



**MEMO for Options – SBE**  
**V1.9**  
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# Table of Contents

|          |                                                            |           |
|----------|------------------------------------------------------------|-----------|
| <b>1</b> | <b>Overview.....</b>                                       | <b>7</b>  |
| <b>2</b> | <b>Architecture.....</b>                                   | <b>8</b>  |
| <b>3</b> | <b>Encoding .....</b>                                      | <b>9</b>  |
| 3.1      | SBE Data Types.....                                        | 9         |
| 3.1.1    | PriceType .....                                            | 9         |
| 3.1.2    | ShortPriceType.....                                        | 10        |
| 3.1.3    | ClOrdID.....                                               | 10        |
| 3.1.4    | Symbology.....                                             | 10        |
| 3.1.5    | UTCTimestampNanos .....                                    | 10        |
| 3.2      | SBE Header .....                                           | 10        |
| 3.3      | Repeating Groups .....                                     | 11        |
| 3.3.1    | RepeatingGroupDimensions Field.....                        | 11        |
| 3.3.2    | Short Two Sided Quote Group .....                          | 11        |
| 3.3.3    | Long Two Sided Quote Group.....                            | 12        |
| 3.3.4    | Short One Sided Quote Group .....                          | 13        |
| 3.3.5    | Long One Sided Quote Group.....                            | 14        |
| 3.3.6    | Parties Group (Repeating Group 453).....                   | 14        |
| 3.3.7    | Execution Allocations Group (Repeating Group 124) .....    | 15        |
| 3.3.8    | Nested Parties Group (Repeating Group 539) .....           | 15        |
| 3.3.9    | Request Allocations Group (Repeating Group 78).....        | 15        |
| 3.3.10   | Report Allocations Group (Repeating Group 78) .....        | 16        |
| <b>4</b> | <b>Message Field Types.....</b>                            | <b>17</b> |
| 4.1      | AllocTransType (FIX tag 71) .....                          | 17        |
| 4.2      | AllocType (FIX tag 626) .....                              | 17        |
| 4.3      | AllocStatusType (FIX tag 87) .....                         | 17        |
| 4.4      | AllocRejCode (FIX tag 88) .....                            | 17        |
| 4.5      | AllocCancReplaceReason (FIX tag 796) .....                 | 18        |
| 4.6      | CxlRejReasonCode (FIX tag 102).....                        | 18        |
| 4.7      | CancelReasonCode (MEMX custom FIX tag 21004).....          | 22        |
| 4.8      | CxlRejResponseToType (FIX tag 434) .....                   | 24        |
| 4.9      | ExchangeCode (used in FIX tag 30).....                     | 24        |
| 4.10     | ExecInstType Bitset (FIX tag 18).....                      | 24        |
| 4.11     | ExecRestatementType (FIX tag 378) .....                    | 25        |
| 4.12     | ExtendedRestatementReasonType (Custom FIX tag 21022) ..... | 25        |
| 4.13     | LastLiquidityIndType (FIX tag 851).....                    | 25        |
| 4.14     | OrdStatusType (FIX tag 39) .....                           | 25        |
| 4.15     | MassCxlRejReasonCode (MEMX Custom FIX tag 21028) .....     | 26        |
| 4.16     | MassCancelInstType Bitset (FIX tag 21031) .....            | 27        |
| 4.17     | MassCancelClearLockoutRejCode (FIX tag 21037) .....        | 27        |
| 4.18     | UnderlyingOrSeriesType (MEMX Custom FIX tag 21029) .....   | 27        |
| 4.19     | PositionEffectType (FIX tag 77).....                       | 28        |
| 4.20     | AllocPositionEffectType (FIX tag 1047).....                | 28        |
| 4.21     | OrderRejectReasonCode (FIX tag 103) .....                  | 28        |
| 4.22     | OrdType (FIX tag 40).....                                  | 33        |
| 4.23     | TradingCapacityType (FIX tag 1815) .....                   | 34        |
| 4.24     | RepriceFrequencyType (MEMX custom FIX tag 21020).....      | 34        |
| 4.25     | RepriceBehaviorType(MEMX custom FIX tag 21021).....        | 34        |
| 4.26     | MatchTradePreventionType (MEMX custom FIX tag 21001).....  | 34        |
| 4.27     | PartyRoleType (FIX tag 452).....                           | 35        |
| 4.28     | SideType (FIX tag 54) .....                                | 35        |
| 4.29     | MtpGroupIDType (FIX tag 2362) .....                        | 35        |
| 4.30     | TimeInForceType (FIX tag 59) .....                         | 36        |

|          |                                                           |           |
|----------|-----------------------------------------------------------|-----------|
| 4.31     | UserStatusType (FIX tag 926).....                         | 36        |
| <b>5</b> | <b>Messages.....</b>                                      | <b>37</b> |
| 5.1      | Client To Server .....                                    | 37        |
| 5.1.1    | NewOrderSingle .....                                      | 37        |
| 5.1.2    | ShortTwoSidedBulkQuote .....                              | 38        |
| 5.1.3    | LongTwoSidedBulkQuote .....                               | 40        |
| 5.1.4    | ShortOneSidedBulkQuote .....                              | 41        |
| 5.1.5    | LongOneSidedBulkQuote .....                               | 42        |
| 5.1.6    | OrderCancelReplaceRequest.....                            | 44        |
| 5.1.7    | OrderCancelRequest .....                                  | 45        |
| 5.1.8    | MassCancelRequest .....                                   | 46        |
| 5.1.9    | MassCancelClearLockoutRequest .....                       | 48        |
| 5.1.10   | MassCancelBulkClearAllLockoutsRequest .....               | 48        |
| 5.1.11   | MassCancelBulkClearLockoutsByEFIDOrUnderlierRequest ..... | 49        |
| 5.1.12   | AllocationInstruction .....                               | 50        |
| 5.2      | Server To Client .....                                    | 51        |
| 5.2.1    | ExecutionReport .....                                     | 51        |
| 5.2.2    | PendingMassCancel.....                                    | 68        |
| 5.2.3    | MassCancelReject.....                                     | 69        |
| 5.2.4    | MassCancelDone .....                                      | 70        |
| 5.2.5    | MassCancelClearLockoutReject .....                        | 71        |
| 5.2.6    | MassCancelClearLockoutDone .....                          | 71        |
| 5.2.7    | MassCancelBulkClearLockoutReject .....                    | 72        |
| 5.2.8    | MassCancelBulkClearLockoutAccepted.....                   | 72        |
| 5.2.9    | OrderCancelReject .....                                   | 73        |
| 5.2.10   | AllocationInstructionAck .....                            | 74        |
| 5.2.11   | AllocationInstructionAlert.....                           | 75        |
| 5.2.12   | UserNotification .....                                    | 77        |

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# 1 Overview

MEMO SBE Options is a binary protocol used by members to submit orders to the MEMX exchange.

## 2 Architecture

A MEMO SBE Options session is a sequenced messaging protocol that uses fixed width binary messages.

The MEMO SBE Options wire format uses an [SBE-encoded](#) subset of FIX 5.0 SP2 tags and messages.

More information about the FIX protocol and associated tag numbers can be found on the [Financial Information Exchange \(FIX\) Protocol version 5.0 Service Pack 2](#) page.

MEMO SBE Options messages are transported using the MEMX-TCP protocol to provide reliable ordered transmission of messages between clients and servers. Connected clients should always use the streaming mode of MEMX-TCP.

Making MEMX-TCP requests for message replay will result in the client being disconnected, as per the MEMX-TCP specification. Heartbeat and heartbeat timeout intervals for a MEMO connection may be configured via the MEMO port support request process.



## 3 Encoding

The MEMO SBE Options protocol uses the FIX Trading Community's [Simple Binary Encoding \(SBE\)](#) to specify message encoding. More information about SBE can be found at the [FIX SBE XML Primer](#).

MEMO SBE Options is always encoded in [Big Endian](#) byte order.

In order to support clients with hardware word alignment restrictions, MEMO SBE will allow clients to supply up to 7 extra bytes after the content of the SBE message. These extra bytes should be added in the MEMX-TCP framing protocol's message length prefix, and not in the message's SBE header.

### 3.1 SBE Data Types

All encoding and decoding for SBE is centered around a set of basic primitive types.

For more information on primitive type encoding, see the [SBE specification](#).

| Type    | Length (bytes) | Description                   | Value Range                     | Null Value   | Null Value (Hex)   |
|---------|----------------|-------------------------------|---------------------------------|--------------|--------------------|
| CHAR    | 1              | ASCII Character               | 32 to 126 (printable ASCII)     | 0            | 0x00               |
| BOOLEAN | 1              | Boolean value (true or false) | 0 to 1<br>0 = false<br>1 = true | 255          | 0xFF               |
| INT8    | 1              | Signed Integer                | -127 to 127                     | -128         | 0x80               |
| INT16   | 2              | Signed Integer                | -32767 to 32767                 | -32768       | 0x8000             |
| INT32   | 4              | Signed Integer                | $-2^{31} + 1$ to $2^{31} - 1$   | $-2^{31}$    | 0x80000000         |
| INT64   | 8              | Signed Integer                | $-2^{63} + 1$ to $2^{63} - 1$   | $-2^{63}$    | 0x8000000000000000 |
| UINT8   | 1              | Unsigned Integer              | 0 to 254                        | 255          | 0xFF               |
| UINT16  | 2              | Unsigned Integer              | 0 to 65534                      | 65535        | 0xFFFF             |
| UINT32  | 4              | Unsigned Integer              | 0 to $2^{32}-2$                 | $2^{32} - 1$ | 0xFFFFFFFF         |
| UINT64  | 8              | Unsigned Integer              | 0 to $2^{63} - 1$               | $2^{64} - 1$ | 0xFFFFFFFFFFFFFFFF |

The MEMO specification does not use the SBE floating point data types.

#### 3.1.1 PriceType

Some prices are encoded as a fixed-point scaled decimal, consisting of an unsigned long (UINT64) mantissa and a constant exponent of -8.

| Type Name | Length | Type                   | Description                                          |
|-----------|--------|------------------------|------------------------------------------------------|
| Mantissa  | 8      | <a href="#">UINT64</a> | The fixed-point decimal representation of the price. |
| Exponent  | N/A    | <a href="#">INT8</a>   | MEMO uses a constant exponent of -8 for all prices.  |

For example, a mantissa of 123456789 (0x75BCD15) with the constant exponent of -8 represents the decimal number 1.23456789, and would appear encoded on the wire as the hex value 00000000075BCD15.

### 3.1.2 ShortPriceType

To conserve bytes on the wire, some prices are encoded as a fixed-point scaled decimal, consisting of an unsigned short (UINT16) mantissa and a constant exponent of -2.

| Type Name | Length | Type                   | Description                                               |
|-----------|--------|------------------------|-----------------------------------------------------------|
| Mantissa  | 2      | <a href="#">UINT16</a> | The fixed-point decimal representation of the price.      |
| Exponent  | N/A    | <a href="#">INT8</a>   | MEMO uses a constant exponent of -2 for all short prices. |

For example, a mantissa of 12345 with the constant exponent of -2 represents the decimal number 123.45, and would appear encoded on the wire as the hex value 00003039

### 3.1.3 ClOrdID

All ClOrdIDs can be up to 20 characters. They can contain only ASCII printable characters.

### 3.1.4 Symbology

Upon request via a separate channel, the exchange provides a list of instrument directory messages. Each instrument directory message provides these relevant field used to identify a product for order processing:

- OptionsSecurityID, (custom tag 21035) an 8 CHAR field that uniquely identifies an options security on the exchange,

The MEMO for Options SBE protocol uses the OptionsSecurityID (custom tag 21035) in the order related and quote related messages to identify the option security for the message.

### 3.1.5 UTCTimestampNanos

Fields with the UTCTimestampNanos type represent a timestamp in Coordinated Universal Time (UTC), which began on the UNIX epoch (January 1, 1970 at 00:00:00 UTC). UTCTimestampNanos has the time unit of nanoseconds and is encoded as follows:

| Type Name | Length | Type                   | Description                                                                                                                                       |
|-----------|--------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Time      | 8      | <a href="#">UINT64</a> | UTC timestamp since UNIX epoch with nanosecond precision.                                                                                         |
| Unit      | N/A    | <a href="#">UINT8</a>  | Unit of time. UTCTimestampNanos are represented in nanoseconds. This field is constant (value=9) and as such will not be transferred on the wire. |

## 3.2 SBE Header

SBE includes a header for each message. The SBE header is followed by the SBE body for the message.

The SBE message header contains the fields that allows the decoder to identify what codec should be used for a message.

- blockLength:** The length of the message. Note: this does not include the header length.
- templateID:** The identifier for the template type of the message that is to follow.

3. **schemalD**: The identifier for the schema the message belongs to.
4. **version**: The version of the schema allowing for extension. MEMX packs two pieces of information into the (UINT16) version field, a major version and a minor update version. So for example a version of 258 = 0x0102 indicates major version 1, minor update 2.
5. **numGroups**: A count of repeating groups at the root level of the message. The count does not include nested repeating groups.

The MEMO SBE header appears on the wire as:

| Field       | Offset | Length | Type                   | Description                                                                                                                                                                                                                                                                     |
|-------------|--------|--------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BlockLength | 0      | 2      | <a href="#">UINT16</a> | The number of bytes in the message body (does not include the header bytes). Note that MEMO messages do not use variable-length fields.                                                                                                                                         |
| TemplateID  | 2      | 1      | <a href="#">UINT8</a>  | Identifier of the message template (ie. the message type)                                                                                                                                                                                                                       |
| SchemalD    | 3      | 1      | <a href="#">UINT8</a>  | The identifier of a message schema. SchemalD=9 for MEMO for US Options                                                                                                                                                                                                          |
| Version     | 4      | 2      | <a href="#">UINT16</a> | The version number of the message schema that was used to encode a message. MEMX packs two pieces of information into the UNIT16 version field, a major version and a minor update version. So for example a version of 258 = 0x0102 indicates major version 1, minor update 2. |
| NumGroups   | 6      | 1      | <a href="#">UINT8</a>  | A count of repeating groups at the root level of the message. The count does not include nested repeating groups.                                                                                                                                                               |

## 3.3 Repeating Groups

### 3.3.1 RepeatingGroupDimensions Field

Some messages in this specification use repeating groups of fields. A RepeatingGroupDimensions block is inserted prior to each repeating group and contains:

1. The BlockLength representing the total space reserved for a single repeating group entry (not counting any nested repeating groups or variable-length fields). BlockLength only represents message body fields; it does not include the length of the group dimension itself, which is fixed size.
2. A counter representing the number of entries in a repeating group.

| Type Name   | Length | Type                  | Description                                                        |
|-------------|--------|-----------------------|--------------------------------------------------------------------|
| BlockLength | 1      | <a href="#">UINT8</a> | The total space reserved for a single repeating group entry.       |
| NumInGroup  | 1      | <a href="#">UINT8</a> | A counter representing the number of entries in a repeating group. |

### 3.3.2 Short Two Sided Quote Group

The Short Two Sided Quote repeating group allows for up to 20 two sided quotes in messages. This group is used within the ShortTwoSidedBulkQuote message. All quotes in a Short Two Sided Quote repeating group must be for the same Underlier. The OptionsSecurityID of the first quote in the repeating group identifies the Underlier that is used to validate all of the following quotes in the repeating group.

This group is always preceded by a RepeatingGroupDimensions field that denotes the length of this group and the number of them expected in the message.

| Field             | Offset | Length | Type                           | Tag Ref Num | Req'd | Description                                                                                                                                                                                  |
|-------------------|--------|--------|--------------------------------|-------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ListSeqNo         | 0      | 1      | <a href="#">UINT8</a>          | 67          | Y     | Unique identifier for a single Quote within the collection. Note the ListSeqNo must be continuous starting with a value of 1 for the quote group.                                            |
| OptionsSecurityID | 1      | 8      | <a href="#">CHAR</a>           | 21035       | Y     | The OptionsSecurityID of the tradable options product for the quote. The Underlier for all quotes in the repeating group must match the Underlier of the first quote in the repeating group. |
| BidSize           | 9      | 2      | <a href="#">UINT16</a>         | 134         | Y     | Bid side quantity of the quote.                                                                                                                                                              |
| BidPx             | 11     | 2      | <a href="#">ShortPriceType</a> | 132         | Y     | Bid side price of the quote. Price per unit of quantity.                                                                                                                                     |
| OfferSize         | 13     | 2      | <a href="#">UINT16</a>         | 135         | Y     | Ask side quantity of the quote.                                                                                                                                                              |
| OfferPx           | 15     | 2      | <a href="#">ShortPriceType</a> | 133         | Y     | Ask side price of the quote. Price per unit of quantity.                                                                                                                                     |

### 3.3.3 Long Two Sided Quote Group

The Two Sided Quote repeating group allows for up to 20 two sided quotes in messages. This group is used within the LongTwoSidedBulkQuote message. All quotes in a Long Two Sided Quote repeating group must be for the same Underlier. The OptionsSecurityID of the first quote in the repeating group identifies the Underlier that is used to validate all of the following quotes in the repeating group.

This group is always preceded by a RepeatingGroupDimensions field that denotes the length of this group and the number of them expected in the message.

| Field             | Offset | Length | Type                  | Tag Ref Num | Req'd | Description                                                                                                                                       |
|-------------------|--------|--------|-----------------------|-------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| ListSeqNo         | 0      | 1      | <a href="#">UINT8</a> | 67          | Y     | Unique identifier for a single Quote within the collection. Note the ListSeqNo must be continuous starting with a value of 1 for the quote group. |
| OptionsSecurityID | 1      | 8      | <a href="#">CHAR</a>  | 21035       | Y     | The OptionsSecurityID of the tradable options product for the quote. The Underlier for                                                            |

| Field     | Offset | Length | Type                      | Tag Ref Num | Req'd | Description                                                                                           |
|-----------|--------|--------|---------------------------|-------------|-------|-------------------------------------------------------------------------------------------------------|
|           |        |        |                           |             |       | all quotes in the repeating group must match the Underlier of the first quote in the repeating group. |
| BidSize   | 9      | 4      | <a href="#">UINT32</a>    | 134         | Y     | Bid side quantity of the quote.                                                                       |
| BidPx     | 13     | 8      | <a href="#">PriceType</a> | 132         | Y     | Bid side price of the quote. Price per unit of quantity.                                              |
| OfferSize | 21     | 4      | <a href="#">UINT32</a>    | 135         | Y     | Ask side quantity of the quote.                                                                       |
| OfferPx   | 25     | 8      | <a href="#">PriceType</a> | 133         | Y     | Ask side price of the quote. Price per unit of quantity.                                              |

### 3.3.4 Short One Sided Quote Group

The One Sided Quote repeating group allows for up to 20 one sided quotes in messages. This group is used within the ShortOneSidedBulkQuote message. All quotes in a Short One Sided Quote repeating group must be for the same Underlier. The OptionsSecurityID of the first quote in the repeating group identifies the Underlier that is used to validate all of the following quotes in the repeating group.

This group is always preceded by RepeatingGroupDimensions field that denotes the length of this group and the number of them expected in the message.

| Field             | Offset | Length | Type                           | Tag Ref Num | Req'd | Description                                                                                                                                                                                  |
|-------------------|--------|--------|--------------------------------|-------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ListSeqNo         | 0      | 1      | <a href="#">UINT8</a>          | 67          | Y     | Unique identifier for a single Quote within the collection. Note the ListSeqNo must be continuous starting with a value of 1 for the quote group.                                            |
| OptionsSecurityID | 1      | 8      | <a href="#">CHAR</a>           | 21035       | Y     | The OptionsSecurityID of the tradable options product for the quote. The Underlier for all quotes in the repeating group must match the Underlier of the first quote in the repeating group. |
| Side              | 9      | 1      | <a href="#">SideType</a>       | 54          | Y     | Side of the quote.                                                                                                                                                                           |
| Quantity          | 10     | 2      | <a href="#">UINT16</a>         | 53          | Y     | Contracts in the quote.                                                                                                                                                                      |
| Price             | 12     | 2      | <a href="#">ShortPriceType</a> | 44          | Y     | Price of the quote. Price per unit of quantity.                                                                                                                                              |

### 3.3.5 Long One Sided Quote Group

The One Sided Quote repeating group allows for up to 20 one sided quotes in messages. This group is used within the LongOneSidedBulkQuote message. All quotes in a Long One Sided Quote repeating group must be for the same Underlier. The OptionsSecurityID of the first quote in the repeating group identifies the Underlier that is used to validate all of the following quotes in the repeating group.

