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GUIDELINES FOR VERIFICATION OF DAMAGE STABILITY REQUIREMENTS FOR TANKERS AND BULK CARRIERS

Development of guidelines for the verification of damage stability on oil, chemical and gas tankers

Submitted by United Kingdom

SUMMARY

Executive summary:	During SLF 51 and MSC 86 discussions of this issue, it was suggested that interested Member States and organizations submit further information. This document presents the results of data collection carried out with regard to damage stability verification made on tank vessels prior to departure. The scope of the data collection is explained, together with the methodology used. The results of the data collection are summarized in a series of tabular presentations detailing the number of vessels on which data was collected and the compliance or otherwise of those vessels with the regulations
Strategic direction:	2
High-level action:	2.1.1
Planned output:	2.1.1.2
Action to be taken:	Paragraph 19
Related documents:	MSC 83/25/14; MSC 85/26; SLF 51/13/1, SLF 51/13/4 and SLF 51/17, section 13

Introduction

1 Further to submission of document MSC 83/25/14 concerning the lack of adequate damage stability verification made on tank vessels prior to departure and the decision of the Committee to include a new work programme item for the SLF Sub-Committee to consider this issue, the United Kingdom and its co-sponsors submitted document SLF 51/13/1 containing draft guidelines for a harmonized method for the verification of damage stability requirements contained in existing instruments applicable to tank vessels and invited the SLF Sub-Committee

to consider using these as a basis for discussion by any working group established to consider the new work programme item.

2 Discussion of other submissions to the SLF Sub-Committee, including document SLF 51/13/4, resulted in a decision to defer the establishment of a working group to consider the new work programme item pending completion of the Sub-Committee's technical evaluation, and to invite Member Governments and international organizations to submit additional information to demonstrate the compelling need for the new work programme item.

3 The United Kingdom has undertaken to collect and to collate additional data with regard to the verification of damage stability on tank vessels prior to departure and these are presented in the annex. Data have been presented according to the type, size and age of vessels as requested by the Sub-Committee and are presented for their information.

Survey method

4 The method used to derive data relating to damage stability verification was obtained during port State control inspections and flag State surveys and audits. In relation to PSC inspection only the arrival and departure conditions were examined during initial inspection.

5 Anonymous data collected from all sample ships in this survey and a copy of the questionnaire used are also included in the annex.

Definition of non-compliance

6 The position of the United Kingdom and its co-sponsors is that any operational tanker loading condition which includes cargo should be verified to meet the appropriate damage stability standard prior to departure. Any loading condition which does not closely reflect an approved condition in the approved stability information should be individually verified prior to departure, as required by international instruments.

7 For the purpose of making a judgement when a vessel is closely loaded to an approved condition, the United Kingdom and its co-sponsors have applied a standard of 2% variation by weight in any cargo or ballast tank and 2 cm on overall GMf or KGf. Dependent upon the margin of residual stability for an individual vessel, these limits can have a significant effect on survivability in terms of heel angle (potentially resulting in immersion of air pipes) and peak residual GZ.

8 Non-compliance is deemed to occur when a vessel is incapable of making an assessment whether a non-approved loading condition complies with residual damage stability, not whether the individual loading condition itself complies or not. Verification against intact stability requirements alone is not sufficient, although common.

9 Non-compliance is also deemed to occur in cases where the vessel is provided with a means to verify damage stability compliance, but does not routinely use this means, and also in cases where the vessel makes such verification but sails even though the verification shows non-compliance with damage stability requirements.

Summary of results

10 The total number of vessels examined was 73. This is made up of a mixture of oil, chemical, gas and chemical/oil products tankers. Full details are given in tables 1 to 6.

11 From the checks made on board during inspections it was established that 47 vessels were fitted with satisfactory means to verify that damage stability requirements were met on departure, and that this means was being used routinely, or that no means were required due to the loading condition adopted.

12 It was also established that 23 vessels (31%) were loaded to a condition significantly different from an approved loading condition when inspected and had no method of verifying compliance with damage stability available on board, or were not routinely using the means provided for this purpose. These vessels are considered non-compliant in respect of the above definition.

13 There was also a residual number of three vessels where lack of detail in the inspectors' report made a definitive judgement of compliance or non-compliance problematic. These vessels have been considered satisfactory as non-compliance has not been proven.

Comparison with results of United Kingdom shipowners survey

14 The United Kingdom informally presented information regarding a survey of United Kingdom ship operators at SLF 51. To further assist the Sub-Committee this survey has been reanalysed in accordance with the same criteria applied during the IMO data gathering survey, and to remove data from vessels also included in the IMO survey. The results are presented in tables 7 to 9 and anonymous ship data is presented in the annex.

15 The result of the United Kingdom survey mirrors that from the IMO data gathering exercise and shows 25 non-compliant vessels from a sample of 71 (35%). Although the sample sizes are similar between these two surveys, the result of the UK survey shows an increased overall level of non-compliance of 4%. However, this difference is reduced to 1% when adjusted for the range of GTs covered.

