



# RUSSIAN MARITIME REGISTER OF SHIPPING

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**CIRCULAR LETTER**

**No. 314-45-1667c**

dated 25.11.2021

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Re:

amendments to the Rules for the Classification and Construction of Sea-Going Ships, 2021, ND No. 2-020101-138-E in connection with coming into force of IACS unified requirement (UR) S11 (Rev.10 Dec 2020)

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Item(s) of supervision:

ships under construction

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Entry-into-force date:

**01.01.2022**

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~~Cancels / amends / adds Circular Letter No.~~

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Number of pages: 1 + 20

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Appendices:

Appendix 1: information on amendments introduced by the Circular Letter

Appendix 2: text of amendments to Part "Hull"

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Director General

Konstantin G. Palnikov

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Text of CL:

We hereby inform that the Rules for the Classification and Construction of Sea-Going Ships shall be amended as specified in the Appendices to the Circular Letter.

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It is necessary to do the following:

1. Bring the content of the Circular Letter to the notice of the RS surveyors, interested organizations and persons in the area of the RS Branch Offices' activity.
  2. Apply the provisions of the Circular Letter during review and approval of the technical documentation on ships contracted for construction or conversion on or after 01.01.2022, in the absence of a contract, the keels of which are laid or which are at a similar stage of construction on or after 01.01.2022, as well as during review and approval of the technical documentation on ships, the delivery of which is on or after 01.01.2022.
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List of the amended and/or introduced paras/chapters/sections:

Part II: para 1.4.3.1.4 and Appendix 4

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"Thesis" System No. 21-277735

**Information on amendments introduced by the Circular Letter  
(for inclusion in the Revision History to the RS Publication)**

Nos.	Amended paras/chapters/ sections	Information on amendments	Number and date of the Circular Letter	Entry-into-force date
1	Para 1.4.3.1.4	Reference to Appendix 4 has been introduced	314-45-1667c of 25.11.2021	01.01.2022
2	Appendix 4	New Appendix has been introduced containing requirements considering IACS UR S11 (Rev.10 Dec 2020)	314-45-1667c of 25.11.2021	01.01.2022

**RULES FOR THE CLASSIFICATION AND CONSTRUCTION OF SEA-GOING SHIPS, 2021,  
ND No. 2-020101-138-E**

**PART II. HULL**

**1 DESIGN PRINCIPLES**

1 **Para 1.4.3.1.4** is replaced by the following text:

**".4** ballast loading conditions where forepeak, afterpeak and/or other ballast tanks are partly filled at the departure, arrival or mid-voyage, shall not be considered as the design loading conditions. The exception shall be the cases where any partial filling of the tank does not exceed the permissible strength limitations. A notion "any partial filling" in the present paragraph assumes loading condition, which corresponds to an empty tank, fully loaded tank and a tank filled up to the prescribed level.

Where there are several partly loaded tanks, then all the combinations comprising empty, full and partly filled tanks shall be considered.

For ore carriers with large side ballast tanks in cargo area for the case where empty or full loading of one or maximum two pairs of these ballast tanks causes a trim exceeding at least one of the values mentioned below, then it shall be sufficient to demonstrate compliance with maximum, minimum and assigned partial filling levels of these one or maximum two pairs of side tanks, so that actual trim does not exceed any of these trim values. Fill up levels for the rest side ballast tanks shall be considered between full and empty.

The above-mentioned trim values are as follows:

trim by the stern for 3 % of ship length;

trim by the bow for 1,5 % of ship length;

any trim, at which propeller depth axis constitutes 25 % of its diameter.

Maximum and minimum filling levels of the above-mentioned one or maximum two pairs of side ballast tanks shall be included to the Loading Manual (refer to Appendix 4).

In cargo loading conditions, the requirements of the present paragraph apply to the peak tanks only.

The requirements of the present paragraph do not apply to ballast water exchange at sea using the sequential method. However, bending moment and shear force calculations for each ballasting or deballasting stage in the ballast water exchange sequence shall be included in the Loading Manual or the Guidelines for Safe Ballast Water Exchange at Sea of any ship that intends to employ the sequential ballast water exchange method."

## **GUIDELINES FOR BALLAST LOADING CONDITIONS OF CARGO VESSELS SHIPS INVOLVING PARTIALLY FILLED BALLAST TANKS**

### **1 GENERAL**

**1.1** This Appendix is intended for interpretation of requirements given in 1.4.3.1.4.

**1.2** Cases A and B are generally applicable for ballast loading conditions for any cargo vessels which may have one ballast water (BW) tank (or one pair of BW tanks) partially filled.

**1.3** Case C is applicable if it is necessary for checking longitudinal strength for a conventional ore carrier with two pairs of large wing water ballast tanks partly filled during the ballast voyage.

**1.4** The provisions of this Appendix do not apply to ships covered by the IACS Common Structural Rules or Part XVIII "Additional Requirements for Structures of Container Ships and Ships, Dedicated Primarily to Carry Their Load in Containers" of the Rules.

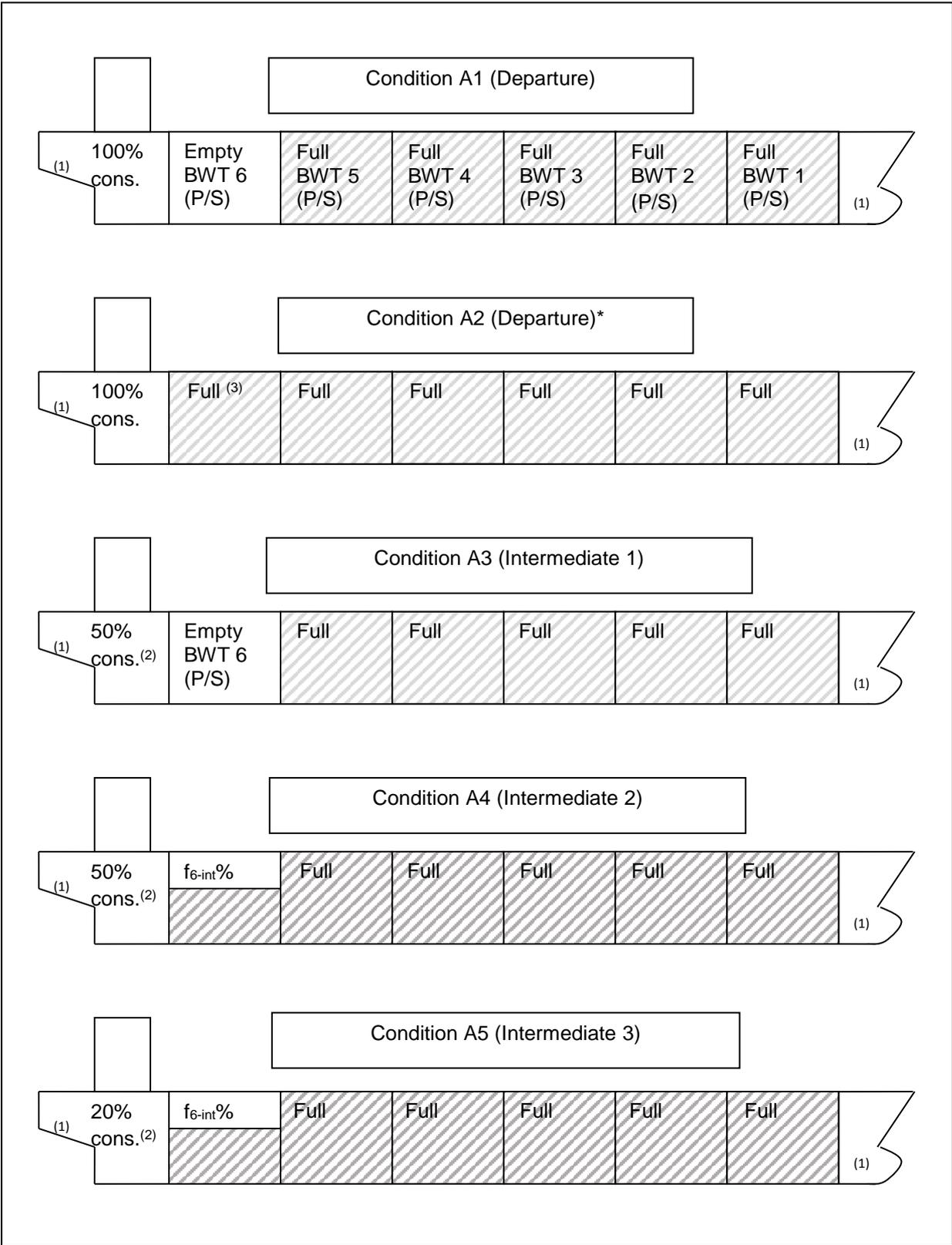
**1.5** In Figs. 2.1 – 2.3-12, the conditions only intended for longitudinal strength verification (not operational) are marked with a star (\*).

