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July 8, 2008

Dear OPRA Market Recipients:

I have attached an updated/revised Symbology Data Recipient Implementation Plan dated July 8, 2008. This plan updates the plan distributed September 6, 2007.

Changes reflected in this plan:

1. November 2008 schedule for the networks supported at SIAC.
2. 2009/2010 testing in conjunction with OCC's Option Symbology Initiative (OSI).
3. Removal of reserved field from messages.
4. Additional information on sequence number rollover
5. Expiration date field zero filled until participants populate field with valid expiration dates.

Very truly yours,

Joe Corrigan
Executive Director

JC\km
Attachment

OPRA Symbology Data Recipient Implementation Plan

Revised July 8, 2008

1. **OPRA Enhancements:**

- Changes reported in this document affect OPRA Output Lines 1-24.
- New/Modified Fields (Symbology format) for the following messages:
 - Last Sale (Category, a)
 - Quote with Size (Category, k)
 - Open Interest (Category, d)
 - End of Day Summary (Category, f)
- FLEX messages continue to use Category C messages and not the formatted quote or last sale messages. The conventions currently used for Category C messages have been updated to incorporate new symbology.
- The Reserved fields have been removed.
- A new control message (Category H Type N) has been established for line integrity.
- New Output Header (includes 10 byte Sequence #, Milliseconds in Timestamp) for all OPRA messages.
- Fast for Symbology Network (incorporates format and header changes) – FAST packet header will include additional features representing an OPRA FAST version number, packet sequence number and number of messages within a packet

2. **Implementation Schedule:**

January, 2008 (Complete)

- Begin First Step of Data Recipient testing of the FAST for Symbology network, using canned output data. (SIAC replay file) Test data will include the following new and modified fields supporting the first phase of Symbology (Expiration Date, expanded Year, and reduced Explicit Strike Price; the Strike Price Code continues to be included in all messages.)

April/May, 2008 (Complete)

- All Data Recipients must be on the current FAST network – (SOD) April 21st
- ASCII Network terminated – (EOD) April 21st
- Support FAST for Symbology Network in production – May 19th
 - Support for both the current FAST Network and FAST for Symbology Network (Real-time and Retransmission messages). With dual support, Data Recipients will be able to migrate from the current FAST network to the FAST for Symbology network as they become ready, eliminating the need for a cold-cutover.
 - Both the current FAST Network and FAST for Symbology Network Multicast Line sequence numbers will roll over at 99,999,999 (current FAST Network supports 8 positions) as they do today to keep both networks in sync.
 - Line Integrity message (Category H, Type N) disseminated

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October, 2008

- Begin Second Step of OPRA Data Recipient testing which includes the Second Phase (Final) of Symbology (utilizing all 5 characters of the symbol, and discontinuation of Strike Price Code field dissemination), using canned output data (SIAC replay file)

November, 2008

- Complete First Step of Data Recipient testing of the FAST for Symbology network, using canned output data. (SIAC replay file) Test data included the following new and modified fields supporting the first phase of Symbology (Expiration Date, expanded Year, and reduced Explicit Strike Price; the Strike Price Code continues to be included in all messages.)
- All Data Recipients must be on the FAST for Symbology network - (SOD) November 14th
- Current FAST Network (existing formats) terminated – (EOD) November 14th
- Support FAST for Symbology Network only – (SOD) November 17th

February, 2009

- FAST for Symbology Multicast Line Network sequence number will no longer roll over after 9,999,999. The new sequence number limit is 1,999,999,999. The change to exceed this limit is to be determined (it requires a new FAST decoder).

September, 2009

- Begin Industry Scripted Testing (OSI)

January, 2010

- Complete Industry Scripted Testing (OSI)
- Complete Second Step of OPRA Data Recipient testing which includes the Second Phase (Final) of Symbology (utilizing all 5 characters of the symbol, and discontinuation of Strike Price Code field dissemination), using canned output data (SIAC replay file)

February 12, 2010

- Discontinue the dissemination of the Strike Price Code in output message formats

March, 2010

- OPRA in place for symbol consolidation when determined (no further action necessary).

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3. OUTPUT MESSAGE HEADER

Applies to all OPRA messages

OUTPUT MESSAGE HEADER (Existing) – 18 Bytes

PARTICIPANT ID	RETRANSMISSION REQUESTER	MESSAGE IDENTIFICATION	MESSAGE SEQUENCE NUMBER	TIME (HHMMSS)
1	1	2	8	6

|←----- 18 BYTES -----→|

OUTPUT EXPANDED MESSAGE HEADER (New) – 23 Bytes

PARTICIPANT ID	RETRANSMISSION REQUESTER	MESSAGE IDENTIFICATION	MESSAGE SEQUENCE NUMBER	TIME HHMMSSsss
1	1	2	10	9

|←----- 23 BYTES -----→|

New or Expanded fields

Message sequence number – 10 position numeric field. See section 4.05 of Data Recipient Specification for additional details.

