

# A study into incidents involving Under 12m Fishing Vessels

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Prevention Report 2/04



## Executive Summary

### Issue

The MCA Prevention Branch, for a trial of a new prevention process, has conducted a study of the risks arising from the use of small fishing vessels involved in commercial fishing within the United Kingdom Search and Rescue Region (UKSRR.)

### Findings

- Humber RCC deal with significantly more under 12m fishing vessel incidents than any other district.
- The number of incidents affecting under 12m fishing vessels (<12m FV) has remained constant since 2000.
- 'Machinery Failure' is the most common cause of incidents.
- Incidents recorded as 'Man Overboard' have the most severe outcome.
- The incidents classed as 'severe' are scattered within the United Kingdom Search and Rescue area.

### Recommendations

1. A decision should be made on whether the priority of the MCA is to reduce the number of incidents affecting small fishing vessels, or reduce the severity of outcome, or a combination.
2. Further research is required in order to ascertain how many serious incidents had 'Machinery Failure' as a causal factor and whether or not this factor is preventable.
3. Methods to promote key safety messages should be employed in the Humber District.
4. Safety campaigns addressing the effects of cold water immersion should be considered.
5. The processes within the MCA to examine, record and extract the severity of marine related incidents activities and establish cause, should be improved.
6. Within IMS/Vision, the categories of fishing vessels should be modified to capture fishing vessels of all group sizes and also to include incident severity information.
7. The Fishing Vessel Customer Awareness Study could be re-visited.
8. The impact of inspections of small fishing vessels by Sector Managers should be assessed in conjunction with an investigation into whether small vessels involved in incidents have been inspected.
9. The existing processes that capture complaints and near misses (The Fishermen's Reporting System and CHIRP) could be reviewed.
10. Monitoring of small fishing vessel incident numbers should be maintained.

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## Introduction

Small fishing vessels have been targeted over the past ten years by the Maritime and Coastguard Agency (MCA) with safety campaigns and the introduction of a Code of Practice in 2001<sup>1</sup>. These initiatives were coordinated and implemented by the Fishing Vessel Safety Branch and its predecessor within the Marine Safety Agency.

The purpose of this report is to present an investigation into the frequency and severity of incidents affecting under 12 metres registered fishing vessels (<12m FV) involved in commercial fishing.

This report describes the method of investigation, an analysis of data and an assessment of the severity and frequency of incidents. It will also cite historical information from previous research projects, overall trends and ownership of <12m FV since 1992. It will present findings, conclusions and recommendations to be considered as part of the Maritime and Coastguard Agency's (MCA) integrated prevention planning system.

## Scope

This study has been restricted to registered fishing vessels that are less than 12m in length and are involved in commercial fishing. On 23 November 2002, the Code of Safe Working Practice for the Construction and Use of 15 metres length overall to less than 24 metres Registered length Fishing Vessels came into force. These Regulations were implemented by the Fishing Vessels (Safety of 15-24 metres Vessels) Regulations SI 2002. At the same time, these Regulations also amended the existing Fishing Vessels (Code of Practice for the Safety of Small Fishing Vessels) Regulations 2001 to cover vessels less than 15 metres length overall. This effectively changed the categorisation of fishing vessel for <12m, 12m – 24m, over 24m to <15m, 15m – 24m, and over 24m. This change is not reflected in this report because at the time of study the UK SAR records had not yet been amended to categorise small fishing boats as <15m. The categorisations were “Registered FV over 12m” and “Registered FV under 12m.”

This study looked at all recorded incidents, the number of persons rescued and assisted, and the fatalities which were a result of the activities undertaken by <12m FV from 1 January 2001 to 31 July 2003 (31 months, 2.583 years.) The cut off point for the research was 31 July 2003 because after this period the installation of IMS/ Vision (the replacement of CMIS) began and, at the time of writing, access to data from IMS/ Vision was restricted. The data sources used are listed on page 15.

