Accident Statistics for Offshore Units on the UKCS 1990-2007

Issue 1

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Co-sponsored by the Health and Safety Executive

This report is part 1 of the published data. Part 2 is the associated spreadsheets listing individually the coding and text for each incident

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1 EXECUTIVE SUMMARY

1.1 Background

Dating back to 1999, several projects were undertaken by Det Norske Veritas (DNV) on behalf of the UK Health & Safety Executive (HSE) with the purpose of obtaining accident statistics for offshore fixed and floating units on the UK Continental Shelf (UKCS). In this respect, four databases holding information about incidents having occurred on offshore units on the UKCS were interrogated.

The most recent project related to fixed and floating units, *Accident Statistics for Offshore Units on the UKCS 1990 – 2006* was completed in March 2008.

This current project updates the data of the previous projects by adding the accidents having occurred in 2007. It should be noted that statistics for the period 1980-1989 is omitted in this report, but may be found in the reports from the projects *Accident Statistics for Fixed Offshore Units on the UK Continental Shelf 1980 – 2005* and *Accident Statistics for Floating Offshore Units on the UK Continental Shelf 1980 – 2005,* which were completed in 2007. The decision is based on the fact that the reporting requirements and systems changed dramatically in the UK around 1990 following the issuing of the Lord Cullen Report from the Piper Alpha accident in 1988.

This project has been commissioned and sponsored by the Oil & Gas UK with co-funding from UK Health & Safety Executive.

1.2 Confidentiality

In order to ensure that the final results of this project are accurate and in line with the Quality Control requirements of the DNV's WOAD databank it has been necessary to obtain "raw" data from each of the databases interrogated. Raw data is defined as the data concerning a specific incident which identified the installation, operator, location, date and time. The data so obtained enabled quality checks to be undertaken on the different databases to prevent double counting of an incident or accident.

It has been a condition of former contracts between the HSE and DNV (the custodians of the WOAD databank) that any information so obtained will only be exported in a non attributable form to protect confidentiality and once the project is completed, the raw data will be destroyed. Similarly it is a condition of this contract that any request for data obtained by WOAD as a result of this project will result in data being supplied which is non attributable and will not allow identification of the name of the installation, company, location, date or time of an incident. It will thus be impossible to pinpoint the installation or operator by any means.

1.3 Objectives

The main objective of the project is to obtain complete statistics for accidents and incidents having occurred on offshore fixed and floating units engaged in the oil and gas exploration and exploitation on the UKCS in the period 1990-2007, including numbers of accidents and incidents with corresponding frequencies per type of installation/rig. This is published both as a written report and two associated spreadsheets in the MS Excel format

listing individually the coding and text for each incident, one for fixed units and one for floaters.

Fixed units in this project are defined as comprising all bottom-fixed structures, but excluding TLPs, FPSOs, FSUs and production jackups even though they are "fixed" during their production phase and are classified as "fixed installations" by the HSE under the Safety Case Regulations. These units are defined and reported under *floating units* which are defined as comprising semi-submersibles, jackups, ships and tension-leg platforms engaged in drilling, accommodation, production and storage.

The results from this study will serve as a reference document for data to be used in future Risk Assessments of offshore units, be a valuable reference document for Oil & Gas UK and furthermore for UK Health & Safety Executive Offshore Division (HSE-OSD) when reviewing Safety Cases.

To fulfil this objective, relevant databases were interrogated with respect to both population and accident data thus forming a complete basis of data for obtaining comprehensive accident statistics for the type of units, geographical area and time period considered in this project. The following databases were selected for interrogation:

- COIN/ORION (the former *Sun Safety System*); UK HSE-Offshore Safety Division
- Offshore Blowout Database (SINTEF, Norway)
- Worldwide Offshore Accident Databank *WOAD*; DNV, Norway
- MAIB accident database; UK Marine Accident Investigation Branch

Prior to 1999, HSE noted that extensive reference was made to the WOAD database in many of the Safety Cases submitted to them by the offshore operators. Consequently the decision was made to utilise the WOAD incident definitions, codings and format in the new database. Utilising the same methodology and format would enable the operators and owners of offshore installations to readily adapt to the use of the new database. DNV, as the custodian of the WOAD database was therefore selected as the contractor to undertake the work on behalf of the HSE. A major part of the work of DNV has thus been the redefining of each incident, in the various databases interrogated, to reflect the definitions, codings and format used in WOAD.

1.4 Results

The information being available for each incident has been reviewed and the chain of events has been obtained. The classification of events has been done according to the WOAD concept. One accident may comprise a chain of consecutive events (accident outcomes or occurrences), e.g. a blowout resulting in explosion, fire and oil spill. This means that one single accident or incident may give rise to several **occurrences**. The total number of occurrences will thus be much higher than the total number of accidents recorded. When giving frequencies per type of event, this is presented as number of occurrences per unit per year. However, when presenting frequencies irrespective of type of event, the figures are given as number of accidents per unit per year.

By combining and merging the results from the interrogation of four databases, COIN/ORION, MAIB, WOAD and BLOWOUT, the accident and occurrence frequencies for both fixed and floating units in the UKCS in the period 1990-2007 are estimated. In the

following tables the accident (or occurrence) frequencies, i.e. number of accidents (or occurrences) per unit year, are given per type of installation, event (only occurrences) and the periods 1990-1999, 2000-2007, and 1990-2007. N denotes number of accidents (or occurrences) and F denotes *average* annual frequency per unit in the specific time period, i.e. number of accidents (or occurrences) per unit and year. The source ***All databases combined*** refers to the database obtained by pooling the four mentioned databases and removing the overlapping records.

Note that '-' is applied where no accidents/occurrences have been recorded (and hence no frequencies calculated) or if the given event is not applicable/relevant for the given type of units.

The results, after having interrogated the databases and removed overlapping records are also detailed in the associated Excel spreadsheets. The spreadsheets, together with this report, may be downloaded by accessing the websites of Oil & Gas UK and HSE, http://www.oilandgasuk.co.uk/ and http://www.hse.gov.uk/research/rrhtm/index.htm respectively. Within the spreadsheets, in addition to other fields, each of the incidents is described in "free text".

Table 1 ***All fixed units.***
Number of accidents and accident frequencies (per unit-year). UKCS, 1990-2007.
Source: All databases combined

	Period					
	1990-1999		2000-2007		1990-2007	
Type of installation	N	F	N	F	N	F
Drilling	27	0.148	19	0.132	46	0.141
Production	3333	3.762	2538	3.091	5871	3.439
Wellhead	208	0.357	169	0.242	377	0.295
Compression	49	0.490	18	0.188	67	0.342
Pumping	-	-	-	-	-	-
Injection/riser	6	0.075	3	0.038	9	0.056
Accommodation	8	0.092	3	0.034	11	0.063
Total fixed units	3631	1.875	2750	1.416	6381	1.645

Table 2 ***All fixed units.***
Number of occurrences and occurrence frequencies (per unit year). UKCS, 1990-2007.
Source: All databases combined

	Period					
	1990-1999		2000-2007		1990-2007	
Type of event	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-
Blowout	3	$1.6 \cdot 10^{-3}$	1	$5.6 \cdot 10^{-4}$	4	$1.0 \cdot 10^{-3}$
Capsize	-	-	-	-	-	-
Collision	14	$7.2 \cdot 10^{-3}$	19	$9.8 \cdot 10^{-3}$	33	$8.5 \cdot 10^{-3}$
Contact	88	0.045	29	0.015	117	0.030
Crane	777	0.401	575	0.296	1352	0.349
Explosion	33	0.017	10	$5.1 \cdot 10^{-3}$	43	0.011
Falling object	1008	0.520	881	0.453	1889	0.487
Fire	484	0.250	305	0.157	789	0.203
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	5	$2.6 \cdot 10^{-3}$	1	$5.1 \cdot 10^{-4}$	6	$1.6 \cdot 10^{-3}$
Leakage	-	-	1	$5.1 \cdot 10^{-4}$	1	$2.6 \cdot 10^{-4}$
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	-	-	-	-	-	-
Spill/release	1886	0.974	1533	0.789	3419	0.881
Structural	10	$5.2 \cdot 10^{-3}$	3	$1.5 \cdot 10^{-3}$	13	$3.4 \cdot 10^{-3}$
Towing/towline	-	-	-	-	-	-
Well problem	206	0.106	235	0.121	441	0.114
Other	48	0.025	69	0.035	117	0.030

Table 3 ***Mobile Offshore Drilling Units (MODUs)*.**
Number of accidents and accident frequencies (per unit-year). UKCS, 1990-2007.
Source: All databases combined

	Period					
	1990-1999		2000-2007		1990-2007	
Type of unit	N	F	N	F	N	F
Jackup	493	2.002	254	1.367	747	1.729
Semisub	1070	2.666	494	1.852	1564	2.341
Drillship	27	6.585	11	6.471	38	6.552
Total MODU	1590	2.440	759	1.671	2349	2.124

Table 4 ***Mobile Offshore Production Units (MOPUs)*.**
Number of accidents and accident frequencies (per unit year). UKCS, 1990-2007.
Source: All databases combined

	Period					
	1990-1999		2000-2007		1990-2007	
Type of unit	N	F	N	F	N	F
Jackup	-	-	31	1.938	31	1.422
Semisub	62	1.406	195	4.875	227	2.699
TLP	58	5.800	20	8.333	78	6.290
Total MOPU	120	2.003	246	4.212	336	2.840

Table 5 ***Monohull units (FPSOs and FSUs).***
Number of accidents and accident frequencies (per unit year). UKCS, 1990-2007.
Source: All databases combined

	Period					
	1990-1999		2000-2007		1990-2007	
Type of unit	N	F	N	F	N	F
FPSO	159	3.681	444	4.269	603	4.096
FSU	8	0.367	16	0.693	24	0.535
Total Monohull	167	2.569	460	3.611	627	3.259

Table 6 ***All floating units (excl. accommodation units).***
Number of accidents and accident frequencies (per unit year). UKCS, 1990-2007.
Source: All databases combined

	Period					
	1990-1999		2000-2007		1990-2007	
Type of unit	N	F	N	F	N	F
MODU	1590	2.440	759	1.671	2349	2.124
MOPU	120	2.003	246	4.212	366	2.840
Monohull	167	2.569	460	3.611	627	3.259
Total floating units	1877	2.417	1465	2.289	3342	2.359

Table 7 ***All floating units (excl accommodation units).***
Number of occurrences and occurrence frequencies (per unit year). UKCS, 1990-2007.
Source: All databases combined

	Period					
	1990-1999		2000-2007		1990-2007	
Type of event	N	F	N	F	N	F
Anchor failure	146	0.188	20	0.031	166	0.117
Blowout	14	0.018	3	$4.7 \cdot 10^{-3}$	17	0.012
Capsize	1	$1.3 \cdot 10^{-3}$	-	-	1	$7.6 \cdot 10^{-4}$
Collision	14	0.018	1	$1.6 \cdot 10^{-3}$	15	0.011
Contact	119	0.153	38	0.059	157	0.111
Crane	776	0.999	473	0.739	1249	0.882
Explosion	14	0.018	-	-	14	0.010
Falling object	943	1.214	653	1.020	1596	1.127
Fire	128	0.165	117	0.183	245	0.173
Foundering	1	$1.3 \cdot 10^{-3}$	15	0.023	16	0.011
Grounding	1	$1.3 \cdot 10^{-3}$	1	$1.6 \cdot 10^{-3}$	2	$1.4 \cdot 10^{-3}$
Helicopter	5	$6.4 \cdot 10^{-3}$	-	-	5	$3.5 \cdot 10^{-3}$
Leakage	16	0.021	4	$6.2 \cdot 10^{-3}$	20	0.014
List	10	0.013	2	$3.1 \cdot 10^{-3}$	12	$8.5 \cdot 10^{-3}$
Machinery	1	$1.3 \cdot 10^{-3}$	4	$6.2 \cdot 10^{-3}$	5	$3.5 \cdot 10^{-3}$
Off position	24	0.031	1	$1.6 \cdot 10^{-3}$	25	0.018
Spill/release	323	0.416	513	0.801	836	0.590
Structural	34	0.044	5	$7.8 \cdot 10^{-3}$	39	0.028
Towing/towline	13	0.017	11	0.017	24	0.017
Well problem	138	0.178	194	0.303	332	0.234
Other	50	0.064	19	0.030	69	0.049

2 INTRODUCTION

Dating back to 1999, several projects were undertaken by Det Norske Veritas (DNV) on behalf of the UK Health & Safety Executive (HSE) with the purpose of obtaining accident statistics for offshore fixed and floating units on the UK Continental Shelf (UKCS). In this respect, four databases holding information about incidents having occurred on offshore units on the UKCS were interrogated.

Fixed units in this project are defined as comprising all bottom-fixed structures, but excluding TLPs, FPSOs, FSUs (for abbreviations, see chapter 3) and production jackups even though they are "fixed" during their production phase and are classified as "fixed installations" by the HSE under the Safety Case Regulations. These units are defined and reported under *floating units* which are defined as comprising semi-submersibles, jackups, ships and tension-leg platforms engaged in drilling, accommodation, production and storage.

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- Accident Statistics for Fixed Offshore Units on the UK Continental Shelf 1980 – 2005
- Accident Statistics for Floating Offshore Units on the UK Continental Shelf 1980 – 2005

which were completed in 2007. The decision is based on the fact that the reporting requirements and systems changed dramatically in the UK around 1990 following the issuing of the Lord Cullen Report from the Piper Alpha accident in 1988.

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This project has been commissioned and sponsored by the Oil & Gas UK with co-funding from UK Health & Safety Executive.

3 OBJECTIVES AND SCOPE OF WORK

The main objective of the project is to obtain complete statistics for accidents and incidents having occurred on offshore fixed and floating units engaged in oil and gas exploration and exploitation on the UKCS in the period 1990-2007, including numbers of accidents and incidents with corresponding frequencies per type of installation/rig. This is published both as a written report and two associated spreadsheets in the MS Excel format listing individually the coding and text for each incident, one for fixed units and one for floaters.

The classification of installations and rigs which are covered by this project is found in the table below.

Table 8 ***Classification of units***

Fixed units	
Category	Type of unit – description
Drilling unit	Drilling platform whose sole purpose is to drill
Production unit	Traditional (manned) production platform, steel jacket or GBS. Included are also platforms with drilling, production, and accommodation facilities (i.e. large integrated platforms)
Wellhead unit	Wellhead platform (normally unmanned) with no processing facilities, serving as "well support". Often linked to the main production platform.
Compression unit	Gas compression platform
Pumping unit	Pumping platform
Injection/riser unit	Water or gas injection and riser platform
Accommodation unit	Accommodation platform
Floating units	
Category	Type of unit – description
Mobile Offshore Drilling Unit (MODU)	Jackup, Semi-submersible, Drillship
Mobile Offshore Production Unit (MOPU)	Jackup, Semi-submersible, Tension-leg platform (TLP)
Monohull unit	Floating storage unit (FSU), Floating production, storage and offloading unit (FPSO)
Accommodation unit	Jackup, Semi-submersible

Fixed units in this project are defined as comprising bottom-fixed installations (manned or unmanned) designed for drilling, accommodation, production, compression, pumping, and injection/riser purposes, or combinations of these. Regarding *production* installations, the study differentiates between the traditional (manned) production platforms, steel jackets or GBSs, and wellhead platforms (normally unmanned).

Floating units in this project are defined to comprise drilling, accommodation, and floating production and storage units. In addition, FPSO's, FSU's, and TLP's are classified as "floating units" although they are classified as "fixed installations" by the HSE under the Safety Case Regulations.

The results from this study will serve as a reference document for data to be used in future Risk Assessments of offshore units, be a valuable reference document for Oil & Gas UK and furthermore for UK Health & Safety Executive Offshore Division (HSE-OSD) when reviewing Safety Cases.

To fulfil this objective, relevant databases were interrogated with respect to both population and accident data thus forming a complete data basis for obtaining comprehensive accident statistics for the said type of units, geographical area and time period. The following four databases were selected for interrogation:

- COIN/ORION*, UK HSE-OSD
- Offshore Blowout Database *BLOWOUT*, SINTEF, Norway
- Worldwide Offshore Accident Databank *WOAD*, Det Norske Veritas (DNV), Norway
- MAIB accident database; UK Marine Accident Investigation Branch

**): The former "Sun Safety System"*

4 EXPOSURE DATA

4.1 Introduction

Exposure (population) data in this context relates to the number of unit- (or platform/rig-) years for each type of installation. By interrogating relevant sources holding such information, the number of unit-years are obtained for each year and type of unit for the UKCS in the period 1990-2007. The results are shown in several tables in the following sub-chapters. The classification of units is shown in the previous chapter. Note that '-' is applied to indicate that no units are in service in the specific year/period. Note that numbers for each year in the period 1990-1999 may be found in ref. /1/ and ref. /2/.

4.2 Fixed units

Table 9 ***Fixed Units (drilling, production, wellhead and compression).***
UKCS, 1990-2007. Number of unit-years

	Type of Installation			
Year	Drilling	Production	Wellhead	Compression
1990-1999	**182**	**886**	**582**	**100**
2000	18	98	84	12
2001	18	99	85	12
2002	18	101	86	12
2003	18	104	86	12
2004	18	104	86	12
2005	18	105	90	12
2006	18	105	90	12
2007	18	105	90	12
2000-2007	**144**	**821**	**697**	**96**
1990-2007	**326**	**1707**	**1279**	**196**

Table 10 ***Fixed Units (pumping, injection, accommodation and total).*** **UKCS. 1990-2007. Number of unit-years**

	Type of Installation			
Year	Pumping	Injection/riser	Accommodation	Total, fixed
1990-1999	**20**	**80**	**87**	**1937**
2000	2	10	11	235
2001	2	10	11	237
2002	2	10	11	240
2003	2	10	11	243
2004	2	10	11	243
2005	2	10	11	248
2006	2	10	11	248
2007	2	10	11	248
2000-2007	**16**	**80**	**88**	**1942**
1990-2007	**36**	**160**	**175**	**3879**

4.3 Mobile Offshore Drilling Units (MODUs)

From WOAD and HSE-OSD, the exposure data for MODUs on the UKCS are obtained. The data are given in Table 11 below.

Table 11 ***Mobile offshore drilling units (MODUs).*** **UKCS, 1990-2007. Number of unit years**

	Type of MODU			
Year	Jackup	Semisub	Drillship	Total
1990-1999	**246.2**	**401.3**	**4.1**	**651.6**
2000	22.4	30.2	0.3	52.9
2001	23.1	30.4	0.4	53.9
2002	22.7	32.6	0.7	56.0
2003	23.1	30.7	0.1	53.9
2004	22.1	33.3	0.2	55.6
2005	21.0	37.0	0.0	58.0
2006	22.6	37.8	0.0	60.4
2007	28.8	34.8	0.0	63.6
2000-2007	**185.8**	**266.8**	**1.7**	**454.3**
1990-2007	**432.0**	**668.1**	**5.8**	**1105.9**

4.4 Mobile Offshore Production Units (MOPUs)

These units comprise conversions and purpose-built producing jackups, semi-submersibles, and tension-leg platforms (TLPs). Based on /2/ and information from the HSE-OSD, the number of unit years are calculated as shown in Table 12.

Table 12 *Mobile Offshore Production Units (MOPUs)*. UKCS, 1980-2007. Number of unit years

Name of unit	Type of unit	Date of first oil production (mm-yyyy)	Date of abandonment (mm-yyyy)	Number of unit-years 1980-2007
AH001	Semi-sub	07-1989		18.5
Balmoral 16/21	Semi-sub	11-1986		21.2
Buchan 'A'	Semi-sub	05-1981		26.7
Janice 'A' [1]	Semi-sub	02-1999		8.9
North Sea Pioneer	Semi-sub	04-1989	01-1991	1.8
Northern Producer[2]	Semi-sub	08-1992		15.4
Sedco 707	Semi-sub	05-1994	02-1999	5.8
Transworld 58	Semi-sub	06-1975	12-1984	5.9
Elgin TPG 5000	Jackup	01-1998		10
Harding	Jackup	04-1996		11.8
Hutton TLP	TLP	08-1984	05-2002	17.8
Total	**-**	**-**	**-**	**143.8**

1): ex West Royal, 2): ex Emerald Producer

The exposure data are further broken down and distributed on year, periods and type of unit as shown in Table 13.

