SHIPPING

Treaty Series No. 36 (1998)

1996 Amendments to the Guidelines

on the

Enhanced Programme of Inspections during Surveys of Bulk Carriers and Oil Tankers (Resolution A.744(18))

(Adopted in Accordance with Article VIII of the International Convention for the Safety of Life at Sea 1974)

London, 4 June 1996

[The Amendments entered into force on 1 July 1998]

Presented to Parliament
by the Secretary of State for Foreign and Commonwealth Affairs
by Command of Her Majesty
August 1998

Cm 4040

£4·00

ADOPTION OF AMENDMENTS TO THE GUIDELINES ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF BULK CARRIERS AND OIL TANKERS (RESOLUTION A.744(18))

Resolution MSC.49 (66)

Adopted on 4 June 1996

THE MARITIME SAFETY COMMITTEE

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO resolution A.744(18) by which the Assembly adopted Guidelines on the enhanced programme of inspections during surveys of bulk carriers and oil tankers,

RECALLING FURTHER article VIII(b) and regulation XI/2 of the International Convention for the Safety of Life at Sea (SOLAS), 1974[1], as amended, concerning the procedure for amending the aforementioned Guidelines,

NOTING that the Assembly, at its eighteenth session, when adopting resolution A.744(18), requested the Maritime Safety Committee and the Marine Environment Protection Committee to keep the Guidelines under review and update them as necessary, in the light of experience gained in their application,

HAVING CONSIDERED, at its sixty-sixth session, amendments to the Guidelines proposed and circulated in accordance with article VIII(b)(i) of the SOLAS Convention,

1. ADOPTS, in accordance with article VIII(b)(iv) of the SOLAS Convention, amendments to the Guidelines the text of which is set out in the Annex to the present resolution;

2. DETERMINES, in accordance with article VIII(b)(vi)(2)(bb) of the Convention, that the amendments shall be deemed to have been accepted on 1 January 1998, unless, prior to that date, more than one third of the Contracting Governments to the SOLAS Convention or Contracting Governments the combined merchant fleets of which constitute not less than 50% of the gross tonnage of the world's merchant fleet, have notified their objections to the amendments;

3. INVITES Contracting Governments to note that, in accordance with article VIII(b)(vii)(2) of the SOLAS Convention, the amendments shall enter into force on 1 July 1998 upon their acceptance in accordance with paragraph 2 above;

4. REQUESTS the Secretary-General, in conformity with article VIII(b)(v) of the SOLAS Convention, to transmit certified copies of the present resolution and the text of the amendments contained in the Annex to all Contracting Governments to the SOLAS Convention;

5. FURTHER REQUESTS the Secretary-General to transmit copies of this resolution and its Annex to Members of the Organization, which are not Contracting Governments to the SOLAS Convention.

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[1]Treaty Series No. 46 (1980), Cmnd 7874

ANNEX

AMENDMENTS TO THE GUIDELINES ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF BULK CARRIERS AND OIL TANKERS (RESOLUTION A.744(18))

Guidelines on the Enhanced Programme of Inspections during Surveys of Bulk Carriers (resolution A.744(18), Annex A)

1 In the contents, "5.1 Planning" is replaced by "5.1 Survey programme".

2 In the contents, the following text is added at the end:

"Annex 9—Guidelines for technical assessment in conjunction with the planning of enhanced surveys for bulk carriers".

3 In paragraph 5.1, sub-heading "Planning" is replaced by "Survey programme".

4 The following sentence is added to paragraph 5.1.1:

"The survey programme should be in a written format."

5 Existing paragraph 5.1.2 is replaced by the following text:

"5.1.2 In developing the survey programme, the following documentation should be collected and consulted with a view to selecting tanks, holds, areas and structural elements to be examined:

— survey status and basic ship information;

— documentation on board, as described in 6.2 and 6.3;

— main structural plans (scantlings drawings), including information regarding use of high tensile steels (HTS);

— relevant previous survey and inspection reports from both the classification society and the owner;

— information regarding the use of the ship's holds and tanks, typical cargoes and other relevant data;

— information regarding corrosion protection level on the new building; and

— information regarding the relevant maintenance level during operation."

