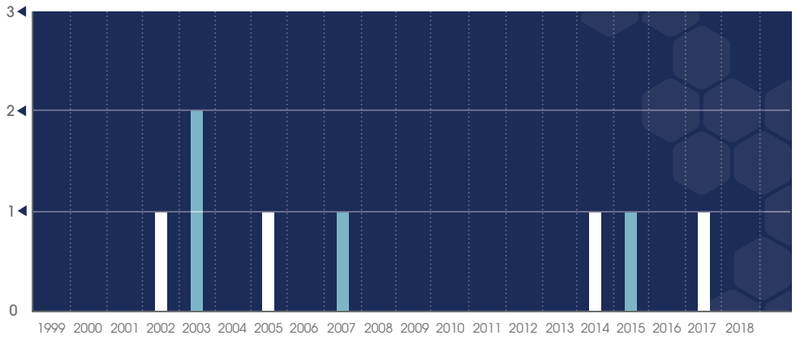


Chart 14

Total cost of Navigation incidents per underwriting year (US$100,000)

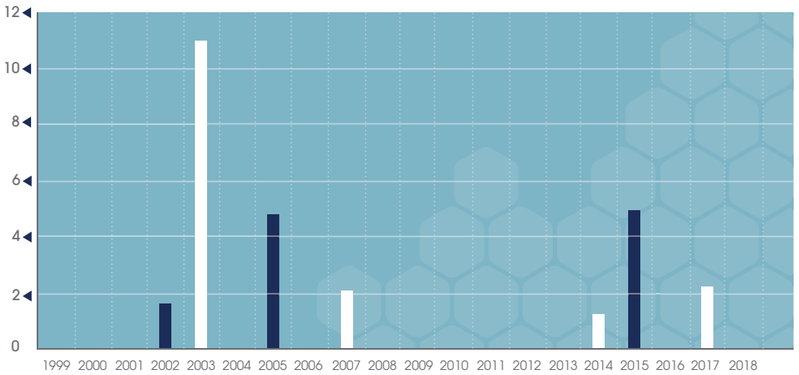
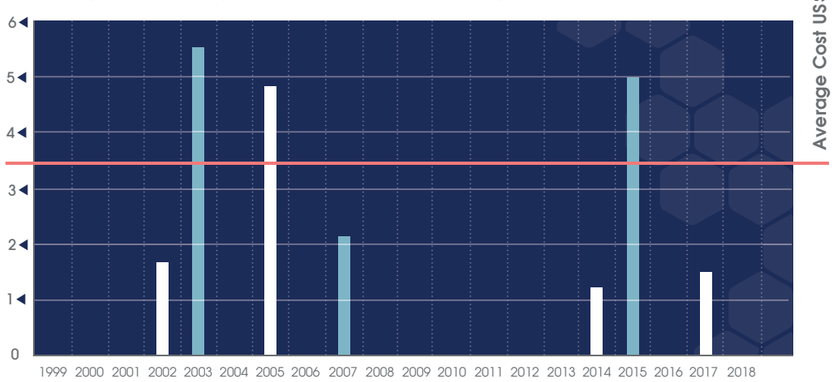


Chart 15

Average cost of Navigation incidents per underwriting year (US$100,000)



INCIDENTS BY COUNTRY AND PORT

These **Tables 7 and 8** which show the number of incidents per country and port are included for the sake of completeness. It must be emphasised however that no adverse conclusions should be drawn from the position in the tables of any particular country or port. The figures of course reflect the volume of shipping traffic in each country. Data is not available to determine the number of ship moves under pilotage in each of these countries over the 20 year period covered by this report, and therefore the numbers below cannot be benchmarked with reference to such information.

Table 7 INCIDENTS BY COUNTRY

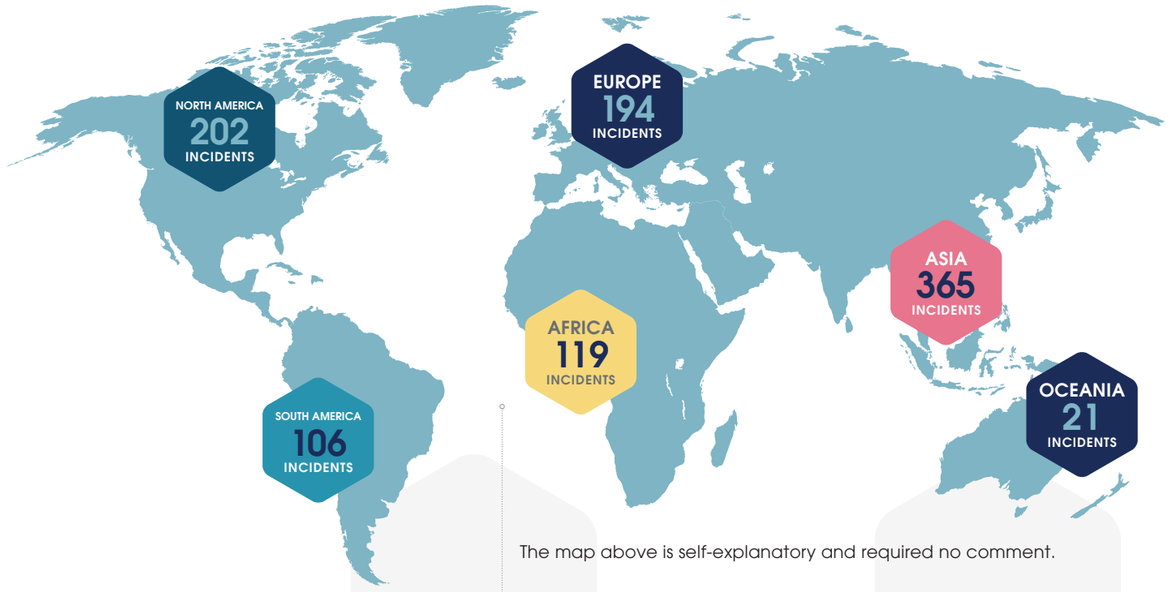
USA	**141**	Cameroon	**8**
China	**64**	Greece	**8**
Japan	**57**	Philippines	**8**
Egypt	**47**	Bahamas	**7**
Brazil	**38**	Morocco	**7**
Argentina	**31**	Panama	**7**
Indonesia	**30**	United Arab Emirates	**7**
Singapore	**28**	Pakistan	**6**
Belgium	**25**	Tunisia	**6**
France	**24**	Algeria	**5**
Saudi Arabia	**24**	Bangladesh	**5**
Netherlands	**23**	Chile	**5**
Germany	**22**	Ecuador	**5**
United Kingdom	**22**	Iran	**5**
Taiwan	**21**	Jamaica	5
Canada	**19**	North Korea	**5**
Spain	**19**	Russia	**5**
Australia	**18**	Ukraine	**5**
India	**18**	Denmark	**4**
Nigeria	**18**	Ivory Coast	**4**
South Korea	**17**	Norway	**4**
Italy	**16**	Congo	**3**
Turkey	**13**	Dominican Republic	**3**
Vietnam	**13**	Georgia	**3**
Colombia	**12**	Israel	**3**
Mexico	**12**	Kuwait	**3**
Thailand	**12**	Madagascar	**3**
Malaysia	**11**	Mozambique	**3**
Venezuela	**10**	Qatar	**3**
		Yemen	**3**