Table 13 *Mobile Offshore Production Units (MOPUs)*. UKCS, 1990-2007. Number of unit years per year and type of unit

	Type of unit			
Year	Semi-sub	Jackup	TLP	Total
1990-1999	**44.1**	**5.8**	**10.0**	**59.9**
2000	5.0	2.0	1.0	8.0
2001	5.0	2.0	1.0	8.0
2002	5.0	2.0	0.4	7.4
2003	5.0	2.0	-	7.0
2004	5.0	2.0	-	7.0
2005	5.0	2.0	-	7.0
2006	5.0	2.0	-	7.0
2007	5.0	2.0	-	7,0
2000-2007	**40.0**	**16.0**	**2.4**	**58.4**
1990-2007	**84.1**	**21.8**	**12.4**	**118.3**

4.5 Monohull units

These units comprise Floating Storage Units (FSUs) and Floating Production, Storage and Offloading units (FPSOs). Based on ref. /2/ and information from the HSE-OSD, the number of unit years are calculated as shown in Table 14.

Table 14 *Monohull units*. UKCS, 1980-2007. Number of unit years

Name of unit	Type of unit	Constr. (P/C)*	Date of first oil production (mm-yyyy)	Date of abandonment (mm-yyyy)	No. of unit-years 1980-2007
Ailsa Craig	FSU	C	08-1992	02-1996	3.5
Fulmar FSU	FSU	C	02-1982	06-1994	12.3
Nordic Apollo	FSU	C	12-2000		7.1
Alba FSU	FSU	P	01-1994		14
Vinga	FSU	P	09-1993	10-1997	4.1
Liverpool Bay Osi	FSU	P	03-1996		11.8
Curlew FPSO	FPSO	C	11-1997		10.2
North Sea Producer	FPSO	C	08-1997		10.4
Uisge Gorm	FPSO	C	08-1995		12.4
Anasuria	FPSO	P	10-1996		11.3
Bleo Holm	FPSO	P	04-1999		8.8
Captain FPSO	FPSO	P	06-1997		10.6

Name of unit	Type of unit	Constr. (P/C)*	Date of first oil production (mm-yyyy)	Date of abandonment (mm-yyyy)	No. of unit-years 1980-2007
Glas Dowr	FPSO	P	08-1997	06-1999	1.9
Global Producer III	FPSO	P	01-2001		7
Gryphon 'A'	FSPO	P	01-1993		15
Haewene Brimm**	FPSO	P	02-1999		8.9
Petrojarl 1	FPSO	P	03-1995	04-2001	6.1
Petrojarl Foinaven	FPSO	P	11-1997		10.2
Ramform Banff	FPSO	P	02-1999		8.9
Schiehallion FPSO	FPSO	P	07-1998		9.5
Seillean	FPSO	P	04-1988	11-1997	9.6
Triton	FPSO	P	08-1999		8.4
Total	-	-	-	-	**202.0**

*) C: Converted tankers, P: Purpose-built, **) Ex. Berge Hugin

The exposure data are further broken down and distributed on year, periods and type of unit as shown in Table 15.

Table 15 *Monohull units*. UKCS, 1990-2007.
Number of unit years per type of unit and construction

	Type of unit and construction					
	FPSO			FSU		
Year	Purpose-built	Converted	Sum	Converted	Purpose-built	Sum
1990-1999	**34.2**	**9.0**	**43.2**	**13.9**	**7.9**	**21.8**
2000	10.0	3.0	13.0	2.0	0.1	2.1
2001	10.3	3.0	13.0	2.0	1.0	3.0
2002	10.0	3.0	13.0	2.0	1.0	3.0
2003	10.0	3.0	13.0	2.0	1.0	3.0
2004	10.0	3.0	13.0	2.0	1.0	3.0
2005	10.0	3.0	13.0	2.0	1.0	3.0
2006	10.0	3.0	13.0	2.0	1.0	3.0
2007	10.0	3.0	13.0	2.0	1.0	3.0
2000-2007	**80.3**	**24.0**	**104.0**	**16.0**	**7.1**	**23.1**
1990-2007	**114.5**	**33.0**	**147.2**	**29.9**	**15.0**	**44.9**

4.6 Floating Accommodation Units

Several potential sources for such information were consulted with no success. It was concluded that if such data was to be obtained, extensive manual work had to be performed. Hence no exposure data for accommodation units was obtained within the scope of this study. This implies that no accident and incident frequencies for these units are calculated in this report.

5 INCIDENT REPORTING IN UK WATERS

The existing reporting requirements of incidents on floating units operating (working, in transit or docked) on the UKCS depend on geographical location and operation mode at the time of the incident. The receiver of information is either the Health and Safety Executive - Offshore Division (HSE-OSD), the Health and Safety Executive – Field Operations Directorate (HSE-FOD) or the Marine Accident Investigation Branch (MAIB).

In the following three chapters one may find some documentation of the incident and accident reporting regime for offshore vessels in UK waters. This regime may be summarised as shown in the table below.

Table 16 Overview of the UKCS incident reporting regime; UK and non-UK flagged vessels

Location/activity	Flag	Report to
Within the 12-mile limit and not an Offshore Installation (e.g. in transit)	UK	MAIB
	Non UK*	MAIB
Outside the 12-mile limit and not an Offshore Installation (e.g. in transit)	UK	MAIB
	Non UK*	Flag state
Working as an Offshore Installation (e.g. drilling, production, accommodation)	UK	HSE-OSD
	Non UK*	HSE-OSD
Alongside at a shipyard (e.g. for repair or maintenance)	UK	HSE-FOD
	Non UK*	HSE-FOD

*): Presumably the non-UK flagged vessels would also report to the relevant Flag State

Descriptions of the three main databases holding this information and operated by the HSE and MAIB, are given in chapter 6.

6 OVERVIEW OF DATABASES

This chapter gives a short presentation of the 4 databases being interrogated in this project.

6.1 COIN/ORION

The **R**eporting of **I**njuries, **D**iseases and **D**angerous **O**ccurrences **R**egulations 1995 (RIDDOR 95) arrangement came into force on 1 April 1996 and requires that all work-related accidents, diseases and dangerous occurrences in the UK and UK Continental Shelf are to be reported to the HSE. It applies to all work activities and to defined types of incidents. The incidents are to be reported using the OIR/9B and F2508A forms. These forms are to be completed and submitted to the HSE.

Prior to 1 April 1996 injuries and dangerous occurrences were reported on the OIR/9A form. This form was created under the Mineral Workings (Offshore Installations) Act 1971 and the Offshore Installations (Inspectors and Casualties) Regulations 1973.

The information submitted on the OIR/9A, OIR/9B and F2508A forms is recorded in a database, "ORION" (the former *Sun Safety System*), run by the HSE-OSD offices in Bootle, Liverpool.

The Sun Safety System (later ORION and now COIN) was primarily developed to record incident data reported on the OIR/9A form. Other information is however recorded on the database, including details of inspections, investigations, prosecutions and the registration and location details of Offshore Installations. The OIR/9A form was first published in October 1990, and the Sun Safety System was implemented in 1st January 1991. The Sun Safety System does however contain some data on pre 1991 incidents (imported from previous systems maintained by the Safety Directorate of the Department of Energy), though not all fields on the OIR/9A form are available for this data. The Sun Safety System was decommissioned year 2000 and all data from 1991(incl.) was transferred to ORION.

Commencing in 2004 the data from a number of HSE legacy software systems was migrated across, in its entirety, to the new **C**orporate **O**perational **IN**formation system or COIN, the work was completed by 2005. ORION was one of the systems migrated to COIN and the data previously recorded in ORION is now contained within the COIN system

Note that notification of hydrocarbon releases (voluntarily submitted on the OIR/12 form) are also recorded in a separate and specifically designed database which is maintained by the HSE-OSD offices in Bootle, Liverpool.

6.2 BLOWOUT

The SINTEF Offshore Blowout Database (BLOWOUT) is a comprehensive event database for blowout risk assessment. The database includes information on 552 (November 2006) offshore blowouts/well releases that have occurred worldwide since 1955.

The database includes blowout/well release descriptions worldwide and drilling and production exposure data for several areas with focus on the US Gulf of Mexico Outer Continental Shelf (US GoM OCS), Norwegian waters, and UK waters.

The blowouts/well releases are categorized in several parameters, emphasizing blowout causes. The database contains 51 different fields describing each blowout/well release. In addition, the database allows for attachment of any electronic file(s) to the blowout description. The various fields are grouped in six different groups:

- Category and location
- Well description
- Present operation
- Blowout causes
- Blowout Characteristics
- Other

ExproSoft has been contracted to operate the SINTEF Offshore Blowout Database from 1 May 2001 by SINTEF.

6.3 WOAD

One of the main sources for offshore accident information for public use is the *Worldwide Offshore Accident Databank* (WOAD) operated by Det Norske Veritas (DNV). WOAD contains some 6,000 events from the period 1970-2007, derived mainly from public-domain sources such as Lloyds Casualty Reports, newspapers and official publications. Most of the data is from the UK and Norwegian Sectors and the US Gulf of Mexico. Exposure data is also provided, allowing accident rates to be calculated for different accident types, installation/rig/platform types, geographical locations, degrees of damage, etc.

6.4 MAIB

The Marine Accident Investigation Branch (MAIB) is a distinct and separate branch within the Department of Transport and the Regions (DETR). Its Chief Inspector reports directly to the Secretary of State for Transport on marine accident investigations. The authority of the MAIB to investigate marine accidents originates from the *Merchant Shipping Act* 1995. MAIB's responsibility covers the investigation of accidents to or on:

- all UK registered vessels anywhere in the world
- other vessels being within the 12-mile zone of the UK coast (UK territorial waters)

For offshore floating vessels all accidents and incidents occurring in transit should be reported to MAIB according to the above.

Accidents must be reported as soon as possible to the MAIB by the quickest means available. Serious injuries and dangerous occurrences must be reported within 14 days or within 14 days after arrival at the next port if the vessel is at sea at time of the accident. The reporting form presently being used is IRF (DFT1598).

About 2000 incidents are reported per year to MAIB of which about 500 require some sort of MAIB correspondence follow-up, for clarification purposes or investigation. Most of these are from UK waters. Additional information about reporting and investigation of accidents by the MAIB may be found at http://www.maib.dft.gov.uk/about_us/index.cfm.

MAIB maintains a database covering accidents and incidents from 1991 to date. Beside the said forms and notifications, daily reports from the UK Coast Guard serve as first-hand information input to the database. Today the database contains some 30,000 events covering all types of incidents and accidents, ranging from smaller low-consequence events and near-misses to major accidents with loss of life.

7 EVENT CLASSIFICATION AND CODING PRINCIPLES

The WOAD concept of classifying events has been selected for the review work on the records received from the databases being interrogated in this project. Hence all events have been categorised, both within this report and the associated spreadsheets, according to the table below.

Table 17 Event classification, WOAD

Type of event	Code*	Explanation
Anchor failure	AN	Problems with anchor/anchor lines, mooring devices, winching equipment or fairleads (e.g. anchor dragging, breaking of mooring lines, loss of anchor(s), winch failures).
Blowout	BL	An uncontrolled flow of gas, oil or other fluids from the reservoir, i.e. loss of 1. barrier (i.e. hydrostatic head) or leak and loss of 2. barrier, i.e. BOP/DHSV.
Capsize	CA	Loss of stability resulting in overturn of unit, capsizing, or toppling of unit.
Collision	CL	Accidental contact between offshore unit and/or passing marine vessel when at least one of them is propelled or is under tow. Examples: tanker, cargo ship, fishing vessel. Also included are collisions with bridges, quays, etc., and vessels engaged in the oil and gas activity on other platforms than the platform affected, and between two offshore installations (to be coded as "Contact" only when intended for close location).
Contact	CN	Collisions/accidental contacts between vessels engaged in the oil and gas activity on the platform affected, e.g. support/supply/stand-by vessels, tugs or helicopters, and offshore installations (floating or fixed). Also are included collisions between two offshore installations only when these are intended for close location.
Crane	CR	Any event caused by or involving cranes, derrick and draw-works, or any other lifting equipment.
Explosion	EX	Explosion
Falling object	FA	Falling load/dropped objects from crane, drill derrick, or any other lifting equipment or platform. Crane fall and lifeboats accidentally to sea and man overboard are also included.
Fire	FI	Fire.
Foundering	FO	Loss of buoyancy or unit sinking.
Grounding	GR	Floating installation in contact with the sea bottom.
Helicopter	HE	Accident with helicopter either on helideck or in contact with the installation.
Leakage	LE	Leakage of water into the unit or filling of shaft or other compartments causing potential loss of buoyancy or stability problems.
List	LI	Uncontrolled inclination of unit.
Machinery failure	MA	Propulsion or thruster machinery failure (incl. control)
Off position	PO	Unit unintentionally out of its expected position or drifting out of control.
Spill/release	LG	"Loss of containment". Release of fluid or gas to the surroundings from unit's own equipment/vessels/tanks causing (potential) pollution and/or risk of explosion and/or fire.
Structural	ST	Breakage or fatigue failures (mostly failures caused by weather, but not necessarily) of structural support and direct structural failures. "Punch through" also included.
Towing/towline	TO	Towline failure or breakage
Well problem	WP	Accidental problem with the well, i.e. loss of one barrier (hydrostatic head) or

Type of event	Code*	Explanation
		other downhole problems.
Other	OT	Event other than specified above

**) Codes for Chain of events (CH1-CH5) used in the associated spreadsheet.*

The categorisation of the incidents has been performed according to principles outlined below.

- Events coded as *Falling load* involve loads and objects either rolling, leaning, tilting, falling, rotating, swinging, or sliding. Man over board is also included here.
- "Occupational Hazard" (OH) incidents, with personal injuries or not, are defined to be events which are not related to operations of equipment and events caused by obvious human errors during maintenance. Such events have only been counted, but are excluded from these statistics.
- Anchor handling involving Anchor Handling Vessels (AHVs) which causes personal injuries to personnel being involved are coded as *Anchor failure* (and not OH).
- Maloperation of lifting equipment or technical failure leading to falling load is coded as *Crane failure + Falling load*.
- Problems with riser tensioners are coded as *Crane failure*
- Events involving equipment or part of equipment bursting or blowing out, are coded as *Spill/Release*
- Events involving problems with gangways/bridges between floating unit and other floating or fixed units, are coded as *Out of position + Falling load*.
- Incidents that occur during maintenance indicates lack of design have been coded accordingly (crane failure, falling load, anchor failure, etc.)

8 ACCIDENT STATISTICS – FIXED UNITS

8.1 Introduction

The information being available for each incident has been reviewed and the chain of events has been obtained. The classification of events has been done according to the WOAD concept. One accident may comprise a chain of consecutive events (accident outcomes or occurrences), e.g. a blowout resulting in explosion, fire and oil spill. This means that one single accident or incident may give rise to several **occurrences**. The total number of occurrences will thus be much higher than the total number of accidents recorded. When giving frequencies per type of event, this is presented as number of occurrences per unit per year. However, when presenting frequencies irrespective of type of event, the figures are given as number of accidents per unit per year.

By combining and merging the results from the interrogation of four databases, COIN/ORION, MAIB, WOAD and BLOWOUT, the accident and occurrence frequencies for both fixed and floating units in the UKCS in the period 1990-2007 are estimated. In the following tables the accident (or occurrence) frequencies, i.e. number of accidents (or occurrences) per unit year, are given per type of installation, event (only occurrences) and the periods 1990-1999, 2000-2007, and 1990-2007. N denotes number of accidents (or occurrences) and F denotes *average* annual frequency per unit in the specific time period, i.e. number of accidents (or occurrences) per unit and year.

The source ***All databases combined*** refers to the database obtained by pooling the four mentioned databases COIN/ORION, BLOWOUT, WOAD and MAIB and removing the overlapping records.

Note: More detailed statistics are given in appendix A where the number of accidents/occurrences and corresponding frequencies is given by type of unit and year in the period 1990-2007.

Note that '-' is applied where no accidents/occurrences have been recorded (and hence no frequencies calculated) or if the given event is not applicable/relevant for the given type of units.

The results, after having interrogated the databases and removed overlapping records are also detailed in the associated Excel spreadsheets. The spreadsheets, together with this report, may be downloaded by accessing the websites of Oil & Gas UK and HSE, http://www.oilandgasuk.co.uk/ and www.hse.gov.uk. Within the spreadsheets, in addition to other fields each of the incidents is described in "free text".

8.2 Fixed units, accident frequencies, all databases combined

In this section the accident frequencies for fixed units in the UKCS in the period 1980-2007 are presented. The following tables give the number of accidents and corresponding frequencies per type of unit.

Table 18 ***All fixed units.***
Number of accidents and accident frequencies (per unit-year). UKCS, 1990-2007.
Source: All databases combined

	Period					
	1990-1999		2000-2007		1990-2007	
Type of installation	N	F	N	F	N	F
Drilling	27	0.148	19	0.132	46	0.141
Production	3333	3.762	2538	3.091	5871	3.439
Wellhead	208	0.357	169	0.242	377	0.295
Compression	49	0.490	18	0.188	67	0.342
Pumping	-	-	-	-	-	-
Injection/riser	6	0.075	3	0.038	9	0.056
Accommodation	8	0.092	3	0.034	11	0.063
Total fixed units	3631	1.875	2750	1.416	6381	1.645

As can be seen from the table above, no accidents are recorded on fixed pumping platforms in either of the databases in the period 1990-2007.

8.3 Fixed units, occurrence frequencies, all databases combined

In this section the occurrence frequencies for fixed units in the UKCS in the period 1990-2007 are presented. The following tables give the number of occurrences and corresponding frequencies per type of occurrence/event and type of unit.

Table 19 ***All fixed units.***
Number of occurrences and occurrence frequencies (per unit year). UKCS, 1990-2007.
Source: All databases combined

	Period					
	1990-1999		2000-2007		1990-2007	
Type of event	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-
Blowout	3	$1.6 \cdot 10^{-3}$	1	$5.1 \cdot 10^{-4}$	4	$1.0 \cdot 10^{-3}$
Capsize	-	-	-	-	-	-
Collision	14	$7.2 \cdot 10^{-3}$	19	$9.8 \cdot 10^{-3}$	33	$9.8 \cdot 10^{-3}$
Contact	88	0.045	29	0.015	117	0.030
Crane	777	0.401	575	0.300	1352	0.349
Explosion	33	0.017	10	$5.1 \cdot 10^{-3}$	43	0.011
Falling object	1008	0.520	881	0.454	1889	0.487
Fire	484	0.250	305	0.157	789	0.203
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	5	$2.6 \cdot 10^{-3}$	1	$5.2 \cdot 10^{-4}$	6	$1.6 \cdot 10^{-3}$
Leakage	-	-	1	$5.2 \cdot 10^{-4}$	1	$2.6 \cdot 10^{-4}$
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	-	-	-	-	-	-
Spill/release	1886	0.974	1533	0.789	3419	0.881
Structural	10	$5.2 \cdot 10^{-3}$	3	$1.2 \cdot 10^{-3}$	13	$3.4 \cdot 10^{-3}$
Towing/towline	-	-	-	-	-	-
Well problem	206	0.106	235	0.121	441	0.114
Other	48	0.025	69	0.036	117	0.030

Table 20 ***Drilling units.***
Number of occurrences and occurrence frequencies (per unit year). UKCS, 1990-2007.
Source: All databases combined

	Period					
	1990-1999		2000-2007		1990-2007	
Type of event	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-
Blowout	-	-	-	-	-	-
Capsize	-	-	-	-	-	-
Collision	-	-	-	-	-	-
Contact	1	$5.5 \cdot 10^{-3}$	1	$6.9 \cdot 10^{-3}$	2	$6.1 \cdot 10^{-3}$
Crane	10	0.055	18	0.139	28	0.086
Explosion	-	-	-	-	-	-
Falling object	10	0.055	20	0.151	30	0.092
Fire	4	0.022	8	0.056	12	0.037
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-
Leakage	-	-	-	-	-	-
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	-	-	-	-	-	-
Spill/release	8	0.044	9	0.062	17	0.052
Structural	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-
Well problem	2	0.011	6	0.042	8	0.024
Other	-	-	-	-	-	-

Table 21 ***Production units.***
Number of occurrences and occurrence frequencies (per unit year). UKCS, 1990-2007.
Source: All databases combined

