Turquoise Equities

TQ301 – Native Trading Gateway

Issue 3.2

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Turquoise

London
Stock Exchange Group

Contents

1.0 Introduction

Turquoise offers a native low latency trading interface to provide Participants with a protocol optimised to meet the needs of trading strategies where speed is a primary consideration. The protocol uses the minimum number of attributes and a binary format to ensure that messaging is as efficient as possible.

The native protocol provides the ability to submit, replace, cancel and mass cancel orders on Turquoise. This specification describes a conceptual overview of the protocol as well as providing technical guidance on adopting the native protocol to connect to Turquoise.

The interface is a point-to-point service based on the TCP/IP standard. For consistency FIX message identifiers are used on the native Interface. However, the format and content of the messages are different.

1.1 Purpose

The purpose of this document is to provide a technical description of the Native trading interface available at Turquoise.

1.2 Readership

This document outlines how to connect to the Native trading gateway and the detailed message types and fields used.

When read in conjunction with the other technical specifications, it is intended that these documents provide all of the details directly connected Turquoise Participants require to develop to the trading services.

This document is particularly relevant to technical staff within the MTF's member firms.

1.3 Document Series

This document is part of series of technical documents providing a holistic view of full trading and information services available from Turquoise.

For reference the full range of technical documents is outlined below:

- TQ102 – Connectivity Guide

- TQ103 – Trading Technical Parameters

- TQ201 - Trading Gateway (FIX 5.0) Specification

- TQ202 - Post Trade Gateway (FIX 5.0) Specification

- TQ203 – Drop Copy Gateway (FIX 5.0) Specification

- **TQ301 – Trading Gateway (Native) Specification (this document)**

- TQ401 – MITCH Level-2 Market Data Specification

- TQ501 – Guide to Reference Data Services

- TQ502 – Guide to Purchase and Sales File

- TQ601 – Guide to Certification

- TQ602 – TQ Certification Report

1.4 Document History

This document has been through the follow iterations:

Issue	Date	Description
R1 1.0	17 March 2010	First issue of this document published.
R1 1.1	27 April 2010	Second issue of this document published for Release 1 of the Turquoise test platform.
R2 1.0	24 May 2010	First issue of CDS release 2 document published
R2 1.1	25 June 2010	Order Mass Cancel Request message length corrected
R2.1 1.0	09 July 2010	Added/updated on Liquidity Pools, Mass Cancellation, Security Identification, Amending an Order, Client Order ID, Trade Match ID and Application ID in Setrvice Description section. Updated description of AppID and Client Order ID in Message Formats section. Updated description and offset of Order ID field Message Formats section. Removed TotalAffected Orders field in Order Mass Cancel Report. Changed data type of all quantity fields from Float to Int32.
R2.1 1.2	14 July 2010	Updated description to Order Types section. Updated description for ExpireDateTime, DisplayQty, TargetBook, CommonSymbol and Trade Liquidity Indicator.

R2.1 1.3	9 August 2010	Updated description for Order Ownership section
		Updated description for Client Order ID section
		Updated description of Pegged in Order Type section
		Updated description of Amending an Order section
		Participant name replaced with CompID
		Updated description for Mass Cancellation on Disconnect section
		Updated description for TransactTime in Timestamps and Dates section
		Updated description for Order ID in Execution Report
		Updated description for Limit Price field in Order Cancel/Replace Request
		Updated description for TradeMatchID in Execution Report
		Addition of Appendix A
R2.1 1.4	16 August 2010	Added Client Order ID to Reject message
		Added 9990 Reject code
		Updated description for Message Rate Throttling to reflect use of Reject message
		Addition of value to ResponseType in Missed Message Request Ack
		Addition of Client Order ID to Reject Message
		Updated description for Order Qty
		Total order quantity. The intended Order Qty has to be inserted here, as this is a mandatory field.
		Updated description for TargetBook
		Updated description of Transact Time
1.5	17 December 2010	Order Qty updated for Order Cancel/Replace Request
		Order throttling behaviour clarified.

1.6	18 February 2011	Updated description for Iceberg order type
		Added value 0 for AppID in Business Reject message
		Updated description for ExpireDateTime in New Order and Order Cancel/Replace Request messages
1.7	31 March 2011	Updated document for Sponsored Accesss. Section 2.4.1 – Order Ownsership
		Section 2.4.11 – Redrafted
		Created section 3.7 – Mass Cancellation on Disconnect of Member Firm for Sponsored Participant
		Created section 3.8 – Mass Cancellation on Suspension of a Sponsored Participant
		Updated sections 7.3.5, 7.3.6, 7.3.7, 7.4.5, 7.4.6, 7.4.7, 7.5.1
		Section 7.3.9 added
		Updated section 8.1 - Appendix A with new error codes for Sponsored Access
1.8	24 May 2011	Updated section 2.4.4 to clarify restriction added in respect to amending orders which are hidden, visible and Iceberg orders
		Updated section 7.1.1 with System Status message
1.9	6 July 2011	Addition of 2 new error messages in section 8.1 Error & Reject Messages
2.0	31 October 2011	Support for clearing interoperability.
2.1	4 January 2012	Section 2.3.3 – Added details of CFD Give Up capacity
		Section 7.4.1 – Added CFD Give Up capacity
		Section 7.4.5 – Added Capacity field
		Appendix A - Added reject codes 121901 & 121903

2.2	27 April 2012	Section 2.2 – Change to matching priority in Dark Midpoint Order Book Section 2.3.1 – Updated details of minimum fill functionality and continuous only orders Section 2.4.4 – added attributes of an order that can be amended Added Section 4.4 – Dormant Account Policy Sections 7.4.1, 7.4.2 – New Exec Instruction enum added Appendix A – Added reject code 121908
2.3	31 August 2012	Section 2.3.1 – Added details of Passive Only Order type Section 2.4.4 – Added Passive Only Order to amendable attributes Section 7.4.1, 7.4.2 – Added PassiveOnlyOrder field Section 7.4.5 – Added TradeLiquidityIndicator enum of 'C' for **Turquoise Uncross^{TM}** , added PriceDifferential field Appendix A - Added reject codes 111906, 111908, 111912, 121201, 121202.
2.4	3 October 2012	Section 7.4.1 – Clarified PassiveOnlyOrder only support for Integrated order book Section 7.4.5 – Removed references to 'Dark' Order types
2.5	25 October 2012	Section 6 – Clarified customer processing logic for Data Types
2.6	13 February 2013	Contact details updated
2.7	20 September 2013	The following sections have been updated; 2.3.1; 2.3.2; 2.3.3; 2.4.2; 2.4.4; 2.4.6; 2.4.7; 2.4.14; 2.4.15; 2.8; 4.1; 6.0; 7.4.1; 7.4.2; 7.4.5; 7.4.6; 8.1
2.8	24 October 2013	The document has been updated to reflect: Call Market will <u>not</u> be available in Production, but will be available in CDS for testing purposes. GFA and GTT TIF definition has been updated to reflect the non-availability of the Call Market indicator in Production. Rebranding of the Turquoise random periodic uncrossing to **Turquoise Uncross ™**,

3.0	20 October 2014	The document has been updated to reflect changes required for Turquoise Block Discovery™ Call Market will be available in Production, GFA and GTT TIF definition has been updated to reflect the availability of the Call Market indicator in Production. Addition of Block Discovery messages. The following sections have been updated; 2.2; 2.3.1; 2.3.2; 2.4.6; 2.4.15; 7.1.2.2; 7.4.1 and 7.4.5.
3.1	24 October 2014	Changed ITCH to MITCH
3.2	15 January 2015	This document has been updated to reflect changes for Millennium 8.6 upgrade. Change Highlights: • TradeMatchId – changing from base 62 to base 36 • Symbol field – changing from 6 to 8 characters. Message length changes for New Order, Order Cancel/Replace Request, Order Cancel Request, Order Mass Cancel Request, Execution Report messages. • New order type introduced **Turquoise Uncross**™ then Continuous • Clarification around order amendment behaviour The following sections have been changed: 2.3.1, 2.3.2, 2.4.1, 2.4.2, 2.4.3, 2.4.6, 2.4.10, 7.4.1, 7.4.2, 7.4.3, 7.4.4, 7.4.5, 8.1 See TQ700 – Release 8.6 Message Guidelines for full details on all changes

In subsequent issues where amendments have been made to the previous version, these changes will be identified using a series of side bars as illustrated opposite.

1.5 Enquiries

Contact Technical Account Management at Turquoise for any functional queries regarding the services outlined in this document. Technical Account Management can be contacted Monday to Friday between 07:30UK and 18:00UK:

- Telephone: +44 (0)20 7797 3939

- Email: londontam@lseg.com

2.0 Service Description

2.1 System Architecture

The Native Trading Gateway consists of two channels. A Real-Time Channel which provides the main order management functionality and a Recovery Channel that allows Participants to retrieve missed messages due to disconnection from the Real Time Channel.

2.2 Liquidity Pools

The Turquoise MTF supports the following liquidity pools for Participants to execute their interest:

(i) Integrated Order Book – The Integrated Order Book will execute orders in a continuous price-time method with large in scale hidden orders getting the lowest priority. Participants have the option to specifying the minimum fill size per order for non-persistent orders only.

(ii) Dark Midpoint Order Book – The Dark Midpoint Order Book accepts only dark orders. Orders will execute at the Primary market Midpoint on entry and during **Turquoise Uncross ™** events which occur at randomized time intervals, midpoint changes or when a firm amends order price, order size or MES. Participants have the option of specifying a minimum fill size per order.

