



BEST PRACTICE GUIDELINE **OVERSEAS TRANSPORT VISIBILITY FOR BULK LIQUIDS**

V1.0 July 2023

ABOUT ITCO

ITCO is the trade association for companies engaged in the global transport of bulk liquids and liquified gases by intermodal tank container. Established in 1989 and with now over 170 registered members, it is estimated that the membership operates the majority of the **800,000 global fleet of tank containers**.

ITCO represents the tank container industry to chemical and liquid food producers, the public and government. It is engaged in regulatory processes, provides technical guidance, and arranges informative membership webinars, work groups and conferences.

MISSION STATEMENT

The ITCO mission is to promote and represent tank containers as safe, cost efficient and flexible means of transport. In doing so, we have a strong focus on enhancing technological and business developments for the sake of quality, health, safety, environment, and corporate responsibility in the tank container industry. We design the framework and platform for strengthening growth of our global business. With this we contribute to the competitiveness and success of the tank container industry.

SUSTAINABILITY

The tank container operates in a business world where safety and leak tightness of the tank is paramount and where the producers of chemicals and liquid foods are increasingly supporting environmental initiatives throughout the transport chain.

Tank containers are re-useable and operate for a projected life of at least 20 years. The tank is constructed with materials that, 95% by weight, are recycled. This provides industry a platform to strive towards its sustainability objective.

Over the past two years, ITCO has undertaken an active campaign to promote the environmental benefits of tank containers. In 2020, a video was produced to encourage the use of tank containers to achieve a sustainable mode of transport in place of single-use plastic flexi-bags used in shipping containers to transport liquids. In 2021, ITCO published its Technical Guidance document “TG- 08 Tank Sustainability Repurposing and Recycling” which provides sustainability guidance - from procurement to safe end-of-life repurposing and eventual recycling.

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ITCO – International Tank Container Organisation

Suite 3, Charter House, 26 Claremont Road, Surbiton KT6 4QU, United Kingdom

T: +44 (0)20 8390 0000 | E: info@itco.org | W: www.itco.org

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CONTENTS

1. Lexicon and list of abbreviations	3
2. Introduction	4
3. Scope and objectives	5
4. Challenges of transport visibility	6
5. Transport visibility and ETA definitions flows from a customer (shipper) point of view	7
6. Milestone message and ETX update rules	10
7. Message and example formats - customer (shipper) view	11
7.1 Transport milestone messages - customer view	11-14
7.1.1 Description of the fields	15
7.1.2 XSD specification of the transport milestone messages	15
7.1.3 XML (EDI) example message for transport milestone message"	
Departed from first departure terminal	16
8. Contacts list and WG participants	16
 Overview of Figures	
Figure 1: Overseas transport visibility milestones – customer (shipper) perspective	7
 Overview of Tables	
Table 1: Definition of milestone messages – shipper (customer) perspective	9
Table 2: Definition of milestones and ETX update triggers	10
Table 3: Mandatory attributes of transport milestone messages	11-14

Disclaimer

This document is intended for information only and sets out best practice guidelines for transport visibility by exchanging transport milestone messages and ETx updates in a bulk liquids supply chain - in a harmonized and interoperable way amongst different supply chain actors. The information provided in these guidelines is provided in good faith and, while it is accurate as far as the authors are aware, no representations or warranties are made with regards to its completeness. It is not intended to be a comprehensive guide. Each company, based on their individual decision-making process, may apply these guidelines, in full or partly or apply any other measures.

No responsibility will be assumed by ITCO to the information contained in these Guidelines.

