BRITISH STANDARD

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Petroleum products — Methods of specifying practical procedures for the transfer of bunker fuels to ships

ICS 75.200

National foreword

This British Standard reproduces verbatim ISO/TR 13739:1998 and implements it as the UK national standard.

The UK participation in its preparation was entrusted by Technical Committee PTI/12, Petroleum measurement and sampling, to Subcommittee PTI/12/3, Bulk cargo transfer, which has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;

— monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled "International Standards Correspondence Index", or by using the "Find" facility of the BSI Standards Electronic Catalogue.

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Summary of pages

This document comprises a front cover, an inside front cover, the ISO/TR title page, pages ii to v, a blank page, pages 1 to 16, an inside back cover and a back cover.

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TECHNICAL REPORT

ISO/TR 13739

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Petroleum products — Methods for specifying practical procedures for the transfer of bunker fuels to ships

Produits pétroliers — Méthode pour spécifier les procédures pratiques de transfert dans les navires des combustibles de soute

Reference number
ISO/TR 13739:1998(E)

Contents

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The main task of technical committees is to prepare International Standards, but in exceptional circumstances a technical committee may propose the publication of a Technical Report of one of the following types:

— type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;

— type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;

— type 3, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example).

Technical Reports of types 1 and 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

ISO/TR 13739, which is a Technical Report of type 2, was prepared by Technical Committee ISO/TC 28, *Petroleum products and lubricants,* Subcommittee SC 6, *Bulk cargo transfer, accountability, inspection and reconciliation.*

This document is being issued in the Technical Report (type 2) series of publications (according to subclause G.3.2.2 of part 1 of the ISO/IEC Directives,1995) as a "prospective standard for provisional application" in the field of supplying bunkers to vessels because there is an urgent need for guidance on how standards in this field should be used to meet an identified need.

This document is not to be regarded as an "International Standard". It is proposed for provisional application so that information and experience of its use in practice may be gathered. Comments on the content of this document should be sent to the ISO Central Secretariat.

A review of this Technical Report (type 2) will be carried out not later than three years after its publication with the options of: extension for another three years; conversion into an International Standard; or withdrawal.

It is envisaged that once ISO/TR 13739 has been reviewed after wider use, it will eventually be reissued as an International Standard.

Annexes A, B, C, D and E of this Technical Report are for information only.

Introduction

This Technical Report was developed for the benefit of the ship-bunkering industry comprising shipowners, operators, charterers, bunker suppliers, bunker-tanker operators and surveyors. It sets out a series of guidelines which, if properly followed, will allow for the uniform and expeditious transfer of bunker fuel to ships.

Petroleum products — Method for specifying practical procedures for the transfer of bunker fuels to ships

WARNING – The use of this Technical Report may involve hazardous materials, operations and equipment. This Technical Report does not purport to address all the safety problems associated with its use. It is the responsibility of the user of this Technical Report to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

1 Scope

This Technical Report describes a method for specifying practical procedures for the transfer of bunker fuels to ships.

It is important to note that this Technical Report neither governs the legal rights of shipowners/buyers and bunker suppliers nor does it supersede applicable legislation.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this Technical Report. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this Technical Report are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 91-1:1992, *Petroleum measurement tables — Part 1: Tables based on reference temperatures of* 15 °C *and* 60 °F.

ISO 91-2:1991, *Petroleum measurement tables — Part 2: Tables based on a reference temperature of* 20 °C.

