中 國 驗 船 中 心

CR Classification Society

SURVEY PROGRAMME for Double Skin Bulk Carriers

M/V "_____"

Enhanced Survey Programme (ESP)

For Special Survey / Intermediate Survey No.___

CR No._____ IMO No._____

Owner's representative : Approved by :

Signature:_____ Signature:_____

Prior to the development of the Survey Programme, the Survey Planning Questionnaire should be completed by the Owner/Manager. It is essential that up-to-date information is provided when completing this questionnaire.

Basic information and particulars

Name of Ship	:	
IMO Number	:	
Flag State	:	
Port of Registry	:	
Gross Tonnage	:	
Deadweight (metric tonnes)	:	
Length between perpendiculars (m)	:	
Shipbuilder	:	
Hull Number	:	
Recognized Organization (RO)	:	CR Classification Society
RO Ship Identity (Class Number)	:	
Date of delivery of the ship	:	
Owner	:	
Thickness Measurement Firm	:	
Survey Place	:	

A specific Survey Programme shall be worked out in advance of the Special Survey/Intermediate Survey by the Owner/Manager in co-operation with CR Classification Society. The Survey Programme shall be in written format and the Survey shall not commence until the Survey Programme had been agreed upon.

1 Preamble

1.1 *Scope*

1.1.1 The present survey programme covers the minimum extent of overall surveys, close-up surveys, thickness measurements and pressure testing within the cargo length area, cargo holds, ballast tanks, including fore and aft peak tanks, required by the CR Rules.

1.1.2 The arrangements and safety aspects of the survey should be acceptable to the attending surveyor(s).

1.2 *Documentation*

All documents used in the development of the survey programme should be available on board during the survey.

2 Arrangement of cargo holds, tanks and spaces

This section of the survey programme should provide information (either in the form of plans or text) on the arrangement of cargo holds, tanks and spaces that fall within the scope of the survey.

Hold & Tank Arrangement*/Hold & Tank List*, which is attached to next page is to be referred.

(* : Delete as appropriate)

3 List of cargo holds, tanks and spaces with information on their use, extent of coatings and corrosion prevention system

This section of the survey programme should indicate any changes relating to (and should update) the information on the use of the holds and tanks of the ship, the extent of coatings and the corrosion prevention system provided in the survey planning questionnaire.

Spaces	Fr. No	Corrosion Protection (1)	Coating Extent (2)	Coating Condition (3)

1) HC=hard coating; SC=soft coating; A=anodes; NP=no protection; CS=clad steel; SS=stainless steel

2) U=upper part; M=middle part; L=lower part; C=complete

3) G=good; F=fair; P=poor, RC=recoated (during the last 3 years)

4 Conditions for survey

This section of the survey programme should provide information on the conditions for survey, e.g. information regarding cargo hold and tank cleaning, gas freeing, ventilation, lighting, etc

4.1 The owner should provide the necessary facilities for a safe execution of the survey.

4.2 In order to enable the attending surveyors to carry out the survey, provisions for proper and safe access should be agreed between the owner and CR.

4.3 In cases where the provisions of safety and required access are judged by the attending surveyors not to be adequate, the survey of the spaces involved should not proceed.

4.4 Cargo holds, tanks and spaces are to be safe for access. Cargo holds, tanks and spaces should be gas free and properly ventilated. Prior to entering a tank, void or enclosed space, it should be verified that the atmosphere in that space is free from hazardous gas and contains sufficient oxygen.

4.5 Cargo holds, tanks and spaces should be sufficiently clean and free from water, scale, dirt, oil residues, sediments etc., to reveal corrosion, deformation, fractures, damages or other structural deterioration as well as the condition of the coating. In particular this applies to areas which are subject to thickness measurement.

4.6 Sufficient illumination should be provided to reveal significant corrosion, deformation, fractures, damages or other structural deterioration as well as the condition of the coating.

