High Speed Vendor Feed

SOLA HSVF UDP Multicast Specifications Guide for BOX

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Document History

VERSION	DATE	CHANGE DESCRIPTION
1.0	2015-03-17	First release of HSVF UDP Multicast Specifications.
1.1	2015-06-12	Section 2.6- Addition of Notes
1.2	2016-12-20	3.4.23 and 3.4.24 Updated O and OS messages: added 2 fields (FirmId and CMTA) (Protocol version C6)

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Section 1 Introduction

The Boston Options Exchange (BOX)-High Speed Vendor Feed (HSVF) User Datagram Protocol (UDP) Multicast was developed by the Information Technology (IT) division of the Montréal Exchange Inc. (MX), a member of the TMX Group Inc.

The HSVF UDP Multicast is comprised of Trades, Quotes, Market Depth, Strategies, Bulletins, Summaries and other Statistics. Information is provided on all BOX listings.

The UDP provides to the HSVF Participant a faster dissemination flow of messages. HSVF Participants are to use UDP lines to obtain the Market Dissemination flow from HSVF Repeaters; each UDP line contains a specific Market, a specific Market Depth, and a specific protocol version.

1.1 Objective

The main objective of the Specifications Guide is to provide information to HSVF Participant in the functional design of their application intended to receive the HSVF feed.

1.2 Scope

This Specifications Guide defines the communications interface and message formats for the high speed transmission which broadcasts real-time trading and statistical information from BOX.

1.3 BOX Contact

Market Operation Center Support / Technical Help Desk
Toll Free: 1-866-768- 8845
boxmoc@boxoptions.com

Section 2 Trading Overview

2.1 Basic Conventions

All messages which comprise the BOX-HSVF are transmitted to the user on a dedicated line. Each message type is fixed in format. Re-transmission of any data is available on the transmission line.

2.2 Connection

Boston Exchange broadcasts the HSVF feed using both the UDP and TCP/IP broadcast interface as follows:

- Real-time Market Dissemination Flow is broadcasted according to a defined timeline using the UDP interface to allow Participants to connect.
- The TCP interface retransmission can be used by Participants to perform queries of missing messages of the UDP Feed.

2.3 HSVF Feed Schedule of a Typical Day

During a typical day, all messages that comprise the BOX-HSVF are transmitted as shown below.

Participants can connect at 1:15 a.m., which is when the broadcast starts, the dictionary is sent at 1:30 a.m. Until the opening of the market, information regarding the instrument keys, summaries, quote/market depth is broadcasted. The connection ends at 5:55 p.m. after the market closure.

Trading Phases/ Information Broadcasted		Other Messages	Instrument Keys	Summary	Quote/Market Depth
Start of connection	1:15 a.m.	X			
Dictionary	1:35 a.m.	X	X	X	X
Instrument Open Interest for the day	5:00 a.m.			X	
Pre-opening	7:00 a.m.	X			X
Opening/Trading	9:30 a.m.	X			
Closing on Equity Options	4:00 p.m.	X			
Closing on ETF and Index Options	4:15 p.m.	X			
End of day Summaries	4:40 p.m.	X	X	X	
End of day for HSVF	4:40 p.m.	X			
End of connection	5:55 p.m.	X			

2.4 Transmission Format

A UDP packet can contain multiple HSVF messages. The UDP packet is built as follows:

UDP Packet			
HSVF Message 1	HSVF Message 2	....	HSVF Message N

A packet can have a maximum of 1000 characters.

Each message is framed by an STX and an ETX character. The format used is:

HSVF Message			
STX	Message Header	Message Body	ETX

STX and ETX indicate the beginning and the end of the record being transmitted.

2.5 Data Format

Each message consists of a standard message header followed by the message body, which varies in format according to the message type.

2.5.1 Message Header

The standard message header attached to all messages has the following format:

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Sequence Number	9	N	Each message is assigned a sequence number starting at ’000000001’ every day and incremented by 1 for each message sent. **Note:** Message sequencing is per Line. There is no validation of message sequence for incoming messages. The sequence numbers will range from 000000001 to 999999999 (decimal, ASCII). Retransmitted messages will contain the original sequence numbers.
Message Type	2	X	Identifies the type of message being sent. Format is left-aligned, right ’blank’ filled (if necessary).

2.6 TCP Retransmission Capability

ACTION	PARTICULARS
Normal UDP Connection (Start of Day @ 1:35 a.m. EST)	1. Participant connects to specific IP address and UDP port; 8 slices are available, each representing a subset of BOX traded instruments; on each slice, 3 different Feeds are available. 2. Exchange sends data to Participant starting with the next available message. First message of the day has sequence number 000000001. Message types receive depend on the feed selected.
Retransmission (From a specific Sequence number of a specific interval of messages)	1. Participant connects to specific IP address and TCP port. 2. Participant sends a LI (Login) message type. BOX sends back a KI (Login Ack) message type. 3. Participant sends a RT (Retransmission Request) message specifying the feed id and the message range to retransmit. 4. BOX sends a RB (Retransmission Begins) message. 5. BOX sends all requested messages. 6. BOX sends a RE (Retransmission Ends) message indicating that all requested messages have been retransmitted. **Note:** If the **Exchange sequence** is lower than the **Start sequence number,** the transmission request is rejected (ER message). **Note:** If the Start sequence is higher than the End sequence, the transmission request is rejected (ER message).
Disconnection	1. Participant disconnects from the UDP port. 2. Participant sends a LO (Logout) message to terminate their TCP Retransmission connection.

Section 3 Messages

3.1 Message Types

This section lists a summary of all HSVF message types.

Note: HSVF users must have the ability to skip and ignore any message that is not defined below. MX may introduce new message types to support extended functions in the future. Because new message types may be defined in future versions of the protocol, anyone using this version of the HSVF protocol must be able to avoid impact of undefined new messages types they may receive.

3.1.1 Technical Messages

TCP RETRANSMISSION MESSAGES		
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3.2 Message Record Format and Definitions

3.2.1 Basic Conventions

- Whenever a field is indicated as being blank, it contains the ASCII space character (hex 20).
- All numeric fields: numbers (0 to 9), right justified, zero filled with a possibility to see a '.' (ASCII character hex 2).
- Alphanumeric fields: all characters possible (numbers, letters, others), right justified, zero filled, with the exception of the following fields, which are left justified, and blank filled:
    - Instrument External Code
    - Root Symbol (Options related messages)
    - Symbol (Strategy related messages)
- Alphabetic fields: letters (A to Z) left justified, blank filled unless stated otherwise.
- The 'Filler' field can have any format; numeric, alphanumeric, ASCII space character (hex 20).