Combined survey results

16 The results from both surveys have been combined at tables 10 to 12.

DATA COLLECTION SUMMARY TABLES

Table 1 – Breakdown of survey sample by Flag State and type – IMO survey

Flag State	Number of Vessels by Type				Total
	Oil	Chemical	Oil/Chemical	Gas	
Antigua and Barbuda	-	-	-	1	1
Bahamas	4	-	1	1	6
Cyprus	2	-	-	-	2
Denmark	2	-	1	-	3
Germany	-	-	1	-	1
Greece	5	-	1	1	7
Hong Kong, China	1	1	-	-	2
Isle of Man	-	-	-	2	2
Italy	-	1	-	1	2
Liberia	11	-	1	-	12

Flag State	Number of Vessels by Type				Total
	Oil	Chemical	Oil/Chemical	Gas	
Luxembourg	-	1	-	-	1
Malta	-	-	1	-	1
Marshall Islands	1	-	3	-	4
Netherlands	-	1	1	1	3
Norway	1	1	1	-	3
Panama	5	1	2	-	8
Portugal	-	1	1	-	2
Singapore	3	-	1	1	5
Sweden	-	-	1	-	1
United Kingdom	2	2	3	-	7
Total All Flags	37	9	19	8	73

Table 2 – Breakdown of survey sample by GT and type – IMO survey

GT	Number of Vessels by Type				**Total**
	Oil	Chemical	Oil/Chemical	Gas	
0 < 5,000	4	5	4	4	17
5,001 < 10,000	-	-	5	2	7
10,001 < 25,000	-	3	7	1	11
25,001 < 50,000	13	1	3	-	17
50,001 < 75,000	15	-	-	-	15
>75,000	5	-	-	1	6
Total All Ships	37	9	19	8	73

Table 3 – Breakdown of survey sample by age and type – IMO survey

Age	Number of Vessels by Type				Total
	Oil	Chemical	Oil/Chemical	Gas	
0 to 3	15	1	7	3	26
4 to 6	8	5	4	2	19
7 to 9	3	-	-	-	3
10 to 15	7	2	7	1	17
16 +	4	1	1	2	8
Total All Ships	37	9	19	8	73

Table 4 – Breakdown of non-compliant vessels by type – IMO survey

Rate (%ge) of non-compliance by Vessel Type				Total
Oil	Chemical	Oil/Chemical	Gas	
8/37 (22%)	4/9 (44%)	9/19 (47%)	2/8 (25%)	23/73 (31%)

Table 5 – Breakdown of non-compliant vessels by GT and type – IMO survey

GT	Rate (%ge) of non-compliance by Vessel Type				Total
	Oil	Chemical	Oil/Chemical	Gas	
0 < 5,000	1/4 (25%)	2/5 (40%)	1/4 (25%)	1/4 (25%)	5/17 (29%)
5,001 < 10,000	-	-	2/5 (40%)	1/2 (50%)	3/7 (43%)
10,001 < 25,000	-	2/3 (67%)	4/7 (57%)	0/1 (0%)	6/11 (54%)
25,001 < 50,000	2/13 (15%)	0/1 (0%)	2/3 (67%)	-	4/17 (23%)
50,001 < 75,000	3/15 (20%)	-	-	-	3/15 (20%)
>75,000	2/5 (40%)	-	-	0/1 (0%)	2/5 (40%)
Total All Ships	8/37 (22%)	4/9 (44%)	9/19 (47%)	2/8 (25%)	23/73 (31%)

Table 6 – Breakdown of non-compliant vessels by age and type – IMO survey

Age	Rate (%ge) of non-compliance by Vessel Type				Total
	Oil	Chemical	Oil/Chemical	Gas	
0 to 3	3/15 (20%)	0/1 (0%)	3/7 (43%)	1/3 (33%)	7/26 (27%)
4 to 6	1/8 (12%)	3/5 (60%)	1/4 (25%)	1/2 (50%)	6/19 (32%)
7 to 9	1/3 (33%)	-	-	-	1/3 (33%)
10 to 15	1/7 (14%)	0/2 (%)	5/7 (71%)	0/1 (0%)	6/17 (35%)
16 +	2/4 (50%)	1/1 (100%)	0/1 (0%)	0/2 (0%)	3/8 (37%)
Total All Ships	8/37 (22%)	4/9 (44%)	9/19 (47%)	2/8 (25%)	23/73 (31%)

Table 7 – Breakdown of non-compliant vessels by type – UK survey

Rate (%ge) of non-compliance by Vessel Type				Total
Oil	Chemical	Oil/Chemical	Gas	
16/29 (55%)	2/8 (25%)	6/24 (25%)	1/10 (10%)	25/71 (35%)

Table 8 – Breakdown of non-compliant vessels by GT and type – UK survey

GT	Rate (%ge) of non-compliance by Vessel Type				Total
	Oil	Chemical	Oil/Chemical	Gas	
0 < 5,000	14/24 (58%)	-	1/5 (20%)	1/1 (100%)	16/30 (53%)
5,001 < 10,000	1/4 (25%)	-	0/10 (0%)	0/2 (0%)	1/16 (6%)
10,001 < 25,000	1/1 (100%)	2/8 (25%)	3/7(43%)	0/7 (0%)	6/23 (26%)
25,001 < 50,000	-	-	2/2 (100%)	-	2/2 (100%)
50,001 < 75,000	-	-	-	-	-
>75,000	-	-	-	-	-
Total All Ships	16/29 (55%)	2/8 (25%)	6/24 (25%)	1/10 (10%)	25/71 (35%)