1. LEXICON AND LIST OF ABBREVIATIONS

Actor	A company exchanging ETA and other information along the logistics chain of milestone events
API	Application Programming Interface
ITCO	International Tank Container Organisation
EDI	Electronic Data Interchange
Booking Confirmation	Not a visibility milestone, but contains all intended stage (milestone) dates
ETD	Estimated time of departure first vessel from POL(port of loading), as contained in Booking Confirmation
ETA	Estimated time of arrival last vessel at POD (port of delivery), as contained in Booking Confirmation
Empty Depot Out	Time of empty tank being lifted at origin depot
Gate in POL	Time of handover to shipping line at POL (port of loading)
ATD	Actual time of first vessel departure from POL (port of loading)
ATA	Actual time of last vessel arrival at POD (port of delivery)
Gate out POD	Time of handover from shipping line to consignee at POD (port of delivery)
Empty Depot in	Time of empty dirty tank being lifted down at tank owner's appointed depot
(Note)	Above lexicon referring to pier-pier shipments, where land movements prior to Gate in POL and after Gate Out POD are handled by the shipper and consignee
ETx	Referring to all different types of estimated time updates, such as ETA, ETP, etc.
Milestone Event	A node where logistics activities take place within the logistics chain that might impact the ETA
XML-XSD	XSD (XML Schema Definition) is a World Wide Web Consortium (W3C) recommendation that specifies how to formally describe the elements in an Extensible Markup Language (XML) document.

2. INTRODUCTION

This guidance document for ITCO members, on the topic of shipment tracking and automated milestone messaging, is produced with the assistance and support of the European Chemical Transport Association (www.ecta.com)

There is a trend of increasing demands among the customer base of bulk liquids manufacturers, traders and their partners for detailed tracking and tracing of each shipment, often against KPI's set for each stage of the supply chain – and for this to be delivered via automation platforms rather than with human intervention such as checking on websites or gathering such information by email correspondence.

In addition to this, using data of delayed or non-compliant deliveries to specify methods for avoiding such deviations in the future, represents an important opportunity for us to practice continual improvement in our supply chain services. But it is no longer sufficient to analyze, measure and investigate why certain shipments were late, after the delivery took place. Both customer and logistics service providers want to think pro-actively and to anticipate late deliveries along a door-to-door movement of goods. As a result, all supply chain actors are demanding more transport visibility through frequent and accurate transport milestone messages and ETA updates especially when unexpected delays in transit are occurring.

The goal of this guideline is to define a standard definition framework with transport milestone events and ETx updates within a Chemical multimodal door-to-door product movement. Once such milestone events are pre-defined and agreed amongst each of the supply chain actors, and a standard offering is achieved, we may avoid the challenging and time-consuming discussions which arise from creating tailor-made milestone information frameworks for each customer or for each individual trade lane. Our ambition is to create an "ITCO Standard" for supply chain milestones occurring from start to finish of an overseas shipment, which can be offered to every customer as the market norm – in a comparable way, for example to the long-standing use of the ITCO ACC standard (Acceptable Container Condition) on tank container condition at On- and Off-Hire

Such a framework is an important precursor before companies start deploying individual telematics and truck/equipment tracking solutions and it forms the basis towards transport visibility, interoperability and real-time information exchange across all logistics actors in the chemical supply chain.

It is with this intention, to create a new ITCO standard on digital delivery of transport milestones, that ITCO has created a relevant Work Group, which has produced the Best Practice Guideline to be found in this booklet.

Below, we explain the benefits of such milestone messages and ETx update framework. Next, we map the door-to-door milestone events typically applied to multimodal bulk liquid movements by sea. At the same time definitions will be set while looking from an end customer (shipper) view. The last chapter sets communication standards between all actors to ensure that seamless, automated pre-notifications can be generated amongst all actors. And finally, some example messages are shared describing the technology connectivity standards most often used – but these standards are not mandated or standardized by ITCO.

This best practice guideline wants to create a collaborative framework so our chemical customers can be served better. To save costs, avoid rework, improve customer service and avoid confusion along a chain of events within an overseas container movement, ITCO recommends to exchange pre-defined, validated milestone messages and ETx updates between all supply chain actors involved instead of continuous sharing of GPS truck or load locations itself.

3. SCOPE & OBJECTIVES

This guideline is focused on liquid bulk chemical product flows by ISOtank. From a transport mode point of view, all likely movements involving an overseas shipment are covered – both those where the landside transportation (prior to the ISOtank being handed over at the shipping line's yard at POL and after the ISOtank's arrival at the POD) is handled by the customer, and those where the entire door to door shipment is handled by the ISOtank operator on behalf of the shipper.