This study did not consider the inspection history of individual fishing vessels because of the limited time available for this project. It also did not examine information from the existing processes that capture complaints and near misses i.e. CHIRP and the Fishermen's Reporting System.

Accidents and incidents in this report will be referred to as incidents.

1 The Code of Practice for the Safety of Small Fishing Vessels, April 2001.

## Methodology

- Data was obtained from the Fishing Vessel Safety Branch, the MCA M:Net, MAIB, the Fishing Vessel Customer Awareness Study and the Fishing Safety: Promotions report. This data identified the number of Fishing Vessels operating in UK waters and <12m FV incidents prior to 2001.
- Data was extracted from CMIS and used to identify the nature and frequency of incidents that affect <12m FV.
- The qualitative data relating to <12m FV was used to identify the severity of incidents. This information was illustrated using a Severity Pyramid structure.
- The findings from the primary and relevant secondary data were integrated to formulate conclusions and recommendations.

## Findings

1 January 1992 - 31 December 2001

- Between 1992 and 2001 the <12m FV fleet has reduced in size by 32% from 8759 to 5763.<sup>1</sup>
- There was a rise of 40% in incidents affecting <12m FV reported to MAIB from 1992 to 1996 (*from approximately 33 per thousand <12m FV to 55 per thousand.*)<sup>2</sup>
- The number of incidents reported to MAIB started to fall from 1996 to 2001 by 44% (*from approximately 55 to 31 incidents per thousand.*)<sup>2</sup>
- The sharpest drop of reported incidents occurred in 1998.
- According to MAIB data, since 1992 Machinery Damage has been the most frequently reported incident category.<sup>2</sup>

1 January 2001 - 31 July 2003

CMIS data revealed:

- The number of incidents involving <12m FV during the study period was 738.
  - In 2001 there were 278
  - In 2002 there were 275
  - In the selected period of 2003 there were 185
- The peak months for <12m FV incidents during 2001 and 2002 were May and July.
- The district dealing with the highest number of incidents was the Humber district which dealt with a total of 18% of the incidents. See annex A.

1. Fisheries Statistic Unit, DEFRA.

2. MAIB: Annual Reports.

- MCA's Sector Manager Workload review study (February 2004) estimated that over 800 <12m FV operated in the Humber District.
- The average number of <12m FV owned at one point during the study period was 5902<sup>3</sup>.
- Over the whole period the percentage of <12m FV involved in incidents is 12.5% of the <12m FV Fleet.
- Figure 1.0 shows that about 80% of incidents fell in to 5 'nature of incident' categories out of a possible 24. The complete nature of incident data can be found at annex B.
- Machinery Failure is the most common 'nature of incident' category. It is also more than double the total of 'Foul Propeller' incidents which is the second most common type. It was not possible to ascertain how many 'Machinery Failure' incidents may be 'preventable' from the CMIS data.

2001	2002	2003 – 31/07/03
Machinery Failure 48%	Machinery Failure 45%	Machinery Failure 46%
Foul Propeller 17%	Foul Propeller 19%	Foul Propeller 15%
Ordnance 6%	Ordnance 8%	Stranded / Aground 8%
Taking Water 6%	Taking Water 5%	Taking Water 6%
Stranded, Aground 5%	Adverse Conditions 5%	Casualty Evacuation 5%

Figure 1.0 Source: CMIS

#### Severity Pyramid 1 January 2001 – 31 July 2003

- The Severity Pyramid, which illustrates the number of incidents recorded on CMIS from 1 January 2001 to 31 July 2003, is found on page 8.
- During the study period there was a total of 9 fatal **incidents**.
  - In 2001 there were 2 incidents that resulted in fatalities.
  - In 2002 there were 4 incidents that result in fatalities.
  - In the first seven months of 2003 there were 3 incidents that resulted in fatalities.
- The total number of **fatalities**, recorded by CMIS, for the entire period is 12. There are no clusters of fatalities in any districts.
- During the study period there were a total of 20 **incidents** where injuries occurred.
  - In 2001 there were 4 incidents that caused injury.
  - In 2002 there were 8 incidents that caused injury.
  - In the first seven months of 2003 there were 8 incidents that caused injury.