In the following tables, the **L** column represents the length in bytes of the described field, and the **T** column ('Data Type') will be represented by the following characters. Refer to the above for a more detail description of each:

- A = Alphabetic
- N = Numeric
- X = Alphanumeric

3.2.2 Instrument Description – 20 Bytes

The Instrument is identified when needed by the following fields.

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Root Symbol	6	X	Symbol for the Option series
Expiry Month Code	1	A	Delivery month for the contract
Strike Price Code	1	A	Code for the strike price of the option
Strike Price	7	N	Strike Price of the option in full
Strike Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph “4.2” on page 33)
Expiry Year	2	N	Last 2 digits of the option expiry year
Expiry Day	2	N	Delivery day for the contract

3.3 Technical Messages

Technical messages are listed in alphabetical order within every sub-section.

3.3.1 Message Type ER - Error Message - 95 Bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header
ErrorCode	4	N	Send back when a LI, LO or RT message receive is invalid or rejected
ErrorMsg	80	X	Error Message

3.3.2 Message Type KI - Login Acknowledgement (TCP Retransmission Mode) - 11 Bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header

3.3.3 Message Type KO - Logout Acknowledgement (TCP Retransmission Mode) - 11 Bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header

3.3.4 Message Type LI - Login (TCP Retransmission Mode) - 51 Bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header
User	16	X	As provided by BOX
Pwd	16	X	As provided by BOX
TimeStamp	6	N	Format HHMMSS
Protocol Version	2	X	HSVF Protocol version (C6)

3.3.5 Message Type LO - Logout (TCP Retransmission Mode)- 11 Bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header

3.3.6 Message Type RB - Retransmission Begin (TCP Retransmission Mode) - 11 Bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header

3.3.7 Message Type RE - Retransmission End (TCP Retransmission Mode) - 11 Bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header

3.3.8 Message Type RT- Retransmission Request - 31 Bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header
Line	2	X	Specific address and port on which market is disseminated based on a list of CPUs and Market Depth Setting Refer to Network Access Specifications for more information regarding available lines.
Start	9	N	Starting message number
End	9	N	Ending message number

3.3.9 Message Type U - End of Transmission - 18 Bytes

This message will be sent to indicate that the day's transmission is complete. This message will be sent at approximately 5:15 p.m. daily. After this hour, no HSVF messages will be transmitted. Transmission will resume the following day at 1:00 a.m.

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header
Exchange ID	1	A	Q by default
Time	6	N	Time at which the message is transmitted HHMMSS

3.3.10 Message Type V - Circuit Assurance - 17 Bytes

This message is sent out if no messages are sent by BOX for more than one minute after the broadcast has started (i.e. at the termination of the Test Loop message). This will be an assurance that the line is up.

This message will continue to be sent until the End of Transmission message (type U) is sent. The Circuit Assurance message will repeat the sequence number of the previous record transmitted (except if it is a re-transmit message) i.e. it will not increase the sequence number.

Note: These messages will be rarely be sent; at the beginning or at the end of the day.

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header
Time	6	N	Time at which the message is transmitted HHMMSS

3.3.11 Message Type Z – System Time Stamp – 20 Bytes

This message is sent out every second and contains the time stamp when it was originally transmitted by the trading engine. Broadcast starts during the pre-opening and continues until the end of day disconnection of all clients (currently 5:55 p.m. EST). The sequence number in the message header is incremented by 1 for each message sent.

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header
Trading Engine TIme Stamp	9	N	Time stamp generated by the SOLA® Trading Engine (HHMMSSmmm)

3.4 Business Messages

3.4.1 Message Type C - Option Trade - 76 Bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header
Exchange ID	1	A	Exchange on which the trade occurred Q by default
Instrument Description	20	X	Refer to Instrument Description – 20 Bytes
Volume	8	N	Number of contracts for the trade Refer to Indicator Code
Trade Price	6	N	Price at which the transaction took place
Trade Price Fraction Indicator	1	X	Defines number of decimal places or fraction positions Refer to Fraction Indicator Code
Net Change Sign +/-	1	X	For the net change field
Net Change	6	N	Net change = last trade price - previous close
Net Change Fraction Indicator	1	X	Fraction indicator for the net change price Refer to Fraction Indicator Code
Filler	6	N	Filler
Timestamp	6	N	Time of transaction HHMMSS
Open Interest	7	N	This field contains the outstanding number of contracts in the series Updated on a trade by trade basis Refer to Indicator Code
Filler	1		Filler
Price Indicator Marker	1	A	Identifies the type of transaction Refer to Price Indicator Markers

3.4.2 Message Type CS - Strategy Trade - 79 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header
Exchange ID	1	A	Exchange on which the trade occurred Q by default
Instrument Description	30	X	Complex Order Instrument symbol. The individual legs are defined in message type NS.
Volume	8	N	Total number of contracts traded Refer to Indicator Code
Trade Price Sign +/-	1	X	For Trade Price field (sign)
Trade Price	6	N	Price at which the transaction took place
Trade Price Fraction Indicator	1	X	Defines number of decimal places or fraction positions Refer to Fraction Indicator Code
Net Change Sign	1	X	+ or - sign
Net Change	6	N	Net change = last trade price - previous close
Net Change Fraction Indicator	1	X	Defines number of decimal places or fraction positions Refer to Fraction Indicator Code
Filler	6		Filler
Timestamp	6	N	Time of transaction HHMMSS
Price Indicator Marker	1	X	Identifies type of transaction Refer to Price Indicator Markers

3.4.3 Message Type D - Option Request for Quote (RFQ) - 40 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11		Refer to Message Header
Exchange ID	1	A	Exchange on which the quote occurred Q by default
Instrument Description	20	X	Refer to Instrument Description – 20 Bytes
Requested Size	8	X	Size of the market requested Refer to Indicator Code