Table 9 – Breakdown of non-compliant vessels by age and type – UK survey

Age	Rate (%ge) of non-compliance by Vessel Type				Total
	Oil	Chemical	Oil/Chemical	Gas	
0 to 3	-	-	-	-	-
4 to 6	1/3 (33%)	0/5 (0%)	4/12 (33%)	-	5/20 (25%)
7 to 9	-	1/2 (50%)	1/4 (25%)	0/2 (0%)	2/8 (25%)
10 to 15	7/10 (70%)	-	1/1 (100%)	-	8/11 (73%)
16 +	8/16 (50%)	1/1 (100%)	0/7 (0%)	1/8 (12%)	10/32 (31%)
Total All Ships	16/29 (55%)	2/8 (25%)	6/24 (25%)	1/10 (10%)	25/71 (35%)

Table 10 – Breakdown of non-compliant vessels by type – combined survey

Rate (%ge) of non-compliance by Vessel Type				Total
Oil	Chemical	Oil/Chemical	Gas	
24/66 (36%)	6/17 (35%)	15/43 (35%)	3/18 (17%)	48/144 (33%)

Table 11 – Breakdown of non-compliant vessels by GT and type – combined survey

GT	Rate (%ge) of non-compliance by Vessel Type				Total
	Oil	Chemical	Oil/Chemical	Gas	
0 < 5,000	15/28 (54%)	2/5 (40%)	2/9 (22%)	2/5 (20%)	21/47 (47%)
5,001 < 10,000	1/4 (25%)	-	2/15 (53%)	1/4 (13%)	4/23 (17%)
10,001 < 25,000	1/1 (100%)	4/11 (37%)	7/14(37%)	0/8 (0%)	12/34 (35%)
25,001 < 50,000	2/13 (15%)	0/1 (0%)	4/5 (80%)	-	6/19 (32%)
50,001 < 75,000	3/15 (20%)	-	-	-	3/15 (20%)
>75,000	2/5 (40%)	-	-	0/1 (0%)	2/6 (33%)
Total All Ships	24/66 (36%)	6/17 (35%)	15/43 (35%)	3/18 (17%)	48/144 (33%)

Table 12 – Breakdown of non-compliant vessels by age and type – combined survey

Age	Rate (%ge) of non-compliance by Vessel Type				Total
	Oil	Chemical	Oil/Chemical	Gas	
0 to 3	3/15 (20%)	0/1 (0%)	3/7 (43%)	1/3 (33%)	7/26 (27%)
4 to 6	2/11 (18%)	3/10 (30%)	5/16 (31%)	1/2 (50%)	11/39 (28%)
7 to 9	1/3 (33%)	1/2 (50%)	1/4 (25%)	0/2 (0%)	3/11 (27%)
10 to 15	8/17 (47%)	0/2 (0%)	6/8 (75%)	0/1 (0%)	14/28 (50%)
16 +	10/20 (50%)	2/2 (100%)	0/8 (0%)	1/10 (10%)	13/40 (32%)
Total All Ships	24/66 (36%)	6/17(35%)	15/43 (35%)	3/18 (17%)	48/144 (33%)

Conclusions

17 The United Kingdom survey made in 2005 and the IMO data gathering exercise conducted in 2009 consistently show that approximately one third of tank ships regularly sail in conditions of loading significantly different from those in the approved stability information and either have no means to assess damage stability compliance or are not using or are ignoring such verification measures where these are provided.

18 This poses an unacceptable risk to life at sea and to the environment and enforcement action required by SOLAS chapter I, regulation 19 is justified by flag States under the existing instruments which apply to these vessels.

Action requested of the Sub-Committee

19 Having regard to the inconsistent methodologies used to approve damage stability compliance on a range of vessels flagged in to the United Kingdom in 2005, the Sub-Committee is requested to complete work on drawing up guidelines for a consistent method to be applied in tank ship damage stability appraisal in order that the enforcement actions justified by the surveys presented in this document can be applied effectively and consistently.

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ANNEX

Supporting information:

1 Explanatory notes regarding ship-related information

2 Anonymous IMO Data Gathering Survey ship-related information (2009)

3 IMO Data Gathering Survey Questionnaire

4 Anonymous UK Operators Survey ship-related information (2005)

1 Explanatory notes regarding ship-related information:

The IMO and UK surveys include data on whether the vessels adhere to approved loading conditions from the stability information. In the case of the IMO survey, this relates to the incoming (arrive) condition and outgoing (depart) condition. In the case of the UK Survey, this relates to whether or not the operator has declared that the vessel loads alternate conditions from those in the approved stability information.

In each case where a loading condition is recorded as not being an approved condition (IMO survey) or a vessel is declared to load alternate conditions (UK survey), criteria for "failure" are decided upon the method used to verify how such a condition meets damage stability.

In cases where it is not possible to establish whether the method used does include damage assessment, the benefit of doubt is given to the vessel and failure is recorded as **[No]**.

The following descriptions are used for stability verification:

Intact describes an intact stability check by loading computer.

Intact Only describes an intact stability check by loading computer even though this is capable of making a damage verification.

Damage describes a damage stability check by loading computer.

SIB refers to the vessel being closely loaded to a condition in the approved Stability Information Book (in which case there is no requirement to make an additional stability check).

Ballast indicates that there is no stability check required as cargo is not carried when the vessel was inspected.

Intact (KG) describes where a check is made using critical intact KG data.

Max KG and **Min GM** describe where a check is made using critical KG/GM data but the basis for these data is not known.

Crit KG Fail indicates one case where a vessel was found to be not in compliance with the critical KG data included in its approved stability information.