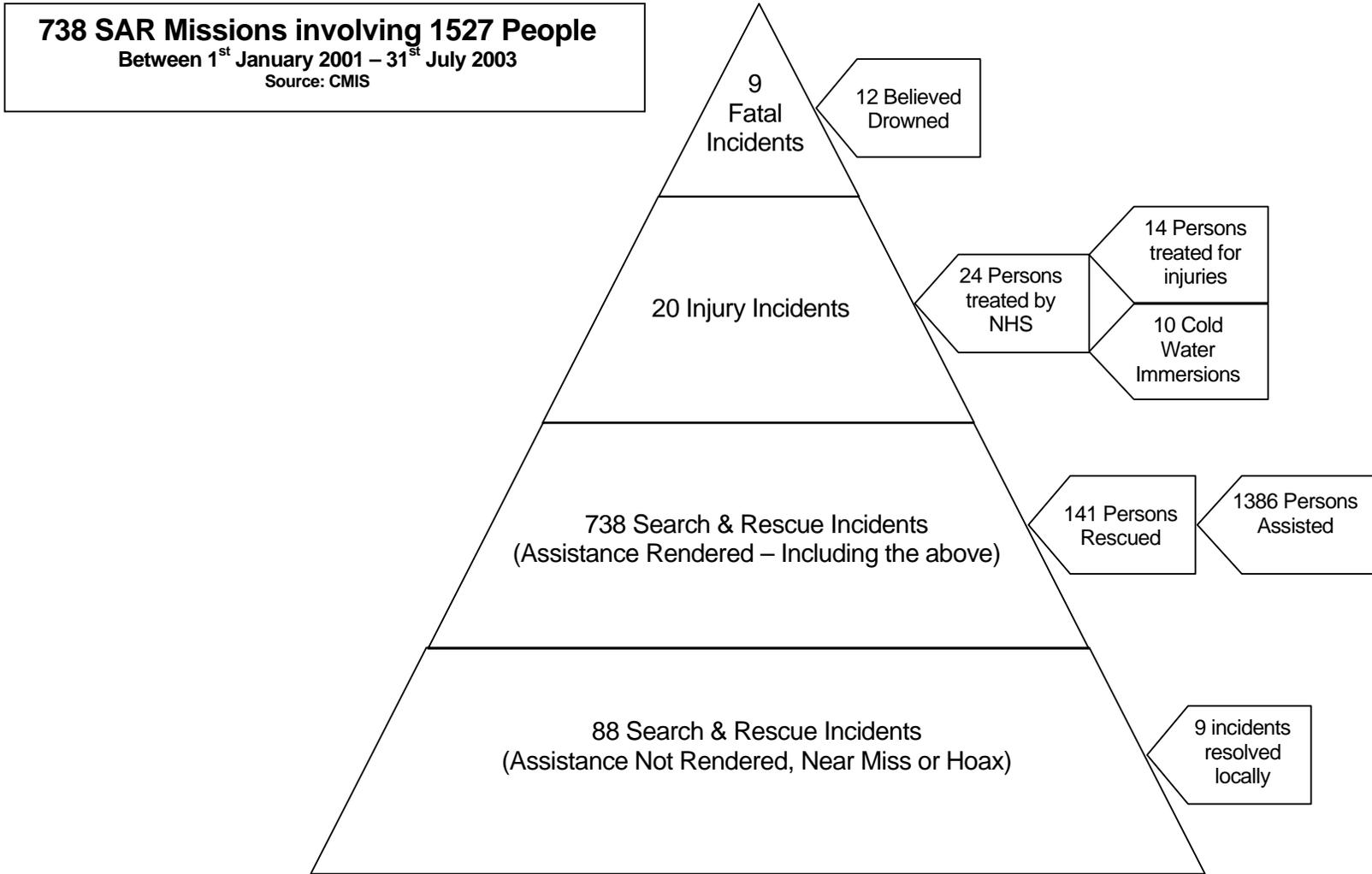
3. Ibid footnote 2.