4.7 The attending surveyor(s) should always be accompanied by at least one responsible person assigned by the Company experienced in tank and enclosed spaces inspection. In addition a backup team of at least two experienced persons should be stationed at the hatch opening of the tank or space that is being surveyed. The back-up team should continuously observe the work in the tank or space and should keep lifesaving and evacuation equipment ready for use.

4.8 Where Soft Coatings have been applied, safe access should be provided for the surveyor to verify the effectiveness of the coating and to carry out an assessment of the conditions of internal structures, which may include spot removal of the coating. When safe access cannot be provided, the soft coating should be removed.

4.9 A communication system is to be arranged between the survey party in the tank or space being examined, the responsible officer on deck and, as the case may be, the navigation bridge. The communication arrangements are to be maintained throughout the survey. This system should also include the personnel in charge of ballast pump handling if boats or rafts are used.

4.10 Survey at sea or at anchorage may be accepted provided the surveyor is given the necessary assistance from the personnel on board.

Complete cargo/ballast discharge to be confirmed by : _____

O2 content measurement and gas detection to be confirmed by : _____

Cleanliness in cargo holds/ballast tanks to be confirmed by : _____

5 Provisions and method of access to structures

This section of the survey programme should indicate any changes relating to (and should update) the information on the provisions and methods of access to structures provided in the survey planning questionnaire.

Hold/Tank No.	Structure	Permanent Means of Access	Temporary staging	Rafts	Ladders	Direct access	Other means (please specify)
F.P.	Fore Peak						
A.P.	Aft Peak						
Cargo Holds	Hatch side coamings						
	Topside sloping plate						
	Upper stool plating						
	Cross deck						
	Double side tank plating						
	Transverse bulkhead						
	Hopper tank platting						
	Lower stool plating						
	Tank top						
Topside Tanks	Underdeck structure						
	Side shell & structure						
	Sloping plate & structure						
	Webs & bulkheads						
Hopper Tanks	Hopper sloping plate & structure						
	Side shell & structure						
	Bottom structure						
	Webs & bulkheads						
Double Side Tanks	Side shell & structure						
	Inner skin & structure						
	Webs & bulkheads						
	Double bottom structure						
	Upper stool internal structure						
	Lower stool internal structure						
Wing Tanks of Ore Carriers	Underdeck & structure						
	Side shell & structure						
	Side shell vertical web & structure						
	Longitudinal bulkhead & structure						
	Longitudinal bulkhead web & structure						
	Bottom plating & structure						
	Cross ties/stringers						

Remark : In case where the provisions of safety and required access are judged by attending surveyors not to be adequate, the survey of the spaces involved should no proceed.

6 List of equipment for survey

This section of the survey programme should identify and list the equipment that will be made available for carrying out the survey and the required thickness measurements.

a) Gas detector / Type : _____

Accuracy to be checked by : _____

b) Portable Safety Light / No.: _____ sets of _____ type

c) Other safety equipment, if any: _____

d) Are the other safety equipment also available at repair yard ? Yes / No

7 Survey requirements

7.1 *Overall survey*

This section of the survey programme should identify and list the spaces that should undergo an overall survey for this ship in accordance with the requirements of CR Rules.
(refer to CR Rules Part I Table I 2-1, I 2-17 and I 2-21)

☐ Cargo Hold	
☐ Cofferdam	
☐ Ballast Tank	
☐ Peak Tank	
☐ Fresh Water Tank	
☐ Fuel Oil Tank	
☐ Lubrication Oil Tank	
☐ Machinery spaces and other Tanks/Spaces	

7.2 *Close-up survey*

This section of the survey programme should identify and list the hull structures that should undergo a close-up survey for this ship in accordance with the requirements of CR Rules.
(refer to CR Rules Part I Table I 2-18 and I 2-21 ; Table I 2-19 for Ore Carrier)