### **2 CASES A AND B**

#### **2.1 Case A (without considering consumables).**

Fig. 2.1 shows a cargo ship where partial filling of ballast water tank BWT 6 (P/S) is permitted. Intermediate condition(s) shall be provided as shown in Fig. 2.1, however filling/partial filling of BWT 6 (P/S) may be done at any step to keep acceptable trim and propeller immersion during the ballast voyage.

In order to ensure partial filling of BWT 6 (P/S), longitudinal strength verification shall be performed at any stage during voyage for loading conditions A2 (full at departure)\* and A8 (empty at arrival)\*.



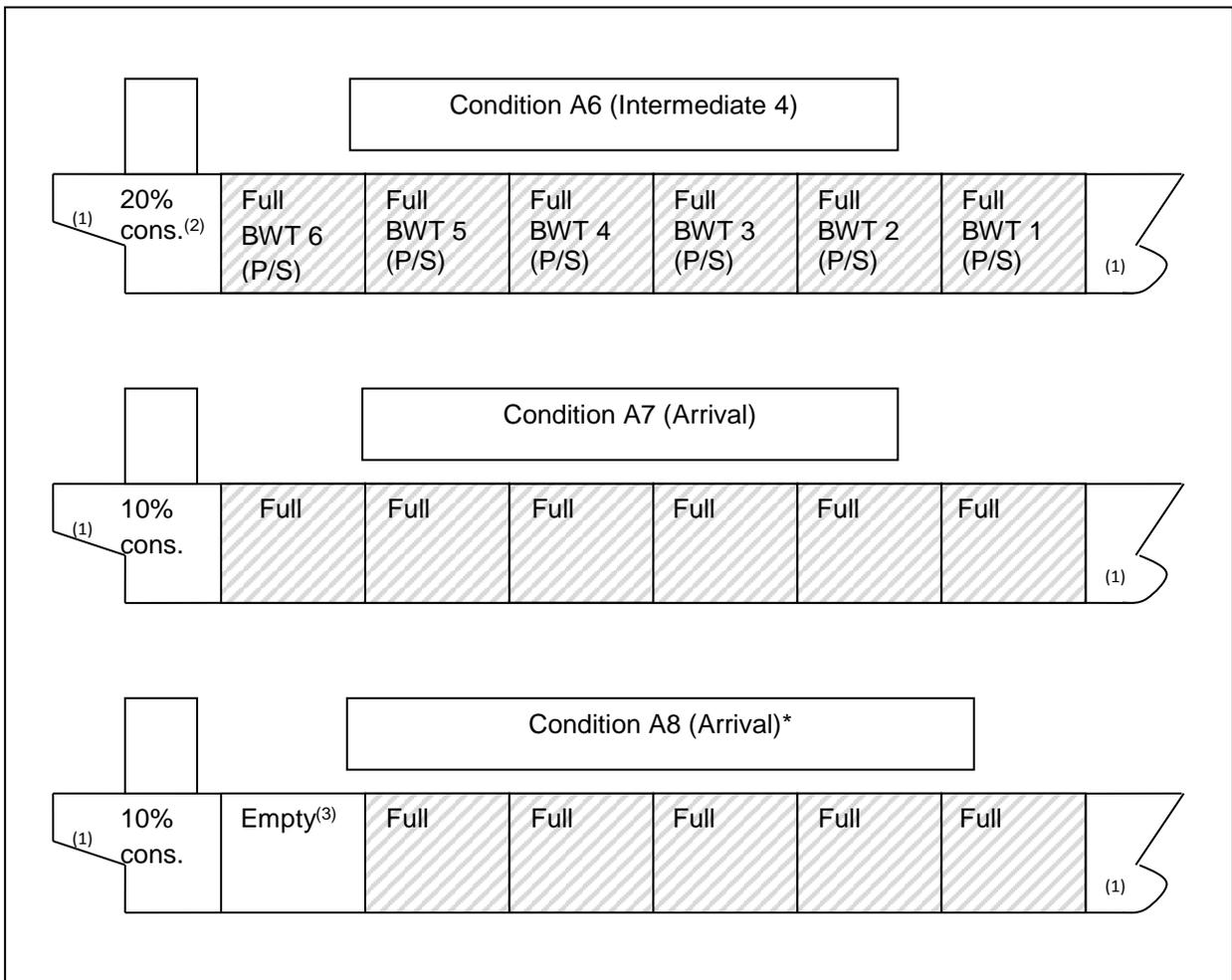


Fig. 2.1

Case A, Partial filling of BWT 6 (P/S) is permitted at any stage during voyage. The intermediate condition is specified, however other partial filling of BWT 6 (P/S) may be applied to keep acceptable trim and propeller immersion during the ballast voyage. Conditions only intended for longitudinal strength verification (not operational) are marked "\*".

Notes:

- (1) For forepeak and afterpeak tanks intended to be partially filled, all combinations of full or partially filled at intended level for those tanks are to be investigated.
- (2) The intermediate condition(s) shall be specified including % consumables.
- (3) For bulk carriers carrying ore and with large wing water ballast tanks "full/empty" may be replaced with maximum/minimum filling levels according to trim limitations and acceptable propeller immersion.

## 2.2 Case B (considering consumables).

Fig. 2.2 shows a cargo ship where BWT 6 (P/S) may be partially filled to a given level ( $f_{6-in\%}$ ) after a specified % consumables is reached, that complies with loading conditions B2 and B3. Before this % consumables (shown as 50 % in Fig. 2.2) is reached, BWT 6 (P/S) shall be kept empty. When reaching a given level of consumables (shown as 20 % in Fig. 2.2), BWT 6 (P/S) shall be kept full, that complies with loading conditions B5 and B6. Two additional intermediate conditions (B4\* and B7\*) shall be added for longitudinal strength verification.

In order to categorize a ship according to Case B, clear operational guidance for partial filling of ballast tanks, in association with the consumption level as shown in Fig. 2.2, is to be given in the loading manual. If such operational guidance is not given, Case A is to be applied.

Condition B1 (Departure)

(1)	100% cons.	Empty BWT 6 (P/S)	Full BWT 5 (P/S)	Full BWT 4 (P/S)	Full BWT 3 (P/S)	Full BWT 2 (P/S)	Full BWT 1 (P/S)	(1)
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Condition B2 (Intermediate 1)

(1)	50% cons.(2)	Empty BWT 6 (P/S)	Full	Full	Full	Full	Full	(1)
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Condition B3 (Intermediate 2)

(1)	50% cons.(2)	$f_{6-int} \%$	Full	Full	Full	Full	Full	(1)
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Condition B4 (Intermediate 3)\*

(1)	50% cons.(2)	Full	Full	Full	Full	Full	Full	(1)
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Condition B5 (Intermediate 4)

(1)	20% cons.(2)	$f_{6-int} \%$	Full	Full	Full	Full	Full	(1)
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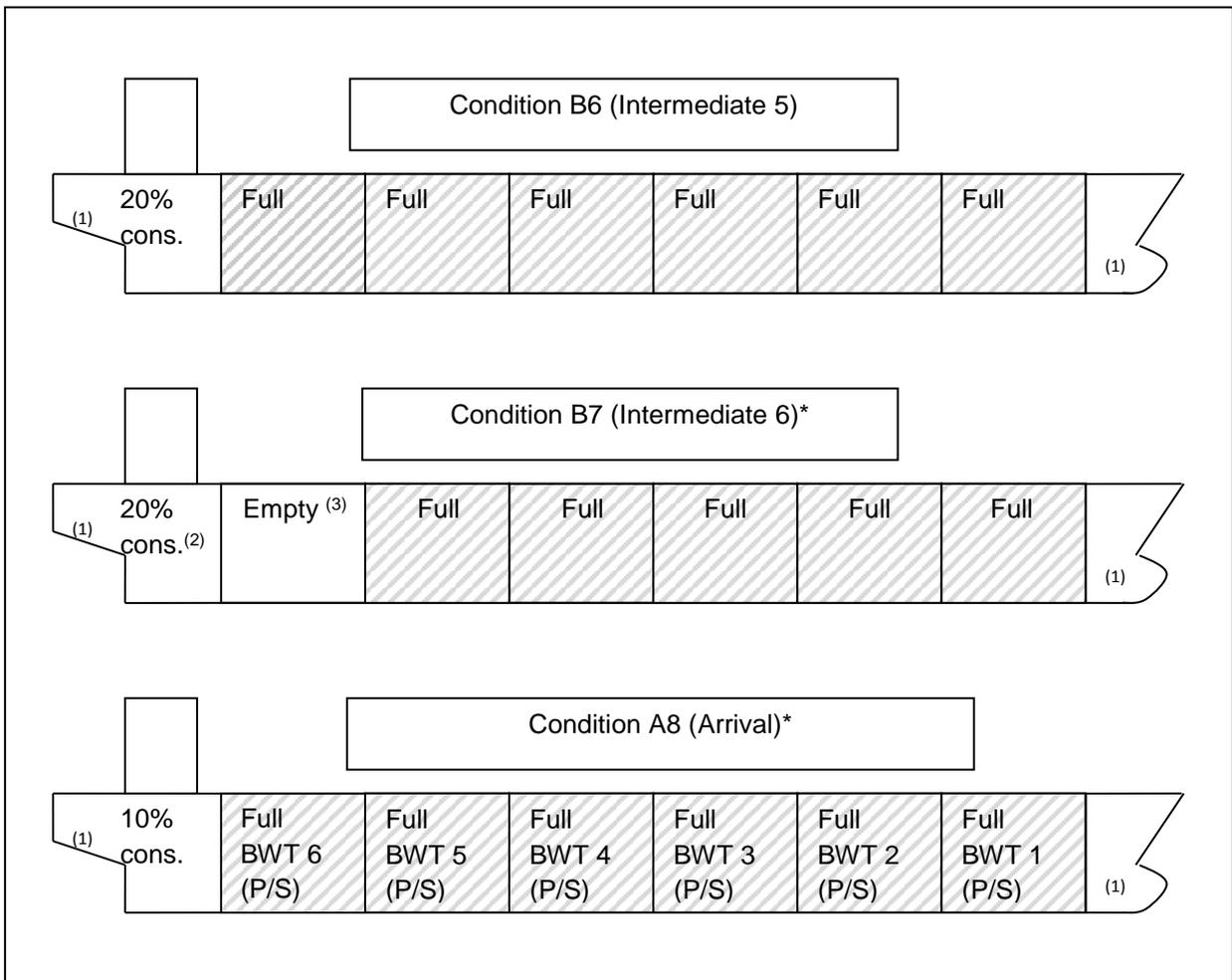


