



SECURITIES INDUSTRY AUTOMATION CORPORATION

CONSOLIDATED QUOTATION SYSTEM

CQS

**OUTPUT MULTICAST LINE
INTERFACE SPECIFICATION**

**Revision: May 13, 2009
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SUMMARY OF CHANGES

REVISION #30B – February 07, 2007	
PAGE(S)	DESCRIPTION
Appendix E	Revised: Timeline of CQS Multicast Line Messages for the BSE, CHX and NYSE Open for select securities (effective February 9, 2007): From: 9:30 AM To: 8:20 AM
REVISION #30B – February 23, 2007	
Appendix E	Revised: Timeline of CQS Multicast Line Messages for the NSX (effective February 26, 2007): “Market Open”: From 9:30 AM - To 8:00 AM E.T. “Market Closed”: From 4:00 PM - To 6:30 PM E.T.
REVISION #30B – February 23, 2007	
4-8, 10-16, 10-18 & Appendix E	Revised Name: From: Chicago Board Options Exchange - CBOE To: Chicago Board of Options Stock Exchange – CBSX Revised Timeline of CQS Multicast Line Messages for the CBSX (effective March 5, 2007): “Market Open”: From 9:30 AM - To 9:15 AM E.T.
REVISION #30B – March 2, 2007	
4-8, 10-16, 10-18 & Appendix E	<u>Correction</u> to Name Revision for CBOE (effective March 5, 2007): From: Chicago Board of Options Stock Exchange To: CBOE Stock Exchange Revised Timeline of CQS Multicast Line Messages for the NASD (effective March 05, 2007): “Market Open”: From 8:30 AM - To 8:00 AM ET “Market Close”: From 8:00 PM - To 6:30 PM ET
REVISION #30B – March 23, 2007	
4-2, 4-5, 6-1, 8-1 and 8-5	Deleted: Category C, Type P – ‘NASD NAQS Wipe-Out’ control message (no longer applicable)
10-10, 10-12, D-1, D-2 and G-3	Deleted: All references to “NAQS” Market Maker ID (no longer applicable)
REVISION #31 – June 25, 2007	
10-19, Appendix D-3, H-3 and H-7	Added: New code ‘Y’ to Quote Condition field to denote Sub-Penny Trading
REVISION #32 – January 29, 2008	
Appendix E	Revised: Timeline of CQS Multicast Line Messages for the International Securities Exchange (ISE) effective February 11, 2008 : “Market Open”: From 9:30 AM - To 9:00 A.M. ET “Market Closed”: From 4:00 PM - To 4:15 P.M. ET

SUMMARY OF CHANGES

REVISION #33 – August 18, 2008	
4-8, 10-16 & 10-18 Appendix E 1-2	Added: New CQS Participant ‘BATS Trading’ <ul style="list-style-type: none"> • New Participant ID – ‘Z’ • New Primary Listing Market ID – ‘Z’ • New Trade Reporting Facility (TRF) ID – ‘Z’ Added: Timeline of CQS Multicast Line Messages for new CQS Participant ‘BATS Trading’: Market Open: 8:00 A.M. ET Market Closed: 4:18 P.M. ET
REVISION #34 – September 29, 2008	
Appendix E	Revised: Timeline of CQS Multicast Line Messages for the International Securities Exchange (ISE) effective October, 2008 : “Market Open”: From 9:00 AM - To 8:00 A.M. ET “Market Closed”: From 4:15 PM - To 5:00 P.M. ET
REVISION #35 – December 24, 2008	
Appendix E	Revised: Timeline of CQS Multicast Line Messages for the International Securities Exchange (ISE): “Market Closed”: From 5:00 P.M. - To 8:00 P.M. ET
All	Revise Participant ID Value: From: NASD To: FINRA
REVISION #36 – February 20, 2009	
All	Revised: Participant ID Value: -From: American Stock Exchange To: NYSE AMEX -From: Boston Stock Exchange To: NASDAQ OMX BX -From: NASDAQ To: NASDAQ OMX -From: Philadelphia Stock Exchange To: NASDAQ OMX PHLX
23-25, 30 & 41	Revised: Total number of IP Multicast Lines broadcasting CQS messages: -From: 5 lines - To: 24 lines Revised: Message routing by Network and Security Symbol over 24 Multicast Lines.
71	- Revised: End of Participant Reporting for NYSE AMEX from 16:25 to 17:30 - Added: End of Participant Reporting for NYSE at 17:30
REVISION #37 – May 13, 2009	
Appendix E - 71	Revised: Timeline of CQS Multicast Line Messages for BATS Trading: “Market Closed”: From 4:00 P.M. ET - To 5:00 P.M. ET

1.0 INTRODUCTION

1.1 BACKGROUND

The Securities Industry Automation Corporation (SIAC) has continuously served as the "Processor" for the Consolidated Quote Plan from its inception on August 1, 1978. In fulfilling its role as the Processor, SIAC plans, develops, operates, and maintains the Consolidated Quote System (CQS).

CQS collects and processes all equity quotes in listed securities, local issues and bonds from all U.S. Stock Exchanges and the Financial Industry Regulatory Authority (FINRA). In addition, CQS calculates and identifies the National and FINRA "Best Bid and Offer" (highest bid and lowest offer). CQS Participant messages, input to the CQS processor, are validated, processed, recorded and merged to form the High Speed outputs. This information is made available via computer-to-computer linkages to the financial community in the U.S. and abroad.

Essential in ensuring the timely reporting of quote information are the CQS Multicast Line (ML) output facilities. Approved subscribers of the CQS service can redistribute CQS data worldwide to their customers as part of their individual services or use the data for their own purposes.

The consolidated ML output facilities designate traffic with two network identifiers. An "E" identifier is used to represent NYSE listed securities quoted by CQS Participants. An "F" identifier is used to represent NYSE AMEX listed securities quoted by CQS Participants, securities eligible for NYSE AMEX listing but quoted solely by Regional Exchanges, bonds and local issues.

1.2 DUAL SITE REDUNDANCY

Computer systems that support the processing and dissemination of consolidated quotes are operational at two sites. The two sites provide back-up capability in the event of a disaster at either location. Redundant dual streams of data are simultaneously disseminated from both sites regardless of which site operates the CQS service. If a disaster should occur at one of the locations, all of the computer processing operations in support of quote reporting would be transferred to the surviving site. A CQS dual site configuration is illustrated in **Appendix A**.

1.3 SCOPE

This specification defines the communications interface and message format requirements for Data Recipients (vendors, broker/dealers or others who receive the data feed) connecting to the National Market System (NMS) IP Multicast distribution network.

2.0 GENERAL DESIGN OF DATA DISTRIBUTION NETWORK

The CQS Communications Interface design utilizes the IP Multicast protocol with T1 and T3 circuits. The requirements for the IP Multicast Network interface are defined in the supplement to this document, "National Market Systems Common IP Multicast Distribution Network Recipient Interface Specification".

3.0 TRANSMISSION CHARACTERISTICS

3.1 TRANSMISSION BLOCK

Encapsulated within each IP packet is a single transmission block. One type of transmission block is used for all types of messages:



|<----- TRANSMISSION BLOCK ----->|

A block can have a maximum of 1,000 characters, which includes the Message Header and text.

3.2 CHARACTER SET

All transmissions are in standard 8-bit USASCII code.

3.3 SOH AND ETX

The Start of Header (SOH) control character (x01) indicates the beginning of the block, whereas the End of Text (ETX) control character (x03) signifies the end of the block.

3.4 US

The Unit Separation (US) control character (x1F) is needed in multiple message blocks to signify the end of the preceding message but not the end of the block.