ISO 2719:1988, *Petroleum products and lubricants — Determination of flash point — Pensky-Martens closed cup method.*

ISO 3104:1994, *Petroleum products — Transparent and opaque liquids — Determination of kinematic viscosity and calculation of dynamic viscosity.*

ISO 3170:1988, *Petroleum liquids — Manual sampling.*

ISO 3171:1988, *Petroleum liquids — Automatic pipeline sampling.*

ISO 3675:1998, *Crude petroleum and liquid petroleum products — Laboratory determination of density — Hydrometer method.*

ISO 4259:1992, *Petroleum products — Determination and application of precision data in relation to methods of test.*

ISO 8216-1:1996, *Petroleum products — Fuels (class F) — Classification — Part 1: Categories of marine fuels.*

ISO 8217:1996, *Petroleum products — Fuels (class F) — Specifications of marine fuels.*

ISO 8754:1992, *Petroleum products — Determination of sulfur content — Energy-dispersive X-ray fluorescence method.*

ISO 12185:1996, *Crude petroleum and petroleum products — Determination of density — Oscillating U-tube method.*

Institute of Petroleum — Petroleum Measurement Manual — Part XIV — Statistics for Static and Dynamic Measurement.

3 Terms and definitions

For the purpose of this Technical Report, the following definitions apply.

3.1
bunker(s)
distillate fuel or residual fuel for a vessel's consumption

3.2
bunker agreement
contractual terms applying to a bunker transfer

3.3
bunker tanker
bunker barge or tanker supplying bunkers to the vessel

3.4
cargo officer
individual from the bunker tanker who is responsible for the delivery and documentation or, in the case of deliveries direct from the shore to the vessel, the person responsible for the delivery and documentation

3.5
sample
product specimen defined by time, location and method of sampling and retention

3.6
specification
negotiated, fixed set of product characteristics based on designated methods of test as defined in ISO 8217

3.7
supplier
persons involved in the provision or the delivery of the bunkers

3.8
surveyor
person engaged to survey the bunker operation

3.9
vessel
ship receiving bunker(s)

3.10
vessel officer
the officer of the vessel, or his representative, who is responsible for receiving bunkers and documentation

3.11
bunker delivery receipt
BDR
proprietary document of the supplier providing details of the quality and quantity of the bunker(s) received by the vessel

See annex A.

4 Documentation

Documents supporting a bunker delivery will vary according to local legal and supplier's requirements. Therefore, it is not practical to recommend standardized formats. However, the major requirements for documentary support of a bunker custody transfer are reviewed in this Technical Report. Completion of proper documentation is the joint responsibility of all parties involved.

5 Pre-delivery requirements

5.1 Essential information

The information listed in 5.2.1 shall be exchanged by the vessel officer and the cargo officer.

5.2 Pre-delivery documentation

Except where dictated by local regulations, the following pre-delivery documentation, issued by the supplier, shall be signed by the vessel officer and the cargo officer when completed to their satisfaction. This pre-delivery documentation is intended to record an agreement on operational details of the transfer and ensure safe transfer of the product.

5.2.1 Delivery information

The documentation shall include the following minimum information:

a) name of vessel;

b) name of bunker tanker (where applicable);

c) name of supplier;

d) date and time of commencement of delivery;

e) nominated bunker quantity(ies);

f) grade(s) of bunker(s) required (see clause 7);

g) sequence of product transfer;

h) basic characteristics of bunker(s) to be supplied, including viscosity, density, flash point and sulfur (see clause 7);

i) requested maximum pumping rate;

j) agreed pumping rate;

k) rated pumping capacity;

l) location of delivery;

m) request and acceptance to witness delivery measurements.

NOTE An example of a pre-delivery document is given in annex B. A delivery checklist is given in annex C.

5.2.2 Responsibilities

5.2.2.1 The cargo officer shall

a) provide, complete and sign the pre-delivery document;

b) confirm with the vessel officer the actual vessel requirements as stated on the pre-delivery document and shall obtain the vessel officer's signature and vessel's stamp;

c) confirm with the vessel officer the intent, as stated in the pre-delivery document, that the vessel officer or his representative will or will not witness delivery measurements.

5.2.2.2 The vessel officer shall

a) advise the requested pumping rate;

b) advise their intention in respect of witnessing supplier's measurements;

c) sign the pre-delivery document and delivery checklist (see annex C).

5.2.3 Associated information

See clauses 7, 8, 9 and 10 for a detailed discussion of bunker specifications, transfer procedures, determination of quantity and sampling.