Fig. 2.2

Case B, partial filling of BWT 6 (P/S) only allowed during intermediate conditions, in this example between 50 – 20 % consumables. Conditions only intended for longitudinal strength verification (not operational) are marked "\*".

Notes :

- (1) For forepeak or afterpeak tanks intended to be partially filled, all combinations of full or partially filled at intended level for those tanks are to be investigated.
- (2) The intermediate condition(s) shall be specified including % consumables.
- (3) For bulk carriers carrying ore and with large wing water ballast tanks "full/empty" may be replaced with maximum/minimum filling levels to keep trim limitations and acceptable propeller immersion.

**2.3 Case C. Conventional (with usual arrangement of WBT) ore carrier with two pairs of partially filled ballast water tanks.**

Fig. 2.3-2 shows the operational loading conditions, departure condition, four intermediate conditions (C2 — C5) and arrival condition (C6), for a conventional (with usual arrangement of BWT) ore carrier with partial filling of both BWT 1 (P/S) and 7 (P/S), refer to Table 2.3.

Table 2.3

Filling level in partially filled BWT for the operational conditions during ballast voyage			
Loading condition	Consumables	Filling level, BWT 1 (S/P)	Filling level, BWT 7 (S/P)
C1 — Departure	100 %	$f_{1\ dep}\%$	$f_{7\ dep}\%$
C2 — Intermediate 1	50 %	$f_{1\ dep}\%$	$f_{7\ dep}\%$
C3 — Intermediate 2	50 %	$f_{1\ int}\%$	$f_{7\ int}\%$
C4 — Intermediate 3	20 %	$f_{1\ int}\%$	$f_{7\ int}\%$
C5 — Intermediate 4	20 %	$f_{1\ arr}\%$	$f_{7\ arr}\%$
C6 — Arrival	10 %	$f_{1\ arr}\%$	$f_{7\ arr}\%$

Figs. 2.3-3 — 2.3-4 show the additional 12 loading conditions (C1-1 — C1-12) which shall be added for longitudinal strength verification of the departure condition.

Figs. 2.3-5 — 2.3-10 show the additional 32 loading conditions (C2-1 — C2-12, C3-1 — C3-4, C4-1 — C4-12 and C5-1 — C5-4) which shall be added for longitudinal strength verification of the intermediate conditions (C2 ~ C5).

Figs. 2.3-11 — 2.3-12 show the additional 12 loading conditions (C6-1 — C6-12) which shall be added for longitudinal strength verification of the arrival condition.

For the additional loading conditions, the maximum and the minimum filling level of BWT are determined taking into account the need to provide acceptable trim and propeller immersion. To confirm this, it is sufficient to demonstrate that under none of the loading conditions for acceptable partial filling levels of ballast tanks the ship's condition will exceed any of acceptable trim limits determined from the trim conditions as follows:

- trim by stern of 3 % of the ship's length;
  - trim by bow of 1,5 % of ship's length;
  - any trim that cannot maintain propeller immersion ( $I/D$ ) not less than 25 %, where:
- $I$  = the distance from propeller centerline to the waterline;  
 $D$  = propeller diameter (refer to Fig. 2.3-1).

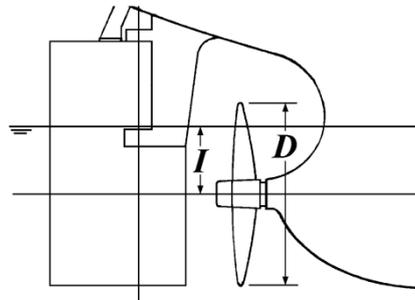


Fig. 2.3-1

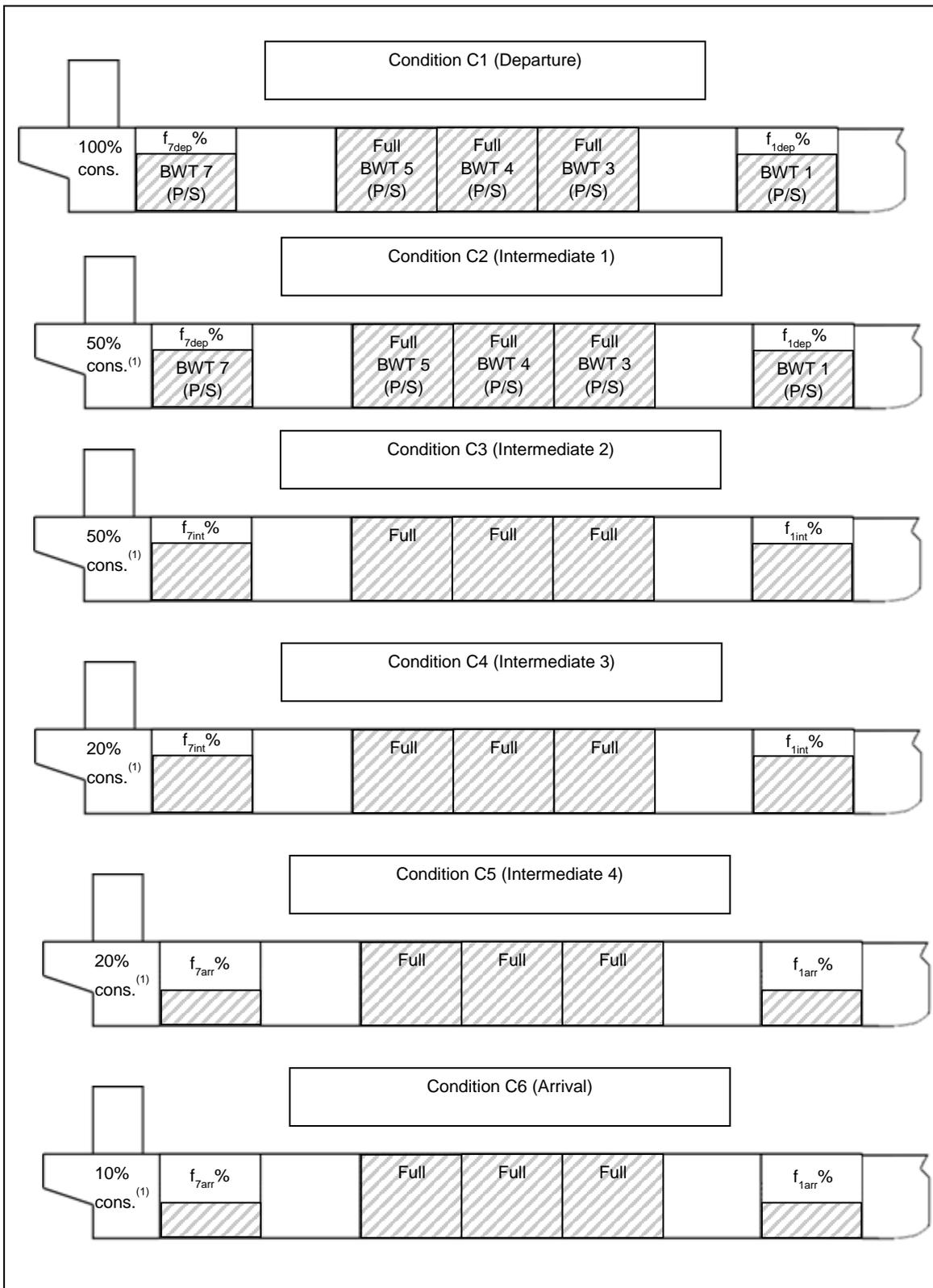


Fig. 2.3-2  
Case C, Ore Carrier. Partial filling of BWT 1 (P/S) and BWT 7 (P/S) during ballast voyage, operational conditions C1 — C6.