Company indicates that the shore office was alleged to make the damage stability check, although the inspector did not make clear whether there was evidence of this on the ship. As this makes it indeterminate, the balance of doubt is given to the ship.

Hand Calc indicates that the inspector reported the vessel to be making a manual check based upon extrapolation of the damage stability calculations. This has been deemed unacceptable as there is no accepted basis for such a check.

2 IMO Survey Summary January-July 2009

Ship	Flag	Tanker Type[1]	Length	YoB	GT	DWT	Class	Loading Instrument/Approval/Type					Approved Condition/Verification				Fail	Port
								Program	App	L/Str	Int	Dam	Arr	Verif	Dep	Verif		
1	Isle of Man	G	72.58	1989	1173	1275	BV	None	None	N	N	N	-	-	Y	SIB	**No**	Grangemouth
2	Germany	O/C	90.00	1992	2634	3750	GL	MACS 3	GL	Y	Y	Y	N	Damage	-	-	**No**	Teesport
3	Italy	C	183.10	2007	29996	50343	RINA	Loadcom	RINA	Y	Y	Y	N	Damage	-	-	**No**	South Killingholme
4	Singapore	O	228.60	2008	43797	76593	ABS	Loadcom	ABS	Y	Y	Y	N	Damage	-	-	**No**	Immingham
5	Portugal	C	119.10	2005	4861	6928	BV	Loadmaster	BV	Y	Y	Y	N	Damage	Y	Ballast	**No**	Immingham
6	Sweden	O/C	135.75	2003	11548	15999	BV	CLC v.2000	DNV	Y	Y	Y	Y	SIB	Y	Ballast	**No**	South Killingholme
7	Italy	G	75.00	2003	2708	3090	RINA	Winshelab/ Damstab	RINA	Y	Y	Y	Y	SIB	Y	SIB	**No**	Teesport
8	Bahamas	O	95.00	2003	3859	4426	LR	Easeacon	LR	Y	Y	Y	Y	SIB	Y	SIB	**No**	Teesport
9	Netherlands	C	93.86	1995	3419	4442	LR	Locopias	LR	Y	Y	Y	Y	SIB	Y	SIB	**No**	Teesport
10	UK	O/C	183.31	2009	29636	51747	LR	MACS 3	LR	Y	Y	Y	N	Damage	N	Damage	**No**	Ulsan
11	UK	O	86.35	1996	3368	4972	LR	Shipwrite	LR	Y	Y	SIB	-	-	N	SIB	**No**	Immingham
12	Singapore	O/C	111.00	2005	5776	8500	BV	Loadicator	BV	Y	Y	Y	N	Damage	Y	Ballast	**No**	Runcorn
13	Greece	O	248.00	1998	54841	105550	ABS	Load Planner	DNV	Y	Y	Y	N	Damage	N	Damage	**No**	Southwold
14	Norway	O	241.09	2002	70933	120670	DNV	Loadcom	DNV	Y	Y	Y	Y	SIB	Y	SIB	**No**	Lowestoft
15	Panama	O	219.95	2008	40865	73965	ABS	Loadcom	ABS	Y	Y	Y	N	Damage	N	Damage	**No**	Southwold
16	Liberia	O	175.79	2005	27725	46697	LR	Loadmaster	LR	Y	Y	Y	N	Damage	N	Damage	**No**	Lowestoft
17	Singapore	O	235.00	2004	61724	109570	LR	Loadmaster	LR	Y	Y	Y	Y	SIB	Y	SIB	**No**	Lowestoft
18	Panama	O	235.92	2009	57773	105272	ABS	Shipmanager 88	KRS	Y	Y	Y	N	Damage	N	Damage	**No**	Lowestoft
19	Bahamas	O	220.99	2008	42446	74999	LR	Shipmanager 88	LR	Y	Y	Y	Y	SIB	Y	SIB	**No**	Lowestoft
20	Marshall Is	O/C	177.46	2006	23421	37456	LR	Loadmaster	LR	Y	Y	Y	Y	SIB	Y	SIB	**No**	Lowestoft
21	Liberia	O	221.03	2008	42331	74999	ABS	Shipmanager 88	ABS	Y	Y	Y	N	Damage	N	Damage	**No**	Lowestoft

[1] Ship Type : G – Gas Tanker; O – Oil Tanker; C – Chemical Tanker; O/C – Oil/Chemical Tanker