6 Post-delivery requirements

6.1 Essential information

The information listed in 6.2.1.1 to 6.2.1.4 and where applicable, in 6.2.1.5, shall be supplied by the cargo officer.

6.2 Bunker delivery receipt (BDR)

A bunker delivery receipt shall be used for each bunker delivery.

NOTE An example of a bunker delivery receipt form is included in annex A. This form may be simplified if deliveries are measured by meter as opposed to tank gauges.

One prime feature relating to the collection of delivery data is the source of density information. This will vary from location to location and, therefore, the format of the BDR will need to be compiled accordingly.

6.2.1 Content of the BDR

The BDR shall include at least the information given in 6.2.1.1 to 6.2.1.4.

6.2.1.1 All deliveries

a) name of supplier;

b) name of vessel being bunkered;

c) method of delivery;

d) name of bunker tanker (if applicable);

e) location of delivery;

f) date and time of commencement of delivery;

g) the ISO fuel grade, designated in accordance with ISO 8216-1, of the product delivered;

h) observed volume delivered;

i) time:

   1) pumping commenced;

   2) pumping completed;

j) sample seal numbers:

   1) vessel;

   2) bunker tanker;

   3) surveyor (if applicable);

   4) others;

k) space shall be provided for remarks; it is not intended that any remarks will alter existing contractual obligations of either party;

l) signatures:

   1) vessel officer;

   2) cargo officer;

m) stamps:

   1) vessel;

   2) supplier.

6.2.1.2 Deliveries from bunker tankers or shore tanks

a) times:

   1) bunker tanker alongside;

   2) bunker tanker departure;

b) record of tank readings at opening and closing gauges;

c) tank number(s);

d) product tank temperature(s).

6.2.1.3 Deliveries via a meter

a) opening and closing meter readings;

b) product temperature(s) taken from pipeline near meter or delivery tank.

6.2.1.4 Quantity data

If the agreement between buyer and seller requires the standard volume and/or apparent mass in air or mass (tonnes) to be reported on the bunker receipt form, the following data shall be included:

a) density at a specified standard temperature (in accordance with ISO 3675 or ISO 12185);

NOTE Often there will not be time, or proper facilities, to physically determine the density from the delivery samples taken. In such circumstances, data derived from shore tanks or another interim source may be used. The bunker agreement should clearly outline the status of the density measurement and the grounds, if any, for subsequent adjustment.

b) location point for determining density;

c) volume correction factor (in accordance with ISO 91-1 or 91-2);

d) volume delivered at a specified standard temperature;

e) the factor for conversion to apparent mass in air or *in vacuo*, as given in table 56 referenced in ISO 1-1:1992.

f) tonnes (apparent mass in air).

The reported data shall represent actual measurements according to agreed procedures. Any predetermined data shall be amended accordingly.

6.2.1.5 Quality data

Where applicable, the following information shall be included in the bunker delivery receipt (BDR):

a) kinematic viscosity (in accordance with ISO 3104) in:

   — square millimetres per second (mm^2/s) at 40 °C for distillates;

   — square millimetres per second (mm^2/s) at 50 °C or 100 °C for residuals;

b) density at the standard temperature of 15 °C (in accordance with ISO 3675 or ISO 12185) or in accordance with local requirements;

c) flash point in degrees Celsius (°C) (in accordance with ISO 2719);

d) sulfur content as a percentage by mass [%(*m/m*)] (in accordance with ISO 8754).