Notes:

- (1) The intermediate condition(s) shall be specified including % consumables.
- (2) Maximum and minimum filling level of BWT to keep the acceptable trim and propeller immersion.

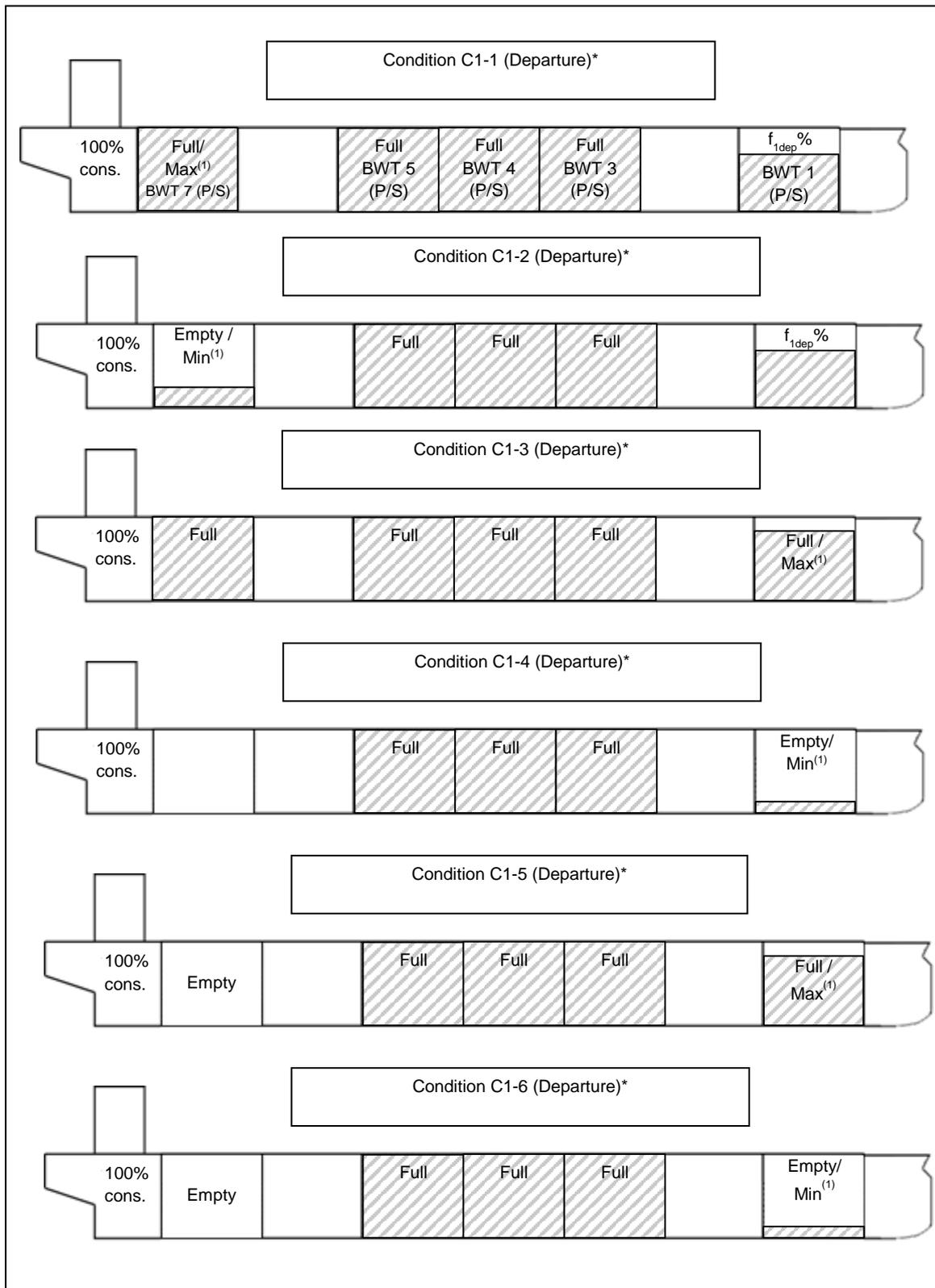


Рис. 2.3-3

Case C, Ore Carrier. Partial filling of BWT 1 (P/S) and BWT 7 (P/S) during voyage. Departure conditions C1-1 — C1-6, only intended for longitudinal strength verification (not operational) are marked "\*".

Note:

(1) Maximum/minimum filling level of BWT to keep the acceptable trim and propeller immersion.

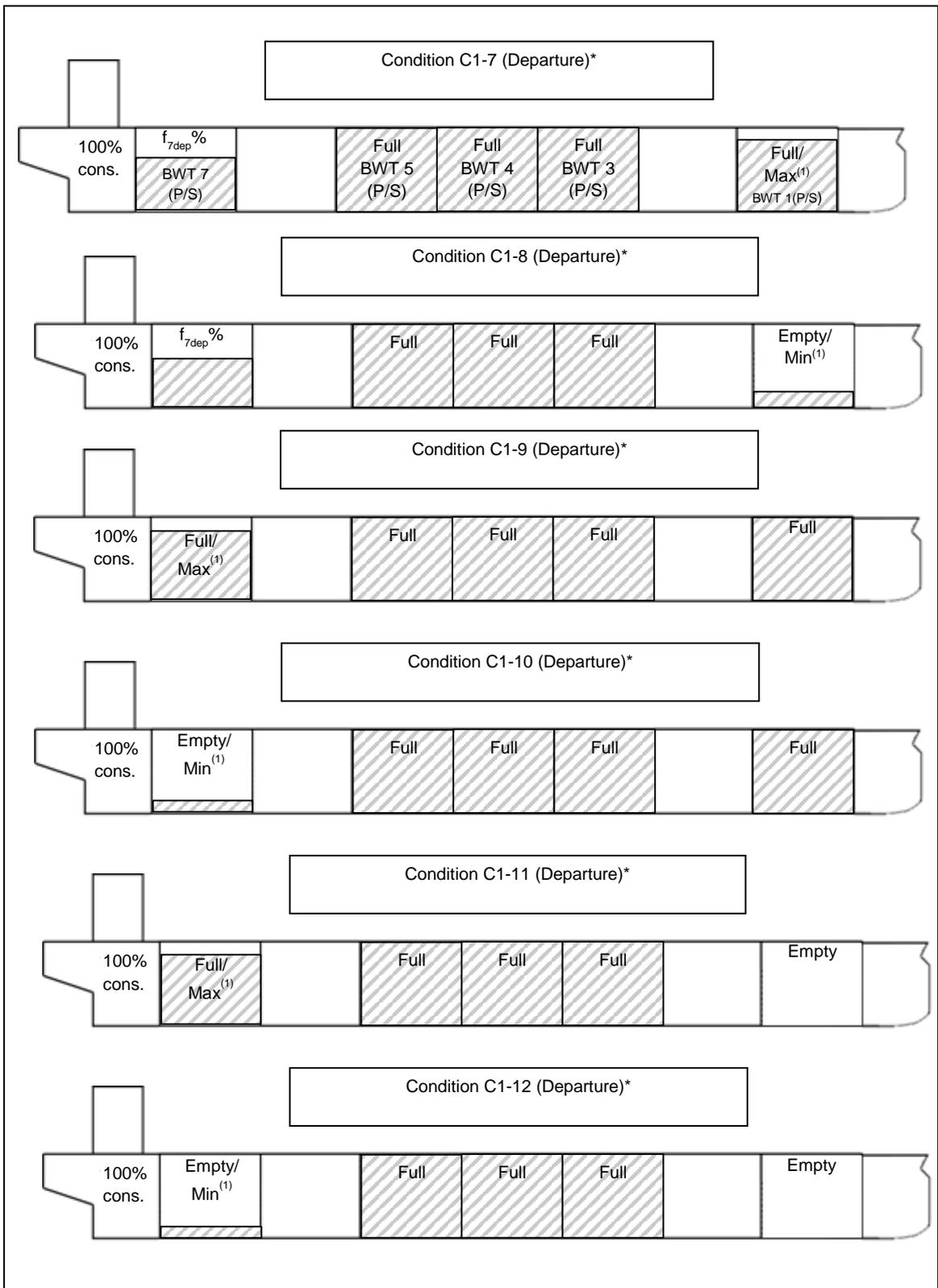


Fig. 2.3-4

Case C, Ore Carrier. Partial filling of BWT 1 (P/S) and BWT 7 (P/S) during voyage. Departure conditions C1-7 — C1-12, only intended for longitudinal strength verification (not operational) are marked "\*\*\*".