3.4.4 Message Type F - Option Quote - 68 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header
Exchange ID	1	A	Exchange on which the quote occurred Q by default
Instrument Description	20	X	Refer to Instrument Description – 20 Bytes
Bid Price	6	X	Bid price for the option series
Bid Price Fraction Indicator	1	X	Defines number of decimal places or fraction positions Refer to Fraction Indicator Code
Bid Size	5	X	Number of option contracts represented by the Bid Price If size is greater than 99999, the 5th character becomes an exponent Refer to Indicator Code
Ask Price	6	X	Ask price for the option series
Ask Price Fraction Indicator	1	X	Defines number of decimal places or fraction positions Refer to Fraction Indicator Code
Ask Size	5	X	Number of option contracts represented by the Ask Price If size is greater than 99999, the 5th character becomes an exponent Refer to Indicator Code
Filler	1	X	Filler
Instrument Status Marker	1	A	Indicates instrument status Refer to Status Markers
Public Customer Bid Size	5	X	Number of option contracts represented by Public Customer orders on the bid side
Public Customer Ask Size	5	X	Number of option contracts represented by Public Customer orders on the ask side

3.4.5 Message Type FS – Complex Order Quote - 79 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header
Exchange ID	1	A	Exchange on which the quote occurred Q by default
Instrument Description	30	X	Complex Order Instrument symbol The legs (underlying) are defined in message type NS
Bid Price Sign	1	X	+ or - sign
Bid Price	6	X	Bid price for the option series
Bid Price Fraction Indicator	1	X	Defines number of decimal places or fraction positions Refer to Fraction Indicator Code
Bid Size	5	X	Number of futures contracts represented by the Bid Price If size is greater than 99999, the 5th character becomes an exponent Refer to Indicator Code
Ask Price sign	1	X	+ or - sign
Ask Price	6	X	Ask price for the option series
Ask Price Fraction Indicator	1	N	Defines number of decimal places or fraction positions. Refer to Fraction Indicator Code
Ask Size	5	X	The number of option contracts represented by the Ask Price If size is greater than 99999, the 5th character becomes an exponent Refer to Indicator Code
Instrument Status Marker	1	X	Indicates instrument status Refer to Status Markers
Public Customer Bid Size	5	X	Number of option contracts represented by Public Customer orders on the bid side
Public Customer Ask Size	5	X	Number of option contracts represented by Public Customer orders on the ask side

3.4.6 Message Type GC - Group Opening Time - 25 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header
Exchange ID	1	A	Exchange on which the quote occurred Q by default
Root Symbol	6	X	Root of the instrument group
Group Status	1	A	Value is O

3.4.7 Message Type GR - Group Status - 19 bytes

This message will be sent when a group of trading instruments enters a new status. Refer to BOX Website (http://www.bostonoptions.com/) for a complete list of the trading hours schedule for BOX products

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header
Exchange ID	1	A	Exchange on which the quote occurred Q by default
Root Symbol	6	X	Root of the instrument group
Group Status	1	A	Group status of the trading instrument Refer to Status Markers

3.4.8 Message Type GS - Group Status (Strategies) - 15 bytes

This message will be sent when a Strategy group of trading instruments enters a new status. All strategies have a predetermined group that can be found in the JS message (Strategy Instrument Keys message).

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header
Exchange ID	1	A	Exchange on which the quote occurred Q by default
Group of the Complex Order Instrument	2	X	Group of the Complex Order Instrument
Group Status	1	A	Group status of the trading instrument Refer to Status Markers

3.4.9 Message Type H - Option Market Depth - up to 179 bytes

FIELD NAME		L	T	DEFINITION / VALIDATION RULES
Message Header		11	X	Refer to Message Header
Exchange ID		1	A	Exchange on which the quote occurred Q by default
Instrument Description		20	X	Refer to Instrument Description – 20 Bytes
Instrument Status Marker		1	A	Instrument status Refer to Status Markers
Number of Level		1	N	Number of level for the trading instrument 1 to 5
Up to 5 times	Level of Market Depth	1	X	Level of market depth 1 to 5: for regular market depth A: for Implied prices P: for Public Customer volume
	Bid Price	6	X	Bid price for the option series For Implied, it represents the best (1st limit) indicative implied bid price
	Bid Price Fraction Indicator	1	X	Defines number of decimal places or fraction positions Refer to Fraction Indicator Code
	Bid Size	5	X	Number of option contracts represented by the Bid Price For Implied, it represents the indicative quantity at the best (1st limit) implied bid price If size is greater than 99999, the 5th character becomes an exponent
	Number of Bid Orders	2	X	Number of bid orders, present at a given moment, in the order book For Implied, it represents the indicative number of implied bid orders making up the implied bid size at that implied bid price If greater than 99-> the 2nd character becomes an exponent. Refer to Indicator Code
	Ask Price	6	X	Ask price for the option series For Implied, it represents the best (1st limit) indicative implied ask price

	FIELD NAME	L	T	DEFINITION / VALIDATION RULES
	Ask Price Fraction Indicator	1	X	Defines number of decimal places or fraction positions Refer to Fraction Indicator Code
	Ask Size	5	X	Number of option contracts represented by the Ask Price If size is greater than 99999, the 5th character becomes an exponent Refer to Indicator Code
	Number of Ask Orders	2	X	Number of Ask Orders, present at a given moment, in the order book If greater than 99-> the 2nd character becomes an exponent Refer to Indicator Code

3.4.10 Message Type HS – Complex Order Market Depth - up to 199 bytes

	FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header		11	X	Refer to Message Header
Exchange ID		1	A	Exchange on which the quote occurred Q by default
Instrument Description		30	X	Complex Order Instrument symbol. Individual legs are defined in message type NS.
Instrument Status Marker		1	A	Instrument status Refer to Status Markers
Number of Level		1	N	Number of level for the trading instrument 1 - 5
Up to 5 times	Level of Market Depth	1	X	Level of market depth 1 to 5: for regular market depth A: for Implied prices P: for Public Customer volume
	Bid Price Sign	1	X	+ or - sign
	Bid Price	6	X	Bid price for option series
	Bid Price Fraction Indicator	1	X	Defines number of decimal places or fraction positions Refer to Fraction Indicator Code

	FIELD NAME	L	T	DEFINITION / VALIDATION RULES
	Bid Size	5	X	Number of strategy units represented by the Bid Price For Implied, it represents the indicative quantity at the best (1st limit) implied bid price If size is greater than 99999, the 5th character becomes an exponent Refer to Indicator Code
	Number of Bid Orders	2	X	Number of Bid Orders, present at a given moment, in the order book If greater than 99-> the 2nd character becomes an exponent Refer to Indicator Code
	Ask Price Sign	1	X	+ or - sign
	Ask Price	6	X	Ask price for the option series
	Ask Price Fraction Indicator	1	N	Defines number of decimal places or fraction positions Refer to Fraction Indicator Code
	Ask Size	5	X	The number of strategy units represented by the Ask Price If size is greater than 99999, the 5th character becomes an exponent Refer to Indicator Code
	Number of Ask Orders	2	X	Number of Ask Orders, present at a given moment, in the order book If greater than 99-> the 2nd character becomes an exponent Refer to Indicator Code

3.4.11 Message Type I - Option Trade Cancellation - 68 bytes

A cancellation will reduce the total volume, value and transactions by the amount of the cancelled trade. A cancellation message is followed by an Option Summary message (message type N) which will reflect the corrected market.