NOTE Optional quality data

Information on the following characteristics may be provided to the buyer:

a) water content as a percentage by volume [%(*V/V*)] (in accordance with ISO 3733);

b) ash content as a percentage by mass [%(*m/m*)] (in accordance with ISO 6245);

c) carbon residue as a percentage by mass [%(*m/m*)], using the Conradson method (in accordance with ISO 6615) or micro method (in accordance with ISO 10370);

d) cetane number for distillates (in accordance with ISO 5165);

e) cloud point in degrees Celsius (°C) for distillates (in accordance with ISO 3015);

f) pour point in degrees Celsius (°C) (in accordance with ISO 3016);

g) sediment as a percentage by mass [%(*m/m*)] in distillates by the extraction method (in accordance with ISO 3735);

h) total sediment as a percentage by mass [%*(m/m)*] (in accordance with ISO 10307-1 and ISO 10307-2);

i) vanadium content in milligrams per kilogram [mg/kg] (in accordance with ISO 14597).

6.2.2 Responsibilities

6.2.2.1 Cargo officer

The cargo officer shall

a) complete the BDR;

b) sign and stamp the BDR;

c) request the vessel officer to sign and stamp the BDR.

6.2.2.2 Vessel officer

The vessel officer shall sign and stamp the BDR.

7 Bunker specifications

7.1 Pre-delivery considerations

The agreement between contracting parties shall state precisely the specification of each grade of bunker.

ISO 8217 shall apply unless otherwise agreed between contracting parties.

7.2 Post-delivery considerations

ISO 4259 shall form the basis for reviewing any observed deviation from the specifications included in the bunker agreement.

Verification of the characteristics of product delivered shall be based on one of the sealed and numbered samples itemized in the bunker delivery receipt form.

8 Transfer procedures

8.1 Pre-delivery

There shall be contact prior to delivery between the cargo officer and vessel officer to agree on the details of the bunker transfer procedures.

Complete the pre-delivery document.

All parties involved in the transfer shall be fully aware of, and follow, local regulations.

NOTE In the absence of any overriding local regulation, see annex C for guidance on spill prevention transfer procedures.

8.2 Delivery

Once the pre-delivery requirements have been settled and bunker hoses have been properly connected to the vessel, bunker supply shall commence after confirmation by the cargo officer and vessel officer.

The cargo officer and vessel officer shall oversee the entire bunkering operation.

Communication between the vessel and the bunker tanker shall be maintained during the entire bunkering operation.

9 Quantity

9.1 General

See clause 2 for references to those standards that shall be used which are common to all deliveries.

NOTE Other International Standards are listed in annex E. These, or their national equivalents, should be used where applicable.

9.2 Quality of measurement

All equipment relating to measurement shall be in good condition and, where applicable, its accuracy verified according to a regular maintenance programme and subject to local authority requirements.

9.3 Sources of error

International standards, or equivalent, provide an acceptable procedure for determining quantities for custody transfer. However, there are a number of measurement areas where the bunker segment of the petroleum industry has difficulty in attaining the usual level of measurement accuracy. Where this occurs, an economic review will often identify that capital investment for alternative forms of measurement is not justified. In such cases, mutually agreed measurement procedures, albeit of lower accuracy levels, may be appropriate. Examples are given in 9.3.1 and 9.3.2.

9.3.1 Small movements from a large shore tank direct to a customer or to a bunker tanker

In this case, tank opening and closing manual inventories normally need to move by 2 m if an accuracy for each delivery of $>$ 0,2 % is required. Where this is not possible, economics may dictate that smaller changes in level, with correspondingly less accuracy, are acceptable.

9.3.2 Measurement based on bunker tanker compartment tank calibrations

Petroleum industry standards have universally been opposed to custody transfer based on bunker tanker compartment calibration data. This is due to the known inaccuracies, often $>$ 1 %, associated with these measurements. However, in practice, this form of measurement is common because bunker tanker meters with adequate air elimination are too expensive. The required accuracy will depend on local conditions. However, it is important that each location be evaluated and the mutually accepted set of measurement procedures be embedded in the appropriate bunker agreement.

9.4 Evaluation

The Institute of Petroleum publication: *Petroleum Measurement Manual — Part XIV — Statistics for Static and Dynamic Measurement*, provides guidelines for establishing the extent of error (random and systematic) associated with delivery systems. Once this error data is assessed, it is an easy step to calculate the economic value of strict compliance versus secondary level(s) of accuracy.