Note:

(1) Maximum/minimum filling level of BWT to keep the acceptable trim and propeller immersion.

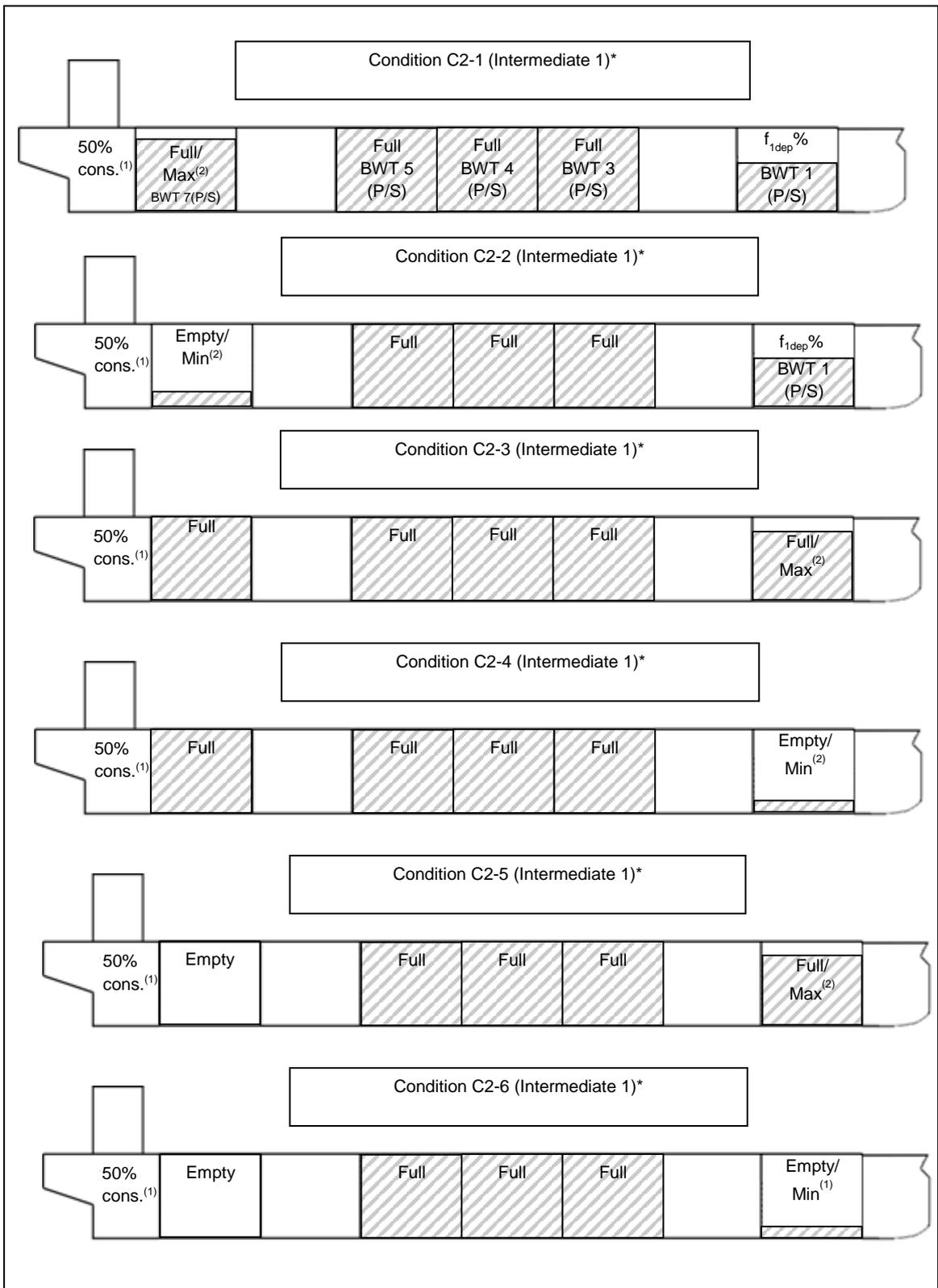


Fig. 2.3-5  
Case C, Ore Carrier. Partial filling of BWT 1 (P/S) and BWT 7 (P/S) during voyage. Intermediate conditions C2-1 — C2-6, only intended for longitudinal strength verification (not operational) are marked "\*".

Notes:

- (1) The intermediate condition(s) shall be specified including % consumables.
- (2) Maximum/minimum filling level of BWT to keep the acceptable trim and propeller immersion.

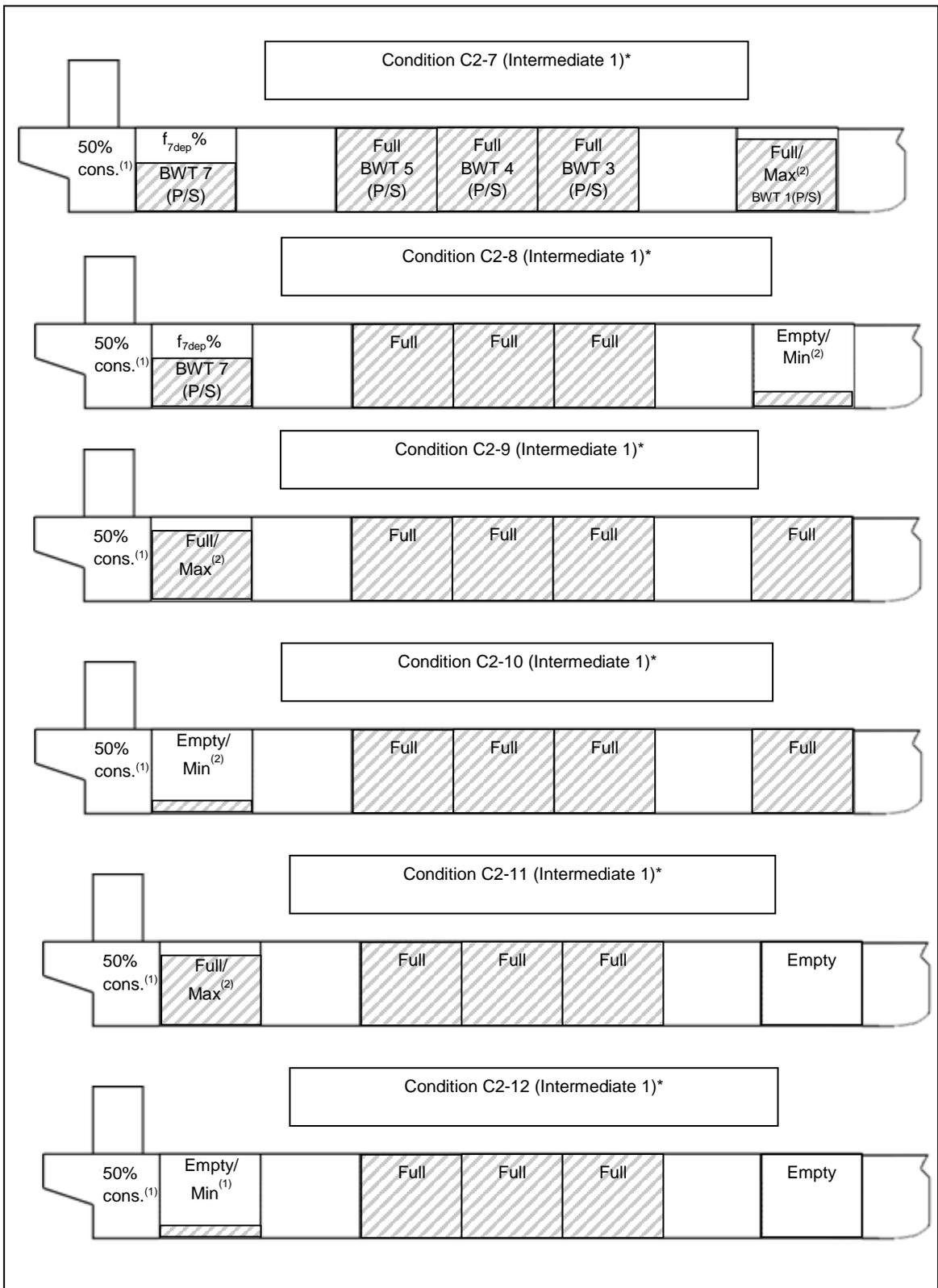


Fig. 2.3-6

Case C, Ore Carrier. Partial filling of BWT 1 (P/S) and BWT 7 (P/S) during voyage. Intermediate conditions C2-7 — C2-12, only intended for longitudinal strength verification (not operational) are marked "\*\*".