3.5 BLOCK TEXT

The block text can consist of multiple messages. A message is a unit of data that can be processed by the receiving station independently of other data. A message may not span a block boundary.

A message consists of a Message Header, which is of fixed length and format, and a Message Text segment, which is variable in length and format. A US character delimits each message, while an ETX character delimits the last message in the block.

3.6 BLOCK TEXT FORMAT

The block text consists of multiple messages with each message consisting of a Message Header and, with the exception of certain control messages, a Message Text.

The block text is depicted below:

S	MESSAGE 1	U S	MESSAGE 2	U S	~ ~ ~ ~	MESSAGE n	E
O	HEADER		HEADER			HEADER	T
H	& TEXT		& TEXT			& TEXT	X

|<----- BLOCK TEXT ----->|

3.7 DATA FORMAT

USASCII filler characters are inserted, as required, in accordance with the following rules:

1. Zeros (hex 30) are inserted in numeric fields. All numeric fields are right justified, as required.
2. Spaces (hex 20) are inserted in alphabetic, alphanumeric and alphanumeric/special character fields. All alphabetic, alphanumeric and alphanumeric/special character fields are left justified, as required.
3. Spaces (hex 20) are inserted in alphanumeric fields, except Price Denominator fields, which are zero filled.

3.8 RETRANSMISSION CAPABILITY

CQS safe-stores all messages transmitted to the Data Recipients within a single trading day. This safe-store provides a facility for message retransmission.

If Data Recipients do not receive a message(s), they can request to have the message retransmitted. Retransmission requests are accepted in the period following transmission of the Start of Day message and before the transmission of the End of Retransmission message.

AutoLink, a PC based facility, is utilized for automatically receiving and processing CQS message retransmission requests. AutoLink works in conjunction with the Retransmission and Playback System (RAPS), a server associated with the CQS host, which reads CQS production data and supports retransmissions. In addition, during non-production hours, RAPS can be used to transmit test data.

Utilizing AutoLink, a Data Recipient may request retransmission(s) from a touch-tone telephone set. The facility provides automatically generated voice responses prompting a Data Recipient to enter information for retransmission requests. Each Data Recipient is assigned a user logon identification number, password and a unique retransmission requester ID code. Data Recipients would first call AutoLink. Then, after entering logon identifiers and passwords, they would be prompted to enter the appropriate data "lines" on which the "gap" occurred and the sequence number(s) to be retransmitted. The request is forwarded to an associated RAPS server which transmits the requested messages over a set of Retransmission IP multicast groups. It is the responsibility of the Data Recipient to ignore retransmitted messages not requested by them.

When a message is retransmitted, its retransmission requester field contains the unique character identifying the Data Recipient who requested the retransmission. The MSN field in the retransmitted message contains the original message sequence number and the original time of transmission. If the MSN counter for a line has been reset to Zero, no messages transmitted prior to reset are available for retransmission.

Retransmissions are transmitted at a lower message rate than regular original messages in order not to delay transmission of current messages. The total number of retransmissions requested at any one time by a particular Data Recipient may be divided into several smaller output message blocks.

If for any reason, RAPS does not receive a message(s) or is unavailable to perform its functions, CQS has the ability to retransmit messages to RAPS and Data Recipients over the Production multicast IP groups. In this case, retransmission messages are sent in a separate message block from original messages and other requested retransmission messages.

The following message types are not included in retransmissions:

1. Start of Test Cycle (cycles of test messages are not available for retransmissions)
2. End of Test Cycle
3. Line Integrity

RETRANSMISSION CAPABILITY (continued)

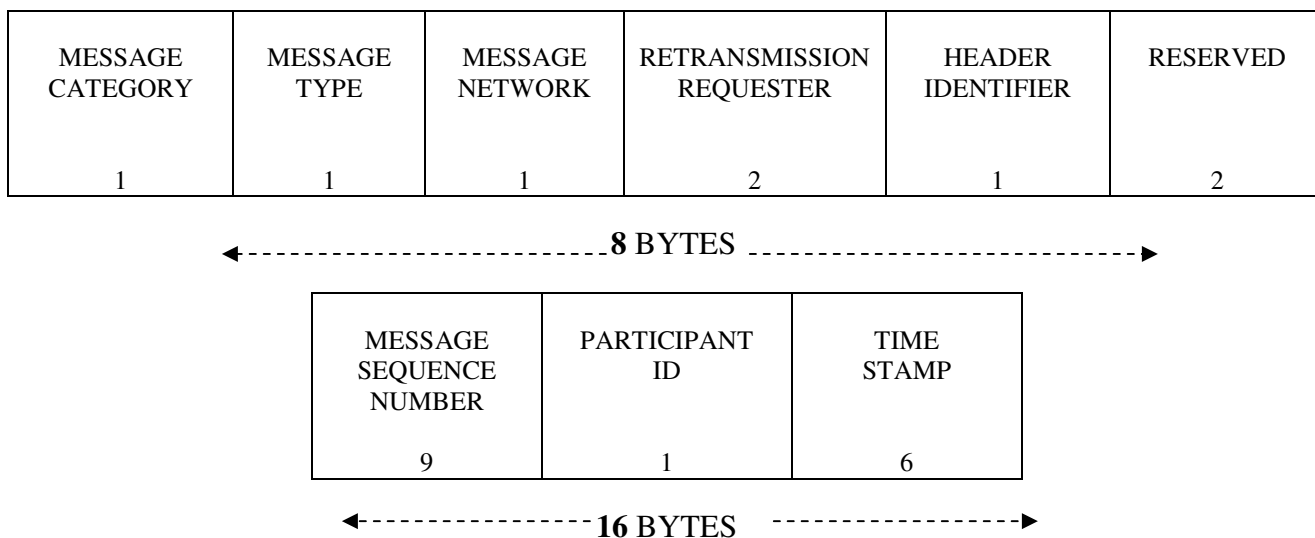
In the event of an AutoLink failure, a manual method of requesting retransmission(s) is also available. A data recipient can place a telephone call to the SIAC CTS Control Center and provide the timeframe required or the first and last message number in the sequence range to be retransmitted.

When a message is retransmitted, its retransmission requester field contains the character(s) identifying the data recipient who requested the retransmission.

Note: It is the responsibility of the data recipient to ignore retransmitted messages not requested by them.

4.0 MESSAGE HEADER

The Message Header supplied on each message contains a total of **24** Bytes and conforms in all cases to the following data fields:



4.1 MESSAGE CATEGORY

The Message Category is a 1 Byte, Alphabetic character field containing one of the following Message Categories:

Message Category Code	Value
A	ADMINISTRATIVE
B	BOND
C	CONTROL
E	LISTED EQUITY
L	LOCAL ISSUE

Note: Additional Message Category(s) will be implemented as required. If Data Recipients are not prepared to process new Message Category(s) when implemented, they should be able to handle them to the extent that they do not impact their normal data processing.

4.2 MESSAGE TYPE

The Message Type is a 1 Byte, Alphabetic character field containing one of the following Message Types:

Message Category	Message Type	Value
Bond Messages		
B	B	Bond Long Quote
Control Messages		
C	C	FINRA Close
C	I	Start of Day
C	L	Reset Message Sequence Number
C	M	Start of Test Cycle
C	N	End of Test Cycle
C	O	FINRA Open
C	T	Line Integrity
C	Z	End of Transmission
Equity Messages		
E	B	Equity Long Quote
E	D	Equity Price Short Quote
Local Issue Messages		
L	B	Local Issue Long Quote
L	D	Local Issue Price Short Quote

***Category codes are repeated for clarification.**

Note: Additional Message Type(s) will be implemented as required. If Data Recipients are not prepared to process new Message Type(s) when implemented, they should be able to handle them to the extent that they do not impact their normal data processing.