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header
Exchange ID	1	A	Exchange on which the trade occurred Q by default
Instrument Description	20	X	Refer to Instrument Description – 20 Bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Volume	8	N	Number of contracts being cancelled Refer to Indicator Code
Trade Price	6	N	Price at which the transaction took place
Trade Price Fraction Indicator	1	X	Defines number of decimal places or fraction positions Refer to Fraction Indicator Code
Filler	6		Filler
Timestamp	6	N	Time of cancellation transaction HHMMSS
Open Interest	7	N	Open long position of the option series, as of the trade Refer to Indicator Code
Filler	1		Filler
Price Indicator Marker	1	A	Identifies the type of transaction Refer to Price Indicator Markers

3.4.12 Message Type IS - Strategy Trade Cancellation - 71 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header
Exchange ID	1	A	Exchange on which the trade occurred Q by default
Instrument Description	30	X	Complex Order Instrument symbol. The individual legs are defined in message type NS.
Volume	8	X	Number of contracts being cancelled Refer to Indicator Code
Trade Price sign	1	X	+ or - sign
Trade Price	6	N	Estimated price at which the transaction took place
Trade Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions Refer to Fraction Indicator Code
Filler	6		Filler
Timestamp	6	N	Time of cancellation transaction HHMMSS

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Price Indicator Marker	1	A	Identifies the type of transaction Refer to Price Indicator Markers

3.4.13 Message Type J - Option Instrument Keys - 119 Bytes

Option Instrument Keys messages will be sent:

- At the beginning and the end of the day with associate Summary message
- Anytime during the day if a threshold limit was changed for an instrument

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header
Exchange ID	1	A	Exchange on which the trade occurred Q by default
Instrument Description	20	X	Refer to Instrument Description – 20 Bytes
Strike Price Currency	3	X	Currency used for the Option Strike Price Refer to Currency Codes
Maximum Number of Contracts per Order	6	N	Maximum authorized number of contract per order Refer to Indicator Code
Minimum Number of Contracts per Order	6	N	Minimum authorized number of contract per order Refer to Indicator Code
Maximum Threshold Price	6	N	Maximum threshold price authorized for an option contract Refer to Indicator Code
Maximum Threshold Price Fraction Indicator	1	X	Defines number of decimal places or fraction positions Refer to Fraction Indicator Code
Minimum Threshold Price	6	N	Minimum threshold price authorized for an option contract Refer to Indicator Code
Minimum Threshold Price Fraction Indicator	1	X	Defines number of decimal places or fraction positions Refer to Fraction Indicator Code
Tick Increment	6	X	Precision with which the price of an order limit can be expressed Refer to Tick Table

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Tick Increment Fraction Indicator	1	N	Defines number of decimal places or fraction positions Refer to Fraction Indicator Code
Option Type	1	N	Type of option A = American E = European
Market Flow Indicator	2	X	Defines the type of instruments Refer to Market Feed Indicators
Group Instrument	2	X	Group of the instrument
Instrument	4	X	Instrument
Instrument External Code	30	X	External identifier used by traders when entering an order
Option Marker	2	A	Refer to Markers for Options
Underlying Symbol Root	10	X	Symbol root for the underlying security

3.4.14 Message Type JS – Complex Order Instrument Keys – 121 Bytes

Complex Order Instrument Keys messages will be sent:

- At the beginning and the end of the day with his associate Summary message;
- Also when a Complex Order instrument is created during trading hours.

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to paragraph “2.5.1” on page 5
Exchange ID	1	A	Q by default
Instrument Description	30	X	Complex Order Instrument symbol. The individual legs are defined in message type NS.
Expiry Year	2	N	Expiration year of the leg of the Complex Order Instrument expiring first. Format is YY.
Delivery Month	1	A	Delivery month code of the leg of the Complex Order Instrument expiring first. (Refer to paragraph “7.1” on page 41)
Expiry Day	2	N	Expiry day of the leg of the Complex Order Instrument expiring first
Max Number of Contracts per Order	6	X	Maximum authorized number of contract per order (Refer to paragraph “5.4” on page 36)

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Min Number of Contracts per Order	6	X	Minimum authorized number of contract per order (Refer to paragraph “5.4” on page 36)
Max Threshold Price Sign	1	X	+ or - sign
Max Threshold Price	6	X	Maximum threshold price authorized for an option contract (Refer to paragraph “5.4” on page 36)
Max Threshold Price Fraction Indicator	1	X	Number of decimal places or fraction positions (Refer to paragraph “4.2” on page 33)
Min Threshold Price Sign	1	X	+ or - sign
Min Threshold Price	6	X	Minimum threshold price authorized for an option contract (Refer to paragraph “5.4” on page 36)
Min Threshold Price Fraction Indicator	1	X	Number of decimal places or fraction positions (Refer to paragraph “4.2” on page 33)
Tick Increment	6	X	Precision used when expressing the price of an order limit (Refer to paragraph “Section 6” on page 39)
Tick Increment Fraction Indicator	1	N	Defines the number of decimal places or fraction positions (Refer to paragraph “4.2” on page 33)
Filler	2	X	Filler
Group	2	X	Group of the instrument
Instrument	4	X	Code identifying the instrument
Instrument External Code	30	X	External identifier used by traders when entering an order
Complex Order Instrument Allow Implied	1	A	Complex Order Instrument support of Implied Price. N: No C: Continuous Implied S: Snapshot Implied

3.4.15 Message Type L - Bulletins - 93 Bytes

Bulletins will be sent throughout the trading day. More than one message will be used if the bulletin is longer than 79 characters. The continuation character "0" indicates that the bulletin continues to the next record.