	Period					
	1990-1999		2000-2007		1990-2007	
Type of event	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-
Blowout	3	$3.4 \cdot 10^{-3}$	1	$1.2 \cdot 10^{-3}$	4	$2.3 \cdot 10^{-3}$
Capsize	-	-	-	-	-	-
Collision	11	0.012	13	0.016	24	0.014
Contact	72	0.081	22	0.027	94	0.055
Crane	742	0.837	500	0.609	1242	0.727
Explosion	32	0.036	9	0.011	41	0.024
Falling object	978	1.104	762	0.928	1740	1.019
Fire	445	0.502	259	0.315	704	0.412
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	5	$5.6 \cdot 10^{-3}$	1	$1.2 \cdot 10^{-3}$	6	$3.5 \cdot 10^{-3}$
Leakage	-	-	1	$1.2 \cdot 10^{-3}$	1	$5.8 \cdot 10^{-4}$
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	-	-	-	-	-	-
Spill/release	1675	1.891	1324	1.612	2999	1.756
Structural	10	0.011	3	$3.6 \cdot 10^{-3}$	13	$7.6 \cdot 10^{-3}$
Towing/towline	-	-	-	-	-	-
Well problem	207	0.234	198	0.241	405	0.237
Other	45	0.051	62	0.076	107	0.062

Table 22 ***Wellhead units.***
Number of occurrences and occurrence frequencies (per unit year). UKCS, 1990-2007.
Source: All databases combined

	Period					
	1990-1999		2000-2007		1990-2007	
Type of event	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-
Blowout	-	-	-	-	-	-
Capsize	-	-	-	-	-	-
Collision	3	$5.2 \cdot 10^{-3}$	4	$5.7 \cdot 10^{-3}$	7	$5.4 \cdot 10^{-3}$
Contact	10	0.017	5	$7.1 \cdot 10^{-3}$	15	0.017
Crane	28	0.048	20	0.031	48	0.038
Explosion	-	-	-	-	-	-
Falling object	35	0.060	28	0.040	63	0.049
Fire	17	0.029	13	0.019	30	0.023
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-
Leakage	-	-	-	-	-	-
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	-	-	-	-	-	-
Spill/release	141	0.242	103	0.147	244	0.191
Structural	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-
Well problem	4	$6.9 \cdot 10^{-3}$	18	0.026	22	0.017
Other	4	$6.9 \cdot 10^{-3}$	3	$4.3 \cdot 10^{-3}$	7	$5.5 \cdot 10^{-3}$

Table 23 *Compression units.*
Number of occurrences and occurrence frequencies (per unit year). UKCS, 1990-2007.
Source: All databases combined

	Period					
	1990-1999		2000-2007		1990-2007	
Type of event	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-
Blowout	-	-	-	-	-	-
Capsize	-	-	-	-	-	-
Collision	-	-	-	-	-	-
Contact	-	-	-	-	-	-
Crane	3	0.030	4	0.042	7	0.036
Explosion	-	-	-	-	-	0
Falling object	6	0.060	6	0.063	12	0.061
Fire	11	0.110	-	-	11	0.056
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-
Leakage	-	-	-	-	-	-
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	-	-	-	-	-	-
Spill/release	26	0.260	13	0.135	39	0.199
Structural	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-
Well problem	-	-	-	-	-	-
Other	-	-	-	-	-	-

Table 24 ***Injection/riser units.***
Number of occurrences and occurrence frequencies (per unit year). UKCS, 1990-2007.
Source: All databases combined

	Period					
	1990-1999		2000-2007		1990-2007	
Type of event	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-
Blowout	-	-	-	-	-	-
Capsize	-	-	-	-	-	-
Collision	-	-	-	-	-	-
Contact	1	0.013	-	-	1	6.2
Crane	-	-	-	-	-	-
Explosion	-	-	-	-	-	-
Falling object	-	-	2	0.025	2	0.013
Fire	3	0.038	1	0.013	4	0.025
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-
Leakage	-	-	-	-	-	-
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	-	-	-	-	-	-
Spill/release	-	-	-	-	-	-
Structural	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-
Well problem	-	-	-	-	-	-
Other	-	-	-	-	-	-

Table 25 ***Accommodation units.***
Number of occurrences and occurrence frequencies (per unit year). UKCS, 1990-2007.
Source: All databases combined

	Period					
	1990-1999		2000-2007		1990-2007	
Type of event	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-
Blowout	-	-	-	-	-	-
Capsize	-	-	-	-	-	-
Collision	-	-	1	0.011	1	$6.0 \bullet 10^{-3}$
Contact	2	0.023	-	-	2	0.011
Crane	-	-	1	0.011	1	$6.0 \bullet 10^{-3}$
Explosion	-	-	-	-	-	-
Falling object	1	0.012	2	0.023	3	0.017
Fire	3	0.035	-	-	3	0.017
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-
Leakage	-	-	-	-	-	-
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	-	-	-	-	-	-
Spill/release	2	0.023	-	-	2	0.011
Structural	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-
Well problem	-	-	-	-	-	-
Other	-	-	-	-	-	-

8.4 Floating units, accident frequencies, all databases combined

In this section the accident frequencies for floating units in the UKCS in the period 1990-2007 are presented. The following tables give the number of accidents (**N**) and corresponding frequencies (**F**) per type of unit.

Table 26 ***Mobile offshore drilling units (MODUs).***
Number of accidents and accident frequencies (per unit-year). UKCS, 1990-2007.
Source: All databases combined

	Period					
	1990-1999		2000-2007		1990-2007	
Type of unit	N	F	N	F	N	F
Jackup	493	2.002	254	1.367	747	1.729
Semisub	1070	2.666	494	1.852	1564	2.341
Drillship	27	6.585	11	6.471	38	6.552
Total MODU	1590	2.440	759	1.671	2349	2.124

Table 27 ***Mobile offshore production units (MOPUs).***
Number of accidents and accident frequencies (per unit year). UKCS, 1990-2007.
Source: All databases combined

	Period					
	1990-1999		2000-2007		1990-2007	
Type of unit	N	F	N	F	N	F
Jackup	-	-	31	1.938	31	1.422
Semisub	62	1.406	195	4.875	227	2.699
TLP	58	5.800	20	8.333	78	6.290
Total MOPU	120	2.003	246	4.212	336	2.840

Table 28 ***Monohull units (FPSOs and FSUs).***
Number of accidents and accident frequencies (per unit year). UKCS, 1990-2007.
Source: All databases combined

	Period					
	1990-1999		2000-2007		1990-2007	
Type of unit	N	F	N	F	N	F
FPSO	159	3.681	444	4.269	603	4.096
FSU	8	0.367	16	0.693	24	0.535
Total Monohull	167	2.569	460	3.611	627	3.259

Table 29 ***All floating units (excl. accommodation units).***
Number of accidents and accident frequencies (per unit year). UKCS, 1990-2007.
Source: All databases combined

	Period					
	1990-1999		2000-2007		1990-2007	
Type of unit	N	F	N	F	N	F
MODU	1590	2.440	759	1.671	2349	2.124
MOPU	120	2.003	246	4.212	366	2.840
Monohull	167	2.569	460	3.611	627	3.259
Total floating units	1877	2.417	1465	2.289	3342	2.359

8.5 Number of accidents for floating accommodation units

Since no exposure data for these types of units are readily available, only the number of accidents are given (i.e. no frequencies). These units comprise both the jackup and semi-submersible types.

Table 30 ***Floating Accommodation units.***
Number of accidents. UKCS, 1990-2007.
Source: All databases combined

	Period		
Type of unit	1990-1999	2000-2007	1990-2007
Jackup	9	6	15
Semi-submersible	70	9	79
Total floating accommodation units	79	15	94

8.6 Floating units, occurrence frequencies, all databases combined

In this section the occurrence frequencies for floating units in the UKCS in the period 1990-2007 are presented. The following tables (except Table 31) give both the number of occurrences (**N**) and corresponding frequencies (**F**) per type of occurrence/event and type of unit.

Table 31 *All floating units*. UKCS, 1990-2007.
No. of occurrences.
Source: All databases combined

	Number of occurrences				
Type of event	Mobile Drilling Units	Mobile Production Units	Monohull Units	Accommodation Units	Total
Anchor failure	147	4	15	25	191
Blowout	16	1	-	-	17
Capsize	1	-	-	-	1
Collision	15	-	-	-	15
Contact	133	7	17	6	163
Crane	1107	71	71	26	1275
Explosion	10	2	2	0	14
Falling object	1398	102	96	36	1632
Fire	146	30	69	12	257
Foundering	1	15	-	-	16
Grounding	1	1	-	1	3
Helicopter	3	1	1	1	6
Leakage	18	-	2	-	20
List	11	-	1	1	13
Machinery	4	-	1	1	6
Off position	24	-	1	9	34
Spill/release	238	194	404	2	838
Structural	33	-	6	5	44
Towing/towline	14	10	-	1	25
Well problem	322	4	3	-	329
Other	35	7	27	1	70

The following tables give the number of occurrences and corresponding frequencies per type of unit (MODU, MOPU, Monohull) and period.

Table 32 ***Mobile drilling units (MODUs).***
Number of occurrences and occurrence frequencies (per unit year). UKCS, 1990-2007.
Source: All databases combined

	Period					
	1990-1999		2000-2007		1990-2007	
Type of event	N	F	N	F	N	F
Anchor failure	133	0.204	14	0.031	147	0.133
Blowout	13	0.020	3	$6.6 \cdot 10^{-3}$	16	0.014
Capsize	1	$1.5 \cdot 10^{-3}$	-	-	1	$9.0 \cdot 10^{-4}$
Collision	14	0.021	1	$2.2 \cdot 10^{-3}$	15	0.014
Contact	108	0.166	25	0.055	133	0.120
Crane	697	1.070	410	0.902	1107	1.001
Explosion	10	0.015	-	-	10	$9.0 \cdot 10^{-3}$
Falling object	851	1.306	547	1.204	1398	1.264
Fire	100	0.153	46	0.101	146	0.132
Foundering	1	$1.5 \cdot 10^{-3}$	-	-	1	$9.0 \cdot 10^{-4}$
Grounding	1	$1.5 \cdot 10^{-3}$	-	-	1	$9.0 \cdot 10^{-4}$
Helicopter	3	4.6E-03	-	-	3	$2.7 \cdot 10^{-3}$
Leakage	15	0.023	3	$6.6 \cdot 10^{-3}$	18	0.016
List	9	0.014	2	$4.4 \cdot 10^{-3}$	11	0.010
Machinery	1	$1.5 \cdot 10^{-3}$	3	$6.6 \cdot 10^{-3}$	4	$3.6 \cdot 10^{-3}$
Off position	23	0.035	1	$2.2 \cdot 10^{-3}$	24	0.022
Spill/release	160	0.246	78	0.172	238	0.215
Structural	29	0.045	4	$8.8 \cdot 10^{-3}$	33	0.030
Towing/towline	13	0.020	1	$2.2 \cdot 10^{-3}$	14	0.013
Well problem	136	0.209	186	0.409	322	0.291
Other	30	0.046	5	0.011	35	0.032

Table 33 ***Mobile production units (MOPUs).***
Number of occurrences and occurrence frequencies (per unit year). UKCS, 1990-2007.
Source: All databases combined

	Period					
	1990-1999		2000-2007		1990-2007	
Type of event	N	F	N	F	N	F
Anchor failure	4	0.067	-	-	4	0.034
Blowout	1	0.017	-	-	1	0.008
Capsize	-	-	-	-	-	-
Collision	-	-	-	-	-	-
Contact	3	0.050	4	0.068	7	0.059
Crane	50	0.835	21	0.360	71	0.600
Explosion	2	0.033	-	-	2	0.017
Falling object	56	0.935	46	0.788	102	0.862
Fire	14	0.234	16	0.274	30	0.254
Foundering	-	-	15	0.257	15	0.127
Grounding	-	-	1	0.017	1	$8.4 \bullet 10^{-3}$
Helicopter	1	0.017	-	-	1	$8.4 \bullet 10^{-3}$
Leakage	-	-	-	-	-	-
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	-	-	-	-	-	-
Spill/release	77	1.285	117	2.003	194	1.640
Structural	-	-	-	-	-	-
Towing/towline	-	-	10	0.171	10	0.085
Well problem	2	0.033	5	0.086	7	0.059
Other	3	0.050	4	0.068	7	0.059

Table 34 ***Monohulls (FPSOs and FSUs).***
Number of occurrences and occurrence frequencies (per unit year). UKCS, 1990-2007.
Source: All databases combined

	Period					
	1990-1999		2000-2007		1990-2007	
Type of event	N	F	N	F	N	F
Anchor failure	9	0.138	6	0.047	15	0.078
Blowout	-	-	-	-	-	-
Capsize	-	-	-	-	-	-
Collision	-	-	-	-	-	-
Contact	8	-	9	0.071	17	0.088
Crane	29	0.446	42	0.330	71	0.369
Explosion	2	0.031	-	-	2	0.010
Falling object	36	0.554	60	0.471	96	0.499
Fire	14	0.215	55	0.432	69	0.359
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	1	0.015	-	-	1	$5.2 \bullet 10^{-3}$
Leakage	1	0.015	1	$7.9 \bullet 10^{-3}$	2	0.010
List	1	0.015	-	-	1	$5.2 \bullet 10^{-3}$
Machinery	-	-	1	$7.9 \bullet 10^{-3}$	1	$5.2 \bullet 10^{-3}$
Off position	1	0.015	-	-	1	$5.2 \bullet 10^{-3}$
Spill/release	86	1.323	318	2.496	404	2.100
Structural	5	0.077	1	$7.9 \bullet 10^{-3}$	6	0.031
Towing/towline	-	-	-	-	-	-
Well problem	-	-	3	0.024	3	0.016
Other	17	0.262	10	0.078	27	0.140

Table 35 ***All floating units (excl accommodation units).***
Number of occurrences and occurrence frequencies (per unit year). UKCS, 1990-2007.
Source: All databases combined

	Period					
	1990-1999		2000-2007		1990-2007	
Type of event	N	F	N	F	N	F
Anchor failure	146	0.188	20	0.031	166	0.117
Blowout	14	0.018	3	$4.5 \cdot 10^{-3}$	17	0.012
Capsize	1	$1.3 \cdot 10^{-3}$	-	-	1	$7.1 \cdot 10^{-4}$
Collision	14	0.018	1	$1.6 \cdot 10^{-3}$	15	0.011
Contact	119	0.153	38	0.059	157	0.111
Crane	776	0.999	473	0.739	1249	0.882
Explosion	14	0.018	-	-	14	0.010
Falling object	943	1.214	653	1.020	1596	1.130
Fire	128	0.165	117	0.183	245	0.173
Foundering	1	$1.3 \cdot 10^{-3}$	15	0.023	16	0.011
Grounding	1	$1.3 \cdot 10^{-3}$	1	$1.6 \cdot 10^{-3}$	2	$1.4 \cdot 10^{-3}$
Helicopter	5	$6.4 \cdot 10^{-3}$	-	-	5	$3.5 \cdot 10^{-3}$
Leakage	16	0.021	4	$6.3 \cdot 10^{-3}$	20	0.014
List	10	0.013	2	$3.1 \cdot 10^{-3}$	12	$8.5 \cdot 10^{-3}$
Machinery	1	$1.3 \cdot 10^{-3}$	4	$6.3 \cdot 10^{-3}$	5	$3.5 \cdot 10^{-3}$
Off position	24	0.031	1	$1.6 \cdot 10^{-3}$	25	0.018
Spill/release	323	0.416	513	0.801	836	0.590
Structural	34	0.044	5	$7.8 \cdot 10^{-3}$	39	0.028
Towing/towline	13	0.017	11	0.017	24	0.017
Well problem	138	0.178	194	0.303	332	0.234
Other	50	0.064	19	0.030	69	0.049

8.7 Number of occurrences for floating accommodation units

Since no exposure data for these type of units are available, only the number of occurrences are given (i.e. no frequencies). These units comprise both the jackup and semisubmersible types.

Table 36 ***Accommodation units.***
Number of occurrences. UKCS, 1990-2007.
Source: All databases combined

	Period					
	1990-1999		2000-2007		1990-2007	
Type of event	Jackup	Semi-sub	Jackup	Semi-sub	Jackup	Semi-sub
Anchor failure	2	20	-	2	2	22
Blowout	-	-	-	-	-	-
Capsize	-	-	-	-	-	-
Collision	-	-	-	-	-	-
Contact	1	3	1	-	2	4
Crane	4	18	1	3	5	21
Explosion	-	-	-	-	-	-
Falling object	4	27	1	2	5	29
Fire	-	9	-	1	-	10
Foundering	-	-	-	-	-	-
Grounding	-	1	-	-	1	-
Helicopter	-	1	-	-	-	1
Leakage	-	1	-	-	-	1
List	-	-	-	-	-	-
Machinery	-	1	-	-	-	1
Off position	-	9	-	-	-	9
Spill/release	1	-	-	-	1	-
Structural	1	4	-	-	1	4
Towing/towline	-	1	-	-	-	1
Well problem	-	-	-	-	-	-
Other	-	1	-	-	-	1

9 CONCLUSIONS

The main source for accident and incident information available to the UKCS offshore industry should be this report and the two associated Excel spreadsheets (databases), since they together contain comprehensive UKCS data from the most relevant accident databases.

These databases are understood to be the only UKCS accident and incident databases which are both publicly and freely available to the offshore industry and others. They have been created in the WOAD format, with which the offshore industry is familiar and it is regularly updated with accident and incident information from relevant international databases. In addition the format of the spreadsheets, which contain a free text description of each incident, allows a sort capability to be utilised thus enabling specific data to be extracted from the databases as and when required.

The results from this study will serve as a reference document for data to be used in future Risk Assessments of offshore units, be a valuable reference document for Oil & Gas UK and furthermore for UK Health & Safety Executive Offshore Division (HSE-OSD) when reviewing Safety Cases.

To fulfil the objectives set out for this project, relevant UK and Norwegian databases were interrogated with respect to both population and accident data forming a complete data basis for obtaining comprehensive accident statistics for the listed type of units, geographical area and time period.

The result after having interrogated the identified databases and removing overlapping records shows a total of 6269 and 3436 events comprising accidents, hazardous situations and near-misses on fixed and floating units respectively on the UKCS in the period 1990-2007

The corresponding figures for the period 1980-2007 are 7312 and 4112.

10 REFERENCES

/1/ *Accident statistics for fixed offshore units on the UK Continental Shelf 1980 – 2005*. Det Norske Veritas/UK Health & Safety Executive. Research Report Series. Report No. RR566. http://www.hse.gov.uk/research/rrhtm/rr566.htm

/2/ *Accident statistics for floating offshore units on the UK Continental Shelf 1980 – 2005*. Det Norske Veritas/UK Health & Safety Executive. HSE Research Report Series. Report No. RR567. http://www.hse.gov.uk/research/rrhtm/rr567.htm

/3/ *Accident Statistics for Offshore Units on the UKCS 1990-2007*. Det Norske Veritas/UK Oil&Gas UK/Health & Safety Executive. March 2008

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APPENDIX
A
DETAILED STATISTICS – FIXED UNITS

A. 1 Introduction

The information being available for each incident has been reviewed and the chain of events has been obtained. The classification of events has been done according to the WOAD concept. One accident may comprise a chain of consecutive events (accident outcomes or occurrences), e.g. a blowout resulting in explosion, fire and oil spill. This means that one single accident or incident may give rise to several **occurrences**. The total number of occurrences will thus be much higher than the total number of accidents recorded. When giving frequencies per type of event, this is presented as number of occurrences per unit per year. However, when presenting frequencies irrespective of type of event, the figures are given as number of accidents per unit per year

A. 2 Accident statistics

By combining and merging the results from the interrogation of all 3 databases, the occurrence frequencies for fixed units in the UKCS in the period 1990-2007 are estimated. All tables in this appendix present the number of accidents and occurrences with corresponding frequencies per type of unit and event for each year in the period 1990-2007, and average for the periods 1990-1999, 2000-2007 and 1990-2007. N denotes number of accidents/occurrences and F denotes average annual frequency per unit, i.e. number of accidents/occurrences per unit year. Note that '-' is applied where no accidents/occurrences have been recorded (and hence no frequencies calculated) or if the given event is not applicable/relevant for the given type of units.

The source ***All databases combined*** refers to the database obtained by pooling the databases ORION, BLOWOUT and WOAD and removing the overlapping records.

A.2. 1 Accident frequencies – All fixed units

In this section the accident frequencies for fixed units in the UKCS in the period 1990-2007 are presented. The following tables give the number of accidents (**N**) and corresponding frequencies (**F**) per type of unit.