Table 8 INCIDENTS BY PORT

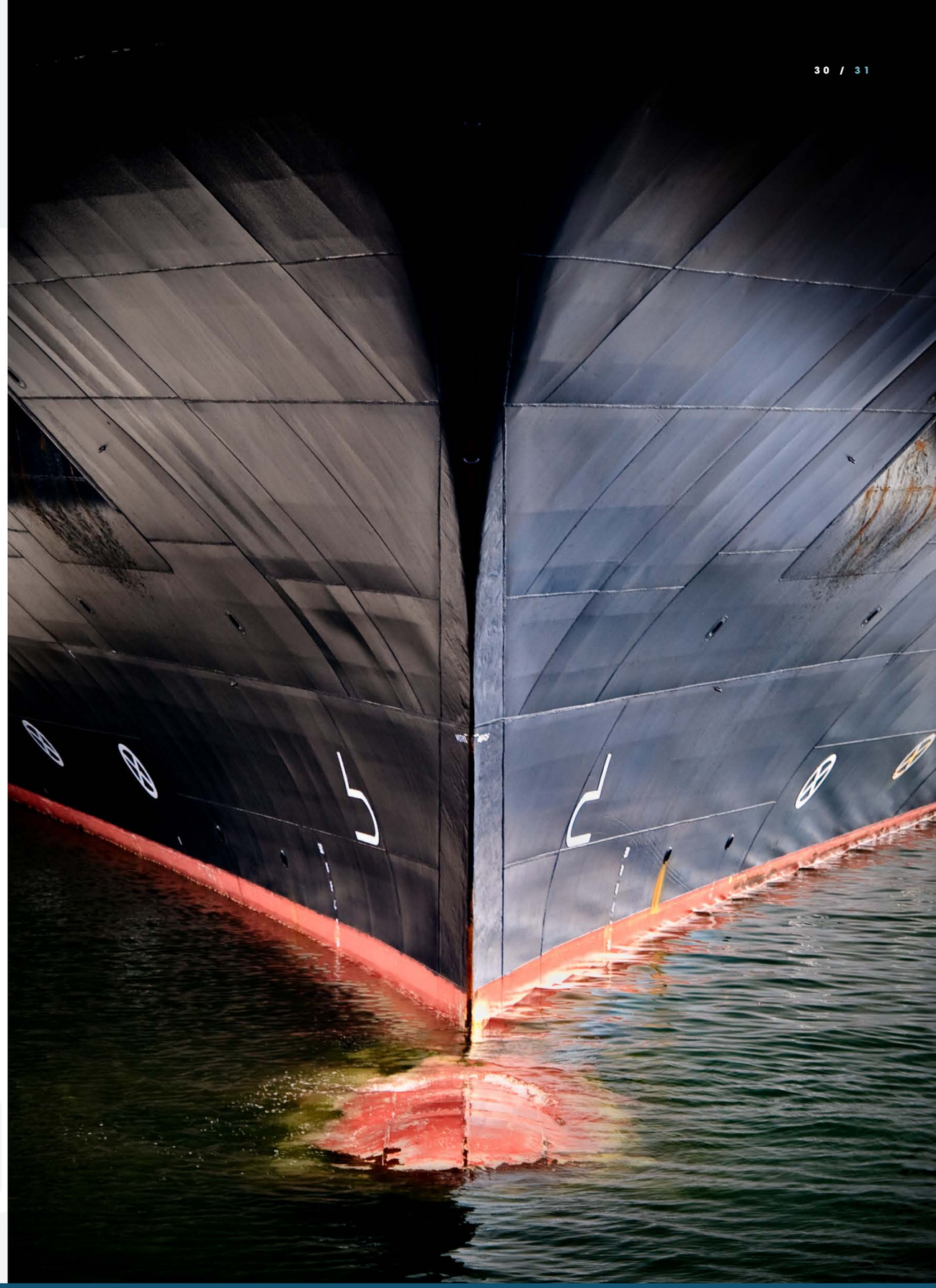
Houston	**25**	Abidjan	**4**
Singapore	**25**	Amsterdam	**4**
Antwerp	**21**	Barranquilla	**4**
New Orleans	**20**	Busan	**4**
Suez Canal	**17**	Campana	**4**
Kaohsiung	**11**	Genoa	**4**
Mississippi River	**11**	Jeddah	**4**
Alexandria	**10**	Karachi	**4**
Port Harcourt	**9**	Kawasaki	**4**
Rotterdam	**9**	Kiel	**4**
Shanghai	**9**	Kobe	**4**
Bangkok	**8**	Odessa	**4**
Douala	**8**	Port Kelang	**4**
Inchon	**7**	Tangier	**4**
New York	**7**	Aden	**3**
Yokohama	**7**	Bremen	**3**
Freeport	**6**	Cartagena	**3**
Ho Chi Minh City	**6**	Chiba	**3**
Hong Kong	**6**	Copenhagen	**3**
Lagos	**6**	Dammam	**3**
Osaka	**6**	Fremantle	**3**
Port Said	**6**	Fujairah	**3**
Rio De Janeiro	**6**	Haiphong	**3**
Santos	**6**	Keelung	**3**
Yanbu	**6**	La Plata	**3**
Beaumont	**5**	Le Havre	**3**
Chittagong	**5**	Mumbai	**3**
El Dekheila	**5**	Ningbo	**3**
Guayaquil	**5**	Norfolk (Virginia)	**3**
Hamburg	**5**	Philadelphia	**3**
Jubail	**5**	Port Arthur	**3**
Kingston, Jamaica	**5**	Ravenna	**3**
Nagoya	**5**	River Parana	**3**
Piraeus	**5**	River Plate	**3**
Surabaya	**5**	San Francisco	**3**
Zhanjiang	**5**	San Lorenzo	**3**
		Suez	**3**
		Tokyo	**3**
		Ulsan	**3**
		Venice	**3**
		Wakayama	**3**
		Yangtze River	**3**
		Zhangjiagang	**3**

The year with the greatest frequency was 2014 in Singapore when there were 7 incidents, the majority of which (4) were collisions with other vessels. This no doubt reflects the traffic density at that port

The timeline of incidents for the top four ports in Table 8 has been examined. No particular trend is evident in any of these ports. The incidents in Houston, Singapore, Antwerp and New Orleans occurred in 14, 10, 13, and 7 separate underwriting years respectively. In 28 of those years there was only one incident. The year with the greatest frequency was 2014 in Singapore when there were 7 incidents, the majority of which (4) were collisions with other vessels. This no doubt reflects the traffic density at that port.



The map above is self-explanatory and required no comment.



COMMENTARY ON CAUSATION AND RECOMMENDATIONS

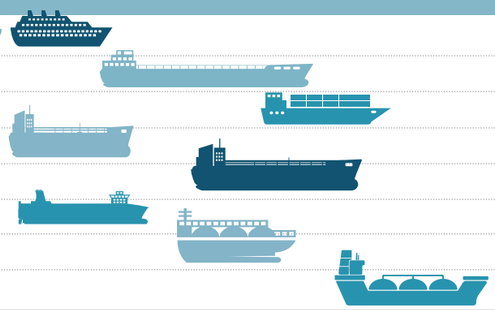
COMMENTARY ON CAUSATION AND RECOMMENDATIONS

It is difficult to draw any specific conclusions on the causes of these incidents because in the majority of the records there is no narrative of events or analysis of the root cause of each incident. As a result, the conclusions and recommendations in this report are necessarily determined on a generic basis.

Whilst the number and overall cost of the incidents covered by this report are significant, some context is necessary. When viewed with reference to the number of shipping movements in and out of port worldwide in any one year, the frequency of these incidents is extremely low. It has been difficult to obtain data on worldwide ship movements under pilotage, but information published by UNCTAD provides the following figures for ship arrivals in port in 2018:

WORLDWIDE SHIP ARRIVALS IN 2018 (SOURCE UNCTAD)

SHIP TYPE	NUMBER OF ARRIVALS
All ship arrivals	4,112,944
Passenger	2,227,407
Wet bulk	494,120
Container	454,016
Dry breakbulk	430,344
Dry bulk	259,551
RoRo	187,532
LPG	49,357
LNG	10,617



It is likely that the passenger vessel arrivals will comprise a large number of ferries which are unlikely to need or use pilots. The other vessel types in the table are those which will be more likely to need the services of a pilot and hence fall within the ambit of this report.

The number of arrivals in 2018 for those vessel types totals 1,885,537. If it is assumed that there may be 10% of those for which a pilotage exemption may exist, that reduces the figure to 1,696,983 – say 1,700,000. If each arrival has a consequential departure this would then mean that there could be something in the region of 3.4m ship movements under pilotage per annum. The figure could be higher if movements under pilotage to anchorage prior to arrival were to be included.

In 2018 there were 30 incidents covered by this report. That is an infinitesimally small percentage of the estimated total number of pilotage moves in that year. This therefore demonstrates that the vast majority of ship moves under pilotage proceed uneventfully, and this is a tribute to the professionalism, experience and skill of the world's maritime pilots. On occasion however, pilotage operations do not proceed as intended and the consequences can be severe as this report establishes.

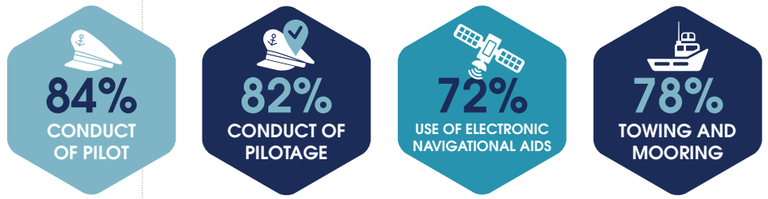
ICS PILOTAGE TOWAGE AND MOORING SURVEY

ICS PILOTAGE TOWAGE AND MOORING SURVEY

In 2016 the International Chamber of Shipping commissioned a survey on Pilotage Towage and Mooring and the results of that were included in a submission to the IMO's Sub-Committee on Navigation Communications and Search and Rescue in December 2017 (NCSR 5/INF.8). That submission is included with this report as Annex I.