When a Trading instrument has been halted by BOX, a Bulletin Message explaining the reason for the halt will be transmitted. When the trading instrument is reinstated, another Bulletin Message explaining the news that accompanied the reinstatement will be transmitted.

All records that make up a particular bulletin will be sent out together. No other message will be interspersed among the records that make up a complete bulletin.

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header
Filler	1	X	
Bulletin Type	1	X	1 = Regular text bulletin 2 = Special text bulletin
Bulletin Contents	79	X	Bulletin in textual format. Left justified and blank filled
Continue Marker	1	N	0: Bulletin continues in next record 1: Bulletin ended

3.4.16 Message Type N - Option Summary - 127 Bytes

Option Summary messages are sent:

- At the beginning of the day. The first Option Summary message sent defines the instruments traded on that day, and contain the closing/reference price in the 'Last Price' field. All other price fields, with the exception of open interest, contain zero values. Any other message sent during the day contain details of the last trade.
- Any option summary sent after the BEGINNING OF OPTIONS SUMMARY message (Message Type = Q) contains the list of trading instruments for the day (sent prior to market opening) or the summaries after the close of the market for BOX options (sent at 5:10 p.m. EST).
- After a trade cancellation if extreme values have been changed (Open/High/Low/Last).
- At the end of the day with relevant data such as the Open/High/Low/Last/Volume
- During the day when new instruments are added.

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header
Exchange ID	1	A	Identifies the exchange for the option Q by default
Instrument Description	20	X	I
Bid Price	6	N	Closing or most recent bid price
Bid Price Fraction Indicator	1	X	Defines number of decimal places or fraction positions Refer to Fraction Indicator Code
Bid Size	5	X	Number of contracts represented by the Bid Price. If size is greater than 99999, the 5th character becomes an exponent Refer to Indicator Code
Ask Price	6	N	Closing or most recent ask price
Ask Price Fraction Indicator	1	X	Defines number of decimal places or fraction positions Refer to Fraction Indicator Code
Ask Size	5	X	Number of contracts represented by the Ask Price If size is greater than 99999, the 5th character becomes an exponent Refer to Indicator Code
Last Price	6	N	Closing or most recent trade price

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Last Price Fraction Indicator	1	X	Defines number of decimal places or fraction positions Refer to Fraction Indicator Code
Open Interest	7	N	This field contains current outstanding number of contracts in the series. Updated on a trade by trade basis. Refer to Indicator Code
Tick	1	X	Determined by the difference between last price and the previous different trade price '+' = uptick '-' = downtick
Volume	8	N	Total number of contracts traded or current volume if sent after a cancellation
Net Change Sign +/-	1	X	For net change field
Net Change	6	N	Net change = last trade price - previous close Net change will be zero if the option did not trade on the last business day or did not trade today
Net Change Fraction Indicator	1	X	Defines number of decimal places or fraction positions Refer to Fraction Indicator Code
Open Price	6	N	Price of the first trade of the day
Open Price Fraction Indicator	1	X	Defines number of decimal places or fraction positions Refer to Fraction Indicator Code
High Price	6	N	Highest trade price of the day or current high price if sent after a cancellation
High Price Fraction Indicator	1	X	Defines number of decimal places or fraction positions Refer to Fraction Indicator Code
Low Price	6	N	Lowest trade price of the day or current low price if sent after a cancellation
Low Price Fraction Indicator	1	X	Defines number of decimal places or fraction positions Refer to Fraction Indicator Code
Option Marker	2	A	Refer to Markers for Options
Underlying Symbol	10	X	Symbol root for the underlying security
Reference Price	6	N	Reference Price of the Option
Reference Price Fraction Indicator	1	X	Number of decimal places or fraction positions Refer to Fraction Indicator Code

3.4.17 Message Type NS – Complex Order Summary – Up to 778 bytes

Complex Order Summary messages will be sent:

- At the beginning of the day. The first Complex Order Summary message sent defines the instruments traded on that day, and contain the closing price in the 'Last Price' field. All other price fields contain zero values. Any other message sent during the day contain details of the last trade.
- Any Complex Order Summary sent after the BEGINNING OF COMPLEX ORDER SUMMARY message (Message Type = QS) contains the list of trading Complex Order instruments for the day (sent prior to market opening) or the summaries after the close of the market for BOX options (sent at 5:10 p.m. EST).
- After a trade cancellation if extreme values have been changed (Open/High/Low/Last).
- At the end of the day with relevant data such as the Open/High/Low/Last/Volume
- During the day when new instruments are added.

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header
Exchange ID	1	A	Identification of the exchange for the future Q by default
Instrument Description	30	X	Complex Order Instrument symbol
Bid Price sign	1	X	+ or - sign
Bid Price	6	N	Closing bid or most recent bid
Bid Price Fraction Indicator	1	X	Defines number of decimal places or fraction positions Refer to Fraction Indicator Code
Bid Size	5	X	Number of contracts represented by the Bid Price. Refer to Indicator Code
Ask Price Sign	1	X	+ or - sign
Ask Price	6	N	Closing ask or most recent ask
Ask Price Fraction Indicator	1	X	Defines number of decimal places or fraction positions Refer to Fraction Indicator Code
Ask Size	5	X	Number of contracts represented by the Ask Price.
Last Price Sign +/-	1	X	For the Last Price field
Last Price	6	N	Last Trade Price for the contract or the current price if sent after a cancellation
Last Price Fraction Indicator	1	X	Defines number of decimal places or fraction positions Refer to Fraction Indicator Code