6 Existing paragraph 5.1.3 is renumbered as a new paragraph 5.1.4.

7 Existing paragraph 5.1.4 is deleted.

8 The following new paragraph 5.1.3 is added:

"5.1.3 The submitted survey programme is to account for and comply, as a minimum, with the requirements of annexes 1 and 2 and paragraph 2.7 for close-up survey, thickness measurement and tank testing, respectively, and is to include relevant information including at least:

— basic ship information and particulars;

— main structural plans (scantling drawings), including information regarding use of high tensile steels (HTS);

— plan of holds and tanks;

— list of holds and tanks with information on use, protection and condition of coating;

— conditions for survey (e.g., information regarding tank cleaning, gas freeing, ventilation, lighting, etc.);

— provisions and methods for access to structures;

— equipment for surveys;

— nomination of holds and tanks and areas for close-up survey (per annex 1);

— nomination of sections for thickness measurement (per annex 2);

— nomination of tanks for tank testing (per paragraph 2.7); and

— damage experience related to the ship in question."

9 The following new paragraphs 5.1.5 and 5.1.6 are added:

"5.1.5 The Administration will advise the owner of the maximum acceptable structural corrosion diminution levels applicable to the ship.

5.1.6 Use may also be made of the Guidelines for technical assessment in conjunction with the planning of enhanced surveys for bulk carriers, contained in annex 9. These guidelines are a recommended tool which may be invoked at the discretion of the Administration, when considered necessary and appropriate, in conjunction with the preparation of the required survey programme."

10 The following new annex 9 is added:

"ANNEX 9

GUIDELINES FOR TECHNICAL ASSESSMENT IN CONJUNCTION WITH THE PLANNING OF ENHANCED SURVEYS FOR BULK CARRIERS

Periodical Survey

1 INTRODUCTION

These guidelines contain information and suggestions concerning technical assessments which may be of use in conjunction with the planning of enhanced special surveys of bulk carriers. As indicated in paragraph 5.1.6 of Annex A, the guidelines are a recommended tool which may be invoked at the discretion of an Administration, when considered necessary and appropriate, in conjunction with the preparation of the required survey programme.

2 PURPOSE AND PRINCIPLES

2.1 Purpose

The purpose of the technical assessments described in these guidelines is to assist in identifying critical structural areas, nominating suspect areas and in focusing attention on structural elements or areas of structural elements which may be particularly susceptible to, or evidence a history of, wastage or damage. This information may be useful in nominating locations, areas, holds and tanks for thickness measurement, close-up survey and tank testing.

2.2 Minimum requirements

These guidelines may not be used to reduce the requirements of annexes 1 and 2 and paragraph 2.7 of Annex A for close-up survey, thickness measurement and tank testing, respectively, which are, in all cases, to be complied with as a minimum.

2.3 Timing

As with other aspects of survey planning, the technical assessments described in these guidelines should be completed out by the owner or operator in co-operation with the Administration well in advance of the commencement of the periodical survey, i.e. prior to commencing the survey and normally at least 12 to 15 months before the survey's completion due date.

2.4 Aspects to be considered

Technical assessments, which may include quantitative or qualitative evaluation of relative risks of possible deterioration, of the following aspects of a particular ship may be used as a basis for the nomination of holds, tanks and areas for survey:

— design features such as stress levels on various structural elements, design details and extent of use of high tensile steel;

— former history with respect to corrosion, cracking, buckling, indents and repairs for the particular ship as well as similar vessels, where available; and

— information with respect to types of cargo carried, protection of tanks, and condition of coating, if any, of holds and tanks.

Technical assessments of the relative risks of susceptibility to damage or deterioration of various structural elements and areas should be judged and decided on the basis of recognized principles and practices, such as may be found in reference 3.

3 TECHNICAL ASSESSMENT

3.1 General

There are three basic types of possible failure which may be the subject of technical assessment in connection with planning of surveys; corrosion, cracks and buckling. Contact damages are not normally covered by the survey plan since indents are usually noted in memoranda and assumed to be dealt with as a normal routine by surveyors.

Technical assessments performed in conjunction with the survey planning process should, in principle, be as shown schematically in figure 1 which depicts, schematically, how technical assessments can be carried out in conjunction with the survey planning process. The approach is based on an evaluation of experience and knowledge basically related to:

.1 design; and

.2 corrosion.

The design should be considered with respect to structural details which may be susceptible to buckling or cracking as a result of vibration, high stress levels or fatigue.

Corrosion is related to the ageing process, and is closely connected with the quality of corrosion protection at newbuilding, and subsequent maintenance during the service life. Corrosion may also lead to cracking and/or buckling.

3.2 Methods

3.2.1 Design details

Damage experience related to the ship in question and similar ships, where available, is the main source of information to be used in the process of planning. In addition, a selection of structural details from the design drawings should be included.

Typical damage experience to be considered will consist of:

— number, extent, location and frequency of cracks; and
— location of buckles.