Time – 9 position numeric field adding milliseconds to current field.

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4. **Affected OPRA Message Formats:**

- Last Sale (Category, a)
- Quote with Size (Category, k)
- Open Interest (Category, d)
- End of Day Summary (Category, f)

Existing Output Message - Existing fields applicable to all 4 Equity/Index Messages:

SECURITY SYMBOL	RESERVED	EXPIRATION MONTH	YEAR	STRIKE PRICE CODE	STRIKE PRICE DENOMINATOR CODE	EXPLICIT STRIKE PRICE
5	2	1	1	1	1	7

|←----- 18 BYTES -----→|

Existing Strike Price Denominator Code

1 Byte, Alphanumeric, Space filled.

The Strike Price Denominator Code field indicates the position of the floating decimal point.

Denominator		Whole	Numerator 7 Byte Price Field (number of decimal places)
Code	Value		
A	10	6	1
B	100	5	2
C	1,000	4	3
D	10,000	3	4
E	100,000	2	5
F	1,000,000	1	6

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New/Modified Output Message - applicable to all 4 Equity/Index Messages (FIRST PHASE DR TESTING):

SECURITY SYMBOL	EXPIRATION MONTH	EXPIRATION DATE	YEAR	STRIKE PRICE DENOMINATOR CODE	EXPLICIT STRIKE PRICE	STRIKE PRICE CODE
5	1	2	2	1	6	1

|←----- 18 BYTES ----->

New/Modified Output Message - applicable to all 4 Equity/Index Messages (SECOND PHASE DR TESTING):

SECURITY SYMBOL	EXPIRATION MONTH	EXPIRATION DATE	YEAR	STRIKE PRICE DENOMINATOR CODE	EXPLICIT STRIKE PRICE
5	1	2	2	1	6

|←----- 17 BYTES ----->

New or expanded fields

Security Symbol – is now alphanumeric

Expiration Date – 2 position numeric field containing values 1 to 31 indicating the date the series expires. This date falls on a Saturday for Standard expirations, a Friday for Weekly expirations and the last business day of the appropriate month for Quarterly expirations.

Note: The Expiration Date field will be zero filled until Participants begin populating it.

Year – 2 position numeric field containing the last 2 digits of the expiration year. The field was previously defined as alpha numeric.

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Modified Strike Price Denominator Code (Modified to remove Code 'F' and re-sequence the 'Whole' numerator code). 1 Byte, Alphanumeric, Space filled. The Strike Price Denominator Code field indicates the position of the floating decimal point.

Denominator		Whole	Numerator 6 Byte Price Field (number of decimal places)
Code	Value		
A	10	5	1
B	100	4	2
C	1,000	3	3
D	10,000	2	4
E	100,000	1	5

Modifications to Option Symbol:

Prior to (currently) and during implementation either the Strike Price Code or the Strike Price Denom Code and Explicit Strike Price are used as part of the Option Symbol.

	Prior to Symbology Implementation	During Symbology Implementation (Beginning April, 2009)	After Symbology Implementation (February 12, 2010)
Field Name	Byte Size	Byte Size	Byte Size
Symbol	5	5	5
Expiration Month	1	1	1
Expiration Date	-	2	2
Year	1	2	2
Strike Price Code	1	1	-
Strike Price Denom Code	1	1	1
Explicit Strike Price	7	6	6
Total Message Length	16 Bytes (without Reserved)	18 Bytes	17 Bytes

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Modified Administrative Equity And Index FLEX Message Standards (Category, C):

Update to Section 9.05 of Data Recipient Specification

1. Security Symbol is now 5 characters and alphanumeric
2. Request Identifier remains identified as alphanumeric, but will only be used as a numeric.
3. Strike Prices and Premium Prices will now be represented as decimal in the text fields (see examples below).
4. Clearing Symbol in the text field (if used) will follow the OCC standard as described in the OCC Symbology Plan (dropping the expiration day).

Modified Administrative Equity And Index FLEX Message Standards (Category, C):

EQUITY AND INDEX OPTIONS			
Field Descriptions	Bytes	Character	Details
Product Type	4	Alphabetic	FLEX
Filler	1	Space	
FLEX Type	3	Alphabetic	I - Index E - Equity
Filler	1	Space	
Security Symbol	5	Alphanumeric Left Justified Space filled	
Filler	1	Space	
Message Type	3	Alphabetic	RFQ - Request for Quote QTE - Quote LST - Last Sale CXL - Cancel ADM - Admin Message IND - Indicative Quote
Filler	1	Space	
Request Identifier	5	Alphanumeric Left Justified Space filled	
Filler	1	Space	
Text	V	Alphanumeric	Variable text up to 428 character free form

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EQUITY INDICATIVE QUOTE (IND)			
Field Descriptions	Bytes	Character	Details
Product Type	4	Alphabetic	FLEX
Filler	1	Space	
FLEX Type	3	Alphabetic	E - Equity
Filler	1	Space	
Security Symbol	5	Alphanumeric Left Justified Space filled	MSFT (Space)
Filler	1	Space	
Message Type	3	Alphabetic	IND - Indicative Quote
Filler	1	Space	
Text	V	Alphanumeric	2 YR ATMC 1.55-1.63
This message is an Equity FLEX Indicative Quote MSFT 2 Year at-the-money call. 1.55% bid, offered at 1.63%.			