4.3 MESSAGE NETWORK

The Message Network is a 1 Byte, Alphabetic character field identifying the Network on which the message is disseminated:

Network Field Value	Description
E	Message relates to symbols with NYSE as the primary market. The Primary Listing Market Participant ID identifies the primary listing market in instances when the primary market is an Exchange <u>other than the NYSE</u> .
F	Message relates to symbols with NYSE AMEX or one of the regional Exchanges as the primary market. Message can also be for local issues and bonds. The Primary Listing Market Participant ID identifies the primary listing market in instances when the primary market is an Exchange <u>other than NYSE AMEX</u> .

CQS messages are disseminated over twenty-four (24) IP Multicast lines:

- For messages with 'E' in the Network field, there are twelve (12) lines dedicated to listed equity messages.
- For messages with 'F' in the Network field, there are twelve (12) lines dedicated to listed equity, bond and local issue messages.

4.4 MESSAGE ROUTING

In total, CQS messages are disseminated over **twenty-four (24)** IP Multicast broadcast lines designated in this document as Line 1 (**L1**) through Line 12 (**L12**) for Network 'E' and Line 1 (**L1**) through Line 12 (**L12**) for Network 'F'. Messages will be routed over the twenty-four IP multicast lines according to the network and security symbol range distribution.

Note: Data Recipients are responsible for handling any symbol over any line. Redistribution of traffic will not occur intraday. Notification may not be sent to the Data Recipients regarding redistribution of traffic.

Message Routing, continued

Traffic for Network ‘E’ and Network ‘F’ messages are routed by network and security symbol to twenty-four (24) assigned multicast lines as follows:

MESSAGE ROUTING					
Traffic for Network ‘E’ and Network ‘F’ Messages are routed by Network and Security Symbol as follows:					
Multicast Lines	Symbol Range Distribution		Multicast Lines	Symbol Range Distribution	
Network ‘E’	From	To	Network ‘F’	From	To
1	A	BZZZZZ	1	A	BZZZZZ
2	C	DZZZZZ	2	C	DZZZZZ
3	E	FZZZZZ	3	E	FZZZZZ
4	G	HZZZZZ	4	G	HZZZZZ
5	I	JZZZZZ	5	I	JZZZZZ
6	K	LZZZZZ	6	K	LZZZZZ
7	M	NZZZZZ	7	M	NZZZZZ
8	O	PZZZZZ	8	O	PZZZZZ
9	Q	RZZZZZ	9	Q	RZZZZZ
10	S	TZZZZZ	10	S	TZZZZZ
11	U	WZZZZZ	11	U	WZZZZZ
12	X	ZZZZZZ	12	X	ZZZZZZ

<p>Note: Data Recipients are responsible for handling any symbol over any line. Redistribution of traffic will <u>not</u> occur intraday. Notification may <u>not</u> be sent to the Data Recipients regarding redistribution of traffic.</p>
--

Message Routing, continued

Distribution of Message Types over a total of twenty-four (24) multicast lines:

Message Category	Message Type	Value	Distribution of Message Types over Multicast Lines 1-24	
			Network E	Network F
ADMINISTRATIVE, ANNOUNCEMENT & VOLUME MESSAGES				
A	H	Administrative Unformatted (free form text)	L1-12	L1-12
BOND MESSAGES				
B	B	Bond Long Quote	N/A	L1-12
CONTROL MESSAGES				
C	C	FINRA Close	L1-12	L1-12
C	I	Start of Day	L1-12	L1-12
C	L	Reset Message Sequence Number	L1-12	L1-12
C	M	Start of Test Cycle	L1-12	L1-12
C	N	End of Test Cycle	L1-12	L1-12
C	O	FINRA Open	L1-12	L1-12
C	T	Line Integrity	L1-12	L1-12
C	Z	End of Transmission	L1-12	L1-12
EQUITY MESSAGES				
E	B	Equity Long Quote	L1-12	L1-12
E	D	Equity Short Quote	L1-12	L1-12
LOCAL ISSUE MESSAGES				
L	B	Local Issue Long Quote	N/A	L1-12
L	D	Local Issue Short Quote	N/A	L1-12

4.5 RETRANSMISSION REQUESTER

The Retransmission Requester field is 2 Bytes, Alphabetic/Special Character, Left Justified, and Space Filled. It identifies the data recipient requesting the retransmission. The character(s) can be upper case, lower case or a special character. Alphabetic upper case character "O" (meaning original message) is entered in the Retransmission Requester field for non-retransmission messages.

The alphabetic upper case character "V" is entered in the Retransmission Requester field to indicate transmission of the associated message to all Data Recipients. A unique identification character(s) is assigned to each participating data recipient.

Note: All currently defined one-character Retransmission Requester codes will be expanded by a space character. That is, the first character is the already defined code and the second character is a space. It is the responsibility of the data recipient to ignore retransmitted messages not requested by them.

4.6 HEADER IDENTIFIER

The Header Identifier is a 1 Byte, Alphanumeric field that distinguishes between the use of the old header (16 Bytes) and the expanded header (24 Bytes) formats.

Header Identifier Value	Representation	Description
A	Alphabetic	New Header (24 Bytes)
0-9	Numeric	Old Header (16 Bytes)

4.7 RESERVED

The Reserved field is 2 Bytes, Alphanumeric and Blank Filled. It will be redefined and implemented as required, and is reserved for future use.

Note: Reserved fields will be redefined and implemented as required. If Data Recipients are not prepared to process newly defined fields when implemented, they should be able to handle them to the extent that they do not impact their normal data processing.

4.8 MESSAGE SEQUENCE NUMBER (MSN)

The Message Sequence Number (MSN) field is **9** Bytes, Numeric, Right Justified and Zero Filled. All messages are assigned a sequence number. On a per line basis, the MSN on the MLs are set to zero at the start of each day and are incremented by one each time a message (other than a Retransmission, Line Integrity, or Reset Message Sequence Number message) is transmitted. The following exceptions or special considerations should be noted:

1. Retransmitted messages contain the Message Sequence Number (MSN) of the original message.
2. The Category C, Type T (Line Integrity) message contains the sequence number of the last message transmitted, which was not a retransmitted message.
3. The MSN field in the message header of a Category C, Type L (Reset Message Sequence Number) message contains the number to which the MSN counter is to be reset. This number is either zero or a number greater than the highest number previously transmitted.
4. Category C, Type Z (End of Transmission) message which is transmitted three times to ensure positive recognition, contain the same sequence number in each iteration of the message, one higher than the last non-retransmission message. The MSN does not change when the message is transmitted the second and third time.
5. The Category C, Type M (Start of Test Cycle) and Category C, Type I (Start of Day) messages contain a zero sequence number.

4.9 CQS FAILURE AND RECOVERY-TREATMENT OF MESSAGE SEQUENCE NUMBER

TYPE OF RESTART	RECOVERY CONDITION
"WARM"	CQS failed but is able to recover; MSNs are transmitted without a gap. Upon recovery, possible duplicate sequence numbers may be transmitted
"COLD"	CQS failed and is unable to perform a WARM recovery; the first MSN after recovery is reset to a multiple of 100,000 greater than the last number transmitted before the failure and message transmission is resumed

4.10 PARTICIPANT ID

The Participant ID is a 1 Byte, Alphabetic character field, which identifies the Exchange or Processor that initiated the message:

<u>Code</u>	<u>Value</u>
A	NYSE AMEX
B	NASDAQ OMX BX
C	National Stock Exchange
D	FINRA
E	Consolidated Quote System
I	International Securities Exchange
M	Chicago Stock Exchange
N	New York Stock Exchange
P	NYSE Arca SM
T	NASDAQ OMX
W	CBOE Stock Exchange
X	NASDAQ OMX PHLX
Z	BATS Trading

Note: Additional Participant ID(s) will be implemented as required. If Data Recipients are not prepared to process new Participant ID(s) when implemented, they should be able to handle them to the extent that they do not impact their normal data processing.