(iii) **Turquoise Block Discovery™** – **Turquoise Block Discovery™** will perform the matching of BIs periodically. Upon receipt of a Call Market message from the Dark Book, **Turquoise Block Discovery™** will match BIs in its book and send OSRs to relevant Participants. The Participants should then respond by submitting Orders to the Dark Midpoint Order Book.

Orders in the Dark Midpoint Order Book will be matched and prioritised on a Size then Time basis.

Participants can submit Orders to the Turquoise Integrated or Dark Midpoint Order Book by explicitly specifying the order book in the TargetBook tag. If the value is not specified the order will be routed to the Dark Midpoint Order Book.

2.3 Order Handling

2.3.1 Order Types

Participants may submit the order types outlined below via the New Order message.

Order Type	Description
Market	Market orders will execute at the best available prices in the Integrated book and any remainder will be cancelled. Orders will be subject to Price Band and Maximum Order Value validations. Market orders in the Dark Midpoint Order Book will execute at the PBBO midpoint. Hidden or Iceberg Market orders are not permitted on the Integrated Book.

Limit	Limit orders will execute at or better than the specified price in the Integrated book. Orders will be subject to Price Band and Maximum Order Value validations. Limit orders will execute in the Dark Midpoint Order Book at the PBBO midpoint only if the limit price is equal to or better than the midpoint. Orders will be subject to Maximum Order Value validations.
Iceberg	An order that contains a disclosed quantity which will be the maximum quantity displayed on the order book and smaller than the total order quantity. Once the displayed quantity is reduced to zero, the display quantity can either be refreshed as an explicit quantity or, where enabled, Participants can elect to have their refreshed peak size randomised for their Order. Details of the randomisation range can be found in the Turquoise Trading Services Description. Once the remaining size falls below the refresh size, the full remaining size will be used as the disclosed quantity. Iceberg orders can not be un-priced.
Hidden	An order that meets MiFID large in scale requirements that is not displayed in the order book. These orders will receive the lowest priority within a price point when executing in the Integrated book.
Pegged	An order that will execute at the Mid-point of the Visible Best Bid and Offer. These will always be Hidden Orders. Pegged orders are not applicable to the Lit Book.
Midpoint Pegged (Dark)	An order that will execute at the midpoint of the Primary Best Bid and Offer. This order type can behave as a Limit or Market order depending on order entry parameters.
Minimum Fill	In the Integrated order book, MAQ (Minimum Acceptable Quantity) will be used. This means that a firm can execute against multiple counterparties if the order's MAQ requirement is satisfied. For the Integrated order book this quantity is valid for non persistent orders only. In the Dark Midpoint Order Book, MES (Minimum Execution Size) will be used. This means that a firm will only execute against another order if that order alone meets the order's MES requirement. For the Dark Midpoint Order Book this quantity is valid for both persistent and non-persistent orders. Firms can also specify whether they want MES to apply for the first execution only or to persist for the lifetime of the order. Where MAQ/MES is greater than remaining Order Quantity, the MAQ/MES will be reduced to equal the remaining Order Quantity.
Turquoise Uncross[TM] **Only**	These orders will only execute during a **Turquoise Uncross**[TM] in the Dark Midpoint Order Book. Please see section 2.3.2 for details of these orders' behaviour around the Call Market. This instruction will be ignored for the Integrated book.
Continuous Only	These orders will only execute during continuous trading and will not match during **Turquoise Uncross**[TM] events. This instruction will be ignored for the Integrated book.

Continuous & **Turquoise Uncross**^{TM}	These orders will execute both in continuous matching and in the **Turquoise Uncross**^{TM} in the Dark Midpoint Order Book. Please see section 2.3.2 for details of these orders' behaviour around the Call Market. This instruction will be ignored for the Integrated book.
Turquoise Uncross™ then Continuous.	These orders will execute first in the nearest **Turquoise Uncross™** and then in continuous trading in the Dark Midpoint book. All the **Turquoise Uncross™** then Continuous orders will be parked until the next immediate **Turquoise Uncross™** which it will participate in. Once it participates in the immediate **Turquoise Uncross™,** it will then behave similar to a Continuous and **Turquoise Uncross™** order.
Passive Only Order	Only applicable to persistent limit orders. These orders will not match with visible orders upon entry, and will expire if they will aggress. These orders can match on entry against large in scale hidden orders sat within the BBO.
Block Indication (BI)	BIs will only match in **Turquoise Block Discovery™**. Participants who submit BIs have to submit a corresponding firm QBO the Dark Midpoint Order Book within a predefined time if the BI matched in **Turquoise Block Discovery™**. BIs will be expired once successfully matched in **Turquoise Block Discovery™**.
Order + Block Discovery Notification (BDN)	Matches in both the Dark Midpoint Order Book (Order) and in **Turquoise Block Discovery™** (BDN).
Qualifying Block Order (QBO)	Qualifying Block Orders are OSR Responses; i.e. they are orders with Order Sub Type BDN that contain a valid ClOrdLinkID, and falls under one of the following criteria: • Matching Instruction "Continuous and **Turquoise Uncross™**"and TIF GFA • Matching Instruction "**Turquoise Uncross™** Only" and TIF GFA Please see section 2.3.2 for details of these orders' behavior around the Call Market.

2.3.2 Behaviour of an Orders TIF and Execution Instruction around the Call Market

A Call Market is sent by Turquoise to indicate to Participants that there is an impending **Turquoise Uncross™** in the Dark Midpoint Order Book. Orders with the following Execution Instructions and TIF behave differently if submitted after a **Turquoise Uncross™** but before the next Call Market and when submitted after a Call Market and before the next **Turquoise Uncross™**:

Order Details (Combination of TIF and Execution Instructions)	Behaviour if the Order is submitted between a Turquoise Uncross™ and the next Call Market	Behaviour if the Order is submitted between a Call Market and its Turquoise Uncross™
GFA – Continuous and **Turquoise Uncross™**	Acts as IOC Order in Continuous Trading with any remainder expired. Orders are not amendable and cannot be cancelled.	The Order will not participate during Continuous trading and will wait to take part in the next **Turquoise Uncross™**. Any remainder will be expired after the **Turquoise Uncross™**. Orders are not amendable and cannot be cancelled.
GFA – **Turquoise Uncross™** Only	The Order will expire immediately. Orders are not amendable and cannot be cancelled.	The Order will take part in the **Turquoise Uncross™** after the next Call Market. Any remainder will be expired after the **Turquoise Uncross™**. Orders are not amendable and cannot be cancelled.
GFA - **Turquoise Uncross™** then Continuous	The Order will not participate during Continuous trading and will wait to take part in the next **Turquoise Uncross™**. Any remainder will be expired after the **Turquoise Uncross™**. Orders are amendable and can be cancelled.	
GTT – **Turquoise Uncross™** Only	The Order will take part in the next **Turquoise Uncross™**. If the order's expiry time elapses before participation in any **Turquoise Uncross™** it will be expired immediately. Any remainder will persist, participating in subsequent **Turquoise Uncross™** events until the Order's expiry time is reached. Orders are amendable and can be cancelled.	

2.3.3   Time in Force (TIF)

The server recognizes the following TIFs.

Time in Force	Description
Day	An order that will expire at the end of the day.
Immediate or Cancel (IOC)	An order that will be executed on receipt and the remainder, if any, immediately cancelled. **Not applicable to BI's or Order+BDN's.**
Fill or Kill (FOK)	An order that will be fully executed on receipt, or immediately cancelled. **Not applicable to BI's or Order+BDN's.**
Good Till Time (GTT)	An order that will expire at a specified time during the current day, or at the end of day, whichever occurs earliest. GTT orders submitted with expire time which has an expiry date in the future will be rejected. I.e. if a GTT order is sent with an already elapsed expiry time but with a future date in the date component, the order will be rejected. Same behaviour is applied when an expiry time outside current day's trading hours is specified. Please see section 2.3.2 for details of **Turquoise Uncross™** GTT Orders' behavior around the Call Market.
Good Till Date (GTD)	**No longer supported by Turquoise.** An order that will expire at the end of the day.
Good Till Cancelled (GTC)	**No longer supported by Turquoise.** An order that will expire at the end of the day.
Good For Auction (GFA)	**Only applicable to TQ Dark Book.** All GFA orders only take part in **Turquoise Uncross™** events. They are expired either after attempting to match during the **Turquoise Uncross™** it is scheduled to participate in or at the time of the scheduled **Turquoise Uncross™** if the **Turquoise Uncross™** fails to happen due to, say, a WFMC failure. Please see section 2.3.2 for details of these Orders' behaviour around the Call Market. **Not applicable to BI's.**

2.3.4   Order Capacity

The server recognises four order capacities; agency, riskless principal, principal and CFD Give Up. Participants are responsible for indicating the capacity an order is submitted under.

The capacity "CFD Give Up" will be applicable only for Sponsored Access Participants who are given the privilege for capacity conversion. If the submitter with appropriate Participant privileges submits an order with dealing capacity "CFD Give Up", such orders will be converted to "Principal" upon successful submission of the order.

2.4 Order Management

2.4.1   Order Ownership

All orders will be associated with the CompID under which the order was entered. No capacity will be provided to enter orders on behalf of another trader.

The remainder of a live order may be cancelled via the Order Cancel Request message. The server will respond with an Execution Report or Order Cancel Reject to confirm or reject the cancellation request respectively.

The Participant should identify the order being cancelled by either its Original Client Order ID or Order ID. If the Cancel Request contains values for both Original Client Order ID and Order ID, the server will only process the Order ID if the request is accepted.