Notes:

- (1) The intermediate condition(s) shall be specified including % consumables.
- (2) Maximum/minimum filling level of BWT to keep the acceptable trim and propeller immersion.

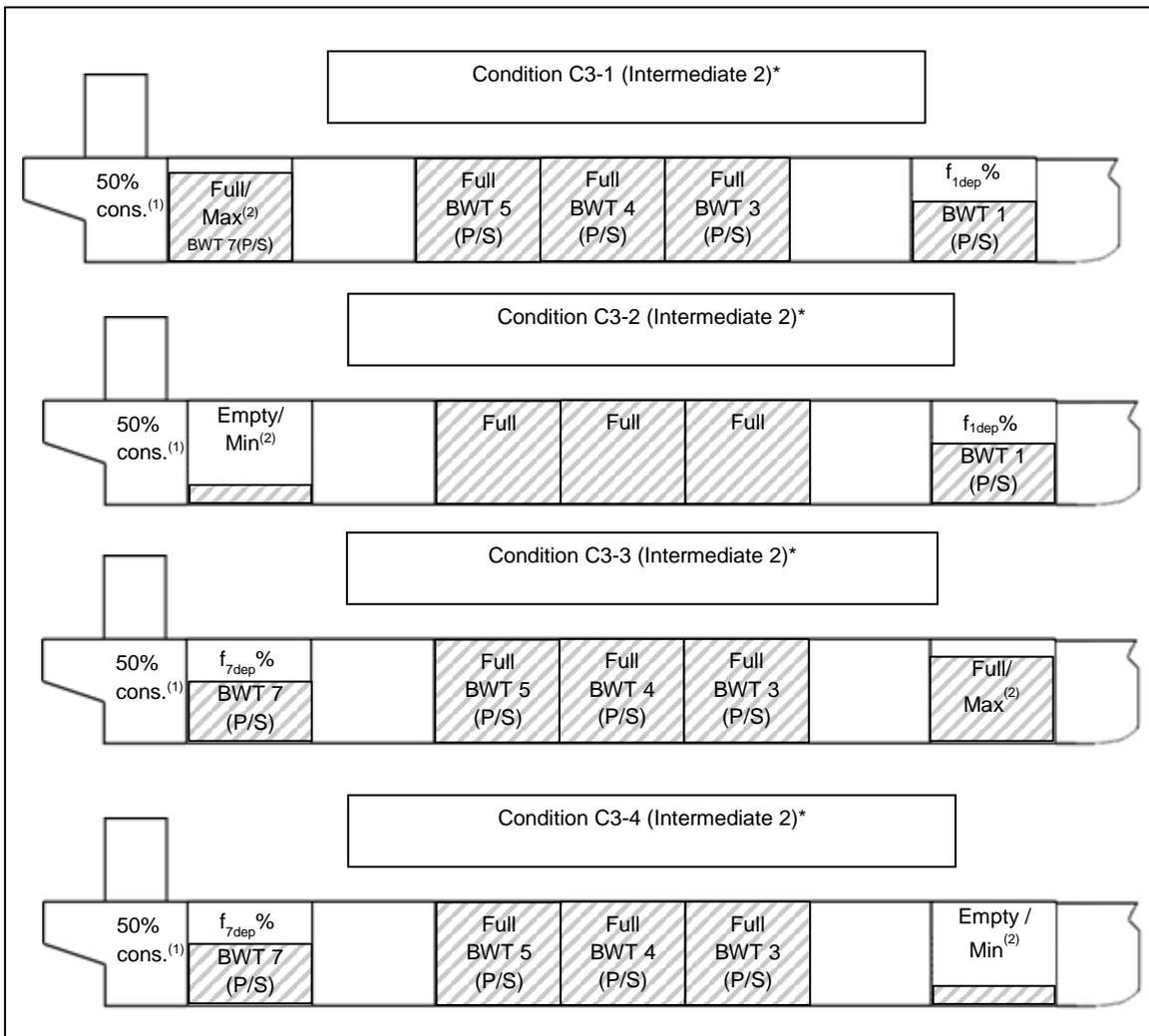


Fig. 2.3-7

Case C, Ore Carrier. Partial filling of BWT 1 (P/S) and BWT 7 (P/S) during voyage. Intermediate conditions C3-1 — C3-4, intended for longitudinal strength verification (not operational) are marked "\*\*\*".

Notes:

- (1) The intermediate condition(s) shall be specified including % consumables.
- (2) Maximum/minimum filling level of BWT to keep the acceptable trim and propeller immersion.

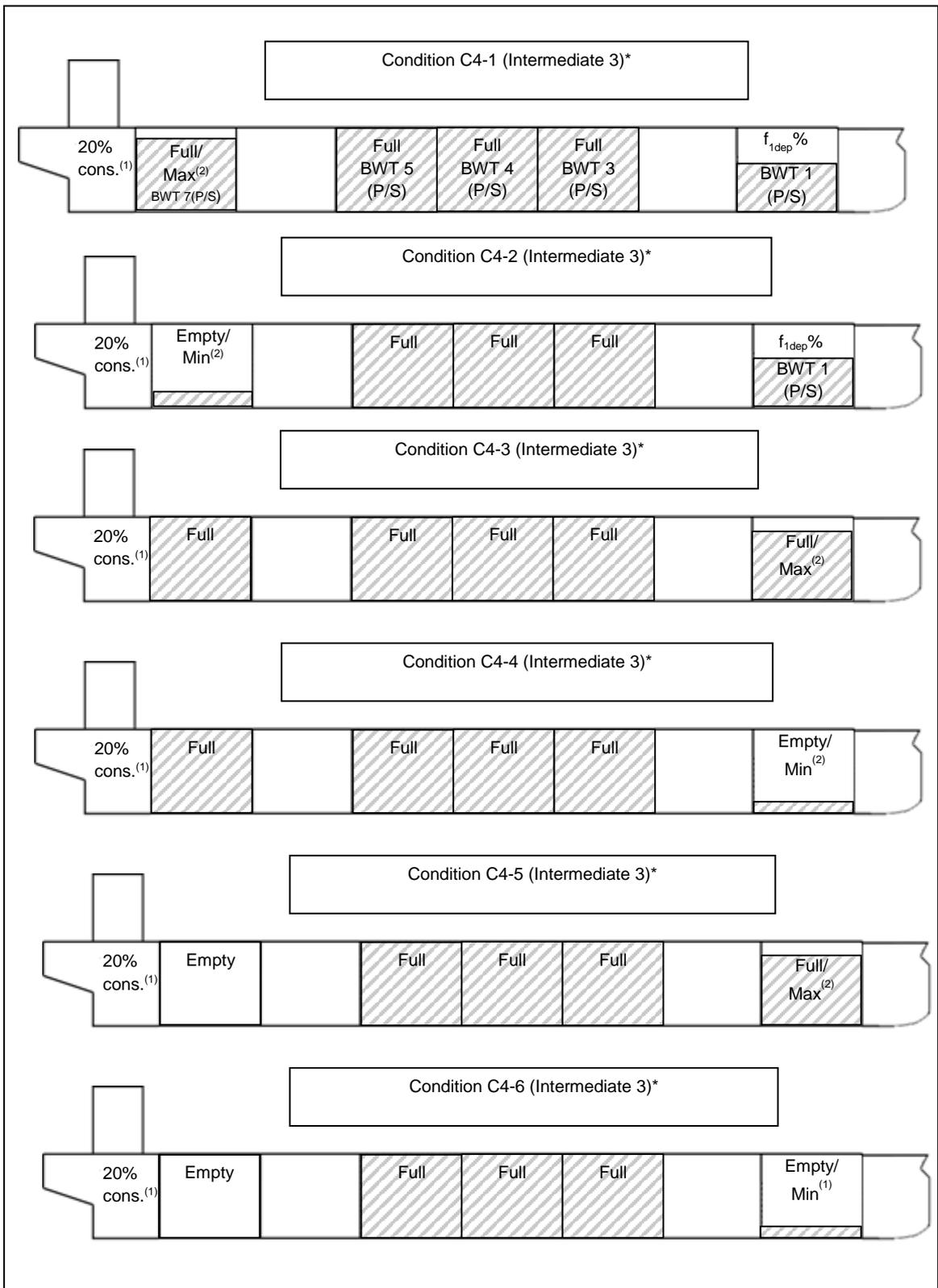


Fig. 2.3-8  
 Case C, Ore Carrier. Partial filling of BWT 1 (P/S) and BWT 7 (P/S) during voyage. Intermediate conditions C4-1 — C4-6, only intended for longitudinal strength verification (not operational) are marked "\*\*".