This information may be found in the survey reports and/or the owner's files, including the results of the owner's own inspections. The defects should be analysed, noted and marked on sketches.

In addition, general experience should be utilized. For example, figure 2 shows typical locations in bulk carriers which experience has shown may be susceptible to structural damage. Also, reference should be made to reference 3 which contains a catalogue of typical damages and proposed repair methods for various bulk carrier structural details.

Such figures should be used together with a review of the main drawings, in order to compare with the actual structure and search for similar details which may be susceptible to damage. An example is shown in figure 3.

The review of the main structural drawings, in addition to using the above-mentioned figures, should include checking typical design details where cracking has been experienced. The factors contributing to damage should be carefully considered.

The use of high tensile steel (HTS) is an important factor. Details showing good service experience where ordinary, mild steel has been used may be more susceptible to damage when HTS, and its higher associated stresses, are utilized. There is extensive and, in general, good experience, with the use of HTS for longitudinal material in deck and bottom structures. Experience in other locations, where the dynamic stresses may be higher, is less favourable, e.g. side structures.

In this respect, stress calculations of typical and important components and details, in accordance with relevant methods, may prove useful and should be considered.

The selected areas of the structure identified during this process should be recorded and marked on the structural drawings to be included in the survey programme.

3.2.2 Corrosion

In order to evaluate relative corrosion risks, the following information is generally to be considered:

— usage of tanks, holds and spaces

— condition of coatings

— condition of anodes

— cleaning procedures

— previous corrosion damage

— ballast use and time for cargo holds

— risk of corrosion in cargo holds and ballast tanks

— location of ballast tanks adjacent to heated fuel oil tanks.

Reference 2 gives definitive examples which can be used for judging and describing coating condition, using typical pictures of conditions.

For bulk carriers, reference 3 should be used as the basis for the evaluation, together with the age of the ship and relevant information on the anticipated condition of the ship as derived from the information collected in order to prepare the survey programme.

The various tanks, holds and spaces should be listed with the corrosion risks nominated accordingly.

3.2.3 Locations for close-up survey and thickness measurement

On the basis of the table of corrosion risks and the evaluation of design experience, the locations for initial close-up survey and thickness measurement (sections) may be nominated.

The sections subject to thickness measurement should normally be nominated in tanks, holds and spaces where corrosion risk is judged to be the highest.

The nomination of tanks, holds and spaces for close-up survey should, initially, be based on highest corrosion risk, and should always include ballast tanks. The principle for the selection should be that the extent is increased by age or where information is insufficient or unreliable.