Please note that QBO's with GFA TIF and Continuous and **Turquoise Uncross**^{TM} or **Turquoise Uncross**^{TM} Only Execution instructions can not be cancelled.

2.4.2   Mass Cancellation

A Participant may mass cancel live orders via the Order Mass Cancel Request. The server will respond with an Order Mass Cancel Report to indicate via the MassCancelResponse field whether the request is successful or not. Participants may receive more than one Mass Cancel Report having different AppIDs to distinguish the order cancellations carried out for each partition.

If the cancellation request is accepted, the server will then immediately transmit Execution Reports for each order that is cancelled. The Client Order ID of all such messages will be the Client Order ID of the Order Mass Cancel Request.

If the mass cancel request is rejected, the reason will be specified in the MassCancelRejectReason field of the Order Mass Cancel Report.

Participants may use the Order Mass Cancel Request to mass cancel all orders or only those for a particular instrument or segment. A mass cancel request may apply to all the orders of the trading firm or only to those of that particular CompID.

A mass cancel request sent in via the Native Trading Gateway or the FIX Gateway may cancel orders submitted through both gateways. In such a case, the execution reports for the order cancellation will be sent to the gateway through which each order was originally submitted.

Please note that QBO's with GFA TIF and Continuous and **Turquoise Uncross**^{TM} or **Turquoise Uncross**^{TM} Only Execution instructions can not be cancelled.

2.4.3   Amending an Order

The following attributes of a live order may be amended via the Order Cancel/Replace Request message:

(i)   Order quantity

(ii) Displayed quantity*

(iii) Price

(iv) Expiration time (GTT orders)

(v) Client reference

(vi) Minimum Execution Size (MES) (valid for Dark Midpoint Order Book)

(vii) Execution Instruction (valid for Dark Midpoint Order Book)

(viii)   Passive Only Order

* The following restrictions apply. Participants may not:

(i) amend a hidden order to become an Iceberg order (By specifying a Display Qty >0 on amend when Display Qty = 0 on original Order Submission to Dark Midpoint or Lit Order Book)

(ii) amend an Iceberg order to become a hidden order (By specifying a Display Qty = 0 on amend when Display Qty > 0 and <Order Qty on original Order Submission to Lit Book)

(iii) amend a visible order to a hidden order (By specifying a Display Qty = 0 on amend when Display Qty = Order Qty on original Order Submission to Lit Book)

(iv) amend a hidden order to a visible order (By specifying a Display Qty = Order Qty on amend when Display Qty =0 on original Order Submission to Lit Book)

Participants may:

(i) amend a fully visible order to become a fixed peak Iceberg order (By specifying a Display Qty < Order Qty and on amend when Display Qty = Order Qty on original Order Submission to Lit Book)

(ii) Amend an Iceberg order to become a visible order (By specifying a Display Qty = Order Qty on amend when Display Qty < Order Qty on original Order Submission to Lit Book)

Whilst the field being amended will have to be filled with the new value, Participants must fill in the current values of all the fields that are not being amended as well.

For Market Orders, the LimitPrice field should be filled with a negative value.

An order's Passive Only Order value will not be re-evaluated unless the order's price is amended.

The server will respond with an Execution Report or Order Cancel Reject to confirm or reject the amendment request respectively.

When an order amended for price, re-aggresses the order book where it gets fully filled, the sender will only receive an Execution Report for the trade and not acknowledging the amendment.

A Passive Only Order amended for price may expire if it falls into a worse price point or would aggress a visible price point on the other side of the order book.

If a Participant tries to amend the Order Quantity and/or Display Quantity, and if the request cannot be completely fulfilled due to edge conditions, the server will do the amendment to the maximum possible extent. Here the system will not allow order quantity to be amended below filled quantity, nor display quantity to be amended below leaves quantity. In order to allow order fills that are yet to be notified to the Participant, the system will automatically adjust the quantities where necessary.

For example if an order is sent with order quantity and display quantity as 800 and then tries to amend the display quantity to 500 two scenarios can happen:

(i) The Participant may have already received a partial fill for 400 and tries to amend the leaves quantity via the display quantity which is not permitted.

(ii) While the amend request is on the wire, there may be a partial fill of 400 which is not known to the Participant at the point of generating the amend request; at this case, rejecting the amend request is not ideal. The server cannot differentiate the two scenarios hence it has implemented fairer option which is to execute the amend request to the maximum possible extent.

Participants may not amend orders that are fully filled.

Please note that QBO's with GFA TIF and Continuous and **Turquoise Uncross**TM or **Turquoise Uncross**TM Only Execution instructions can not be cancelled.

Any amendment to the Execution Instruction of the Dark Midpoint book will result the order lose its' priority and re-aggress the order book.

2.4.4 Order Status

The Order Status field is used to convey the current state of an order. If an order simultaneously exists in more than one order state, the value with highest precedence is reported as the Order Status. The relevant order statuses are given below from the highest to lowest precedence. When a cancellation or amendment to a "Filled" or "Cancelled" or "Expired" order is rejected, order status is given as "Rejected" in the Order Cancel Reject instead of the actual status of the order. For example when an amend request to change the side of an order is rejected, the order status is given as "Rejected" in the Order Cancel Reject.

Value	Meaning
2	Filled
4	Cancelled
6	Expired
1	Partially Filled
0	New
8	Rejected

2.4.5 Execution Reports

The Execution Report message is used to communicate many different events to Participants. The events are differentiated by the value in the ExecType field as outlined below.

Exec Type	Usage	Ord Status
0	Order Accepted Indicates that a new order has been accepted. This message will also be sent unsolicited if an order was submitted by Market Operations on behalf of the Participant.	0
8	Order Rejected Indicates that an order has been rejected. The reason for the rejection is specified in the field Order Reject Code.	8
F	Order Executed Indicates that an order has been partially or fully filled. The execution details (e.g. price and quantity) are specified.	1, 2

C	Order Expired
	
	Indicates that an order has expired in terms of its time qualifier or due to one of the following events:
	
	    (i) When orders are expired upon entering the order book when the number of orders in the order book is at the maximum allowed level.
	
	    (ii) When the remaining orders are expired at market close.
	
	    (iii) When orders are expired based on the auto cancellation on disconnect/log out feature.
	
	    (iv) When the relevant order is configured with the self execution prevention specifying CIO or CRO.
	
	    (v) When a **Turquoise Uncross™** Only GFA Order has not been fully executed in the **Turquoise Uncross™** to which it was expected to participate,
	
	    (vi) When a Continuous and **Turquoise Uncross™** GFA Order has not been fully executed in the **Turquoise Uncross™** to which it was expected to participate,
	
	    (vii) When a GTT Order's expiry time elapses before it has been fully executed
	
	    (viii) When a Continuous and **Turquoise Uncross™** GFA Order is submitted between a **Turquoise Uncross™** and a Call Market, it will act as an IOC, with any remaining quantity being expired.
	
	    (ix) When BIs are successfully matched by **Turquoise Block Discovery™**.
	
	    (x) When a **Turquoise Uncross™** GFA Order is submitted between a **Turquoise Uncross™** and a Call Market, it will be immediately expired.
	
	    (xi) When a **Turquoise Uncross™** then Continuous GFA Order participates in a **Turquoise Uncross™.**
		6

4	Order Cancelled Indicates that an Order Cancel Request has been accepted and successfully processed. This message will also be sent unsolicited if the order was cancelled by Market Operations. If an order is cancelled by Market Operations it will not be assigned a new Client Order ID.	4
5	Order Cancel/Replaced Indicates that an Order Cancel/Replace Request has been accepted and successfully processed.	0, 1
D	**Order Cancel/Replace by Market Operations** Will be stamped if an order has been amended by the Market Operations team. If an order is amended by Market Operations it will not be assigned a new Client Order ID.	0, 1

H	**Trade Cancel** Indicates that an execution has been cancelled by the Market Operations. An Execution Report Ref ID to identify the execution being cancelled will be included.	0, 1, 4, 6
L	**Triggered** Stamped on OSRs sent to Participant indicating that their BI has matched in **Turquoise Block Discovery™** and a corresponding firm QBO should be submitted to the Dark Midpoint Order Book.	2

2.4.6   Client Order ID

Participants should use unique Client Order IDs per business day. The server does not validate each Client Order ID for uniqueness.

Clients must specify the Client Order ID when submitting a New Order, Order Cancel Request or Order Cancel/Replace Request.

The system will accept a maximum length of 20 characters. If the ID is longer than 20 characters then it will be rejected. This is valid for the following.

- New Order Single – Client Order ID
- Order Cancel Request – Original Client Order ID

2.4.7   Order ID

The server will use the OrderID field of the Execution Report to affix the order identification numbers of the trading engine. Order IDs will be unique across trading days.

Unlike Client Order ID which requires a chaining through cancel/replace requests and cancel requests, the OrderID of an order will remain constant throughout its life.

Participants have the option of specifying the OrderID (instead of the Original Client Order ID) when submitting an Order Cancel Request orOrder Cancel/Replace Request. The Common Symbol and Target Book should always be specified along with either option.

Using the OrderID when amending or cancelling an order will be faster, since the system maintains orders by the Order ID.

2.4.8   Execution ID

The server will use the Execution ID field to affix a unique identifier for each Execution Report. Execution IDs will be unique across trading days.