Ship	Flag	Tanker Type[1]	Length	YoB	GT	DWT	Class	Loading Instrument/Approval/Type					Approved Condition/Verification				Fail	Port
								Program	App	L/Str	Int	Dam	Arr	Verif	Dep	Verif		
22	Netherlands	O/C	88.50	1998	1813	2818	-	MACS 3/Locopias	BV/LR	Y	Y	Y	N	Damage	Y	SIB	**No**	Sandeford
23	Liberia	O/C	119.10	2005	4859	6843	BV	Delta Load	BV	Y	Y	Y	Y	SIB	Y	SIB	**No**	Slagen
24	Cyprus	O	82.30	2004	1860	2813	BV	Load Ship	BV	Y	Y	Y	N	Damage	N	Damage	**No**	Heroya
25	Denmark	O	243.74	1997	57031	89999	DNV	Loadstar	DNV	Y	Y	Y	N	Damage	N	Damage	**No**	Mongstad
26	UK	O	240.50	2004	58070	106085	LR	HEC-Cargomax	LR	Y	Y	Y	Y	SIB	Y	SIB	**No**	Sture
27	Liberia	O	243.00	1998	56076	106552	LR	Loadcal	LR	Y	Y	Y	N	Damage	N	Damage	**No**	Sture
28	Liberia	O	228.60	2008	42010	73723	ABS	Cargomax	ABS	Y	Y	Y	Y	SIB	Y	SIB	**No**	Namsos
29	Liberia	O	228.00	2008	42331	74999	ABS	Shipmanager 88	ABS	Y	Y	Y	N	Damage	N	Damage	**No**	Lowestoft
30	Cyprus	O	241.09	2008	62775	112827	ABS	Cargomax	ABS	Y	Y	Y	N	Damage	N	Damage	**No**	Lowestoft
31	Greece	O	274.19	2008	84735	164746	DNV	Shipmanager 88	DNV	Y	Y	Y	N	Damage	N	Damage	**No**	Lowestoft
32	Hong Kong	O	243.00	2007	60208	108700	ABS	Cargomax	ABS	Y	Y	Y	N	Damage	N	Damage	**No**	Lowestoft
33	Marshall Isl	O/C	144.00	2009	11259	17596	KRS	Shipmanager 88	KRS	Y	Y	Y	Y	SIB	Y	SIB	**No**	Stanlow
34	Luxembourg	C	99.95	1998	2335	3614	GL	Onboard Napa	GL	Y	Y	Y	Y	Ballast	Y	SIB	**No**	Immingham
35	Singapore	O	243.80	2009	60205	107529	ABS	Loadcal II	ABS	Y	Y	Y	N	Damage	-	-	**No**	Lowestoft
36	Isle of Man	G	155.87	1999	14400	21823	GL	Onboard Napa	GL	Y	Y	Y	Y	Damage	-	-	**No**	Isle of Grain
37	Greece	G	276.80	2006	97491	84823	DNV	Load Planner	DNV	Y	Y	N	Y	SIB	-	-	**No**	Isle of Grain
38	Greece	O	274.30	1991	81110	143895	Flag	-	-	Y	Y	Y	-	-	Y	SIB	**No**	River Forth
39	Panama	O	172.00	1999	28077	45858	NKK	Load Ace	NKK	Y	Y	N	Y	Ballast	Y	SIB	**No**	Immingham
40	Denmark	O/C	123.05	2007	7728	11372	BV	Cload	DNV	Y	Y	Y	N	Damage	-	-	**No**	Hull
41	Marshall Is	O/C	110.00	1998	6294	11747	NKK	Load Planner	NKK	Y	Y	N	N	Intact	-	-	**No**	Hull
42	Panama	C	145.53	2004	11629	19947	NKK	Marine Ldg Comp	NKK	Y	Y	SIB	N	SIB	-	-	**No**	Hull
43	Bahamas	O	221.67	2006	42048	73400	BV	Cargomax	-	Y	Y	N	Y	SIB	Y	SIB	**No**	Lowestoft
44	Liberia	O	235.61	2002	57326	99990	NKK	Loadometer	NKK	Y	Y	N	Y	SIB	Y	SIB	**No**	Lowestoft
45	Antigua and Barbuda	G	112.58	2008	9110	10263	DNV	Loadcom	DNV	Y	Y	Y	N	Damage	N	Damage	**No**	Braefoot
46	Liberia	O	274.00	1998	81565	157406	DNV	CLC v.97	DNV	Y	Y	Y	N	Damage	N	Damage	**No**	Finnart
47	Singapore	G	66.60	1992	2223	2004	BV	Easeacon	BV	Y	Y	Y	N	Ballast	N	Intact	**No**	Immingham