REFERENCES

1 TSCF "Guidance Manual for the Inspection and Condition Assessment of Tanker Structures, 1986."

2 TSCF "Condition Evaluation and Maintenance of Tanker Structures, 1992."

3 IACS "Bulk Carriers: Guidelines for Surveys, Assessment and Repair of Hull Structures, 1994."

Technical Assessment and The Survey Planning Process

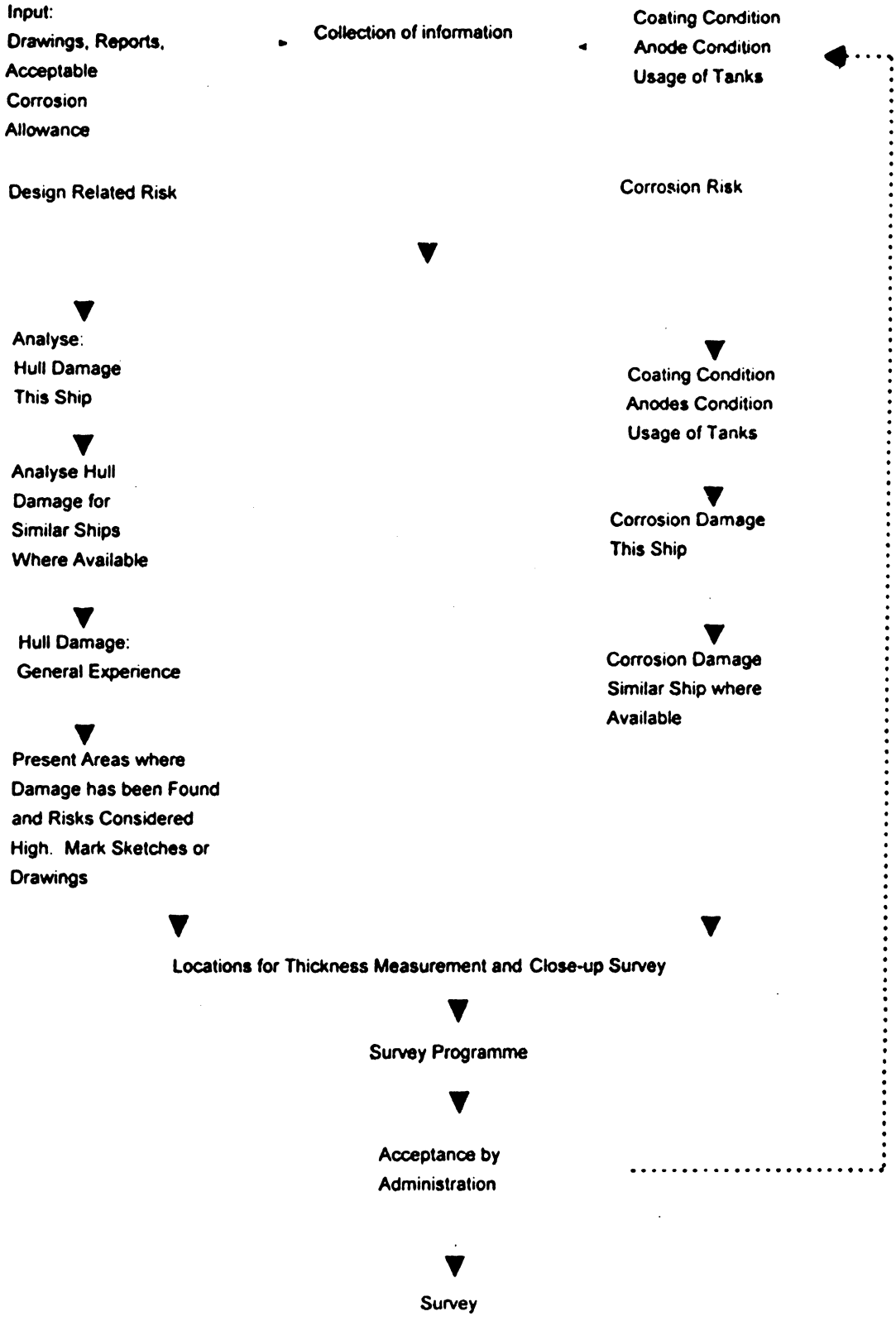


Figure 1: Planning Process
Technical Assessment and The Survey

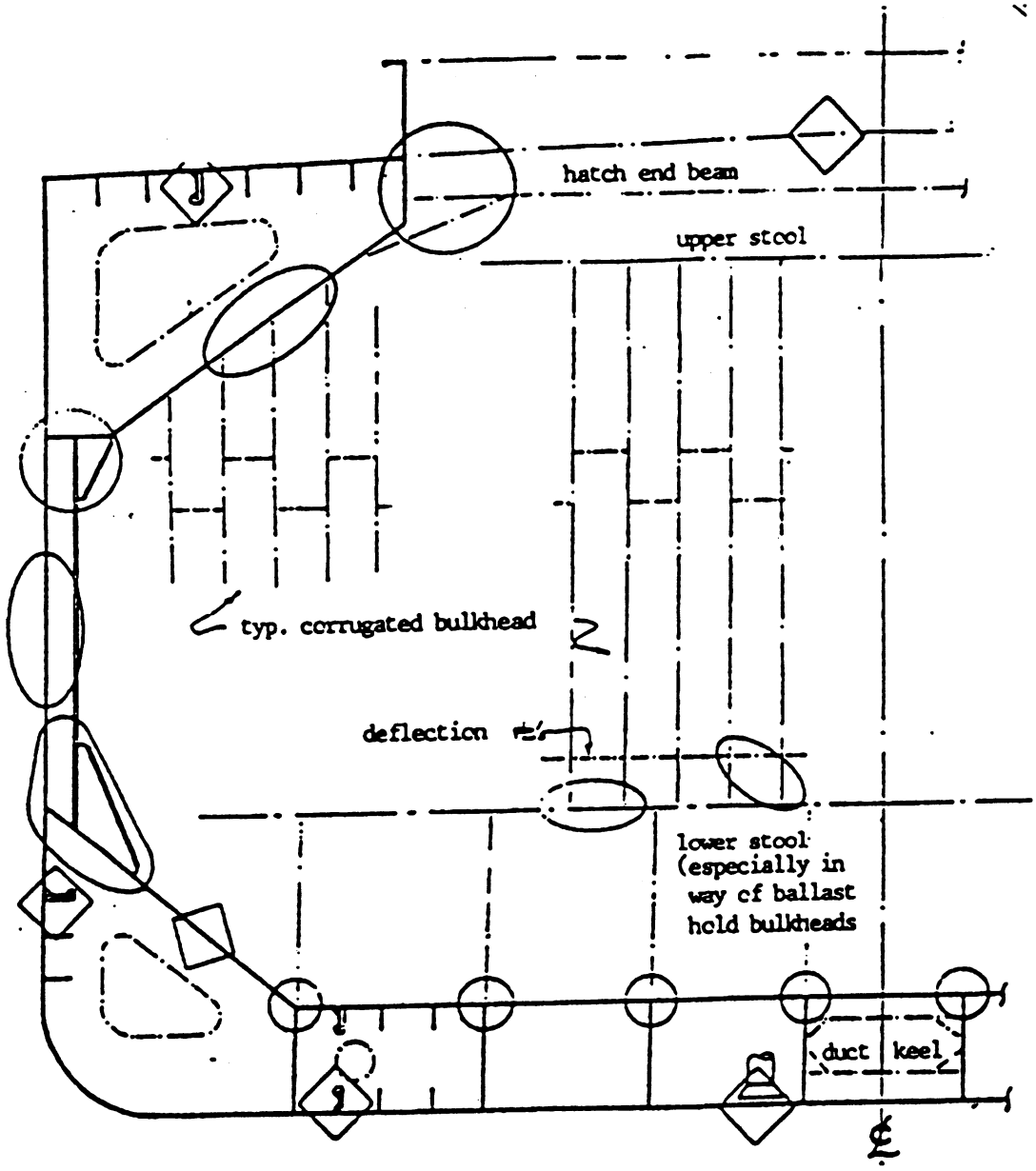
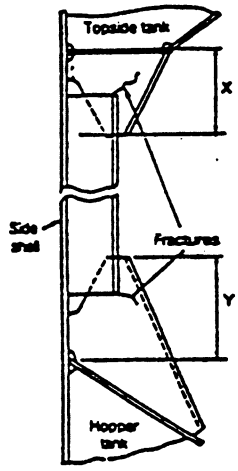