This group is always preceded by RepeatingGroupDimensions field that denotes the length of this group and the number of them expected in the message.

| Field             | Offset | Length | Type                      | Tag Ref Num | Req'd | Description                                                                                                                                                                                  |
|-------------------|--------|--------|---------------------------|-------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ListSeqNo         | 0      | 1      | <a href="#">UINT8</a>     | 67          | Y     | Unique identifier for a single Quote within the collection. Note the ListSeqNo must be continuous starting with a value of 1 for the quote group.                                            |
| OptionsSecurityID | 1      | 8      | <a href="#">CHAR</a>      | 21035       | Y     | The OptionsSecurityID of the tradable options product for the quote. The Underlier for all quotes in the repeating group must match the Underlier of the first quote in the repeating group. |
| Side              | 9      | 1      | <a href="#">SideType</a>  | 54          | Y     | Side of the quote.                                                                                                                                                                           |
| Quantity          | 10     | 4      | <a href="#">UINT32</a>    | 53          | Y     | Contracts in the quote.                                                                                                                                                                      |
| Price             | 14     | 8      | <a href="#">PriceType</a> | 44          | Y     | Price of the quote. Price per unit of quantity.                                                                                                                                              |

### 3.3.6 Parties Group (Repeating Group 453)

The Parties Group repeating group allows for multiple party identifiers to be supplied in a message.

This group is always preceded by RepeatingGroupDimensions field that denotes the length of this group and the number of the items in the group in the message.

| Field         | Offset | Length | Type                          | Tag Ref Num | Req'd | Description                                                                                                                                                     |
|---------------|--------|--------|-------------------------------|-------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PartyID       | 0      | 16     | <a href="#">CHAR</a>          | 448         | Y     | Party identifier/code.                                                                                                                                          |
| PartyIDSource | 17     | 1      | <a href="#">CHAR</a>          | 447         | Y     | Identifies class or source of the PartyID (448) value. The exchange currently accepts the following values for this field:<br>- 'D' for Proprietary/Custom Code |
| PartyRole     | 18     | 1      | <a href="#">PartyRoleType</a> | 452         | Y     | Identifies the type or role of the PartyID (448) specified.                                                                                                     |

### 3.3.7 Execution Allocations Group (Repeating Group 124)

The Execution Allocations Group repeating group allows for identification of the original Exchange Trade that post trade allocations are occurring on. Though this is denoted as a repeating group, at the current time, this group will always contain a single entry.

This group is always preceded by RepeatingGroupDimensions field that denotes the length of this group and the number of the items in the group in the message. (Always set to 1)

| Field   | Offset | Length | Type                      | Tag Ref Num | Req'd | Description                      |
|---------|--------|--------|---------------------------|-------------|-------|----------------------------------|
| TradeId | 0      | 8      | <a href="#">UINT64</a>    | 1003        | Y     | TrdMatchID of the original Trade |
| LastQty | 8      | 4      | <a href="#">UINT32</a>    | 32          | Y     | Qty of original Trade            |
| LastPx  | 12     | 8      | <a href="#">PriceType</a> | 31          | Y     | Price of original Trade          |

### 3.3.8 Nested Parties Group (Repeating Group 539)

The Nested Parties Group repeating group allows for multiple party identifiers to be supplied inside a Allocation Group entry in post trade allocation messages.

This group is always preceded by RepeatingGroupDimensions field that denotes the length of this group and the number of the items in the group in the message.

| Field               | Offset | Length | Type                          | Tag Ref Num | Req'd | Description                                                                                                                                                                                                        |
|---------------------|--------|--------|-------------------------------|-------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NestedPartyID       | 0      | 16     | <a href="#">CHAR</a>          | 524         | Y     | Party identifier/code. An empty string or whitespace filled string indicates this PartyRole will be cleared.                                                                                                       |
| NestedPartyIDSource | 17     | 1      | <a href="#">CHAR</a>          | 525         | Y     | Identifies class or source of the NestedPartyID (524) value. The exchange currently accepts the following values for this field: <ul style="list-style-type: none"> <li>'D' for Proprietary/Custom Code</li> </ul> |
| NestedPartyRole     | 18     | 1      | <a href="#">PartyRoleType</a> | 538         | Y     | Identifies the type or role of the NestedPartyID (524) specified.                                                                                                                                                  |

### 3.3.9 Request Allocations Group (Repeating Group 78)

The Request Allocations Group repeating group allows for multiple allocations to be supplied in a post-trade request message.

This group is always preceded by RepeatingGroupDimensions field that denotes the length of this group and the number of the items in the group in the message.

| Field               | Offset | Length | Type                                     | Tag Ref Num | Req'd | Description                                 |
|---------------------|--------|--------|------------------------------------------|-------------|-------|---------------------------------------------|
| AllocQty            | 0      | 4      | <a href="#">UINT32</a>                   | 80          | Y     | Quantity of allocation                      |
| AllocPositionEffect | 4      | 1      | <a href="#">AllocPositionEffectType</a>  | 1047        | N     | Position Effect of allocation               |
| TradingCapacity     | 5      | 1      | TradingCapacityType                      | 1815        | N     | Trading Capacity of allocation              |
| NoNestedPartyIDs    | 6      | 2      | <a href="#">RepeatingGroupDimensions</a> | 539         | Y     | The dimensions of the Repeating Group.      |
| NestedParties       | -      | -      | <a href="#">Nested Parties Group</a>     | N/A         | N     | The parties associated with the allocation. |

### 3.3.10 Report Allocations Group (Repeating Group 78)

The Report Allocations Group repeating group allows for multiple allocations to be supplied in a post-trade report message - note, each entry will have a unique IndividualAllocID that will be used from that point onward to identify that particular allocation.

This group is always preceded by RepeatingGroupDimensions field that denotes the length of this group and the number of the items in the group in the message.

| Field               | Offset | Length | Type                                     | Tag Ref Num | Req'd | Description                                 |
|---------------------|--------|--------|------------------------------------------|-------------|-------|---------------------------------------------|
| AllocQty            | 0      | 4      | <a href="#">UINT32</a>                   | 80          | Y     | Quantity of allocation                      |
| AllocPositionEffect | 4      | 1      | <a href="#">AllocPositionEffectType</a>  | 1047        | N     | Position Effect of allocation               |
| IndividualAllocID   | 5      | 20     | <a href="#">CHAR</a>                     | 467         | Y     | Individual ID of allocation                 |
| TradingCapacity     | 5      | 1      | TradingCapacityType                      | 1815        | N     | Trading Capacity of allocation              |
| NoNestedPartyIDs    | 25     | 2      | <a href="#">RepeatingGroupDimensions</a> | 539         | Y     | The dimensions of the Repeating Group.      |
| NestedParties       | -      | -      | <a href="#">Nested Parties Group</a>     | N/A         | N     | The parties associated with the allocation. |



## 4 Message Field Types

All messages are composed of fields. Each field has a type. This section defines the non-primitive field types, their underlying type on the wire, acceptable values, and their descriptions.

### 4.1 AllocTransType (FIX tag 71)

The AllocTransType Identifies an allocation transaction type.

AllocTransType is a 1-byte [UINT8](#) value.

| Value | Name    | Description                                                                                                                                                                                                             |
|-------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0     | New     | Replace existing trade with allocation. This is the first allocation on a trade, and does not require a RefAllocID to be supplied. The original trade must be referenced in the Execution Allocations Group.            |
| 1     | Replace | Replacing existing allocations with new allocations. This is any subsequent allocation and clients should use the RefAllocID field to match a previously reported allocation by specifying its IndividualAllocID value. |
| 2     | Cancel  | Canceling existing allocations. This is done by the exchange when the original trade is canceled or corrected. Will reference the individual allocation via the RefAllocID field.                                       |

### 4.2 AllocType (FIX tag 626)

The AllocType Identifies an allocation type.

AllocType is a 1-byte [UINT8](#) value.

| Value | Name          | Description                                                                    |
|-------|---------------|--------------------------------------------------------------------------------|
| 100   | PostTradeEdit | The allocation was a post trade edit. (This is a custom value defined by MEMX) |

### 4.3 AllocStatusType (FIX tag 87)

The AllocStatusType Identifies the status of an allocation.

AllocStatusType is a 1-byte [UINT8](#) value.

| Value | Name               | Description                                          |
|-------|--------------------|------------------------------------------------------|
| 0     | Accepted           | The allocation was accepted (successfully processed) |
| 1     | BlockLevelReject   | Block level reject.                                  |
| 2     | AccountLevelReject | Account level reject.                                |

### 4.4 AllocRejCode (FIX tag 88)

The AllocRejCode Identifies the reason an allocation instruction was rejected.

AllocRejCode is a 2-byte [UINT16](#) value.

| Value | Name                       | Description                              |
|-------|----------------------------|------------------------------------------|
| 1     | IncorrectQuantity          | Incorrect or missing block quantity.     |
| 8     | IncorrectAllocatedQuantity | Incorrect or missing allocated quantity. |

| Value | Name                                | Description                                                             |
|-------|-------------------------------------|-------------------------------------------------------------------------|
| 10    | UnknownOrStaleExecID                | Unknown or Stale ExecID(17)                                             |
| 11    | MismatchedData                      | Some data in the new allocation does not match the original trade data. |
| 14    | DuplicateOrMissingIndividualAllocID | The AllocID is a duplicate or was missing.                              |
| 15    | TradeNotRecognized                  | The trade (specified by ExecID or TrdMatchID) was unknown.              |
| 16    | DuplicateTrade                      | Trade previously allocated.                                             |
| 17    | IncorrectOrMissingInstrument        | Incorrect or missing instrument.                                        |
| 23    | UnknownOrMissingParty               | Unknown or missing party.                                               |
| 24    | IncorrectOrMissingSide              | Incorrect or missing Side                                               |
| 25-28 | N/A                                 |                                                                         |
| 29    | MissingPositionEffectType           | The PositionEffect field is missing.                                    |
| 30    | InvalidPositionEffectType           | The PositionEffect field is invalid.                                    |
| 113   | InvalidTradingCapacity              | Trading Capacity field is invalid                                       |
| 150   | MissingPartyID                      | Missing Party ID                                                        |
| 99    | Other                               | The allocation was rejected for some other reason.                      |

#### 4.5 AllocCancelReplaceReason (FIX tag 796)

The AllocCancelReplaceReason Identifies the reason for cancellation of an allocation when AllocTransType = Cancel.

AllocCancelReplaceReason is a 2-byte UINT16 value.

| Value | Name                           | Description                                                                       |
|-------|--------------------------------|-----------------------------------------------------------------------------------|
| 2     | ChangeInUnderlyingOrderDetails | The cancellation is due to the underlying Trade/Order being canceled or modified. |
| 99    | Other                          |                                                                                   |

#### 4.6 CxlRejReasonCode (FIX tag 102)

Identifies the reason why an order cancellation or replace request was rejected.

Values 0-99 are reserved by the FIX specification. Note that not all of the reserved FIX codes are used.

Values 100-199 are used to denote issues with specific request fields.

Values 200-299 are used to denote issues with the request as a whole.

Values 300-399 are used to denote issues related to risk.

Also note that some codes in this table may not be sent in SBE but are listed here to maintain consistency with the FIX order entry specification, or reserved for future use.

CxlRejReasonCode is a 2-byte [UINT16](#) value.

| Value | Name            | Description                                                             |
|-------|-----------------|-------------------------------------------------------------------------|
| 0     | TooLateToCancel | A cancel or replace request was received after the exchange has closed. |

| Value   | Name                               | Description                                                                                                                                                                                         |
|---------|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | UnknownOrder                       | An order with the specified identifier was not found. (OrigClOrdID or OrderID for single orders, or the combination of OrigClOrdID, Side, and ListSeqNo for components of Bulk Quote requests).     |
| 3       | OrderAlreadyPendingCancelOrReplace | There is a pending request on this order.                                                                                                                                                           |
| 6       | DuplicateClOrdID                   | The supplied ClOrderID was already used on a previous request.                                                                                                                                      |
| 8       | PriceExceedsCurrentPriceBand       | The price of the replacement order fell outside execution price collar bands.                                                                                                                       |
| 18      | InvalidPriceIncrement              | Request Limit Price increment is invalid.                                                                                                                                                           |
| 99      | Other                              | This request was rejected for some other reason not listed.                                                                                                                                         |
| 100     | MissingSymbol                      | The request did not supply a Symbol/OptionsSecurityID.                                                                                                                                              |
| 101     | InvalidSymbol                      | The request supplied an invalid Symbol/OptionsSecurityID.                                                                                                                                           |
| 102     | MissingClOrdID                     | The request did not supply a ClOrdID.                                                                                                                                                               |
| 103     | InvalidClOrdID                     | The request supplied an invalid ClOrdID.                                                                                                                                                            |
| 104     | MissingSide                        | The request did not supply a side.                                                                                                                                                                  |
| 105     | InvalidSide                        | The request supplied an invalid side.                                                                                                                                                               |
| 106     | MissingOrderQty                    | The request did not supply a quantity.                                                                                                                                                              |
| 107     | InvalidOrderQty                    | The request supplied a quantity, but it was set to an invalid value (i.e. 0, larger than exchange max, etc).                                                                                        |
| 108     | MissingOrderType                   | The request did not supply an order type.                                                                                                                                                           |
| 109     | InvalidOrderType                   | The request supplied an invalid order type.                                                                                                                                                         |
| 110     | MissingLimitPrice                  | The request did not supply a LimitPrice field and was required to due to OrderType requested.                                                                                                       |
| 111     | InvalidLimitPrice                  | The request supplied the LimitPrice field but the value was invalid (0, more than the max allowed by the exchange, etc) or not applicable (i.e. the OrderType was set to Market).                   |
| 112-113 | N/A                                |                                                                                                                                                                                                     |
| 114     | MissingListSeqNo                   | The request did not supply the ListSeqNo field.                                                                                                                                                     |
| 115     | InvalidListSeqNo                   | The request supplied the ListSeqNo field, but it was set to an invalid value.                                                                                                                       |
| 116     | MissingOrigClOrdID                 | The request did not supply the OrigClOrdID field.                                                                                                                                                   |
| 117     | InvalidOrigClOrdID                 | The request supplied the OrigClOrdID field, but it was too large, contained illegal characters, etc.                                                                                                |
| 118     | MissingOrderID                     | The request did not supply the OrderID field, and was required to (for example, request omitted the OrigClOrdID field and was trying to perform a delegated cancel for an order from another port). |

| Value   | Name                                         | Description                                                                                                                                                                                                                  |
|---------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 119     | InvalidOrderID                               | The request supplied the OrderID field, but it was too large, contained illegal characters, etc.                                                                                                                             |
| 120     | MissingSendingTime                           | The request did not supply sendingTime field                                                                                                                                                                                 |
| 121     | InvalidSendingTime                           | The request supplied sendingTime, but it was set to an invalid value.                                                                                                                                                        |
| 122-199 | N/A                                          | Reserved.                                                                                                                                                                                                                    |
| 200     | Halted                                       | The symbol/OptionsSecurityID supplied in the request is currently halted.                                                                                                                                                    |
| 201     | FirmDisabled                                 | The request was rejected because the firm sending the order has been disabled.                                                                                                                                               |
| 202     | EFIDDisabled                                 | The request was rejected because the EFID used in the order has been disabled.                                                                                                                                               |
| 203     | AccountDisabled                              | The request was rejected because the account sending the order has been disabled.                                                                                                                                            |
| 204     | UnsupportedOrdTypeChange                     | Change of OrdType in replace request not supported.                                                                                                                                                                          |
| 205     | UnsupportedSideChange                        | Change of side in replace request not supported.                                                                                                                                                                             |
| 206     | SymbolMismatch                               | Symbol/OptionsSecurityID provided on a replace request does not match the Symbol/OptionsSecurityID on the original order associated with the provided OrigClOrdID or OrderID.                                                |
| 207     | OrigOrderIDMismatch                          | OrigClOrdID and OrderID were both provided, but the provided OrderID does not match the actual OrderID associated with the provided OrigClOrdID (or OrigClOrdID, Side, and ListSeqNo for components of Bulk Quote requests). |
| 208     | UnsupportedOrderPropertyChange               | Attempting to change an immutable order property.                                                                                                                                                                            |
| 209-299 | N/A                                          | Reserved.                                                                                                                                                                                                                    |
| 300     | NonTestSymbolsBlocked                        | The replace was for a non-test symbol/OptionsSecurityID and the port is configured in test-only mode (exchange configuration).                                                                                               |
| 301     | NotionalValueExceedsThreshold                | The notional value of the replace exceeded an exchange configured maximum.                                                                                                                                                   |
| 302     | MaxNotionalValuePerOrder<br>RiskRuleViolated | The notional value of the replace violated the firm's max notional value per order risk rule.                                                                                                                                |
| 303     | BlockNonTestSymbol<br>RiskRuleViolated       | The replace violated the firm's test symbol/OptionsSecurityID trading risk rule.                                                                                                                                             |
| 304     | MaxContractsPerOrder<br>RiskRuleViolated     | The replace breached the firm's max contracts per order risk rule.                                                                                                                                                           |
| 305     | NBBOWidthExceedsThreshold                    | The width of the NBBO is greater than the exchange specified threshold.                                                                                                                                                      |
| 306     | ExchangePriceValueCollar<br>RiskRuleViolated | A replace Limit Order to buy with a price that is more than an Exchange specified amount above the NBO or an incoming replace Limit                                                                                          |

| Value | Name                                      | Description                                                                                                                                                                                                                                                                                                         |
|-------|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|       |                                           | Order to sell with a price that is less than an Exchange specified amount below the NBB                                                                                                                                                                                                                             |
| 307   | ExecutionPriceHigherThanStrikePrice       | Replace Market Order or the remaining portion of a Market Order to buy a put that would execute in whole or in part at a price higher than or equal to the strike price of the option or an incoming Limit Order to buy a put that would execute at a price higher than or equal to the strike price of the option. |
| 308   | MarketBuyWhenNBOIsZero                    | Replace Market Order to buy in an open series when the NBO is zero.                                                                                                                                                                                                                                                 |
| 309   | MarketSellWhenNBBGreaterThanThreshold     | Replace Market Order to sell in an open series when the NBB is greater than \$0.50.                                                                                                                                                                                                                                 |
| 310   | QuotePriceOutsideExchangeThreshold        | Bulk quote replace canceled, bid with a price that is more than an Exchange specified amount above the NBO and cancel an incoming bulk replace offer with a price that is less than an Exchange specified amount below the NBB.                                                                                     |
| 311   | N/A                                       |                                                                                                                                                                                                                                                                                                                     |
| 312   | NumContractsExecutedExceedsThreshold      | The number of contracts executed exceeds firm specified threshold.                                                                                                                                                                                                                                                  |
| 313   | NotionalValueOfExecutionsExceedsThreshold | The notional value of contracts executions exceeds firm specified threshold.                                                                                                                                                                                                                                        |
| 314   | CountOfExecutionsExceedsThreshold         | The count of contracts executed exceeds firm specified threshold.                                                                                                                                                                                                                                                   |
| 315   | OutstandingPercentageThresholdExceeded    | The number of contracts executed as a percentage of the number of contracts outstanding within an Exchange configurable time period or for the trading day has been exceeded.                                                                                                                                       |
| 316   | TripsThresholdExceeded                    | The number of times a firm reaches the limits in: <ul style="list-style-type: none"> <li>• NumContractsExecutedExceedsThreshold</li> <li>• NotionalValueOfExecutionsExceedsThreshold</li> <li>• CountOfExecutionsExceedsThreshold</li> <li>• OutstandingPercentageThresholdExceeded</li> </ul> exceeds a threshold. |
| 317   | ISOOrdersNotAllowed                       | ISO marked orders at disabled.                                                                                                                                                                                                                                                                                      |
| 318   | MarketIsCrossed                           | Order not allowed while market is crossed.                                                                                                                                                                                                                                                                          |
| 319   | ActiveRiskBreach                          | Order not allowed because of an active breach.                                                                                                                                                                                                                                                                      |
| 320   | ManualRiskBreach                          | Order not allowed because of a manual breach.                                                                                                                                                                                                                                                                       |
| 321   | GrossNotionalValueExceedsThreshold        | Order not allowed because it surpassed the gross notional risk threshold.                                                                                                                                                                                                                                           |
| 322   | NetNotionalValueExceedsThreshold          | Order not allowed because it surpassed the net notional risk threshold.                                                                                                                                                                                                                                             |

| Value | Name                                           | Description                                                                                   |
|-------|------------------------------------------------|-----------------------------------------------------------------------------------------------|
| 323   | DuplicateOrderThresholdExceeded                | Order not allowed because it surpassed the duplicate order risk threshold.                    |
| 324   | OrderRateThresholdExceeded                     | Order not allowed because it surpassed the order rate risk threshold.                         |
| 325   | MassCancelLockoutInEffect                      | Order not allowed because a Mass Cancel Lockout is in effect.                                 |
| 326   | MarketOrderGrossNotionalValueExceeds Threshold | Market Order not allowed because it surpassed the market order gross notional risk threshold. |
| 327   | MarketOrderNetNotionalValueExceedsThreshold    | Market Order not allowed because it surpassed the market order net notional risk threshold.   |
| 328   | LimitOrderFatFingerCheck                       | Limit Order not allowed because it failed fat finger check                                    |
| 329   | BulkQuoteFatFingerCheck                        | Bulk Quote not allowed because it failed fat finger check                                     |

## 4.7 CancelReasonCode (MEMX custom FIX tag 21004)

CancelReasonCode represents the reason the order was canceled by the system.