We consider the following supply chain actors involved:

1. Logistics Service Providers (Tankcontainer operators)

2. Customers / Shippers (Tankcontainer users)

- Petrochemicals, Chemicals, Gas and food / feed producers
- Chemical processors
- Chemical distributors and traders
- Etc.

The overall objectives of the guideline are to:

- Describe and predefine the milestone events of typical door-to-door flows and align the relevant ETx type definitions accordingly
- Provide a standard to strive for a more consistent, transparent communication when providing transport milestone messages and ETx updates
- Provide rules for ETx update notifications to the specific actors involved in case of a delay along the logistics chain
- Set the framework for ETx interoperability together with a synchronized communication between all logistics actors involved and focusing on the end customer delivery
- Provide the foundation for clear order status reports according to the milestone event framework and logistics activities
- Start measuring “door-to-door” delivery performance levels and work on the weakest performance links to improve the overall customer service level
- To provide by these means, a complete and customer-ready offering for milestone communication which our ITCO members can use as a resource for working with their customers, by way of an Industry Standard for the ISOtank freight industry.

3. CHALLENGES OF TRANSPORT VISIBILITY

Some of the challenges in a multi-actor and multimodal lane are:

- Within a chain of milestone events, not every actor has the same level of supply chain visibility maturity and the accuracy of the ETx updates might depend on the weakest link in the chain.
- A scattered landscape of involved supply chain actors and lacking connectivity between them hampers the near real-time flow of data along the chain and thus causes a delayed reception at the receiver side.
- Exchanging milestone messages and ETx updates continuously in a real time way needs adapted system infrastructure and resources.
- Exchanging information requires harmonised industry-wide standards and definitions to ensure interoperability and scalability.
- Companies consider data sharing and digital collaboration as a risk to lose control.
- Keep IT systems complexity under control.

Within these constraints, we have produced the guideline standards below, for our Members' use :

5. TRANSPORT VISIBILITY AND ETA DEFINITIONS FLOWS

5.1 From a customer point of view

As described before, customers of logistics service providers (LSP) expect a higher degree of transport visibility for future transports. Based on the known demands of those shippers and best practice examples a standard milestone and ETA framework is depicted below and definitions of each milestone event and ETx types are described thereafter:

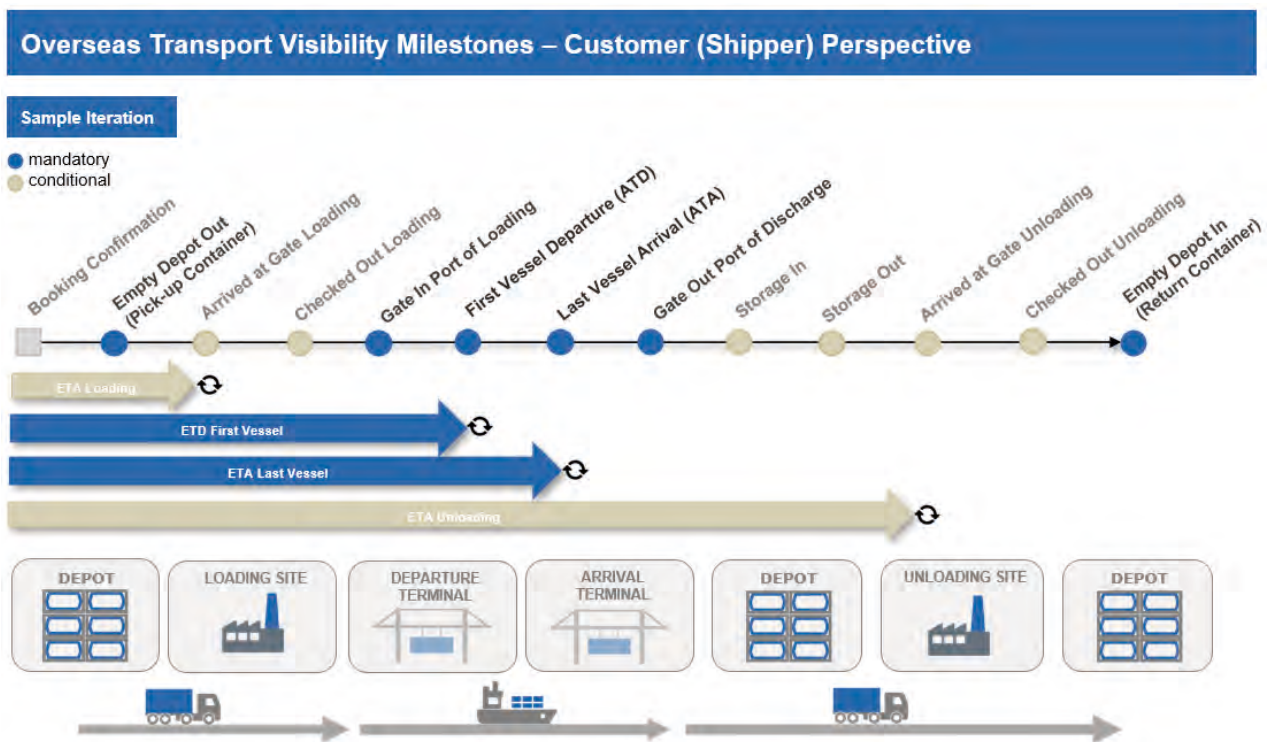


Figure 1: Overseas Transport Visibility Milestones – Customer (Shipper) Perspective

Hereby the milestone messages are defined as follows:

Term	Definition
Estimated Time of Arrival Loading	Estimated time of arrival at loading site (place of receipt)
Estimated Time of Departure First Vessel (ETD)	Estimated time of first vessel departure from port of loading
Estimated Time of Arrival Last Vessel (ETA)	Estimated time of last vessel arrival at port of discharge
Estimated Time of Arrival Unloading	Estimated time of arrival at unloading site (place of delivery)
Booking Confirmation	Timestamp of booking confirmation (non visibility milestone, but trigger event for estimated times)
Empty Depot Out	Timestamp of pick-up of empty container at depot
Arrived at Gate Loading	Timestamp of arrival at gate loading site (place of receipt)
Checked Out Loading	Timestamp of departure from loading site (place of receipt)
Gate In Port of Loading (POL)	Timestamp of the handover of the container at port of loading
First Vessel Departure (ATD)	Timestamp of the actual first vessel departure at port of loading
Last Vessel Arrival (ATA)	Timestamp of the actual last vessel arrival at port of discharge
Gate Out Port of Discharge (POD)	Timestamp of the pick-up at port of discharge
Storage In	Timestamp when the container goes into storage
Storage Out	Timestamp when the container goes out of storage
Arrived at Gate Unloading	Timestamp of arrival at gate unloading site (place of delivery)
Checked Out Unloading	Timestamp of departure from unloading site (place of delivery)
Empty Depot In	Timestamp of return of empty container at depot

Table 1: Definition of Milestone Messages – Customer (Shipper) Perspective

6. MILESTONE MESSAGE AND ETX UPDATE RULES

One important element within transport visibility is the near real-time flow of information to ensure timely notification of all involved supply chain actors. Regarding the provision of transport milestone messages, this guideline proposes to aim for a target time lag of one hour between the realisation of a milestone event and the reporting to the next actor. However, this will only be feasible in a more connected and integrated service provider landscape.

Additionally, for the provision of ETx updates a crucial element is the alignment of update triggers that define rules of sending actualised information - in order to avoid over communication between supply chain actors. Hence the following timelags are proposed (it is to be noted that these protocols are a proposal at this moment, and a best-case target. This must be made clear to your customers, because the fulfilment of these targets relies heavily on the accurate co-operation of our supply partners) :

Term	Update Trigger
ETA Loading	>24 hours prior to planned loading: deviation > 24 hours vs. last reported <24 hours prior to planned loading: deviation > 1 hour vs. last reported
ETA Unloading	>24 hours prior to planned unloading: deviation > 24 hours vs. last reported <24 hours prior to planned unloading: deviation > 1 hour vs. last reported
ETD First Vessel	Difference of planned vs. new departure time: deviation > 24 hours vs. last reported
ETA Last Vessel	Difference of planned vs. new arrival time: deviation > 24 hours vs. last reported
For all actual Milestones	Milestone updates transmitted within one working day