Figure 2: Typical locations susceptible to structural damage or corrosion

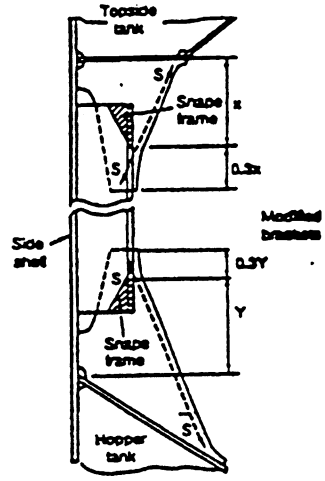
AREA 1	Structural item	Side shell frames and end brackets (Separate bracket configuration)	EXAMPLE 1
Detail of damage		Fractures on brackets at termination of frame	

Sketch of damage



Separate Bracket Configuration

Sketch of repair



S = Snaped end

Notes on possible cause of damage/repair

1 This type of damage is due to stress concentration.

2 For small fractures, e.g. hairline fractures, the fracture can be 'veed' out, welded up, ground and examined by NDT for fractures

3 For larger/significant fractures consideration is to be given to cropping and partly renewing/renewing the frame brackets. If renewing the brackets, ends of frames can be shaped to soften them.

4 If felt prudent, soft toes are to be incorporated at the boundaries of the bracket to the wing tanks.

5 Attention to be given to the structure in wing tanks in way of the extended bracket arm i.e. reinforcement provided in line with the bracket arm.

Figure 3: Typical damage and repair example
(reproduced from ref.3)."

11 In the contents, "5.1 Planning" is replaced by "5.1 Survey programme."

12 In the contents, the following text is added to the end:
"Annex 11—Guidelines for technical assessment in conjunction with the planning of enhanced surveys for oil tankers".

13 In paragraph 5.1, sub-heading "Planning" is replaced by "Survey programme".

14 The following sentence is added to paragraph 5.1.1:
"The survey programme should be in a written format."

15 Existing paragraph 5.1.2 is replaced by the following text:
"5.1.2 In developing the survey programme, the following documentation should be collected and consulted with a view to selecting tanks, areas, and structural elements to be examined:

— survey status and basic ship information;

— documentation on board, as described in 6.2 and 6.3;

— main structural plans (scantlings drawings), including information regarding use of high tensile steels (HTS);

— relevant previous survey and inspection reports from both the classification society and the owner;

— information regarding the use of the ship's tanks, typical cargoes and other relevant data;

— information regarding corrosion protection level on the new building; and

— information regarding the relevant maintenance level during operation."