CancelReasonCode is a 1-byte [UINT8](#) value.

| Value  | Name                  | Description                                                                                                                                      |
|--------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 0      | Other                 | This order was canceled for some other reason not listed.                                                                                        |
| 1      | UserRequestedCancel   | The client sent a OrderCancelRequest or OrderMassCancelRequest for this order.                                                                   |
| 5      | ExecutionPriceCollar  | The price of the order fell outside execution price collar bands                                                                                 |
| 6      | Halted                | The market on the order's security was halted.                                                                                                   |
| 7      | ExchangeSupervisory   | Operational or supervisory actions taken by the Exchange resulted in the cancellation of this order.                                             |
| 8      | OrderExpired          | The order's supplied expiration time passed.                                                                                                     |
| 13     | ParticipantDisconnect | The participant directed that their orders should be canceled when the trading system detects a disconnection, and the participant disconnected. |
| 14     | OrderNotBookable      | Order is not of bookable type (this may include market orders, IOC, etc)                                                                         |
| 17     | FirmDisabled          | Order was canceled because the firm was disabled                                                                                                 |
| 18     | EFIDDisabled          | Order was canceled because the EFID was disabled                                                                                                 |
| 19     | AccountDisabled       | Order was canceled because the Account was disabled                                                                                              |
| 20, 21 | N/A                   | Reserved                                                                                                                                         |

| Value | Name                                          | Description                                                                                                                                                                                                                                                                                                         |
|-------|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 22    | QuoteUpdateRejectedOrigQuoteCanceled          | A quote update for an existing quote was rejected, the original quote was canceled.                                                                                                                                                                                                                                 |
| 23    | ActiveRiskBreach                              | Canceled because an active risk rule was breached.                                                                                                                                                                                                                                                                  |
| 24    | ManualRiskBreach                              | Canceled because of a manual breach.                                                                                                                                                                                                                                                                                |
| 25    | NumContractsExecutedExceedsThreshold          | The number of contracts executed exceeds firm specified threshold.                                                                                                                                                                                                                                                  |
| 26    | NotionalValueOfExecutionsExceedsThreshold     | The notional value of the order violated the firm's max notional value per order risk rule.                                                                                                                                                                                                                         |
| 27    | CountOfExecutionsExceedsThreshold             | The count of contracts executed exceeds firm specified threshold.                                                                                                                                                                                                                                                   |
| 28    | OutstandingPercentageThresholdExceeded        | The number of contracts executed as a percentage of the number of contracts outstanding within an Exchange configurable time period or for the trading day has been exceeded.                                                                                                                                       |
| 29    | TripsThresholdExceeded                        | The number of times a firm reaches the limits in: <ul style="list-style-type: none"> <li>• NumContractsExecutedExceedsThreshold</li> <li>• NotionalValueOfExecutionsExceedsThreshold</li> <li>• CountOfExecutionsExceedsThreshold</li> <li>• OutstandingPercentageThresholdExceeded</li> </ul> exceeds a threshold. |
| 30    | GrossNotionalValueExceedsThreshold            | Order not allowed because it surpassed the gross notional risk threshold.                                                                                                                                                                                                                                           |
| 31    | NetNotionalValueExceedsThreshold              | Order not allowed because it surpassed the net notional risk threshold.                                                                                                                                                                                                                                             |
| 32    | DuplicateOrderThresholdExceeded               | Order not allowed because it surpassed the duplicate order risk threshold.                                                                                                                                                                                                                                          |
| 33    | OrderRateThresholdExceeded                    | Order not allowed because it surpassed the order rate risk threshold.                                                                                                                                                                                                                                               |
| 34    | MarketOrderGrossNotionalValueExceedsThreshold | Market Order not allowed because it surpassed the market order gross notional risk threshold.                                                                                                                                                                                                                       |
| 35    | MarketOrderNetNotionalValueExceedsThreshold   | Market Order not allowed because it surpassed the market order net notional risk threshold.                                                                                                                                                                                                                         |
| 36    | MarketOrderNBBOWidthExceeded                  | Market Order not allowed because it surpassed the market order NBBO width                                                                                                                                                                                                                                           |
| 37    | MarketOrderNoNationalBestBid                  | Market Order not allowed because there was no national best bid                                                                                                                                                                                                                                                     |
| 38    | MarketOrderNoNationalBestOffer                | Market Order not allowed because there was no national best offer                                                                                                                                                                                                                                                   |
| 39    | DrillThroughPriceExceeded                     | Order not allowed because it surpassed drill through price                                                                                                                                                                                                                                                          |
| 40    | OrderWouldLockOrCross                         | Order not allowed because it would lock or cross                                                                                                                                                                                                                                                                    |
| 41    | MassCancelRequest                             | Cancel was the result of a mass cancel request                                                                                                                                                                                                                                                                      |

| Value | Name                  | Description                                                                                                                       |
|-------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| 42    | LockedOrCrossedMarket | Cancel was due to the order having a RepriceBehavior specified as RepriceLockCancelCross and the Away Market Quotes being crossed |

## 4.8 CxlRejResponseType (FIX tag 434)

CxlRejResponseType identifies the request type that a cancel reject was issued for.

CxlRejResponseType is a 1-byte [CHAR](#) value.

| Value | Name                      | Description                             |
|-------|---------------------------|-----------------------------------------|
| '1'   | OrderCancelRequest        | This response is for a cancel request.  |
| '2'   | OrderCancelReplaceRequest | This response is for a replace request. |

## 4.9 ExchangeCode (used in FIX tag 30)

ExchangeCode (MIC code) indicates the market of execution for last fill, or an indication of the market where an order was routed. MIC code are maintained here <http://www.iso10383.org/>.

ExchangeCode is a 4-byte CHAR value.

| Value | Market Name                             |
|-------|-----------------------------------------|
| AMXO  | NYSE AMEX OPTIONS                       |
| XBOX  | BOX OPTIONS EXCHANGE                    |
| XCBO  | CBOE GLOBAL MARKETS INC.                |
| EMLD  | MIAX EMERALD, LLC                       |
| EDGO  | CBOE EDGX OPTIONS EXCHANGE              |
| GMNI  | ISE GEMINI EXCHANGE                     |
| XISX  | INTERNATIONAL SECURITIES EXCHANGE, LLC  |
| MCRY  | ISE MERCURY, LLC                        |
| XMIO  | MIAMI INTERNATIONAL SECURITIES EXCHANGE |
| ARCO  | NYSE ARCA OPTIONS                       |
| MPRL  | MIAX PEARL, LLC                         |
| XNDQ  | NASDAQ OPTIONS MARKET                   |
| XBXO  | NASDAQ OMX BX OPTIONS                   |
| MXOP  | MEMX OPTIONS EXCHANGE                   |
| C2OX  | CBOE C2 OPTIONS EXCHANGE                |
| XPHO  | PHILADELPHIA OPTIONS EXCHANGE           |
| BATO  | CBOE BZX OPTIONS EXCHANGE               |

## 4.10 ExecInstType Bitset (FIX tag 18)

The ExecInstType provides instructions for order handling on exchange.

ExecInstType is a 2-byte [UINT16](#) value.

| Type Name    | Length | Type                   | Values                                       | Description                                       |
|--------------|--------|------------------------|----------------------------------------------|---------------------------------------------------|
| ExecInstType | 2      | <a href="#">UINT16</a> | Bit 0 - ParticipateDoNotInitiate (Post only) | Enable an execution instruction by setting a bit. |



| Type Name | Length | Type | Values                                                                          | Description                                                                               |
|-----------|--------|------|---------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
|           |        |      | Bit 1 - IntermarketSweep (ISO)<br>Bit 2 - ExternalRoutingNotAllowed (Book Only) | Disable an execution instruction by clearing the bit. Bit 0 is the least significant bit. |

#### 4.11 ExecRestatementType (FIX tag 378)

Defines the reason for a restatement.

ExecRestatementType is a 1-byte [UINT8](#) value.

| Value | Name                 | Description                                                              |
|-------|----------------------|--------------------------------------------------------------------------|
| 3     | OrderReprice         | The order's booking price was updated.                                   |
| 5     | MatchTradePrevention | The order quantity was reduced to prevent a wash trade.                  |
| 99    | Other                | More information is supplied in tag 21022 ExtendedExecRestatementReason. |

#### 4.12 ExtendedRestatementReasonType (Custom FIX tag 21022)

Defines the extended reason for a restatement.

ExtendedRestatementReasonType is a 1-byte [UINT8](#) value.

| Value | Name                    | Description                                            |
|-------|-------------------------|--------------------------------------------------------|
| 0     | None                    | No additional information.                             |
| 1,2   | Reserved                | Reserved for future use.                               |
| 3     | MatchTrade-CancelNewest | Restatement due to MatchTradePrevention - CancelNewest |
| 4     | MatchTrade-CancelOldest | Restatement due to MatchTradePrevention - CancelOldest |
| 6     | MatchTrade-CancelBoth   | Restatement due to MatchTradePrevention - CancelBoth   |

#### 4.13 LastLiquidityIndType (FIX tag 851)

Indicates the liquidity code for this execution.

LastLiquidityIndType is a 1-byte [UINT8](#) value.

| Value | Name    | Description                                               |
|-------|---------|-----------------------------------------------------------|
| 1     | Added   | The order added displayed liquidity to the Exchange book. |
| 2     | Removed | The order removed liquidity from the Exchange book.       |

#### 4.14 OrdStatusType (FIX tag 39)

Indicates the status of an order.

OrdStatusType is a 1-byte [CHAR](#) value.

| Value | Name          |
|-------|---------------|
| '0'   | New           |
| '1'   | PartialFilled |
| '2'   | Filled        |

| Value | Name           |
|-------|----------------|
| '4'   | Canceled       |
| '6'   | PendingCancel  |
| '8'   | Rejected       |
| 'E'   | PendingReplace |
| 'C'   | Expired        |

## 4.15 MassCxlRejReasonCode (MEMX Custom FIX tag 21028)

Identifies the reason why a mass cancellation request was rejected.

MassCxlRejReasonCode is a 2-byte [UINT16](#) value.

| Value | Name                                 | Description                                                                                      |
|-------|--------------------------------------|--------------------------------------------------------------------------------------------------|
| 0     | Other                                | This order was rejected for some other reason not listed.                                        |
| 1     | DuplicateCLOrdID                     | The CLOrdID is a duplicate and cannot be reused.                                                 |
| 2     | MissingCLOrdID                       | The request is malformed, it is missing the CLOrdID field.                                       |
| 3     | InvalidCLOrdID                       | Request was rejected for invalid CHAR value in CLOrdID field.                                    |
| 4     | MissingEFID                          | The request is malformed, it is missing the EFID field.                                          |
| 5     | InvalidEFID                          | Request was rejected for invalid EFID.                                                           |
| 6     | MissingUnderlyingOrSeries            | The request is malformed, it is missing the UnderlyingOrSeries field.                            |
| 7     | InvalidUnderlyingOrSeries            | Request was rejected for invalid UnderlyingOrSeries field.                                       |
| 8     | MissingUnderlier                     | The request is malformed, it is missing the Underlier field.                                     |
| 9     | InvalidUnderlier                     | Request was rejected for invalid Underlier field.                                                |
| 10    | MissingOptionsSecurityID             | The request is malformed, it is missing the OptionsSecurityID field.                             |
| 11    | InvalidOptionsSecurityID             | Request was rejected for invalid OptionsSecurityID field.                                        |
| 12    | MissingCancelGroupID                 | The request is malformed, it is missing the CancelGroupID field.                                 |
| 13    | InvalidCancelGroupID                 | The cancel group id supplied is invalid for the account.                                         |
| 14    | MissingMassCancelInst                | The request is malformed, it is missing the MassCancelInst field.                                |
| 15    | InvalidMassCancelInst                | Request was rejected for an invalid MassCancelInst field.                                        |
| 17    | MassCancelInProgress                 | Request was rejected because a prior Mass Cancel Request with the same semantics is in progress. |
| 18    | MissingSendingTime                   | The request is malformed, it is missing sendingTime field                                        |
| 19    | InvalidSendingTime                   | Request was rejected for invalid sendingTime field                                               |
| 20    | InvalidOptionsSecurityIDForUnderlier | Request was rejected for mismatch between Underlier and OptionsSecurityID                        |

## 4.16 MassCancelInstType Bitset (FIX tag 21031)

The MassCancelInstType provides instructions for mass cancel request handling on the exchange.

MassCancelInstType is a 1-byte [UINT8](#) value.

| Type Name          | Length | Type                  | Values                                                                                                                                                                                                                                                                                                                                                                                                                                           | Description                                                                                                                              |
|--------------------|--------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| MassCancelInstType | 1      | <a href="#">UINT8</a> | Bit 0 - Lockout (bit set indicates to lockout future orders that match the mass cancel criteria)<br>Bit 1 - SendCancels (bit set indicates to send Cancel messages for each order/quote canceled)<br>Bit 2 - CancelOrdersFromThisPortOnly (bit set indicates that only orders that originated from the port that receives the MassCancelRequest should be considered for cancelation. If not set all firm orders are considered for cancelation. | Enable a handling instruction by setting a bit. Disable an handling instruction by clearing the bit. Bit 0 is the least significant bit. |

## 4.17 MassCancelClearLockoutRejCode (FIX tag 21037)

The MassCancelClearLockoutRejCode Identifies the reason why a MassCancelClearLockoutRequest was rejected.

MassCancelClearLockoutRejCode is a 2-byte [UINT16](#) value.

| Value | Name                         | Description                                                       |
|-------|------------------------------|-------------------------------------------------------------------|
| 0     | Other                        | This order was rejected for some other reason not listed.         |
| 1     | MissingClOrdID               | The request did not supply a ClOrdID.                             |
| 2     | InvalidClOrdID               | The request supplied an invalid ClOrdID.                          |
| 3     | MissingLockoutID             | The request did not supply a LockoutID.                           |
| 4     | InvalidLockoutID             | The request supplied an invalid LockoutID.                        |
| 5     | UnknownLockoutID             | The request supplied an unknown LockoutID                         |
| 6     | NoLockoutsActive             | There were no active lockouts for the clear all lockouts request  |
| 7     | MissingEFID                  | The request did not supply an EFID                                |
| 8     | InvalidEFID                  | The request supplied an invalid EFID                              |
| 9     | MissingUnderlier             | The request did not supply an Underlier                           |
| 10    | InvalidUnderlier             | The request supplied an invalid Underlier                         |
| 11    | MissingEFIDOrUnderlier       | The request must supply at least EFID or Underlier                |
| 12    | InvalidUnderlierForLockoutId | Request was rejected for mismatch between Underlier and LockoutId |

## 4.18 UnderlyingOrSeriesType (MEMX Custom FIX tag 21029)

Identifies what category of order/quote to mass cancel.

UnderlyingOrSeriesType is a 1-byte [UINT8](#) value.

| Value | Name                  | Description                                        |
|-------|-----------------------|----------------------------------------------------|
| 0     | CancelAllOnUnderlying | Cancel all orders/quotes on the underlying symbol. |

| Value | Name              | Description                                     |
|-------|-------------------|-------------------------------------------------|
| 1     | CancelAllOnSeries | Cancel all orders/quotes on the options series. |

## 4.19 PositionEffectType (FIX tag 77)

Indicates whether the resulting position after a trade should be an opening position or closing position.

PositionEffectType is a [CHAR](#) value.

| Value | Name  |
|-------|-------|
| 'O'   | Open  |
| 'C'   | Close |

## 4.20 AllocPositionEffectType (FIX tag 1047)

Indicates whether the resulting position for an allocation should be an opening or closing position.

AllocPositionEffectType is a CHAR value.

| Value | Name  |
|-------|-------|
| 'O'   | Open  |
| 'C'   | Close |

## 4.21 OrderRejectReasonCode (FIX tag 103)

Identifies the reason why a new order was rejected by the system.

Values 0-99 are reserved by the FIX specification. Note that not all of the reserved FIX codes are used.

Values 100-199 are used to denote issues with specific request fields.

Values 200-299 are used to denote issues with the request as a whole.

Values 300-399 are used to denote issues related to risk.

Also note that some codes in this table may not be sent in SBE but are listed here to maintain consistency with the FIX order entry specification, or reserved for future use.

OrdRejReason is a 2-byte [UINT16](#) value.

| Value | Name           | Description                                                                                                                                                   |
|-------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1     | UnknownSymbol  | The order contained a valid symbol/OptionsSecurityID, but the symbol/OptionsSecurityID is not currently traded on this port or exchange.                      |
| 2     | ExchangeClosed | The exchange is closed and not accepting orders at this time.                                                                                                 |
| 6     | DuplicateOrder | The user entered a duplicate order identifier (CISID for single orders, or the combination of CISID, Side, and ListSeqNo for components of Bulk Quote entry). |

| Value     | Name                                   | Description                                                                                                                     |
|-----------|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| 16        | PriceExceedsCurrentPriceBand           | The price of the order fell outside execution price collar bands.                                                               |
| 18        | InvalidPriceIncrement                  | The order contained an invalid limit price increment.                                                                           |
| 27        | MaxNotionalValuePerOrderRiskRuleBreach | The order breached the firm's max notional value per order risk rule.                                                           |
| 99        | Other                                  | This order was rejected for some other reason not listed.                                                                       |
| 100       | MissingSymbol                          | The order did not supply the Symbol/OptionsSecurityID.                                                                          |
| 101       | InvalidSymbol                          | The order had an. invalid Symbol/OptionsSecurityID.                                                                             |
| 102       | MissingCLOrdID                         | The order did not supply the CLOrdID.                                                                                           |
| 103       | InvalidCLOrdID                         | A CLOrdID was present but contained illegal characters.                                                                         |
| 104       | MissingSide                            | The order did not supply the side.                                                                                              |
| 105       | InvalidSide                            | The order contained an invalid side.                                                                                            |
| 106       | MissingOrderQty                        | The order did not supply the quantity.                                                                                          |
| 107       | InvalidOrderQty                        | The order contained an invalid order quantity.                                                                                  |
| 108       | MissingOrderType                       | The order did not supply the order type.                                                                                        |
| 109       | InvalidOrderType                       | The order contained an invalid order type.                                                                                      |
| 110       | MissingTimeInForce                     | The order did not supply the time in force.                                                                                     |
| 111       | InvalidTimeInForce                     | The order contained an invalid time in force.                                                                                   |
| 112       | MissingTradingCapacity                 | The order did not supply the trading capacity.                                                                                  |
| 113       | InvalidTradingCapacity                 | The order contained an invalid trading capacity.                                                                                |
| 114       | MissingExecInst                        | The order did not supply the execution instructions field.                                                                      |
| 115       | InvalidExecInst                        | The order contained an invalid execution instruction.                                                                           |
| 116 - 117 | N/A                                    |                                                                                                                                 |
| 118       | MissingLimitPrice                      | The order did not supply the limit price.                                                                                       |
| 119       | InvalidLimitPrice                      | The order contained an invalid limit price.                                                                                     |
| 120 - 123 | N/A                                    |                                                                                                                                 |
| 124       | MissingMatchTradePreventionType        | The order supplied the MTPGroupID field but did not supply the MatchTradePreventionType field.                                  |
| 125       | InvalidMatchTradePreventionType        | The order contained an invalid MatchTradePreventionType.                                                                        |
| 126       | MissingCancelGroupID                   | The order did not supply the CancelGroupID field (used when a port is configured with a fixed set of allowable CancelGroupIDs). |
| 127       | InvalidCancelGroupID                   | The order contained an invalid CancelGroupID (used when a port is                                                               |