2.4.9   Trade Match ID

Trade Match ID in the Native Trading gateway matches exactly with the Trade Match ID field on the MITCH gateway execution report which is in binary. It also matches the TradeMatchID (tag 880) on FIX Trading & Drop Copy execution reports as well as the TradeID (tag 1003) in the Post Trade gateway. However this is in base 36 with a one character prefix. It can be converted to an 8 byte integer for comparison after removing the prefix of 'T' or 'M'.

The ExecID generated by the CCP gateway could be deduced from the Trade Match ID after the prefix T/M, the side indicator (B/S prefix) and the sequence numbers (1 for cancelled trades) are removed and then the remainder converted to binary using base 36.

2.4.10   Application ID

The trading system consists of a series of parallel partitions each of which services an exclusive set of instruments. Each application message transmitted by the server will include the identity of the partition that generated the message. The number of partitions could increase/ decrease in the future.

2.4.12 Trade Cancellations

Market supervision may cancel any (automatically executed) trade. The server will transmit to the relevant Participants to notify them of a trade cancellation.

If a trade is cancelled for a partially filled order, the cancelled quantity of the trade is not reinstated. The Participant will receive two notifications in such a scenario; one for the trade cancel and another for the order restatement/cancellation.

2.4.13 Public Order ID

This is a new order ID that will be maintained by the matching engine, and will be unique for each replenishment of a particular iceberg order.

For a single iceberg order, the Order ID will be the same, but a unique new Public Order ID will be generated for each replenishment.

2.4.14   Unsolicited Order Updates

The Execution Report message is used to notify the Participant if an order is executed or expired. The Client Order ID of the message will be that of the last New Order or Order Modification Request that successfully updated the order.

2.4.15   Order Submission Requests

OSRs are sent by the system, in the form of Execution Reports to notify the Participant that their BI matched in **Turquoise Block Discovery™**. An OSR will contain the following information:

- Exec Type = L,
- Order Status = 0 (New),
- Client Order ID,
- An Order ID (Same OrderID stamped on new BI ack Execution Report, which needs to be sent back in the ClOrdLinkID field as part of a QBO),
- Limit price of Order to be submitted (unless the BI was unpriced i.e. a Market Order),
- Executed Price,
- MES of Order to be submitted,

- Size of Order to be submitted (This will be the size of the BI irrespective of the size matched in **Turquoise Block Discovery™**),

- Instrument and side of the Order to be submitted,

- Reputational Score of the Participant (Only on OSRs for matched BIs); and

- Time the message was generated.

2.5 Security Identification

Participants submit and manage orders by specifying the MTF Common Symbol.

Participants can submit and manage Orders by specifying the MTF Common Symbol. When using the MTF Common Symbol scheme, the Participant must specify the following:

(i) The Common Symbol in the CommonSymbol field

(ii) The order book in the TargetBook field:

- o '0' for Dark Midpoint Order Book

- o '1' for Integrated Order Book

2.6 Market Operations

2.6.1 Order Deletion

Market Operations are able to cancel orders on behalf of a Participant in accordance with the Turquoise rulebook.

The Participant will be notified of the Order Cancel Request submitted on its behalf if and when it is accepted. The Participant will not be notified if the action is rejected.

This feature is intended to help a Participant manage an emergency situation and should not be relied upon as a normal business practice.

2.6.2 Trade Cancellations

Market Operations may cancel any on-book trade. The server will transmit Execution Reports to the relevant Participants to notify them of a trade cancellation or correction.

If an execution is cancelled to reduce the executed quantity, the cancelled quantity will have to be reduced from the order quantity for that order.

Therefore, the order will have to be restated to reduce its order quantity by the cancelled quantity. The Participant will receive two notifications in such a scenario; one for the trade cancel and another for the restatement.

2.7 Conditionally Required fields

All fields that are not conditionally required will not be validated by the server, and will only be passed back on execution reports.

2.8 Timestamps and Dates

ExpireDateTime should be in Unix (Posix) time which will be the number of seconds elapsed since midnight proleptic Coordinated Universal Time (UTC) of January 1, 1970, not counting leap seconds.The first 4 bytes of the TransactTime timestamp will represent the Unix (Posix) time while the next 4 bytes will specify the micro seconds. The TransactTime will be in UTC.

7	6	5	4	3	2	1	0
micro seconds				UNIX time			

2.9 Information for Billing

Customers may use the Native Execution Report to estimate billing. For the current Turquoise rebates and fees, please refer to the TQ Equity Tariff Schedule.

In general, rebates and fees can be determined via the following Native Execution Report fields:

- Integrated Order Book – aggressive trades

  - TargetBook=1 and TradeLiquidityIndicator = R

- Integrated Order Book – passive trades

  - TargetBook=1 and TradeLiquidityIndicator = A

- Dark Midpoint Order Book – all trades

  - TargetBook=0 (The TradeLiquidityIndicator field is not required for calculation)

- In addition, the CommonSymbol field may be relevant for stocks that are eligible for rebates during new market segment promotions.

3.0 Connectivity

3.1 CompIDs

CompIDs will be confirmed with each Participant before communications can begin through the Native Trading Gateway. A single Participant may have multiple connections to the server (i.e. a Participant can maintain multiple sessions if he has multiple CompIDs).

3.2 Passwords

Each CompID will be assigned a password on registration. Participants will be required to change the password to one of their choosing via the Logon message. When a new password is submitted by the Participant, a successful login will indicate that the new password is accepted. The new password will, if accepted, be effective for subsequent logins. If a new password is rejected, the RejectReason of the Logon Reply will indicate why the password is rejected.

In terms of the Turquoise password policy, the initial password of each CompID must be changed at least once. If not, the Participant will be unable to login to the server. In such a case, the Participant should contact Turquoise.

3.3 Production IP Addresses and Ports

The IP addresses and ports for the Native Trading Gateway are published in the Turquoise Connectivity Guide.

3.4 Failover and Recovery

The system has been designed with fault tolerance and disaster recovery technology that ensures that trading should continue in the unlikely event of a process or site outage.

If the Participant is unexpectedly disconnected from the server, it should attempt to re-connect to primary site within a few seconds. The Participant should only attempt to connect to the backup IP address and port if so requested by Turquoise.

If a service interruption occurs in the Native Recovery Channel (due to Order Cache outage) the Native Gateway will send a System Status message to all logged in Participants of that gateway's recovery channel with AppID stamped to indicate the service non availability of the partition. When this message is received, Participants are expected to identify that the recovery service is not available for the partition indicated by AppID. They would be able to continue recovery activities on other partitions without interruption.

If the gateway was in the middle of serving a Missed Message Request, it will send a Missed Message Report message with 'ResponseType' = 3 (service unavailable) to the Participant.

If a new Missed Message Request is sent by a Participant, the gateway will reject the message with a 'Missed Message Request Ack' with 'ResponseType' = 3 (service unavailable) to the Participant.

Once the service is available again, the Native Gateway will send another System Status message with AppID to indicate the service availability of the partition to the Participants who are still connected on to the recovery channel with 'AppStatus' = 1. When this message is received, Participants are expected to resend the request for missed messages (preferably from the point of interruption) to the gateway to resume the missed message recovery.

3.5 Message Rate Throttling

Turquoise has implemented a scheme for throttling message traffic where each Participant is only permitted to submit up to a specified number of messages per second.

Every message which exceeds the maximum rate of a CompID will be rejected via a [Reject](#).

3.6 Mass Cancel On Disconnect

At the request of the Participant, the server can be configured to automatically cancel certain live orders submitted by a Participant whenever it disconnects from the server.

The Participant can mark each order (through the Auto Cancel field) showing whether the Participant's settings should be checked in the event of a disconnection/log out or whether the order should remain unaffected. For each server initiated cancellation, Exec Type and Order Status fields in the execution report will be stamped with the value 'Expired' as opposed to 'Cancelled' which would be applicable to all firm initiated cancellations.

This feature does not guarantee that all outstanding marked orders will be successfully cancelled as executions that occur very near the time of disconnect may not be reported to the Participant. During such a situation, the Participant should contact Market Operations to verify that all marked orders have been cancelled and all Execution Report messages have been received.

The configuration of the mass cancellation on disconnect feature cannot be updated during a session.

3.7 Mass Cancel on Disconnect of Member Firm for Sponsored Participant

Sponsoring Firms are able to constantly monitor their Sponsored Participants via a Drop Copy Gateway connection. Should a Sponsoring Firm lose their ability to monitor their Sponsored Participants (e.g. Disconnect) and not reconnect within the configured amount of time, their Sponsored Participants will be restricted from submitting new orders, while all their existing orders will be expired.

3.8 Mass Cancel on Suspension of a Sponsored Participant

Sponsoring Firms will have the ability to suspend access to a Sponsored Participant via the Sponsor Portal. On suspension of a Sponsored Participant they will be restricted from submitting new orders, while all their existing orders will be cancelled.

4.0 Connections and Sessions

4.1 Establishing a Connection

Each Participant will use the assigned IP address and port to establish a TCP/IP session with the server. If the Participant does not initiate the session by sending the Logon message within one heartbeat interval of establishing the session, the connection will be dropped by the server. The Participant will identify itself using the CompID field. The server will validate the CompID and password of the Participant.

Once the Participant is authenticated, the server will respond with a Logon Reply message. If the Participant's logon is successful or if the Participant's new password is accepted, the RejectCode of the Logon Reply will be Successful (0). If the Participant's logon is unsuccessful (e.g. invalid username, invalid or expired password or locked Participant) the Logon Reply will include the RejectCode which corresponds to the reason for rejection.