FIELD NAME		L	T	DEFINITION / VALIDATION RULES
Open Price Sign		1	X	+ or - sign
Open Price		6	N	Price of the first trade of the day
Open Price Fraction Indicator		1	X	Defines number of decimal places or fraction positions Refer to Fraction Indicator Code
High Price Sign		1	X	+ or - sign
High Price		6	N	Highest trade price of the day or current high price if sent after a cancellation
High Price Fraction Indicator		1	X	Defines number of decimal places or fraction positions Refer to Fraction Indicator Code
Low Price Sign		1	X	+ or - sign
Low Price		6	N	Lowest Trade Price of the day or current low price if sent after a cancellation
Low Price Fraction Indicator		1	X	Defines number of decimal or fraction positions Refer to Fraction Indicator Code
Net Change Sign		1	X	+ or - sign
Net Change		6	N	Net change = last trade price - previous close Net change will be zero if the option did not trade on the last business day or did not trade today.
Net Change Fraction Indicator		1	X	Defines number of decimal places or fraction positions Refer to Fraction Indicator Code
Volume		8	N	Total number of contracts traded or current volume if sent after cancellation Refer to Indicator Code
Number of Legs		2	N	Number of legs in the Complex Order Instrument 2 to 4
From 2 to 4 times	Leg Ratio Sign	1	X	+ : Buy the leg - : Sell the leg
	Leg Ratio	2	N	Quantity (bought or sold) 1 to 99
	Leg Symbol	30	X	Trading symbol of the leg

3.4.18 Message Type Q - Beginning of Options Summary - 12 Bytes

This message indicates that the beginning and the end of day option summaries (message type N) are to follow. Other messages (such as bulletins) can be interspersed with the summaries.

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header
Exchange ID	1	A	Identifies the exchange Q by default

3.4.19 Message Type QS - Beginning of Complex Order Summary - 12 Bytes

This message indicates that the beginning or the end of day Complex Order summaries (message type NS) are to follow. Other messages can be interspersed with the summaries.

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header
Exchange ID	1	A	Identifies the exchange Q by default

3.4.20 Message Type S - End of Sales - 18 Bytes

This message will be sent when there is no more trading activity to be transmitted. This will occur after the closing of the market.

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header
Reserved	1	A	Reserved for future use
Time	6	N	Time at which the message is transmitted HHMMSS

3.4.21 Message Type M - Improvement Process Beginning Message (Option) - 84 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header
Exchange ID	1	A	Q by default
Instrument Description	20	X	Refer to 3.2.2
Improvement Phase Sequential Numbe	6	N	Indicates the number of an Improvement Phase. Sequential number unique per Instrument and per trading day
Initial Order Price	6	N	Indicates the price of the Initial Order
Initial Order Price Fraction Indicator	1	X	Refer to Fraction Indicator Code
Initial Order Quantity	8	X	Indicates the quantity of the Initial Order
Initial Order Side	1	A	Indicates the dealer side of the Initial Order B for buy S for sell
Improvement Phase Expiry Time	8	A	Indicates the expiry time of the Improvement Phase (value is in HHMMSSCC)
Improvement Process Expiry Duration	4	N	Indicates the expiry duration of the Improvement Phase (value is in SSCC)
Minimum Quantity for Improvement Order	8	X	Enables market makers to know the minimum quantity for an Improvement Order during the Improvement Phase
Percentage Assured to Initial Order	8	X	Indicates the quantity of the Initial Order assured to the dealer side of the IO in case of the Initial Order price is the best limit Ex: 00040.00 stands for 40.00 %
Auction Type	1	X	Indicating the auction type G: Regular PIP B: Solicitation C: Facilitation
Filler	1	A	Default value space

3.4.22 Message Type MS - Improvement Process Beginning Message (Complex Order) - 94 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header
Exchange ID	1	A	Q by default
Instrument Description	30	X	Complex Order Instrument symbol. The individual legs are defined in message type NS.
Improvement Phase Sequential Number	6	N	Indicates the number of an Improvement Phase. Sequential number unique per Instrument and per trading day
Initial Order Price Sign	1	X	+ or - sign
Intial Order Price	6	N	Indicates the price of the Initial Order
Initial Order Price Fraction Indicator	1	X	Refer to Indicator Code
Initial Order Quantity	8	X	Indicates the quantity of the Initial Order
Initial Order Side	1	A	Indicates the dealer side of the Initial Order B for buy S for sell
Improvement Phase Expiry Time	8	A	Indicates the expiry time of the Improvement Phase (value is in HHMMSSCC)
Improvement Process Expiry Duration	4	N	Indicates the expiry duration of the Improvement Phase (value is in SSCC)
Minimum Quantity for Improvement Order	8	X	Enables market makers to know the minimum quantity for an Improvement Order during the Improvement Phase
Percentage Assured to Initial Order	8	X	Indicates the quantity of the Initial Order assured to the dealer side of the IO in case of the Initial Order price is the best limit Ex: 00040.00 stands for 40.00 %
Auction Type	1	X	Indicating the auction type G: Regular PIP B: Solicitation C: Facilitation

3.4.23 Message Type O - Market Sheet Initial and Improvement Order (Options) / Exposed Order (Options) - 80 bytes

This message type is not broadcasted for Improvement orders related to Solicitation and Facilitation auction types.

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header
Exchange ID	1	A	Q by default
Instrument Description	20	X	Refer to 3.2.2
Order Side	1	X	The "must be filled" side ("B" for Buy, "S" for Sell)
Type of Order	1	X	Type of limit entered A: Initial Order P: Exposed Order
Limit Entered for an Order	6	X	For a buy order, represents the highest price that the order issuer is willing to pay For a sell order, represents the lowest price at which the order issuer is willing to sell
Limit Fraction Indicator	1	X	Refer to Fraction Indicator Code
Order Quantity	8	X	Refer to Indicator Code
Order Sequence Number	6	N	Allocated by the Central trading engine at each valid order entry
Improvement Phase Sequential Number	6	N	Indicates the number of an Improvement Phase. Not relevant when the message refers to an Exposed Order. Sequential number unique per instrument and per trading day
Type of Clearing Account for Member that Owns the Order	1	X	Indicates the account type for which an order was entered using the clearing house member's account typology. When “Type of Order” is equal to “A”, the Account Type is for the InitO (Auction initiator or dealer side). 6: Public Customer 7: Broker Dealer 8: Market Maker T: Professional Customer W: Broker Dealer cleared as Customer X: Away Market Maker
Filler	1	A	Default value space

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
End of the Exposition	8	N	HHMMSSCC - '0' filled for PIP messages
Auction Type	1	X	Indicates the auction type G: Regular PIP F: Exposed Order
FirmId	4	X	Indicates the FirmId
CMTA	4	X	Indicates the CMTA

3.4.24 Message Type OS - Market Sheet Initial and Improvement Order (Complex Order) / Exposed Order (Complex Order) - 91 bytes

This message type is not broadcasted for Improvement orders related to Solicitation and Facilitation auction types.