NOTE In making a judgement on the quality of any bunker delivery system based on its historic performance, caution should be taken to avoid being misled by the effect of random error. Whilst a system may show only very small annual or quarterly losses and gains, this could reflect significant random errors that have averaged to zero.

9.5 Measurement procedures

9.5.1 Deliveries direct from shore to vessel

Carry out the measurement procedures using one of the techniques listed below:

a) shore meter;

b) manual tank gauging;

c) automatic tank gauging.

9.5.2 Deliveries from bunker tanker

Carry out the measurement procedures using one of the techniques listed below:

a) bunker-tanker tank gauging;

b) delivery of a full bunker-tanker compartment previously measured by shore meter or shore tank gauging;

c) bunker-tanker onboard meter.

NOTE 1 Shore meters may be situated in pipelines from a tank farm or meters may be fitted on rail tank cars or road tankers.

NOTE 2 Where delivery is based on shore measurement of full compartments, adequate sealing and general control should be in place.

10 Sampling

10.1 General

The objective is to obtain a representative sample of the bunker(s) delivered.

Although not specific to bunkering operations, ISO 3170, ISO 3171 and ASTM D4057 may be used.

10.2 Sampling preferences

The order of sampling equipment preferences, based on their likely accuracy performance, is

a) flow-proportional automatic sampler;

b) time-proportional automatic sampler;

c) manual valve-setting continuous-drip sampler;

NOTE Use of the manual valve-setting continuous-drip sampler is recognized as common industry practice, albeit only the third listed preference. This acknowledges practical and economical considerations peculiar to the bunker industry.

d) tank sampling.

Unless previously agreed by the contracting parties, the vessel officer and the cargo officer shall mutually agree upon the method to be adopted for each bunker location covered by their bunker agreement.

10.3 Sample integrity

A means shall be provided to seal the sampling apparatus throughout the period of the supply, except in the case of tank sampling.

10.4 Sampling location

Samples shall be drawn continuously throughout the delivery, except in the case of tank sampling.

Generally, for bunker deliveries there is no single perfect location for obtaining a representative sample. However, the optimal location for obtaining an automatic or continuous-drip representative sample is at either end of the bunker delivery hose.

For practical reasons, the preferred sampling location is at the bunker tanker's end of the delivery hose. However, it is recognized that other sampling locations such as the vessel's end of the delivery hose may apply, if mutually agreed between the contracting parties;

The objective is to obtain only one representative sample or the sub-samples derived therefrom (see 10.5).

If tank sampling is adopted, sufficient samples shall be taken to satisfy all parties.

10.5 Sample handling

Care shall be taken to ensure that the guidelines for sample handling given in ISO 3170 and ISO 3171 are followed. Where manual subdivision of the representative sample is required, subdivide into equal portions with a minimum of three sample containers, making three or four passes in turn to fill each container in the presence of the vessel officer and cargo officer.

The quantity of the samples taken shall be sufficient for carrying out the tests required.

10.6 Sealing of samples

Immediately following collection of the samples, security seals with means of identification shall be installed by the cargo officer in the presence of the vessel officer. Labels containing the following information shall be secured to the sample container:

a) location at which, and the method by which, the sample was drawn;

b) date and time of sampling;

c) name of bunker tanker;

d) name of vessel;

e) signatures and names of the cargo officer and the vessel officer;

f) details of seal identification;

g) bunker grade.

Details of the seal identification shall also be recorded on the bunker delivery receipt (BDR).

10.7 Sample retention

A means shall be provided to ensure adequate sample retention time and integrity under proper storage conditions.

11 Disputes

11.1 General

Disputes shall require full examination of all the documentation in an endeavour to trace any inconsistencies. This may include previous bunker deliveries to the vessel, other bunker deliveries made from the same supplying bunker tanker on the same day, etc.

NOTE Examination of vessel logs, custody transfer documentation, tank calibration tables, tank level gauge verification data and other related information should be considered.