Notes:

- (1) The intermediate condition(s) shall be specified including % consumables.
- (2) Maximum/minimum filling level of BWT to keep the acceptable trim and propeller immersion.

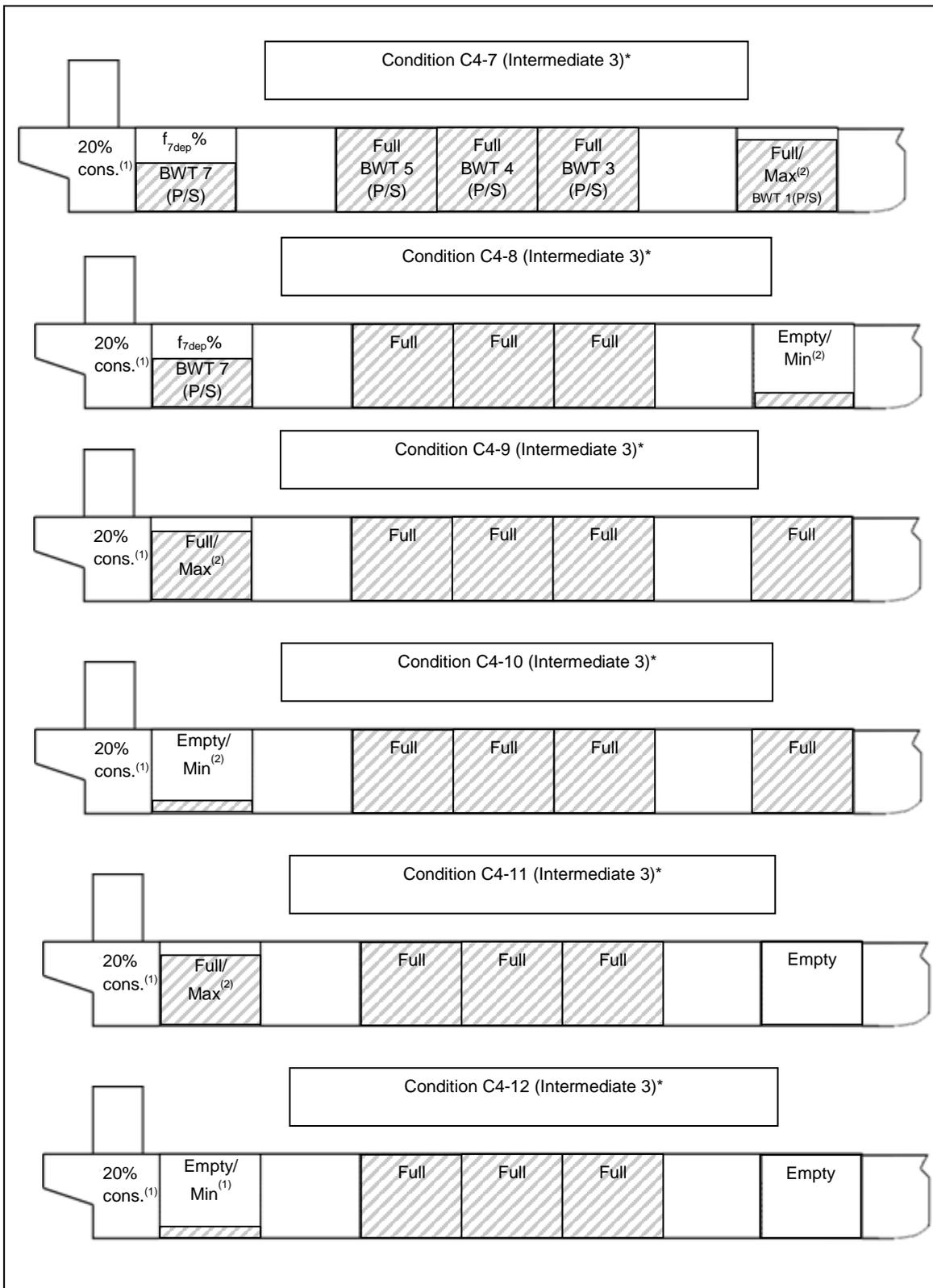


Fig. 2.3-9  
 Case C, Ore Carrier. Partial filling of BWT 1 (P/S) and BWT 7 (P/S) during voyage. Intermediate conditions C4-7 — C4-12, only intended for longitudinal strength verification (not operational) are marked "\*\*\*".

Notes:

- (1) The intermediate condition(s) shall be specified including % consumables.
- (2) Maximum/minimum filling level of BWT to keep the acceptable trim and propeller immersion.

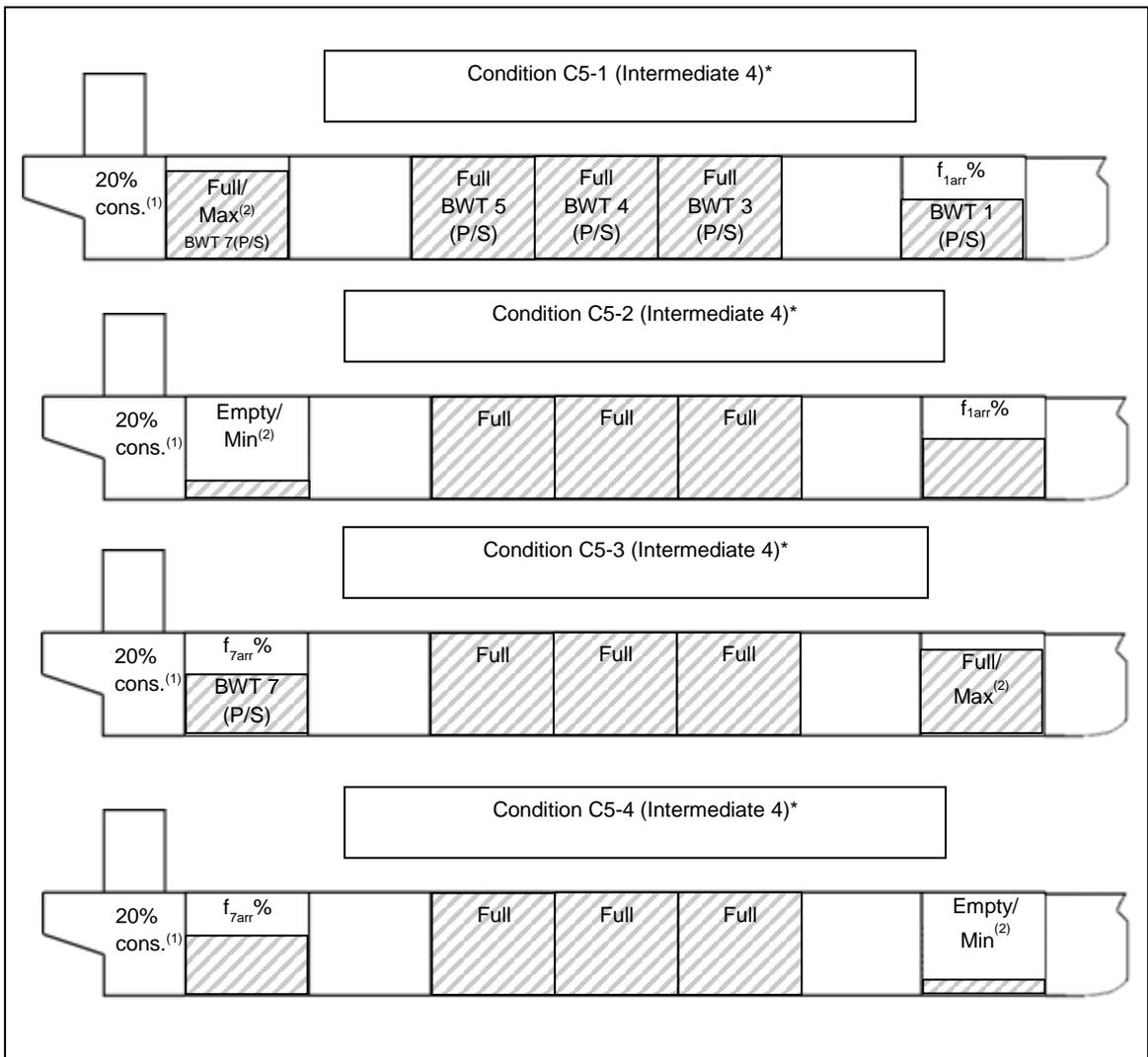


Fig. 2.3-10

Case C, Ore Carrier. Partial filling of BWT 1 (P/S) and BWT 7 (P/S) during voyage. Intermediate conditions C5-1 — C5-4, only intended for longitudinal strength verification (not operational) are marked "\*".