- The total number of injuries, recorded by CMIS, for the entire period is 24. There are no clusters of serious injuries in any district.
- It is estimated that the average number of full and part time fishermen working on <12m FV is 8026. Using this figure with the injury and fatality statistics from CMIS the annual equivalent fatality rate can be suggested as 6.9. Annex C explains how these figures were calculated.
- The data recorded on CMIS about the nine fatal incidents, shown at Annex D, categorised the nature of the incidents as 'Sunk', 'Man Overboard', 'Fishing Gear Snagged', 'Capsize' and 'Vessel Overdue'.<sup>4</sup>
- The 20 incidents where injuries occurred were categorised as 'Man Overboard', 'Capsize', CASEVAC (casualty evacuation), 'Sunk', 'Taking Water', 'Stranded / Aground', and 'Collision'. The CMIS qualitative data revealed that the most common injury to a person was cold water immersion.
- Annex D highlights that 'Man Overboard' is the most severe incident type because 5 out of 6 incidents recorded as 'Man Overboard' were fatal or resulted in injury.
- There was no clear method for extracting the severity of an incident from CMIS. The process was lengthy and it is possible that some of the severe incidents could have been missed.
- **Other information**
- The Fishing Vessel Safety Awareness Survey carried out in 2003 had a poor response rate. Although 3,453 questionnaires were distributed, only 123 fishermen responded, 83 of the replies were from fishermen or owners of <15m FV.<sup>5</sup>
- CMIS and IMS vision have not yet been modified to reflect the change in the Code of Practice for the Safety of Small Fishing Vessels Regulations 2001. This code originally applied to fishing vessels under 12m in length and now covers vessels that are under 15m in length.
- DEFRA, Scottish Fisheries and other government departments use different categories to present fishing vessel statistic. The Fisheries Statistics Unit (DEFRA), for example, group their statistics for small fishing vessels as 'under 10m in length', MAIB group small fishing vessel as 'under 12m in length' and other departments present whole fishing fleet statistic.

4. This incident was recorded as 'Vessel Overdue' and since the termination of SAR the vessel has not been recovered and therefore assumed to have sunk.

5. Customer Awareness Study. Amey Performance Measurement Group, 2003.

Severity Structure: Under 12m Fishing Vessels



## Conclusions and Recommendations

There has been a downward trend from 1997 in incidents affecting under <12m FV, even when the decline in the fleet is taken into consideration; without further research it is difficult to assess the actual reason for the decline. The most common incident types that require Coastguard action are 'Machinery Failure' and 'Foul Propeller'. Neither category proved to be severe because there were no fatalities or injuries. This raises the question whether the MCA's priority is to reduce the number of incidents or the severity of the incident.

**Recommendation 1: A decision should be made on whether the priority of the MCA is to reduce the number of incidents affecting small fishing vessels, or reduce the severity of outcome, or a combination.**

Whether Machinery Failure is a preventable factor in the more severe incidents should be investigated to establish the importance, and priority, of further campaigns.

**Recommendation 2: Further research is required in order to ascertain how many serious incidents had 'Machinery Failure' as a causal factor and whether or not this factor is preventable.**

Humber RCC deal with the most incidents relating to <12m FV and should be considered as a priority district to target with safety campaigns.

**Recommendation 3: Methods to promote key safety messages should be employed in the Humber District.**

An estimated annual equivalent fatality rate of 6.9, in the 31 months from January 2001, justifies MCA and MAIB work for "safer ships, safer lives" in this area of the maritime industry. The most severe incident type was 'Man Overboard'. The number of incidents recorded under this category was low at 6 incidents over the whole period. The majority of serious injuries were as a result of cold water immersion. This could be an area to be explored for safety campaigns.