The ICS survey covered 472 ports in 123 countries and its findings were based upon 879 responses, predominantly from masters and Officers of the Watch. The outcome of this survey produced, inter alia, the following results:

SATISFACTION RATE



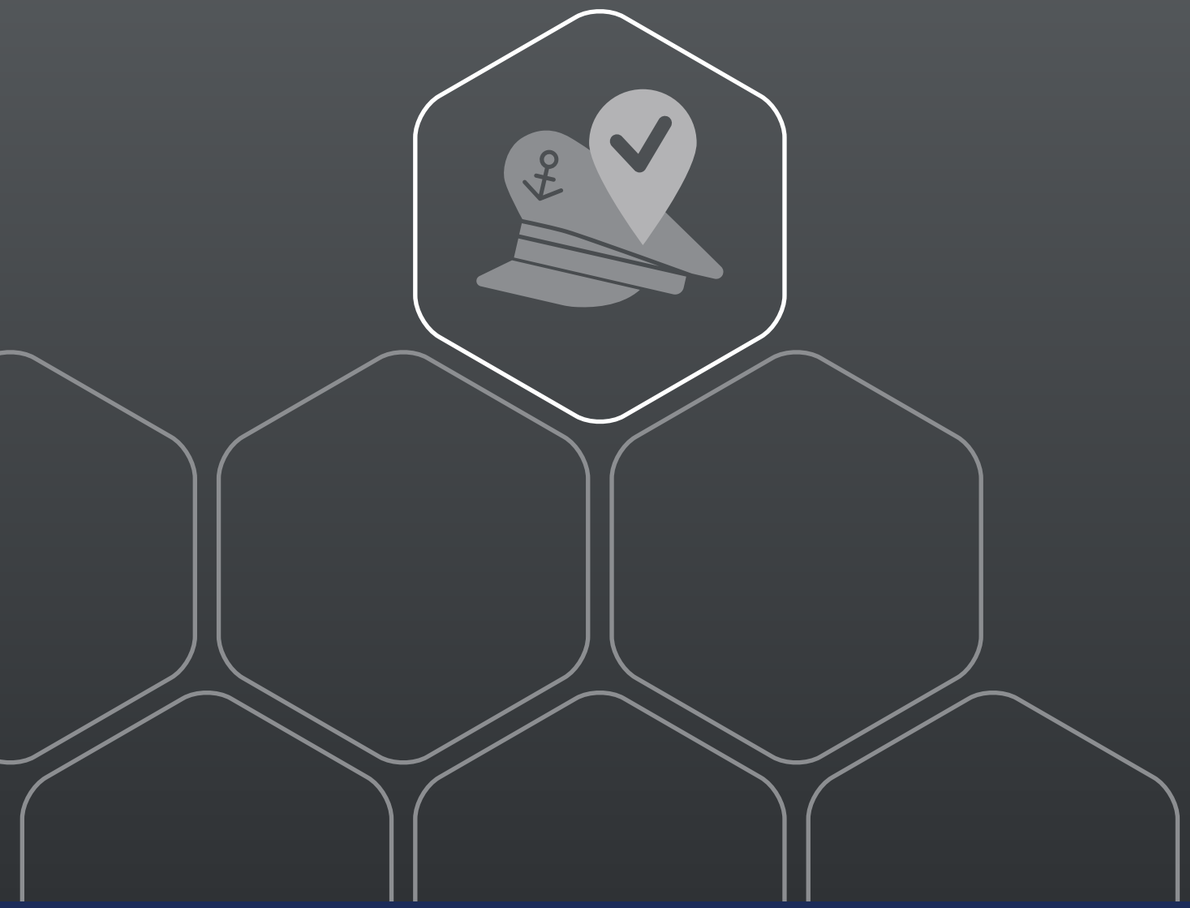
The findings listed below are also worthy of note:

- **Communication difficulties between pilots and bridge teams is a commonly reported concern worldwide.**
- **It is understandable that communications between the pilot, towage and mooring personnel are often conducted in a local language. However, this practice places a burden on the pilot (that may interfere with the pilot's primary role) to translate orders and actions during towage and mooring.**
- **There may be the need for the development of an internationally standardised approach to the Master-Pilot Information Exchange (MPX) which emphasises the visual presentation of the pilot's plan for the pilotage during the MPX and discourages reliance upon a purely verbal exchange of information.**

The findings of the survey were shared with the International Maritime Pilots Association (IMPA). IMPA were not surprised by the report's endorsement of the good work undertaken by their members, nor by the uneven quality of the MPX and Bridge Resource Management (BRM) that is encountered by their members. To demonstrate their commitment to improvement, IMPA issued guidance documents to assist their members on the issues of BRM training for pilots and MPX and launched a collaborative poster campaign with the Marine Accident Investigators International Forum (MAIIF) – see Annex II. IMPA have emphasised however that in order to maximise the benefits from these efforts it is essential for there to be full engagement of masters and officers in pilotage operations.

BRIDGE RESOURCE MANAGEMENT (BRM)

Following on from IMPA's comments above on BRM, it is often apparent when reviewing the circumstances of incidents generating P&I liabilities that have arisen when vessels are under pilotage, that the BRM on the vessel has been sub-optimal. It is therefore well recognised that it is to the benefit of all in any passage under pilotage that the external pilot and the vessel's bridge team function as an effective and cohesive unit. This can be challenging to achieve.



BRIDGE RESOURCE MANAGEMENT (BRM)

In its document on Recommendation for Bridge Resource Management courses for pilots, in drawing the distinction between the courses required for ships' officers to whom standardised routines and procedures apply, and those required for pilots, IMPA made the following observations concerning the specific challenges that pilots face on a daily basis:

"On each assignment, a compulsory pilot will typically encounter a different ship, different bridge equipment and lay-out, a different operating environment, a different set of navigation procedures, and a different crew (usually one with limited English language abilities) with varying skill levels and capabilities from what the pilot encountered on the previous assignment. In most pilotage areas, the compulsory pilot is also expected to exercise independent professional judgement, which may on occasion conflict with the intentions of the ship's operator or master. Because of those circumstances, pilots need to assess quickly the nature and quality of the resources available for each pilotage assignment and then adjust their practices to get the most out of those available resources. This calls for flexibility and adaptability rather than rigid adherence to a standardised routine."

Much has been written over the years on this general issue of optimising the performance of bridge teams and pilots. In 1983 OCIMF, ICS and INTERTANKO published the booklet "International Best Practices for Maritime Pilotage". The guidance in that document is as relevant today as it was 37 years ago. This perhaps emphasises the need for continued attention to, and reinforcement of those best practices to help reduce the number of avoidable incidents.

It has also been noted that an updated version of the ICS Bridge Procedures Guide (BPG) will be published in 2021 and will include:

- **A new section on BRM, with examples of best practices and bridge team integration,**
- **A revamp of the MPX with the assistance of IMPA, and**
- **A revised and updated chapter on Pilotage.**

When the new guide is launched, the ICS will be heading up a pilot ladder compliance drive in tandem with IMPA.

There are several areas of P&I liability exposure, for example entry to enclosed spaces, accidents involving lifeboats etc., where the underlying risk is long established, well recognised and the subject of persistent training, and yet the risk continues to be the cause of repeated casualties. The appropriate response is enhanced and repeated training to ensure that best practices become embedded and thus more likely to be adhered to.

In the context of casualties arising under pilotage, absent a radical and novel solution – and none is immediately apparent - the enhanced and repeated training response outlined above is equally appropriate to that situation.

BRIDGE RESOURCE MANAGEMENT (BRM)

Such training, whether in a formal training establishment setting, or in the less formal arrangement of company training sessions for its officers, is also likely to be enhanced by the participation in those training sessions of either serving or very recently retired pilots.

This training should place emphasis upon matters such as:

- **Proper and diligent MPX, and ensuring that pilots are fully informed about any limitations of the vessel's machinery or equipment - e.g. engine power, steering, bitt capacity etc.**
- **Understanding all aspects of the voyage plan for the passage under pilotage.**
- **The need for vigilance on the part of ships' officers in monitoring the progress of the vessel with reference to that plan.**
- **Officers raising awareness immediately any deviation from the passage plan is noted**
- **Communication with the pilot – especially when there are doubts.**
- **Encouraging officers to question a pilot where there is any uncertainty about the situation, or the actions intended and understanding the most effective way in which to do this.**
- **Reinforcing the understanding of masters that, with the sole exception of the Panama Canal, the pilot directs the navigation of the ship, supported by the bridge team. The master remains in command and has the right, and indeed the duty, to intervene if it should be felt that the actions of a pilot endanger the safety of the ship.**

It is also important to reinforce the understanding of masters that even when the vessel has the assistance of a pilot, they are ultimately responsible for the safety of their vessel, its crew the environment and its cargo and that they should not allow commercial or other pressures to compromise safety.