4.11 TIME STAMP

The Time Stamp field format is 6 Bytes and comprised of the following characters:

- (a) **HMS**, Alphanumeric/Special Character, where the first 3 Bytes are formatted **H=Hours**, **M=Minutes** and **S=Seconds** and the Modified USASCII character set is used for Time (Military Eastern Time) representation.
- (b) **Milliseconds**, Numeric, where the last 3 bytes represent the **actual** time in milliseconds.

The Time Stamp indicates the Time that a transaction is disseminated over the Multicast line(s). For Retransmissions, the Time will reflect the original Time that the message was disseminated.

5.0 MESSAGE FORMATS

Each message transmitted by CQS consists of a Message Header and a Message Text. The particular message category and message type entered in the message header determines the format of the text. Message formats are fixed field formats (with the exception of Administrative and some Control messages which have unformatted text). Quote messages are disseminated over L1-12 based on the network and the first letter of the security symbol.

5.1 MESSAGE FORMAT FIELD DESCRIPTIONS

Detailed information on each field specified in every message format is contained in alphabetical order in the Field Descriptions section of this document.

5.2 GLOSSARY

A definition of terms is contained in the Glossary section, **Appendix C**.

5.3 SUMMARY OF DAILY CQS MULTICAST LINE MESSAGES

A summary of a day's CQS Multicast Line messages is provided in **Appendix D**.

5.4 CQS CLOSING ROUTINE

A summary detailing the CQS Closing Routine is provided in **Appendix E**.

5.5 NATIONAL AND FINRA BEST BID AND OFFER OVERVIEW

A National and FINRA Best Bid and Offer Overview is provided in **Appendix F**.

5.6 QUOTE CONDITIONS

Quote condition definitions are provided in **Appendix G**.

6.0 MESSAGE CATEGORIES AND TYPES

MESSAGE DESCRIPTION	CATEGORY	TYPE
GENERAL ADMINISTRATIVE UNFORMATTED	A	H
FINRA CLOSE	C	C
START OF DAY	C	I
RESET MESSAGE SEQUENCE NUMBER	C	L
START OF TEST CYCLE	C	M
END OF TEST CYCLE	C	N
FINRA OPEN	C	O
LINE INTEGRITY	C	T
END OF TRANSMISSION	C	Z
EQUITY LONG QUOTE	E	B
BOND LONG QUOTE	B	B
LOCAL ISSUE LONG QUOTE	L	B
EQUITY PRICE SHORT QUOTE	E	D
LOCAL ISSUE PRICE SHORT QUOTE	L	D

6.1 SHORT QUOTE

34 BYTES

The Short Quote format is used to report quote data for CTA eligible security, or Local Issue information only if the quote meets all the field restrictions. If any of the field restrictions are **not** met, the Long Quote format is used. This message can also be used to report trading suspensions in a security, price indications and trading range indications.

Field Restrictions:

- a) The security symbol does not exceed 3 bytes
- b) A temporary suffix is not required
- c) The financial status indicator is not required
- d) The currency is in U.S. Dollars
- e) Bid and Offer prices meet the requirements for an 8 byte price field (see Price Denominator Indicator field description in section 10)
- f) Bid and Offer sizes are less than 1000 round-lots (001-999)
- g) Instrument type is not required
- h) The quote is not a Bond or FINRA quote
- i) Settlement condition is regular way settlement
- j) Market condition is normal auction market
- k) The Primary Listing Participant Identifier is not required.

Category	Type
E	D
L	D

SECURITY SYMBOL	QUOTE CONDITION	RESERVED	BID PRICE DENOMINATOR INDICATOR	BID SHORT PRICE	BID SIZE IN UNITS OF TRADE	RESERVED
3	1	2	1	8	3	1

<-----19 BYTES----->

OFFER PRICE DENOMINATOR INDICATOR	OFFER SHORT PRICE	OFFER SIZE IN UNITS OF TRADE	RESERVED	NATIONAL BBO INDICATOR	FINRA BBO INDICATOR
1	8	3	1	1	1

<-----15 BYTES----->

VALID COMBINATIONS OF SHORT QUOTE AND NATIONAL/FINRA BBO APPENDAGES

MESSAGE HEADER-MH/ (BYTES)	MESSAGE TYPE/ (BYTES)	NATIONAL BBO INDICATOR VALUES	NATIONAL BBO APPENDAGE/ (BYTES)	FINRA BBO INDICATOR VALUES	FINRA BBO APPENDAGE/ (BYTES)	TOTAL BYTES
MH (24)	SHORT (34)	0, 1	NONE (0)	0, 2	NONE (0)	58
MH (24)	SHORT (34)	2	NONE (0)	2	NONE (0)	58
MH (24)	SHORT (34)	4	LONG (58)	0, 2	NONE (0)	116
MH (24)	SHORT (34)	6	SHORT (28)	0, 2	NONE (0)	86
MH (24)	SHORT (34)	0, 1	NONE (0)	3	FINRA (56)	114
MH (24)	SHORT (34)	4	LONG (58)	3	FINRA (56)	172
MH (24)	SHORT (34)	6	SHORT (28)	3	FINRA (56)	142

6.2 LONG QUOTE

78 BYTES

The Long Quote format is used to report quote data for CTA eligible security, Local Issue or bond quote information that does **not** meet the Short Quote format restrictions. This message is also used to report a cancellation of a previous quote or corrected price indication, trading suspensions in a security, price indications and trading range indications.

Category	Type
B	B
E	B
L	B

SECURITY SYMBOL	TEMPORARY SUFFIX	TEST MESSAGE INDICATOR	PRIMARY LISTING MARKET PARTICIPANT IDENTIFIER	RESERVED	FINANCIAL STATUS	CURRENCY INDICATOR
11	1	1	1	2	1	3

<----- 20 BYTES ----->

INSTRUMENT TYPE	CANCEL/ CORRECTION INDICATOR	SETTLEMENT CONDITION	MARKET CONDITION	QUOTE CONDITION	RESERVED
1	1	1	1	1	2

<----- 7 BYTES ----->

LONG QUOTE, continued

BID PRICE DENOMINATOR INDICATOR	BID PRICE	BID SIZE IN UNITS OF TRADE	OFFER PRICE DENOMINATOR INDICATOR	OFFER PRICE	OFFER SIZE IN UNITS OF TRADE
1	12	7	1	12	7

|<-----40 BYTES----->|

FINRA MARKET MAKER ID	FINRA MARKET MAKER GEOGRAPHICAL LOCATION	FINRA MARKET MAKER DESK LOCATION	RESERVED	NATIONAL BBO INDICATOR	FINRA BBO INDICATOR
4	2	1	2	1	1

|<-----11 BYTES----->|

VALID COMBINATIONS OF LONG QUOTE AND NATIONAL/FINRA BBO APPENDAGES

MESSAGE HEADER-MH/ (BYTES)	MESSAGE TYPE/ (BYTES)	NATIONAL BBO INDICATOR VALUES	NATIONAL BBO APPENDAGE/ (BYTES)	FINRA BBO INDICATOR VALUES	FINRA BBO APPENDAGE/ (BYTES)	TOTAL BYTES
MH (24)	LONG (78)	0, 1	NONE (0)	0, 1, 2	NONE (0)	102
MH (24)	LONG (78)	2	NONE (0)	2	NONE (0)	102
MH (24)	LONG (78)	4	LONG (58)	0, 1, 2	NONE (0)	160
MH (24)	LONG (78)	6	EXP SHORT (28)	0, 1, 2	NONE (0)	130
MH (24)	LONG (78)	0, 1	NONE (0)	3	FINRA (56)	158
MH (24)	LONG (78)	4	LONG (58)	3	FINRA (56)	216
MH (24)	LONG (78)	6	EXP SHORT (28)	3	FINRA (56)	186

6.3 SHORT NATIONAL BBO APPENDAGE

28 BYTES

The Short National BBO Appendage is generated whenever a new quote has caused a new National Best Bid and/or Best Offer and the BBO data meets all the field restrictions. If any of the field restrictions are **not** met, the Long National BBO Appendage format is used. If it is determined that a Short National BBO appendage is required, the appropriate BBO information is appended following the FINRA BBO Indicator field of the Short or Long Quote format. Refer to **Appendix F** for National and FINRA Best Bid and Offer Overview.