Ship	Flag	Tanker Type[1]	Length	YoB	GT	DWT	Class	Loading Instrument/Approval/Type					Approved Condition/Verification				Fail	Port
								Program	App	L/Str	Int	Dam	Arr	Verif	Dep	Verif		
48	Panama	O	228.00	2004	40953	74998	NKK	Loadometer	NKK	Y	Y	N	N	Company	N	Company	**[No]**	Lowestoft
49	Liberia	O	240.06	2004	62877	114879	LR	Loadmaster	LR	Y	Y	N	N	Intact	N	Intact	**[No]**	Lowestoft
50	Greece	O	228.00	1992	39265	66895	LR	GSTAB	LR	Y	Y	Y	Y	Damage	Y	Damage	**[No]**	Teesport
51	Denmark	O	234.00	1997	57031	99999	DNV	Loadstar	DNV	Y	Y	N	N	Intact	N	Intact	**Yes**	Lowestoft
52	Greece	O/C	174.00	1998	27254	44990	LR	Loadmaster	LR	Y	Y	N	-	-	N	Intact	**Yes**	Immingham
53	Panama	O	172.00	2008	28054	45996	NKK	Load Ace	NKK	Y	Y	-	N	Intact	N	Intact	**Yes**	Lowestoft
54	Bahamas	O	234.00	2006	57325	105583	DNV	Shipmanager 88	DNV	Y	Y	N	N	Intact	N	Intact	**Yes**	Milford Haven
55	Norway	O	123.00	1996	6045	9494	DNV	Cargomaster	DNV	Y	Y	N	N	Intact	N	Intact	**Yes**	Salt End
56	Greece	O	175.53	1990	29506	45425	LR	GSTAB	LR	Y	Y	N	N	Intact	-	-	**Yes**	Immingham
57	Bahamas	O/C	175.00	1998	20573	30957	NKK	Loadcom	NKK	Y	Y	KG data	N	Intact only	Y	SIB	**Yes**	Salt End
58	UK	C	167.89	2005	19758	29040	LR	Loadstar	LR	Y	Y	Y	N	Intact	Y	Ballast	**Yes**	Purfleet
59	UK	O/C	177.44	2008	23353	37296	LR	MACS 3	LR	Y	Y	Y	Y	SIB	N	Intact only	**Yes**	Santa Panagia
60	Norway	C	69.20	1970	1300	1263	DNV	-	-	-	-	-	N	Crit KG fail	-	-	**Yes**	Teesport
61	UK	C	175.50	2005	19758	29032	LR	Loadstar	LR	Y	Y	-	N	Intact	-	-	**Yes**	Montevideo
62	Panama	O/C	175.00	1996	20573	30947	NKK	Loadcom	NKK	Y	Y	KG data	N	Intact only	N	Intact only	**Yes**	Salt End
63	Portugal	O/C	120.00	2006	4870	6927	BV	-	-	Y	Y	N	N	Intact	-	-	**Yes**	Grangemouth
64	Hong Kong	C	98.15	2003	3466	4836	BV	Delta Load	BV	Y	-	N	N	Hand Calc	-	-	**Yes**	Dagenham
65	UK	O/C	116.65	2007	6952	9595	BV	Autoload	LRS	Y	Y	N	N	Intact	-	-	**Yes**	Walvis Bay
66	Marshall Is	O	274.00	2004	81076	159152	ABS	Shipmanager 88	ABS	Y	Y	N	N	Intact (KG)	Bal last	-	**Yes**	Southampton
67	Netherlands	G	106.00	2007	1997	1720	BV	Locopias	BV	Y	Y	Y	-	-	N	Intact	**Yes**	Fawley
68	Bahamas	G	119.95	2003	7893	8709	BV	Loadstar	BV	Y	Y	N	Y	SIB	N	Intact	**Yes**	Fawley
69	Malta	O/C	175.38	2005	28960	50950	ABS	Loadcom	ABS	Y	Y	N	Y	Ballast	N	Intact	**Yes**	Immingham
70	Panama	O/C	141.21	1997	11951	19508	NKK	Load Ace	-	Y	Y	KG data	N	Intact only	N	Intact only	**Yes**	Hull
71	Liberia	O	235.80	2006	57325	105571	DNV	Shipmanager 88	DNV	Y	Y	N	N	Intact	N	Intact	**Yes**	Lowestoft

Ship	Flag	Tanker Type[1]	Length	YoB	GT	DWT	Class	Loading Instrument/Approval/Type					Approved Condition/Verification				Fail	Port
								Program	App	L/Str	Int	Dam	Arr	Verif	Dep	Verif		
72	Liberia	O	101.60	1992	4847	6403	LR	Shipwrite	LR	Y	-	N	Y	SIB	Y	SIB	**Yes**	Salt End
73	Liberia	O	320.00	2000	159463	298824	ABS	KAAL OC-4001W	ABS	Y	Y	N	-	-	N	Intact	**Yes**	Hound Point

3 Questionnaire

	Port of Inspection	Date	

1. Ship-related information

Name	
IMO Number	
Flag	
Length	
YOB	
Date of Major Modification	
GT	
DWT	

2. Details of certification/approval

Item	Issued/Approved by	Date		
MARPOL Annex I (Oil)			**5.1/5.2**	Note 1
IBC Code (Chemical)				
IGC Code (Gas)				
Stability Information				
Damage Assessment				Note 2

3. Details of CLI/Stability Program

Supplier				
Program				
Version			**Date**	
Approved by				Note 3
Longitudinal strength	Provided □	Approved □		
Intact stability verification	Provided □	Approved □		
Damage stability verification	Provided □	Approved □		

4. Details of sailing condition for voyage to the port of inspection

Was sailing condition an approved condition from the stability book	**Yes / No**	Note 4
If **NO**, what method was used to verify damage stability compliance		
1) Written authorization from flag or class	□	Note 5
2) Onboard **Manual/Computer** check using critical damage KG	□	Note 6
3) Onboard check using damage stability program	□	
4) Verification using **intact** stability program only	□	Note 7
5) Other (specify)		Note 8 Note 9
If **NO**, what was the departure sailing condition GMf		
If **NO**, what is the GMf of the closest approved condition		Note 10

5. Details of proposed sailing condition for voyage from the port of inspection

Is sailing condition an approved condition from the stability book	**Yes / No**	Note 4
If **NO**, what method is proposed to verify damage stability compliance		
1) Written authorization from flag or class	□	Note 5
2) Onboard **Manual/Computer** check using critical damage KG	□	Note 6
3) Onboard check using damage stability program	□	
4) Verification using **intact** stability program only	□	Note 7
5) Other (specify)		Note 8 Note 9
If **NO**, what is the departure sailing condition GMf		
If **NO**, what is the GMf of the closest approved condition		Note 10

6. Additional information for vessels using intact stability program only or no check

(i.e. those with an entry under 4.4, 4.5, 5.4 or 5.5)

Full load draft

A) Data taken from approved conditions close to full load draft and/or recent loading conditions Note 11

Cond No	Filling Range	Range of SG	Range of Draft	GMf	Min res GZ	Deck Tanks	Note 12
1						**Yes / No**	Note 13
2						**Yes / No**	
3						**Yes / No**	
4						**Yes / No**	
5						**Yes / No**	
					Note 14	←	Note 14

B) Data taken from recent conditions (including close to full load draft if any) Note 11

Cond No	Filling Range	Range of SG	Range of Draft	GMf	Date	Deck Tanks	Note 12
1						**Yes / No**	Note 13
2						**Yes / No**	
3						**Yes / No**	
4						**Yes / No**	
5						**Yes / No**	

NOTES

1 - Record the stability approval type described in section 5 of the Certificate of Fitness - 5.1 or 5.2.