16 Existing paragraph 5.1.3 is renumbered as a new paragraph 5.1.4.

17 Existing paragraph 5.1.4 is deleted.

18 The following new paragraph 5.1.3 is added:
"5.1.3 The submitted survey programme is to account for and comply, as a minimum, with the requirements of annexes 1, 2 and 3 for close-up survey, thickness measurement and tank testing, respectively, and is to include relevant information including at least:

— basic ship information and particulars;

— main structural plans (scantling drawings), including information regarding use of high tensile steels (HTS);

— plan of tanks;

— list of tanks with information on use, protection and condition of coating;

— conditions for survey (e.g., information regarding tank cleaning, gas freeing, ventilation, lighting, etc.);

— provisions and methods for access to structures;

— equipment for surveys;

— nomination of tanks and areas for close-up survey (per annex 1);

— nomination of sections for thickness measurement (per annex 2);

— nomination of tanks for tank testing (per annex 3); and

— damage experience related to the ship in question."

19 The following new paragraphs 5.1.5 and 5.1.6 are added:

"5.1.5 The Administration will advise the owner of the maximum acceptable structural corrosion diminution levels applicable to the ship.

5.1.6 Use may also be made of the Guidelines for technical assessment in conjunction with the planning of enhanced surveys for tankers, contained in annex 11. These guidelines are a recommended tool which may be invoked at the discretion of the Administration, when considered necessary and appropriate, in conjunction with the preparation of the required survey programme."

20 The following new annex 11 is added:

ANNEX 11

GUIDELINES FOR TECHNICAL ASSESSMENT IN CONJUNCTION WITH THE PLANNING OF ENHANCED SURVEYS FOR OIL TANKERS

Periodical Survey

1 INTRODUCTION

These guidelines contain information and suggestions concerning technical assessments which may be of use in conjunction with the planning of enhanced special surveys of oil tankers. As indicated in paragraph 5.1.6 of Annex B, the guidelines are a recommended tool which may be invoked at the discretion of an Administration, when considered necessary and appropriate, in conjunction with the preparation of the required survey programme.

2 PURPOSE AND PRINCIPLES

2.1 Purpose

The purpose of the technical assessments described in these guidelines is to assist in identifying critical structural areas, nominating suspect areas and in focusing attention on structural elements or areas of structural elements which may be particularly susceptible to, or evidence a history of, wastage or damage. This information may be useful in nominating locations, areas and tanks for thickness measurement, close-up survey and tank testing.

2.2 Minimum requirements

These guidelines may not be used to reduce the requirements of annexes 1, 2, and 3 for close-up survey, thickness measurement and tank testing, respectively, which are, in all cases, to be complied with as a minimum.

2.3 Timing

As with other aspects of survey planning, the technical assessments described in these guidelines should be completed out by the owner or operator in co-operation with the Administration well in advance of the commencement of the periodical survey, i.e., prior to commencing the survey and normally at least 12 to 15 months before the survey's completion due date.

2.4 Aspects to be considered

Technical assessments, which may include quantitative or qualitative evaluation of relative risks of possible deterioration, of the following aspects of a particular ship may be used as a basis for the nomination of tanks and areas for survey:

— design features such as stress levels on various structural elements, design details and extent of use of high tensile steel;

— former history with respect to corrosion, cracking, buckling, indents and repairs for the particular ship as well as similar vessels, where available; and

— information with respect to types of cargo carried, use of different tanks for cargo/ballast, protection of tanks and condition of coating, if any.

Technical assessments of the relative risks of susceptibility to damage or deterioration of various structural elements and areas should be judged and decided on the basis of recognized principles and practices, such as may be found in references 1 and 2.

3 TECHNICAL ASSESSMENT

3.1 General

There are three basic types of possible failure which may be the subject of technical assessment in connection with planning of surveys; corrosion, cracks and buckling. Contact damages are not normally covered by the survey plan since indents are usually noted in memoranda and assumed to be dealt with as a normal routine by surveyors.

Technical assessments performed in conjunction with the survey planning process should, in principle be as shown schematically in figure 1 which depicts, schematically, how technical assessments can be carried out in conjunction with the survey planning process. The approach is based on an evaluation of experience and knowledge basically related to:

.1 design; and

.2 corrosion.

The design should be considered with respect to structural details which may be susceptible to buckling or cracking as a result of vibration, high stress levels or fatigue.