Field Restrictions:

- a) Bid and Offer prices meet the requirements for an 8 byte price field (See Price Denominator Indicator in field description section.)
- b) Bid and Offer sizes are less than 1000 round-lots (001-999)
- c) No FINRA quotes are involved in generating the National BBO

BEST BID PARTICIPANT ID	BEST BID PRICE DENOMINATOR INDICATOR	BEST SHORT BID PRICE	BEST BID SIZE IN UNITS OF TRADE	RESERVED
1	1	8	3	1
-----14 BYTES-----				

BEST OFFER PARTICIPANT ID	BEST OFFER PRICE DENOMINATOR INDICATOR	BEST SHORT OFFER PRICE	BEST OFFER SIZE IN UNITS OF TRADE	RESERVED
1	1	8	3	1
-----14 BYTES-----				

6.4 LONG NATIONAL BBO APPENDAGE

58 BYTES

The Long National BBO Appendage is generated whenever a new quote has caused a new National Best Bid and/or Best Offer and the BBO data does **not** meet the Short National BBO Appendage format restrictions. If it is determined that a new Long National BBO appendage is required, the appropriate BBO information is appended following the FINRA BBO Indicator field of the Short or Long Quote format. Refer to **Appendix F** for National and FINRA Best Bid and Offer Overview.

RESERVED	BEST BID PRICE PARTICIPANT ID	BEST BID PRICE DENOMINATOR INDICATOR	BEST BID PRICE	BEST BID SIZE IN UNITS OF TRADE
2	1	1	12	7

|<----- 23 BYTES ----->|

BEST BID FINRA MARKET MAKER ID	BEST BID FINRA MARKET MAKER GEOGRAPHICAL LOCATION	BEST BID FINRA MARKET MAKER DESK LOCATION
4	2	1

|<----- 7 BYTES ----->|

BEST OFFER PARTICIPANT ID	BEST OFFER PRICE DENOMINATOR INDICATOR	BEST OFFER PRICE	BEST OFFER SIZE IN UNITS OF TRADE
1	1	12	7

|<----- 21 BYTES ----->|

BEST OFFER FINRA MARKET MAKER ID	BEST OFFER FINRA MARKET MAKER GEOGRAPHICAL LOCATION	BEST OFFER FINRA MARKET MAKER LOCATION
4	2	1

|<----- 7 BYTES ----->|

6.5 FINRA BBO APPENDAGE

56 BYTES

The FINRA BBO Appendage is generated whenever a new FINRA quote has caused a new FINRA Best Bid and/or Best Offer and the quote itself is **not** the FINRA best. If it is determined that a new FINRA BBO appendage is required, the appropriate FINRA BBO information is appended following either the FINRA BBO Indicator field or the National BBO appendage, if present, of the Short or Long Quote format. Refer to **Appendix F** for National and FINRA Best Bid and Offer Overview.

RESERVED	BEST BID PRICE DENOMINATOR INDICATOR	BEST BID PRICE	BEST BID SIZE IN UNITS OF TRADE
2	1	12	7

|<----- 22 BYTES ----->|

BEST BID FINRA MARKET MAKER ID	BEST BID FINRA MARKET MAKER GEOGRAPHICAL LOCATION	BEST BID FINRA MARKET MAKER DESK LOCATION
4	2	1

|<----- 7 BYTES ----->|

BEST OFFER PRICE DENOMINATOR INDICATOR	BEST OFFER PRICE	BEST OFFER SIZE IN UNITS OF TRADE
1	12	7

|<----- 20 BYTES ----->|

BEST OFFER FINRA MARKET MAKER ID	BEST OFFER FINRA MARKET MAKER GEOGRAPHICAL LOCATION	BEST OFFER FINRA MARKET MAKER DESK LOCATION
4	2	1

|<----- 7 BYTES ----->|

7.0 ADMINISTRATIVE MESSAGES

7.1 ADMINISTRATIVE UNFORMATTED (FREE FORM TEXT) - CATEGORY A, TYPE H

General Administrative Unformatted messages (called admins) are those messages that, because of the nature of the information they contain, cannot be readily arranged in a fixed format.

7.2 ADMINISTRATIVE MESSAGE LENGTH

The length of an Administrative message is variable. The total length of the entire message **cannot** exceed 300 characters, including the SOH character, the Message Header, the ETX character and all characters between those characters.

7.3 ADMINISTRATIVE MESSAGE TEXT

The text section of the Administrative message is transmitted in free format.

7.4 ADMINISTRATIVE NOTIFICATION MESSAGE FOR REPORTING CQS DELAYS

Standard Message Sent Upon Detection of Delay:

```
ALERT ALERT ALERT THE CONSOLIDATED QUOTE SYSTEM IS EXPERIENCING A
REPORTING DELAY STANDBY FOR FURTHER UPDATES AS INFORMATION BECOMES
AVAILABLE
```

Example of Update Message on Status of Delay:

```
ALERT ALERT ALERT THE CONSOLIDATED QUOTE SYSTEM IS EXPERIENCING A
REPORTING DELAY AFFECTING SYMBOLS S THROUGH ZZZ DUE TO A PROBLEM WITH
SYMBOL XYZ REPORTING FOR ALL OTHER SYMBOLS IS NORMAL STANDBY FOR
FURTHER UPDATES AS INFORMATION BECOMES AVAILABLE
```

Standard Message Sent Upon Return to Normal Reporting:

```
ALERT ALERT ALERT THE CONSOLIDATED QUOTE SYSTEM REPORTING IS NOW NORMAL
```

8.0 CONTROL MESSAGES

8.1 CONTROL MESSAGE SUMMARY

The following represents all control messages, which are transmitted:

Category	Type	Description
C	C	FINRA Close
C	I	Start of Day
C	L	Reset Message Sequence Number
C	M	Start of Test
C	N	End of Test
C	O	FINRA Open
C	T	Line Integrity
C	Z	End of Transmission

CONTROL MESSAGES, continued

8.2 CONTROL MESSAGE DESCRIPTIONS

Control messages are in a fixed format and perform specified system advisory and control functions.

Control messages consist of the standard Message Header only, and are **not** blocked with any other messages including control messages.

The Message Network field of the Message Header contains USASCII alphabetic upper case character "E" or "F" for all control messages.

The Participant ID field of the Message Header contains USASCII alphabetic upper case character "E" for all control messages.

While the Start of Day and End of Transmission control messages are normally transmitted three times with a one minute quiescent period after each transmission, when they are retransmitted they are sent out one time only and are **not** followed by the one minute quiescent period.