2 - All vessels should carry a copy of damage stability calculations which demonstrate that approved loading conditions from the stability book meet statutory damage criteria following statutory damage.

3 - If reference is made to IACS URL5 type 1, 2 or 3 programs (post July 2005 only), type is to be given.

4 - A sailing condition is deemed to be an approved condition **IF** the filling of each cargo and ballast tank lies within 1% of the weight in the approved condition **AND** GMf lies within 2 cm of the approved condition's GMf. Outside these limits a condition shall not be considered "close to" an approved one.

5 - Where flag/class authorization is presented, copy to be added to the report. Part 6 is also to be completed if an authorization does not relate to a specific loading condition.

6 - In cases where critical damage KG data are used to verify damage stability compliance indicate whether the check is made manually or using a loading instrument or stability program.
7 - Where an intact computer is being used for damage stability verification and this shows a warning on the report that the condition is "intact only", "not verified for damage" or that the condition requires to be submitted to the flag State for approval, a copy should be obtained and added to the report.
8 - If conditions are not loaded closely to an approved condition (as defined in Note 4) but remain unchecked on the basis that the crew regard them as closely loaded, or "within the range" of approved conditions, this should be recorded.
9 - There is a possibility that vessels provided with stability computers approved to validate damage may rely only on the intact stability module to verify loading conditions. This should be highlighted if found.
10 - The closest approved condition should be considered to be that which exhibits the closest draught amidships, then the closest trim and finally the closest cargo distribution by weight.
11 - Provide comparative data for recent loading conditions or conditions at more than 95% of full load draft.
12 - The range of tank cargo fillings and cargo SGs shall be recorded as percentages and two decimal places respectively, e.g., 55-98 and 1.20-1.45 For homogeneous cargoes only one SG need be recorded.
13 - In any approved case or actual case of loading where deck tanks are filled in whole or in part, the use of deck tanks shall be recorded as YES.
14 - If this data can readily be obtained from damage stability calculations, the minimum residual GZ following the worst case of damage is to be recorded for each condition.

Where **Yes/No** is offered, circle choice that applies and/or delete choice that doesn't
Where **Manual/Computer** is offered, circle choice that applies and/or delete choice that doesn't
Where check boxes □are offered, mark only those which apply □

ADDITIONAL COMMENTS/INFORMATION SHOULD BE SUBMITTED ON A SEPARATE SHEET

4 – UK Survey Summary July-Sept 2005

Vessel	Flag	Ship Type [2]	Length	YoB	GT	DWT	Class	Alternate Conditions	Verification	Program Type	Failure
1	UK	O	80.00	1980	2077	3120	LR	Yes	Program	Damage	**No**
2	UK	O	135.00	1997	9356	14204	LR	Yes	Program	Damage	**No**
3	UK	G	116.00	2002	8613	9996	ABS	Yes	Program	Damage	**No**
4	UK	G	116.00	2002	8613	9996	ABS	Yes	Program	Damage	**No**
5	UK	G	153.00	1981	14102	18270	LR	Yes	Program	Damage	**No**
6	UK	G	153.00	1981	14102	18270	LR	Yes	Program	Damage	**No**
7	UK	G	153.00	1981	14102	18270	LR	Yes	Program	Damage	**No**
8	UK	G	153.00	1982	14102	18270	LR	Yes	Program	Damage	**No**
9	UK	G	153.00	1984	14102	18270	LR	Yes	Program	Damage	**No**
10	UK	G	153.00	1984	14102	18270	LR	Yes	Program	Damage	**No**
11	UK	O/C	140.00	1993	7926	13924	LR	Yes	Program	Damage	**No**
12	UK	O/C	112.00	1990	5006	9009	NKK	Yes	Program	Damage	**No**
13	UK	O/C	171.00	1984	15163	23793	DNV	Yes	Program	Damage	**No**
14	UK	G	158.00	1990	11822	16137	DNV	Yes	Program	Damage	**No**
15	UK	O/C	132.00	1990	7916	13701	LR	Yes	Program	Damage	**No**
16	UK	O/C	146.00	2003	11590	19940	NKK	Yes	Program	Damage	**No**
17	UK	O/C	145.00	2003	11590	19937	NKK	Yes	Program	Damage	**No**
18	UK	O/C	111.00	1992	4989	9103	NKK	Yes	Program	Damage	**No**
19	UK	O/C	132.00	1992	7916	13940	LR	Yes	Program	Damage	**No**
20	UK	O/C	112.00	1992	4989	9103	NKK	Yes	Program	Damage	**No**
21	UK	O/C	149.80	2001	13753	22377	LR	Yes	Program	Intact	**No**
22	UK	O/C	78.00	2003	1300	1862	BV	No	Program	Intact	**No**
23	UK	O/C	89.00	2000	1845	2802	DNV	No	Program	Intact	**No**
24	UK	O	79.00	1979	1696	2550	BV	No	N/A	None	**No**
25	UK	O	127.00	2004	8449	12800	LR	Yes	Program	Damage	**No**