1. Requirements (excluding Ore Carriers)

.1 Ballast tank

Structural member	Tank
One transverse web with associated plating and longitudinals in two representative water ballast tanks of each type. (This is to include the foremost topside and double side water ballast tanks on either side)	
One transverse web with associated plating and longitudinals as applicable in each water ballast tank.	
All transverse webs with associated plating and longitudinals as applicable in each water ballast tank.	
Forward and aft transverse bulkheads including stiffening system in a transverse section including topside, hopper side and double side ballast tanks on one side of the ship (i.e. port or starboard).	
All transverse bulkheads including stiffening system in each water ballast tank.	
25% of ordinary transverse frames for transverse framing system or 25% of longitudinals for longitudinal framing system on side shell and inner side plating at forward, middle and aft parts, in the foremost double side tanks.	
25% of ordinary transverse frames for transverse framing systems or 25% of longitudinals for longitudinal framing systems on side shell and inner side plating at forward, middle and aft parts in all double side tanks.	
All ordinary transverse frames for transverse framing systems or all longitudinals for longitudinal framing systems on side shell and inner side plating at forward, middle and aft parts in all double side tanks.	

.2 Cargo hold

Structural member	Hold
2 selected cargo hold transverse bulkheads, including internal structure of upper and lower stools, where fitted.	
1 transverse bulkhead in each cargo hold, including internal structure of upper and lower stools, where fitted.	
All cargo hold transverse bulkheads, including internal structure of upper and lower stools, where fitted.	
All cargo hold hatch covers and coamings (platings and stiffeners).	
All deck plating and under deck structure, inside line of hatch openings between all cargo hold hatches.	

2. Requirements for Ore Carriers

.1 Ballast tank

Structural member	Tank
1 web frame ring complete including adjacent structural members in a ballast wing tank.	
All web frame rings complete including adjacent structural members in a ballast wing tank.	
All web frame rings complete including adjacent structural members in each ballast tank.	
1 transverse bulkhead lower part including girder system and adjacent structural members in a ballast tank	
1 deck transverse including adjacent deck structural members in each remaining ballast tank.	
Forward and aft transverse bulkheads complete including girder system and adjacent structural members in a ballast wing tank	
1 transverse bulkhead lower part including girder system and adjacent structural members in each remaining ballast tank.	
All transverse bulkheads complete including girder system and adjacent structural members in each ballast tank.	
1 web frame ring complete including adjacent structural members in each wing void space.	
Additional web frame rings in void spaces as deemed necessary by the Society.	

.2 Cargo hold

Structural member	Hold
2 selected cargo hold transverse bulkheads, including internal structure of upper and lower stools, where fitted.	
1 transverse bulkhead in each cargo hold, including internal structure of upper and lower stools, where fitted.	
All cargo hold transverse bulkheads, including internal structure of upper and lower stools, where fitted.	
All cargo hold hatch covers and coamings (platings and stiffeners).	
All deck plating and under deck structure, inside line of hatch openings between all cargo hold hatches.	

8 Identification of tanks for tank testing

This section of the survey programme should identify and list the cargo holds and tanks that should undergo tank testing for this ship in accordance with the requirements of CR Rules.
(refer to CR Rules Part I Chapter 2.1.6, 2.6, 2.7 and 2.15.3(g))

☐ Ballast Hold	
☐ Ballast Tank	
☐ Fresh Water Tank	
☐ Other Water Tank	
☐ Deep Tank	
☐ Fuel Oil Tank	
☐ Lubrication Oil Tank	

9 Identification of areas and sections for thickness measurements

This section of the survey programme should identify and list the areas and sections where thickness measurements should be taken in accordance with the requirements of CR Rules.
(refer to CR Rules Part I 2.15, Table I 2-20, I 2-21 and I 2-22)