The Participant must wait for the server's Logon before sending additional messages. Messages received from the Participant before the exchange of Logon messages will be rejected by the server. In some cases (e.g.: Non existing username, username with no Native login privileges) the session will be disconnected with no Logon Reply.

4.2 Maintaining a Session

4.2.1 Application Sequence Numbers

While the Server-initiated application messages will always have an AppID and a Sequence No, the Participant-initiated application messages will not be numbered. The AppID will correspond to the partition ID of the instrument the message is sent for, and the Sequence No will be a sequence number assigned to messages of the given partition.

The Sequence Number received by a Participant for a particular AppID although incremental will not be sequential since the sequence numbers are not maintained per Participant. Therefore, a Participant should not connect to the recovery channel and request missed messages if the difference in SequenceNo between two consecutive messages is more than one. Recovery should be initiated only upon a reconnection after a session disconnection.

Uniqueness of Participant-initiated messages will be achieved through the provision of unique Participant Order IDs per Participant.

4.2.2 Heartbeats

The Participant and server will use the Heartbeat message to exercise the communication line during periods of inactivity and to verify that the interfaces at each end are available. The heartbeat interval is 3 seconds, for both Participant and server.

The server will send a Heartbeat anytime it has not transmitted a message for the heartbeat interval. The Participant is expected to employ the same logic.

If the server detects inactivity for the specified heartbeat interval, the server will send a Logout and break the TCP/IP connection with the Participant. The Participant is expected to employ similar logic if inactivity is detected on the part of the server.

4.3 Terminating a Connection

The Participant is expected to terminate each connection at the end of each trading day before the server shuts down. The Participant will terminate a connection by sending the Logout message. The Participant will then break the TCP/IP connection with the server.

All open TCP/IP connections will be terminated by the server when it shuts down (a Logout will not be sent). Under exceptional circumstances the server may initiate the termination of a connection during the trading day by sending the Logout message.

Either party that wishes to terminate the connection may wait the heartbeat interval duration before breaking the TCP/IP connection, in order to ensure that the other party received the Logout message.

4.4 Dormant Account Policy

Participants are advised that CompIDs for both the Native and FIX Trading services will automatically be deactivated after a period of 100 days without a successful logon.

If a Participant is unable to connect because a CompID has been marked as inactive, they should contact Turquoise Market Operations who will reactivate CompIDs as required.

Participants that may have allocated specific Trading CompIDs for a disaster recovery site are strongly advised to take note of the above.

5.0 Recovery

If a Participant gets disconnected from the server, the recovery channel shall be used to recover missed messages. This section explains the protocol to be followed when recovering missed messages.

5.1 Requesting Missed Messages

When a Participant needs to recover missed messages he must first connect to the Real Time Channel and establish a session by exchanging Logon and Logon Reply messages. The Participant may then connect to the Recovery Channel and exchange Logon and Logon Reply messages to establish a recovery session. Any attempt to connect to the Recovery Channel without first connecting to the Real Time Channel shall be rejected, and the server will send a Logon Reply message, which will include the appropriate Reject Code. The Participant must ensure proper authentication (i.e. same CompID and password) when logging in to both channels. Any values sent for the NewPassword field in the Logon message sent to the Recovery Channel will be ignored.

After establishing a connection with the Recovery Channel, the Participant may send a Missed Message Request with the relevant AppID and the last received Sequence No corresponding to that AppID. The Participant will have to send separate Missed Message Request messages to retrieve messages from each partition.

If a service interruption (via Order Cache Primary failing over to its Mirror or via both Order Cache Processes going down) occurs in the Native Recovery Channel the Native Gateway will send a System Status message to all logged in Participants of that gateway's recovery channel with AppID to indicate the service non availability of the partition. When this message is received, the Participants are expected identify that the recovery service is not available for the partition indicated by AppID. They would be able to continue recovery activities on other partitions without interruptions.

If the gateway was in the middle of serving a Missed Message Request, it will send a Missed Message Report message with 'Status' = 3 (service unavailable) to the Participant.

If a new Missed Message Request is sent by a Participant, the gateway will reject the message with a 'Missed Message Request Ack' with 'Status' = 3 (service unavailable) to the Participant. Once the service is available again, the Native Gateway will then send another System Status message with AppID and with 'AppStatus' = 1 to indicate the service availability of the partition to the Participants who are still connected on to the recovery channel. When this message is received, the Participants are expected to resend the request for missed messages (preferably from the point of interruption) to the gateway to resume the missed message recovery.

5.2 Response to a Missed Message Request

The server will respond to the Missed Message Request with a Missed Message Request Ack to indicate whether the recovery request is successful or not. If the request is unsuccessful, the reason will be specified in the field ResponseType.

The total number of Missed Message Requests that a Participant may send on the Recovery channel is limited each day. This limit is defined by Turquoise. Once this limit is reached, the server will reject any additional request via a Missed Message Request Ack with a ResponseType of Recovery Request limit reached (1).

In the case of a successful recovery request, the server will transmit the requested messages immediately after the Missed Message Request Ack. It should be noted that due to race conditions duplicate messages may be transmitted via the recovery channel. Participants are advised to use the AppID and SeqNum to carry out duplicate discard. Please note that the response to a missed message request will include the LastMsgSeqNum message.

Upon transmitting all the missed messages (i.e. messages from the last received Sequence No to the first message received through the Real Time Channel) the Recovery Channel will send a Missed Message Report which will indicate whether or not all requested messages have been sent.

The total number of messages that a Participant may receive is limited per Missed Message Request. Therefore, if the Participant's missed message request exceeds this limit, the server will send the first set of messages from the AppID and Sequence No provided, followed by a Missed Message Report with a ResponseType of Message Limit Reached (1).

A Participant should not send subsequent Missed Message Requests prior to receiving the Missed Message Report, since these will be rejected by the server.

Upon receiving the Missed Message Report, the Participant can send a Logout message and terminate the connection or submit a new Missed Message Request for any more messages that need to be transmitted.

5.3 Terminating the Recovery Session

Upon sending the Missed Message Report the server will wait three heartbeat intervals prior to disconnecting the Participant. If the Participant has received only part of the message set that was requested, the Participant may send in a new Missed Message Request message for the messages that were not recovered in the first attempt. However, if such a request is not sent within three heartbeat intervals the Server will terminate the connection. If the Participant is unable to send a new request within this time, the Participant can re-login to the Recovery Channel and send in the Missed Message Request.

6.0 Data Types

The fields of the messages utilised by the server will support the data types outlined below.

Data Type	Length	Description
Alpha	1	A single byte used to hold one ASCII character.
Price	8	Signed Little-Endian encoded eight byte integer field with eight implied decimal places.
UInt8	1	8 bit unsigned integer.
Int8	1	Little-Endian encoded 8 bit signed integer
Int16	2	Little-Endian encoded 16 bit signed integer
UInt16	2	Little-Endian encoded 16 bit unsigned integer
Int32	4	Little-Endian encoded 32 bit signed integer.
UInt32	4	Little-Endian encoded 32 bit unsigned integer.
UInt64	8	Little-Endian encoded 64 bit unsigned integer
String (null terminated)	Variable	These fields use standard ASCII character bytes. A field will be null terminated if the full fixed length is unused. The first byte will contain a null if the field is unused.
Byte	1	A single byte used to hold one ASCII character.

Customers should design their applications such that:

- When sending messages, it populates all Reserved fields will nulls (hex 0x00)

- When receiving messages, it disregards and does not process any fields marked as Reserved

7.0 Message Formats

This section provides details on the eight administrative messages and eight application messages utilized by the server. Any message not included in this section will be rejected by the server.

7.1 Supported Message Types

7.1.1   Administrative Messages

All administrative messages may be initiated by either the Participant or the server (unless otherwise indicated).

Message	Message Type	Usage
Logon	A	Allows the Participant and server to establish a session.
Logon Reply	B	Allows the server to acknowledge a Participants Logon.
Logout	5	Allows the Participant and server to terminate a session.
Heartbeat	0	Allows the Participant and server to exercise the communication line during periods of inactivity and verify that the interfaces at each end are available.
Missed Message Request	M	Allows the Participant to subscribe to missed messages through the Recovery Channel.
Missed Message Request Ack	N	Allows the server to acknowledge a Participant's Missed Message Request.
Missed Message Report	P	Allows the Server to communicate the result of a Missed Message Request.
Reject	3	Allows the Server to reject a message that does not comply with the Native Trading Gateway messaging protocol.
System Status	n	Sent to All Native Recovery Channel Participants on the event of Order Cache Outage.

7.1.2 Application Messages: Order Handling

7.1.2.1 Participant-Initiated

Message	Message Type	Usage
New Order	D	Allows the Participant to submit a new order.
Order Cancel Request	F	Allows the Participant to cancel a live order.
Order Mass Cancel Request	q	Allows the Participant to mass cancel: (i) All live orders. (ii) All live orders for a particular instrument. (iii) All live orders for a particular segment. The mass cancel may apply to the orders of a particular trading party or to all orders of the firm.
Order Cancel/Replace Request	G	Allows the Participant to cancel/replace a live order.

7.1.2.2 Server-Initiated

Message	Message Type	Usage
Execution Report	8	Indicates one of the following: (i) Order accepted. (ii) Order rejected. (iii) Order executed. (iv) Order expired. (v) Order cancelled. (vi) Order cancel/replaced. (vii) Trade cancel. (viii) BI triggered.

Order Cancel Reject	9	Indicates that an Order Cancel Request or Order Cancel/Replace Request has been rejected.
Order Mass Cancel Report	r	Indicates one of the following: Mass order cancel request accepted. Mass order cancel request rejected.
Business Message Reject	j	Indicates that an application message could not be processed.