Table 2: Definition of Milestone and ETx Update Triggers

7. MESSAGE EXAMPLES FORMATS CUSTOMER (SHIPPER) PERSPECTIVE

7.1 Transport milestone messages - customer (shipper) perspective

In this chapter, we offer generic example messages for the customer (shipper) perspective described in chapter 5 above. The following overview shows the mandatory attributes of the transport milestone messages used in the customer (shipper) perspective as well as example messages to match data exchange formats. As regards data exchange formats, ITCO recommends that Members choose the message standard that suits best their customer requirements, and their own IT capacities / profiles. Among the most favored messaging systems are : EDIFACT IFTSTA messaging / ANSI X12 315 messaging / DCSA Events (Track and Trace) messaging / XML Status Event messaging (as used by ECTA). If using XML messaging, which are already in use by some members of the Work Group, we are able to offer a detailed usage protocol as set out below :

Transport Milestone Messages – Customer (Shipper) Perspective			
Message Name	Content/Attribute	Value	Mandatory (M) Required <small>(for optional attributes please see example message)</small>
Empty Depot Out (Pick-up Container)	StatusCode	DEPOT_EMPTY_OUT_TIME	M
	DocumentIdentifier	individual	M
	ThisDocumentDateTime	ISO Code 8601	M
	Sender	DUNS Number / CompanyID	M
	Receiver	DUNS Number / CompanyID	M
	EventDateTime	ISO Code 8601	M
	ShipmentIdentifier	individual	M
	CarriersReferenceNumber	individual	M
Arrived at Gate Loading	StatusCode	LOADING_ARRIVAL_TIME	M
	DocumentIdentifier	individual	M
	ThisDocumentDateTime	ISO Code 8601	M
	Sender	DUNS Number / CompanyID	M
	Receiver	DUNS Number / CompanyID	M
	EventDateTime	ISO Code 8601	M
	ShipmentIdentifier	individual	M
	CarriersReferenceNumber	individual	M
Checked out Loading	StatusCode	LOADING_CHECKOUT_TIME	M
	DocumentIdentifier	individual	M
	ThisDocumentDateTime	ISO Code 8601	M
	Sender	DUNS Number / CompanyID	M
	Receiver	DUNS Number / CompanyID	M
	EventDateTime	ISO Code 8601	M
	ShipmentIdentifier	individual	M
	CarriersReferenceNumber	individual	M
Gate In Port of Loading	StatusCode	SL_GATE_IN_PORT_OF_LOADING_TIME	M
	DocumentIdentifier	individual	M
	ThisDocumentDateTime	ISO Code 8601	M
	Sender	DUNS Number / CompanyID	M
	Receiver	DUNS Number / CompanyID	M
	EventDateTime	ISO Code 8601	M
	ShipmentIdentifier	individual	M
	CarriersReferenceNumber	individual	M