Location	TM requirements
Suspect area	***To be described if applicable***
Measurements, for general assessment and recording of corrosion pattern, of those structural members subject to close-up survey	***Refer to Section 7.2***
Within the cargo length:	☐ - 2 transverse sections of deck plating outside line of cargo hatch openings ☐ - each deck plate outside line of cargo hatch openings ☐ - 2 transverse sections, 1 in the amidship area, outside line of cargo hatch openings ☐ - 3 transverse sections, 1 in the amidship area, outside line of cargo hatch openings ☐ - all wind and water strakes ☐ - each bottom plate
Wind and water strakes	☐ - In way of the 2 transverse sections considered above. ☐ - Selected outside the cargo length area. ☐ - All wind and water strakes, full length.
Others	

10 Minimum thickness of hull structures

This section of the survey programme should specify the minimum thickness for hull structures of this ship that are subject to survey (indicate either (a) or preferably (b), if such information is available):

(a) Determined from the wastage allowance table and the original thickness according to the hull structure plans of the ship;

(b) Given in the following table(s) (refer to CR Rules Part I 2.1.4, Table I 2-29 and I 2-30)

Individual Wastage Allowances, Ships, 90 m ≦ L (9), (10) and (11)

Ordinary and High Strength Steel	Built 2018 or later	Built between 1962 and 2018
	Non CSR Bulk Carriers, Ore Carriers and OBOs	
Strength Deck Plating	20%	20%
Continuous Long'l Hatch Coamings & Above Deck Box-Girders	20%	20%
Deck Plates within Line of Hatches and at Ends.	30%	30%
Forecastle, Poop and Bridge Deck Plates;Superstructure End Bulkheads	30%	30%
Tween Deck Plates	--	--
Sheer Strake Plates	20%	20%
Side Shell Plates	20%	25%
Bilge Strake Plates	20%	25%
Bottom Plates	20%	25%
Keel Plates(4)		
Outermost Strake of Inner Bottom	25%	30%
Other Plates of Inner Bottom	25%	30%
Top Strake of Longitudinal Bulkheads and Top Strake of Topside Tank Sloping Plating	20%	20%
Bottom Strake of Longitudinal Bulkheads	20%	25%
Other Plates of Longitudinal Bulkheads, Topside Tank Sloping Plating, Hopper Tank Sloping Plating and Transverse Bulkheads (5) & (6)	20%	25%
Internals including Longitudinals, Girders, Transverses, Struts, Bulkhead Webs and Stringers, Brackets and Hatch Side Girders	20%	25%
Plates in way of Top of Tanks	25%	30%
Underdeck Box Girders (Long'l or Transverse)	20%	20%
Hatch Covers(7), Hatch coamings and brackets	30%	30%

Notes:

(1) Internals included in longitudinal strength must be continuous or be effectively developed at ends, throughout amidships 0.4L.

(2) Structure must meet individual member thickness and average wastage.

(3) If design was originally approved on basis of engineering analysis (such as car carriers and other specialized vessels), or if owner specially request, the wastage may be assessed on engineering basis (i.e., acceptable stress levels and structural stability).

(4) Keel plates are to be renewed when they reach the minimum allowed thickness for adjacent bottom plating.

(5) Bulk Carriers for which IACS UR S19 applies to the corrugated transverse watertight bulkhead between cargo holds 1 and 2 are to be assessed in accordance with S19 for initial compliance and subsequent continued compliance at each Intermediate Survey and Special Periodical Survey – Hull.

(6) Bulk carriers for which UR S18 applies to the corrugated transverse W.T. bulkheads are to comply with the steel renewal provisions of S18.

(7) The hatch covers of bulk carriers to which IACS UR S21 applies are to comply with the steel renewal provisions of UR S21.6.

(8) Wastage allowances in columns 1, 2 or 3 of Table I 2-27, depending on the barge's construction, apply to tank barges over 122 m in length.

(9) The individual wastage allowances are acceptable, provided the hull girder Section Modulus is not less than 90% of the greater Section Modulus required:

a) at the time of new construction or

b) Z_{min} by 3.2.2 of Part II.