Table 37 ***Fixed Units (drilling, production, wellhead and compression).***
UKCS, 1990-2007. No. of accidents and accident frequencies (per unit year).
Source: All databases combined

	Type of installation							
	Drilling		Production		Wellhead		Compression	
Year/period	N	F	N	F	N	F	N	F
1990-1999	**27**	**0.148**	**3333**	**3.762**	**208**	**0.357**	**49**	**0.490**
1990	8	0.444	172	2.276	9	0.231	1	0.125
1991	3	0.167	199	2.519	7	0.156	2	0.222
1992	-	-	320	3.951	9	0.188	6	0.667
1993	1	0.053	407	4.733	17	0.333	3	0.300
1994	9	0.474	474	5.152	9	0.161	5	0.500
1995	-	-	350	3.804	21	0.368	13	1.182
1996	1	0.059	359	3.860	22	0.339	8	0.889
1997	3	0.167	368	3.915	37	0.529	4	0.364
1998	1	0.056	365	3.763	36	0.500	2	0.182
1999	1	0.056	319	3.323	41	0.519	5	0.417
2000	-	-	410	4.184	40	0.476	2	0.167
2001	-	-	411	4.152	24	0.282	-	-
2002	-	-	411	4.069	16	0.047	-	-
2003	-	-	323	3.106	23	0.267	-	-
2004	5	0.278	346	3.327	16	0.178	7	0.583
2005	9	0.500	283	2.695	11	0.122	4	0.333
2006	-	-	279	2.657	13	0.144	5	0.417
2007	5	0.278	75	0.714	26	0.289	-	-
2000-2007	**19**	**0.132**	**2538**	**3.091**	**169**	**0.242**	**18**	**0.188**
1990-2007	**46**	**0.141**	**5871**	**3.439**	**377**	**0.295**	**67**	**0.342**

Table 38 ***Fixed Units (pumping, injection, accommodation and total).***
UKCS, 1990-2007. No. of accidents and accident frequencies (per unit year).
Source: All databases combined

	Type of installation							
	Pumping		Injection/riser		Accommodation		Total. fixed	
Year/period	N	F	N	F	N	F	N	F
1990-1999	**-**	**-**	**6**	**0.075**	**8**	**0.092**	**3631**	**1.875**
1990	-	-	1	0.200	-	-	191	1.246
1991	-	-	2	0.333	-	-	213	1.291
1992	-	-	2	0.333	1	0.167	338	1.977
1993	-	-	1	0.125	1	0.143	430	2.337
1994	-	-	-	-	2	0.250	499	2.533
1995	-	-	-	-	-	-	384	1.930
1996	-	-	-	-	1	0.111	391	1.907
1997	-	-	-	-	1	0.100	413	1.930
1998	-	-	-	-	1	0.100	405	1.841
1999	-	-	-	-	1	0.091	367	1.610
2000	-	-	-	-	1	0.091	453	1.928
2001	-	-	-	-	-	-	435	1.835
2002	-	-	-	-	-	-	427	1.779
2003	-	-	-	-	-	-	346	1.424
2004	-	-	2	0.200	-	-	376	1.516
2005	-	-	1	0.100	1	0.091	309	1.246
2006	-	-	-	-	1	0.091	298	1.202
2007	-	-	-	-	-	-	106	0.427
2000-2007	**-**	**-**	**3**	**0.038**	**3**	**0.034**	**2750**	**1.416**
1990-2007	**-**	**-**	**9**	**0.056**	**11**	**0.063**	**6381**	**1.645**

A.2. 2 Occurrence frequencies – All fixed units

In this section the occurrence frequencies for fixed units in the UKCS in the period 1990-2007 are presented.

In the following tables the number of occurrences (**N**) and corresponding frequencies (**F**) for all fixed units are given per year/period.

Table 39 ***Fixed Units (drilling, production, wellhead and compression).***
UKCS, 1990-2007. No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Type of installation							
	Drilling		Production		Wellhead		Compression	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-	-	-
Blowout	-	-	4	$2.3 \cdot 10^{-3}$	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	24	0.014	7	$5.4 \cdot 10^{-3}$	-	-
Contact	2	$6.1 \cdot 10^{-3}$	94	0.055	15	$1.2 \cdot 10^{-2}$	-	-
Crane	28	0.086	1242	0.727	48	0.037	7	0.035
Explosion	-	-	41	0.024	-	-	-	-
Falling object	30	0.092	1740	1.019	63	0.049	12	0.061
Fire	12	0.037	704	0.412	30	0.023	11	0.056
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	6	$3.5 \cdot 10^{-3}$	-	-	-	-
Leakage	-	-	1	$5.9 \cdot 10^{-4}$	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	17	0.052	2999	1.756	244	0.191	39	0.198
Structural	-	-	13	0.008	-	-	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	8	0.024	405	0.237	22	0.017	-	-
Other	-	-	107	0.062	7	0.005	-	-

Table 40 ***Fixed Units (pumping, injection, accommodation and total).***
UKCS, 1990-2007. No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Type of installation							
	Pumping		Injection/riser		Accommodation		Total. fixed	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-	-	-
Blowout	-	-	-	-	-	-	4	1.03E-03
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	-	-	1	$5.7 \cdot 10^{-3}$	33	$8.5 \cdot 10^{-3}$
Contact	-	-	1	$6.3 \cdot 10^{-3}$	2	0.011	117	0.030
Crane	-	-	-	-	1	$5.7 \cdot 10^{-3}$	1352	0.349
Explosion	-	-	-	-	-	-	43	0.011
Falling object	-	-	2	0.012	3	0.017	1889	0.487
Fire	-	-	4	0.025	3	0.017	789	0.203
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	6	$1.5 \cdot 10^{-3}$
Leakage	-	-	-	-	-	-	1	$2.58 \cdot 10^{-3}$
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	-	-	-	-	2	0.011	3419	0.881
Structural	-	-	-	-	-	-	13	$3.35 \cdot 10^{-3}$
Towing/towline	-	-	-	-	-	-	-	-
Well problem	-	-	-	-	-	-	441	0.114
Other	-	-	-	-	-	-	117	0.030

Table 41 *All Fixed Units.* UKCS, 1990, 1991, 1992.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year					
	1990		1991		1992	
Type of event	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-
Blowout	-	-	-	-	-	-
Capsize	-	-	-	-	-	-
Collision	-	-	-	-	1	$5.4 \cdot 10^{-3}$
Contact	12	0.078	8	0.049	5	0.027
Crane	63	0.409	62	0.376	70	0.380
Explosion	4	0.026	6	0.036	6	0.033
Falling object	68	0.442	82	0.497	94	0.511
Fire	36	0.234	16	0.097	73	0.397
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	2	0.013	1	$6.1 \cdot 10^{-3}$	1	$5.4 \cdot 10^{-3}$
Leakage	-	-	-	-	-	-
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	-	-	-	-	-	-
Spill/release	71	0.461	75	0.455	247	1.342
Structural	-	-	1	$6.1 \cdot 10^{-3}$	4	0.023
Towing/towline	-	-	-	-	-	-
Well problem	2	0.013	2	0.012	9	0.049
Other	1	$6.5 \cdot 10^{-3}$	6	0.036	4	0.022

Table 42 *All Fixed Units.* UKCS, 1993, 1994, 1995, 1996.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	1993		1994		1995		1996	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-	-	-
Blowout	-	-	1	$5.1 \cdot 10^{-3}$	1	$5.0 \cdot 10^{-3}$	1	$4.9 \cdot 10^{-3}$
Capsize	-	-	-	-	-	-	-	-
Collision	1	$5.8 \cdot 10^{-3}$	3	0.015	3	0.015	-	-
Contact	7	0.041	10	0.051	12	0.060	10	0.049
Crane	70	0.409	94	0.478	78	0.392	68	0.332
Explosion	1	$5.8 \cdot 10^{-3}$	3	0.015	1	$5.0 \cdot 10^{-3}$	1	$4.9 \cdot 10^{-3}$
Falling object	88	0.515	126	0.640	101	0.508	94	0.459
Fire	48	0.281	66	0.335	47	0.236	34	0.166
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	1	$5.0 \cdot 10^{-3}$	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	188	1.099	321	1.629	217	1.091	162	0.790
Structural	-	-	-	-	2	0.010	1	$4.9 \cdot 10^{-3}$
Towing/towline	-	-	-	-	-	-	-	-
Well problem	2	0.012	14	0.071	9	0.045	50	0.244
Other	4	0.023	7	0.036	8	0.040	3	0.015

Table 43 *All Fixed Units.* UKCS, 1997, 1998, 1999.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year					
	1997		1998		1999	
Type of event	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-
Blowout	-	-	-	-	-	-
Capsize	-	-	-	-	-	-
Collision	1	$4.7 \cdot 10^{-3}$	3	0.014	3	0.013
Contact	9	0.042	5	0.023	8	0.035
Crane	93	0.435	104	0.473	80	0.351
Explosion	7	0.033	1	$4.5 \cdot 10^{-3}$	2	$8.8 \cdot 10^{-3}$
Falling object	117	0.547	134	0.609	126	0.553
Fire	48	0.224	44	0.200	41	0.180
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-
Leakage	-	-	-	-	-	-
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	-	-	-	-	-	-
Spill/release	200	0.935	198	0.900	173	0.759
Structural	1	$4.7 \cdot 10^{-3}$	1	$4.5 \cdot 10^{-3}$	-	-
Towing/towline	-	-	-	-	-	-
Well problem	43	0.201	44	0.200	38	0.167
Other	3	0.014	5	0.023	5	0.022

Table 44 *All Fixed Units*. UKCS, 2000, 2001, 2002, 2003.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	2000		2001		2002		2003	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-	-	-
Blowout	-	-	1	$4.2 \cdot 10^{-3}$	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	5	0.021	-	-	7	0.029	-	-
Contact	8	0.034	3	0.013	-	-	3	0.012
Crane	90	0.383	100	0.422	112	0.467	54	0.222
Explosion	3	0.013	-	-	3	0.013	1	$4.2 \cdot 10^{-3}$
Falling object	137	0.583	145	0.612	155	0.646	96	0.395
Fire	50	0.213	52	0.219	35	0.146	28	0.115
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	1	$4.2 \cdot 10^{-3}$	-	-	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	217	0.923	220	0.928	196	0.817	201	0.827
Structural	2	$8.5 \cdot 10^{-3}$	-	-	1	$4.2 \cdot 10^{-3}$	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	35	0.149	35	0.148	38	0.158	25	0.103
Other	15	0.064	5	0.021	13	0.054	6	0.025

Table 45 *All Fixed Units*. UKCS, 2004, 2005, 2006, 2007.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	2004		2005		2006		2007	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-	-	-
Blowout	-	-	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	1	$4.1 \cdot 10^{-3}$	1	$4.0 \cdot 10^{-3}$	2	8.10^{-3}	3	0.012
Contact	3	0.012	3	0.012	6	0.024	3	0.012
Crane	63	0.259	63	0.254	40	0.161	53	0.214
Explosion	1	$4.1 \cdot 10^{-3}$	-	-	1	$4.0 \cdot 10^{-3}$	1	$4.0 \cdot 10^{-3}$
Falling object	99	0.407	85	0.343	74	0.298	90	0.363
Fire	43	0.177	25	0.101	36	0.145	36	0.145
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	1	$4.1 \cdot 10^{-3}$	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	216	0.889	172	0.694	165	0.665	146	0.589
Structural	-	-	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	24	0.099	29	0.117	24	0.097	25	0.101
Other	9	0.037	9	0.036	8	0.032	4	0.016

A.2. 3 Occurrence frequencies – Drilling units

The recorded number and type of occurrences (**N**) and the corresponding frequencies (**F**) are given for fixed drilling units in the following table.

Table 46 *Drilling Units*. UKCS, 1990-2007.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

Year	Type of event	N	F
1990	Crane	5	0.278
	Falling object	3	0.167
	Fire	1	0.056
	Spill/release	2	0.111
1991	Contact	1	0.056
	Crane	1	0.056
	Spill/release	1	0.056
1993	Spill/release	1	0.053
1994	Crane	1	0.053
	Falling object	1	0.053
	Fire	3	0.158
	Spill/release	4	0.211
	Well problem	1	0.053
1996	Falling object	1	0.059
1997	Crane	1	0.056
	Falling object	3	0.167
1998	Crane	1	0.056
	Falling object	1	0.056
	Well problem	1	0.056
1999	Crane	1	0.056
	Falling object	1	0.056
2004	Crane	3	0.167
	Falling object	4	0.222
	Fire	1	0.056
2005	Crane	3	0.167
	Falling object	4	0.222
	Fire	1	0.056
	Spill/release	1	0.056
	Well problem	4	0.222
2006	Falling object	1	0.056
2007	Crane	2	0.111
	Falling object	1	0.056
	Fire	2	0.111

A.2. 4 Occurrence frequencies – Production units

In the following tables the number of occurrences (**N**) and corresponding frequencies (**F**) for fixed production units are given per year.

Table 47 *Production Units.* UKCS, 1990, 1991, 1992.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year					
	1990		1991		1992	
Type of event	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-
Blowout	-	-	-	-	-	-
Capsize	-	-	-	-	-	-
Collision	-	-	-	-	1	0.012
Contact	11	0.145	8	0.101	4	0.049
Crane	53	0.697	59	0.747	68	0.840
Explosion	4	0.053	6	0.076	1	0.012
Falling object	57	0.750	78	0.987	86	1.062
Fire	34	0.447	14	0.177	47	0.580
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	2	0.026	1	0.013	-	-
Leakage	-	-	-	-	-	-
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	-	-	-	-	-	-
Spill/release	66	0.868	69	0.873	176	2.173
Structural	-	-	1	0.013	4	0.049
Towing/towline	-	-	-	-	-	-
Well problem	2	0.026	2	0.025	3	0.035
Other	1	0.013	6	0.076	4	0.049

Table 48 *Production Units.* UKCS, 1993, 1994, 1995, 1996.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	1993		1994		1995		1996	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-	-	-
Blowout	-	-	1	0.011	1	0.011	1	0.011
Capsize	-	-	-	-	-	-	-	-
Collision	1	0.012	2	0.022	2	0.022	-	-
Contact	4	0.047	8	0.087	11	0.120	8	0.086
Crane	67	0.779	92	1.000	76	0.826	65	0.699
Explosion	6	0.070	3	0.033	1	0.011	1	0.011
Falling object	91	1.058	124	1.348	98	1.065	88	0.946
Fire	70	0.814	60	0.652	38	0.413	34	0.366
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	1	0.011	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	231	2.686	305	3.315	197	2.141	147	1.581
Structural	-	-	-	-	2	0.022	1	0.011
Towing/towline	-	-	-	-	-	-	-	-
Well problem	9	0.105	13	0.141	7	0.076	50	0.538
Other	4	0.047	7	0.076	7	0.076	3	0.032

Table 49 *Production Units.* UKCS, 1997, 1998, 1999.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year					
	1997		1998		1999	
Type of event	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-
Blowout	-	-	-	-	-	-
Capsize-	-	-	-	-	-	-
Collision	1	0.011	2	0.021	2	0.021
Contact	8	0.085	5	0.052	5	0.052
Crane	86	0.915	100	1.031	76	0.792
Explosion	7	0.075	1	0.010	2	0.021
Falling object	107	1.138	130	1.340	119	1.240
Fire	44	0.468	41	0.423	35	0.365
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-
Leakage	-	-	-	-	-	-
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	-	-	-	-	-	-
Spill/release	173	1.840	169	1.742	142	1.479
Structural	1	0.011	1	0.010	-	-
Towing/towline	-	-	-	-	-	-
Well problem	43	0.457	40	0.412	37	0.385
Other	3	0.032	4	0.041	3	0.031

Table 50 *Production units*. UKCS, 2000, 2001, 2002, 2003.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	2000		2001		2002		2003	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-	-	-
Blowout	-	-	1	0.010	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	4	0.041	-	-	5	0.050	-	-
Contact	6	0.061	2	0.020	-	-	2	0.019
Crane	89	0.908	98	0.990	108	1.069	49	0.471
Explosion	3	0.031	-	-	3	0.030	1	$9.6 \cdot 10^{-3}$
Falling object	136	1.388	143	1.444	151	1.495	89	0.856
Fire	49	0.500	45	0.455	33	0.327	27	0.260
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	1	0.010	-	-	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	181	1.847	207	2.091	187	1.851	189	1.817
Structural	2	0.020	-	-	1	$9.9 \cdot 10^{-3}$	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	33	0.337	32	0.323	37	0.366	24	0.231
Other	13	0.133	5	0.051	13	0.129	5	0.048

Table 51 *Production units*. UKCS, 2004, 2005, 2006, 2007.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	2004		2005		2006		2007	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-	-	-
Blowout	-	-	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	1	$9.6 \cdot 10^{-3}$	-	-	2	0.019	1	0.010
Contact	3	0.029	3	0.029	5	0.048	1	0.010
Crane	54	0.519	58	0.552	36	0.343	8	0.076
Explosion	1	$9.6 \cdot 10^{-3}$	-	-	1	0.010	-	-
Falling object	84	0.808	78	0.743	67	0.638	14	0.133
Fire	41	0.394	22	0.210	36	0.343	6	0.057
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	1	$9.6 \cdot 10^{-3}$	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	205	1.971	160	1.524	153	1.457	42	0.400
Structural	-	-	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	22	0.212	24	0.229	24	0.229	2	0.019
Other	9	0.087	9	0.086	7	0.067	1	0.010

A.2. 5 Occurrence frequencies – Wellhead units

In the following tables the number of occurrences and corresponding frequencies for fixed wellhead (production) units are given per year.

Table 52 *Wellhead Units.* UKCS, 1990, 1991, 1992.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year					
	1990		1991		1992	
Type of event	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-
Blowout	-	-	-	-	-	-
Capsize	-	-	-	-	-	-
Collision	-	-	-	-	-	-
Contact	1	0.026	-	-	1	0.021
Crane	5	0.128	2	0.044	1	0.021
Explosion	3	$3.4 \cdot 10^{-3}$	8	$5.3 \cdot 10^{-3}$	-	-
Falling object	7	0.180	3	0.067	1	0.021
Fire	-	-	-	-	-	-
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-
Leakage	-	-	-	-	-	-
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	-	-	-	-	-	-
Spill/release	3	0.077	5	0.111	7	0.146
Structural	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-
Well problem	-	-	-	-	-	-
Other	-	-	-	-	-	-

Table 53 *Wellhead Units.* UKCS, 1993, 1994, 1995, 1996.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	1993		1994		1995		1996	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-	-	-
Blowout	-	-	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	-	-	1	0.018	-	-
Contact			1	0.018	1	0.018	2	0.031
Crane	3	0.059	1	0.018	1	0.018	3	0.046
Explosion	-	-	-	-	-	-	-	-
Falling object	3	0.059	1	0.018	1	0.018	5	0.077
Fire	1	0.020	2	0.036	3	0.053	-	-
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	13	0.255	7	0.125	14	0.246	15	0.231
Structural	-	-	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	-	-	-	-	-	-	-	-
Other	-	-	-	-	1	0.018	-	-

Table 54 *Wellhead Units.* UKCS, 1997, 1998, 1999.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year					
	1997		1998		1999	
Type of event	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-
Blowout	-	-	-	-	-	-
Capsize	-	-	-	-	-	-
Collision	-	-	1	0.014	1	0.013
Contact	1	0.014	-	-	3	0.038
Crane	6	0.086	3	0.042	3	0.038
Explosion	-	-	-	-	-	-
Falling object	6	0.086	3	0.042	5	0.063
Fire	3	0.043	3	0.042	4	0.051
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-
Leakage	-	-	-	-	-	-
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	-	-	-	-	-	-
Spill/release	25	0.357	26	0.361	26	0.329
Structural	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-
Well problem	-	-	3	0.042	1	0.013
Other	-	-	1	0.014	2	0.025

Table 55 *Wellhead units*. UKCS, 2000, 2001, 2002, 2003.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	2000		2001		2002		2003	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-	-	-
Blowout	-	-	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	-	-	2	0.023	-	-
Contact	2	0.024	1	0.012	-	-	1	0.012
Crane	1	0.012	2	0.024	4	0.047	5	0.058
Explosion	-	-	-	-	-	-	-	-
Falling object	1	0.012	2	0.024	4	0.047	7	0.081
Fire	1	0.012	7	0.082	2	0.023	1	0.012
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	34	0.405	13	0.153	9	0.105	12	0.140
Structural	-	-	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	2	0.024	3	0.035	1	0.012	1	0.012
Other	2	0.024	-	-	-	-	-	-

Table 56 *Wellhead units*. UKCS, 2004, 2005, 2006, 2007.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	2004		2005		2006		2007	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-	-	-
Blowout	-	-	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	1	0.011	-	-	1	0.011
Contact	-	-	-	-		-	-	-
Crane	4	0.047	1	0.011	-	-	1	0.011
Explosion	-	-	-	-	-	-	-	-
Falling object	7	0.081	2	0.022	-	-	3	0.033
Fire	1	0.012	-	-	1	0.011	1	0.011
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	6	0.070	8	0.089	2	0.222	12	0.133
Structural	-	-	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	2	0.023	1	0.011	-	-	8	0.089
Other	-	-	-	-	-	-	-	-

A.2. 6 Occurrence frequencies – Compression units

In the following tables the number of occurrences (**N**) and corresponding frequencies (**F**) for fixed compression units are given per year.