**Recommendation 4: Safety campaigns addressing the effects of cold water immersion should be considered.**

The quality of data input onto CMIS greatly reflects the information that can be extracted. There was evidence of misreporting, missing data and ascertaining the severity of an incident was not an easy process. This means that the recording of incidents should be improved and the severity of an incident clearly indicated.

The MAIB data available for this study focused on the number of individuals who were injured or died rather than the number of incidents that caused injury or fatalities. If this information could be extracted it would have enhanced the findings of this report.

**Recommendation 5: The processes within the MCA to examine, record, extract the severity of marine related incident activities and establish cause, should be improved.**

DEFRA, Scottish Fisheries and other government departments categorise fishing vessels in different lengths according to factors such as licenses to fish; this meant it was difficult to compare figures as they had different length groupings to MCA data. These categories have arisen from separate policies and mean that the Prevention Branch is unable to recommend that the length categories for vessel are standardised. In addition IMS/ Vision has not yet been modified to reflect the changes to the Code of Practice for the Safety of Small Fishing Vessels Regulations 2001.

**Recommendation 6: Within IMS/Vision, the categories of fishing vessels should be modified to capture fishing vessels of all group sizes and also to include incident severity information.**

The Fishing Vessel Customer Awareness Study, carried out by Amey Performance Measurement Group, had a low response rate. Further research could be carried out in this area because the purpose of the study was to judge the accessibility and usefulness of MCA safety literature, and to give an indication of the most effective means to target safety campaigns.

**Recommendation 7: The Fishing Vessel Customer Awareness Study could be re-visited.**

The study did not look at the inspection history of small fishing vessels and it is possible that inspection of these vessels by MCA personnel may have had an impact on incidents numbers and their severity. It would be beneficial to investigate if the vessels involved in these incidents have been inspected, and therefore it is suggested that further research is required to assess the effects of the inspections and to what extent they prevent incidents.

**Recommendation 8: The impact of inspections of small fishing vessels by Sector Managers should be assessed in conjunction with an investigation into whether small vessels involved in incidents have been inspected.**

This study did not use data from the existing reporting system for near misses and complaints. An investigation should be carried out to examine the recording processes and the quality of information that could be extracted. This is because the data could be useful to identify the frequency of potential hazards for small fishing vessels.

**Recommendation 9: The existing processes that capture complaints and near misses (Fishermen's Reporting System and CHIRP) could be reviewed.**