Notes:

- (1) The intermediate condition(s) shall be specified including % consumables.
- (2) Maximum/minimum filling level of BWT to keep the acceptable trim and propeller immersion.

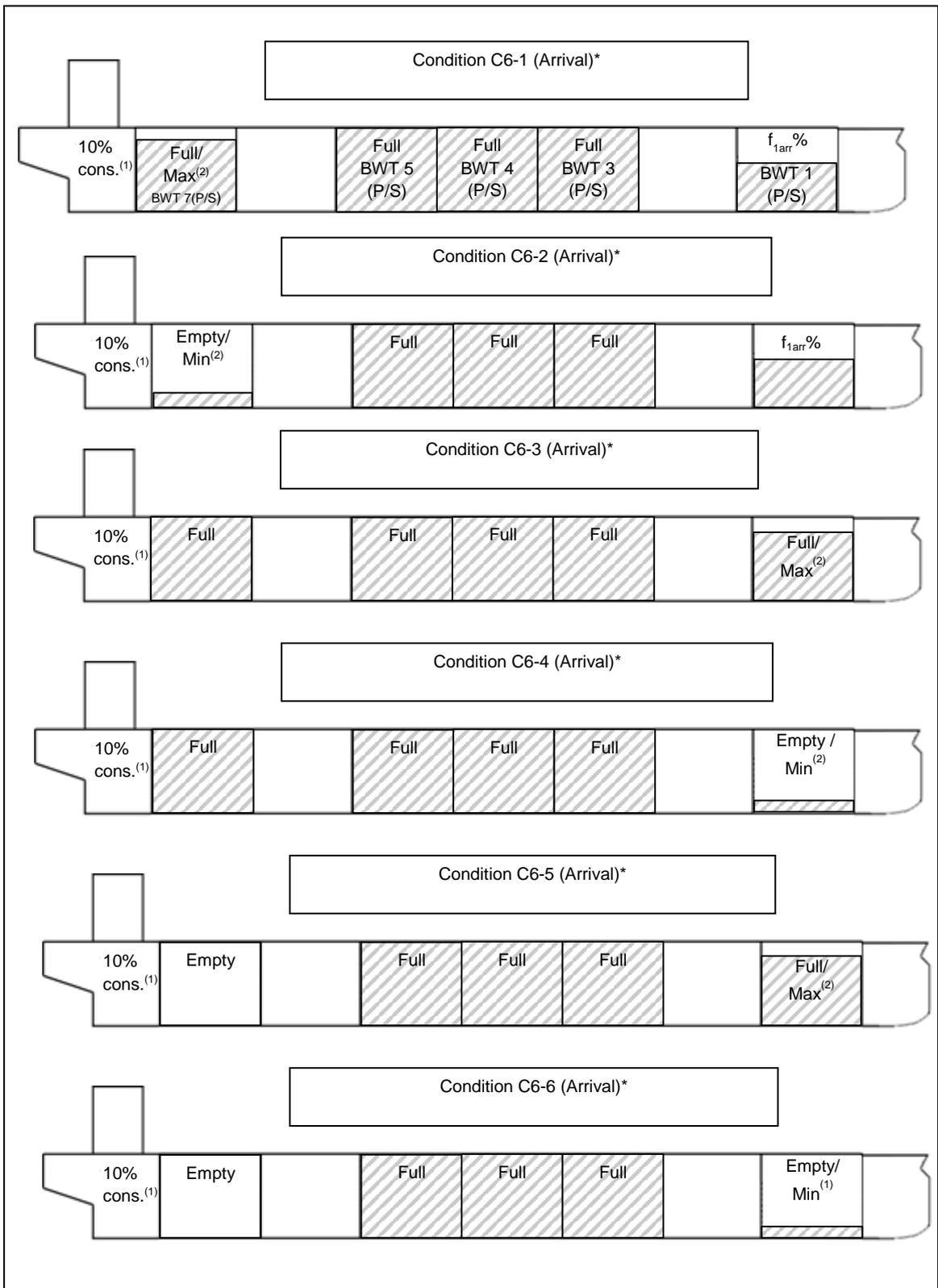


Fig. 2.3-11

Case C, Ore Carrier. Partial filling of BWT 1 (P/S) and BWT 7 (P/S) during voyage. Arrival conditions C6-1 — C6-6, only intended for longitudinal strength verification (not operational) are marked "\*".

Notes:

- (1) The intermediate condition(s) shall be specified including % consumables.
- (2) Maximum/minimum filling level of BWT to keep the acceptable trim and propeller immersion.

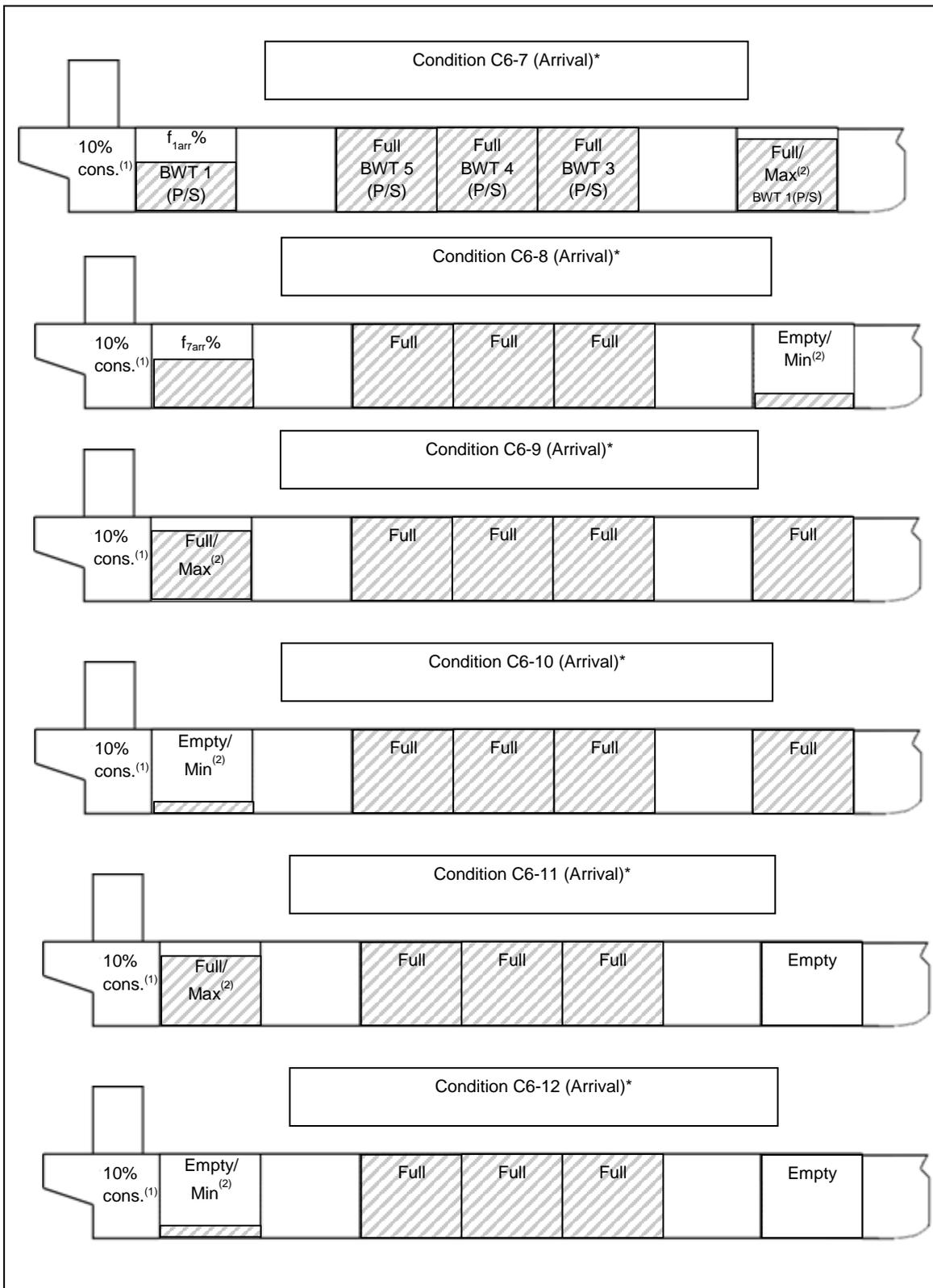


Fig. 2.3-12

Case C, Ore Carrier. Partial filling of BWT 1 (P/S) and BWT 7 (P/S) during voyage. Arrival conditions C6-7 — C6-12, only intended for longitudinal strength verification (not operational) are marked "\*".

Notes:

- (1) The intermediate condition(s) shall be specified including % consumables.
- (2) Maximum/minimum filling level of BWT to keep the acceptable trim and propeller immersion."