Table 57 *Compression Units.* UKCS, 1990, 1991, 1992.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year					
	1990		1991		1992	
Type of event	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-
Blowout	-	-	-	-	-	-
Capsize	-	-	-	-	-	-
Collision	-	-	-	-	-	-
Contact	-	-	-	-	-	-
Crane	-	-	1	0.111	-	-
Explosion	-	-	-	-	-	-
Falling object	1	0.125	1	0.111	-	-
Fire	-	-	-	-	1	0.111
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-
Leakage	-	-	-	-	-	-
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	-	-	-	-	-	-
Spill/release	-	-	1	0.111	2	0.222
Structural	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-
Well problem	-	-	-	-	-	-
Other	-	-	-	-	-	-

Table 58 *Compression Units.* UKCS, 1993, 1994, 1995, 1996.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	1993		1994		1995		1996	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-	-	-
Blowout	-	-	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	-	-	-	-	-	-
Contact	-	-	-	-	-	-	-	-
Crane	1	0.100	-	-	1	0.091	-	-
Explosion	-	-	-	-	-	-	-	-
Falling object	1	0.100	-	-	2	0.182	-	-
Fire	-	-	1	0.100	6	0.546	-	-
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	5	0.500	4	0.400	6	0.546	-	-
Structural	-	-	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-

Table 59 *Compression Units.* UKCS, 1997, 1998, 1999.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year					
	1997		1998		1999	
Type of event	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-
Blowout	-	-	-	-	-	-
Capsize	-	-	-	-	-	-
Collision	-	-	-	-	-	-
Contact	-	-	-	-	-	-
Crane	-	-	-	-	-	-
Explosion	-	-	-	-	-	-
Falling object	1	0.091	-	-	-	-
Fire	-	-	-	-	1	0.083
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-
Leakage	-	-	-	-	-	-
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	-	-	-	-	-	-
Spill/release	2	0.182	2	0.182	4	0.333
Structural	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-
Well problem	-	-	-	-	-	-
Other	-	-	-	-	-	-

Table 60 *Compression units*. UKCS, 2000, 2001, 2002, 2003.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	2000		2001		2002		2003	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-	-	-
Blowout	-	-	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	-	-	-	-	-	-
Contact	-	-	-	-	-	-	-	-
Crane	-	-	-	-	-	-	-	-
Explosion	-	-	-	-	-	-	-	-
Falling object	-	-	-	-	-	-	-	-
Fire	-	-	-	-	-	-	-	-
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	2	0.167	-	-	-	-	-	-
Structural	-	-	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-

Table 61 *Compression units*. UKCS, 2004, 2005, 2006, 2007.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	2004		2005		2006		2007	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-	-	-
Blowout	-	-	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	-	-	-	-	-	-
Contact	-	-	-	-	-	-	-	-
Crane	2	0.167	1	0.083	1	0.083	-	-
Explosion	-	-	-	-	-	-	-	-
Falling object	2	0.167	1	0.083	3	0.250	-	-
Fire	-	-	-	-	-	-	-	-
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	5	0.417	3	0.250	3	0..250	-	-
Structural	-	-	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-

A.2. 7 Occurrence frequencies – Pumping Units

No accidents are recorded on fixed pumping platforms in either of the databases in the period 1990-2007, and hence the overall calculated occurrence frequency is 0.

A.2. 8 Occurrence frequencies – Injection/riser Units

The recorded number (**N**) and type of occurrences and the corresponding frequencies (**F**) are given in the following table.

Table 62 *Injection/riser units*. UKCS. 1990-2007.
No. of occurrences per unit year.
Source: All databases combined

Year	Type of event	N	F
1990	Fire	1	0.200
1991	Fire	2	0.333
1993	Contact	1	0.125
2004	Falling object	2	0.200
2005	Fire	1	0.100
2006	-	-	-
2007	-	-	-

A.2.9 Occurrence frequencies – Accommodation units

The recorded number (**N**) and type of occurrences and the corresponding frequencies (**F**) are given in the following table.

Table 63 *Accommodation units*. UKCS. 1990-2007.
No. of occurrences per unit year. Source: All databases combined

Year	Type of event	N	F
1992	Contact	1	0.143
1993	Fire	1	0.125
1994	Contact	1	0.111
	Spill/release	1	0.111
1996	Fire	1	0.100
1997	Fire	1	0.100
1998	Spill/release	1	0.091
1999	Falling object	1	0.091
2000	Collision	1	0.091
2005	Fire	1	0.091
2006	Crane	1	0.091
2006	Falling object	1	0.091
2007	-	-	-

APPENDIX
B
DETAILED STATISTICS – FLOATING UNITS

B. 1 Introduction

The information being available for each incident has been reviewed and the chain of events has been obtained. The classification of events has been done according to the WOAD concept. One accident may comprise a chain of consecutive events (accident outcomes or occurrences), e.g. a blowout resulting in explosion, fire and oil spill. This means that one single accident or incident may give rise to several **occurrences**. The total number of occurrences will thus be much higher than the total number of accidents recorded. When giving frequencies per type of event, this is presented as number of occurrences per unit per year.

B. 2 Accident statistics

By combining and merging the results from the interrogation of all 4 databases, the occurrence frequencies for floating units in the UKCS in the period 1990-2007 are estimated. All tables in this appendix present the number of accidents and occurrences with corresponding frequencies per type of unit and event for each year in the period 1990-2007, and average for the periods 1990-1999, 2000-2007 and 1990-2007. N denotes number of occurrences and F denotes average annual frequency per unit, i.e. number of occurrences per unit year. Since no exposure data are readily available for floating accommodation units (comprising both the jackup and semi-submersible types), only the number of occurrences are given (i.e. no frequencies). Note that '-' is applied where no accidents/occurrences have been recorded (and hence no frequencies calculated) or if the given event is not applicable/relevant for the given type of unit.

The source ***All databases combined*** refers to the database obtained by pooling the databases ORION, MAIB, BLOWOUT and WOAD and removing the overlapping records.

B.2. 1 Occurrence frequencies - Mobile Offshore Drilling Units (MODUs)

In the following tables the number of occurrences (**N**) and corresponding frequencies (**F**) for mobile drilling units are given per type of unit and year.

Table 64 *Drilling jackups*. UKCS, 1990, 1991, 1992.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year					
	1990		1991		1992	
Type of event	N	F	N	F	N	F
Anchor failure	-	-	1	0.034	1	0.034
Blowout	-	-	1	0.034	-	-
Capsize	-	-	-	-	-	-
Collision	-	-	2	0.067	2	0.069
Contact	7	0.252	6	0.202	10	0.345
Crane	26	0.935	32	1.077	14	0.483
Explosion	-	-	-	-	-	-
Falling object	22	0.791	33	1.111	13	0.448
Fire	4	0.144	-	-	5	0.172
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-
Leakage	1	0.036	1	0.034	-	-
List	1	0.036	1	0.034	1	0.034
Machinery	-	-	-	-	-	-
Off position	1	0.036	-	-	1	0.034
Spill/release	7	0.252	2	0.067	14	0.483
Structural	1	0.036	1	0.034	1	0.034
Towing/towline	3	0.108	-	-	1	0.034
Well problem	2	0.072	2	0.067	2	0.069
Other	-	-	1	0.034	1	0.034

Table 65 *Drilling jackups*. UKCS, 1993, 1994, 1995, 1996.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	1993		1994		1995		1996	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	1	0.046	-	-	-	-
Blowout	-	-	1	0.046	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	1	0.038	-	-	-	-	-	-
Contact	4	0.15	6	0.276	2	0.097	-	-
Crane	12	0.451	18	0.829	12	0.58	15	0.652
Explosion	-	-	1	0.046	1	0.048	-	-
Falling object	19	0.714	19	0.876	20	0.966	22	0.957
Fire	3	0.113	7	0.323	6	0.29	4	0.174
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	1	0.048	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	1	0.038	-	-	-	-	-	-
Spill/release	9	0.338	10	0.461	6	0.29	2	0.087
Structural	2	0.075	-	-	1	0.048	1	0.043
Towing/towline	-	-	-	-	-	-	-	-
Well problem	-	-	3	0.138	4	0.193	7	0.304
Other	-	-	-	-	2	0.097	1	0.043

Table 66 *Drilling jackups*. UKCS, 1997, 1998, 1999.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year					
	1997		1998		1999	
Type of event	N	F	N	F	N	F
Anchor failure	1	0.046	-	-	-	-
Blowout	1	0.046	1	0.045	-	-
Capsize	-	-	-	-	-	-
Collision	-	-	-	-	-	-
Contact	2	0.092	5	0.227	3	0.125
Crane	27	1.244	31	1.409	9	0.375
Explosion	-	-	-	-	-	-
Falling object	31	1.429	45	2.045	15	0.625
Fire	5	0.230	4	0.182	4	0.167
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-
Leakage	1	0.046	-	-	-	-
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position					1	0.042
Spill/release	3	0.138	6	0.273	9	0.375
Structural	-	-	1	0.045	1	0.042
Towing/towline	-	-	-	-	-	-
Well problem	14	0.645	30	1.364	8	0.333
Other	2	0.092	1	0.045	-	-

Table 67 *Drilling jackups*. UKCS, 2000, 2001, 2002, 2003.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	2000		2001		2002		2003	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	1	0.045	-	-	-	-	-	-
Blowout	1	0.045	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	-	-	-	-	-	-
Contact	-	-	1	0.043	2	0.088	2	0.087
Crane	6	0.268	17	0.736	25	1.101	19	0.823
Explosion	-	-	-	-	-	-	-	-
Falling object	15	0.670	22	0.952	27	1.189	23	0.996
Fire	1	0.045	3	0.130	1	0.044	-	-
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	6	0.268	5	0.216	5	0.220	4	0.173
Structural	2	0.090	1	0.043	-	-	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	15	0.670	11	0.476	17	0.749	13	0.563
Other	-	-	-	-	-	-	-	-

Table 68 *Drilling jackups*. UKCS, 2004, 2005, 2006, 2007.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	2004		2005		2006		2007	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-	-	-
Blowout	-	-	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	-	-	-	-	-	-
Contact	-	-	2	0.095	2	0.088	4	0.139
Crane	10	0.452	13	0.619	6	0.265	17	0.590
Explosion	-	-	-	-	-	-	-	-
Falling object	13	0.588	17	0.810	9	0.398	23	0.799
Fire	1	0.045	-	-	2	0.088	-	-
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	1	0.045	5	0.238	1	0.044	3	0.104
Structural	-	-	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	14	0.633	9	0.429	16	0.708	8	0.278
Other	-	-	-	-	-	-	-	-

Table 69 *Drilling semisubmersibles*. UKCS, 1990, 1991, 1992.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year					
	1990		1991		1992	
Type of event	N	F	N	F	N	F
Anchor failure	19	0.412	21	0.426	11	0.228
Blowout	1	0.022	2	0.041	1	0.021
Capsize	-	-	-	-	-	-
Collision	1	0.022	-	-	-	-
Contact	9	0.195	12	0.243	11	0.228
Crane	50	1.085	105	2.130	52	1.079
Explosion	2	0.043	3	0.061	1	0.021
Falling object	53	1.150	104	2.11	58	1.203
Fire	3	0.065	12	0.243	6	0.124
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-
Leakage	4	0.087	4	0.081	1	0.021
List	1	0.022	3	0.061	1	0.021
Machinery	-	-	1	0.020	-	-
Off position	2	0.043	5	0.101	2	0.041
Spill/release	9	0.195	14	0.284	9	0.187
Structural	3	0.065	3	0.061	1	0.021
Towing/towline	2	0.043	2	0.041	-	-
Well problem	3	0.065	7	0.142	6	0.124
Other	4	0.087	7	0.142	-	-

Table 70 *Drilling semisubmersibles*. UKCS, 1993, 1994, 1995, 1996.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	1993		1994		1995		1996	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	18	0.407	5	0.139	5	0.145	17	0.445
Blowout	-	-	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	1	0.023	-	-	3	0.087	1	0.026
Contact	8	0.181	4	0.111	2	0.058	3	0.079
Crane	16	0.362	12	0.333	44	1.279	48	1.257
Explosion	-	-	-	-	1	0.029	-	-
Falling object	31	0.701	18	0.500	53	1.541	55	1.440
Fire	5	0.113	3	0.083	7	0.203	5	0.131
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	1	0.026
Helicopter	-	-	1	0.028	2	0.058	-	-
Leakage	1	0.023	-	-	1	0.029	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	3	0.068	2	0.056	-	-	3	0.079
Spill/release	6	0.136	8	0.222	5	0.145	11	0.288
Structural	1	0.023	-	-	2	0.058	-	-
Towing/towline	-	-	1	0.028	-	-	3	0.079
Well problem	5	0.113	1	0.028	2	0.058	10	0.262
Other	4	0.090	2	0.056	-	-	-	-

Table 71 *Drilling semisubmersibles*. UKCS, 1997, 1998, 1999.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year					
	1997		1998		1999	
Type of event	N	F	N	F	N	F
Anchor failure	17	0.471	8	0.219	4	0.124
Blowout	5	0.139	-	-	-	-
Capsize	-	-	1	0.027	-	-
Collision	-	-	1	0.027	2	0.062
Contact	3	0.083	5	0.137	5	0.155
Crane	76	2.105	52	1.425	29	0.898
Explosion	-	-	1	0.027	-	-
Falling object	93	2.576	63	1.726	65	2.012
Fire	4	0.111	3	0.082	7	0.217
Foundering	-	-	1	0.027	-	-
Grounding	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-
Leakage	-	-	-	-	-	-
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	1	0.028	1	0.027	-	-
Spill/release	13	0.360	7	0.192	9	0.279
Structural	5	0.139	4	0.110	1	0.031
Towing/towline	1	0.028	-	-	-	-
Well problem	11	0.305	12	0.329	7	0.217
Other	2	0.055	-	-	3	0.093

Table 72 *Drilling semisubmersibles*. UKCS, 2000, 2001, 2002, 2003.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	2000		2001		2002		2003	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	2	0.066	2	0.066	2	0.061	4	0.130
Blowout	1	0.033	1	0.033	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	1	0.033	-	-	-	-
Contact	2	0.066	2	0.066	4	0.123	1	0.033
Crane	64	2.119	61	2.007	47	1.442	10	0.326
Explosion	-	-	-	-	-	-	-	-
Falling object	78	2.583	69	2.270	55	1.687	17	0.554
Fire	6	0.199	2	0.066	8	0.245	3	0.098
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	1	0.033	-	-	-	-	-	-
List	2	0.066	-	-	-	-	-	-
Machinery	-	-	2	0.066	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	10	0.331	6	0.197	8	0.245	8	0.261
Structural	1	0.033	-	-	-	-	-	-
Towing/towline	-	-	1	0.033	-	-	-	-
Well problem	11	0.364	7	0.230	13	0.399	8	0.261
Other	-	-	1	0.033	1	0.031	1	0.033

Table 73 *Drilling semisubmersibles*. UKCS, 2004, 2005, 2006, 2007.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	2004		2005		2006		2007	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	2	0.054	1	0.026	-	-
Blowout	-	-	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	-	-	-	-	-	-
Contact	1	0.030	-	-	-	-	2	-
Crane	17	0.511	31	0.838	27	0.714	36	1.034
Explosion	-	-	-	-	-	-	-	-
Falling object	26	0.781	39	1.054	56	1.481	53	1.523
Fire	4	0.120	9	0.243	2	0.053	5	0.144
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	1	0.030	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	1	0.027	-	-	-	-
Off position	-	-	1	0.027	-	-	-	-
Spill/release	3	0.090	7	0.189	4	0.106	2	0.057
Structural	-	-	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	15	0.450	8	0.216	10	0.265	7	0.201
Other	1	0.030	-	-	-	-	-	-

Table 74 *Drillships*. UKCS, 1990, 1991, 1992.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year					
	1990		1991		1992	
Type of event	N	F	N	F	N	F
Anchor failure	-	-	3	7.500	1	2.500
Blowout	-	-	-	-	-	-
Capsize	-	-	-	-	-	-
Collision	-	-	-	-	-	-
Contact	-	-	1	2.500	-	-
Crane			2	5.000	4	10.000
Explosion	-	-	-	-	-	-
Falling object	-	-	2	5.000	5	12.500
Fire	-	-	1	2.500	-	-
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-
Leakage	-	-	1	2.500	-	-
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	-	-	-	-	-	-
Spill/release	-	-	-	-	-	-
Structural	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-
Well problem	-	-	-	-	-	-
Other	-	-	-	-	-	-

Table 75 *Drillships*. UKCS, 1993, 1994, 1995, 1996.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	1993		1994		1995		1996	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-	-	-
Blowout	-	-	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	-	-	-	-	-	-
Contact	-	-	-	-	-	-	-	-
Crane	1	2.500	2	6.667	1	3.333	4	13.333
Explosion	-	-	-	-	-	-	-	-
Falling object	2	5.000	2	6.667	-	-	5	16.667
Fire	-	-	-	-	-	-	1	3.333
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	-	-	-	-	-	-	-	-
Structural	-	-	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-

Table 76 *Drillships*. UKCS, 1997, 1998, 1999.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year					
	1997		1998		1999	
Type of event	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-
Blowout	-	-	-	-	-	-
Capsize	-	-	-	-	-	-
Collision	-	-	-	-	-	-
Contact	-	-	-	-	-	-
Crane	3	10.000	-	-	-	-
Explosion	-	-	-	-	-	-
Falling object	3	10.000	-	-	-	-
Fire	-	-	-	-	-	-
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-
Leakage	-	-	-	-	-	-
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	-	-	-	-	-	-
Spill/release	1	3.333	-	-	-	-
Structural	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-
Well problem	-	-	-	-	-	-
Other	-	-	-	-	-	-

Table 77 *Drillships*. UKCS, 2000, 2001, 2002, 2003.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	2000		2001		2002		2003	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-	-	-
Blowout	-	-	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	-	-	-	-	-	-
Contact	-	-	-	-	-	-	-	-
Crane	-	-	2	5.000	-	-	1	1.000
Explosion	-	-	-	-	-	-	-	-
Falling object	-	-	2	5.000	-	-	1	1.000
Fire	-	-	-	-	-	-	-	-
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	-	-	-	-	1	1.429	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	-	-	-	-	-	-	-	-
Structural	-	-	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	-	-	2	5.000	1	1.429	-	-
Other	-	-	1	2.500	-	-	-	-

Table 78 *Drillships*. UKCS, 2004, 2005, 2006, 2007.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	2004		2005		2006		2007	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-	-	-
Blowout	-	-	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	-	-	-	-	-	-
Contact	-	-	-	-	-	-	-	-
Crane	1	5.000	-	-	-	-	-	-
Explosion	-	-	-	-	-	-	-	-
Falling object	2	10.000			-	-	-	
Fire	-	-	-	-	-	-	-	-
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	-	-	-	-	-	-	-	-
Structural	-	-	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	1	5.000	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-

A.2. 2 Occurrence frequencies - Mobile Offshore Production Units (MOPUs)

In the following tables the number of occurrences (**N**) and corresponding frequencies (**F**) for mobile production units (MOPUs) are given per type of unit and year. The MOPUs comprise jackups, semi-submersibles and tension-leg platforms. Please observe that no events have been recorded for production jackups prior to year 2000.