Transport Milestone Messages – Customer (Shipper) Perspective

Message Name	Content/Attribute	Value	Mandatory (M) Required <small>(for optional attributes please see example message)</small>
First Vessel Departure (ATD)	StatusCode	SL_FIRST_VESSEL_DEPARTURE_TIME	M
	DocumentIdentifier	individual	M
	ThisDocumentDateTime	ISO Code 8601	M
	Sender	DUNS Number / CompanyID	M
	Receiver	DUNS Number / CompanyID	M
	EventDateTime	ISO Code 8601	M
	ShipmentIdentifier	individual	M
	CarriersReferenceNumber	individual	M
Last Vessel Arrival (ATA)	StatusCode	SL_LAST_VESSEL_ARRIVAL_TIME	M
	DocumentIdentifier	individual	M
	ThisDocumentDateTime	ISO Code 8601	M
	Sender	DUNS Number / CompanyID	M
	Receiver	DUNS Number / CompanyID	M
	EventDateTime	ISO Code 8601	M
	ShipmentIdentifier	individual	M
	CarriersReferenceNumber	individual	M
Gate Out Port of Discharge	StatusCode	SL_GATE_OUT_PORT_OF_DISCHARGE_TIME	M
	DocumentIdentifier	individual	M
	ThisDocumentDateTime	ISO Code 8601	M
	Sender	DUNS Number / CompanyID	M
	Receiver	DUNS Number / CompanyID	M
	EventDateTime	ISO Code 8601	M
	ShipmentIdentifier	individual	M
	CarriersReferenceNumber	individual	M
Storage In	StatusCode	STORE_IN_TIME	M
	DocumentIdentifier	Individual	M
	ThisDocumentDateTime	ISO Code 8601	M
	Sender	DUNS Number / CompanyID	M
	Receiver	DUNS Number / CompanyID	M
	EventDateTime	ISO Code 8601	M
	ShipmentIdentifier	individual	M
	CarriersReferenceNumber	individual	M
Storage Out	StatusCode	STORE_OUT_TIME	M
	DocumentIdentifier	Individual	M
	ThisDocumentDateTime	ISO Code 8601	M
	Sender	DUNS Number / CompanyID	M
	Receiver	DUNS Number / CompanyID	M
	EventDateTime	ISO Code 8601	M
	ShipmentIdentifier	individual	M
	CarriersReferenceNumber	individual	M

Transport Milestone Messages – Customer (Shipper) Perspective

Message Name	Content/Attribute	Value	Mandatory (M) Required <small>(for optional attributes please see example message)</small>
Arrived at Gate Unloading	StatusCode	UNLOADING_ARRIVAL_TIME	M
	DocumentIdentifier	individual	M
	ThisDocumentDateTime	ISO Code 8601	M
	Sender	DUNS Number / CompanyID	M
	Receiver	DUNS Number / CompanyID	M
	EventDateTime	ISO Code 8601	M
	ShipmentIdentifier	individual	M
	CarriersReferenceNumber	individual	M
Checked out Unloading	StatusCode	UNLOADING_CHECKOUT_TIME	M
	DocumentIdentifier	individual	M
	ThisDocumentDateTime	ISO Code 8601	M
	Sender	DUNS Number / CompanyID	M
	Receiver	DUNS Number / CompanyID	M
	EventDateTime	ISO Code 8601	M
	ShipmentIdentifier	individual	M
	CarriersReferenceNumber	individual	M
Empty Depot In (Return Container)	StatusCode	DEPOT_EMPTY_IN_TIME	M
	DocumentIdentifier	individual	M
	ThisDocumentDateTime	ISO Code 8601	M
	Sender	DUNS Number / CompanyID	M
	Receiver	DUNS Number / CompanyID	M
	EventDateTime	ISO Code 8601	M
	ShipmentIdentifier	individual	M
	CarriersReferenceNumber	individual	M
ETA Loading	StatusCode	LOADING_ETA_TIME	M
	DocumentIdentifier	individual	M
	ThisDocumentDateTime	ISO Code 8601	M
	Sender	DUNS Number / CompanyID	M
	Receiver	DUNS Number / CompanyID	M
	EventDateTime	ISO Code 8601	M
	ShipmentIdentifier	individual	M
	CarriersReferenceNumber	individual	M
ETD First Vessel	StatusCode	SL_FIRST_VESSEL_ETD_TIME	M
	DocumentIdentifier	individual	M
	ThisDocumentDateTime	ISO Code 8601	M
	Sender	DUNS Number / CompanyID	M
	Receiver	DUNS Number / CompanyID	M
	EventDateTime	ISO Code 8601	M
	ShipmentIdentifier	individual	M
	CarriersReferenceNumber	individual	M