| Value   | Name                          | Description                                                                                                                 |
|---------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
|         |                               | configured with a fixed set of allowable CancelGroupIDs).                                                                   |
| 128     | MissingMTPGroupID             | The order did not supply the MTPGroupID field (used when a port is configured with a fixed set of allowable MTPGroupIDs).   |
| 129     | InvalidMTPGroupID             | The order contained an invalid MTPGroupID (used when a port is configured with a fixed set of allowable MTPGroupIDs).       |
| 130-133 | N/A                           |                                                                                                                             |
| 134     | MissingRiskGroupID            | The order did not supply the RiskGroupID field (used when a port is configured with a fixed set of allowable RiskGroupIDs). |
| 135     | InvalidRiskGroupID            | The order contained an invalid RiskGroupID (used when a port is configured with a fixed set of allowable RiskGroupIDs).     |
| 136     | MissingEFID                   | The order did not supply the EFID field.                                                                                    |
| 137     | InvalidEFID                   | The order contained an invalid EFID.                                                                                        |
| 138     | MissingListSeqNo              | The order did not supply the ListSeqNo field.                                                                               |
| 139     | InvalidListSeqNo              | The order contained an invalid ListSeqNo.                                                                                   |
| 140     | QuotesHaveDifferentUnderliers | The order contained quotes for different underliers.                                                                        |
| 141     | TwoSidedQuotesCross           | The order contained a two sided quote's where bidPx and offerPx cross.                                                      |
| 142     | MissingPositionEffect         | The order did not supply the PositionEffect field.                                                                          |
| 143     | InvalidPositionEffect         | The order contained an invalid PositionEffect.                                                                              |
| 144     | MissingRepriceBehaviorType    | The order did not supply the RepriceBehaviorType field.                                                                     |
| 145     | InvalidRepriceBehaviorType    | The order contained an invalid RepriceBehaviorType.                                                                         |
| 146     | MissingRepriceFrequencyType   | The order did not supply the RepriceFrequencyType field.                                                                    |
| 147     | InvalidRepriceFrequencyType   | The order contained an invalid RepriceFrequencyType.                                                                        |
| 148     | MissingPartyRoleType          | The order did not supply the PartyRoleType field.                                                                           |
| 149     | InvalidPartyRoleType          | The order contained an invalid PartyRoleType.                                                                               |
| 150     | MissingPartyID                | The order did not supply the PartyID field.                                                                                 |
| 151     | InvalidPartyID                | The order contained an invalid PartyID.                                                                                     |
| 152     | MissingPartyIDSource          | The order did not supply the PartyIDSource field.                                                                           |
| 153     | InvalidPartyIDSource          | The order contained an invalid PartyIDSource.                                                                               |

| Value   | Name                           | Description                                                                                                                                    |
|---------|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 154     | UnderlyingSymbolNotOpen        | The order contained underlying symbol not open for trading                                                                                     |
| 155     | MissingSendingTime             | The order did not supply sendingTime field                                                                                                     |
| 156     | InvalidSendingTime             | The order contained invalid sending time field                                                                                                 |
| 157     | MissingSubAccount              | The order did not supply subAccount                                                                                                            |
| 158     | InvalidSubAccount              | The order contained an invalid subAccount                                                                                                      |
| 159     | MissingGiveUp                  | The order did not supply giveUp field                                                                                                          |
| 160     | InvalidGiveUp                  | The order contained an invalid giveUp                                                                                                          |
| 161     | MissingCMTA                    | The order did not supply CMTA field                                                                                                            |
| 162     | InvalidCMTA                    | The order contained an invalid CMTA                                                                                                            |
| 163     | MissingActionableID            | The order did not supply actionableID field                                                                                                    |
| 164     | InvalidActionableID            | The order contained an invalid actionableID                                                                                                    |
| 165     | MissingOptionalOCCEData        | The order did not supply optionalOCCEData field                                                                                                |
| 166     | InvalidOptionalOCCEData        | The order contained an invalid optionalOCCEData                                                                                                |
| 167-199 | N/A                            | Reserved.                                                                                                                                      |
| 200     | Halted                         | The symbol/OptionsSecurityID supplied in the order is currently halted.                                                                        |
| 201     | FirmDisabled                   | The order was rejected because the firm sending the order has been disabled.                                                                   |
| 202     | EFIDDisabled                   | The order was rejected because the EFID used in the order has been disabled.                                                                   |
| 203     | AccountDisabled                | The order was rejected because the account sending the order has been disabled.                                                                |
| 204     | InvalidModifierForOrderType    | The order contained one or more modifiers that are not compatible with the order type provided.                                                |
| 205     | InvalidTimeInForceForOrderType | The order contained a time in force that is not compatible with the order type provided.                                                       |
| 206     | N/A                            | Reserved.                                                                                                                                      |
| 207     | PostOnlyNotAllowed             | Post-only behavior is not allowed with one or more of the supplied order directives.                                                           |
| 208     | QuoteModifyRejected            | Canceled resting bulk quote if an incoming bulk message to modify such quote with the same EFID is rejected or canceled by the Trading System. |
| 209     | QuotingDisabled                | Bulk quote sent by a non-market maker.                                                                                                         |
| 210     | InvalidQuoteComponentCount     | Empty quote or a quote exceeding max components.                                                                                               |
| 211-299 | N/A                            | Reserved.                                                                                                                                      |

| Value | Name                                         | Description                                                                                                                                                                                                                                                                                                 |
|-------|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 300   | NonTestSymbolsBlocked                        | The order was for a non-test symbol/OptionsSecurityID and the port is configured in test-only mode (exchange configuration).                                                                                                                                                                                |
| 301   | NotionalValueExceedsThreshold                | The notional value of the order exceeded an exchange configured maximum.                                                                                                                                                                                                                                    |
| 302   | MaxNotionalValuePerOrder<br>RiskRuleViolated | The notional value of the order violated the firm's max notional value per order risk rule.                                                                                                                                                                                                                 |
| 303   | BlockNonTestSymbol<br>RiskRuleViolated       | The order violated the firm's test symbol/OptionsSecurityID trading risk rule.                                                                                                                                                                                                                              |
| 304   | MaxContractsPerOrder<br>RiskRuleViolated     | The order breached the firm's max contracts per order risk rule.                                                                                                                                                                                                                                            |
| 305   | NBBOWidthExceedsThreshold                    | The width of the NBBO is greater than the exchange specified threshold.                                                                                                                                                                                                                                     |
| 306   | ExchangePriceValueCollar<br>RiskRuleViolated | An incoming Limit Order to buy with a price that is more than an Exchange specified amount above the NBO or an incoming Limit Order to sell with a price that is less than an Exchange specified amount below the NBB                                                                                       |
| 307   | ExecutionPriceHigherThanStrikePrice          | Market Order or the remaining portion of a Market Order to buy a put that would execute in whole or in part at a price higher than or equal to the strike price of the option or an incoming Limit Order to buy a put that would execute at a price higher than or equal to the strike price of the option. |
| 308   | MarketBuyWhenNBOIsZero                       | Market Order to buy in an open series when the NBO is zero.                                                                                                                                                                                                                                                 |
| 309   | MarketSellWhenNBBGreaterThanThreshold        | An incoming Market Order to sell in an open series when the NBB is greater than \$0.50.                                                                                                                                                                                                                     |
| 310   | QuotePriceOutsideExchangeThreshold           | Bulk quote canceled, bid with a price that is more than an Exchange specified amount above the NBO and cancel an incoming bulk message offer with a price that is less than an Exchange specified amount below the NBB.                                                                                     |
| 311   | N/A                                          |                                                                                                                                                                                                                                                                                                             |
| 312   | NumContractsExecutedExceedsThreshold         | The number of contracts executed exceeds firm specified threshold.                                                                                                                                                                                                                                          |
| 313   | NotionalValueOfExecutionsExceedsThreshold    | The notional value of contracts executions exceeds firm specified threshold.                                                                                                                                                                                                                                |
| 314   | CountOfExecutionsExceedsThreshold            | The count of contracts executed exceeds firm specified threshold.                                                                                                                                                                                                                                           |
| 315   | OutstandingPercentageThresholdExceeded       | The number of contracts executed as a percentage of the number of contracts outstanding within an Exchange configurable time                                                                                                                                                                                |



| Value | Name                                          | Description                                                                                                                                                                                                                                        |
|-------|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|       |                                               | period or for the trading day has been exceeded.                                                                                                                                                                                                   |
| 316   | TripsThresholdExceeded                        | The number of times a firm reaches the limits in:<br>- NumContractsExecutedExceedsThreshold<br>- NotionalValueOfExecutionsExceedsThreshold<br>- CountOfExecutionsExceedsThreshold<br>- OutstandingPercentageThresholdExceeded exceeds a threshold. |
| 317   | ISOOrdersNotAllowed                           | ISO marked orders at disabled.                                                                                                                                                                                                                     |
| 318   | MarketIsCrossed                               | Order not allowed while market is crossed.                                                                                                                                                                                                         |
| 319   | ActiveRiskBreach                              | Active risk controls were breached for the underlying                                                                                                                                                                                              |
| 320   | ManualRiskBreach                              | Order not allowed because of a manual breach.                                                                                                                                                                                                      |
| 321   | GrossNotionalValueExceedsThreshold            | Order not allowed because it surpassed the gross notional risk threshold.                                                                                                                                                                          |
| 322   | NetNotionalValueExceedsThreshold              | Order not allowed because it surpassed the net notional risk threshold.                                                                                                                                                                            |
| 323   | DuplicateOrderThresholdExceeded               | Order not allowed because it surpassed the duplicate order risk threshold.                                                                                                                                                                         |
| 324   | OrderRateThresholdExceeded                    | Order not allowed because it surpassed the order rate risk threshold.                                                                                                                                                                              |
| 325   | MassCancelLockoutInEffect                     | Order not allowed because a Mass Cancel Lockout is in effect.                                                                                                                                                                                      |
| 326   | MarketOrderGrossNotionalValueExceedsThreshold | Market Order not allowed because it surpassed the market order gross notional risk threshold.                                                                                                                                                      |
| 327   | MarketOrderNetNotionalValueExceedsThreshold   | Market Order not allowed because it surpassed the market order net notional risk threshold.                                                                                                                                                        |
| 328   | LimitOrderFatFingerCheck                      | Limit Order not allowed because it failed fat finger check                                                                                                                                                                                         |
| 329   | BulkQuoteFatFingerCheck                       | Bulk Quote not allowed because it failed fat finger check                                                                                                                                                                                          |
| 330   | MarketOrdersNotAllowed                        | Market orders are disabled                                                                                                                                                                                                                         |
| 331   | UnderlierOnRestrictedList                     | Order not allowed because underlier is on restricted list                                                                                                                                                                                          |

## 4.22 OrdType (FIX tag 40)

Indicates the type of an order.

OrdType is a 1-byte [CHAR](#) value.

| Value | Name   |
|-------|--------|
| '1'   | Market |
| '2'   | Limit  |

## 4.23 TradingCapacityType (FIX tag 1815)

Capacity of the order.

TradingCapacityType is a 1-byte [UINT8](#) value.

| Value | Name                   |
|-------|------------------------|
| 1     | Customer               |
| 2     | Professional Customer  |
| 3     | Broker Dealer          |
| 4     | Broker Dealer Customer |
| 5     | Firm                   |
| 6     | Market Maker           |
| 7     | Away Market Maker      |

## 4.24 RepriceFrequencyType (MEMX custom FIX tag 21020)

Defines the type of reprice used when marking an order for repricing.

RepriceFrequencyType is a 1-byte [UINT8](#) value.

| Value | Name              | Description                                                |
|-------|-------------------|------------------------------------------------------------|
| 0     | SingleReprice     | An order will be repriced upon entry.                      |
| 1     | ContinuousReprice | An order will continuously be repriced after being booked. |
| 2     | None              | No repricing will be done.                                 |

## 4.25 RepriceBehaviorType (MEMX custom FIX tag 21021)

Defines the market conditions for which to apply repricing for.

RepriceBehaviorType is a 1-byte [UINT8](#) value.

| Value | Name                    | Description                                                                          |
|-------|-------------------------|--------------------------------------------------------------------------------------|
| 1     | RepriceLockCancelCross  | An order will only be repriced if the market is locked, cancel if market is crossed. |
| 2     | RepriceLockRepriceCross | An order will be repriced if the market is locked or crossed.                        |

## 4.26 MatchTradePreventionType (MEMX custom FIX tag 21001)

Defines the match trade operation which will be used if the exchange match-trade-prevention functionality is triggered on this order.

If this order would execute against an opposite side resting interest with the same match-trade prevention identifier, the behavior specified by this value will be triggered.

MatchTradePreventionType is a 1-byte [UINT8](#) value.

| Value | Name         | Description                                                     |
|-------|--------------|-----------------------------------------------------------------|
| 0     | CancelNewest | If triggered, this order (the incoming order) will be canceled. |

| Value | Name         | Description                                                              |
|-------|--------------|--------------------------------------------------------------------------|
| 1     | CancelOldest | If triggered, the resting order will be canceled.                        |
| 2     | N/A          | Reserved value.                                                          |
| 3     | CancelBoth   | If triggered, both the incoming and the resting orders will be canceled. |

## 4.27 PartyRoleType (FIX tag 452)

Identifies the type or role of the PartyID in the Parties repeating group. Clients must specify the Execution Firm ID (EFID), and if the capacity is M or N the Market Maker Sub Account, on New Orders and Allocation Instructions. Clients may optionally specify the Actionable Identifier, Give Up, Optional OCC Data, and CMTA. Clients will receive the Contra EFID and potentially any of the other Contra fields on Trades and Allocation Report messages. Clients will also receive Clearing Firm and Contra Clearing Firm on all Trade and Allocation Report messages. Clearing Firm is not allowed on inbound messages.

PartyRoleType is a [UINT8](#) value. The exchange currently supports the following values for this field:

| Value | Name                     |
|-------|--------------------------|
| 1     | Executing Firm ID        |
| 3     | Actionable Identifier    |
| 4     | Clearing Firm            |
| 14    | GiveUp Clearing Firm     |
| 17    | Contra EFID              |
| 18    | Contra Clearing Firm     |
| 24    | OptionalOCCData          |
| 37    | Contra MM Sub Account    |
| 40    | CMTA                     |
| 41    | Contra CMTA              |
| 66    | Market Maker Sub Account |

## 4.28 SideType (FIX tag 54)

Defines the side of an order.

SideType is a [CHAR](#) value.

| Value | Name                                                                                                                                                                                                                                      |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| '1'   | Buy                                                                                                                                                                                                                                       |
| '2'   | Sell                                                                                                                                                                                                                                      |
| 'B'   | As Defined - Note this is not a valid Client to Exchange SideType value. It is only sent from the Exchange to the Client. It can be used for the Side field in an ExecutionReport_Rejected message when an entire bulk quote is rejected. |

## 4.29 MtpGroupIDType (FIX tag 2362)

This field uniquely identifies the match trade prevention group. Several of the values are reserved values while other values are treated as custom values and are at the discretion of the client.

MtpGroupID is a 2-byte [UINT16](#) value.

| Value | Name       | Description                                                |
|-------|------------|------------------------------------------------------------|
| 0     | Firm Scope | Prevents orders from the same firm trading with each other |
| 1     | EFID Scope | Prevents orders from the same EFID trading with each other |

| Value   | Name          | Description                                                                           |
|---------|---------------|---------------------------------------------------------------------------------------|
| 2       | Account Scope | Prevents orders from the same account trading with each other                         |
| 3-65534 | Custom Scope  | Prevents orders with matching MtpGroupID across the firm from trading with each other |
| 65535   | NULL          | The UINT16 Null value (0xFFFF) disables custom match-trade prevention grouping.       |

### 4.30 TimeInForceType (FIX tag 59)

Defines the time during which an order is eligible for execution.

TimeInForceType is a 1-byte [CHAR](#) value. Messages

| Value | Name                      | Description                                                                            |
|-------|---------------------------|----------------------------------------------------------------------------------------|
| '0'   | Day                       | The order is entered for execution during the open market period.                      |
| '3'   | Immediate Or Cancel (IOC) | The order shall be partially or completely executed immediately, or canceled outright. |

### 4.31 UserStatusType (FIX tag 926)

Defines the changed session state as it pertains the User.

UserStatusType is a [UINT8](#) value.

| Value | Name                                         |
|-------|----------------------------------------------|
| 8     | Session shutdown warning.                    |
| 100   | Session shutdown, end of events for session. |

## 5 Messages

### 5.1 Client To Server

#### 5.1.1 NewOrderSingle

The new order message type is used by institutions wishing to electronically submit options orders to the exchange for execution.

This message corresponds to FIX message type D.

| Field                      | Offset | Length | Type                                 | Tag Ref Num | Req'd | Description                                                                                          |
|----------------------------|--------|--------|--------------------------------------|-------------|-------|------------------------------------------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a>           | N/A         | N/A   | SBE Header with templateID = 1                                                                       |
| SendingTime                | 7      | 8      | <a href="#">UTCTimestampNanos</a>    | 52          | Y     | Time of message transmission always expressed in UTC (Universal Time Coordinated, also known as GMT) |
| CIOrdID                    | 15     | 20     | <a href="#">CHAR</a>                 | 11          | Y     | Unique identifier of the order as assigned by the client.                                            |
| OptionsSecurityID          | 35     | 8      | <a href="#">CHAR</a>                 | 21035       | Y     | The OptionsSecurityID of the tradable options product for the order.                                 |
| Side                       | 43     | 1      | <a href="#">SideType</a>             | 54          | Y     | Side of order.                                                                                       |
| OrderQty                   | 44     | 4      | <a href="#">UINT32</a>               | 38          | Y     | Quantity ordered. This represents the number of options contracts.                                   |
| OrdType                    | 48     | 1      | <a href="#">OrdType</a>              | 40          | Y     | Type of the order.                                                                                   |
| Price                      | 49     | 8      | <a href="#">PriceType</a>            | 44          | N     | Price per unit of quantity (e.g. per contract).                                                      |
| TimeInForce                | 57     | 1      | <a href="#">TimeInForceType</a>      | 59          | Y     | Defines the time during which an order is eligible for execution.                                    |
| PositionEffect             | 58     | 1      | PositionEffectType                   | 77          | N     | Opening or closing a position.                                                                       |
| ExecInst                   | 59     | 2      | <a href="#">ExecInstType</a>         | 18          | Y     | Instructions for order handling on exchange.                                                         |
| TradingCapacity            | 61     | 1      | <a href="#">TradingCapacityType</a>  | 1815        | Y     | Capacity of the order.                                                                               |
| RepriceFrequency           | 62     | 1      | <a href="#">RepriceFrequencyType</a> | 21020       | N     | Defines the frequency of a                                                                           |

| Field                | Offset | Length | Type                                     | Tag Ref Num | Req'd | Description                                                                                                                               |
|----------------------|--------|--------|------------------------------------------|-------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------|
|                      |        |        |                                          |             |       | reprice. If this tag is not sent then the order will not be repriced.                                                                     |
| RepriceBehavior      | 63     | 1      | RepriceBehaviorType                      | 21021       | N     | Defines the reprice behavior when market is locked or crossed.                                                                            |
| MtpGroupID           | 64     | 2      | <a href="#">MtpGroupIDType</a>           | 2362        | N     | Unique identifier of custom match-trade prevention group.                                                                                 |
| MatchTradePrevention | 66     | 1      | <a href="#">MatchTradePreventionType</a> | 21001       | N     | Defines the desired behavior in the event of a wash. The UINT8 Null (0xFF) value disables match trade prevention.                         |
| CancelGroupID        | 67     | 2      | <a href="#">UINT16</a>                   | 21000       | N     | Unique identifier of custom cancel group.                                                                                                 |
| RiskGroupID          | 69     | 2      | <a href="#">UINT16</a>                   | 21005       | N     | Unique identifier of a custom risk control set to be applied to this order. The UINT16 Null value (0xFFFF) disables custom risk controls. |
| NoPartyIDs           | -      | -      | <a href="#">RepeatingGroupDimensions</a> | 453         | Y     | The dimensions of the Repeating Group.                                                                                                    |
| Parties              | -      | -      | <a href="#">Parties Group</a>            | N/A         | N     | The parties associated with the quotes.                                                                                                   |

### 5.1.2 ShortTwoSidedBulkQuote

The two sided bulk quote message type is used by market makers wishing to electronically submit multiple quotes with similar semantics to the exchange for execution. This messages supports two sided quotes with smaller field sizes for quantities and prices.