(10) For vessels built to other society rules, the Head Office of the Society carrying out the initial plan review is to be contacted for wastage allowances.

(11) For CSR vessels type, the individual wastage allowance is defined in accordance with Part 1, Chapter 13 of IACS CSR for double hull oil tankers and for bulk carriers.

Individual Wastage Allowances, Ships, L < 90 m

Main Deck Plating	25%
Bottom Plating	25%
Keel Plating	25%
Sheer Strake	25%
Bilge Strake	25%
Side Shell Plating	30%
Forecastle	30%
Internals and Bulkheads	30%

For vessels built to other society rules, the Head Office of the Society carrying out the initial plan review is to be contacted for wastage allowances.

Notes:

(1) Internals included in longitudinal strength must be continuous or be effectively developed at ends, throughout amidships 0.4L.

(2) The values shown in the table are the minimum requirements for individual members and plates.

(3) In addition to satisfying the individual member and plate requirements, it should be verified that the hull girder section modulus is not less than 90% of the greater Hull Girder Section Modulus required either:

a) At the time of new construction

b) Z_{σ} as specified in 3.2.1 of Part XV

(4) For vessels less than 60 m only, maximum loss of deck or bottom area is 20 percent of Rule required area.

(5) For vessels built to other society rules, wastage allowance based on the previous society requirements may apply.

11 Thickness measurement company

This section of the survey programme should identify changes, if any, relating to the information on the thickness measurement company provided in the survey planning questionnaire.

12 Damage experience related to the ship

This section of the survey programme should, using the tables provided below, provide details of the hull damages for at least the last three years in way of the cargo holds, ballast tanks and void spaces within the cargo area. These damages are subject to survey.

Hull damages sorted by location for this ship

Cargo Hold, Tank or space number or area	Possible cause, if known	Description of the damages	Location	Repair	Date of repair

Hull damages for sister or similar ships (if available) in the case of design related damage

Cargo Hold, Tank or space number or area	Possible cause, if known	Description of the damages	Location	Repair	Date of repair

13 Areas identified with substantial corrosion from previous surveys

This section of the survey programme should identify and list the areas of substantial corrosion from previous surveys.

14 Critical structural areas and suspect areas

This section of the survey programme should identify and list the critical structural areas and the suspect areas, when such information is available.

15 Other relevant comments and information

This section of the survey programme should provide any other comments and information relevant to the survey.

Appendix 1 - List of Plans

1. Basic ship information and particulars;

See, attached survey status

2. Main structural plans of cargo holds and ballast tanks (scantling drawings), including information regarding use of high tensile steels (HTS);

- *Midship Section and Typical Trans. BHD*
- *Construction Profile & Decks*
- *Shell Expansion (Fore & Aft)*
- *Transverse Bulkheads*
- *Forward Construction*
- *Afterward Construction*

3. Arrangements of Tanks;

- *General Arrangement*

4. List of tanks with information on their use, extent of coatings and corrosion protection systems;

See, paragraph 3 of SURVEY PROGRAMME.

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

See, paragraph 4 of SURVEY PROGRAMME.

6. Provisions and methods for access to structures;

See, paragraph 5 of SURVEY PROGRAMME.

7. Equipment for survey;

See, paragraph 6 of SURVEY PROGRAMME.

8. Identification of tanks and areas for the close-up survey;

See, paragraph 7.2 of SURVEY PROGRAMME.

9. Identification of areas and sections for thickness measurement;

See, paragraph 9 of SURVEY PROGRAMME.

10. Identification of tanks for tank testing;

See, paragraph 8 of SURVEY PROGRAMME and General Arrangement.

11. Identification of the thickness measurement company;

See, paragraph 11 of SURVEY PROGRAMME.

12. Damage experience related to the ship;

See, paragraph 12 of SURVEY PROGRAMME.