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header
Exchange ID	1	A	Q by default
Instrument Description	30	X	Complex Order Instrument symbol. The individual legs are defined in message type NS.
Order Side	1	X	The "must be filled" side ("B" for Buy, "S" for Sell)
Type of Order	1	X	Type of limit entered A: Initial Order P: Exposed Order
Limit Entered for an Order sign	1	X	+ or - sign
Limit Entered for an Order	6	N	For a buy order, represents the highest price that the order issuer is willing to pay For a sell order, represents the lowest price at which the order issuer is willing to sell
Limit Fraction Indicator	1	X	Refer to Fraction Indicator Code
Order Quantity	8	X	Refer to Indicator Code
Order Sequence Number	6	N	Allocated by the Central trading engine at each valid order entry
Improvement Phase Sequential Number	6	N	Indicates the number of an Improvement Phase. Not relevant when the message refers to an Exposed

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
			Order. Sequential number unique per instrument and per trading day
Type of Clearing Account for Member that Owns the Order	1	X	Indicates the account type for which an order was entered using the clearing house member's account typology. When “Type of Order” is equal to “A”, the Account Type is for the InitO (Auction initiator or dealer side). 6: Public Customer 7: Broker Dealer 8: Market Maker T: Professional Customer W: Broker Dealer cleared as Customer X: Away Market Maker
Filler	1	A	Default value space
End of the Exposition	8	N	HHMMSSCC - '0' filled for PIP messages
Auction Type	1	X	Indicating the auction type G: Regular PIP F: Exposed Order
FirmId	4	X	Indicates the FirmId
CMTA	4	X	Indicates the CMTA

3.4.25 Message Type T – Delete N lines Initial and Improvement Order (Options) / Exposed Order (Options) – 47 Bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header
Exchange ID	1	A	Q by default
Instrument Description	20	X	Refer to
Deletion Type	1	N	1: Deletion of a precise order 2: Deletion of all previous orders in the specified side 3: Deletion of all orders
Order Sequence Number	6	N	Allocated by the Central trading engine at each valid order entry
Order Side	1	X	B: Buy S: Sell <Blank>: all
Improvement Phase Sequential Number	6	N	Number of an Improvement Phase. Not relevant when the message refers to an Exposed Order. Sequential number unique per Instrument and per trading day
Auction Type	1	X	Auction type or if the message is related to an exposed order. G: Regular PIP B: Solicitation C: Facilitation F: Exposed Order

3.4.26 Message Type TS – Delete N lines Initial and Improvement Order (Complex Order) / Exposed Order (Complex Order) – 57 Bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to Message Header
Exchange ID	1	A	Q by default
Instrument Description	30	X	Complex Order Instrument symbol. The individual legs are defined in message type NS.
Deletion Type	1	N	1: Deletion of a precise order 2: Deletion of all previous orders in the specified side 3: Deletion of all orders
Order Sequence Number	6	N	Allocated by the Central trading engine at each valid order entry
Order Side	1	X	B: Buy S: Sell <Blank>: all
Improvement Phase Sequential Number	6	N	Number of an Improvement Phase. Not relevant when the message refers to an Exposed Order. Sequential number unique per Instrument and per trading day
Auction Type	1	X	Auction type or if the message is related to an exposed order. G: Regular PIP B: Solicitation C: Facilitation F: Exposed Order

Section 4 Price Fields

4.1 Description

The Price field is a six-character numeric field.

Note: The exception to the above is for MarketOnOpen (MOO) orders, where the Price field contains ’000OUV’ with a Fraction Indicator Code of ’0’. ’000OUV’ stands for ’Opening Price’ as calculated by the trading engine during the pre-opening phase.

The delineation of the whole number portion of the price and the decimal/fractional portion of the price will be defined by the Fraction Indicator (FI) Code. Furthermore, the FI indicates the manner in which the price is displayed visually. This implies that all zero fractions may be sent in order to maintain consistency in the visual alignment of the implied decimal places. The all zero fraction is replaced by spaces for visual display.

No truncation of price data is permitted by this Specification, except for high-order zeros for products that trade in fractions of 1/10,000,000 or smaller. Should such a truncation be necessary, then it is implicit from the FI, which is 7, 8, or 9.

4.2 Fraction Indicator Code

All fractions are expressed as fractions or in decimals as defined by the price fraction rules of the particular product (section Tick Table). The Fraction Indicator Code is one alphanumeric character as follows:

FRACTION	CODE	FRACTION	CODE
1/1	0	-1/1	A
1/10	1	-1/10	B
1/100	2	-1/100	C
1/1,000	3	-1/1,000	D
1/10,000	4	-1/10,000	E
1/100,000	5	-1/100,000	F
1/1,000,000	6	-1/1,000,000	G
1/10,000,000	7		
1/100,000,000	8		
1/1,000,000,000	9		

4.3 Tick Table (Price Fraction rules)

PRICE RANGE	TICK INCREMENT FIELD VALUE	FRACTION INDICATOR (F.I.)	MINIMUM TICK INCREMENT
Order Price below $3.00	0000T1	2	$0.05
Order Price equal or above $3.00	0000T1	2	$0.10
All PIP, Facilitation and Solicitation orders, at any price	0000T1	2	$0.01

Section 5 Marker Codes

5.1 Markers for Options

FIRST LETTER (CURRENCY OR TYPE OF MARKET)	
Marker	**Description**
B	Trading in British Pound
C	Trading in Canadian Dollar
D	Danish Krone
E	Trading in Swiss Franc
F	Trading in Euro
U	Trading in US Dollar
Y	Trading in Japanese Yen
2ND LETTER (TYPE OF OPTIONS)	
Marker	**Description**
Blank	Regular Options

5.2 Status Markers

STATUS		USED IN	
MARKER	DESCRIPTION	GROUP MESSAGES	INSTRUMENT MESSAGES
Y	Pre-opening phase	X	X
O	Opening phase	X	X
T	Opened for Trading	X	X
F	Forbidden phase	X	X
H	Trading Halted	X	X
R	Reserved phase (goes into a state as pre-opening where orders can be sent, modified, or canceled)		X

Status		Used in	
Marker	Description	Group Messages	Instrument Messages
S	Suspended phase (goes into a state as pre-opening where orders can be sent, modified, or cancelled)		X
Z	Frozen		X
A	Surveillance Intervention phase (Consultation phase)	X	X
C	Closed	X	X
B	Beginning of day inquiries	X	X
BLANK	If not used		