Table 79 *Production jackups*. UKCS. 1990-2007.
No. of occurrences per unit year.
Source: All databases combined

Year	Type of event	N	F
2000	Crane	5	2.500
2000	Falling object	6	3.000
2000	Spill/release	2	1.000
2000	Well problem	2	1.000
2001	Crane	1	0.500
2001	Falling object	3	1.500
2001	Fire	1	0.500
2001	Spill/release	7	3.500
2001	Well problem	1	0.500
2002	Crane	2	1.000
2002	Falling object	2	1.000
2003	Falling object	2	1.000
2003	Spill/release	1	0.500
2005	Falling object	1	0.500
2006	Falling object	1	0.500
2007	Contact	1	0.500
	Falling object	1	0.500
	Fire	1	0.500
	Spill/release	2	1.000

Table 80 *Production semisubmersibles*. UKCS, 1990, 1991, 1992.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year					
	1990		1991		1992	
Type of event	N	F	N	F	N	F
Anchor failure	2	0.500	-	-	1	0.292
Blowout	-	-	-	-	-	-
Capsize	-	-	-	-	-	-
Collision	-	-	-	-	-	-
Contact	-	-	1	0.333	-	-
Crane	-	-	5	1.667	1	0.292
Explosion	1	0.250	-	-	-	-
Falling object	1	0.250	5	1.667	1	0.292
Fire	2	0.500	-	-	-	-
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-
Leakage	-	-	-	-	-	-
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	-	-	-	-	-	-
Spill/release	1	0.250	-	-	1	0.292
Structural	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-
Well problem	-	-	-	-	-	-
Other	-	-	-	-	-	-

Table 81 *Production semisubmersibles*. UKCS, 1993, 1994, 1995, 1996.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	1993		1994		1995		1996	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	1	0.250	-	-	-	-	-	-
Blowout	-	-	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	-	-	-	-	-	-
Contact	-	-	-	-	-	-	-	-
Crane	1	0.250	2	0.428	3	0.600	2	0.400
Explosion	-	-	-	-	-	-	-	-
Falling object	1	0.250	1	0.214	2	0.400	2	0.400
Fire	-	-	-	-	-	-	-	-
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	2	0.500	4	0.857	2	0.400	1	0.200
Structural	-	-	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	-	-	-	-	-	-	-	-
Other	-	-	1	0.214	-	-	-	-

Table 82 *Production semisubmersibles*. UKCS, 1997, 1998, 1999.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year					
	1997		1998		1999	
Type of event	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-
Blowout	-	-	-	-	-	-
Capsize	-	-	-	-	-	-
Collision	-	-	-	-	-	-
Contact	-	-	-	-	1	0.200
Crane	3	0.600	-	-	1	0.200
Explosion	-	-	-	-	-	-
Falling object	4	0.800	1	0.200	1	0.200
Fire	-	-	-	-	3	0.600
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-
Leakage	-	-	-	-	-	-
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	-	-	-	-	-	-
Spill/release	7	1.400	1	0.200	8	1.600
Structural	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-
Well problem	-	-	-	-	-	-
Other	1	0.200	-	-	1	0.200

Table 83 *Production semisubmersibles*. UKCS, 2000, 2001, 2002, 2003.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	2000		2001		2002		2003	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-	-	-
Blowout	-	-	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	-	-	-	-	-	-
Contact	1	0.200	-	-	-	-	-	-
Crane	1	0.200	5	1.000	2	0.400	-	-
Explosion	-	-	-	-	-	-	-	-
Falling object	1	0.200	7	1.400	4	0.800	-	-
Fire	3	0.600	1	0.200	3	0.600	1	0.200
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	-	-	-	-	12	2.400	11	2.200
Structural	-	-	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	1	0.200	-	-	-	-	-	-
Other	1	0.200	-	-	-	-	1	0.200

Table 84 *Production semisubmersibles*. UKCS, 2004, 2005, 2006, 2007.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	2004		2005		2006		2007	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-	-	-
Blowout	-	-	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	-	-	-	-	-	-
Contact	-	-	2	0.400	-	-	-	-
Crane	1	0.200	3	0.600	1	0.200	1	0.200
Explosion	-	-	-	-	-	-	-	-
Falling object	6	1.200	4	0.800	3	0.600	3	0.600
Fire	3	0.600	-	-	-	-	1	0.200
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	23	4.600	16	3.200	23	4.600	24	4.800
Structural	-	-	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	-	-	-	-	-	-	-	-
Other	-	-	-	-	1	0.200	1	0.200

Table 85 *Tension-leg platforms*. UKCS, 1990, 1991, 1992.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year					
	1990		1991		1992	
Type of event	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-
Blowout	-	-	-	-	-	-
Capsize	-	-	-	-	-	-
Collision	-	-	-	-	-	-
Contact	-	-	-	-	-	-
Crane	4	4.000	9	9.000	8	8.000
Explosion	-	-	-	-	-	-
Falling object	3	3.000	10	10.000	9	9.000
Fire	3	3.000	-	-	-	-
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-
Leakage	-	-	-	-	-	-
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	-	-	-	-	-	-
Spill/release	2	2.000	1	1.000	-	-
Structural	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-
Well problem	-	-	-	-	-	-
Other	-	-	-	-	-	-

Table 86 *Tension-leg platforms*. UKCS, 1993, 1994, 1995, 1996.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	1993		1994		1995		1996	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-	-	-
Blowout	-	-	-	-	1	1.000	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	-	-	-	-	-	-
Contact	-	-	-	-	-	-	1	1.000
Crane	-	-	3	3.000	4	4.000	1	1.000
Explosion	-	-	-	-	-	-	1	1.000
Falling object	2	2.000	3	3.000	5	5.000	1	1.000
Fire	2	2.000	1	1.000	-	-	3	3.000
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	1	1.000	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	1	1.000	1	1.000	3	3.000	1	1.000
Structural	-	-	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	-	-	1	1.000	1	1.000	-	-
Other	-	-	-	-	-	-	-	-

Table 87 *Tension-leg platforms*. UKCS, 1997, 1998, 1999.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year					
	1997		1998		1999	
Type of event	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-
Blowout	-	-	-	-	-	-
Capsize	-	-	-	-	-	-
Collision	-	-	-	-	-	-
Contact	-	-	-	-	-	-
Crane	2	2.000	1	1.000	-	-
Explosion	-	-	-	-	-	-
Falling object	2	2.000	2	2.000	-	-
Fire	-	-	-	-	-	-
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-
Leakage	-	-	-	-	-	-
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	-	-	-	-	-	-
Spill/release	-	-	1	1.000	-	-
Structural	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-
Well problem	-	-	-	-	-	-
Other	-	-	-	-	-	-

Table 88 *Tension-leg platforms*. UKCS, 2000, 2001, 2002, 2003.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	2000		2001		2002		2003	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-	-	-
Blowout	-	-	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	-	-	-	-	-	-
Contact	-	-	-	-	-	-	-	-
Crane	-	-	-	-	7	17.500	-	-
Explosion	-	-	-	-	-	-	-	-
Falling object	-	-	3	3.000	6	15.000	-	-
Fire	2	2.000	-	-	1	2.500	-	-
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	2	2.000	4	4.000	-	-	-	-
Structural	-	-	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	1	1.000	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-

Table 89 *Tension-leg platforms*. UKCS, 2004, 2005, 2006, 2007.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	2004		2005		2006		2007	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-	-	-
Blowout	-	-	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	-	-	-	-	-	-
Contact	-	-	-	-	-	-	-	-
Crane	-	-	-	-	-	-	-	-
Explosion	-	-	-	-	-	-	-	-
Falling object	-	-	-	-	-	-	-	-
Fire	-	-	-	-	-	-	-	-
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	-	-	-	-	-	-	-	-
Structural	-	-	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-

A.2. 3 Occurrence frequencies - Monohull units

In the following tables the number of occurrences (**N**) and corresponding frequencies (**F**) for monohull units are given per type of unit and year. The monohulls comprise both FSUs and FPSOs (both converted tankers and purpose-built units).

FPSOs - Both types

The following tables show the calculated frequencies for FPSOs irrespective of type of construction (i.e. converted or purpose-built)

Table 90 *FPSOs*. UKCS, 1990, 1991, 1992.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year					
	1990		1991		1992	
Type of event	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-
Blowout	-	-	-	-	-	-
Capsize	-	-	-	-	-	-
Collision	-	-	-	-	-	-
Contact	-	-	-	-	1	1.000
Crane	-	-	1	1.000	-	-
Explosion	-	-	-	-	-	-
Falling object	-	-	1	1.000	-	-
Fire	1	1.000	-	-	-	-
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-
Leakage	-	-	-	-	-	-
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	-	-	-	-	-	-
Spill/release	-	-	1	1.000	3	3.000
Structural	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-
Well problem	-	-	-	-	-	-
Other	-	-	2	2.000	-	-

Table 91 *FPSOs*. UKCS, 1993, 1994, 1995, 1996.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	1993		1994		1995		1996	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	1	0.500	4	2.000	-	-	1	0.235
Blowout	-	-	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	-	-	-	-	-	-
Contact	2	1.000	-	-	-	-	-	-
Crane	3	1.500	1	0.500	2	0.615	1	0.235
Explosion	-	-	1	0.500	1	0.308	-	-
Falling object	3	1.500	2	1.000	3	0.923	1	0.235
Fire	1	0.500	2	1.000	3	0.923	2	0.471
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	1	0.500	-	-	-	-	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	1	0.500	-	-	-	-	-	-
Spill/release	3	1.500	14	7.000	13	4.000	3	0.706
Structural	-	-	1	0.500	1	0.308	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	-	-	-	-	-	-	-	-
Other	-	-	2	1.000	1	0.308	-	-

Table 92 *FPSOs*. UKCS, 1997, 1998, 1999.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year					
	1997		1998		1999	
Type of event	N	F	N	F	N	F
Anchor failure	-	-	-	-	3	0.240
Blowout	-	-	-	-	-	-
Capsize	-	-	-	-	-	-
Collision	-	-	-	-	-	-
Contact	1	0.152	2	0.211	2	0.160
Crane	10	1.520	3	0.316	6	0.480
Explosion	-	-	-	-	-	-
Falling object	10	1.520	5	0.526	8	0.640
Fire	-	-	1	0.105	4	0.320
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-
Leakage	-	-	-	-	1	0.080
List	-	-	-	-	1	0.080
Machinery	-	-	-	-	-	-
Off position	-	-	-		-	-
Spill/release	4	0.608	11	1.158	32	2.560
Structural	-	-	1	0.105	1	0.080
Towing/towline	-	-	-	-	-	-
Well problem	-	-	-	-	-	-
Other	1	0.152	-	-	9	0.720

Table 93 *FPSOs*. UKCS, 2000, 2001, 2002, 2003.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	2000		2001		2002		2003	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-	2	0.154
Blowout	-	-	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	-	-	-	-	-	-
Contact	-	-	-	-	1	0.077	1	0.077
Crane	7	0.538	7	0.528	6	0.462	4	0.308
Explosion	-	-	-	-	-	-	-	-
Falling object	11	0.846	7	0.528	5	0.385	7	0.539
Fire	9	0.692	6	0.453	7	0.539	4	0.308
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	1	0.077
Off position	-	-	-	-	-	-	-	-
Spill/release	49	3.769	23	1.736	39	3.000	41	3.154
Structural	1	0.077	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	-	-	1	0.075	-	-	1	0.077
Other	3	0.231	2	0.151	2	0.154	1	0.077

Table 94 *FPSOs*. UKCS, 2004, 2005, 2006, 2007.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	2004		2005		2006		2007	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	2	0.154	1	0.077	1	0.077
Blowout	-	-	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	-	-	-	-	-	-
Contact	-	-	1	0.077	1	0.077	1	0.077
Crane	2	0.154	3	0.231	3	0.231	7	0.538
Explosion	-	-	-	-	-	-	-	-
Falling object	4	0.308	3	0.231	7	0.538	9	0.692
Fire	4	0.308	10	0.769	5	0.385	8	0.615
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	-	-	-	-	1	0.077	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	43	3.308	40	3.077	22	1.692	56	4.308
Structural	-	-	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	-	-	-	-	-	-	1	0.077
Other	-	-	-	-	1	0.077	1	0.077

In the table below the frequencies for purpose-built and converted FPSOs are shown separately for the period 1990-2007.

Table 95 *FPSOs*. Type of event vs. type of FPSO. UKCS, 1990-2007.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Type of construction			
	Purpose-built		Converted	
Type of event	N	F	N	F
Anchor failure	14	0.134	-	-
Blowout	-	-	-	-
Capsize	-	-	-	-
Collision	-	-	-	-
Contact	11	0.105	1	0.033
Crane	44	0.421	14	0.467
Explosion	2	0.019	-	-
Falling object	61	0.584	16	0.533
Fire	47	0.450	12	0.400
Foundering	-	-	-	-
Grounding	-	-	-	-
Helicopter	1	0.010	-	-
Leakage	1	0.010	1	0.033
List	1	0.010	-	-
Machinery	-	-	-	-
Off position	1	0.010	-	-
Spill/release	241	2.306	100	3.333
Structural	3	0.029	2	0.067
Towing/towline	-	-	-	-
Well problem	2	0.019	-	-
Other	19	0.182	4	0.133

FSUs

The tables below show the calculated frequencies for FSUs.

Table 96 *FSUs*. UKCS, 1990, 1991, 1992.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year					
	1990		1991		1992	
Type of event	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-
Blowout	-	-	-	-	-	-
Capsize	-	-	-	-	-	-
Collision	-	-	-	-	-	-
Contact	-	-	-	-	-	-
Crane	-	-	-	-	-	-
Explosion	-	-	-	-	-	-
Falling object	1	1.000	1	1.000	-	-
Fire	-	-	-	-	-	-
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-
Leakage	-	-	-	-	-	-
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	-	-	-	-	-	-
Spill/release	-	-	-	-	-	-
Structural	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-
Well problem	-	-	-	-	-	-
Other	-	-	-	-	-	-

Table 97 *FSUs*. UKCS, 1993, 1994, 1995, 1996.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	1993		1994		1995		1996	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-	-	-
Blowout	-	-	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	-	-	-	-	-	-
Contact	-	-	-	-	-	-	-	-
Crane	1	0.429	-	-	-	-	-	-
Explosion	-	-	-	-	-	-	-	-
Falling object	1	0.429	-	-	-	-	-	-
Fire	-	-	-	-	-	-	-	-
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	-	-	1	0.292	1	0.333	-	-
Structural	-	-	-	-	1	0.333	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	-	-	-	-	-	-	-	-
Other	-	-	1	0.292	1	0.333	-	-

Table 98 *FSUs*. UKCS, 1997, 1998, 1999.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year					
	1997		1998		1999	
Type of event	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-
Blowout	-	-	-	-	-	-
Capsize	-	-	-	-	-	-
Collision	-	-	-	-	-	-
Contact	-	-	-	-	-	-
Crane	-	-	-	-	1	0.500
Explosion	-	-	-	-	-	-
Falling object	-	-	-	-	-	-
Fire	-	-	-	-	-	-
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-
Leakage	-	-	-	-	-	-
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	-	-	-	-	-	-
Spill/release	-	-	-	-	-	-
Structural	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-
Well problem	-	-	-	-	-	-
Other	-	-	-	-	-	-

Table 99 *FSUs*. UKCS, 2000, 2001, 2002, 2003.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	2000		2001		2002		2003	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-	-	-
Blowout	-	-	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	-	-	-	-	-	-
Contact	1	0.481	1	0.333	2	0.667	-	-
Crane	1	0.481	1	0.333	-	-	-	-
Explosion	-	-	-	-	-	-	-	-
Falling object	1	0.481	1	0.333	-	-	1	0.333
Fire	-	-	-	-	-	-	-	-
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	-	-	1	0.333	-	-	-	-
Structural	-	-	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-

Table 100 *FSUs*. UKCS, 2004, 2005, 2006, 2007.
No. of occurrences and occurrence frequencies (per unit year).
Source: All databases combined

	Year							
	2004		2005		2006		2007	
Type of event	N	F	N	F	N	F	N	F
Anchor failure	-	-	-	-	-	-	-	-
Blowout	-	-	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	-	-	-	-	-	-
Contact	-	-	-	-	-	-	-	-
Crane	1	0.333	-	-	-	-	-	-
Explosion	-	-	-	-	-	-	-	-
Falling object	2	0.667	-	-	1	0.333	1	0.333
Fire	1	0.333	-	-	-	-	1	0.333
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	2	0.667	2	0.667	-	-		
Structural	-	-	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-

A.2. 4 Number of occurrences - Accommodation units

Since no exposure data for these type of units are available, only the number of occurrences are given (i.e. no frequencies). These units comprise both the jackup and semisubmersible types.

Table 101 *Accommodation units*. UKCS. 1990, 1991, 1992.
No. of occurrences.
Source: All databases combined

	Year					
	1990		1991		1992	
Type of event	Jackup	Semisub.	Jackup	Semisub.	Jackup	Semisub.
Anchor failure	-	1	-	1	-	4
Blowout	-	-	-	-	-	-
Capsize	-	-	-	-	-	-
Collision	-	-	-	-	-	-
Contact	-	1	-	-	-	1
Crane	-	3	-	3	-	6
Explosion	-	-	-	-	-	-
Falling object	-	6	-	5	-	6
Fire	-	1	-	2	-	-
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	-	1	-	-	-	-
Leakage	-	-	-	-	-	-
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	-	2	-	1	-	1
Spill/release	-	-	-	-	-	-
Structural	-	2	-	2	-	-
Towing/towline	-	-	-	-	-	-
Well problem	-	-	-	-	-	-
Other	-	-	-	-	-	1

Table 102 *Accommodation units*. UKCS, 1993, 1994, 1995, 1996.
No. of occurrences.
Source: All databases combined

	Year							
	1993		1994		1995		1996	
Type of event	Jackup	Semisub.	Jackup	Semisub.	Jackup	Semisub.	Jackup	Semisub.
Anchor failure	-	6	-	6	-	1	2	-
Blowout	-	-	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	-	-	-	-	-	-
Contact	-	-	-	-	1	-	-	-
Crane	-	4	-	1	1	-	3	-
Explosion	-	-	-	-	-	-	-	-
Falling object	-	7	-	-	1	2	3	-
Fire	-	1	-	3	-	1	-	-
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	1	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	-	-	-	1
Machinery	-	1	-	-	-	-	-	-
Off position	-	4	-	1	-	-	-	-
Spill/release	-	-	-	-	1	-	-	-
Structural	-	-	-	-	1	-	-	-
Towing/towline	-	1	-	-	-	-	-	-
Well problem	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-

Table 103 *Accommodation units*. UKCS, 1997, 1998, 1999.
No. of occurrences.
Source: All databases combined

	Year					
	1997		1998		1999	
Type of event	Jackup	Semisub.	Jackup	Semisub.	Jackup	Semisub.
Anchor failure	-	1	-	-	-	-
Blowout	-	-	-	-	-	-
Capsize	-	-	-	-	-	-
Collision	-	-	-	-	-	-
Contact	-	1	-	-	-	-
Crane	-	1	-	-	-	-
Explosion	-	-	-	-	-	-
Falling object	-	1	-	-	-	-
Fire	-	-	-	1	-	-
Foundering	-	-	-	-	-	-
Grounding	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-
Leakage	-	-	-	-	-	-
List	-	-	-	-	-	-
Machinery	-	-	-	-	-	-
Off position	-	-	-	-	-	-
Spill/release	-	-	-	-	-	-
Structural	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-
Well problem	-	-	-	-	-	-
Other	-	-	-	-	-	-

Table 104 *Accommodation units*. UKCS, 2000, 2001, 2002, 2003.
No. of occurrences.
Source: All databases combined

	Year							
	2000		2001		2002		2003	
Type of event	Jackup	Semisub.	Jackup	Semisub.	Jackup	Semisub.	Jackup	Semisub.
Anchor failure	-	-	-	1	-	-	-	-
Blowout	-	-	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	-	-	-	-	-	-
Contact	1	-	-	-	-	-	-	-
Crane	-	-	-	-	-	-	-	-
Explosion	-	-	-	-	-	-	-	-
Falling object	-	-	-	-	1	-	-	-
Fire	-	-	-	-	-	-	-	-
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	-	-	-	-	-	-	-	-
Structural	-	-	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-

Table 105 *Accommodation units*. UKCS, 2004, 2005, 2006, 2007.
No. of occurrences.
Source: All databases combined

	Year							
	2004		2005		2006		2007	
Type of event	Jackup	Semisub.	Jackup	Semisub.	Jackup	Semisub.	Jackup	Semisub.
Anchor failure	-	-	-	-	-	-	-	2
Blowout	-	-	-	-	-	-	-	-
Capsize	-	-	-	-	-	-	-	-
Collision	-	-	-	-	-	-	-	-
Contact	-	-	-	-	-	-	1	
Crane	-	-	-	-	-	-	1	3
Explosion	-	-	-	-	-	-		
Falling object	-	-	-	-	-	1	1	2
Fire	1	-	1	1	-	-	-	1
Foundering	-	-	-	-	-	-	-	-
Grounding	-	-	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-	-	-
Leakage	-	-	-	-	-	-	-	-
List	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Off position	-	-	-	-	-	-	-	-
Spill/release	-	-	-	-	-	-	-	1
Structural	-	-	-	-	-	-	-	-
Towing/towline	-	-	-	-	-	-	-	-
Well problem	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-