11.2 Letter of protest

In cases of dispute, a letter of protest shall be issued promptly by either the supplier or vessel officer. This letter of protest shall include a brief description of the nature of the complaint. An example is given in annex D.

Annex A
(informative)
Bunker delivery receipt

NOMINATION NO.:	VESSEL NAME:	DATE:	LOCATION:	SUPPLIER:	PURCHASER:

DELIVERED EX: ☐ Shore tank ☐ Bunker tanker [Name _____] ☐ Meter [☐ Compensated] ☐ Pipeline ☐ Road tank wagon

DECLARED PRODUCT DETAILS	Test Method	
Grade name/ISO designation	ISO 8217	
Density @ 15 °C[1] [kg/m³] ☐Calc. from components ☐Shore tank measure ☐ Bunker tanker measure	ISO 3675 or ISO 12185	
Viscosity, [mm²/s] @ ☐ 40 °C/☐ 50 °C/☐ 100 °C	ISO 3104	
Flash point, [°C]	ISO 2719	
Sulfur, % [*m/m*]	ISO 8754	

DELIVERED QUANTITY CALCULATIONS	**ISO 91–1**
Standard volume @ 15 °C [m³] **[(A – B)/1000]**	
Kilograms/cubic metre [kg/m³] – **Table 56**	
TONNES[2][kg/1000]	

SAMPLE SEAL NO.
Vessel:
Bunker tanker:
Surveyor:
IMO No./Other:

	OPENING GAUGES					CLOSING GAUGES				
Tank No.	Tank gauge[3]/ meter reading	Observed volume in litres	Observed temp. °C	Volume correction factor (Table 54B)[4]	Standard volume at 15 °C in litres	Tank gauge[3]/ meter reading	Observed volume in litres	Observed temp. °C	Volume correction factor (Table 54B)[4]	Standard volume at 15 °C in litres
1										
2										
3										
4										
5										
6										

TOTAL STANDARD VOLUME, OPENING **[A]**

TOTAL STANDARD VOLUME, CLOSING **[B]**

STANDARD VOLUME TRANSFERRED **[A - B]**

LOG: DATE/TIME

ALONGSIDE:	CONNECTED	START PUMPING	FINISH PUMPING	DEPARTED

AUTHORIZATIONS

Stamp of supplier/Signature of cargo officer

Stamp of vessel/Signature of vessel officer

REMARKS:

1) Or other temperature – specify.
2) If required by local authorities, the *in vacuo* calculation is density @ 15 °C × standard cubic metres = tonnes *in vacuo*.
3) Bunker tanker measurement should be trim corrected.
4) Table 54B is referenced in ISO 91-1: 1992.

Annex B
(informative)

Example of a pre-delivery document

SELLER'S COMPANY NAME

BUNKER REQUISITION FORM

The Chief Engineer Date: _____

MV/SS: _____ Location: _____

Dear Sir,

We have been nominated to supply to you the following grade/s of fuel:

Tonnes of residual fuel at ISO grade _____ (mm^2/s at .....°C)

Tonnes of residual fuel at ISO grade _____ (mm^2/s at .....°C)

Tonnes of distillate fuel _____ ISO grade (marine diesel / marine diesel blended)

Tonnes of distillate fuel _____ ISO grade (marine gas oil)

We undertake to supply/deliver to you the following bunker fuel, the basic characteristics of which conform to the agreed specifications between bunker supplier and buyer.

Product	Order of pumping	Density @ 15 °C [kg/m^3]	Kinematic viscosity @ 40 °C/50 °C/100 °C [mm^2/s]	Flash point °C	Sulfur content [%(*m/m*)]

The rated pumping capacity of our bunker tanker is _____ tonnes per hour.

1) What pumping rate do you require?
Residual fuel _____ tonnes per hour.
Distillate fuel _____ tonnes per hour.