7.2 Message Header

Field	Offset	Length	Data Type	Description
Start of Message	0	1	Int8	Indicates the start of the message. Participants will have to send the binary value of '2' at the start of each message. Server will also follow the same protocol.
Message Length	1	2	UInt16	Length of the message from the Message Type field onwards i.e. total message length - 3.
Message Type	3	1	Alpha	Type of Message.

7.3 Administrative Messages

7.3.1 Logon

Field	Offset	Length	Data Type	Description
Header	MsgType = A (0x41)			
CompID	4	25	String	Participant name
Password	29	25	String	Password
NewPassword	54	25	String	New Password
Message Version	79	1	Int8	Message Version that will be used in this session. Always set to 1.

7.3.2 Logon Reply

Field	Offset	Length	Data Type	Description
Header	MsgType = B (0x42)			
RejectCode	4	4	Int32	Code specifying the reason for the reject.
PasswordExpiryDay Count	8	30	String	The number of days before the password will expire.

7.3.3 Logout

Field	Offset	Length	Data Type	Description
Header	MsgType = 5 (0x35)			
LogoutReason	4	20	String	Reason for the logout.

7.3.4 Heartbeat

Field	Offset	Length	Data Type	Description
Header	MsgType = 0 (0x30)			

7.3.5 Missed Message Request

Field	Offset	Length	Data Type	Description
Header	MsgType = M (0x4D)			
AppID	4	1	Int8	Partition ID **Value** **Meaning** 1 Partition 1 2 Partition 2 3 Partition 3
LastMsgSeqNum	5	4	Int32	Last received Sequence Number. Please note that the response will include the LasMsgSeqNum message.

7.3.6 Missed Message Request Ack

Field	Offset	Length	Data Type	Description	
Header	MsgType = N (0x4E)				
ResponseType	4	1	Int8	**Value**	**Meaning**
				0	Successful
				1	Recovery Request limit reached
				2	Invalid App ID
				3	Service Unavailable

7.3.7 Missed Message Report

Field	Offset	Length	Data Type	Description	
Header	MsgType = P (0x50)				
ResponseType	4	1	Int8	**Value**	**Meaning**
				0	Download Complete
				1	Message limit reached
				3	Service Unavailable

7.3.8 Reject

Field	Offset	Length	Data Type	Description
Header	MsgType = 3 (0x33)			
RejectCode	4	4	Int32	Code specifying the reason for the reject.
Reject Reason	8	30	String	Reject Reason.
Rejected MessageType	38	1	Alpha	Message type of the rejected message.
Client Order ID	39	20	String	Participant specified identifier of the rejected message if it is available.

7.3.9   System Status

Field	Offset	Length	Data Type	Description
Header	MsgType = n (0x6E)			
AppID	4	1	Int8	Partition ID **Value** **Meaning** 1 Partition 1 2 Partition 2 3 Partition 3
Reject Reason	5	1	Int8	Value Meaning 1 Recovery Service Resumed 2 Recovery Service Not Available

7.4 Application Messages: Order Handling

7.4.1   New Order

Field	Offset	Length	Data Type	Description
Header	MsgType = D (0x44)			
Client Order ID	4	20	String	Participant specified identifier of the request.
Trader ID	24	11	String	Optional Trader ID that Participants may submit.
Account	35	10	String	Optional reference of the desk the order is submitted for.
ClearingAccount	45	1	Int8	Clearing Account Type **Value** **Meaning** 1 Client 3 House
CommonSymbol	46	8	String	MTF Common Symbol of the instrument.
Order Type	54	1	Int8	Type of order **Value** **Meaning** 1 Market 2 Limit
TIF	55	1	Int8	Time qualifier of the order **Value** **Meaning** 0 Day 3 Immediate or Cancel (IOC) 4 Fill or Kill (FOK) 8 Good Till Time (GTT) 9 Good for Auction (GFA)

ExpireDateTime	56	4	UInt32	This field will indicate the time the order expires on. GTT orders will be rejected if a value greater than zero is not specified for this field. Should be in Unix (Posix) time which will be the number of seconds elapsed since midnight proleptic Coordinated Universal Time (UTC) of January 1, 1970, not counting leap seconds.
Side	60	1	Int8	Side of the order **Value** **Meaning** 1 Buy 2 Sell
Order Qty	61	4	Int32	Total order quantity.
DisplayQty	65	4	Int32	Maximum quantity that may be displayed. The intended display quantity has to be inserted as this is a mandatory field.
LimitPrice	69	8	Price	Limit Price. Required if OrderType is Limit. Else this field will be ignored.
Capacity	77	1	Int8	Capacity of the order **Value** **Meaning** 1 Riskless Principal 2 Principal 3 Agency 4 CFD Give Up

AutoCancel	78	1	Int8	Checks Participant preferences on logout/disconnection of session
				Value **Meaning**
				0 Do not cancel on disconnect
				1 Check system preference
OrderSubType	79	1	Int8	Used to specify the order type.
				Types 1 and 3 are not accepted to the Lit Order Book, so they will be rejected if accompanied with Target Book of 1.
				If this is populated with value "51" while a value which is greater than 0 and less than the Order Quantity is populated in DisplayQty, the DisplayQty after a replenishment will be random.
				If this is populated with value "0" while a value which is greater than 0 and less than the Order Quantity is populated in DisplayQty, the DisplayQty after a replenishment will be "fixed peak".
				Value **Meaning**
				0 Order
				1 BI
				3 Order + BDN
				5 Pegged Order
				51 Random
ReservedField1	80	1	Int8	Reserved for future use.
ReservedField2	81	8	Price	Reserved for future use.

TargetBook	89	1	Int8	Indicates the target book for the order
				Value **Meaning**
				0 Dark Midpoint Order Book
				1 Integrated Order Book
Exec Instruction	90	1	Int8	Indicates if the order should participate only in **Turquoise Uncross™** events, or in continuous trading as well. The value set in this field will be ignored for orders entering the Integrated Order Book.
				Value **Meaning**
				0 Apply user level Default
				1 **Turquoise Uncross™** only
				2 Continuous only
				5 Continuous and **Turquoise Uncross™**
				6 **Turquoise Uncross™** then Continuous
Minimum Quantity	91	4	Int32	Minimum Fill size. Please reference 2.3.1 for further description

Set to zero if not used. |
ReservedField3	95	1	Int8	Reserved for future use.
ReservedField4	96	1	Int8	Reserved for future use.
ReservedField5	97	1	Int8	Reserved for future use.

PassiveOnlyOrder	98	1	Int8	Used to specify whether an order will rest prior to execution, with flexibility for visible orders to rest at a specified price level on the book.
				No protection is provided against order execution with large in scale hidden orders sat within the BBO.
				A hidden order submitted with a value other than 0 or 99 will be rejected.
				A Dark Midpoint Order submitted with a value other than 0 will be rejected.

Value	Meaning
0	No constraint (ignore this field, i.e. aggressive or passive)
99	Accept order only if passive upon order entry. Otherwise expire.
100	Accept order if setting new BBO. Otherwise expire.
1	Accept order if setting new BBO or joining existing BBO. Otherwise expire.
2	Accept order if joining existing BBO or within one visible price point. Otherwise expire.
3	Accept order if joining existing BBO or within two visible price points. Otherwise expire.

ClOrdLinkID	99	12	String	Identifier linking the Order to the OSR. Must be populated with the Order ID of the OSR.

7.4.2 Order Cancel/Replace Request

Field	Offset	Length	Data Type	Description
Header	MsgType = G (0x47)			
Client Order ID	4	20	String	Participant specified identifier of the request.
Original Client Order ID	24	20	String	Participant Order ID of the order being amended.
OrderID	44	12	String	Unique identifier of the order assigned by the matching system.
CommonSymbol	56	8	String	MTF Common Symbol of the instrument.
ExpireDateTime	64	4	UInt32	This field will indicate the time the order expires at. GTT and GTD orders will be rejected if a value greater than zero is not specified for this field.
Order Qty	68	4	Int32	Total order quantity.
DisplayQty	72	4	Int32	Maximum quantity that may be displayed. The intended display quantity has to be inserted as this is a mandatory field.
Limit Price	76	8	Price	For market orders only this field should be filled with a negative. For limit orders the intended limit price has to be inserted.
Account	84	10	String	The reference of the investor the order is submitted for. This field should be null if it is not being amended.

TIF	94	1	Int8	Time qualifier of the order being amended. This should be the same as the original time qualifier, and is used to identify the value entered in the ExpiryDateTime field.
				Value **Meaning**
				0 Day
				3 Immediate or Cancel (IOC)
				4 Fill or Kill (FOK)
				8 Good Till Time (GTT)
				9 Good for Auction (GFA)
Side	95	1	Int8	Side of the order.
				Value **Meaning**
				1 Buy
				2 Sell
ReservedField1	96	8	Price	Reserved for future use.
TargetBook	104	1	Int8	Indicates the target book for the order.
				Value **Meaning**
				0 Dark Midpoint Order Book
				1 Integrated Order Book

Exec Instruction	105	1	Int8	Indicates if the order should participate only in **Turquoise Uncross™** events or in continuous trading as well. The value set in this field will be ignored for orders entering the Integrated Book.