In response generally to casualties that have a navigational cause, navigational audits or reviews have assumed greater significance in recent years as a tool to aid loss prevention. There are benefits to be gained from more frequent reviews of bridge team navigational performance whilst vessels are under pilotage, undertaken by companies' marine superintendents with navigational review training and experience, or independent consultants in this field.

One key ingredient to the establishment of an effective bridge team when under pilotage is the creation of a good working relationship with the pilot from the outset. The pilot's relationship with those on the vessel they have been rostered to assist begins during the process of boarding. That is a hazardous operation with an ever-present and real risk of personal injury to the pilot.

...masters are ultimately responsible for the safety of their vessel, its crew the environment and its cargo and they should not allow commercial or other pressures to compromise safety

In 2018 IMPA undertook a survey of the safety of pilot boarding arrangements and received returns from over 4,300 participating IMPA members worldwide. There were 570 returns (over 13%) reporting boarding arrangements that were not in compliance with the requirements of SOLAS Regulation V/23 and IMO Resolution 1045/27 – see the following weblink:

https://ukmpa.org/wp-content/uploads/2018/11/impasafety-brochure-2018pagesfinalprint.pdf

The importance of compliance with these requirements cannot be over emphasised if the safety of pilots during the process of boarding is to be assured. By ensuring that a pilot boards a vessel under safe conditions and is then met and escorted to the bridge by a responsible officer, a master can have much greater confidence that the pilot will be in a settled frame of mind to commence his or her duties immediately and effectively.

With the exception of cruise ships, there is limited opportunity for the majority of masters to experience the handling and manoeuvring of their own vessels in confined waters. In the area of training therefore, there is perhaps also benefit in providing greater opportunities for masters and senior officers to gain experience of manoeuvring their vessels at slow speed in order to improve their understanding of how the vessel responds to helm and engine orders in various conditions of draught and when subject to the effects of wind and current.

There is frequently a very limited amount of time between the pilot arriving on the bridge, the MPX taking place, and the ship commencing its approach to the port. For a crew that may never previously have visited that port this may then mean it is difficult for the bridge team to effectively assimilate all the requirements of the passage plan from the pilot station to the berth. If more ports were to provide on their websites generic diagrams and instructions on how ships are usually piloted both inbound and outbound, this would provide an opportunity for masters and navigating officers to study and understand the outline requirements prior to the vessel's arrival at the pilot station. This would also facilitate the preparation on the vessel of more accurate berth to berth passage plans. This could also serve to alleviate time pressure during the MPX. Where such generic plans were available, the MPX could focus upon any deviation from the generic plan that might be necessary because of particular local circumstances at that time.

PILOT LIABILITY AND INSURANCE

Whenever incidents occur that result in in substantial P&I liabilities, it is understandable in such situations that the question arises of whether there is any liability on the part of the pilot or the relevant pilotage body, and whether insurance coverage for such liability exists. The position varies according to jurisdiction but it is commonly the case, as indicated above, that the pilot has the conduct of the navigation and the shipowner remains vicariously responsible for liabilities arising from the pilots' acts or negligence. There are jurisdictions in which the potential for recourse against the pilot or pilotage body is possible. For example in Italy there is now legislation which imposes liability on pilots up to a maximum of €1m and requires compulsory insurance. More generally however, even where recourse is possible, the potential levels of financial liability are often low and such liability may not be covered by insurance. The idea therefore of addressing the concerns that prompted this report through widespread legislative change and associated insurance regimes is considered unrealistic. There would be a cost burden that would inevitably affect every ship movement under pilotage, the overwhelming majority of which proceed without incident. Further the scale of change that might be achieved and the level of financial recovery is unlikely to result in a significant impact. It is considered that the better approach is to focus upon the prevention of incidents through a collaborative approach on incident investigation.

CONCLUSION
RESPONSE TO INCIDENTS

CONCLUSION –
RESPONSE TO INCIDENTS

It is inevitable that there will continue to be incidents of loss or damage that arise with vessels under pilotage. However, one can only hope that the measures outlined in this report might serve to reduce the frequency and severity of these. However, when such incidents occur it will be beneficial for there to be more specific follow-up action than generally occurs now.

Not all incidents will be the subject of a published flag state investigation report. Because these incidents, particularly Allision/FFO generally involve strict liability on the part of the vessel, the focus of the claims handler at the P&I Club involved will be upon mitigating the financial consequences of the casualty, and not necessarily on determining what went wrong, and what actions or recommendations might be made to reduce the risk of recurrence. More attention on this area is recommended.

In those instances where no flag state investigation will be made, some structure needs to be established that will facilitate fact-finding, root cause analysis and risk mitigation measures for more costly incidents, or those where more egregious conduct is evident. Perhaps a Memorandum of Understanding (MoU) approach under which there is a commitment to cooperate with the IG Clubs on the part of the more significant pilotage bodies, hopefully with the support of IMPA, in investigating the causes of more serious incidents for the purpose of identifying measures that will assist in preventing further loss. Such MoUs should provide for:

- **joint incident investigations leading to establishing meaningful root causes,**
- **a platform to co-operate in formulating lessons learnt without appointing blame, and**
- **tracking the implementation of mitigating measures in the long term.**

If that recommendation is accepted, further work will be necessary to draft the terms of a MoU and identify the principal entities who should be approached with this initiative. This work might usefully start with the pilotage bodies involved with the most serious container vessel/gantry crane incidents to which reference is made on page 11 of this report. It should also be noted that IMPA has been closely following the incidents involving large container ships and has made submissions on this topic to the IMO's Sub-Committee on Implementation of IMO Instruments. These seek an expert review of relevant Marine Safety Investigation Reports on such incidents with a view to identifying measures that will improve operational safety and enhance safe berthing procedures. See submission III 6/4/4 dated 25 April 2019 – Annex III.

Another area of initial focus could also be the Suez Canal Authority given the frequency of groundings in that waterway.

ANNEXES

INTERNATIONAL MARITIME ORGANIZATION

E

SUB-COMMITTEE ON NAVIGATION, COMMUNICATIONS AND SEARCH AND RESCUE
5th session
Agenda item 22

NCSR 5/INF.18
15 December 2017
ENGLISH ONLY

ANY OTHER BUSINESS

Results of the ICS pilotage, towage and mooring survey 2016

Submitted by the International Chamber of Shipping (ICS)

SUMMARY

Executive summary:	This document provides the results of a pilotage, towage and mooring survey conducted by ICS between 16 September 2016 and 16 November 2016
Strategic direction:	No related provisions
High-level action:	
Output:	No related provisions
Action to be taken:	Paragraph 9
Related documents:	Resolution A.960(23) and FAL.6/Circ.11/Rev.1

Introduction

1 This document provides the executive summary of the report of the results of an ICS pilotage, towage and mooring survey (the Survey) conducted between 16 September 2016 and 16 November 2016. The questionnaire was completed for 903 port calls during the survey period.

2 The Survey was conducted at the request of the Members of ICS in order to review the performance of pilotage, towage and mooring services worldwide. The questionnaire was developed using operational knowledge and experience, best practice guidance in the ICS *Bridge Procedures Guide* (5th edition) and the:

.1 *Recommendations on training and certification and operational procedures for maritime pilots other than deep-sea pilots* (resolution A.960(23)); and

.2 *Guidelines on minimum training and education of mooring personnel* (FAL.6/Circ.11/Rev.1).

Executive summary

3 The survey reports the level of satisfaction of masters and bridge teams with pilotage, towage and mooring services. This results should be considered in context and be used as a benchmark for reviewing changes in satisfaction that may be observed should the survey be repeated in the future.

Satisfaction rate	**(%)**
Conduct of the Pilot	84
Conduct of the pilotage	82
Use of electronic navigation aids	72
Towage and mooring services	78

4 Based on the responses received, the quality of pilotage, towage and mooring services worldwide have generally been reported to be of a satisfactory standard and, in particular:

.1 the survey identified no systemic concerns with respect to the content and application of the *Recommendation on training and certification of maritime pilots other than deep-sea pilots* (resolution A.960(23), annex 1);

.2 the survey identified no systemic concerns with respect to the content and application of the *Recommendation on operational procedures for maritime pilots other than deep-sea pilots* (resolution A.960(23), annex 2); and

.3 the survey identified no systemic concerns with respect to the provision of towage, mooring services or the *Guidelines on minimum training and education of mooring personnel* (FAL.6/Circ.11/Rev.1).