Corrosion is related to the ageing process, and is closely connected with the quality of corrosion protection at newbuilding, and subsequent maintenance during the service life. Corrosion may also lead to cracking and/or buckling.

3.2 Methods

3.2.1 Design details

Damage experience related to the ship in question and similar ships, where available, is the main source of information to be used in the process of planning. In addition, a selection of structural details from the design drawings should be included.

Typical damage experience to be considered will consist of:

— number, extent, location and frequency of cracks; and

— location of buckles.

This information may be found in the survey reports and/or the owner's files, including the results of the owner's own inspections. The defects should be analysed, noted and marked on sketches.

In addition, general experience should be utilized. For example, reference should be made to reference 1, which contains a catalogue of typical damages and proposed repair methods for various tanker structural details.

Such figures should be used together with a review of the main drawings, in order to compare with the actual structure and search for similar details which may be susceptible to damage. An example is shown in figure 2.

The review of the main structural drawings, in addition to using the above-mentioned figures, should include checking for typical design details where cracking has been experienced. The factors contributing to damage should be carefully considered.

The use of high tensile steel (HTS) is an important factor. Details showing good service experience where ordinary, mild steel has been used may be more susceptible to damage when HTS, and its higher associated stresses, are utilized. There is extensive and, in general, good experience, with the use of HTS for longitudinal material in deck and bottom structures. Experience in other locations, where the dynamic stresses may be higher, is less favourable, e.g. side structures.

In this respect, stress calculations of typical and important components and details, in accordance with relevant methods, may prove useful and should be considered.

The selected areas of the structure identified during this process should be recorded and marked on the structural drawings to be included in the survey programme.

3.2.2 Corrosion

In order to evaluate relative corrosion risks, the following information is generally to be considered:

— usage of tanks and spaces

— condition of coatings

— condition of anodes

— cleaning procedures

— previous corrosion damage

— ballast use and time for cargo tanks

— corrosion risk scheme (see reference 2, table 3.1)

— location of heated tanks.

Reference 2 gives definitive examples which can be used for judging and describing coating condition, using typical pictures of conditions.

The evaluation of corrosion risks should be based on information in reference 2, together with the age of the ship and relevant information on the anticipated condition as derived from the information collected in order to prepare the survey programme.

The various tanks and spaces should be listed with the corrosion risks nominated accordingly.

3.2.3 Locations for close-up survey and thickness measurement

On the basis of the table of corrosion risks and the evaluation of design experience, the locations for initial close-up survey and thickness measurement (sections) may be nominated.

The sections subject to thickness measurement should normally be nominated in tanks and spaces where corrosion risk is judged to be the highest.

The nomination of tanks and spaces for close-up survey should, initially, be based on highest corrosion risk, and should always include ballast tanks. The principle for the selection should be that the extent is increased by age or where information is insufficient or unreliable.