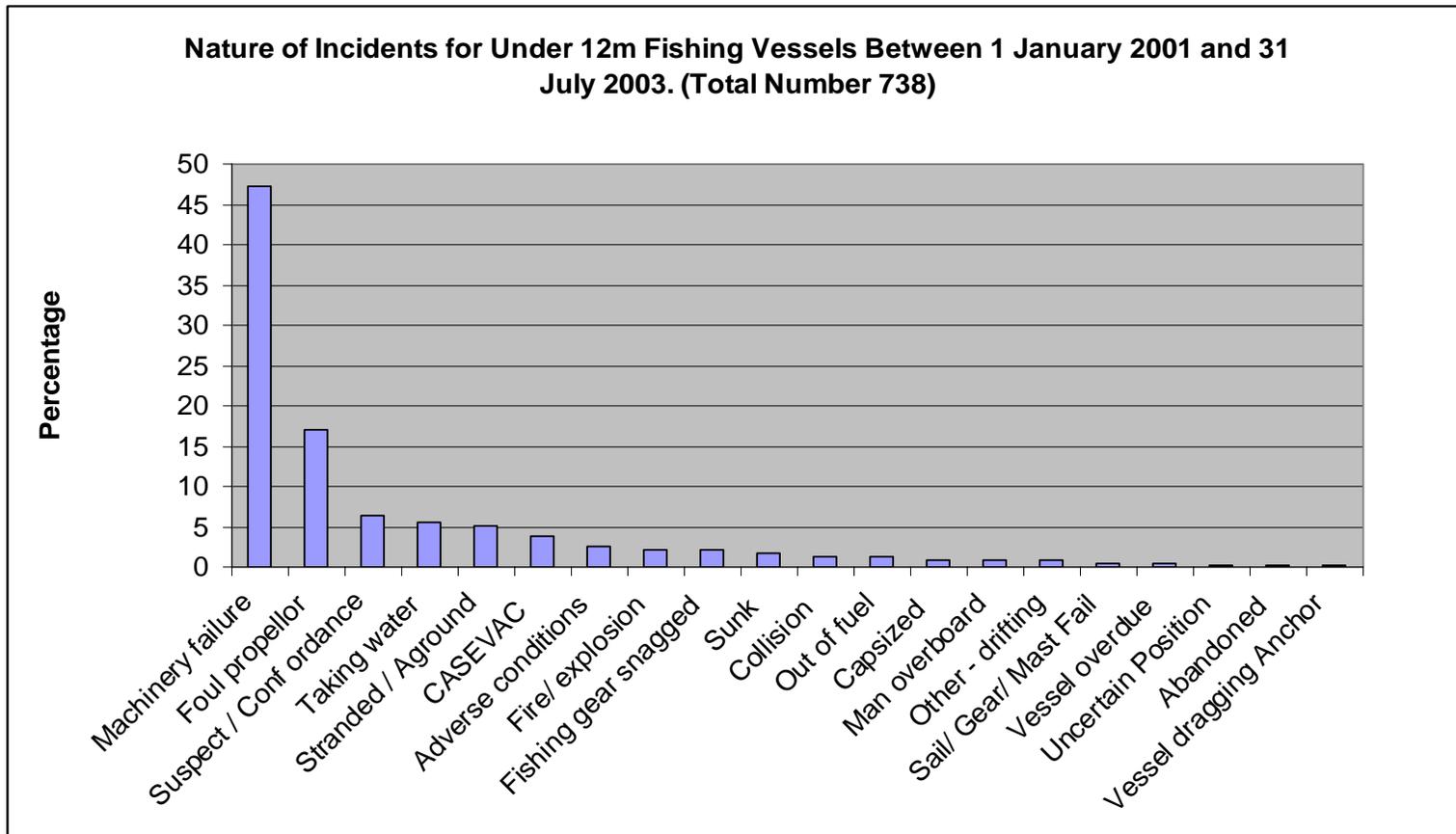
Overall, it can be concluded that the activity of commercial fishing on <12m FV should continue to be targeted with safety campaigns and new avenues for promotion should be considered. Monitoring of the statistics should be maintained, reporting processes improved and further study commenced to ensure the incident numbers continue to decline in both frequency and severity.

**Recommendation 10: Monitoring of small fishing vessel incident numbers should be maintained.**

## Annex A

## Incident Numbers By District

District	Number of Incidents	Fatal Incident	Serious Incident	% of Total Incidents
Humber ( and Tyne District 2001)	133	0	1	18%
Clyde	63	0	3	8.5%
Dover	58	0	0	7.9%
Brixham	57	2	2	7.7%
Falmouth	50	0	3	6.8%
Forth	45	2	0	6.1%
Stornoway	44	0	2	6.0%
Milford Haven	39	0	2	5.3%
Yarmouth	38	0	0	5.1%
Portland	32	1	2	4.3%
Shetland	29	0	1	3.9%
Solent	28	0	2	3.8%
Liverpool	26	1	0	3.5%
Belfast	25	2	1	3.4%
Thames	25	0	1	3.4%
Aberdeen	21	1	0	2.8%
Swansea	17	0	0	2.3%
Holyhead	8	0	0	1.1%
<b>TOTAL</b>	<b>738</b>	<b>9</b>	<b>20</b>	<b>99.9%</b>