This message corresponds to FIX message type i.

| Field                      | Offset | Length | Type                       | Tag Ref Num | Req'd | Description                    |
|----------------------------|--------|--------|----------------------------|-------------|-------|--------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a> | N/A         | Y     | SBE Header with templateID = 2 |

| Field                | Offset | Length | Type                                     | Tag Ref Num | Required | Description                                                                                                                               |
|----------------------|--------|--------|------------------------------------------|-------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------|
| SendingTime          | 7      | 8      | <a href="#">UTCTimestampNanos</a>        | 52          | Y        | Time of message transmission always expressed in UTC (Universal Time Coordinated, also known as GMT)                                      |
| ClOrdID              | 15     | 20     | <a href="#">CHAR</a>                     | 11          | Y        | Unique identifier of the order as assigned by the client.                                                                                 |
| TimeInForce          | 35     | 1      | <a href="#">TimeInForceType</a>          | 59          | Y        | Defines the time during which an order is eligible for execution.                                                                         |
| ExecInst             | 36     | 2      | <a href="#">ExecInstType</a>             | 18          | Y        | Instructions for order handling on exchange.                                                                                              |
| TradingCapacity      | 38     | 1      | <a href="#">TradingCapacityType</a>      | 1815        | Y        | Capacity of the order.                                                                                                                    |
| MtpGroupID           | 39     | 2      | <a href="#">MtpGroupIDType</a>           | 2362        | N        | Unique identifier of custom match-trade prevention group.                                                                                 |
| MatchTradePrevention | 41     | 1      | <a href="#">MatchTradePreventionType</a> | 21001       | N        | Defines the desired behavior in the event of a wash. The UINT8 Null (0xFF) value disables match trade prevention.                         |
| CancelGroupID        | 42     | 2      | <a href="#">UINT16</a>                   | 21000       | N        | Unique identifier of custom cancel group.                                                                                                 |
| RiskGroupID          | 44     | 2      | <a href="#">UINT16</a>                   | 21005       | N        | Unique identifier of a custom risk control set to be applied to this order. The UINT16 Null value (0xFFFF) disables custom risk controls. |
| NoPartyIDs           | -      | -      | <a href="#">RepeatingGroupDimensions</a> | 453         | Y        | The dimensions of the Repeating Group.                                                                                                    |
| Parties              | -      | -      | <a href="#">Parties Group</a>            | N/A         | Y        | The parties associated with the quotes.                                                                                                   |

| Field          | Offset | Length | Type                                     | Tag Ref Num | Required | Description                            |
|----------------|--------|--------|------------------------------------------|-------------|----------|----------------------------------------|
| NoQuoteEntries | -      | -      | <a href="#">RepeatingGroupDimensions</a> | 295         | Y        | The dimensions of the Repeating Group. |
| Quotes         | -      | -      | <a href="#">Short Two Sided Quote</a>    | N/A         | Y        | The characteristics of each quote.     |

### 5.1.3 LongTwoSidedBulkQuote

The two sided bulk quote message type is used by market makers wishing to electronically submit multiple quotes with similar semantics to the exchange for execution. This messages supports two sided quotes with larger field sizes for quantities and prices.

This message corresponds to FIX message type i.

| Field                      | Offset | Length | Type                                     | Tag Ref Num | Required | Description                                                                                                          |
|----------------------------|--------|--------|------------------------------------------|-------------|----------|----------------------------------------------------------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a>               | N/A         | Y        | SBE Header with templateID = 3                                                                                       |
| SendingTime                | 7      | 8      | <a href="#">UTCTimestampNanos</a>        | 52          | Y        | Time of message transmission always expressed in UTC (Universal Time Coordinated, also known as GMT)                 |
| ClOrdID                    | 15     | 20     | <a href="#">CHAR</a>                     | 11          | Y        | Unique identifier of the order as assigned by the client.                                                            |
| TimeInForce                | 35     | 1      | <a href="#">TimeInForceType</a>          | 59          | Y        | Defines the time during which an order is eligible for execution.                                                    |
| ExecInst                   | 36     | 2      | <a href="#">ExecInstType</a>             | 18          | Y        | Instructions for order handling on exchange.                                                                         |
| TradingCapacity            | 38     | 1      | <a href="#">TradingCapacityType</a>      | 1815        | Y        | Capacity of the order.                                                                                               |
| MtpGroupID                 | 39     | 2      | <a href="#">MtpGroupIDType</a>           | 2362        | N        | Unique identifier of custom match-trade prevention group.                                                            |
| MatchTradePrevention       | 41     | 1      | <a href="#">MatchTradePreventionType</a> | 21001       | N        | Defines the desired behavior in the event of a wash.<br>The UINT8 Null (0xFF) value disables match trade prevention. |



| Field          | Offset | Length | Type                                     | Tag Ref Num | Req'd | Description                                                                                                                               |
|----------------|--------|--------|------------------------------------------|-------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------|
| CancelGroupID  | 42     | 2      | <a href="#">UINT16</a>                   | 21000       | N     | Unique identifier of custom cancel group.                                                                                                 |
| RiskGroupID    | 44     | 2      | <a href="#">UINT16</a>                   | 21005       | N     | Unique identifier of a custom risk control set to be applied to this order. The UINT16 Null value (0xFFFF) disables custom risk controls. |
| NoPartyIDs     | -      | -      | <a href="#">RepeatingGroupDimensions</a> | 453         | Y     | The dimensions of the Repeating Group.                                                                                                    |
| Parties        | -      | -      | <a href="#">Parties Group</a>            | N/A         | Y     | The parties associated with the quotes.                                                                                                   |
| NoQuoteEntries | -      | -      | <a href="#">RepeatingGroupDimensions</a> | 295         | Y     | The dimensions of the Repeating Group.                                                                                                    |
| Quotes         | -      | -      | <a href="#">Long Two Sided Quote</a>     | N/A         | Y     | The characteristics of each quote.                                                                                                        |

#### 5.1.4 ShortOneSidedBulkQuote

The one sided bulk quote message type is used by market makers wishing to electronically submit multiple one sided quotes with similar semantics to the exchange for execution. This messages supports one sided quotes with smaller field sizes for quantities and prices.

This message corresponds to FIX message type i.

| Field                      | Offset | Length | Type                              | Tag Ref Num | Req'd | Description                                                                                          |
|----------------------------|--------|--------|-----------------------------------|-------------|-------|------------------------------------------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a>        | N/A         | Y     | SBE Header with templateID = 4                                                                       |
| SendingTime                | 7      | 8      | <a href="#">UTCTimestampNanos</a> | 52          | Y     | Time of message transmission always expressed in UTC (Universal Time Coordinated, also known as GMT) |
| ClOrdID                    | 15     | 20     | <a href="#">CHAR</a>              | 11          | Y     | Unique identifier of the order as assigned by the client.                                            |
| TimeInForce                | 35     | 1      | <a href="#">TimeInForceType</a>   | 59          | Y     | Defines the time during which an order is eligible for execution.                                    |

| Field                | Offset | Length | Type                                     | Tag Ref Num | Req'd | Description                                                                                                                               |
|----------------------|--------|--------|------------------------------------------|-------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------|
| ExecInst             | 36     | 2      | <a href="#">ExecInstType</a>             | 18          | Y     | Instructions for order handling on exchange.                                                                                              |
| TradingCapacity      | 38     | 1      | <a href="#">TradingCapacityType</a>      | 1815        | Y     | Capacity of the order.                                                                                                                    |
| MtpGroupID           | 39     | 2      | <a href="#">MtpGroupIDType</a>           | 2362        | N     | Unique identifier of custom match-trade prevention group.                                                                                 |
| MatchTradePrevention | 41     | 1      | <a href="#">MatchTradePreventionType</a> | 21001       | N     | Defines the desired behavior in the event of a wash. The UINT8 Null (0xFF) value disables match trade prevention.                         |
| CancelGroupID        | 42     | 2      | <a href="#">UINT16</a>                   | 21000       | N     | Unique identifier of custom cancel group.                                                                                                 |
| RiskGroupID          | 44     | 2      | <a href="#">UINT16</a>                   | 21005       | N     | Unique identifier of a custom risk control set to be applied to this order. The UINT16 Null value (0xFFFF) disables custom risk controls. |
| NoPartyIDs           | -      | -      | <a href="#">RepeatingGroupDimensions</a> | 453         | Y     | The dimensions of the Repeating Group.                                                                                                    |
| Parties              | -      | -      | <a href="#">Parties Group</a>            | N/A         | N     | The parties associated with the quotes.                                                                                                   |
| NoQuoteEntries       | -      | -      | <a href="#">RepeatingGroupDimensions</a> | 295         | Y     | The dimensions of the Repeating Group.                                                                                                    |
| Quotes               | -      | -      | <a href="#">Short One Sided Quote</a>    | N/A         | Y     | The characteristics of each quote.                                                                                                        |

### 5.1.5 LongOneSidedBulkQuote

The one sided bulk quote message type is used by market makers wishing to electronically submit multiple one sided quotes with similar semantics to the exchange for execution. This messages supports one sided quotes with larger field sizes for quantities and prices.

This message corresponds to FIX message type i.

| Field                      | Offset | Length | Type                                     | Tag Ref Num | Required | Description                                                                                                                               |
|----------------------------|--------|--------|------------------------------------------|-------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a>               | N/A         | Y        | SBE Header with templateID = 5                                                                                                            |
| SendingTime                | 7      | 8      | <a href="#">UTCTimestampNanos</a>        | 52          | Y        | Time of message transmission always expressed in UTC (Universal Time Coordinated, also known as GMT)                                      |
| ClOrdID                    | 15     | 20     | <a href="#">CHAR</a>                     | 11          | Y        | Unique identifier of the order as assigned by the client.                                                                                 |
| TimeInForce                | 35     | 1      | <a href="#">TimeInForceType</a>          | 59          | Y        | Defines the time during which an order is eligible for execution.                                                                         |
| ExecInst                   | 36     | 2      | <a href="#">ExecInstType</a>             | 18          | Y        | Instructions for order handling on exchange.                                                                                              |
| TradingCapacity            | 38     | 1      | <a href="#">TradingCapacityType</a>      | 1815        | Y        | Capacity of the order.                                                                                                                    |
| MtpGroupID                 | 39     | 2      | <a href="#">MtpGroupIDType</a>           | 2362        | N        | Unique identifier of custom match-trade prevention group.                                                                                 |
| MatchTradePrevention       | 41     | 1      | <a href="#">MatchTradePreventionType</a> | 21001       | N        | Defines the desired behavior in the event of a wash.<br>The UINT8 Null (0xFF) value disables match trade prevention.                      |
| CancelGroupID              | 42     | 2      | <a href="#">UINT16</a>                   | 21000       | N        | Unique identifier of custom cancel group.                                                                                                 |
| RiskGroupID                | 44     | 2      | <a href="#">UINT16</a>                   | 21005       | N        | Unique identifier of a custom risk control set to be applied to this order. The UINT16 Null value (0xFFFF) disables custom risk controls. |
| NoPartyIDs                 | -      | -      | <a href="#">RepeatingGroupDimensions</a> | 453         | Y        | The dimensions of the Repeating Group.                                                                                                    |
| Parties                    | -      | -      | <a href="#">Parties Group</a>            | N/A         | Y        | The parties associated with the quotes.                                                                                                   |

| Field          | Offset | Length | Type                                     | Tag Ref Num | Req'd | Description                            |
|----------------|--------|--------|------------------------------------------|-------------|-------|----------------------------------------|
| NoQuoteEntries | -      | -      | <a href="#">RepeatingGroupDimensions</a> | 295         | Y     | The dimensions of the Repeating Group. |
| Quotes         | -      | -      | <a href="#">Long One Sided Quote</a>     | N/A         | Y     | The characteristics of each quote.     |

### 5.1.6 OrderCancelReplaceRequest

The order cancel/replace request is used to change the parameters of an existing order.

This message corresponds to FIX message type G

| Field                      | Offset | Length | Type                               | Tag Ref Num | Req'd | Description                                                                                                                                                                                                                                  |
|----------------------------|--------|--------|------------------------------------|-------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a>         | N/A         | Y     | SBE Header with templateID = 6                                                                                                                                                                                                               |
| SendingTime                | 7      | 8      | <a href="#">UTCTimestampNano s</a> | 52          | Y     | Time of message transmission always expressed in UTC (Universal Time Coordinated, also known as GMT)                                                                                                                                         |
| OrderID                    | 15     | 8      | <a href="#">UINT64</a>             | 37          | N     | OrderID as assigned by the exchange.                                                                                                                                                                                                         |
| ClOrdID                    | 23     | 20     | <a href="#">CHAR</a>               | 11          | Y     | Unique identifier of the replacement order as assigned by the client. Uniqueness must be guaranteed within a single trading day.                                                                                                             |
| ListSeqNo                  | 43     | 1      | <a href="#">UINT8</a>              | 67          | Y     | This field is used for identifying a specific quote entered via a Bulk Quote request. This field may not change from the value stated in the original Bulk Quote request. For orders entered via New Order Single this field should be zero. |
| OrigClOrdID                | 44     | 20     | <a href="#">CHAR</a>               | 41          | Y     | ClOrdID (11) of the previous order                                                                                                                                                                                                           |

| Field             | Offset | Length | Type                      | Tag Ref Num | Req'd | Description                                                                                                               |
|-------------------|--------|--------|---------------------------|-------------|-------|---------------------------------------------------------------------------------------------------------------------------|
|                   |        |        |                           |             |       | (NOT the initial order of the day) .                                                                                      |
| OptionsSecurityID | 64     | 8      | <a href="#">CHAR</a>      | 21035       | Y     | The OptionsSecurityID identifying the tradable options product.                                                           |
| Side              | 72     | 1      | <a href="#">SideType</a>  | 54          | Y     | This field may not change from the value stated in the original order.                                                    |
| OrderQty          | 73     | 4      | <a href="#">UINT32</a>    | 38          | Y     | Quantity ordered. This represents the number of contracts for options.                                                    |
| OrdType           | 77     | 1      | <a href="#">OrdType</a>   | 40          | Y     | OrderType may only change from Limit order to Market order.                                                               |
| Price             | 78     | 8      | <a href="#">PriceType</a> | 44          | N     | Price per unit of quantity (e.g. per contract). Changing the price will cause the order to lose its priority in the book. |

### 5.1.7 OrderCancelRequest

The order cancel request message requests the cancellation all remaining size on an order.

Note: this message can be used to cancel an order for a different account by specifying the order's exchange order ID (`OrderID`), the remote order may have been entered via MEMO or MEMO FIX supported ports.

This message corresponds to FIX message type F

| Field                      | Offset | Length | Type                               | Tag Ref Num | Req'd | Description                                                                                          |
|----------------------------|--------|--------|------------------------------------|-------------|-------|------------------------------------------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a>         | N/A         | Y     | SBE Header with templateID = 7                                                                       |
| SendingTime                | 7      | 8      | <a href="#">UTCTimestampNano s</a> | 52          | Y     | Time of message transmission always expressed in UTC (Universal Time Coordinated, also known as GMT) |

| Field             | Offset | Length | Type                     | Tag Ref Num | Req'd | Description                                                                                                                                                                                                                                  |
|-------------------|--------|--------|--------------------------|-------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OrderID           | 15     | 8      | <a href="#">UINT64</a>   | 37          | Y*    | OrderID as assigned by the exchange.                                                                                                                                                                                                         |
| ClOrdID           | 23     | 20     | <a href="#">CHAR</a>     | 11          | Y     | An identifier for the cancel request.                                                                                                                                                                                                        |
| ListSeqNo         | 43     | 1      | <a href="#">UINT8</a>    | 67          | Y     | This field is used for identifying a specific quote entered via a Bulk Quote request. This field may not change from the value stated in the original Bulk Quote request. For orders entered via New Order Single this field should be zero. |
| OrigClOrdID       | 44     | 20     | <a href="#">CHAR</a>     | 41          | Y*    | ClOrdID (11) of the previous order (NOT the initial order of the day) as assigned by the customer.                                                                                                                                           |
| OptionsSecurityID | 64     | 8      | <a href="#">CHAR</a>     | 21035       | Y     | The OptionsSecurityID identifying the tradable options product.                                                                                                                                                                              |
| Side              | 72     | 1      | <a href="#">SideType</a> | 54          | Y     | This field is used to identify a specific quote entered via a Bulk Quote request.                                                                                                                                                            |

Note: either OrigClOrdID or OrderID fields must be present.

### 5.1.8 MassCancelRequest

The mass cancel request message requests the cancellation all remaining size on a set of existing orders that match the given criteria.

Note: this message can be used to cancel orders from different accounts. Orders affected by this request may have been entered via either MEMO or MEMO FIX supported protocol

| Field                      | Offset | Length | Type                                   | Tag Ref Num | Required | Description                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------|--------|--------|----------------------------------------|-------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a>             | N/A         | Y        | SBE Header with templateID = 8                                                                                                                                                                                                                                                                                                                                                                                  |
| SendingTime                | 7      | 8      | <a href="#">UTCTimestampNanos</a>      | 52          | Y        | Time of message transmission always expressed in UTC (Universal Time Coordinated, also known as GMT)                                                                                                                                                                                                                                                                                                            |
| CIOrdID                    | 15     | 20     | <a href="#">CHAR</a>                   | 11          | Y        | A unique identifier for the mass cancel request.                                                                                                                                                                                                                                                                                                                                                                |
| EFID                       | 35     | 4      | <a href="#">CHAR</a>                   | 21007       | N        | Cancel all orders on this EFID.                                                                                                                                                                                                                                                                                                                                                                                 |
| UnderlyingOrSeries         | 39     | 1      | <a href="#">UnderlyingOrSeriesType</a> | 21029       | Y        | If UnderlyingOrSeries is set to CancelAllOnSeries then OptionsSecurityID must be provided to denote the specific option series (root, put/call, expiration, and strike price) to cancel orders on. This option must be a series of the provided underlying symbol. If UnderlyingOrSeries is set to CancelAllOnUnderlying then all orders on that underlying that match the rest of the filter will be canceled. |
| Underlier                  | 40     | 6      | <a href="#">CHAR</a>                   | 55          | Y        | The Underlying symbol on which to cancel orders. If UnderlyingOrSeries is set to CancelAllOnSeries, cancels will be limited in scope for the OptionsSecurityID provided on this message.                                                                                                                                                                                                                        |
| OptionsSecurityID          | 46     | 8      | <a href="#">CHAR</a>                   | 21035       | N        | The OptionsSecurityID identifying the                                                                                                                                                                                                                                                                                                                                                                           |

| Field          | Offset | Length | Type                               | Tag Ref Num | Req'd | Description                                                                                      |
|----------------|--------|--------|------------------------------------|-------------|-------|--------------------------------------------------------------------------------------------------|
|                |        |        |                                    |             |       | tradable options product to cancel orders on, if UnderlyingOrSeries is set to CancelAllOnSeries. |
| CancelGroupID  | 54     | 2      | <a href="#">UINT16</a>             | 21000       | N     | Identifier of custom cancel group.                                                               |
| MassCancelInst | 56     | 1      | <a href="#">MassCancelInstType</a> | 21031       | Y     | The instructions for mass cancel request handling.                                               |

### 5.1.9 MassCancelClearLockoutRequest

The mass cancel clear lockout request message requests the clearing of a previous lockout. A lockout can be requested as part of a Mass Cancel Request using the MassCancelInst field. The LockoutID is assigned by the exchange and is returned in a PendingMassCancel message. The lockoutID from the PendingMassCancel message is used to identify the lockout to clear.

| Field                      | Offset | Length | Type                              | Tag Ref Num | Req'd | Description                                                                                          |
|----------------------------|--------|--------|-----------------------------------|-------------|-------|------------------------------------------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a>        | N/A         | Y     | SBE Header with templateID = 9                                                                       |
| SendingTime                | 7      | 8      | <a href="#">UTCTimestampNanos</a> | 52          | Y     | Time of message transmission always expressed in UTC (Universal Time Coordinated, also known as GMT) |
| ClOrdID                    | 15     | 20     | <a href="#">CHAR</a>              | 11          | Y     | A unique identifier for the mass cancel clear lockout request.                                       |
| Underlier                  | 35     | 6      | <a href="#">CHAR</a>              | 55          | Y     | The Underlying symbol on which the lockout is in effect.                                             |
| LockoutID                  | 41     | 8      | <a href="#">UINT64</a>            | 21033       | Y     | The LockoutID of a previous lockout, returned in a PendingMassCancel message.                        |

### 5.1.10 MassCancelBulkClearAllLockoutsRequest

The mass cancel clear all lockouts request message requests the clearing of previously placed lockouts. A lockout can be requested as part of a MassCancelRequest using the MassCancelInst field. The MassCancelBulkClearAllLockoutsRequest will clear all existing lockouts for the FIRM associated with the port. A MassCancelBulkClearLockoutAccepted message will be sent on the requesting port if the request is deemed valid else a MassCancelBulkClearLockoutReject will be sent instead with the appropriate reject reason code.

note: Lockouts initiated via a different port sent in parallel to this request may be cleared as part of this operation as well.



| Field                      | Offset | Length | Type                              | Tag Ref Num | Req'd | Description                                                                                          |
|----------------------------|--------|--------|-----------------------------------|-------------|-------|------------------------------------------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a>        | N/A         | Y     | SBE Header with templateID = 32                                                                      |
| SendingTime                | 7      | 8      | <a href="#">UTCTimestampNanos</a> | 52          | Y     | Time of message transmission always expressed in UTC (Universal Time Coordinated, also known as GMT) |
| CIOrdID                    | 15     | 20     | <a href="#">CHAR</a>              | 11          | Y     | A unique identifier for the mass cancel clear lockout request.                                       |

### 5.1.11 MassCancelBulkClearLockoutsByEFIDOrUnderlierRequest

The mass cancel clear lockouts by EFID and/or Underlier request message requests the clearing of previously placed lockouts. A lockout can be requested as part of a MassCancelRequest using the MassCancelInst field. The MassCancelBulkClearLockoutsByEFIDOrUnderlierRequest will clear all existing lockouts for the specified EFID and/or those for the FIRM associated with the port and the specified Underlier, if both values are set, only lockouts belonging to both EFID and Underlier will be cleared.