REFERENCES

1. TSCF "Guidance Manual for the Inspection and Condition Assessment of Tanker Structures, 1986".

2. TSCF "Condition Evaluation and Maintenance of Tanker Structures, 1992".

Technical Assessment and The Survey Planning Process

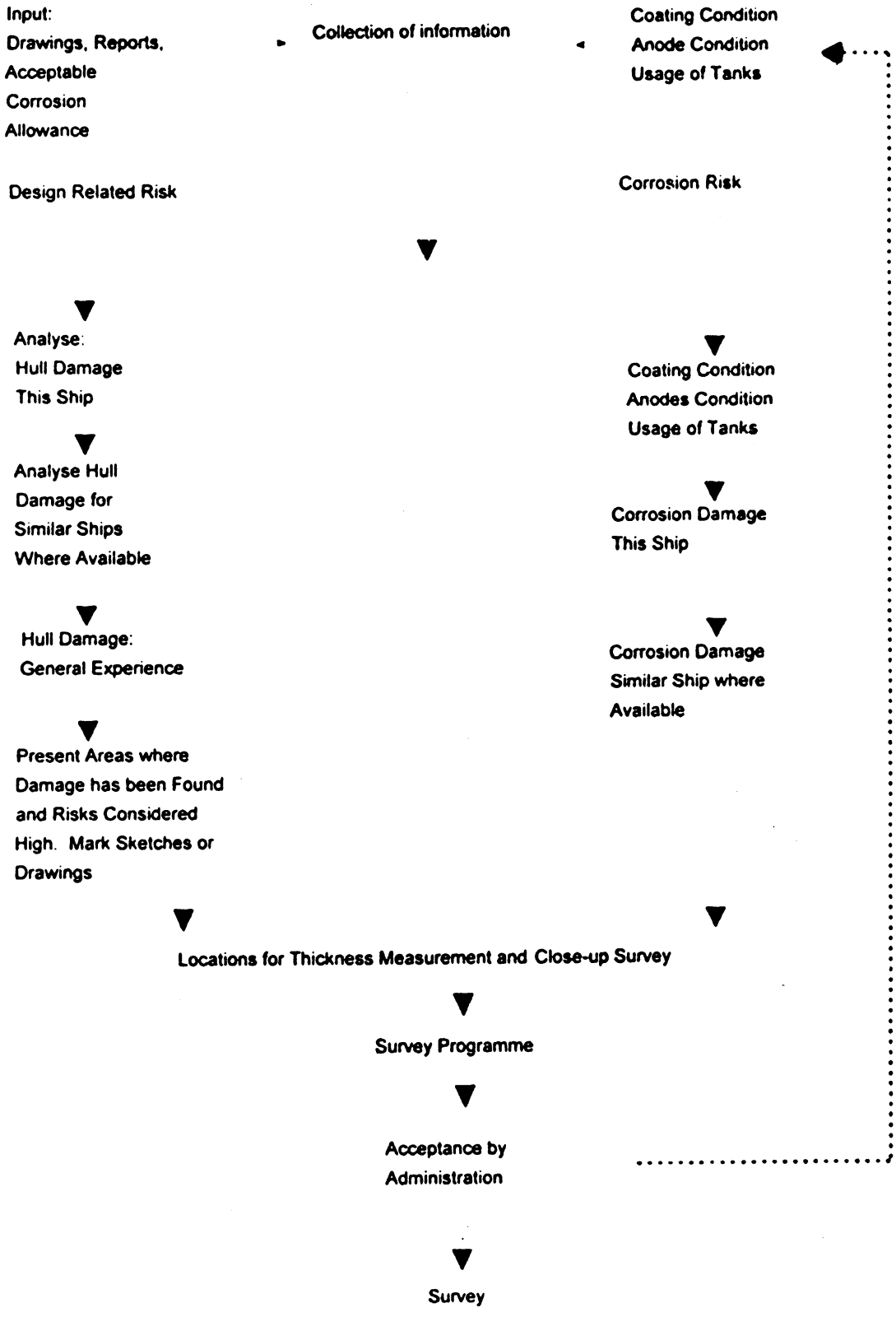
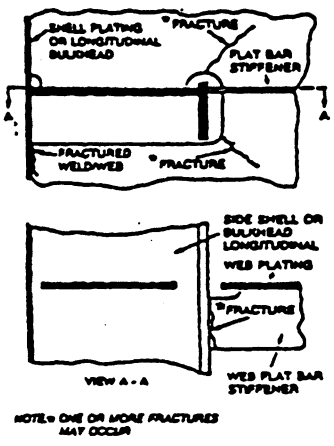
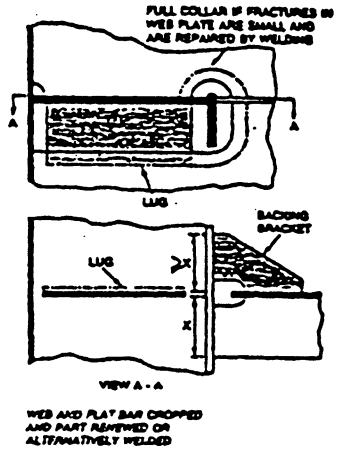


Figure 1: Planning Process
Technical Assessment and The Survey

LOCATION: Connection of longitudinals to transverse webs

EXAMPLE NO.1 Web and flat bar fractures at cut-outs for longitudinal stiffener connections

TYPICAL DAMAGE	PROPOSED REPAIR
	

FACTORS CONTRIBUTING TO DAMAGE

1 Asymmetrical connection of flat bar stiffener resulting in high peak stresses at the heel of the stiffener under fatigue loading.

2 Insufficient area of connection of longitudinal to web plate.

3 Defective weld at return around the plate thickness.

4 High localized corrosion at areas of stress concentration such as flat bar stiffener connections, corners of cut-out for the longitudinal and connection of web to shell at cut-outs.

5 High shear stress in the web of the transverse.

6 Dynamic sea way loads/ship motions.

FIGURE 1	TANKER STRUCTURE CO-OPERATIVE FORUM	FIGURE 1
	SUBJECT: CATALOGUE OF STRUCTURAL DETAILS	

Figure 2: Typical damage and repair example
(reproduced from ref.1)".

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