Transport Milestone Messages – Customer (Shipper) Perspective			
Message Name	Content/Attribute	Value	Mandatory (M) Required <small>(for optional attributes please see example message)</small>
ETA Last Vessel	StatusCode	SL_LAST_VESSEL_ETA_TIME	M
	DocumentIdentifier	individual	M
	ThisDocumentDateTime	ISO Code 8601	M
	Sender	DUNS Number / CompanyID	M
	Receiver	DUNS Number / CompanyID	M
	EventDateTime	ISO Code 8601	M
	ShipmentIdentifier	individual	M
	CarriersReferenceNumber	individual	M
ETA Unloading	StatusCode	UNLOADING_ETA_TIME	M
	DocumentIdentifier	individual	M
	ThisDocumentDateTime	ISO Code 8601	M
	Sender	DUNS Number / CompanyID	M
	Receiver	DUNS Number / CompanyID	M
	EventDateTime	ISO Code 8601	M
	ShipmentIdentifier	individual	M
	CarriersReferenceNumber	individual	M

Table 3: Mandatory Attributes of Transport Milestone Messages

7.1.1 Description of the Fields

DocumentIdentifier	Unique Identifier of this status message
ThisDocumentDateTime	Time, when message got created
Sender	DUNS Number / CompanyID
Receiver	DUNS Number / CompanyID
Carrier	Allows to specify the carrier in case it differs from sender
Shipper	Allows to specify the shipper, in case it differs from the receiver
Consignee	Allows to specify the consignee
ShipmentIdentifier	The identifier of the shipment from the sender of the shipment
AdditionalShipmentIdentifier	Additional identifier of the shipment
EquipmentIdentifier	Container
CarriersReferenceNumber	The identifier of the shipment from the carrier of the shipment
StatusCode	Status code
StatusNote	Comment to the status code
StatusEventDateTime	The date time when the event happened or the updated expectation of the event
EventTriggerDateTime	The date time when this event or the update of the expected event happened
LoadedQuantity	Weight of the chemicals in the container
Temperature	Temperature of the chemicals in the container
StatusLocation	Address, where this status update occurred
Latitude	Position, where this status update occurred
Longitude	Position, where this status update occurred
StatusReason	ECTA-ReasonCode for this status message
StatusReason.ECTACode	Official ECTA-ReasonCode
StatusReason.ECTAComment	Comment to the ECTA-ReasonCode
EventDateTime	Date and Time, when this status occurred
CarrierTrackingLink	URL where the carrier offers a detailed status
Documents	Documents (like CMR, HBL, etc.) of this shipment

7.1.2 XSD specification of the transport milestone messages



ITCOStatusEvent1.1
.xsd

7.1.3 XML (EDI) example message for transport milestone message "First Vessel Departure"



ITCO1.1.xml

8. CONTACT LISTS AND WG PARTICIPANTS

**Johanna Klaßen**

Product Manager Digital Solutions
HOYER Group
T + 49 40 21044410
M + 49 174 2705329
johanna.klassen@hoyer-group.com

**Thies Grage**

Head of Innovation & Sustainability
HOYER Group
T +49 40 21044302
M +49 151 11442089
thies.grage@hoyer-group.com

**Shane Robertson**

Digital Strategy & Innovation Manager
Stolt Tank Containers
T + 44 1708 758744
s.robertson@stolt.com

**Lynn Adams**

Integrations Team Lead
Stolt Tank Containers
T + 44 1708 758744
M +44 7885 584949
l.adams@stolt.com

**Dean Lee**

General Manager STC Management
Stolt Tank Containers
T + 44 1708 758704
M + 44 7408 865497
d.lee@stolt.com

**Michelle Slobbe**

Programme Manager SCV
Den Hartogh Logistics B.V.
T +31 88 162 01 51
M +31 6 10 55 70 26
mslobbe@denhartogh.com

**William Leigh-Pemberton**

Strategic Development Director
Bertschi AG
T + 41 62 767 68 91
M + 44 7929 880078
william.lp@bertschi.com

**Patrick Hicks**

Secretary General
International Tank Container Organization
T + 44 20 8390 0000
M + 44 7770 636613
info@itco.org

**Cedric Walti**

Head of Digitalization
Bertschi AG
T +41 62 559 71 50
M +41 79 932 29 56
cedric.walti@bertschi.com

**Matthias Domedi**

Operations Director
Bertschi Global AG
T + 41 62 767 68 91
M + 41 79 445 81 25
matthias.domedi@bertschi.com