A MassCancelBulkClearLockoutAccepted message will be sent on the requesting port if the request is deemed valid else a MassCancelBulkClearLockoutReject will be sent instead with the appropriate reject reason code.

note: Lockouts initiated via a different port sent in parallel to this request may be cleared as part of this operation as well.

| Field                      | Offset | Length | Type                              | Tag Ref Num | Req'd | Description                                                                                          |
|----------------------------|--------|--------|-----------------------------------|-------------|-------|------------------------------------------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a>        | N/A         | Y     | SBE Header with templateID = 33                                                                      |
| SendingTime                | 7      | 8      | <a href="#">UTCTimestampNanos</a> | 52          | Y     | Time of message transmission always expressed in UTC (Universal Time Coordinated, also known as GMT) |
| CIOrdID                    | 15     | 20     | <a href="#">CHAR</a>              | 11          | Y     | A unique identifier for the mass cancel clear lockout request.                                       |
| EFID                       | 35     | 4      | <a href="#">CHAR</a>              | 21007       | Y*    | The EFID for which all lockouts will be cleared.                                                     |
| Underlier                  | 39     | 6      | <a href="#">CHAR</a>              | 55          | Y*    | The Underlying symbol on which to clear all lockouts for the firm.                                   |

\*Either Underlier and/or EFID is required.

### 5.1.12 AllocationInstruction

The AllocationInstruction message requests a modification to the clearing information on the trade. Supported fields to change are the non-contra fields in the Parties block, along with being able to split the quantity of the trade into multiple allocation units. Changes requested with this message are returned in AllocationInstructionAck (to the requestor) and AllocationInstructionAlert (to the contra party) messages.

| Field                      | Offset | Length | Type                              | Tag Ref Num | Req'd | Description                                                                                                  |
|----------------------------|--------|--------|-----------------------------------|-------------|-------|--------------------------------------------------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a>        | N/A         | Y     | SBE Header with templateID = 10                                                                              |
| SendingTime                | 7      | 8      | <a href="#">UTCTimestampNanos</a> | 52          | Y     | Time of message transmission always expressed in UTC (Universal Time Coordinated, also known as GMT)         |
| AllocID                    | 15     | 20     | <a href="#">CHAR</a>              | 70          | Y     | Unique identifier for this allocation instruction message - supplied by customer, similar to ClOrdID         |
| AllocType                  | 35     | 1      | <a href="#">AllocType</a>         | 626         | Y     | Specifies the purpose or type of Allocation message.                                                         |
| AllocTransType             | 36     | 1      | <a href="#">AllocTransType</a>    | 71          | Y     | Identifies allocation transaction type being requested (New or Replace)                                      |
| RefAllocID                 | 37     | 20     | <a href="#">CHAR</a>              | 72          | C     | Required when AllocTransType = Replace, contains the IndividualAllocID of the allocation unit being changed. |
| OptionsSecurityID          | 57     | 8      | <a href="#">CHAR</a>              | 21035       | Y     | The OptionsSecurity ID of the tradable options product of the                                                |

| Field                | Offset | Length | Type                                      | Tag Ref Num | Req'd | Description                                                      |
|----------------------|--------|--------|-------------------------------------------|-------------|-------|------------------------------------------------------------------|
|                      |        |        |                                           |             |       | trade being edited.                                              |
| Side                 | 65     | 1      | SideType                                  | 54          | Y     | Identifies the Side of the trade being edited                    |
| NoExecs              | -      | -      | <a href="#">RepeatingGroupDimensions</a>  | 124         | Y     | Specifies the number of Trades being allocated (always set to 1) |
| ExecutionAllocations | -      | -      | <a href="#">ExecutionAllocationsGroup</a> | N/A         | Y     | Specifies the Trade being allocated                              |
| NoAllocs             | -      | -      | <a href="#">RepeatingGroupDimensions</a>  | 78          | Y     | The dimensions of the Allocations Repeating Group.               |
| RequestedAllocations | -      | -      | <a href="#">RequestAllocationsGroup</a>   | N/A         | Y     | The requested allocations for the trade.                         |

## 5.2 Server To Client

### 5.2.1 ExecutionReport

The MEMO schema defines multiple Execution Report messages each conforming to FIX message type 8.

#### 5.2.1.1 ExecutionReport\_New

The ExecutionReport\_New is a response to order requests in the event the order was accepted by the exchange. This message echos back to the requester all the fields as been configured on the request with additional information about the state of the order.

| Field                      | Offset | Length | Type                       | Tag Ref Num | Req'd | Description                          |
|----------------------------|--------|--------|----------------------------|-------------|-------|--------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a> | N/A         | Y     | SBE Header with templateID = 11      |
| OrderID                    | 7      | 8      | <a href="#">UINT64</a>     | 37          | Y     | OrderID as assigned by the exchange. |
| ClOrdID                    | 15     | 20     | <a href="#">CHAR</a>       | 11          | Y     | As stated in the order.              |
| ListSeqNo                  | 35     | 1      | <a href="#">UINT8</a>      | 67          | Y     | This field is used for               |

| Field             | Offset | Length | Type                                 | Tag Ref Num | Req'd | Description                                                                                                                       |
|-------------------|--------|--------|--------------------------------------|-------------|-------|-----------------------------------------------------------------------------------------------------------------------------------|
|                   |        |        |                                      |             |       | identifying a specific quote entered via a Bulk Quote request. For orders entered via New Order Single this field should be zero. |
| ExecID            | 36     | 8      | <a href="#">UINT64</a>               | 17          | Y     | Identifier of execution message as assigned by the exchange. The ExecID can be correlated with the Memoir OrderID value.          |
| OrdStatus         | 44     | 1      | <a href="#">OrdStatusType</a>        | 39          | Y     | The status of the order.                                                                                                          |
| OptionsSecurityID | 45     | 8      | <a href="#">CHAR</a>                 | 21035       | Y     | As stated in the order.                                                                                                           |
| Side              | 53     | 1      | <a href="#">SideType</a>             | 54          | Y     | As stated in the order.                                                                                                           |
| OrderQty          | 54     | 4      | <a href="#">UINT32</a>               | 38          | Y     | As stated in the order.                                                                                                           |
| OrdType           | 58     | 1      | <a href="#">OrdType</a>              | 40          | Y     | As stated in the order.                                                                                                           |
| Price             | 59     | 8      | <a href="#">PriceType</a>            | 44          | N     | As stated in the order.                                                                                                           |
| TimeInForce       | 67     | 1      | <a href="#">TimeInForceType</a>      | 59          | Y     | As stated in the order.                                                                                                           |
| PositionEffect    | 68     | 1      | PositionEffectType                   | 77          | N     | As stated in the order.                                                                                                           |
| ExecInst          | 69     | 2      | <a href="#">ExecInstType</a>         | 18          | Y     | As stated in the order.                                                                                                           |
| TradingCapacity   | 71     | 1      | <a href="#">TradingCapacityType</a>  | 1815        | Y     | As stated in the order.                                                                                                           |
| RepriceFrequency  | 72     | 1      | <a href="#">RepriceFrequencyType</a> | 21020       | N     | As stated in the order.                                                                                                           |
| RepriceBehavior   | 73     | 1      | <a href="#">RepriceBehaviorType</a>  | 21021       | N     | As stated in the order.                                                                                                           |
| LeavesQty         | 74     | 4      | <a href="#">UINT32</a>               | 151         | Y     | Quantity open for further execution.                                                                                              |
| CumQty            | 78     | 4      | <a href="#">UINT32</a>               | 14          | Y     | Total quantity (e.g. number of contracts) filled.                                                                                 |

| Field                | Offset | Length | Type                                     | Tag Ref Num | Req'd | Description                                                                                      |
|----------------------|--------|--------|------------------------------------------|-------------|-------|--------------------------------------------------------------------------------------------------|
| SendingTime          | 82     | 8      | <a href="#">UTCTimestampNanos</a>        | 52          | Y     | The time the ExecutionReport was sent. UTC timestamp since unix epoch with nanosecond precision. |
| TransactTime         | 90     | 8      | <a href="#">UTCTimestampNanos</a>        | 60          | Y     | The time at which the transaction occurred. UTC timestamp since epoch with nanosecond precision. |
| MtpGroupID           | 98     | 2      | <a href="#">MtpGroupIDType</a>           | 2362        | N     | As stated in the order.                                                                          |
| MatchTradePrevention | 100    | 1      | <a href="#">MatchTradePreventionType</a> | 21001       | N     | As stated in the order.                                                                          |
| CancelGroupID        | 101    | 2      | <a href="#">UINT16</a>                   | 21000       | N     | As stated in the order.                                                                          |
| RiskGroupID          | 103    | 2      | <a href="#">UINT16</a>                   | 21005       | N     | As stated in the order.                                                                          |
| NoPartyIDs           | -      | -      | <a href="#">RepeatingGroupDimensions</a> | 453         | Y     | The dimensions of the Repeating Group.                                                           |
| Parties              | -      | -      | <a href="#">Parties Group</a>            | N/A         | Y     | The parties associated with the quotes.                                                          |

#### 5.2.1.2 ExecutionReport\_BulkQuote\_PendingNew

The ExecutionReport\_BulkQuote\_PendingNew is a response to bulk quote requests (ShortTwoSidedBulkQuote, LongTwoSidedBulkQuote, ShortOneSidedBulkQuote, LongOneSidedBulkQuote) in the event the bulk quote request was accepted by the exchange. This message echos back to the requester fields configured on the request with additional information about the state of the bulk quote handling.

| Field                      | Offset | Length | Type                       | Tag Ref Num | Req'd | Description                     |
|----------------------------|--------|--------|----------------------------|-------------|-------|---------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a> | N/A         | Y     | SBE Header with templateID = 12 |
| ClOrdID                    | 7      | 20     | <a href="#">CHAR</a>       | 11          | Y     | As stated in the request.       |

| Field                | Offset | Length | Type                                     | Tag Ref Num | Req'd | Description                                                                                      |
|----------------------|--------|--------|------------------------------------------|-------------|-------|--------------------------------------------------------------------------------------------------|
| Symbol (Underlier)   | 27     | 6      | <a href="#">CHAR</a>                     | 55          | Y     | As stated in the request.                                                                        |
| TimeInForce          | 33     | 1      | <a href="#">TimeInForceType</a>          | 59          | Y     | As stated in the request.                                                                        |
| ExecInst             | 34     | 2      | <a href="#">ExecInstType</a>             | 18          | Y     | As stated in the request.                                                                        |
| TradingCapacity      | 36     | 1      | <a href="#">TradingCapacityType</a>      | 1815        | Y     | As stated in the request.                                                                        |
| SendingTime          | 37     | 8      | <a href="#">UTCTimestampNanos</a>        | 52          | Y     | The time the ExecutionReport was sent. UTC timestamp since unix epoch with nanosecond precision. |
| TransactTime         | 45     | 8      | <a href="#">UTCTimestampNanos</a>        | 60          | Y     | The time at which the transaction occurred. UTC timestamp since epoch with nanosecond precision. |
| MtpGroupID           | 53     | 2      | <a href="#">MtpGroupIDType</a>           | 2362        | N     | As stated in the request.                                                                        |
| MatchTradePrevention | 55     | 1      | <a href="#">MatchTradePreventionType</a> | 21001       | N     | As stated in the request.                                                                        |
| CancelGroupID        | 56     | 2      | <a href="#">UINT16</a>                   | 21000       | N     | As stated in the request.                                                                        |
| RiskGroupID          | 58     | 2      | <a href="#">UINT16</a>                   | 21005       | N     | As stated in the request.                                                                        |
| NumberOfOrders       | 60     | 1      | <a href="#">UINT8</a>                    | 346         | Y     | The number of orders/quote entries in the request.                                               |
| NoPartyIDs           | -      | -      | <a href="#">RepeatingGroupDimensions</a> | 453         | Y     | The dimensions of the Repeating Group.                                                           |
| Parties              | -      | -      | <a href="#">Parties Group</a>            | N/A         | Y     | The parties associated with the quotes.                                                          |

#### 5.2.1.3 ExecutionReport\_BulkQuote\_ComponentNew

The ExecutionReport\_BulkQuote\_ComponentNew is a response to bulk quote requests (ShortTwoSidedBulkQuote, LongTwoSidedBulkQuote, ShortOneSidedBulkQuote, LongOneSidedBulkQuote). This message gives state information about an individual single sided quote within the bulk quote request. The requester will receive a component new message for each

side of a two-sided entry. This message echos back to the requester fields configured on the individual single sided quote with additional information about the state of the individual quote handling.

| Field                      | Offset | Length | Type                              | Tag Ref Num | Req'd | Description                                                                                                                                                                           |
|----------------------------|--------|--------|-----------------------------------|-------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a>        | N/A         | Y     | SBE Header with templateID = 13                                                                                                                                                       |
| OrderID                    | 7      | 8      | <a href="#">UINT64</a>            | 37          | Y     | OrderID as assigned by the exchange.                                                                                                                                                  |
| CIOrdID                    | 15     | 20     | <a href="#">CHAR</a>              | 11          | Y     | As stated in the request.                                                                                                                                                             |
| ListSeqNo                  | 35     | 1      | <a href="#">UINT8</a>             | 67          | Y     | As stated in the request.                                                                                                                                                             |
| ExecID                     | 36     | 8      | <a href="#">UINT64</a>            | 17          | Y     | Unique identifier of execution message as assigned by the exchange. Uniqueness is guaranteed within a single trading day. The ExecID can be correlated with the Memoir OrderID value. |
| OrdStatus                  | 44     | 1      | <a href="#">OrdStatusType</a>     | 39          | Y     | The status of the request.                                                                                                                                                            |
| OptionsSecurityID          | 45     | 8      | <a href="#">CHAR</a>              | 21035       | Y     | As stated in the request.                                                                                                                                                             |
| Side                       | 53     | 1      | <a href="#">SideType</a>          | 54          | Y     | As stated in the request.                                                                                                                                                             |
| OrderQty                   | 54     | 4      | <a href="#">UINT32</a>            | 38          | Y     | As stated in the request.                                                                                                                                                             |
| Price                      | 58     | 8      | <a href="#">PriceType</a>         | 44          | N     | As stated in the request.                                                                                                                                                             |
| LeavesQty                  | 66     | 4      | <a href="#">UINT32</a>            | 151         | Y     | Quantity open for further execution.                                                                                                                                                  |
| CumQty                     | 70     | 4      | <a href="#">UINT32</a>            | 14          | Y     | Total quantity (e.g. number of contracts) filled.                                                                                                                                     |
| SendingTime                | 74     | 8      | <a href="#">UTCTimestampNanos</a> | 52          | Y     | The time the ExecutionReport was sent. UTC timestamp since unix epoch with nanosecond precision.                                                                                      |
| TransactTime               | 82     | 8      | <a href="#">UTCTimestampNanos</a> | 60          | Y     | The time at which the transaction                                                                                                                                                     |

| Field | Offset | Length | Type | Tag Ref Num | Req'd | Description                                                    |
|-------|--------|--------|------|-------------|-------|----------------------------------------------------------------|
|       |        |        |      |             |       | occurred. UTC timestamp since epoch with nanosecond precision. |

#### 5.2.1.4 ExecutionReport\_Rejected

The ExecutionReport\_Rejected is a response to order and quote requests in the event the order/quote was rejected by the Exchange. This message echos back to the requester some of the fields as been configured on the request with additional information about the reject reason.

| Field                      | Offset | Length | Type                                  | Tag Ref Num | Req'd | Description                                                                                                                                                                           |
|----------------------------|--------|--------|---------------------------------------|-------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a>            | N/A         | Y     | SBE Header with templateID = 14                                                                                                                                                       |
| ClOrdID                    | 7      | 20     | <a href="#">CHAR</a>                  | 11          | Y     | As stated in the order.                                                                                                                                                               |
| ListSeqNo                  | 27     | 1      | <a href="#">UINT8</a>                 | 67          | Y     | As stated in the Bulk Quote request or 0 for NewOrderSingle request                                                                                                                   |
| ExecID                     | 28     | 8      | <a href="#">UINT64</a>                | 17          | Y     | Unique identifier of execution message as assigned by the exchange. Uniqueness is guaranteed within a single trading day. The ExecID can be correlated with the Memoir OrderID value. |
| OrdStatus                  | 36     | 1      | <a href="#">OrdStatusType</a>         | 39          | Y     | The status of the order.                                                                                                                                                              |
| RejectReason               | 37     | 2      | <a href="#">OrderRejectReasonCode</a> | 103         | Y     | Reason code for order rejection.                                                                                                                                                      |
| OptionsSecurityID          | 39     | 8      | <a href="#">CHAR</a>                  | 21035       | Y     | As stated in the order.                                                                                                                                                               |
| Side                       | 47     | 1      | <a href="#">SideType</a>              | 54          | Y     | As stated in the order. If the order was a Bulk Quote this field will have the value 'B' = "As Defined".                                                                              |



| Field       | Offset | Length | Type                              | Tag Ref Num | Req'd | Description                                                                                      |
|-------------|--------|--------|-----------------------------------|-------------|-------|--------------------------------------------------------------------------------------------------|
| LeavesQty   | 48     | 4      | <a href="#">UINT32</a>            | 151         | Y     | Quantity open for further execution.                                                             |
| CumQty      | 52     | 4      | <a href="#">UINT32</a>            | 14          | Y     | Total quantity (e.g. number of contracts) filled.                                                |
| SendingTime | 56     | 8      | <a href="#">UTCTimestampNanos</a> | 52          | Y     | The time the ExecutionReport was sent. UTC timestamp since unix epoch with nanosecond precision. |

#### 5.2.1.5 ExecutionReport\_Trade

The ExecutionReport\_Trade is an unsolicited response triggered as a result of a trade. The message contains all the data describing the trade.

| Field                      | Offset | Length | Type                       | Tag Ref Num | Req'd | Description                                                                                                                                                   |
|----------------------------|--------|--------|----------------------------|-------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a> | N/A         | Y     | SBE Header with templateID = 15                                                                                                                               |
| OrderID                    | 7      | 8      | <a href="#">UINT64</a>     | 37          | Y     | OrderID as assigned by the exchange.                                                                                                                          |
| ClOrdID                    | 15     | 20     | <a href="#">CHAR</a>       | 11          | Y     | The unique identifier as specified by the client.                                                                                                             |
| ListSeqNo                  | 35     | 1      | <a href="#">UINT8</a>      | 67          | Y     | As stated in Bulk Quote request or 0 for NewOrderSingle request                                                                                               |
| TrdMatchID                 | 36     | 8      | <a href="#">UINT64</a>     | 880         | Y     | Identifier assigned to the Trade by the matching system. In case of executions on orders routed to another exchange, the TrdMatchID field will be filled on a |

| Field             | Offset | Length | Type                              | Tag Ref Num | Req'd | Description                                                                                                                                                                           |
|-------------------|--------|--------|-----------------------------------|-------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   |        |        |                                   |             |       | best-effort basis.                                                                                                                                                                    |
| ExecID            | 44     | 8      | <a href="#">UINT64</a>            | 17          | Y     | Unique identifier of execution message as assigned by the exchange. Uniqueness is guaranteed within a single trading day. The ExecID can be correlated with the Memoir OrderID value. |
| OrdStatus         | 52     | 1      | <a href="#">OrdStatusType</a>     | 39          | Y     | The status of the order.                                                                                                                                                              |
| OptionsSecurityID | 53     | 8      | <a href="#">CHAR</a>              | 21035       | Y     | As stated in the order.                                                                                                                                                               |
| Side              | 61     | 1      | <a href="#">SideType</a>          | 54          | Y     | As stated in the order                                                                                                                                                                |
| LastQty           | 62     | 4      | <a href="#">UINT32</a>            | 32          | Y     | Quantity (e.g. contracts) bought/sold on this (last) fill.                                                                                                                            |
| LastPx            | 66     | 8      | <a href="#">PriceType</a>         | 31          | Y     | Price of this (last) fill.                                                                                                                                                            |
| LeavesQty         | 74     | 4      | <a href="#">UINT32</a>            | 151         | Y     | Quantity open for further execution.                                                                                                                                                  |
| CumQty            | 78     | 4      | <a href="#">UINT32</a>            | 14          | Y     | Total quantity (e.g. number of contracts) filled.                                                                                                                                     |
| SendingTime       | 82     | 8      | <a href="#">UTCTimestampNanos</a> | 52          | Y     | The time the ExecutionReport was sent. UTC timestamp since unix epoch with nanosecond precision.                                                                                      |
| TransactTime      | 90     | 8      | <a href="#">UTCTimestampNanos</a> | 60          | Y     | The time at which the transaction occurred. UTC timestamp since epoch                                                                                                                 |

| Field                 | Offset | Length | Type                                     | Tag Ref Num | Req'd | Description                                                                                                 |
|-----------------------|--------|--------|------------------------------------------|-------------|-------|-------------------------------------------------------------------------------------------------------------|
|                       |        |        |                                          |             |       | with nanosecond precision.                                                                                  |
| LastLiquidityInd      | 98     | 1      | <a href="#">LastLiquidityIndType</a>     | 851         | Y     | Indicator denoting whether the referenced order removed liquidity from or added liquidity to the MEMX book. |
| LastMkt               | 99     | 4      | <a href="#">ExchangeCode</a>             | 30          | Y     | Market of execution for last fill, or an indication of the market where an order was routed.                |
| PositionEffect        | 103    | 1      | PositionEffectType                       | 77          | Y     | As stated in the order.                                                                                     |
| TradingCapacity       | 104    | 1      | <a href="#">TradingCapacityType</a>      | 1815        | Y     | As stated in the order.                                                                                     |
| ContraTradingCapacity | 105    | 1      | <a href="#">TradingCapacityType</a>      | 21036       | Y     | TradingCapacity of the contra order.                                                                        |
| NoPartyIDs            | -      | -      | <a href="#">RepeatingGroupDimensions</a> | 453         | Y     | The dimensions of the Repeating Group.                                                                      |
| Parties               | -      | -      | <a href="#">Parties Group</a>            | N/A         | N     | The parties associated with the quotes.                                                                     |