8.3 FINRA CLOSE - CATEGORY C, TYPE C

All FINRA Market Maker quotes must be in either an open or closed state, where open implies current and closed implies not current. The FINRA Open and FINRA Close messages are to be used by Data Recipients to open and close all Market Maker quotes.

Upon receipt of the FINRA Close message all individual Market Maker quotes are indicated as closed by the FINRA.

After receipt of the FINRA Close message, individual Market Maker quotes may be transmitted in either an open or closed state, and are so indicated in the Quote Condition field in the Message Text. The Data Recipients should mark these quotes accordingly within their respective systems.

8.4 START OF DAY - CATEGORY C, TYPE I

The Start of Day message signals the start of normal data dissemination over the Multicast Lines.

The Start of Day message is sent three times with a quiescent period of one minute following each of the three transmissions.

The Message Sequence Number (MSN) field in the Start of Day message always contains a sequence number of zero. The MSN counter is reset to zero, and is not incremented during the normal Start of Day message transmission cycle.

CONTROL MESSAGE DESCRIPTIONS, continued

8.5 RESET MESSAGE SEQUENCE NUMBER - CATEGORY C, TYPE L

The Reset Sequence Number message is transmitted when the sequence number on an output ML requires resetting.

The Message Sequence Number (MSN) field in the Reset Sequence Number message contains the number to which the MSN counter is to be reset. This number is higher than the highest MSN previously transmitted, or it may be zero.

8.6 START OF TEST – CATEGORY C, TYPE M

The Start of Test message is transmitted after the ML is started and before the Start of Day message is sent out. The Start of Test message is followed by the transmission of a repeated test message cycle.

The Message Sequence Number (MSN) is reset to zero by the Start of Test message, and increments by one, for each of the canned messages within the group. The purpose of the test message cycle is for Data Recipients to confirm systems and network connectivity.

There are two distinct test message cycles. Each test message cycle is initiated by transmission of the Start of Test message (one for each of the multicast lines). Each test message cycle includes a complete set of messages types routed over the respective ML with the exception of administrative messages and some control messages. The test message cycle is repeated until shortly before transmission of the Start of Day message and is terminated by transmission of an End of Test Message.

Retransmission requests are **not** accepted during the test message cycle.

8.7 END OF TEST - CATEGORY C, TYPE N

The End of Test message is transmitted to signal the end of the transmission of a test message group.

The Message Sequence Number (MSN) field of the End of Test message contains a number one greater than the number of the last test message transmitted in the final test message transmission group.

CONTROL MESSAGE DESCRIPTIONS, continued

8.8 FINRA OPEN - CATEGORY C, TYPE O

All FINRA Market Maker quotes must be in either an open or closed state, where open implies current and closed implies not current. The FINRA Open and FINRA Close messages are to be used by Data Recipients to open and close all Market Maker quotes in their files.

Upon receipt of the FINRA Open message all individual Market Maker quotes that have been transmitted during the current day prior to receipt of the FINRA Open message are indicated as open by the FINRA.

CONTROL MESSAGE DESCRIPTIONS, continued

8.9 LINE INTEGRITY - CATEGORY C, TYPE T

The Line Integrity message is automatically transmitted over the Multicast Lines (MLs) at intervals of approximately one minute to verify continued integrity of ML transmission.

The Line Integrity message transmission does not interrupt a transmission in progress, but is transmitted whether or not additional messages are queued for transmission. Line Integrity messages are **not** retransmitted.

The Message Sequence Number (MSN) is not incremented for Line Integrity messages. The MSN field will contain the MSN of the last original message.

8.10 END OF TRANSMISSION - CATEGORY C, TYPE Z

The End of Transmission message is transmitted over the MLs to advise all Data Recipients that there are no further messages of any type transmitted for the day.

The message is transmitted three times, with a quiescent line interval of one minute following each transmission.

The Message Sequence Number (MSN) field of the End of Transmission message contains a number one greater than the highest MSN previously transmitted. The MSN counter is not incremented and the MSN does not change when the message is transmitted the second and third time in the normal message transmission sequence.

<p>Note: Under normal conditions, upon receiving the Category C, Type Z – ‘End of Transmission’ message, it is the data recipient's responsibility to terminate their production CQS output ML feeds from SIAC.</p>
--

9.0 FIELD APPEARANCES WITHIN MESSAGES

FIELD NAME	MESSAGE APPEARANCE	# OF APPEARANCES/ MSGS
- B -		
BEST BID FINRA MARKET MAKER DESK LOCATION	LONG NATIONAL BBO APPENDAGE FINRA BBO APPENDAGE	1 1
BEST BID FINRA MARKET MAKER GEOGRAPHICAL LOCATION	LONG NATIONAL BBO APPENDAGE FINRA BBO APPENDAGE	1 1
BEST BID FINRA MARKET MAKER ID	LONG NATIONAL BBO APPENDAGE FINRA BBO APPENDAGE	1 1
BEST BID PARTICIPANT ID	SHORT NATIONAL BBO APPENDAGE LONG NATIONAL BBO APPENDAGE	1 1
BEST BID PRICE	LONG NATIONAL BBO APPENDAGE FINRA BBO APPENDAGE	1 1
BEST BID PRICE DENOMINATOR INDICATOR	SHORT NATIONAL BBO APPENDAGE LONG NATIONAL BBO APPENDAGE FINRA BBO APPENDAGE	1 1 1
BEST BID SIZE IN UNITS OF TRADE	SHORT NATIONAL BBO APPENDAGE LONG NATIONAL BBO APPENDAGE FINRA BBO APPENDAGE	1 1 1

FIELD APPEARANCES WITHIN MESSAGES, continued

FIELD NAME	MESSAGE APPEARANCE	# OF APPEARANCES/ MSGS
- B -		
BEST OFFER FINRA MARKET MAKER DESK LOCATION	LONG NATIONAL BBO APPENDAGE FINRA BBO APPENDAGE	1 1
BEST OFFER FINRA MARKET MAKER GEOGRAPHICAL LOCATION	LONG NATIONAL BBO APPENDAGE FINRA BBO APPENDAGE	1 1
BEST OFFER FINRA MARKET MAKER ID	LONG NATIONAL BBO APPENDAGE FINRA BBO APPENDAGE	1 1
BEST OFFER PARTICIPANT ID	SHORT NATIONAL BBO APPENDAGE LONG NATIONAL BBO APPENDAGE	1 1
BEST OFFER PRICE	LONG NATIONAL BBO APPENDAGE FINRA BBO APPENDAGE	1 1
BEST OFFER PRICE DENOMINATOR INDICATOR	SHORT NATIONAL BBO APPENDAGE LONG NATIONAL BBO APPENDAGE FINRA BBO APPENDAGE	1 1 1

FIELD APPEARANCES WITHIN MESSAGES, continued

FIELD NAME	MESSAGE APPEARANCE	# OF APPEARANCES/ MSGS
- B -		
BEST OFFER SIZE IN UNITS OF TRADE	SHORT NATIONAL BBO APPENDAGE LONG NATIONAL BBO APPENDAGE FINRA BBO APPENDAGE	1 1 1
BEST SHORT BID PRICE	SHORT NATIONAL BBO APPENDAGE	1
BEST SHORT OFFER PRICE	SHORT NATIONAL BBO APPENDAGE	1
BID PRICE	LONG QUOTE	1
BID PRICE DENOMINATOR INDICATOR	SHORT QUOTE LONG QUOTE	1 1
BID SHORT PRICE	SHORT QUOTE	1
BID SIZE IN UNITS OF TRADE	SHORT QUOTE	1
- C -		
CANCEL/CORRECTION INDICATOR	LONG QUOTE	1
CURRENCY INDICATOR	LONG QUOTE	1
- F -		
FINANCIAL STATUS	LONG QUOTE	1