2) Will you be witnessing the dipping of our tanks * Yes/No/NA
Will you be witnessing our meter reading? * Yes/No/NA

3) Will you be witnessing our sampling? * Yes/No

4) Has a spill prevention transfer procedure been discussed and agreed? * Yes/No

Acknowledged By:

_____ _____
Cargo officer Vessel officer

_____ _____
Name in full (block letters) Name in full (block letters)

_____ _____
Bunker tanker's stamp and name Vessel's stamp

* Delete as necessary NA – Not Applicable

Annex C
(informative)

Example of a delivery checklist for spill prevention transfer procedures

A bunker transfer operation should not commence unless the following requirements are met and agreed upon by the cargo officer and vessel officer.

a) the mooring lines are adequate for all anticipated conditions;

b) bunker hoses and/or loading arms are long enough for intended use;

c) bunker hoses are adequately supported to prevent undue strain on the couplings;

d) the transfer system is properly lined up for discharging or receiving bunker (additional checks should be performed each time a valve is repositioned);

e) all flange connections on the bunkering system not being used during the transfer operation are securely blanked or shut off;

f) the bunker hoses and/or loading arms are connected to the manifolds using gaskets and a bolt in every hole;

g) the overboard or sea suction valves are sealed or lashed in the closed position;

h) adequate spill containments have been provided for couplings;

i) all scuppers or other overboard drains are closed or plugged;

j) a communications system is provided between the supplier's delivery facility and the vessel;

k) the emergency shutdown system is available and operable;

l) communication procedures are established and understood between the cargo officer and vessel officer;

m) qualified and designated personnel are on duty at the supplier's delivery facility and vessel bunker stations;

n) the bunker hose(s) has been visually inspected to ensure that it has no loose covers, kinks, bulges, soft spots or gouges, cuts and slashes which penetrate the hose reinforcement, and that hose(s) is(are) marked for identification and test data is maintained in a test log;

o) adequate lighting of the manifold areas is provided;

p) the cargo officer and vessel officer have met to ensure the mutual understanding of

   1) the pre-delivery form;

   2) starting, stripping, topping and shutdown;

   3) emergency procedures including notification, containment and cleanup of oil spills;

   4) watch and shift arrangement;

   5) notification before leaving stations.

Annex D
(informative)

Example of a letter of protest

Date : _____

Ref. : _____

To : _____

_____

Dear Sirs

NOTE OF PROTEST FOR BUNKERING OPERATION ON _____ (date)

On behalf of my principal(s), I, _____ (position/name) hereby register the following protest :

Details as necessary will be provided later.

Yours faithfully

_____
Signature and stamp

_____
Name in full (block letters)

_____

ACKNOWLEDGED RECEIPT

_____
Signature and stamp

_____
Name in full (block letters)

_____
Date/Time

Annex E
(informative)

Bibliography of standards applicable to bunker measurement

[1] ISO 2714:1980, *Liquid hydrocarbons – Volumetric measurement by displacement meter systems other than dispensing pumps.*

[2] ISO 3015:1992, *Petroleum products – Determination of cloud point.*

[3] ISO 3016:1994, *Petroleum products – Determination of pour point.*

[4] ISO 3733:1976, *Petroleum products and bituminous materials – Determination of water – Distillation method.*

[5] ISO 3735:1975, *Crude petroleum and fuel oils – Determination of sediment – Extraction method.*

[6] ISO 4266-1:—[1)], *Petroleum and liquid petroleum products – Measurement of level and temperature in storage tanks by automatic methods – Part 1: Measurement of level in atmospheric tanks.*

[7] ISO 4266-2:—[1)], *Petroleum and liquid petroleum products – Measurement of level and temperature in storage tanks by automatic methods – Part 2: Measurement of level in marine vessels.*

[8] ISO 4266-3:—[1)], *Petroleum and liquid petroleum products – Measurement of level and temperature in storage tanks by automatic methods – Part 3: Measurement of level in pressurized storage tanks (non-refrigerated).*

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1) To be published. (Revision of ISO 4266:1994)

2) To be published.

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