EQUITY ADMINISTRATIVE MESSAGE (ADM)			
Field Descriptions	Bytes	Character	Details
Product Type	4	Alphabetic	FLEX
Filler	1	Space	
FLEX Type	3	Alphabetic	E - Equity
Filler	1	Space	
Security Symbol	5	Alphanumeric Left Justified Space filled	MSFT (Space)
Filler	1	Space	
Message Type	3	Alphabetic	ADM - Admin Message
Filler	1	Space	
Text	V	Alphanumeric	RFQ MSFT1 Market Closed
This message is an Equity FLEX Administrative Message that RFQ MSFT1 has been closed.			

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INDEX OPTIONS REQUEST FOR QUOTE (RFQ)			
Field Descriptions	Bytes	Character	Details
Product Type	4	Alphabetic	FLEX
Filler	1	Space	
FLEX Type	3	Alphabetic	I - Index
Filler	1	Space	
Security Symbol	5	Alphanumeric Left Justified Space filled	OEX
Filler	1	Space	
Message Type	3	Alphabetic	RFQ - Request for Quote
Filler	1	Space	
Request Identifier	5	Alphanumeric Left Justified Space filled	1
Filler	1	Space	
Text	V	Alphanumeric	Call 12/31/01 105% EUR CL \$20M QUOTE IN % BY 1030 CST
<p>This message is an Index FLEX Request for Quote for OEX call, Expiration date 12/31/01, Strike Price 5% out of the money (calculated at the close), European Expiration, settled on the close \$20,000,000. Quotes must be made in percentages of the closing index value and must be in by 10:30 central standard time.</p>			

INDEX OPTIONS QUOTE (QTE)			
Field Descriptions	Bytes	Character	Details
Product Type	4	Alphabetic	FLEX
Filler	1	Space	
FLEX Type	3	Alphabetic	I - Index
Filler	1	Space	
Security Symbol	5	Alphanumeric Left Justified Space filled	XMI
Filler	1	Space	
Message Type	3	Alphabetic	QTE - Quote
Filler	1	Space	
Request Identifier	5	Alphanumeric Left Justified Space filled	12
Filler	1	Space	
Text	V	Alphanumeric	4 1/2%-5% \$10Mx\$10M
<p>This message is an Index FLEX Quote for XMI, according to the terms of the request assigned identifier RFQ12. Bid 4 1/2%-Offer 5%, size \$10,000,000 up.</p>			

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INDEX OPTIONS LAST SALE (LST)			
Field Descriptions	Bytes	Character	Details
Product Type	4	Alphabetic	FLEX
Filler	1	Space	
FLEX Type	3	Alphabetic	I - Index
Filler	1	Space	
Security Symbol	5	Alphanumeric Left Justified Space filled	SPX
Filler	1	Space	
Message Type	3	Alphabetic	LST - LAST SALE
Filler	1	Space	
Request Identifier	5	Alphanumeric Left Justified Space filled	2
Filler	1	Space	
Text	V	Alphanumeric	250 @ 23.75 5NSX
This message is an Index FLEX Last Sale for SPX Request for Quote number 2. 250 contracts traded at 23.75; clearing symbol is 5NSX.			

EQUITY OPTIONS LAST SALE (LST)			
Field Descriptions	Bytes	Character	Details
Product Type	4	Alphabetic	FLEX
Filler	1	Space	
FLEX Type	3	Alphabetic	E - Equity
Filler	1	Space	
Security Symbol	5	Alphanumeric Left Justified Space filled	IBM
Filler	1	Space	
Message Type	3	Alphabetic	LST - LAST SALE
Filler	1	Space	
Request Identifier	5	Alphanumeric Left Justified Space filled	2
Filler	1	Space	
Strike Price	1-9	Alphanumeric	125.125
Filler	1	Space	
Type (call or put)	1	Alphabetic	C
Filler	1	Space	
Exercise Style (Amer, Eur)	3-4	Alphanumeric	AMER
Filler	1	Space	
Expiration Date	10	Alphanumeric	01.02.09
Filler	1	Space	
Volume	5	Alphanumeric	500
Filler	1	Space	
Premium	1-9	Alphanumeric	3.57
Filler	1	Space	
Clearing Symbol	6	Alphanumeric	1IBM
This message is an Equity FLEX Last Sale for IBM, 125.125 Call. American exercise, expiring 01/02/09. 500 sold at 3.57			