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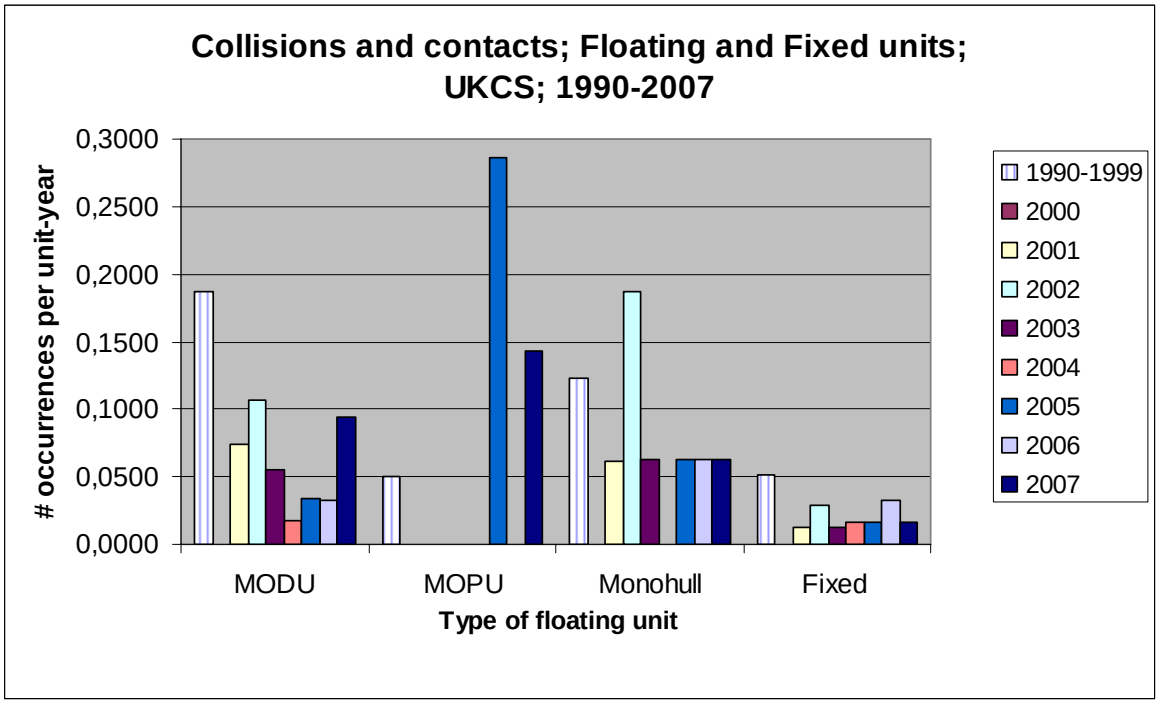
APPENDIX
C
GRAPHS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UKCS; 1990-2007
occurrences per unit-year
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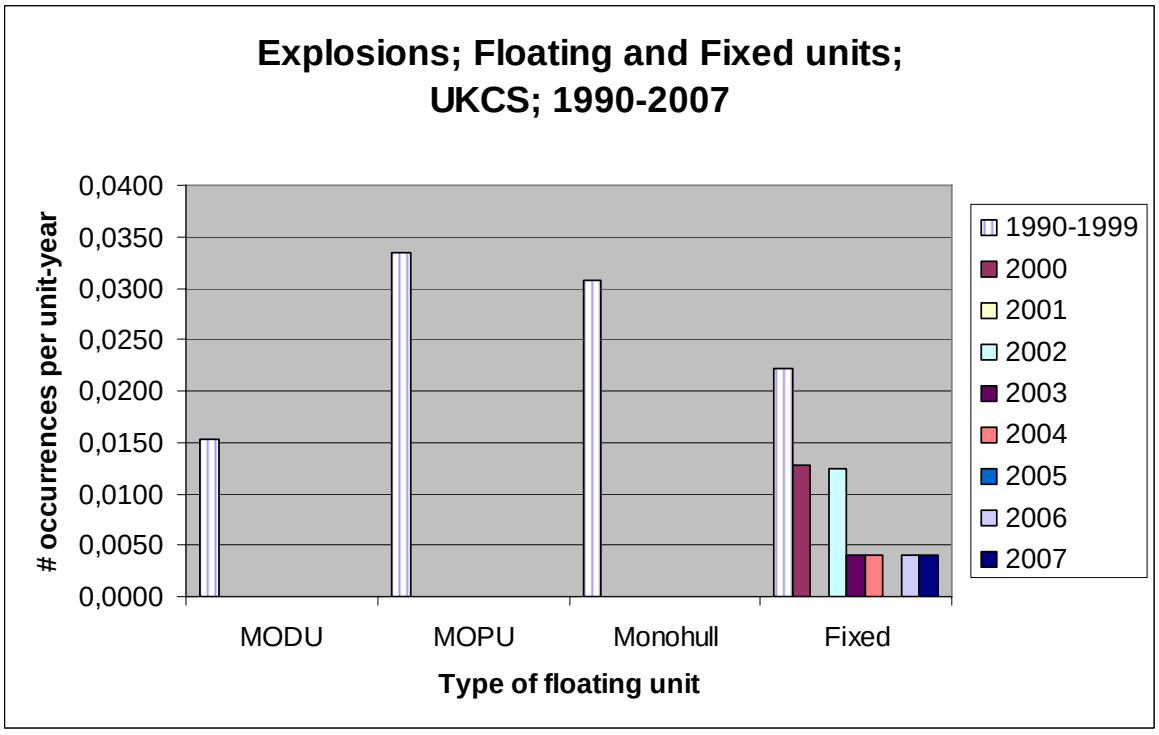
0,2000
0,1500
0,1000
0,0500
0,0000
MODU
MOPU
Monohull
Fixed
Type of floating unit
1990-1999
2000
2001
2002
2003
2004
2005
2006
2007


Explosions; Floating and Fixed units;
UKCS; 1990-2007
occurrences per unit-year
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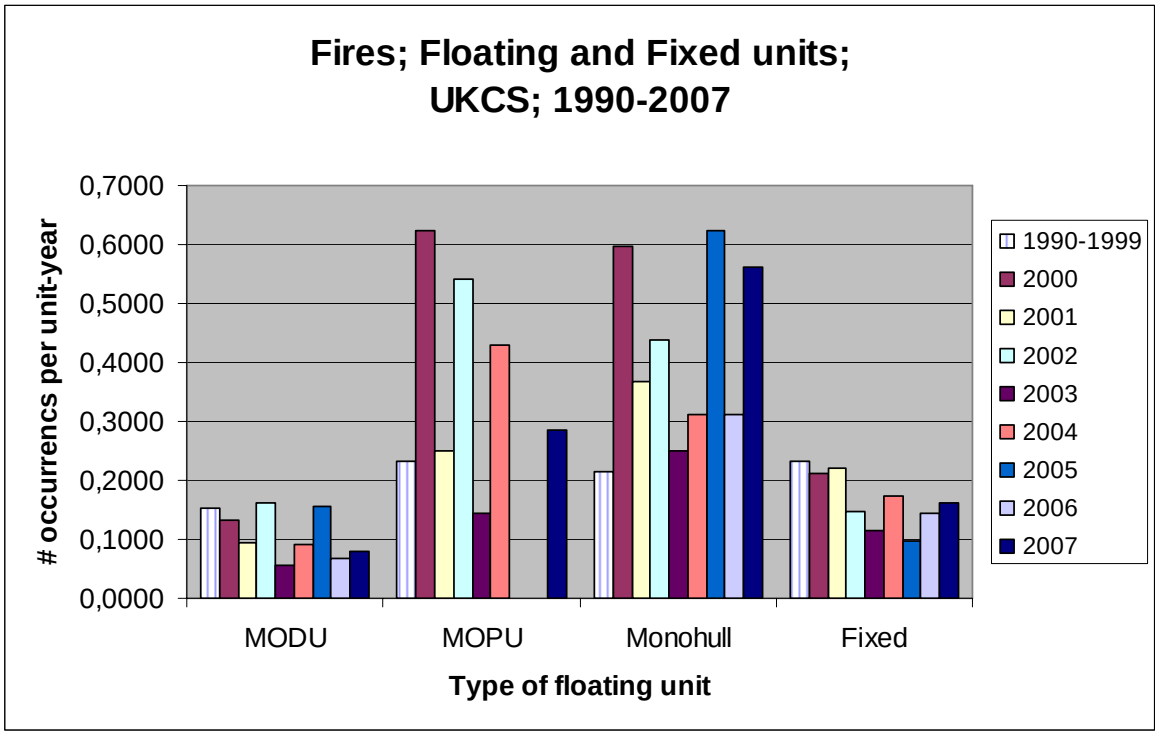
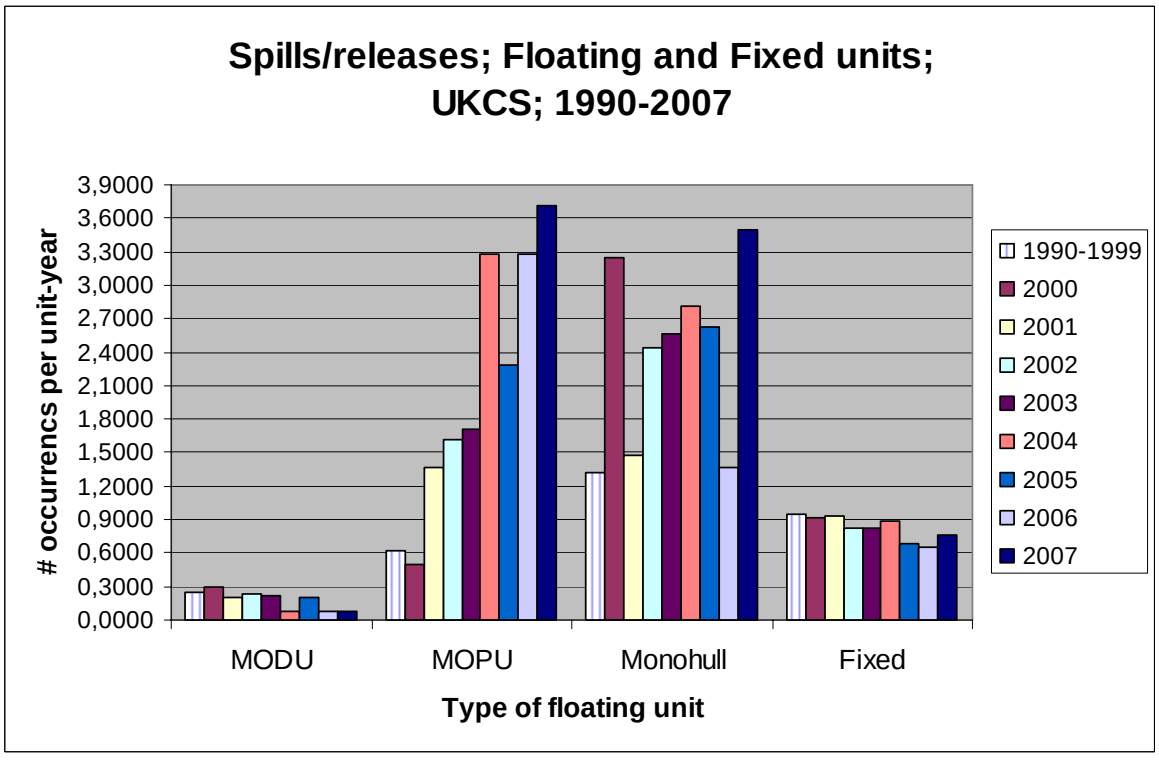
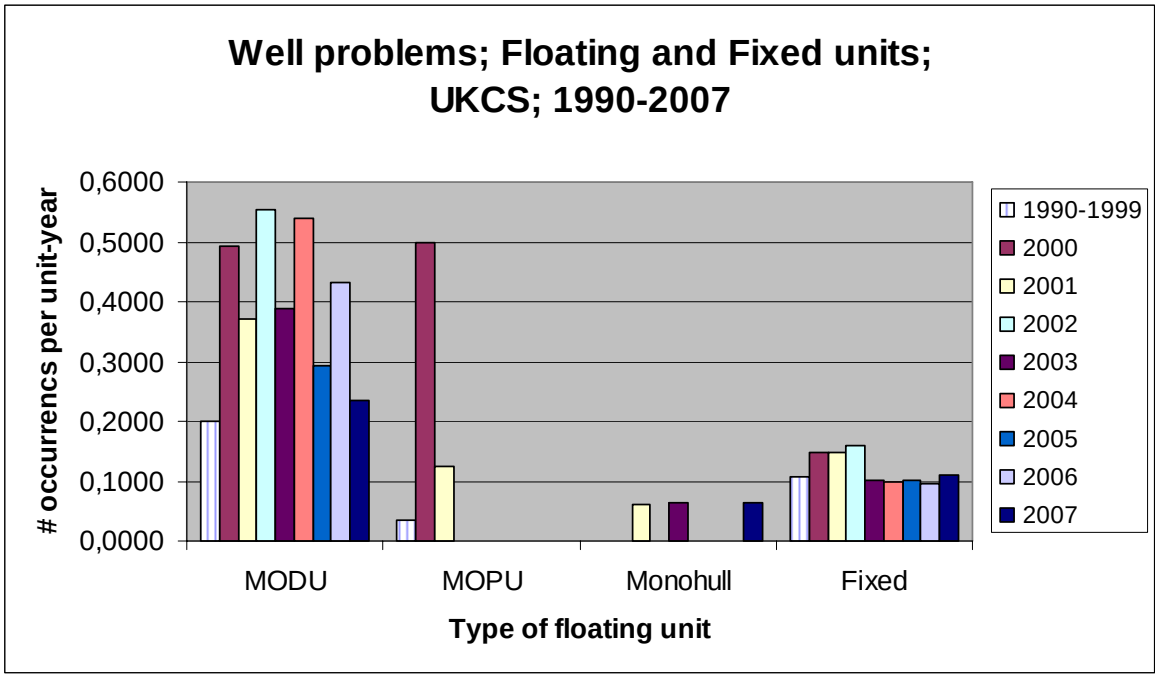
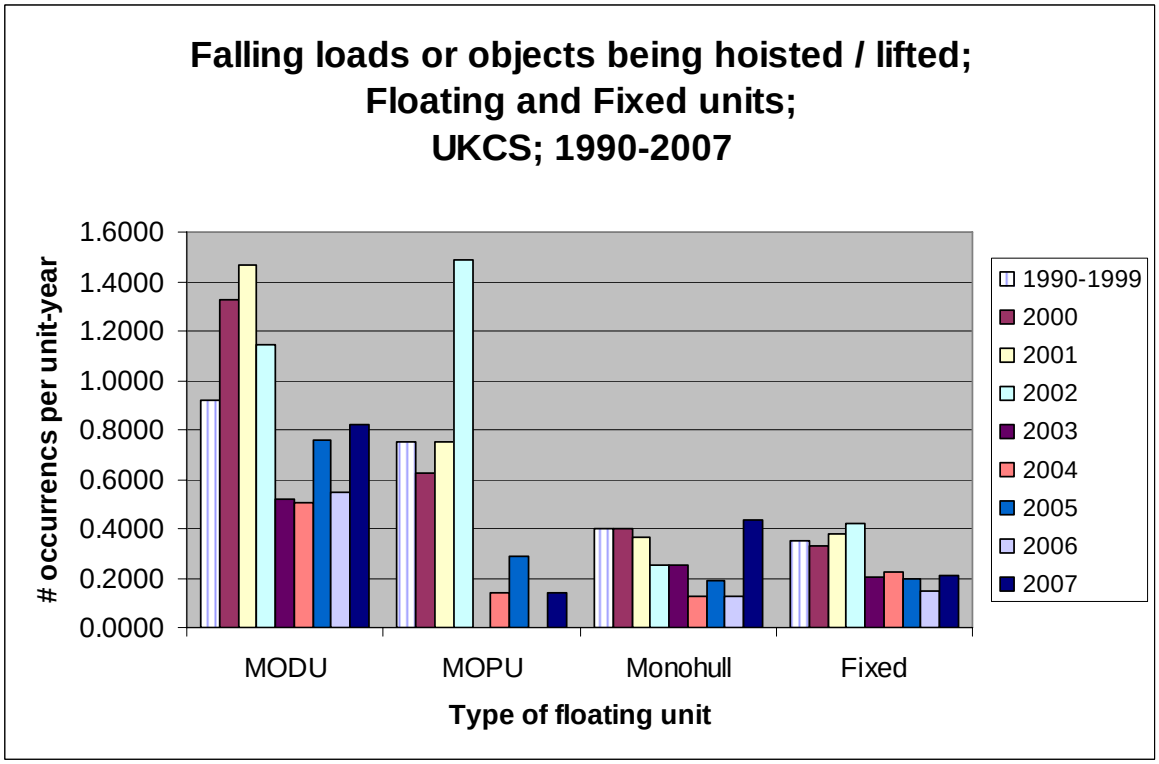
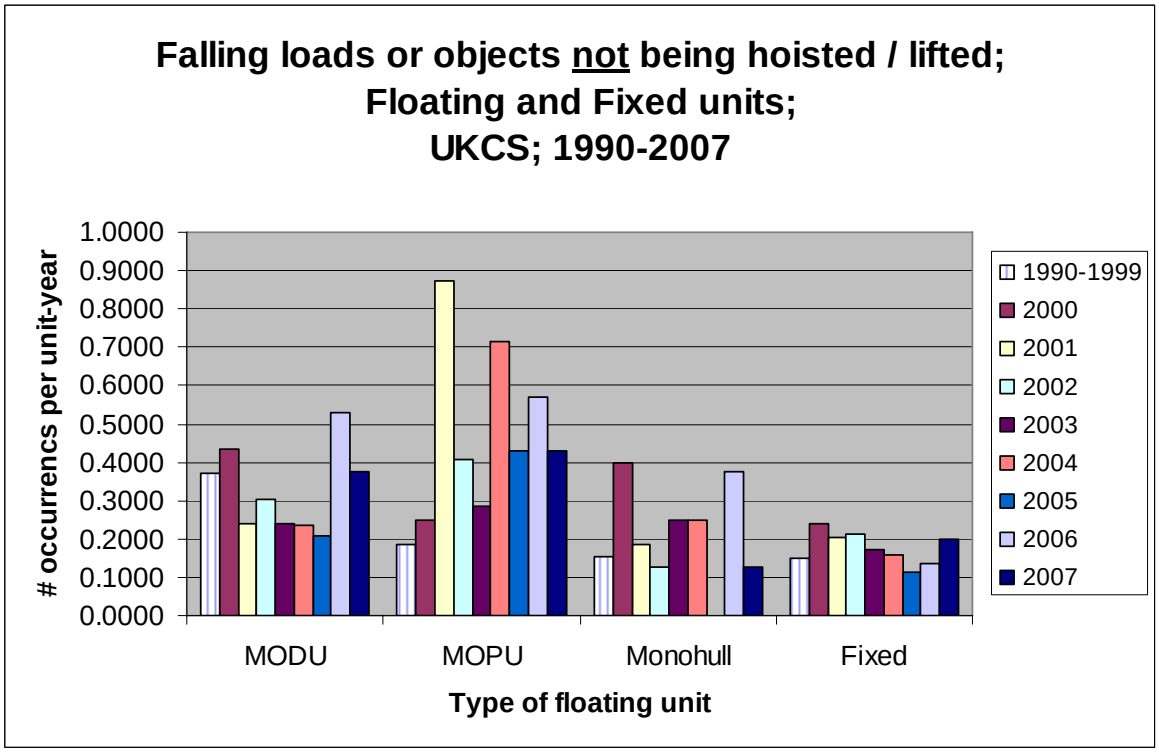
0,0350
0,0300
0,0250
0,0200
0,0150
0,0100
0,0050
0,0000
MODU
MOPU
Monohull
Fixed
Type of floating unit
1990-1999
2000
2001
2002
2003
2004
2005
2006
2007