5.3 Price Indicator Markers

Price Indicator		Will Impact The …				
Marker	Description	Opening Price	High Price	Low Price	Last Price	Volume
A	As-Of trades					X
C	Trades performed at the end of a PIP allocation phase	X	X	X	X	X
L	Late trade (Transaction is being reported late and is out of sequence)					X
O	Trades performed during the opening	X	X	X	X	X
S	Reference price (volume field zero filled)					
W	Trades resulting from the transmission of an ISO Inbound order	X	X	X	X	X
X	Trades performed when the market is crossed					X

PRICE INDICATOR		WILL IMPACT THE …				
MARKER	DESCRIPTION	OPENING PRICE	HIGH PRICE	LOW PRICE	LAST PRICE	VOLUME
G	Contingent Trade, price of the trade was not controlled against the NBBO	X	X	X	X	X
I	Trade involving an implied order or Leg Trade of a Complex Order instrument	X	X	X	X	X
P	Trade done on a Complex Order Instrument					X
BLANK	Actual transaction took place	X	X	X	X	X

5.4 Indicator Code

This code is used for Bid/Ask Size, Volume, and Open Interest.

MARKER	DESCRIPTION (THE SIZE OF THE BID/ASK FIELD IS IN …)	
C	100	(Hundreds)
D	1,000	(Thousands)
E	10,000	(Ten-Thousands)
F	100,000	(Hundred-Thousands)
G	1,000,000	(Millions)
H	10,000,000	(Ten-Millions)
I	100,000,000	(Hundred-Millions)
J	1,000,000,000	(Billions)

DATA	MESSAGE SENT	PARTICIPANT SHOULD DISPLAY…
Bid size of 120575	Size field will indicate 1205C	120500
Volume of 258,487,797	Volume will indicate 2584877C	258,487,700

5.5 Strike Price Currency Codes

CURRENCY	
MARKER	**DESCRIPTION**
USD	US $
CAD	Canadian $
Blank	Not provided

Section 6 Month Codes

6.1 Options

CALL OPTIONS		
A – January	E – May	I – September
B – February	F – June	J – October
C – March	G – July	K – November
D – April	H – August	L – December
PUT OPTIONS		
M – January	Q – May	U – September
N – February	R – June	V – October
O – March	S – July	W – November
P – April	T – August	X – December

6.2 Market Feed Indicators

FIRST LETTER	TYPE OF INSTRUMENT	SECOND LETTER	TYPE OF UNDERLYING
O	Options	X	Index
L	Long Term	E	Equities

6.3 Option Strike Price Codes

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
5555	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200
205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300
305	310	315	320	325	330	335	340	345	350	355	360	365	370	375	380	385	390	395	400
405	410	415	420	425	430	435	440	445	450	455	460	465	470	475	480	485	490	495	500
505	510	515	520	525	530	535	540	545	550	555	560	565	570	575	580	585	590	595	600
605	610	615	620	625	630	635	640	645	650	655	660	665	670	675	680	685	690	695	700
705	710	715	720	725	730	735	740	745	750	755	760	765	770	775	780	785	790	795	800
805	810	815	820	825	830	835	840	845	850	855	860	865	870	875	880	885	890	895	900
905	910	915	920	925	930	935	940	945	950	955	960	965	970	975	980	985	990	995	1000
1005	1010	1015	1020	1025	1030	1035	1040	1045	1050	1055	1060	1065	1070	1075	1080	1085	1090	1095	1100
1105	1110	1115	1120	1125	1130	1135	1140	1145	1150	1155	1160	1165	1170	1175	1180	1185	1190	1195	1200
1205	1210	1215	1220	1225	1230	1235	1240	1245	1250	1255	1260	1265	1270	1275	1280	1285	1290	1295	1300
1305	1310	1315	1320	1325	1330	1335	1340	1345	1350	1355	1360	1365	1370	1375	1380	1385	1390	1395	1400
1405	1410	1415	1420	1425	1430	1435	1440	1445	1450	1455	1460	1465	1470	1475	1480	1485	1490	1495	1500
1505	1510	1515	1520	1525	1530	1535	1540	1545	1550	1555	1560	1565	1570	1575	1580	1585	1590	1595	1600
1605	1610	1615	1620	1625	1630	1635	1640	1645	1650	1655	1660	1665	1670	1675	1680	1685	1690	1695	1700
1705	1710	1715	1720	1725	1730	1735	1740	1745	1750	1755	1760	1765	1770	1775	1780	1785	1790	1795	1800
1805	1810	1815	1820	1825	1830	1835	1840	1845	1850	1855	1860	1865	1870	1875	1880	1885	1890	1895	1900
1905	1910	1915	1920	1925	1930	1935	1940	1945	1950	1955	1960	1965	1970	1975	1980	1985	1990	1995	2000
2005	2010	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060	2065	2070	2075	2080	2085	2090	2095	2100
2105	2110	2115	2120	2125	2130	2135	2140	2145	2150	2155	2160	2165	2170	2175	2180	2185	2190	2195	2200
2205	2210	2215	2220	2225	2230	2235	2240	2245	2250	2255	2260	2265	2270	2275	2280	2285	2290	2295	2300
2305	2310	2315	2320	2325	2330	2335	2340	2345	2350	2355	2360	2365	2370	2375	2380	2385	2390	2395	2400

2,5	**Z**	9	**L**	17	**R**	23	**P**	32,5	**Z**	67,5	**U**
3	**G**	11	**M**	17,5	**W**	24	**S**	37,5	**U**	72,5	**V**
4	**H**	12	**N**	18	**S**	26	**T**	42,5	**V**	77,5	**W**
6	**I**	12,5	**V**	19	**T**	27	**U**	47,5	**W**	82,5	**X**
7	**J**	13	**O**	21	**L**	27,5	**Y**	52,5	**X**	87,5	**Y**
7,5	**U**	14	**P**	22	**O**	28	**V**	57,5	**Y**	92,5	**Z**
8	**K**	16	**Q**	22,5	**X**	29	**W**	62,5	**Z**	97,5	**U**

6.3.1 Basic Convention

Because the full strike price is always be transmitted along with its associated code, users will be aware of the codes that have been determined to be used for strike prices outside the range displayed.

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