Exec Instruction detail:

Value	Meaning
0	Apply user level Default
1	**Turquoise Uncross™** only
2	Continuous only
5	Continuous and **Turquoise Uncross™**
6	**Turquoise Uncross™** then Continuous

MinQty	106	4	Int32	Minimum Fill size
PassiveOnlyOrder	110	1	Int8	

PassiveOnlyOrder detail:

Value	Meaning
0	No constraint (ignore this field, i.e. aggressive or passive)
99	Accept order only if passive upon order entry. Otherwise expire.
100	Accept order if setting new BBO. Otherwise expire.
1	Accept order if setting new BBO or joining existing BBO. Otherwise expire.
2	Accept order if joining existing BBO or within one visible price point. Otherwise expire.
3	Accept order if joining existing BBO or within two visible price points. Otherwise expire.

ReservedField2	111	3	String	Reserved for future use.

7.4.3   Order Cancel Request

Field	Offset	Length	Data Type	Description
Header	MsgType = F (0x46)			
Client Order ID	4	20	String	Participant specified identifier of the request.
Original Client Order ID	24	20	String	Participant Order ID of the order being cancelled.
OrderID	44	12	String	Unique identifier of the order assigned by the matching system.
CommonSymbol	56	8	String	MTF Common Symbol of the instrument.
Side	64	1	Int8	Side of the order **Value** **Meaning** 1 Buy 2 Sell
TargetBook	65	1	Int8	Indicates the target book for the order. **Value** **Meaning** 0 Dark Midpoint order book 1 Integrated order book
ReservedField1	66	9	String	Reserved for future use.

7.4.4 Order Mass Cancel Request

Field	Offset	Length	Data Type	Description
Header	MsgType = q (0x71)			
Client Order ID	4	20	String	Participant specified identifier of mass cancel request.
MassCancelType	24	1	Int8	Type of Mass Cancellation **Value** **Meaning** 3 All firm orders for an instrument 4 All firm orders in a segment 7 All orders submitted by the CompID 8 All firm orders 9 All orders submitted by the CompID for an instrument 15 All orders submitted by the CompID for a segment
CommonSymbol	25	8	String	MTF Common Symbol of the instrument. Required if MassCancelType = 3 or 9. Else this field will be ignored.
Segment	33	4	String	The segment for which the orders will be cancelled. Required if MassCancelType = 4 or 15. Else this field will be ignored.
ReservedField1	37	1	Int8	Reserved for future use.

Field	Offset	Length	Data Type	Description
TargetBook	38	1	Int8	Indicates the target book for the order. Required if MassCancelType = 3 or 9. Else this field will be ignored.

Value	Meaning
0	Dark Midpoint Order Book
1	Integrated Order Book

Field	Offset	Length	Data Type	Description
ReservedField2	39	9	String	Reserved for future use.

7.4.5 Execution Report

Field	Offset	Length	Data Type	Description
Header	MsgType = 8 (0x38)			
AppID	4	1	Int8	Partition ID
Sequence No	5	4	Int32	Sequence number of the message.
Execution ID	9	12	String	Unique ID of the Execution Report. Unique across all partitions.
Client Order ID	21	20	String	Participant specified identifier of the New Order Request, Order Cancel Request, Order Cancel/Replace Request, or Order Mass Cancel Request.

For AppID:

Value	Meaning
1	Partition 1
2	Partition 2
3	Partition 3

Order ID	41	12	String	Unique identifier of the order assigned by the matching system. This will be an 11 character base 62 encoded value in ASCII format with an 'O' prefix. After removing the prefix 'O' and converting to an 8 byte binary, this can be mapped exactly to the MITCH Order ID. However, please note that the field 'secondary order id' already contains this mapping.
Exec Type	53	1	Alpha	The reason the Execution Report is being sent.

Value	Meaning
0	New
4	Cancelled
5	Replaced
8	Rejected
C	Expired
D	Restated
F	Trade
H	Trade Cancel
L	Triggered

Execution Report Ref ID	54	12	String	Execution ID of the trade being cancelled or corrected. Populated if ExecType is Trade Cancel.

Order Status	66	1	Int8	The status of the order

				Value	Meaning
				0	New
				1	Partially filled
				2	Filled
				4	Cancelled
				6	Expired
				8	Rejected

Field	Offset	Len	Type	Description	
Order Reject Code	67	4	Int32	Code specifying the reason for the reject. The value in this field should be disregarded if Exec Type is not Rejected (8).	
Executed Price	71	8	Price	Value of this fill. Required if ExecType is Trade.	
Executed Qty	79	4	Int32	Quantity that was executed in this fill.	
Leaves Qty	83	4	Int32	Quantity available for further execution. Will be "0" if Order Status is Filled, Cancelled, Rejected or Expired.	
Container	87	1	Int8	Not applicable for Turquoise The container which holds the order in the trading engine Value — Meaning 0 — No Container 1 — Order Book 7 — Pegged Order Container	
DisplayQty	88	4	Int32	Maximum quantity that may be displayed.	
CommonSymbol	92	8	String	MTF Common Symbol of the instrument.	

Side	100	1	Int8	Side of the order
				Value **Meaning**
				1 Buy
				2 Sell
Secondary Order ID	101	8	UInt64	MITCH Order ID
Counterparty	109	11	String	Set to the MemberFirmID for internalised trade executions else set to the CCP name: EMCF LCH X-Clear
Trade Liquidity Indicator	120	1	Alpha	Whether the order added or removed liquidity. The value in this field should only be considered if the Exec Type is Trade (F) or Trade Cancel (H). For the rest of the exec types, the value in this field should be ignored. **Value** **Meaning** A Added Liquidity R Removed Liquidity C **Turquoise Uncross**[TM] Execution S Block Discovery Execution - **Turquoise Uncross**[TM] T Block Discovery Execution - Continuous Trading
TradeMatchID	121	8	UInt64	Contains the trade identifier sent on the MITCH market data feed. This is also sent to the CCP by converting the number to a 9 character base 36 string and adding a 'T/M' (On book/Off book) character prefix. To this a 'B/S' prefix should be added. For trade cancellations, this also requires the addition of a '1' character prefix.

Transact Time	129	8	UInt64	Time the Execution Report was generated.
TargetBook	137	1	Int8	Indicates the target book for the order. **Value** **Meaning** 0 Dark Midpoint Order Book 1 Integrated Order Book
TypeOfTrade	138	1	Int8	Indicates whether the executed portion of a passive order is visible or hidden. Valid only if ExecType (150) = F. Ignore value in all other cases. If ExecType (150) is not = F (Trade), the 2 will be stamped for all ERs. **Value** **Meaning** 0 Visible 1 Hidden 2 Not Specified
Capacity	139	1	Int8	Capacity of the order **Value** **Meaning** 1 Riskless Principal 2 Principal 3 Agency

PriceDifferential	140	1	Alpha	**Value**	**Meaning**
				A	Aggressive. Any residual visible quantity is then stamped based on its deviation from the current BBO. Set to 'P' if hidden.
				B	New visible BBO.
				1	Join visible BBO.
				2	Joining/setting 2nd best visible price point.
				3	Joining/setting 3rd best visible price point.
				4	Joining/setting 4th best visible price point.
				5	Joining/setting 5th best visible price point.
				6	Joining/setting 6th best visible price point.
				7	Joining/setting 7th best visible price point.
				8	Joining/setting 8th best visible price point.
				9	Joining/setting 9th best visible price point (or a worse price point).
				P	Passive. Valid for large in scale hidden orders only.
				S	Restated due to SEP upon aggression
				\<null\>	PriceDifferential Unspecified.
Public Order ID	141	12	String	Maintained by matching engine, will be unique for each replenishment of a particular iceberg order. This will be a 62 base encoded value in ASCII format.	

Minimum Quantity	153	4	Int32	Minimum Quantity of the order.
Reputational Score	157	1	Int8	Reputational Score for a BI Participant at the time of the **Turquoise Block Discovery™** match.

7.4.6   Order Cancel Reject

Field	Offset	Length	Data Type	Description
Header	MsgType = 9 (0x39)			
AppID	4	1	Int8	Partition ID **Value** **Meaning** 1 Partition 1 2 Partition 2 3 Partition 3
Sequence No	5	4	Int32	Sequence number of the message.
Client Order ID	9	20	String	Participant Order ID that was submitted with the order cancel or cancel/replace request being rejected.
Order ID	29	12	String	Server specified identifier of the order for which the cancel or cancel/replace was submitted. If the order cancel request cannot be mapped to an active order in the system this field will be populated with "NONE".
Cancel Reject Reason	41	4	Int32	Code specifying the reason for the reject.
Transact Time	45	8	UInt64	Time the Order Cancel Reject occurred.
ReservedField1	53	10	String	Reserved for future use.

7.4.7 Order Mass Cancel Report

Field	Offset	Length	Data Type	Description
Header	MsgType = r (0x72)			
AppID	4	1	Int8	Partition ID **Value** **Meaning** 1 Partition 1 2 Partition 2 3 Partition 3
Sequence No	5	4	Int32	Sequence number of the message.
Client Order ID	9	20	String	Participant specified identifier of mass cancel request.
MassCancel Response	29	1	Int8	Whether the Mass Cancel Request was accepted or rejected. **Value** **Meaning** 0 Rejected 7 Accepted
MassCancel RejectReason	30	4	Int32	The code that identifies the reason the order mass cancel was rejected.
ReservedField1	34	4	String	Reserved for future use.
Transact Time	38	8	UInt64	Time the order mass cancel report generated.
ReservedField2	46	10	String	Reserved for future use.