### Annual Equivalent Fatality Rate Between 2001 and 2003.

#### Calculation for Average Full Time and Part Time Fishermen 2001 – 2003

The average overall number of fishermen = 13,055. <sup>i</sup>

The average crew size <sup>ii</sup> for <12 (1.36) x Average Fleet Size (5902) = 8026

The average crew size <sup>ii</sup> for 12m and <24 (3.78) x Average Fleet Size (826) = 3122

The average crew size <sup>ii</sup> for 24m and >24 (7.16) x Average Fleet Size (264) = 1890

The average overall number of fishermen based on average crew size = 13,036

*(Variance of 19 persons or 0.14%)*

i. Fisheries Statistic Unit, DEFRA.

ii MCA Fishing Vessel Statistics, 2001 including 21% decline in full and part time fishermen.

#### Calculation for Annual Equivalent Fatality Rate Between 2001 and 2003

Fatalities <12m FV = 12 <sup>iii</sup>

24 Injuries <12 FV = 24 <sup>iii</sup>

$(12 + 24/10) / (8026 / (12 \times 31)) = 0.000695 \times 10^4$

Annual Equivalent Fatality Rate of the activity of <12m FV sea fishing with = 6.9

iii. Source: CMIS

### Nature of Fatal and Serious Incidents for <12m Fishing Vessels

2001					
Nature of Incident	Incidents	Fatal Incidents	Serious Incidents	Persons	% Of Incidents Involving Fatalities or Injuries.
Taking Water	16	0	1	2	6%
Capsize	4	1	1	3	50%
Sunk	3	0	1	2	33%
Man Overboard	3	1	1	2	66%

2002					
Nature of Incident	Incidents	Fatal Incidents	Serious Incidents	Persons	% Of Incidents Involving Fatalities or Injuries.
Stranded / Aground	8	0	2	4	25%
CASEVAC*	8	0	4	4	50%
Sunk	5	2	0	5	40%
Man Overboard	2	1	1	2	100%
Capsize	2	1	1	2	100%

2003**					
Nature of Incident	Incidents	Fatal Incident	Serious Incident	Persons	% Of Incidents Involving Fatalities or Injuries.
CASEVAC*	8	0	6	5	75%
Fishing Gear Snagged	6	1	0	1	17%
Collision	3	0	2	2	66%
Man Overboard	1	1	0	1	100%
Vessel Overdue (Missing)	1	1	0	1	100%

\* Does not include existing medical conditions.

Source: CMIS

\*\* 01/01/2003 to 31/07/2003

## Glossary

Accident	An unplanned act or incident which has undesirable consequences.
CASEVAC	Casualty evacuation.
CMIS	Coastguard Management Information System.
Fatal Incident	An incident reported to HM Coastguard where person or persons died during or prior to search and rescue.
Incident	An event caused by factors that could have been prevented.
MAIB	Marine Accident Investigation Branch.
MCA	Maritime and Coastguard Agency.
RNLI	Royal National Lifeboat Institution.
Suspect Conf. Ordnance	The discovery of explosives, e.g. mines, pyrotechnics.
SAR Mission	Search and rescue activities.
Serious Incident	An incident reported to HM Coastguard where person or persons were injured prior to search and rescue.
<12 FV	Fishing Vessels that are registered as being under 12m in length overall.
<15 FV	Fishing Vessels that are registered as being under 15m in length overall.

## Sources of Data and Information

Data was gathered from the following sources:

- Coastguard Management Information System (CMIS).
- Fishing Vessel Customer Awareness Survey, Amey Performance Measurement Group, 2003.
- Fishing Vessel Safety Promotions: Analysis of Data, Emma Jack, 14/08/2002
- "Fishing News", various dates. This is a newspaper which is aimed at the Fishing Industry.
- The Code of Practice for the Safety of Small Fishing Vessels, April 2001.
- Marine Accident Investigation Branch, annual reports, Safety Study 1/2002.
- Sector Manager Workload Review Study, Maritime and Coastguard Agency. February 2004.
- Fisheries Statistics Unit, DEFRA.
- Scottish Fisheries.

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