#### 5.2.1.6 ExecutionReport\_PendingCancel

The ExecutionReport\_PendingCancel is a response to OrderCancelRequest request indicating the request has been received by the exchange and is in the process of being handled.

| Field                      | Offset | Length | Type                       | Tag Ref Num | Req'd | Description                          |
|----------------------------|--------|--------|----------------------------|-------------|-------|--------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a> | N/A         | Y     | SBE Header with templateID = 16      |
| OrderID                    | 7      | 8      | <a href="#">UINT64</a>     | 37          | Y     | OrderID as assigned by the exchange. |
| ClOrdID                    | 15     | 20     | <a href="#">CHAR</a>       | 11          | Y     | As stated in the cancel request      |

| Field             | Offset | Length | Type                              | Tag Ref Num | Req'd | Description                                                                                      |
|-------------------|--------|--------|-----------------------------------|-------------|-------|--------------------------------------------------------------------------------------------------|
| ListSeqNo         | 35     | 1      | <a href="#">UINT8</a>             | 67          | Y     | As stated in the cancel request                                                                  |
| OrigClOrdID       | 36     | 20     | <a href="#">CHAR</a>              | 41          | Y     | As stated in the cancel request                                                                  |
| OrdStatus         | 56     | 1      | <a href="#">OrdStatusType</a>     | 39          | Y     | The status of the order.                                                                         |
| OptionsSecurityID | 57     | 8      | <a href="#">CHAR</a>              | 21035       | Y     | As stated in the cancel request.                                                                 |
| Side              | 65     | 1      | <a href="#">SideType</a>          | 54          | N     | As stated in the cancel request                                                                  |
| LeavesQty         | 66     | 4      | <a href="#">UINT32</a>            | 151         | Y     | Quantity open for further execution.                                                             |
| CumQty            | 70     | 4      | <a href="#">UINT32</a>            | 14          | Y     | Total quantity (e.g. number of contracts) filled.                                                |
| SendingTime       | 74     | 8      | <a href="#">UTCTimestampNanos</a> | 52          | Y     | The time the ExecutionReport was sent. UTC timestamp since unix epoch with nanosecond precision. |

#### 5.2.1.7 ExecutionReport\_Canceled

The ExecutionReport\_Canceled message is an event on an order/quote triggered by a successful handling of cancel / mass cancel request for that order. Orders/quotes that are canceled by the exchange because of Time in Force instructions shall have an OrdStatus as Expired. All other cases shall have OrdStatus as Canceled.

| Field                      | Offset | Length | Type                       | Tag Ref Num | Req'd | Description                                                                                        |
|----------------------------|--------|--------|----------------------------|-------------|-------|----------------------------------------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a> | N/A         | Y     | SBE Header with templateID = 17                                                                    |
| OrderID                    | 7      | 8      | <a href="#">UINT64</a>     | 37          | Y     | OrderID as assigned by the exchange to the canceled order.                                         |
| ClOrdID                    | 15     | 20     | <a href="#">CHAR</a>       | 11          | Y     | The identifier for the cancel request or the canceled order in the event of an unsolicited cancel* |
| ListSeqNo                  | 35     | 1      | <a href="#">UINT8</a>      | 67          | Y     | As stated in the cancel request                                                                    |
| OrigClOrdID                | 36     | 20     | <a href="#">CHAR</a>       | 41          | Y     | A Unique identifier for the canceled order.                                                        |

| Field             | Offset | Length | Type                              | Tag<br>Ref<br>Num | Req'd | Description                                                                                                                                                                           |
|-------------------|--------|--------|-----------------------------------|-------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ExecID            | 56     | 8      | <a href="#">UINT64</a>            | 17                | Y     | Unique identifier of execution message as assigned by the exchange. Uniqueness is guaranteed within a single trading day. The ExecID can be correlated with the Memoir OrderID value. |
| OrdStatus         | 64     | 1      | <a href="#">OrdStatusType</a>     | 39                | Y     | The status of the order.                                                                                                                                                              |
| CancelReason      | 65     | 1      | <a href="#">CancelReasonCode</a>  | 21004             | Y     | Reason code for order cancellation.                                                                                                                                                   |
| OptionsSecurityID | 66     | 8      | <a href="#">CHAR</a>              | 21035             | Y     | As stated in the cancel request.                                                                                                                                                      |
| Side              | 74     | 1      | <a href="#">SideType</a>          | 54                | N     | As stated in the cancel request                                                                                                                                                       |
| LeavesQty         | 75     | 4      | <a href="#">UINT32</a>            | 151               | Y     | Quantity open for further execution.                                                                                                                                                  |
| CumQty            | 79     | 4      | <a href="#">UINT32</a>            | 14                | Y     | Total quantity (e.g. number of contracts) filled.                                                                                                                                     |
| SendingTime       | 83     | 8      | <a href="#">UTCTimestampNanos</a> | 52                | Y     | The time the ExecutionReport was sent. UTC timestamp since unix epoch with nanosecond precision.                                                                                      |
| TransactTime      | 91     | 8      | <a href="#">UTCTimestampNanos</a> | 60                | Y     | The time at which the transaction occurred. UTC timestamp since epoch with nanosecond precision.                                                                                      |
| OrigListSeqNo     | 99     | 1      | UINT8                             | 21023             | Y     | Original list sequence number                                                                                                                                                         |

When the client has requested ExecutionRequest\_Canceled messages as a result of a mass cancel request the cancels will be reported back to customers as Unsolicited cancel i.e. the ClOrdID and OrigClOrdID fields will contain the canceled order identifier.

## 5.2.1.8 ExecutionReport\_PendingReplace

The ExecutionReport\_PendingReplace message is a response to OrderCancelReplaceRequest request indicating the request has been received by the exchange and is in the process of being handled.

| Field                      | Offset | Length | Type                              | Tag Ref Num | Req'd | Description                                                                                                                                                                           |
|----------------------------|--------|--------|-----------------------------------|-------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a>        | N/A         | Y     | SBE Header with templateID = 18                                                                                                                                                       |
| OrderID                    | 7      | 8      | <a href="#">UINT64</a>            | 37          | Y     | OrderID as assigned by the exchange to the canceled order.                                                                                                                            |
| ClOrdID                    | 15     | 20     | <a href="#">CHAR</a>              | 11          | Y     | As stated in the replace request                                                                                                                                                      |
| ListSeqNo                  | 35     | 1      | <a href="#">UINT8</a>             | 67          | Y     | As stated in the Bulk Quote request or 0 for NewOrderSingle request                                                                                                                   |
| OrigClOrdID                | 36     | 20     | <a href="#">CHAR</a>              | 41          | Y     | As stated in the replace request                                                                                                                                                      |
| ExecID                     | 56     | 8      | <a href="#">UINT64</a>            | 17          | Y     | Unique identifier of execution message as assigned by the exchange. Uniqueness is guaranteed within a single trading day. The ExecID can be correlated with the Memoir OrderID value. |
| OrdStatus                  | 64     | 1      | <a href="#">OrdStatusType</a>     | 39          | Y     | The status of the order. (PendingReplace)                                                                                                                                             |
| OptionsSecurityID          | 65     | 8      | <a href="#">CHAR</a>              | 21035       | Y     | As stated on the previous order                                                                                                                                                       |
| Side                       | 73     | 1      | <a href="#">SideType</a>          | 54          | Y     | As stated in the order.                                                                                                                                                               |
| OrderQty                   | 74     | 4      | <a href="#">UINT32</a>            | 38          | Y     | As stated on the previous order                                                                                                                                                       |
| OrdType                    | 78     | 1      | <a href="#">OrdType</a>           | 40          | Y     | As stated on the previous order                                                                                                                                                       |
| Price                      | 79     | 8      | <a href="#">PriceType</a>         | 44          | N     | As stated on the previous order                                                                                                                                                       |
| LeavesQty                  | 87     | 4      | <a href="#">UINT32</a>            | 151         | Y     | Quantity open for further execution.                                                                                                                                                  |
| CumQty                     | 91     | 4      | <a href="#">UINT32</a>            | 14          | Y     | Total quantity (e.g. number of contracts) filled.                                                                                                                                     |
| SendingTime                | 95     | 8      | <a href="#">UTCTimestampNanos</a> | 52          | Y     | The time the ExecutionReport                                                                                                                                                          |

| Field | Offset | Length | Type | Tag Ref Num | Req'd | Description                                                         |
|-------|--------|--------|------|-------------|-------|---------------------------------------------------------------------|
|       |        |        |      |             |       | was sent. UTC timestamp since unix epoch with nanosecond precision. |

#### 5.2.1.9 ExecutionReport\_Replaced

The ExecutionReport\_Replaced is an unsolicited event on an order/quote triggered by a successful handling of OrderCancelReplaceRequest for the original order/quote. The original order/quote can be considered fully cancelled and replaced by the stated replacement order upon receipt of this event.

| Field                      | Offset | Length | Type                          | Tag Ref Num | Req'd | Description                                                                                                                                                                           |
|----------------------------|--------|--------|-------------------------------|-------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a>    | N/A         | Y     | SBE Header with templateID = 19                                                                                                                                                       |
| OrderID                    | 7      | 8      | <a href="#">UINT64</a>        | 37          | Y     | OrderID as assigned by the exchange.                                                                                                                                                  |
| ClOrdID                    | 15     | 20     | <a href="#">CHAR</a>          | 11          | Y     | As stated in the replace request                                                                                                                                                      |
| ListSeqNo                  | 35     | 1      | <a href="#">UINT8</a>         | 67          | Y     | As stated in the Bulk Quote request or 0 for NewOrderSingle request                                                                                                                   |
| OrigClOrdID                | 36     | 20     | <a href="#">CHAR</a>          | 41          | Y     | As stated in the replace request                                                                                                                                                      |
| ExecID                     | 56     | 8      | <a href="#">UINT64</a>        | 17          | Y     | Unique identifier of execution message as assigned by the exchange. Uniqueness is guaranteed within a single trading day. The ExecID can be correlated with the Memoir OrderID value. |
| OrdStatus                  | 64     | 1      | <a href="#">OrdStatusType</a> | 39          | Y     | The status of the order.                                                                                                                                                              |
| OptionsSecurityID          | 65     | 8      | <a href="#">CHAR</a>          | 21035       | Y     | As stated on the replace request                                                                                                                                                      |
| Side                       | 73     | 1      | <a href="#">SideType</a>      | 54          | Y     | As stated in the replace request                                                                                                                                                      |
| OrderQty                   | 74     | 4      | <a href="#">UINT32</a>        | 38          | Y     | As stated in the replace request                                                                                                                                                      |
| OrdType                    | 78     | 1      | <a href="#">OrdType</a>       | 40          | Y     | As stated in the replace request                                                                                                                                                      |

| Field         | Offset | Length | Type                              | Tag<br>Ref<br>Num | Req'd | Description                                                                                      |
|---------------|--------|--------|-----------------------------------|-------------------|-------|--------------------------------------------------------------------------------------------------|
| Price         | 79     | 8      | <a href="#">PriceType</a>         | 44                | N     | As stated in the replace request                                                                 |
| LeavesQty     | 87     | 4      | <a href="#">UINT32</a>            | 151               | Y     | Quantity open for further execution.                                                             |
| CumQty        | 91     | 4      | <a href="#">UINT32</a>            | 14                | Y     | Total quantity (e.g. number of contracts) filled.                                                |
| SendingTime   | 95     | 8      | <a href="#">UTCTimestampNanos</a> | 52                | Y     | The time the ExecutionReport was sent. UTC timestamp since unix epoch with nanosecond precision. |
| TransactTime  | 103    | 8      | <a href="#">UTCTimestampNanos</a> | 60                | Y     | The time at which the transaction occurred. UTC timestamp since epoch with nanosecond precision. |
| OrigListSeqNo | 111    | 1      | UINT8                             | 21023             | Y     | Original list sequence number                                                                    |

#### 5.2.1.10 ExecutionReport\_TradeCorrection

The ExecutionReport\_TradeCorrection is an unsolicited event notifying of a change to a price and/or quantity of a previously reported trade.

| Field                      | Offset | Length | Type                       | Tag<br>Ref<br>Num | Req'd | Description                                                         |
|----------------------------|--------|--------|----------------------------|-------------------|-------|---------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a> | N/A               | Y     | SBE Header with templateID = 20                                     |
| OrderID                    | 7      | 8      | <a href="#">UINT64</a>     | 37                | Y     | OrderID as assigned by the exchange.                                |
| ClOrdID                    | 15     | 20     | <a href="#">CHAR</a>       | 11                | Y     | The ClOrdID associated with the order.                              |
| ListSeqNo                  | 35     | 1      | <a href="#">UINT8</a>      | 67                | Y     | As stated in the Bulk Quote request or 0 for NewOrderSingle request |
| TrdMatchID                 | 36     | 8      | <a href="#">UINT64</a>     | 880               | Y     | Identifier assigned to the Trade by the matching                    |



| Field             | Offset | Length | Type                              | Tag<br>Ref<br>Num | Req'd | Description                                                                                                                                                                           |
|-------------------|--------|--------|-----------------------------------|-------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   |        |        |                                   |                   |       | system. In case of executions on orders routed to another exchange, the TrdMatchID field will be filled on a best-effort basis.                                                       |
| ExecID            | 44     | 8      | <a href="#">UINT64</a>            | 17                | Y     | Unique identifier of execution message as assigned by the exchange. Uniqueness is guaranteed within a single trading day. The ExecID can be correlated with the Memoir OrderID value. |
| ExecRefID         | 52     | 8      | <a href="#">UINT64</a>            | 19                | Y     | The ExecID of the trade being corrected                                                                                                                                               |
| OrdStatus         | 60     | 1      | <a href="#">OrdStatusType</a>     | 39                | Y     | Order status                                                                                                                                                                          |
| OptionsSecurityID | 61     | 8      | <a href="#">CHAR</a>              | 21035             | Y     | As stated on the order.                                                                                                                                                               |
| Side              | 69     | 1      | <a href="#">SideType</a>          | 54                | Y     |                                                                                                                                                                                       |
| LastQty           | 70     | 4      | <a href="#">UINT32</a>            | 32                | Y     | Corrected trade quantity.                                                                                                                                                             |
| LastPx            | 74     | 8      | <a href="#">PriceType</a>         | 31                | Y     | Corrected trade price.                                                                                                                                                                |
| LeavesQty         | 82     | 4      | <a href="#">UINT32</a>            | 151               | Y     | Quantity open for further execution.                                                                                                                                                  |
| CumQty            | 86     | 4      | <a href="#">UINT32</a>            | 14                | Y     | Total quantity (e.g. number of contracts) filled.                                                                                                                                     |
| SendingTime       | 90     | 8      | <a href="#">UTCTimestampNanos</a> | 52                | Y     | The time the ExecutionReport was sent. UTC timestamp since unix epoch with nanosecond precision.                                                                                      |

#### 5.2.1.11 ExecutionReport\_TradeBreak

The ExecutionReport\_TradeBreak is an unsolicited event notifying of a cancelation of a previously reported trade.

| Field                      | Offset | Length | Type                          | Tag<br>Ref<br>Num | Req'd | Description                                                                                                                                                                           |
|----------------------------|--------|--------|-------------------------------|-------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a>    | N/A               | Y     | SBE Header with templateID = 21                                                                                                                                                       |
| OrderID                    | 7      | 8      | <a href="#">UINT64</a>        | 37                | Y     | OrderID as assigned by the exchange.                                                                                                                                                  |
| ClOrdID                    | 15     | 20     | <a href="#">CHAR</a>          | 11                | Y     | The ClOrdID associated with the order.                                                                                                                                                |
| ListSeqNo                  | 35     | 1      | <a href="#">UINT8</a>         | 67                | Y     | As stated in the Bulk Quote request or 0 for NewOrderSingle request                                                                                                                   |
| TrdMatchID                 | 36     | 8      | <a href="#">UINT64</a>        | 880               | Y     | Identifier assigned to the Trade by the matching system. In case of executions on orders routed to another exchange, the TrdMatchID field will be filled on a best-effort basis.      |
| ExecID                     | 44     | 8      | <a href="#">UINT64</a>        | 17                | Y     | Unique identifier of execution message as assigned by the exchange. Uniqueness is guaranteed within a single trading day. The ExecID can be correlated with the Memoir OrderID value. |
| ExecRefID                  | 52     | 8      | <a href="#">UINT64</a>        | 19                | Y     | The ExecID of the trade being corrected                                                                                                                                               |
| OrdStatus                  | 60     | 1      | <a href="#">OrdStatusType</a> | 39                | Y     | Order status                                                                                                                                                                          |
| OptionsSecurityID          | 61     | 8      | <a href="#">CHAR</a>          | 21035             | Y     | As stated on the order.                                                                                                                                                               |
| Side                       | 69     | 1      | <a href="#">SideType</a>      | 54                | Y     |                                                                                                                                                                                       |
| LeavesQty                  | 70     | 4      | <a href="#">UINT32</a>        | 151               | Y     | Quantity open for further execution.                                                                                                                                                  |
| CumQty                     | 74     | 4      | <a href="#">UINT32</a>        | 14                | Y     | Total quantity (e.g. number of contracts) filled.                                                                                                                                     |

| Field       | Offset | Length | Type                              | Tag Ref Num | Req'd | Description                                               |
|-------------|--------|--------|-----------------------------------|-------------|-------|-----------------------------------------------------------|
| SendingTime | 78     | 8      | <a href="#">UTCTimestampNanos</a> | 52          | Y     | UTC timestamp since unix epoch with nanosecond precision. |

#### 5.2.1.12 ExecutionReport\_Restatement

The ExecutionReport\_Restatement is an unsolicited event to notify the client that an open order has been updated by the MEMX system. This message may be sent for orders configured for automatic repricing via the RepriceFrequency instruction. This message can also be sent if the order quantity is partially or fully cancelled because of Match Trade Prevention.