[2] Ship Type: G - Gas Tanker; O - Oil Tanker; C - Chemical Tanker; O/C - Oil/Chemical Tanker

Vessel	Flag	Ship Type [2]	Length	YoB	GT	DWT	Class	Alternate Conditions	Verification	Program Type	Failure
26	UK	O	127.00	2005	8446	12800	LR	Yes	Program	Damage	**No**
27	UK	O	92.00	1980	1595	3120	LR	Yes	Program	Damage	**No**
28	UK	O	89.00	1997	2965	3778	LR	No	N/A	Intact	**No**
29	UK	O	88.00	1997	2965	3778	LR	No	N/A	Intact	**No**
30	UK	C	162.00	2004	22184	34656	LR	No	Program	Damage	**No**
31	UK	C	162.00	2000	22181	34985	LR	No	Program	Damage	**No**
32	UK	C	162.00	2003	22184	34548	LR	No	Program	Damage	**No**
33	UK	C	162.00	2003	22184	26400	LR	No	Program	Damage	**No**
34	UK	C	162.00	2003	22184	29999	LR	No	Program	Damage	**No**
35	UK	C	162.00	2004	22184	34656	LR	No	Program	Damage	**No**
36	UK	O/C	110.00	2003	5145	8234	GL	No	Program	Damage	**No**
37	UK	O/C	110.00	2003	5095	8264	GL	No	Program	Damage	**No**
38	UK	O/C	110.00	2003	5145	8150	GL	No	Program	Damage	**No**
39	UK	O/C	110.00	2002	5095	8150	GL	No	Program	Damage	**No**
40	UK	O/C	110.00	2004	5145	8150	GL	No	Program	Damage	**No**
41	UK	O/C	110.00	2003	5145	8150	GL	No	Program	Damage	**No**
42	UK	O	80.00	1986	1219	1770	GL	Yes	Min GM	Not Known	**[No]**
43	UK	O	70.00	1985	992	1570	LR	Yes	Max KG	Not Known	**[No]**
44	UK	O	70.00	1985	992	1570	LR	Yes	Max KG	Not Known	**[No]**
45	UK	O	73.00	1989	1646	2675	LR	Yes	Max KG	Not Known	**[No]**
46	UK	O	73.00	1989	1646	2675	LR	Yes	Max KG	Not Known	**[No]**
47	UK	G	88.00	1991	3023	3621	BV	Yes	Program	Intact	**Yes**
48	UK	C	166.00	2000	16754	26707	ABS	Yes	Program	Intact	**Yes**
49	UK	O/C	88.00	2005	2865	3647	LR	Yes	Program	Intact	**Yes**
50	UK	O/C	168.00	2004	25400	37069	ABS	Yes	Hand Calc	Intact	**Yes**
51	UK	O/C	168.00	2004	24663	37091	ABS	Yes	Program	Intact	**Yes**
52	UK	O/C	170.00	2004	24663	37069	ABS	Yes	Hand Calc	Intact	**Yes**
53	UK	O/C	174.00	1996	28027	44720	LR	Yes	Program	Intact	**Yes**
54	UK	O	79.00	1982	1926	3027	LR	Yes	Program	Intact	**Yes**

Vessel	Flag	Ship Type [2]	Length	YoB	GT	DWT	Class	Alternate Conditions	Verification	Program Type	Failure
55	UK	O	80.00	1990	1930	3144	LR	Yes	Program	Intact	**Yes**
56	UK	O	80.00	1990	1930	3144	LR	Yes	Program	Intact	**Yes**
57	UK	O	79.00	1981	1926	3027	LR	Yes	Program	Intact	**Yes**
58	UK	O	83.00	1988	1711	3294	LR	Yes	Program	Intact	**Yes**
59	UK	O	79.00	1981	1926	3027	LR	Yes	Program	Intact	**Yes**
60	UK	O	141.00	1983	6892	11227	LR	Yes	SIB	Intact	**Yes**
61	UK	O	92.00	1998	2760	4765	LR	Yes	SIB	Intact	**Yes**
62	UK	O	91.00	1998	2760	4763	LR	Yes	SIB	Intact	**Yes**
63	UK	O	92.00	1997	2760	4765	LR	Yes	SIB	Intact	**Yes**
64	UK	O	91.00	1997	3368	4970	LR	Yes	SIB	Intact	**Yes**
65	UK	O	91.00	1997	3368	4968	LR	Yes	SIB	Intact	**Yes**
66	UK	O	91.00	1997	3368	4973	LR	Yes	SIB	Intact	**Yes**
67	UK	O	187.00	2004	24242	35309	DNV	Yes	Program	Damage	**Yes**
68	UK	O/C	160.00	2000	13753	22377	LR	Yes	Program	Intact	**Yes**
69	UK	C	142.00	1993	11688	14730	GL	Yes	Program	Intact	**Yes**
70	UK	O	101.00	1994	4842	6419	LR	Yes	SIB	Intact	**Yes**
71	UK	O	100.00	1993	4842	6397	LR	Yes	SIB	Intact	**Yes**