FIELD APPEARANCES WITHIN MESSAGES, continued

FIELD NAME	MESSAGE APPEARANCE	# OF APPEARANCES/ MSGS
- I -		
INSTRUMENT TYPE	LONG QUOTE	1
- M -		
MARKET CONDITION	LONG QUOTE	1
- N -		
FINRA BBO INDICATOR	SHORT QUOTE LONG QUOTE	1 1
FINRA MARKET MAKER DESK LOCATION	LONG QUOTE	1
FINRA MARKET MAKER GEOGRAPHICAL LOCATION	LONG QUOTE	1
FINRA MARKET MAKER ID GEOGRAPHICAL LOCATION	LONG QUOTE	1
FINRA MARKET MAKER ID	LONG QUOTE	1
NATIONAL BBO INDICATOR	SHORT QUOTE LONG QUOTE	1 1
- O -		
OFFER PRICE	LONG QUOTE	1
OFFER PRICE DENOMINATOR INDICATOR	SHORT QUOTE LONG QUOTE	1 1
OFFER SHORT PRICE	SHORT QUOTE	1

FIELD APPEARANCES WITHIN MESSAGES, continued

	MESSAGE APPEARANCE	# OF APPEARANCES/ MSGS
- O -		
OFFER SIZE IN UNITS OF TRADE	SHORT QUOTE LONG QUOTE	1 1
-P-		
PRIMARY LISTING MARKET PARTICIPANT IDENTIFIER	LONG QUOTE	1
- Q -		
QUOTE CONDITION	SHORT QUOTE LONG QUOTE	1 1
- R -		
RESERVED	SHORT QUOTE SHORT NATIONAL BBO APPENDAGE LONG QUOTE LONG NATIONAL BBO APPENDAGE FINRA BBO APPENDAGE	3 2 3 1 1
- S -		
SECURITY SYMBOL	SHORT QUOTE LONG QUOTE	1 1
SETTLEMENT CONDITION	LONG QUOTE	1
- T -		
TEMPORARY SUFFIX	LONG QUOTE	1
TEST MESSAGE INDICATOR	LONG QUOTE	1

10.0 FIELD DESCRIPTIONS

- B -

10.1 BEST BID FINRA MARKET MAKER DESK LOCATION

1 Byte, Alphanumeric/Special Character. Otherwise this field is space filled. Identifies the Trading Desk location for the quote from the FINRA Market Making Firm. Represents the FINRA Market Maker Desk Location that submitted the Best Bid on a Consolidated and/or FINRA basis.

10.2 BEST BID FINRA MARKET MAKER GEOGRAPHICAL LOCATION

2 Bytes, Alphanumeric/Special Character. Left justified, space filled. Identifies the office location for the quote from the FINRA Market Making Firm. Represents the FINRA Market Maker Location that submitted the Best Bid on a Consolidated and/or FINRA basis.

10.3 BEST BID MARKET MAKER ID

4 Bytes, Alphanumeric/Special Character. Left justified, space filled. Contains the firm identifier of the FINRA Market Maker. Represents the FINRA Market Maker that submitted the Best Bid on a Consolidated and/or FINRA basis.

FIELD DESCRIPTIONS

- B -

10.4 BEST BID PARTICIPANT ID

1 Byte, Alphabetic. Identifies the Participant that submitted the Best Bid on a Consolidated basis. The Best Bid Participant ID will be blank filled if the Best Bid Price in the Short National BBO Appendage or Long National BBO Appendage is zero. Refer to **PARTICIPANT ID** for codes.

10.5 BEST BID PRICE

12 Bytes, Numeric. Right justified, zero filled. The Best Bid Price contains the whole and fractional or decimal portion of the Bid Price information with the **BEST BID PRICE DENOMINATOR INDICATOR** determining the price representation. Represents the Best Bid price on a Consolidated and/or FINRA basis.

10.6 BEST BID PRICE DENOMINATOR INDICATOR

1 Byte, Numeric. Refer to **PRICE DENOMINATOR INDICATOR** for codes.

10.7 BEST BID SIZE IN UNITS OF TRADE

3 or 7 Bytes, Numeric. Right justified, zero filled.

Primarily, a unit of trade or round-lot consists of 100 shares or multiples thereof (e.g., 200, 1000, 5000). Certain securities trade in round-lot multiples other than 100 shares; other units of trade are in 1, 10, 25 or 50 share round-lots.

The Best Bid Size In Units of Trade represents the number of round-lots associated with the Best Bid Price for a security on a Consolidated and/or FINRA basis.

FIELD DESCRIPTIONS

- B -

10.8 BEST OFFER FINRA MARKET MAKER DESK LOCATION

1 Byte, Alphanumeric/Special Character. Otherwise this field is space filled. Identifies the Trading Desk location for the quote from the FINRA Market Making Firm. Represents the FINRA Market Maker Desk Location that submitted the Best Offer on a Consolidated and/or FINRA basis.

10.9 BEST OFFER FINRA MARKET MAKER GEOGRAPHICAL LOCATION

2 Bytes, Alphanumeric/Special Character. Left justified, space filled. Identifies the office location for the quote from the FINRA Market Making Firm. Represents the FINRA Market Maker Location that submitted the Best Offer on a Consolidated and/or FINRA basis.

10.10 BEST OFFER FINRA MARKET MAKER ID

4 Bytes, Alphanumeric/Special Character. Left justified, space filled. Contains the firm identifier of the FINRA Market Maker. Represents the FINRA Market Maker that submitted the Best Offer on a Consolidated and/or FINRA basis.

10.11 BEST OFFER PARTICIPANT ID

1 Byte, Alphabetic. Identifies the Participant that submitted the Best Offer on a Consolidated basis. The Best Offer Participant ID will be blank filled if the Best Offer Price in the Short National BBO Appendage or Long National BBO Appendage is zero. Refer to **PARTICIPANT ID** for codes.

FIELD DESCRIPTIONS

- B -

10.12 BEST OFFER PRICE

12 Bytes, Numeric. Right justified, zero filled. The Best Offer Price contains the whole and fractional or decimal portion of the Offer Price information with the **BEST OFFER PRICE DENOMINATOR INDICATOR** determining the price representation. Represents the Best Offer Price on a Consolidated and/or FINRA as basis.

10.13 BEST OFFER PRICE DENOMINATOR INDICATOR

1 Byte, Numeric. Refer to **PRICE DENOMINATOR INDICATOR** for codes.

10.14 BEST OFFER SIZE IN UNITS OF TRADE

3 or 7 Bytes, Numeric. Right justified, zero filled.

Primarily, a unit of trade or round-lot consists of 100 shares or multiples thereof (e.g., 200, 1000, 5000). Certain securities trade in round-lot multiples other than 100 shares; other units of trade are in 1, 10, 25 or 50 share round-lots.

The Best Offer Size In Units of Trade represents the number of round-lots associated with the Best Offer Price for a security on a Consolidated and/or FINRA basis.

FIELD DESCRIPTIONS

- B -

10.15 BEST SHORT BID PRICE

8 Bytes, Numeric. Right justified, zero filled. Appears in the Short National Appendage.

The Best Short Bid Price contains the whole and decimal portion of the Bid Price information with the **BEST BID PRICE DENOMINATOR INDICATOR** determining the price representation. Represents the Best Bid price on a Consolidated and/or FINRA basis.

10.16 BEST SHORT OFFER PRICE

8 Bytes, Numeric. Right justified, zero filled.

Appears in the Short National BBO Appendage.