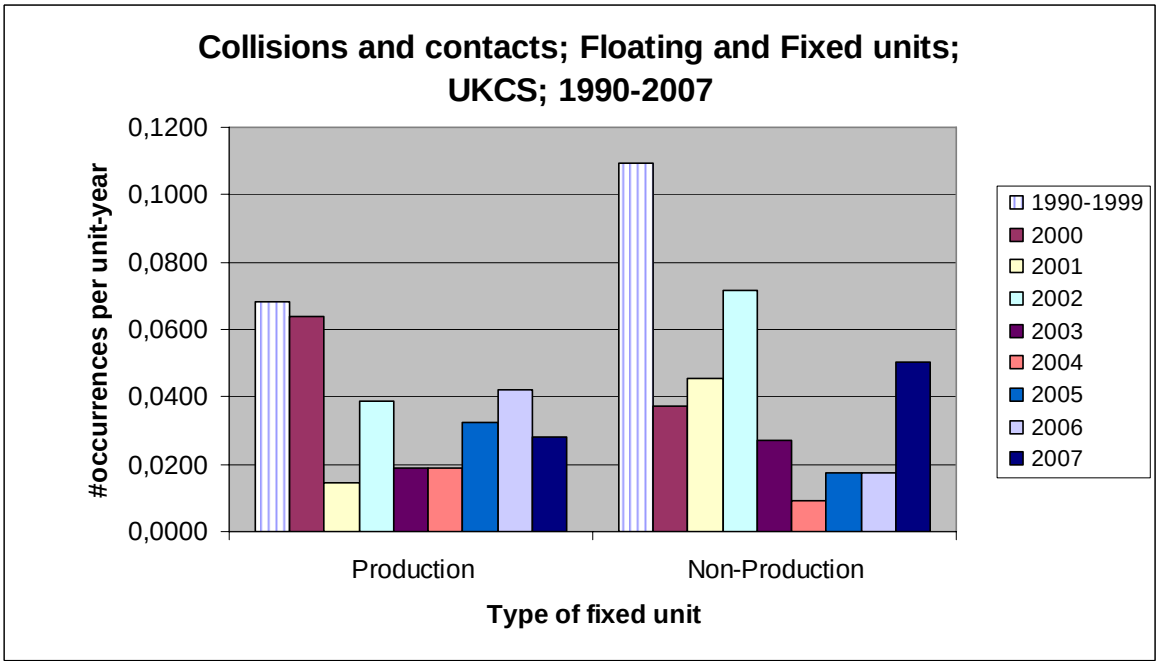

Fires; Floating and Fixed units;
UKCS; 1990-2007
occurrencs per unit-year
0,7000
0,6000
0,5000
0,4000
0,3000
0,2000
0,1000
0,0000
MODU
MOPU
Monohull
Fixed
Type of floating unit
1990-1999
2000
2001
2002
2003
2004
2005
2006
2007

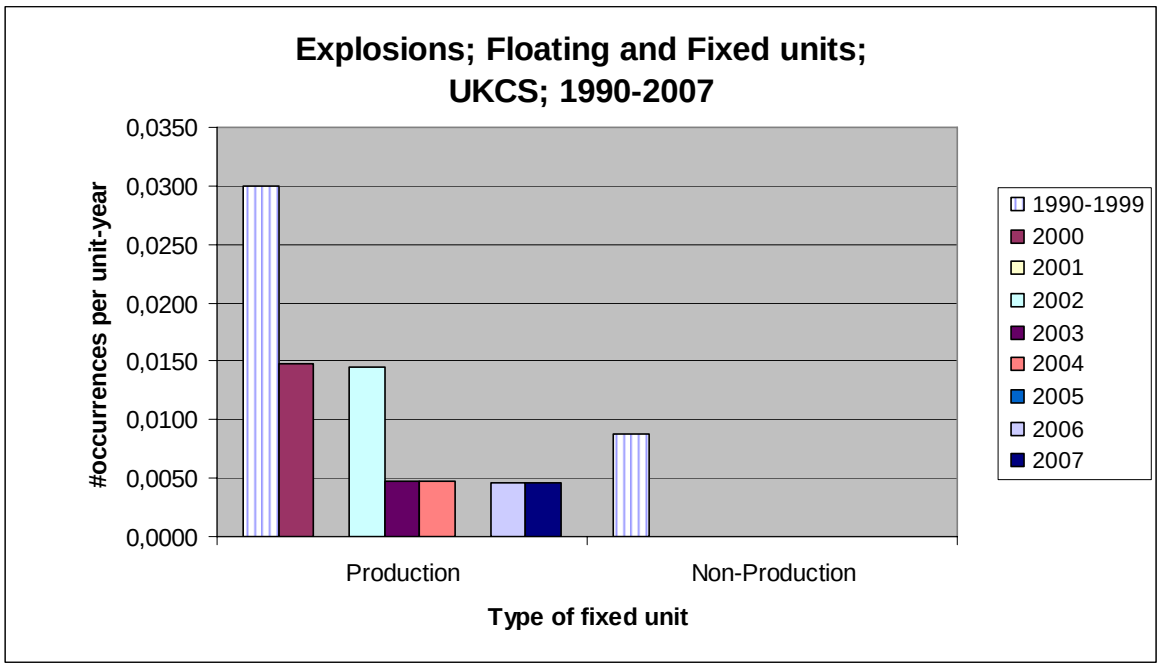

Spills/releases; Floating and Fixed units;
UKCS; 1990-2007
occurrencs per unit-year
3,9000
3,6000
3,3000
3,0000
2,7000
2,4000
2,1000
1,8000
1,5000
1,2000
0,9000
0,6000
0,3000
0,0000
MODU
MOPU
Monohull
Fixed
Type of floating unit
1990-1999
2000
2001
2002
2003
2004
2005
2006
2007

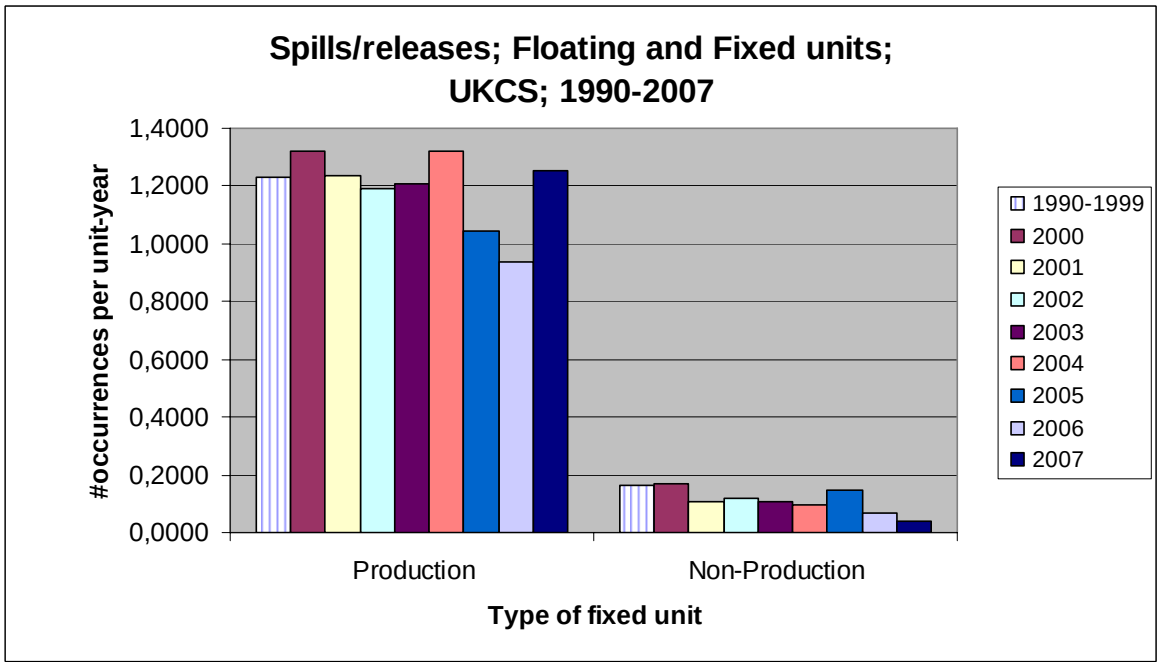

Well problems; Floating and Fixed units;
UKCS; 1990-2007
occurrencs per unit-year
0,6000
0,5000
0,4000
0,3000
0,2000
0,1000
0,0000
MODU
MOPU
Monohull
Fixed
Type of floating unit
1990-1999
2000
2001
2002
2003
2004
2005
2006
2007

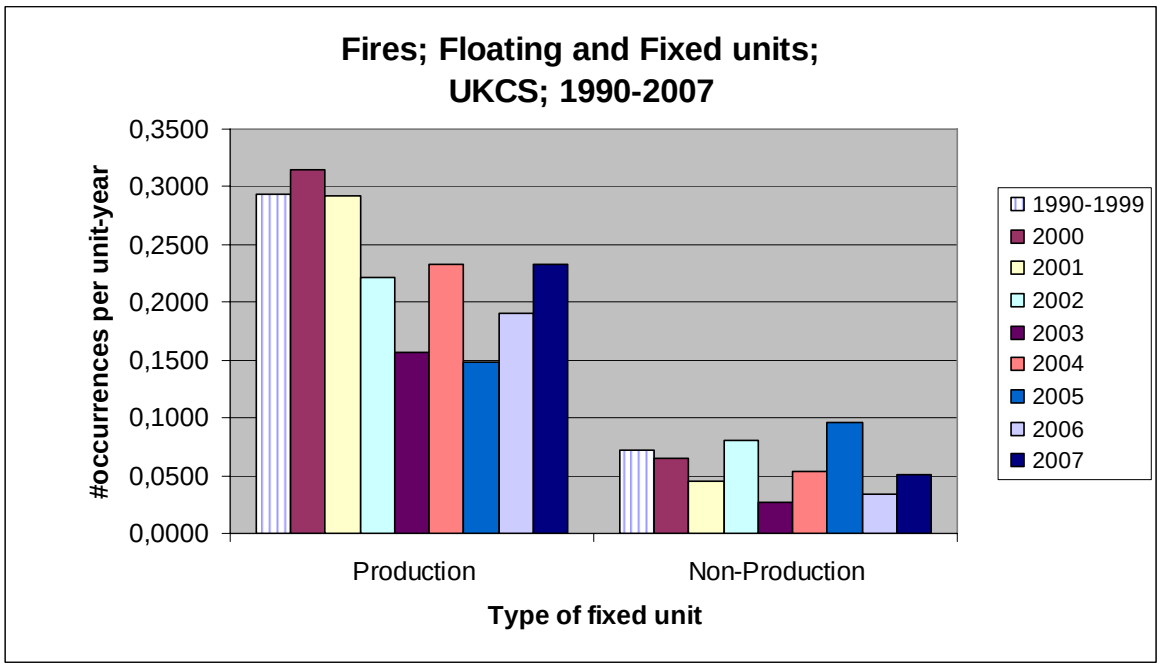

Falling loads or objects being hoisted / lifted;
Floating and Fixed units;
UKCS; 1990-2007
occurrencs per unit-year
1.6000
1.4000
1.2000
1.0000
0.8000
0.6000
0.4000
0.2000
0.0000
MODU
MOPU
Monohull
Fixed
Type of floating unit
1990-1999
2000
2001
2002
2003
2004
2005
2006
2007

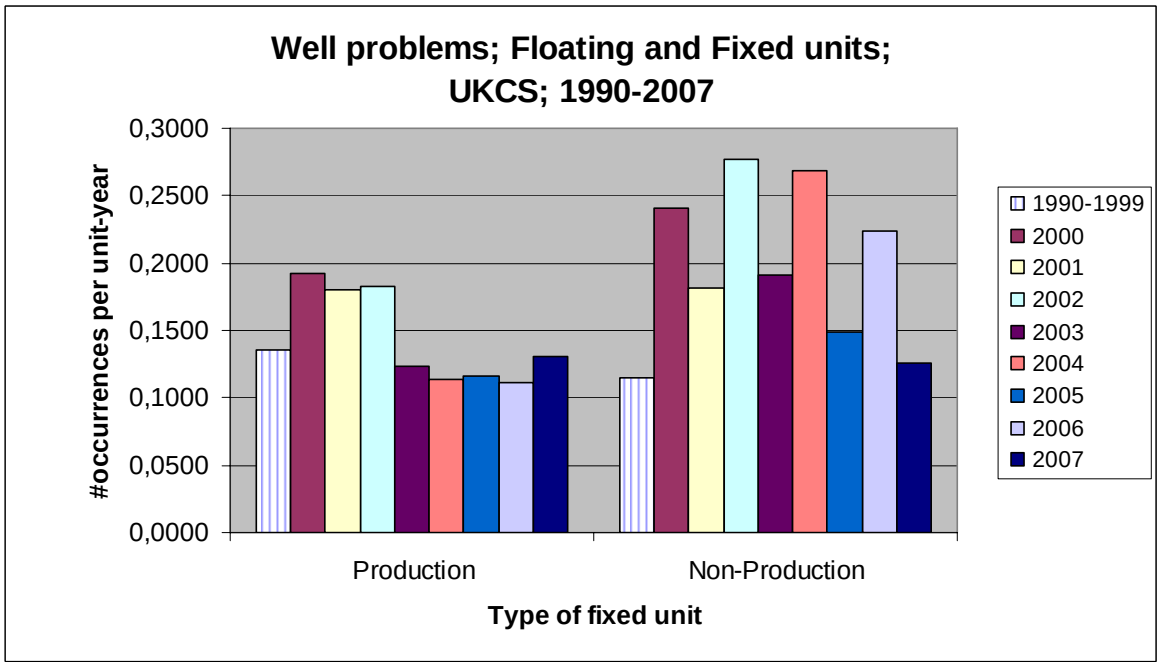

Falling loads or objects not being hoisted / lifted;
Floating and Fixed units;
UKCS; 1990-2007
occurrencs per unit-year
1.0000
0.9000
0.8000
0.7000
0.6000
0.5000
0.4000
0.3000
0.2000
0.1000
0.0000
MODU
MOPU
Monohull
Fixed
Type of floating unit
1990-1999
2000
2001
2002
2003
2004
2005
2006
2007

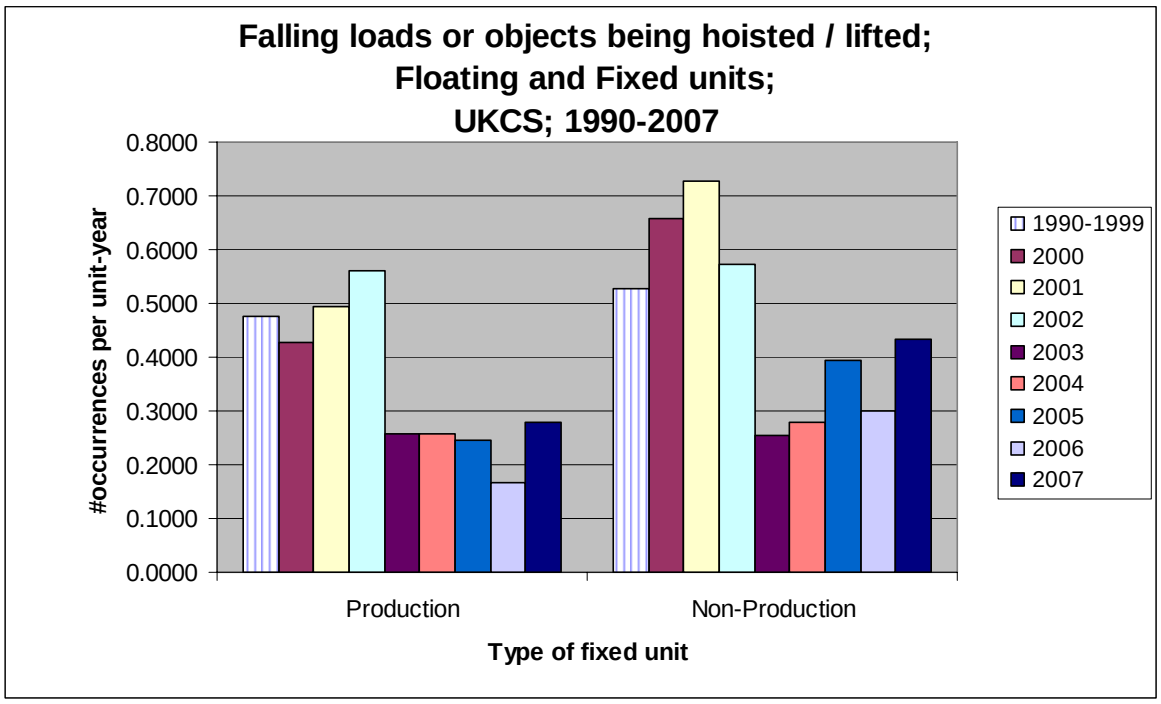

Collisions and contacts; Floating and Fixed units;
UKCS; 1990-2007
#occurrences per unit-year
0,1200
0,1000
0,0800
0,0600
0,0400
0,0200
0,0000
Production
Non-Production
Type of fixed unit
1990-1999
2000
2001
2002
2003
2004
2005
2006
2007

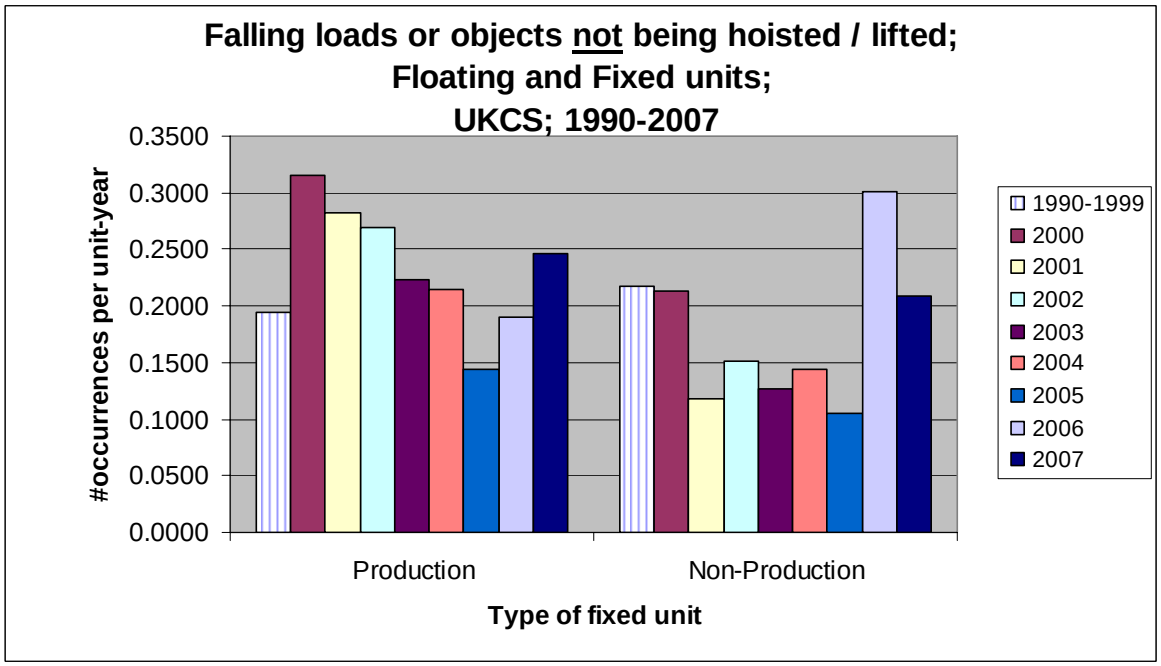

Explosions; Floating and Fixed units;
UKCS; 1990-2007
#occurrences per unit-year
0,0350
0,0300
0,0250
0,0200
0,0150
0,0100
0,0050
0,0000
Production
Non-Production
Type of fixed unit
1990-1999
2000
2001
2002
2003
2004
2005
2006
2007


Spills/releases; Floating and Fixed units;
UKCS; 1990-2007
#occurrences per unit-year
1,4000
1,2000
1,0000
0,8000
0,6000
0,4000
0,2000
0,0000
Production
Non-Production
Type of fixed unit
1990-1999
2000
2001
2002
2003
2004
2005
2006
2007


Fires; Floating and Fixed units;
UKCS; 1990-2007
#occurrences per unit-year
0,3500
0,3000
0,2500
0,2000
0,1500
0,1000
0,0500
0,0000
Production
Non-Production
Type of fixed unit
1990-1999
2000
2001
2002
2003
2004
2005
2006
2007


Well problems; Floating and Fixed units;
UKCS; 1990-2007
#occurrences per unit-year
0,3000
0,2500
0,2000
0,1500
0,1000
0,0500
0,0000
Production
Non-Production
Type of fixed unit
1990-1999
2000
2001
2002
2003
2004
2005
2006
2007


Falling loads or objects being hoisted / lifted;
Floating and Fixed units;
UKCS; 1990-2007
#occurrences per unit-year
0.8000
0.7000
0.6000
0.5000
0.4000
0.3000
0.2000
0.1000
0.0000
Production
Non-Production
Type of fixed unit
1990-1999
2000
2001
2002
2003
2004
2005
2006
2007


Falling loads or objects not being hoisted / lifted;
Floating and Fixed units;
UKCS; 1990-2007
#occurrences per unit-year
0.3500
0.3000
0.2500
0.2000
0.1500
0.1000
0.0500
0.0000
Production
Non-Production
Type of fixed unit
1990-1999
2000
2001
2002
2003
2004
2005
2006
2007

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