13. Critical Structural and Suspect Areas, where relevant;

See, paragraph 14 of SURVEY PROGRAMME.

Appendix 2 - Survey Planning Questionnaire

The Survey Planning Questionnaire, which has been submitted by the owner, should be appended to the survey programme.

Appendix 3 - Other documentation

This part of the survey programme should identify and list any other documentation that forms part of the survey programme.

Appendix 2 - SURVEY PLANNING QUESTIONNAIRE

The following information will enable the owner in cooperation with CR Rules to develop a survey programme complying with the requirements of the Rules. It is essential that the owner provides, when completing the present questionnaire, up-to-date information. The present questionnaire, when completed, should provide all information and material required by the Rules.

Particulars

Ship's name :
IMO number :
Flag State :
Port of registry :
Owner :
RO Ship identity(Class Number):
Gross tonnage :
Deadweight (metric tonnes) :
Date of build :

Information on access provision for close-up surveys and thickness measurement

The owner should indicate, in the table below, the means of access to the structures subject to close-up survey and thickness measurement. A close-up survey is an examination where the details of structural components are within the close visual inspection range of the attending surveyor, i.e. normally within reach of hand.

Hold/Tank No.	Structure	Permanent Means of Access	Temporary staging	Rafts	Ladders	Direct access	Other means (please specify)
F.P.	Fore Peak						
A.P.	Aft Peak						
Cargo Holds	Hatch side coamings						
	Topside sloping plate						
	Upper stool plating						
	Cross deck						
	Double side tank plating						
	Transverse bulkhead						
	Hopper tank platting						
	Lower stool plating						
	Tank top						
Topside Tanks	Underdeck structure						
	Side shell & structure						
	Sloping plate & structure						
	Webs & bulkheads						
Hopper Tanks	Hopper sloping plate & structure						
	Side shell & structure						
	Bottom structure						
	Webs & bulkheads						
Double Side Tanks	Side shell & structure						
	Inner skin & structure						
	Webs & bulkheads						
	Double bottom structure						
	Upper stool internal structure						
	Lower stool internal structure						
Wing Tanks of Ore Carriers	Underdeck & structure						
	Side shell & structure						
	Side shell vertical web & structure						
	Longitudinal bulkhead & structure						
	Longitudinal bulkhead web & structure						
	Bottom plating & structure						
	Cross ties/stringers						

Applicable access provisions are to be ticked.

History of bulk cargoes of a corrosive nature (e.g. high sulphur content)

Owner's inspections

Using a format similar to that of the table below (which is given as an example), the owner should provide details of the results of their inspections, for the last 3 years on all CARGO holds and BALLAST tanks and VOID spaces within the cargo area, including peak tanks.

Hold or Tank No.	Corrosion protection (1)	Coating extent (2)	Coating condition (3)	Structural deterioration (4)	Hold and Tank damage history (5)
Cargo holds					
Topside tanks					
Hopper tanks					
Double bottom tanks					
Upper stools					
Lower stools					
Wing tanks (Ore Carriers)					
Fore peak					
Aft peak					
Miscellaneous other spaces					

Note: Indicate tanks which are used for oil/ballast

1) HC=hard coating; SC=soft coating; A=anodes; NP=no protection;
2) U=upper part; M=middle part; L=lower part; C=complete
3) G=good; F=fair; P=poor; RC=recoated (during the last 3 years)
4) N= no findings recorded; Y= findings recorded, description of findings is to be attached to the questionnaire
5) DR=damage & repair; L= Leakages; CV= Conversion (description should be attached to this questionnaire)

Name of owner's representative:

.....

Signature: .....

Date: .....

Reports of Port State Control inspections

List the reports of Port State Control inspections containing hull structural related deficiencies and relevant information on the rectification of the deficiencies:

Safety Management System

List non-conformities related to hull maintenance, including the associated corrective actions:

Name and address of the approved thickness measurement company:

Other information:

Appendix 3 - Other documentation