5 Despite the general level of satisfaction reported in paragraph 4 above, the following safety related findings from the survey are worthy of note:

.1 communication difficulties between pilots and bridge teams is a commonly reported concern worldwide;

.2 the level of knowledge of the areas of the recommended syllabus for pilotage and certification or licensing contained in section 7 of annex 1 of resolution A.960(23) which were addressed in this survey demonstrated concerning inadequacies by a minority of pilots;

.3 the availability and use of personal protective equipment (PPE) by pilots and the provision of appropriate vessels for Pilot transfer is an area of concern. In the case of PPE, there were 36 reports covering 16 different countries of pilots boarding without appropriate PPE;

.4 it is understandable that communications between the Pilot, towage and mooring personnel are often conducted in a local language. However, this practice places a burden on the Pilot (that may interfere with the Pilot's primary role), to translate orders and actions during towage and mooring; and

.5 there may be a need for the development of an internationally standardized approach to the Master-Pilot information exchange (MPX) which emphasizes the visual presentation of the Pilot's plan for the pilotage during the MPX, and discourages reliance on a purely verbal exchange of information.

6 Given the findings in paragraphs 5, particularly paragraph 5.3, the outcome of the survey has been shared with the International Maritime pilots Association (IMPA).

Results of the Survey

7 The results of the Survey are provided in annex 1 to this document. Whilst responses to the survey included references to specific ports and countries, these have been removed from the results presented here. The Survey questionnaire is provided at annex 2.

Future of the Survey

8 The Survey may be repeated at an appropriate point in the future, but it will not be conducted on an annual basis.

Action requested of the Sub-Committee

9 The Sub-Committee is invited note the information provided.

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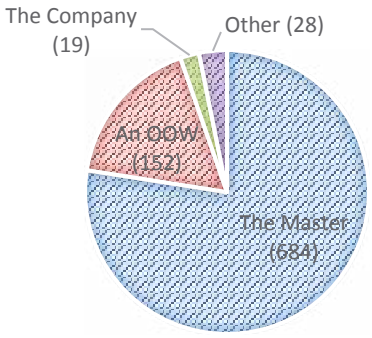
ANNEX 1

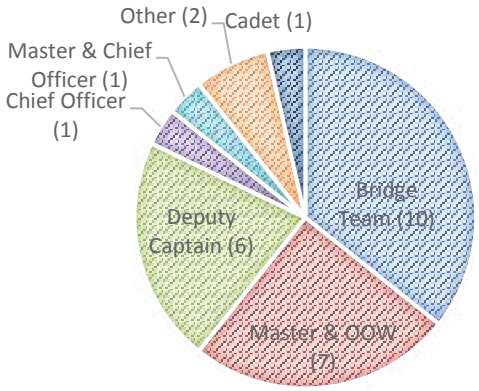
RESULTS OF THE ICS PILOTAGE, TOWAGE AND MOORING SURVEY 2016

1.1 Number of responses. Of the 903 responses, 879 were considered valid. The following responses were excluded from the analysis of the results:

- Incomplete and unusable responses[1]; and
- Responses from pilots.[2]

1.2 Who completed the survey?





1.3 Port coverage. The survey was completed for 472 ports in 123 different countries. 97.95% (861) of responses were for a port call where a Pilot was embarked. In these cases, all questions regarding pilotage, towage and mooring (questions 5 to 11) were completed. The remaining 2.05% (18) of responses covered port calls where no Pilot was embarked. In these cases only the questions relating to towage and mooring (questions 9 to 11) were completed.

1.4 Pilotage Exemption Certificates (PEC). The questions in this section of the survey related to the availability of PECs and the existence of clear procedures for the application and validation of PECs by port authorities.

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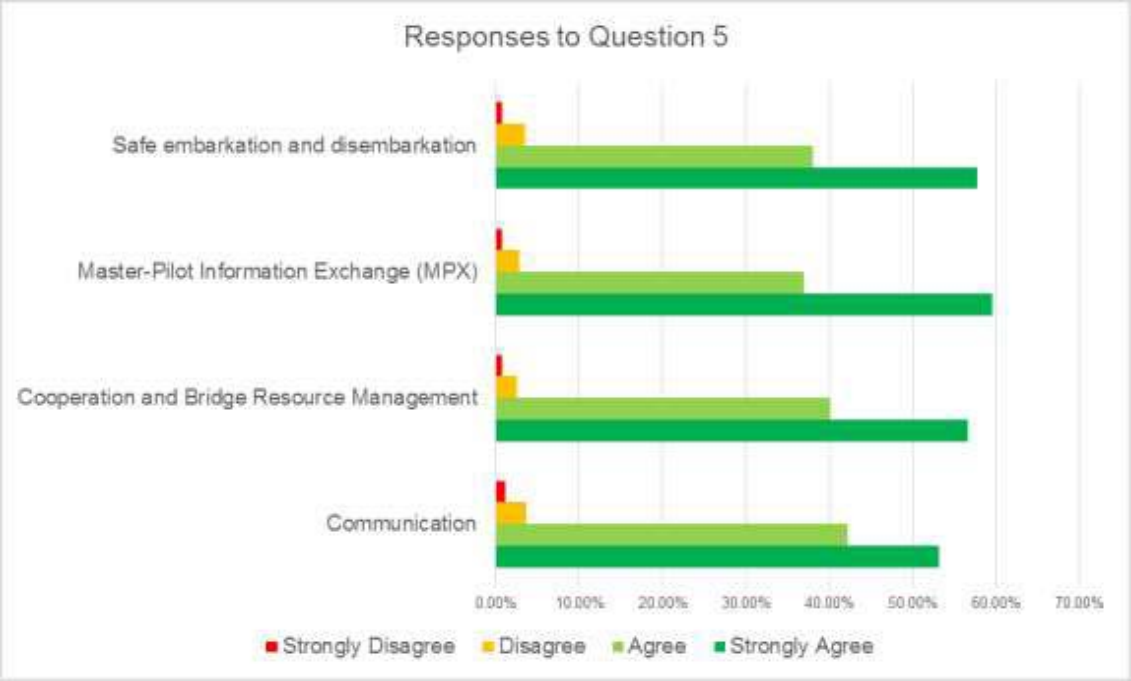
1 The submission of incomplete responses explains the variations in total responses for particular questions.

2 This information has however been kept as it generally provides more detailed comments on towage and mooring services provided at some ports.

1.4.1 PECs were not available in 89.2% of ports for the ship type of the respondents covered by the survey. Where PECs were available in 81 of the ports covered in the survey. In those 81 ports, 70 (86.42%) had clear application and validation procedures.

1.4.2 No notable findings were obtained from analysis of responses to questions concerning the availability of PECs.

1.5 Conduct of the Pilot. The questions in this section were, in general, based on the recommendations for operational procedures for pilots contained in annex 2 to IMO resolution A.960(23).



1.5.1 In general, the Master-Pilot Information Exchange (MPX) and associated checklists are being used effectively to ensure that the Pilot and Bridge Team are fully informed prior to pilotage commencing;

1.5.2 The volume and form of information exchanged during the MPX is inconsistent. Varying from an entirely verbal exchange of information to a comprehensive briefing supported by checklists and passage plans (of the ship and the Pilot);

1.5.3 In 36 cases respondents reported a failure of pilots to follow appropriate procedures or use appropriate PPE, particularly lifejackets, when embarking. This issue affected ports in 16 countries;

1.5.4 The locations of pilot boarding points (as charted) and locations of actual point of pilot embarkation can vary significantly and may bring ships to well within pilotage waters. This finding is contrary to the recommendations in section 3.3 and section 5.5 of IMO resolution A.960(23);

1.5.5 Observations were made of requests for last minute changes to Pilot boarding arrangements, including the requirement to rig accommodation ladders in place of Pilot ladders even when the climb is less than 9m;

1.5.6 Observations were made of a lack of availability of appropriate Pilot vessels. Reports of the use of tug rescue boats and small dinghies being used for Pilot transfers;