| Field                      | Offset | Length | Type                                      | Tag Ref Num | Req'd | Description                                                                                                                                                                           |
|----------------------------|--------|--------|-------------------------------------------|-------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a>                | N/A         | Y     | SBE Header with templateID = 22                                                                                                                                                       |
| OrderID                    | 7      | 8      | <a href="#">UINT64</a>                    | 37          | Y     | OrderID as assigned by the exchange.                                                                                                                                                  |
| ClOrdID                    | 15     | 20     | <a href="#">CHAR</a>                      | 11          | Y     | The ClOrdID associated with the order.                                                                                                                                                |
| ListSeqNo                  | 35     | 1      | <a href="#">UINT8</a>                     | 67          | Y     | As stated in the Bulk Quote request or 0 for NewOrderSingle request                                                                                                                   |
| ExecID                     | 36     | 8      | <a href="#">UINT64</a>                    | 17          | Y     | Unique identifier of execution message as assigned by the exchange. Uniqueness is guaranteed within a single trading day. The ExecID can be correlated with the Memoir OrderID value. |
| OrdStatus                  | 44     | 1      | <a href="#">OrdStatusType</a>             | 39          | Y     | Order status                                                                                                                                                                          |
| OptionsSecurityID          | 45     | 8      | <a href="#">CHAR</a>                      | 21035       | Y     | OptionsSecurityID associated with the order.                                                                                                                                          |
| ExecRestatementReason      | 53     | 1      | <a href="#">ExecRestatementType</a>       | 378         | Y     | The reason for the restatement.                                                                                                                                                       |
| ExtendedRestatementReason  | 54     | 1      | <a href="#">ExtendedRestatementReason</a> | 21022       | N     | This field provides more RestatementReason info when applicable/available.                                                                                                            |
| Side                       | 55     | 1      | <a href="#">SideType</a>                  | 54          | Y     | Order side                                                                                                                                                                            |
| LastPx                     | 56     | 8      | <a href="#">PriceType</a>                 | 31          | Y     | ExecRestatementType(3):The updated booked price. This is                                                                                                                              |

| Field        | Offset | Length | Type                               | Tag Ref Num | Req'd | Description                                                                                                                                                                                               |
|--------------|--------|--------|------------------------------------|-------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |        |        |                                    |             |       | the price that the order can match at. It may be different than the displayed price. ExecRestatementType(5): The match price if this order had not been prevented from executing due to MTP restrictions. |
| LastQty      | 64     | 4      | <a href="#">UINT32</a>             | 32          | N     | ExecRestatementType(5): The number of contracts that would have matched if this order had not been prevented from executing due to MTP restrictions.                                                      |
| LeavesQty    | 68     | 4      | <a href="#">UINT32</a>             | 151         | Y     | Quantity open for further execution.                                                                                                                                                                      |
| CumQty       | 72     | 4      | <a href="#">UINT32</a>             | 14          | Y     | Total quantity (e.g. number of contracts) filled.                                                                                                                                                         |
| SendingTime  | 76     | 8      | <a href="#">UTCTimestampNano s</a> | 52          | Y     | UTC timestamp since unix epoch with nanosecond precision.                                                                                                                                                 |
| TransactTime | 84     | 8      | <a href="#">UTCTimestampNano s</a> | 60          | Y     | The time at which the transaction occurred. UTC timestamp since epoch with nanosecond precision.                                                                                                          |

### 5.2.2 PendingMassCancel

The PendingMassCancel is a response to MassCancelRequest request indicating the request has been received by the exchange and is in the process of being handled.

| Field                      | Offset | Length | Type                               | Tag Ref Num | Req'd | Description                                                                |
|----------------------------|--------|--------|------------------------------------|-------------|-------|----------------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a>         | N/A         | Y     | SBE Header with templateID = 23                                            |
| ClOrdID                    | 7      | 20     | <a href="#">CHAR</a>               | 11          | Y     | The identifier for this mass cancel, as stated in the mass cancel request. |
| MassCancelInst             | 27     | 1      | <a href="#">MassCancelInstType</a> | 21031       | Y     | As stated in the mass cancel request.                                      |

| Field              | Offset | Length | Type                                   | Tag Ref Num | Req'd | Description                                                                                                                                                                                                                    |
|--------------------|--------|--------|----------------------------------------|-------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LockoutID          | 28     | 8      | <a href="#">UINT64</a>                 | 21033       | N     | If the request had the Lockout bit set in the MassCancelInst, this field will be present and contain a trading session unique lockout identifier that can be used to clear the lockout with a MassCancelClearLock Out message. |
| EFID               | 36     | 4      | <a href="#">CHAR</a>                   | 21007       | N     | As stated in the mass cancel request.                                                                                                                                                                                          |
| UnderlyingOrSeries | 40     | 1      | <a href="#">UnderlyingOrSeriesType</a> | 21029       | Y     | As stated in the mass cancel request.                                                                                                                                                                                          |
| Underlier          | 41     | 6      | <a href="#">CHAR</a>                   | 55          | Y     | As stated in the mass cancel request.                                                                                                                                                                                          |
| OptionsSecurityID  | 47     | 8      | <a href="#">CHAR</a>                   | 21035       | N     | As stated in the mass cancel request.                                                                                                                                                                                          |
| CancelGroupID      | 55     | 2      | <a href="#">UINT16</a>                 | 21000       | N     | As stated in the mass cancel request                                                                                                                                                                                           |
| SendingTime        | 57     | 8      | <a href="#">UTCTimestampNanos</a>      | 52          | Y     | The time the ExecutionReport was sent. UTC timestamp since unix epoch with nanosecond precision.                                                                                                                               |

### 5.2.3 MassCancelReject

The MassCancelReject message is used by the exchange to indicate a mass cancel request cannot be honored as sent.

| Field                      | Offset | Length | Type                                 | Tag Ref Num | Req'd | Description                                                                |
|----------------------------|--------|--------|--------------------------------------|-------------|-------|----------------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a>           | N/A         | Y     | SBE Header with templateID = 24                                            |
| CIOrdID                    | 7      | 20     | <a href="#">CHAR</a>                 | 11          | Y     | The identifier for this mass cancel, as stated in the mass cancel request. |
| RejectReason               | 27     | 2      | <a href="#">MassCxlRejReasonCode</a> | 21028       | Y     | Code to identify reason for mass cancel rejection                          |

| Field              | Offset | Length | Type                                   | Tag Ref Num | Req'd | Description                                                                              |
|--------------------|--------|--------|----------------------------------------|-------------|-------|------------------------------------------------------------------------------------------|
| EFID               | 29     | 4      | <a href="#">CHAR</a>                   | 21007       | N     | As stated in the mass cancel request.                                                    |
| UnderlyingOrSeries | 33     | 1      | <a href="#">UnderlyingOrSeriesType</a> | 21029       | N     | As stated in the mass cancel request.                                                    |
| Underlier          | 34     | 6      | <a href="#">CHAR</a>                   | 55          | N     | As stated in the mass cancel request.                                                    |
| OptionsSecurityID  | 40     | 8      | <a href="#">CHAR</a>                   | 21035       | N     | As stated in the mass cancel request.                                                    |
| CancelGroupID      | 48     | 2      | <a href="#">UINT16</a>                 | 21000       | N     | As stated in the mass cancel request.                                                    |
| MassCancelInst     | 50     | 1      | <a href="#">MassCancelInstType</a>     | 21031       | Y     | As stated in the mass cancel request.                                                    |
| SendingTime        | 51     | 8      | <a href="#">UTCTimestampNanos</a>      | 52          | Y     | The time the message was sent. UTC timestamp since unix epoch with nanosecond precision. |

#### 5.2.4 MassCancelDone

The MassCancelDone is sent when all the orders specified in the MassCancelRequest request have been processed.

| Field                      | Offset | Length | Type                       | Tag Ref Num | Req'd | Description                                                           |
|----------------------------|--------|--------|----------------------------|-------------|-------|-----------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a> | N/A         | Y     | SBE Header with templateID = 25                                       |
| ClOrdID                    | 7      | 20     | <a href="#">CHAR</a>       | 11          | Y     | The identifier for this cancel, as stated in the mass cancel request. |

| Field               | Offset | Length | Type                              | Tag Ref Num | Req'd | Description                                                                                      |
|---------------------|--------|--------|-----------------------------------|-------------|-------|--------------------------------------------------------------------------------------------------|
| TotalAffectedOrders | 27     | 4      | <a href="#">UINT32</a>            | 533         | Y     | The number or orders cancelled.                                                                  |
| SendingTime         | 31     | 8      | <a href="#">UTCTimestampNanos</a> | 52          | Y     | The time the message was sent. UTC timestamp since unix epoch with nanosecond precision.         |
| TransactTime        | 39     | 8      | <a href="#">UTCTimestampNanos</a> | 60          | Y     | The time at which the transaction occurred. UTC timestamp since epoch with nanosecond precision. |

### 5.2.5 MassCancelClearLockoutReject

The MassCancelClearLockoutReject message is used by the exchange to indicate a MassCancelClearLockoutRequest cannot be honored.

| Field                      | Offset | Length | Type                                          | Tag Ref Num | Req'd | Description                                                                              |
|----------------------------|--------|--------|-----------------------------------------------|-------------|-------|------------------------------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a>                    | N/A         | Y     | SBE Header with templateID = 30                                                          |
| ClOrdID                    | 7      | 20     | <a href="#">CHAR</a>                          | 11          | Y     | Unique identifier from the MassCancelClearLockout Request.                               |
| Underlier                  | 27     | 6      | <a href="#">CHAR</a>                          | 55          | Y     | The Underlying symbol on which the lockout is applied.                                   |
| LockoutID                  | 33     | 8      | <a href="#">UINT64</a>                        | 21033       | Y     | The LockoutID in the MassCancelClearLockout Request.                                     |
| RejReason                  | 41     | 2      | <a href="#">MassCancelClearLockoutRejCode</a> | 21037       | Y     | Code to identify reason for cancel rejection.                                            |
| SendingTime                | 43     | 8      | <a href="#">UTCTimestampNanos</a>             | 52          | Y     | The time the message was sent. UTC timestamp since unix epoch with nanosecond precision. |

### 5.2.6 MassCancelClearLockoutDone

The MassCancelClearLockoutDone message is used by the exchange to indicate a lockout has been cleared. This message may be the result of MassCancelClearLockoutRequest or a bulk clear

request MassCancelBulkClearAllLockoutsRequest /  
MassCancelBulkClearLockoutsByEFIDOrUnderlierRequest.

| Field                      | Offset | Length | Type                              | Tag Ref Num | Req'd | Description                                                                                                                                                                 |
|----------------------------|--------|--------|-----------------------------------|-------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a>        | N/A         | Y     | SBE Header with templateID = 31                                                                                                                                             |
| ClOrdID                    | 7      | 20     | <a href="#">CHAR</a>              | 11          | Y     | Unique identifier from the MassCancelClearLockoutRequest or the bulk request (MassCancelBulkClearAllLockoutsRequest / MassCancelBulkClearLockoutsByEFIDOrUnderlierRequest). |
| Underlier                  | 27     | 6      | <a href="#">CHAR</a>              | 55          | Y     | The Underlying symbol on which the lockout is configured                                                                                                                    |
| LockoutID                  | 33     | 8      | <a href="#">UINT64</a>            | 21033       | Y     | The LockoutID in the MassCancelClearLockoutRequest.                                                                                                                         |
| Sending Time               | 41     | 8      | <a href="#">UTCTimestampNanos</a> | 52          | Y     | The time the message was sent. UTC timestamp since unix epoch with nanosecond precision.                                                                                    |
| Transact Time              | 49     | 8      | <a href="#">UTCTimestampNanos</a> | 60          | Y     | The time at which the transaction occurred. UTC timestamp since epoch with nanosecond precision.                                                                            |

### 5.2.7 MassCancelBulkClearLockoutReject

The MassCancelBulkClearLockoutReject message is used by the exchange to indicate a request to bulk clear lockouts (MassCancelBulkClearAllLockoutsRequest, MassCancelBulkClearLockoutsByEFIDOrUnderlierRequest) cannot be honored.

| Field                      | Offset | Length | Type                                          | Tag Ref Num | Req'd | Description                                                                              |
|----------------------------|--------|--------|-----------------------------------------------|-------------|-------|------------------------------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a>                    | N/A         | Y     | SBE Header with templateID = 35                                                          |
| ClOrdID                    | 7      | 20     | <a href="#">CHAR</a>                          | 11          | Y     | Unique identifier from the MassCancelClearLockoutRequest.                                |
| RejReason                  | 27     | 2      | <a href="#">MassCancelClearLockoutRejCode</a> | 21037       | Y     | Code to identify reason for cancel rejection.                                            |
| Sending Time               | 29     | 8      | <a href="#">UTCTimestampNanos</a>             | 52          | Y     | The time the message was sent. UTC timestamp since unix epoch with nanosecond precision. |

### 5.2.8 MassCancelBulkClearLockoutAccepted

The MassCancelBulkClearLockoutAccepted message is used by the exchange to indicate a request to bulk clear lockouts (MassCancelBulkClearAllLockoutsRequest, MassCancelBulkClearLockoutsByEFIDOrUnderlierRequest) has been accepted. This message will



be followed by individual MassCancelClearLockoutDone messages for each lockout cleared as a result of the bulk request, which will be sent to the port that initiated each lockout.

| Field                      | Offset | Length | Type                              | Tag Ref Num | Req'd | Description                                                                                                                                                                   |
|----------------------------|--------|--------|-----------------------------------|-------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a>        | N/A         | Y     | SBE Header with templateID = 36                                                                                                                                               |
| ClOrdID                    | 7      | 20     | <a href="#">CHAR</a>              | 11          | Y     | Unique identifier from the clear bulk request (MassCancelBulkClearAllLockoutsRequest, MassCancelBulkClearLockoutsByEFDRequest, MassCancelBulkClearLockoutByUnderlierRequest). |
| SendingTime                | 27     | 8      | <a href="#">UTCTimestampNanos</a> | 52          | Y     | The time the message was sent. UTC timestamp since unix epoch with nanosecond precision.                                                                                      |

### 5.2.9 OrderCancelReject

The OrderCancelReject message is used by the exchange to indicate a OrderCancelRequest or OrderCancelReplaceRequest cannot be honored.

This message corresponds to FIX message type 9

| Field                      | Offset | Length | Type                                 | Tag Ref Num | Req'd | Description                                                         |
|----------------------------|--------|--------|--------------------------------------|-------------|-------|---------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a>           | N/A         | Y     | SBE Header with templateID = 26                                     |
| ClOrdID                    | 7      | 20     | <a href="#">CHAR</a>                 | 11          | Y     | Unique identifier from the cancel request.                          |
| ListSeqNo                  | 27     | 1      | <a href="#">UINT8</a>                | 67          | Y     | As stated in the Bulk Quote request or 0 for NewOrderSingle request |
| CxlRejResponseTo           | 28     | 1      | <a href="#">CxlRejResponseToType</a> | 434         | Y     | Identifies the request that this cancel reject is responding to.    |
| CxlRejReason               | 29     | 2      | <a href="#">CxlRejReasonCode</a>     | 102         | Y     | Code to identify reason for cancel rejection.                       |
| OptionsSecurityID          | 31     | 8      | <a href="#">CHAR</a>                 | 21035       | N     | As stated in the request.                                           |

| Field       | Offset | Length | Type                              | Tag Ref Num | Req'd | Description                                               |
|-------------|--------|--------|-----------------------------------|-------------|-------|-----------------------------------------------------------|
| Side        | 39     | 1      | <a href="#">SideType</a>          | 54          | N     | As stated in the request                                  |
| SendingTime | 40     | 8      | <a href="#">UTCTimestampNanos</a> | 52          | Y     | UTC timestamp since unix epoch with nanosecond precision. |

### 5.2.10 AllocationInstructionAck

The AllocationInstructionAck message provides a response (accepted or rejected) to a previously submitted Allocation Instruction message. It contains the new state of the allocations with any modified fields updated and cleared fields removed. This message is sent to the requestor of the Allocation Instruction, whereas, if successful, the contra party will be notified via an Allocation Instruction Alert message.

| Field                      | Offset | Length | Type                              | Tag Ref Num | Req'd | Description                                                                                          |
|----------------------------|--------|--------|-----------------------------------|-------------|-------|------------------------------------------------------------------------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a>        | N/A         | Y     | SBE Header with templateID = 27                                                                      |
| SendingTime                | 7      | 8      | <a href="#">UTCTimestampNanos</a> | 52          | Y     | Time of message transmission always expressed in UTC (Universal Time Coordinated, also known as GMT) |
| AllocID                    | 15     | 20     | <a href="#">CHAR</a>              | 70          | Y     | Unique identifier for this allocation instruction ack message - generated by MEMX                    |
| AllocType                  | 35     | 1      | <a href="#">AllocType</a>         | 626         | Y     | As stated on request                                                                                 |
| AllocTransType             | 36     | 1      | <a href="#">AllocTransType</a>    | 71          | Y     | Identifies allocation transaction type being requested (New or Replace)                              |
| SecondaryAllocID           | 37     | 20     | <a href="#">CHAR</a>              | 793         | Y     | Contains the AllocID from the original Allocation                                                    |

| Field               | Offset | Length | Type                                     | Tag Ref Num | Req'd | Description                                                                                                                                                    |
|---------------------|--------|--------|------------------------------------------|-------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |        |        |                                          |             |       | Instruction request supplied by the customer                                                                                                                   |
| RefAllocID          | 57     | 20     | <a href="#">CHAR</a>                     | 72          | C     | Required when AllocTransType = Replace, contains the IndividualAllocID of the allocation unit being changed.                                                   |
| AllocStatus         | 77     | 1      | <a href="#">AllocStatusType</a>          | 87          | Y     | Status of request (Accepted or Rejected)                                                                                                                       |
| AllocRejCode        | 78     | 2      | <a href="#">AllocRejCodeType</a>         | 88          | C     | Populated when AllocStatus is not set to 'Accepted'                                                                                                            |
| NoAllocs            | -      | -      | <a href="#">RepeatingGroupDimensions</a> | 78          | Y     | The dimensions of the Allocations Repeating Group.                                                                                                             |
| ReportedAllocations | -      | -      | <a href="#">ReportAllocationsGroup</a>   | N/A         | Y     | The allocations assigned to the trade - NOTE: this group contains IndividualAllocIDs for each unit of allocation, used to make further changes on those units. |

### 5.2.11 AllocationInstructionAlert

The AllocationInstructionAlert message provides an unsolicited notification of allocations applied to a previously reported Trade or Allocation. It contains the new state of the allocations with any modified fields updated and cleared fields removed. This message is sent to a customer when the contra party has applied a new Allocation Instruction to a Trade or Allocation.

| Field                      | Offset | Length | Type                       | Tag Ref Num | Req'd | Description                     |
|----------------------------|--------|--------|----------------------------|-------------|-------|---------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a> | N/A         | Y     | SBE Header with templateID = 28 |

| Field                  | Offset | Length | Type                                       | Tag Ref Num | Req'd | Description                                                                                                  |
|------------------------|--------|--------|--------------------------------------------|-------------|-------|--------------------------------------------------------------------------------------------------------------|
| SendingTime            | 7      | 8      | <a href="#">UTCTimestampNanos</a>          | 52          | Y     | Time of message transmission always expressed in UTC (Universal Time Coordinated, also known as GMT)         |
| AllocID                | 15     | 20     | <a href="#">CHAR</a>                       | 70          | Y     | Unique identifier for this allocation instruction ack message - generated by MEMX                            |
| AllocType              | 35     | 1      | <a href="#">AllocType</a>                  | 626         | Y     | As stated on request                                                                                         |
| AllocTransType         | 36     | 1      | <a href="#">AllocTransType</a>             | 71          | Y     | Identifies allocation transaction type being requested (New, Replace, or Cancel)                             |
| RefAllocID             | 37     | 20     | <a href="#">CHAR</a>                       | 72          | C     | Required when AllocTransType = Replace, contains the IndividualAllocID of the allocation unit being changed. |
| AllocCancReplaceReason | 57     | 2      | <a href="#">AllocCancReplaceReasonType</a> | 796         | C     | Required when AllocTransType = Cancel                                                                        |
| Side                   | 59     | 1      | <a href="#">SideType</a>                   | 54          | Y     | Side of the Execution                                                                                        |
| OptionsSecurityID      | 60     | 8      | <a href="#">CHAR</a>                       | 21035       | Y     | OptionsSecurityID of the instrument traded                                                                   |
| TradeDate              | 68     | 8      | <a href="#">CHAR</a>                       | 75          | Y     | YYYYMMDD                                                                                                     |
| NoExecs                | -      | -      | <a href="#">RepeatingGroupDimensions</a>   | 124         | Y     | Number of Trades being                                                                                       |

| Field                | Offset | Length | Type                                      | Tag Ref Num | Req'd | Description                                                                                                                                                     |
|----------------------|--------|--------|-------------------------------------------|-------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                      |        |        |                                           |             |       | allocated (always 1)                                                                                                                                            |
| ExecutionAllocations | -      | -      | <a href="#">ExecutionAllocationsGroup</a> | N/A         | Y     | Specifies the Trade being allocated                                                                                                                             |
| NoAllocs             | -      | -      | <a href="#">RepeatingGroupDimensions</a>  | 78          | Y     | The dimensions of the Allocations Repeating Group.                                                                                                              |
| ReportedAllocations  | -      | -      | <a href="#">ReportAllocationsGroup</a>    | N/A         | Y     | The allocations assigned to the trade - NOTE: this group contains IndividualAlloc IDs for each unit of allocation, used to make further changes on those units. |

## 5.2.12 UserNotification

The UserNotification message is used to notify the user of an event or information about the exchange. This message will be used to provide a logical session shutdown warning.

This message corresponds to FIX message type CB

| Field                      | Offset | Length | Type                              | Tag Ref Num | Req'd | Meaning                                |
|----------------------------|--------|--------|-----------------------------------|-------------|-------|----------------------------------------|
| <a href="#">SBE Header</a> | 0      | 7      | <a href="#">SBE Header</a>        |             | Y     | SBE Header templateID = 29             |
| SendingTime                | 7      | 8      | <a href="#">UTCTimestampNanos</a> | 52          | Y     | The timestamp when the event occurred. |
| UserStatus                 | 15     | 1      | <a href="#">UserStatusType</a>    | 926         | Y     | Reason for notification.               |