7.5 Application Messages: Others

7.5.1   Business Reject

Field	Offset	Length	Data Type	Description
Header	MsgType = j (0x6A)			
AppID	4	1	Int8	Partition ID **Value** **Meaning** 1 Partition 1 2 Partition 2 3 Partition 3 0 System Suspended
Sequence No	5	4	Int32	Sequence number of the message.
RejectCode	9	4	Int32	Code specifying the reason for the reject.
Client Order ID	13	20	String	Participant specified identifier of the order.
OrderID	33	12	String	Unique identifier of the order assigned by the matching system.
Transact Time	45	8	UInt64	Time the transaction the reject message corresponds to occurred.
ReservedField1	53	10	String	Reserved for future use.

8 APPENDIX A

8.1 Error & Reject Messages

Code	Description
1	INVALID_USERID_PWD
2	ALREADY_LOGGED
4	USER_NOT_FOUND
5	FLAGGED_FOR_DELETION
6	BROKER_SUSPENDED
8	ACCOUNT_LOCKED
9	ACCOUNT_EXPIRED
10	UNAUTHORIZED_MACHINE
11	UNAUTHORIZED_FE
14	MIN_PSWD_LEN
15	MAX_PSWD_LEN
16	MIN_PSWD_DIGITS
17	MIN_PSWD_DIFF
19	INVALID_PROCESS
20	NO_TIME_ZONE
22	USER_LOGGEDIN
23	USER_NOT_LOGGEDIN
24	INIT_USER_LOGIN
26	PAM_SAME_AS_OLD

27	PAM_PALINDROME
28	PAM_CASE_CHANGES_ONLY
29	PAM_TOO_SIMILAR
30	PAM_TOO_SIMPLE
31	PAM_ROTATED_VERSION
32	USER_NOT_LOCKED
33	INVALID_FE_VERSION
50	LOGIN_CONTEXT_NOT_FOUND
51	INVALID_LOGIN_PRIV_CODE
52	MISMATCH_IN_CONTEXT_ID
53	ROLE_FLAGGED_FOR_DELETE
54	NODE_SUSPENDED
55	NODE_HIERARCHY_SUSPENDED
56	NODE_FLG_DELETE
57	NODE_HIERARCHY_FLG_DELETE
624	UNAUTHORIZED_GATEWAY
625	USER_ROLE_NOT_FOUND
626	ACCOUNT_SUSPENDED
627	ACCOUNT_DELETED
628	ACCOUNT_INACTIVATED
630	SYSTEM_END_OF_DAY
1000	Invalid order size (<= zero)

1001	Invalid order size (< minimum size)
1002	Invalid order size (not multiple of lot size)
1003	Invalid order size (> maximum size)
1004	Invalid order quantity
1005	Invalid order size (> maximum order value)
1006	Max Gross Consideration Reached
1100	Invalid display size (< zero)
1101	Invalid display quantity (greater than order quantity)
1102	Invalid display size (not multiple of lot size)
1103	Invalid display quantity
1200	Invalid limit price (≤ zero or no limit price)
1201	Invalid limit price (not multiple of tick)
1202	Invalid limit price (price band breached)
1203	Invalid limit price (> maximum price)
1204	Invalid limit price (< minimum price)
1400	Invalid order type (unknown)
1500	Invalid TIF (unknown)
1501	Invalid expire time (elapsed)
1502	Invalid expire time (time is for a future date)
1503	Invalid expire date (elapsed)
1508	Invalid TIF (invalid date format)
1509	No time qualifier specified

1550	Expired (end of day)
1800	Participant not registered to submit interest for instrument
1802	Invalid order type for Participant (market order)
1900	Invalid side
1901	Invalid order status (%d)
1902	Received Prior to First Trading Date of instrument
1903	Last Trading Date of instrument elapsed
1904	Invalid order capacity
1905	Invalid instrument set up (no tick structure)
1912	Monitoring Participant from sponsoring firm not connected
2000	Order not found (too late to cancel or unknown order)
2001	Participant not registered to mass cancel interest
2002	Participant not registered to mass cancel interest for firm
2003	Unknown Participant (submitting Trader ID)
2004	Unknown instrument
2005	Unknown underlying
2006	Unknown segment
2007	Unknown firm
2008	Unknown clearing mnemonic
2009	Unknown Participant (target Owner ID)
2010	Unknown Participant (target Trader ID)
2011	Invalid mass cancel type

2012	No orders for instrument/underlying
2099	Other
3000	Invalid order quantity (less than filled quantity)
3100	Invalid display quantity (greater than order quantity)
3700	Invalid owner (different from original order)
3900	Invalid side (different from original order)
4000	Invalid bid size (> maximum size)
4001	Invalid offer size (> maximum size)
4102	Invalid displayed bid size (> bid size)
4103	Invalid displayed offer size (> offer size)
4200	Invalid bid price (≤ zero)
4201	Invalid offer price (≤ zero)
6002	Received Prior to First Trading Date of instrument
6003	Last Trading Date of instrument elapsed
9000	Unknown SecurityID
9001	Unknown order book
9002	Instrument halted
9003	Instrument halted or suspended
9004	Instrument halted (last trading day reached)
9005	market is closed
9006	Instrument halted (market suspended)
9007	Instrument halted (invalid trading session)

9008	Session is closed
9009	Instrument halted (order book in invalid state)
9012	Instrument halted (invalid set up)
9013	Instrument halted (invalid order book set up)
9100	Unknown Participant (Owner ID)
9102	Participant suspended
9200	Invalid trading session (unknown)
9201	Invalid new order message
9202	Invalid amend order message
9203	Invalid cancel order message
9901	Invalid value in field
9904	Invalid Gateway (Not configured for sponsored Access)
9905	System unavailable (to sponsored Participants)
9906	Logons not allowed at this time
9990	Maximum message rate exceeded
9998	Matching partition suspended
9999	System suspended
010005	Service Interupted
111000	Invalid reserve value (< minimum reserve order value)
111001	Invalid qty (>max order qty)
111100	Invalid display size (< minimum disclosed size)
111101	Invalid display size (pegged orders cannot be displayed)

111102	Invalid display size (> order size)
111103	Invalid order (un priced order with hidden quantity)
111400	Invalid order type (named orders are not allowed)
111401	Invalid order type (stop/stop limit orders are not allowed)
111402	Invalid order type (not allowed in the session)
111403	Invalid order type (pegged orders cannot be stop orders)
111404	Invalid amend (cannot amend order type)
111500	Invalid amend (cannot amend TIF)
111501	Invalid TIF (relevant session elapsed/not found)
111502	Invalid TIF (not allowed for the session)
111503	Invalid TIF (maximum order duration is set)
111504	Invalid expiry date (maximum order duration is violated)
111505	Invalid TIF (not allowed for stop/stop limit orders)
111506	Invalid TIF (not permitted for pegged orders)
111507	Invalid TIF for **Turquoise Uncross** ^{TM} then Continuous Exec Instruction
111600	Invalid session (cannot enter orders/quotes)
111601	Invalid session (orders are not allowed)
111800	Invalid session (cannot cancel/amend orders/quotes)
111801	Invalid clearing set up (clearing information not defined)
111900	Invalid account type (unknown)
111901	Invalid capacity (unknown)
111902	No internal mid-point established

111906	Passive only orders disabled for instrument
111908	Passive only indicator not valid for TIF
111912	Invalid passive only indicator for hidden order
113101	Invalid amend (iceberg/fully visible to hidden)
113100	Invalid amend (hidden to iceberg/fully visible)
114008	Invalid bid size (> max qty)
114009	Invalid offer size (> max qty)
114802	Invalid clearing set up (clearing information not defined)
117001	Invalid capacity type
117002	Invalid price band
117003	Invalid Instrument with no closing price maintained.
117004	Invalid settlement date
117007	Trade Reporting time over
117008	Invalid TrdSubType(829) for zero priced trade
119200	Order Expired due to Self Execution Prevention
121001	Failed maximum order value validation
121002	Invalid MES (> order size)
121003	Invalid MES (less than minimum size)
121004	Invalid MES (negative)
121005	Invalid MES (not a multiple of lot size)
121006	MES Should be greater than the Minimum Size of the Book
121007	Minimum Quantity Cannot be negative

121008	Order Value Cannot exceed the maximum value
121009	Indication (BI) request below minimum quantity threshold (minimum indication size)
121201	Dynamic price band tolerance breached
121202	Static price band tolerance breached
121401	Invalid Order Sub Type
121402	Non Persistent orders can not be **Turquoise Uncross™** only
121403	Invalid message type for Lit book
121500	Invalid Order Qualifier
121501	Invalid TIF for indication (BI)
121801	Invalid message type for this user
121802	Access to indications (BIs) revoked due to reputational scoring
121901	Invalid Capacity (Capacity Conversion Disabled)
121902	MES not allowed for persistent orders
121903	Invalid Capacity (Not a Sponsored Participant)
121908	Invalid Execution Instruction for Instrument
121910	Invalid execution instruction for indication (BI)
121911	Invalid execution instruction for broker notification (BDN)
121912	Invalid TIF for bid/offer book
121913	Invalid peg price for indicative order (BI)
121914	Invalid TIF (GFA) for "Continuous Only" matching instruction (execution instruction)
121915	Invalid request. Order cancellation or amendment not allowed
123201	Invalid amend (cannot amend MES)

127001	Invalid capacity or account type for executing party
127200	Settlement Date is specified in the trade
129001	Invalid Book Target Book in the Received Order
129201	Failed price band validation
129202	Quotes not allowed
129500	Attached Instrument Is not Dark
129501	Cannot amend Account Type
129502	Cannot amend Capacity
129503	Invalid display quantity (> zero)

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