1.5.7 There remains scope of an internationally recognized and accepted approach to the delivery of the MPX;

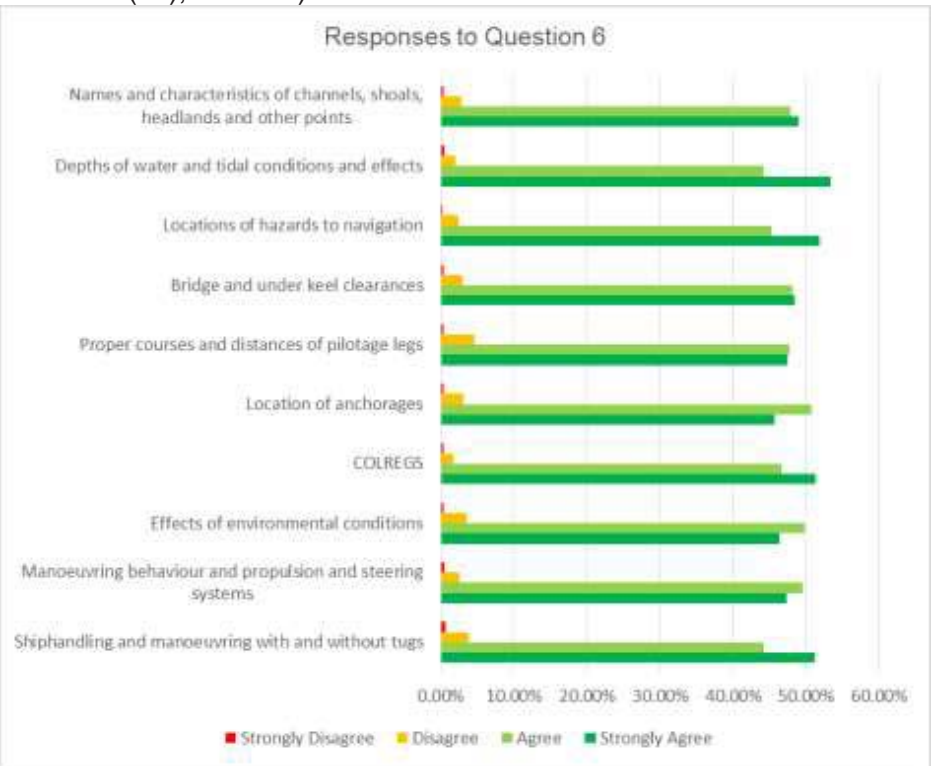
1.5.8 In some responses, significant concerns were raised regarding corrupt practices engaged in by some pilots;

1.5.9 Observations were made that the MPX was conducted entirely verbally and without support of a checklist or passage plan. This was a particular matter of concern in ports in 4 countries;

1.5.10 Observations were made that pilots had limited knowledge of bridge resource management (BRM) and that ensuring that a chain of errors did not develop was left to the Bridge Team; and

1.5.11 Concerns over the quality of English used by pilots was a general concern expressed by Masters and Bridge Teams in a number of countries.

1.6 Conduct of the pilotage. The questions in this section were based on section 5.5 of Recommendations on training and certification of maritime pilots other than deep-sea pilots (IMO resolution A.960(23), annex 1).



1.6.1 In general, respondents commented positively on the experience, knowledge and abilities of pilots and the conduct of pilotage was in accordance with IMO resolution A.960(23);

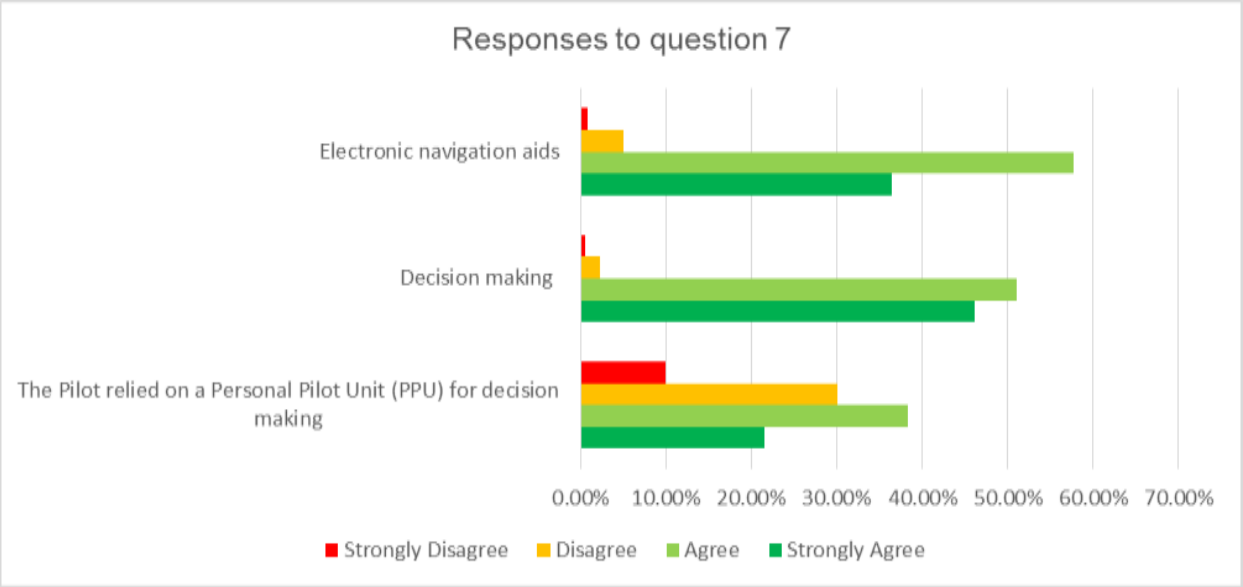
1.6.2 Observations were made regarding the familiarity of pilots with the latest propulsion technologies, particularly electronically controlled engines, and the impact of this on use of main engines during berthing and un-berthing;

1.6.3 Observations were made that the knowledge of the Master and Bridge Team regarding the capabilities of propulsion systems and ships manoeuvring behaviour should be given greater consideration during berthing and un berthing operations;

1.6.4 Observations were made that the flow of information between the Bridge Team and Pilot required encouragement from the Bridge Team to discuss actions in accordance with the COLREGs, instructions from port control, and use and positioning of tugs; and

1.6.5 Observations were made that, in general, Pilot's appreciation of risk is satisfactory. Only in a small number of locations in 3 countries were there reports of that the Pilot's appetite for risk was considered incompatible with the Master's.

1.7 Electronic Navigation Aids.

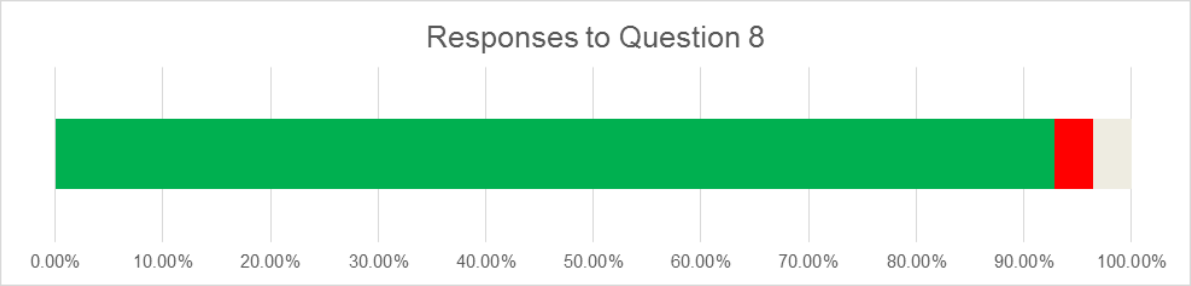


1.7.1 In general, knowledge and appropriate use of electronic navigation aids, particularly ECDIS was satisfactory, reflecting section 7 of annex 1 to with IMO resolution A.960(23);

1.7.2 Although observations were made regarding over-reliance on personal Pilot units (PPU), in the majority of cases good practices involving multiple sources of information were used for decision making with subsequent actions explained to the Bridge Team to enable them to continue to monitor safety effectively; and

1.7.3 Observations were made that pilots are not familiar with ECDIS and are unwilling to use ECDIS during pilotage, even on ships which navigate using ECDIS.

1.8 Pilotage Incidents or Near Misses (Current Port Call).



1.8.1 During the survey period, 30 responses (4%) included pilotage incidents or near misses with a Pilot embarked. The below assessment uses PivotTables to focus on assessing the potential relationship between the relevant responses to Question 5 and Question 6. The term "negative" means a combined total of "disagree" or "strongly disagree" responses. The term "positive" means a combined total of "agree" and "strongly agree" responses. Differences in total figures reflects the incompleteness of some questionnaires

1.8.2 For the MPX (Question 5.2):

Incident or Near Miss	Negative	Positive	Total
No	23	787	**810**
Yes	7	23	**30**
Total	**30**	**810**	**840**

1.8.3 For cooperation and bridge resource management (Question 5.3):

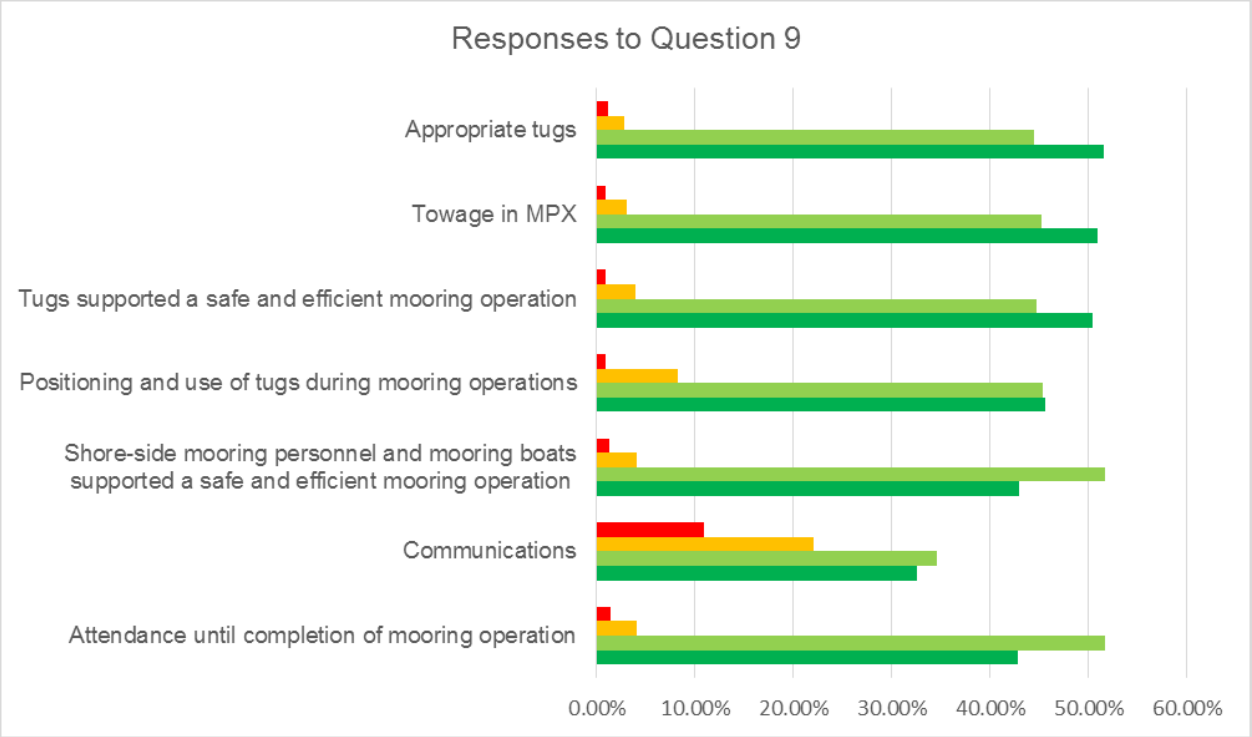
Incident or Near Miss	Negative	Positive	Total
No	18	792	**810**
Yes	9	20	**29**
Total	**27**	**812**	**839**

1.8.4 For communication (Question 5.4):

Incident or Near Miss	Negative	Positive	Total
No	31	782	**813**
Yes	8	22	**30**
Total	**39**	**804**	**843**

1.8.5 The data indicates that there is no apparent causal relationship between a negative assessment of any of the factors for conduct of the Pilot and conduct of the pilotage and a report of an incident and near miss. This indicates that the incidents or near misses reported were influenced by a factor or factors other than those addressed in this survey.

1.9 Towage and Mooring. The questions relating to towage and mooring were based on the best practice guidance provided in the 5th Edition of the ICS Bridge Procedures Guide, consultation with ICS Members and the guidelines on minimum training and education of mooring personnel (FAL.6/Circ.11/Rev.1).



1.9.1 In general, the provision of towage and mooring services was considered satisfactory by respondents. However, the principle area for concern is the burden placed on the Pilot by the need to translate communications between the Pilot, tug master and shore-based mooring personnel at a critical time;

1.9.2 Observations were made in ports in 5 countries that cooperation between mooring personnel and the Pilot and/or ship's mooring personnel is not always effective.

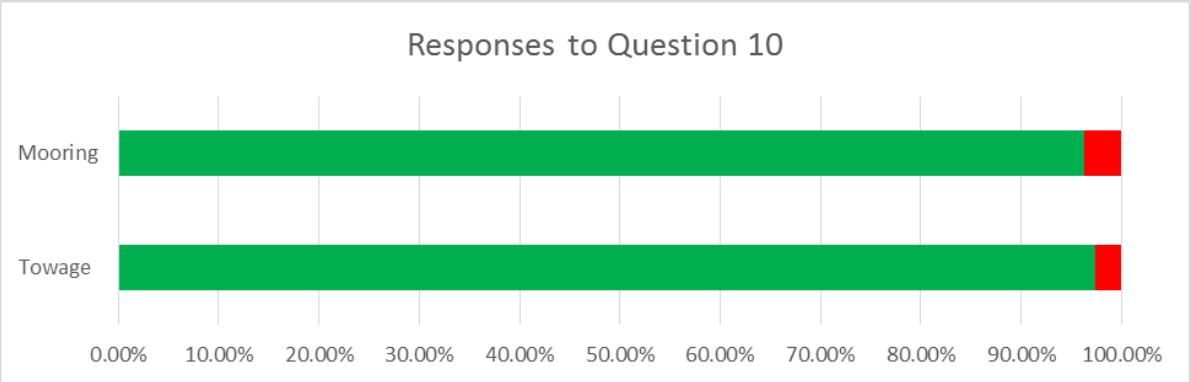
1.9.3 Observations regarding the absence of personal protective equipment (PPE) for mooring personnel were made in one country;

1.9.4 Observations were made of inadequate numbers of mooring personnel being available to support safe mooring;

1.9.5 Port regulations did not always take into account the manoeuvrability of ships, for example by requiring a specific number of tugs, rather than a number of tugs appropriate to the vessel, it characteristics and conditions at the berth; and

1.9.6 Observations were made of a practice in one country where the language barrier between Bridge Team and mooring personnel is addressed through the use of a pre-agreed mooring plan and the use of visual signals.

1.10 Towage and Mooring Incidents or Near Misses (Current Port Call).



1.10.1 During the survey period, 21 incidents or near misses during towage operations and 31 incidents or near misses during mooring operations. The assessment below uses PivotTables to focus on the assessing the potential relationship between incidents and near misses and the relevant responses to Question 9. The term "negative" means a combined total of "disagree" or "strongly disagree" responses. The term "positive" means a combined total of "agree" and "strongly agree" responses. Differences in total figures reflects the incompleteness of some questionnaires.

1.10.2 For appropriate tug selection:

Incident or Near Miss	Negative	Positive	Total
No	29	773	**802**
Yes	2	19	**21**
Total	**31**	**792**	**823**

1.10.3 For towage addressed in the MPX:

Incident or Near Miss	Negative	Positive	Total
No	30	770	**800**
Yes	2	19	**21**
Total	**32**	**789**	**821**

1.10.4 For tugs supporting a safe and efficient mooring operation:

Incident or Near Miss	Negative	Positive	Total
No	36	752	**788**
Yes	3	18	**21**
Total	**39**	**770**	**809**

1.10.5 For positioning and use of tugs during mooring operations:

Incident or Near Miss	Negative	Positive	Total
No	70	721	**791**
Yes	4	17	**21**
Total	**74**	**738**	**812**

1.10.6 For shore-based mooring personnel and mooring boats supporting a safe and efficient mooring operation:

Incident or Near Miss	Negative	Positive	Total
No	41	767	**808**
Yes	3	30	**33**
Total	**44**	**797**	**841**

1.10.7 For communications during mooring operations:

Incident or Near Miss	Negative	Positive	Total
No	267	545	**812**
Yes	11	21	**32**
Total	**278**	**566**	**844**

1.10.8 For attendance until mooring operation completed:

Incident or Near Miss	Negative	Positive	Total
No	45	761	**806**
Yes	1	32	**33**
Total	**46**	**793**	**839**

1.10.9 The data indicates that there is no apparent causal relationship between a negative assessment of any aspect of the towage or mooring operations and a report of an incident and near miss. This indicates that the incidents or near misses reported were influenced by a factor or factors other than those addressed in this survey.

1.11 Incidents or Near Misses (Port calls in last 12 months). Respondents to the survey accumulated 5057 port calls at the ports covered by the survey in the 12 months preceding the survey. Over this 12-month period, 3.2% (162) port calls involved an incident or near miss during either pilotage, towage or mooring operations.

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ANNEX 2

SURVEY QUESTIONNAIRE

1. This survey was completed by: * (Required Field)

- ☐ A Master
- ☐ An OOW
- ☐ The Company
- ☐ Other (Please specify)

2. Port or Terminal: * (Required Field)

Please provide the full name of the Port or Terminal**.**

3. Was a Pilot Embarked? * (Required Field)

- ☐ Yes
- ☐ No

4. Pilotage Exemption Certificates (PEC) (One answer per row)

	Yes	No
A PEC is available from the Port Authority, for appropriately qualified deck officers	☐	☐
There is a formal and transparent application process for a PEC	☐	☐
The PEC assessment process, including renewals, is fair, proportionate and transparent	☐	☐

Comments:

5. Conduct of the Pilot (One answer per row)

	Strongly Agree	Agree	Disagree	Strongly Disagree
The Pilot followed safe embarkation and disembarkation procedures and used appropriate PPE	☐	☐	☐	☐
An effective Master-Pilot Information Exchange (MPX) was conducted using an appropriate supporting checklist	☐	☐	☐	☐
The Pilot cooperated with the Master and Bridge Team and made use of the principles of Bridge Resource Management (BRM)	☐	☐	☐	☐
The Pilot communicated their knowledge effectively to the Master and Bridge Team, in a common working language or English and using the IMO Standard Maritime Communications Phrases (SMCP) as appropriate	☐	☐	☐	☐

Comments:

6. Conduct of the Pilotage (One answer per row)

The Pilot demonstrated detailed local knowledge and skill which enhanced the safety of navigation in pilotage waters, including:

	Strongly Agree	Agree	Disagree	Strongly Disagree
Identification, position and characteristics of aids to navigation	☐	☐	☐	☐
Names and characteristics of channels, shoals, headlands and other points	☐	☐	☐	☐
Depths of water and tidal conditions and effects	☐	☐	☐	☐
Locations of hazards to navigation	☐	☐	☐	☐
Bridge and under keel clearances	☐	☐	☐	☐
Proper courses and distances of pilotage legs	☐	☐	☐	☐
Location of anchorages	☐	☐	☐	☐
Effective anti-collision advice in accordance with the COLREGS, taking into account knowledge of local traffic patterns	☐	☐	☐	☐
Effects of environmental conditions, including interaction effects on ship performance	☐	☐	☐	☐
Manoeuvring behaviour of the ship and the limitations imposed by particular propulsion and steering systems	☐	☐	☐	☐
Ship handling, including safe approaches and departure from the berth and manoeuvring with and without tugs	☐	☐	☐	☐

Comments:

7. Electronic Navigation Aids (One answer per row)

	Strongly Agree	Agree	Disagree	Strongly Disagree
The Pilot was familiar with electronic navigation aids, including ECDIS	☐	☐	☐	☐
Bridge navigation equipment was used to support decision making by the Pilot and Bridge Team	☐	☐	☐	☐
The Pilot relied on a Personal Pilot Unit (PPU) for decision making	☐	☐	☐	☐

Comments:

8. Pilotage Incidents or Near Misses

During **THIS** port or terminal call, did the ship experience a safety and/or environmental incident or near miss during pilotage with a pilot embarked**?**

☐ Yes

☐ No

☐ Not applicable

9. Towage and Mooring Services (One answer per row)

	Strongly Agree	Agree	Disagree	Strongly Disagree
The number and size of tugs provided for towage during mooring operations was adequate for the size of vessel and berthing conditions	☐	☐	☐	☐
Towage during mooring operations was included in the Master-Pilot Information Exchange (MPX)	☐	☐	☐	☐
Tugs complied with the instructions of the Master or Pilot and effectively supported a safe and efficient mooring operation	☐	☐	☐	☐
The Master and Bridge Team were kept informed of changes in the positioning and use of tugs during mooring operations	☐	☐	☐	☐
Shore-side mooring personnel and mooring boats complied with the instructions of the Master or Pilot and effectively supported a safe and efficient mooring operation	☐	☐	☐	☐
Communications between the Pilot, tugs and mooring personnel were conducted in a common working language and were clearly understood by the Master and Bridge Team	☐	☐	☐	☐
Shore-based mooring personnel did not break communications before mooring operations was complete	☐	☐	☐	☐

Comments:

10. Mooring and Towage Incidents or Near Misses

During **THIS** port or terminal call, did the ship experience a safety and/or environmental incident or near miss during towage or mooring operations?

	Yes	No
During towage	☐	☐
During mooring	☐	☐

11. Incidents and Near Misses in the last 12 Months

If the Ship **REGULARLY** calls at the port or terminal, has it experienced a safety and/or environmental incident or near miss in the last 12 months?

Number of calls at the port or terminal ☐

Number during pilotage with a pilot embarked ☐

Number during towage operations ☐

Number during mooring operations ☐

Commit to Safe Navigation

SAFE NAVIGATION IN PILOTAGE WATERS IS A SHARED TASK OF THE BRIDGE TEAM AND THE PILOT

- **SHARE** NAVIGATION INFORMATION
- **RESPECT** EACH OTHER
- **COMMUNICATE** THROUGHOUT THE VOYAGE
- **WORK** TOGETHER
- **STAY** ALERT

INTERNATIONAL MARITIME ORGANIZATION

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SUB-COMMITTEE ON IMPLEMENTATION OF IMO INSTRUMENTS
6th session
Agenda item 4

III 6/4/4
25 April 2019
Original: ENGLISH
Pre-session public release: ☒

LESSONS LEARNED AND SAFETY ISSUES IDENTIFIED FROM THE ANALYSIS OF MARINE SAFETY INVESTIGATION REPORTS

Safe pilotage practice

Submitted by the International Maritime Pilots' Association (IMPA)

SUMMARY

Executive summary:	This document comments on and provides an overview on lessons learned and safety issues identified from the analysis of marine safety investigation reports regarding recent incidents involving ultra large containerships (ULCSs) whilst under pilotage
Strategic direction, if applicable:	6
Output:	6.4
Action to be taken:	Paragraph 8
Related document:	Resolution A.960 (23), annex 2

Background

1 IMPA has been following closely certain incidents involving ultra large containerships (ULCSs) in port/pilotage areas, which have resulted in injury to port workers and included damage to the ship, port and cargo-handling infrastructure.

The way forward

2 Section 5 of annex 2 of the *Recommendations on Training and Certification and on Operational Procedures for Maritime Pilots other than Deep-Sea Pilots* (resolution A.960(23)), relates to the master – pilot information exchange before the piloting/berthing procedure commences.

3 Accordingly, as a first step, it is suggested that all pilotage authorities should ensure that pilots are fully familiar with the recommendations outlined in annex 2 of resolution A.960(23).

4 It is important for port and pilotage authorities to drive home the message to pilots and ship operators on the imperative need for an exchange of information between the master and the pilot and for the bridge team to take an active role in the ship's navigation in support of the pilot.

5 The other practical issues that are of relevance are:

.1 inter-port rivalry for handling of ever larger ships may compromise safety judgments and propose ships movements that involve excessive risk owing to inadequate under keel clearance (UKC), channel width, safe turning basins, or other necessary navigation infrastructure;

.2 machinery failure;

.3 rudders with small surface areas and software managed engines to improve fuel economy make ship manoeuvring ever more difficult;

.4 absence and shortage of adequate number of assist tugs of suitable power for the size of the ships being handled; and

.5 escort tugs and/or powerful tugs for steering/pushing a ship away from a developing incident area.

6 From a closer review of a recent Marine Accident Investigation Branch (MAIB) report of such incidents, some pertinent issues outlined above in paragraphs 5.1 to 5.5 relating to operational pilotage/berthing matters are of relevance. In terms of planning and execution of the ships' movement, there is always the important need for a master – pilot information exchange (resolution A.960(23), annex 2, section 5) and for the bridge team to take an active role in the ships' navigation in support of, and cooperation with, the pilot.

7 There is also a pressing need for coordination in management of pilotage and port operations in respect of ULCSs. This is the norm in most major container ports. Impractical Key Performance Indicators (KPIs) for pilotage/berthing movements and their corresponding relationship to financial incentives can lead to unfortunate incidents/accidents.

Action requested of the Sub-Committee

8 The Sub-Committee is invited to take note and action as appropriate, taking into consideration the following:

.1 IMPA is of the view that compliance with the very basic elements of safe pilotage practice outlined above merit careful consideration including an expert review by the Working Group on Analysis of Marine Safety Investigation Reports, if established; and

.2 it is hoped that the relevant expert recommendations can then be shared as deemed appropriate globally by IMPA with pilotage authorities to improve operational safety and to enhance safe berthing procedures in ports.

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Report on P&I claims involving vessels under pilotage **1999-2019**

IGP&I International Group of P&I Clubs

For more information about the International Group, please visit our website at www.igpandi.org or contact the International Group Secretariat:

International Group of P&I Clubs
78/79 Leadenhall Street, London, EC3A 3DH, UK

Tel: 00 (0)20 7929 3544
e-mail: secretariat@internationalgroup.org.uk

www.igpandi.org