The Best Short Offer Price contains the whole and decimal portion of the Offer Price information with the **BEST OFFER PRICE DENOMINATOR INDICATOR** determining the price representation. Represents the Best Offer Price on a Consolidated and/or FINRA basis.

FIELD DESCRIPTIONS

- B -

10.17 BID PRICE

12 Bytes, Numeric. Right justified, zero filled.

The Bid Price is the whole and decimal portion of the Bid Price information with the **BID PRICE DENOMINATOR INDICATOR** determining the price representation.

The Bid Price represents the highest price a prospective buyer is prepared to pay at a particular time for a security.

When the **BID PRICE** and the **BID SIZE IN UNITS OF TRADE** fields are all zeros, it represents a "No Bid" quote, a "No Quote" (i.e., neither a Bid nor an Offer, which zeroes out the quote) or an Opening Delay or Trading Halt condition. If the bid size is zero and there is a bid price, it represents either a Trading Range Indication or a Price Indication.

10.18 BID PRICE DENOMINATOR INDICATOR

1 Byte, Numeric. Refer to **PRICE DENOMINATOR INDICATOR** for codes.

FIELD DESCRIPTIONS

- B -

10.19 BID SHORT PRICE

8 Bytes, Numeric. Right justified, zero filled.

Appears in the Short Quote.

The Bid Short Price is the whole and decimal portion of the Bid Price information with the **BID PRICE DENOMINATOR INDICATOR** determining the price representation.

The Bid Price represents the highest price a prospective buyer is prepared to pay at a particular time for a security.

When the **BID PRICE** and the **BID SIZE IN UNITS OF TRADE** fields are all zeros, it represents a "No Bid" quote, a "No Quote" (i.e., neither a Bid nor an Offer, which zeroes out the quote) or an Opening Delay or Trading Halt condition. If the bid size is zero and there is a bid price, it represents either a Trading Range Indication or a Price Indication.

10.20 BID SIZE IN UNITS OF TRADE

3 or 7 Bytes, Numeric. Right justified, zero filled.

The Bid Size identifies the number of round-lots, for a security. Primarily, a unit of trade or round-lot consists of 100 shares or multiples thereof (e.g., 200, 1000, 5000). Certain securities trade in round-lot multiples other than 100 shares; other units of trade are in 1, 10, 25 or 50 share round-lots.

FIELD DESCRIPTIONS

- C -

10.21 CANCEL/CORRECTION INDICATOR

1 Byte, Alphanumeric. This field is used by a Participant to cancel or correct the most recent quote for a particular security, which was originally sent in error. **FOR PARTICIPANTS OTHER THAN FINRA ONLY THE LAST QUOTE THAT WAS SENT FOR A SECURITY BY THAT PARTICIPANT IS ELIGIBLE TO BE CANCELLED. FOR FINRA, THE LAST QUOTE FROM ANY FINRA MARKET MAKER IS ELIGIBLE TO BE CANCELLED BY THAT MARKET MAKER.** In cancel quotes, cancel Price Indication, and cancel Trading Range Indication, the Security Symbol, Temporary Suffix, Financial Status Indicator, Currency Indicator and Instrument Type will be appropriately filled. The FINRA Market Maker ID field will contain the Market Maker ID of the last FINRA quote being cancelled. All other fields will be appropriately space or zero filled. Quote messages with Quote Conditions E, F, T, U, V, W or Z are not eligible to be cancelled. Quote messages with Quote Conditions D, E, F, I, J, K, M, P, Q, S, U, W or X are not eligible to be cancelled if the Bid and Offer Prices and Sizes are zero. Quote messages with E, F, U and W are not eligible to be corrected.

Code	Value
A	Not a Cancel quote
B	Cancel quote/Cancel Price Indication/ Cancel Trading Range Indication
C	Corrected Price Indication

Note: A Cancel quote, Cancel Price Indication, or Cancel Trading Range Indication in effect eliminates the previous quote or indication as opposed to zeroing it out. A Corrected Price Indication replaces the previous Price Indication.

10.22 CURRENCY INDICATOR (RESERVED)

3 Bytes, Alphabetic. Represents the International Standard Foreign Currency code in which the transaction was executed. For transactions executed in U.S. Dollars, this field is space filled.

FIELD DESCRIPTIONS

- F -

10.23 FINANCIAL STATUS

1 Byte, Numeric. Contains the state of the security:

Code	Value
0	Not Bankrupt, Not Below Continuing Listing Standards & Not Late Filing
1	Bankrupt
2	Below Continuing Listing Standards (For NYSE, NYSE AMEX & Regional issues)
3	Bankrupt & Below Continuing Listing Standards (For NYSE, NYSE AMEX & Regional issues)
4	Late Filing
5	Bankrupt & Late Filing
6	Below Continuing Listing Standards & Late Filing (For NYSE, NYSE AMEX & Regional issues)
7	Bankrupt, Below Continuing Listing Standards & Late Filing (For NYSE, NYSE AMEX & Regional issues)

FIELD DESCRIPTIONS

- I -

10.24 INSTRUMENT TYPE

1 Byte, Alphanumeric. Otherwise, this field is space filled. Identifies the instrument type relevant to the quote. Currently, this field is only applicable for bond quotes (Network F):

Code	Value
A	Corporate Bond
B	Government Bond

- M -

10.25 MARKET CONDITION

1 Byte, Alphanumeric. Identifies the market condition of a quote for a security. Crossed Market and Locked Market are only applicable to Network F Bonds. In cases of a Normal Auction Market, the Bid Price must be less than the Offer Price. In cases of a Crossed Market, the Bid Price must be greater than the Offer Price. In cases of a Locked Market, the Bid Price must be equal to the Offer Price. Refer to **Appendix C** for definition of values.

Code	Value
A	Normal Auction Market
B	Crossed Market
C	Locked Market

FIELD DESCRIPTIONS

- N -

10.26 FINRA BBO INDICATOR

1 Byte, Numeric. Indicates the affect the new quote has on the FINRA BBO.

If it is determined that a new FINRA BBO appendage is required, the appropriate FINRA BBO information is appended following either the FINRA BBO Indicator field or the National BBO appendage, if present. If it is determined that the current quote is the new FINRA BBO or does **not** affect the FINRA BBO, an appendage is not present. Refer to **Appendix F** for National and FINRA BBO Overview.

Code	Value
0	No FINRA BBO change Current quote does not affect the BBO. No FINRA appendage is required.
1	Quote contains all FINRA BBO information Current quote is itself the new FINRA BBO. No FINRA appendage is required.
2	No FINRA BBO There is no calculation of FINRA BBO such as before Market Open or after Market Close. No FINRA appendage is required. There is no best or no change.
3	FINRA BBO Appendage A new FINRA BBO is generated and the new BBO information is contained in the FINRA BBO appendage.

FIELD DESCRIPTIONS

- N -

10.28 FINRA MARKET MAKER DESK LOCATION

1 Byte, Alphanumeric. Otherwise this field is space filled. Identifies the Trading Desk location for the quote from the FINRA Market Maker Firm. This field is used only by FINRA.

10.29 FINRA MARKET MAKER GEOGRAPHICAL LOCATION

2 Bytes, Alphanumeric. Left justified, space filled. Otherwise this field is space filled. Identifies the office location for the quote from the FINRA Market Maker Firm. This field is used only by FINRA.

10.30 FINRA MARKET MAKER ID

4 Bytes, Alphanumeric. Left justified, space filled. Otherwise this field is space filled. Contains the firm identifier of the FINRA Market Maker. This field is used only by FINRA.

FIELD DESCRIPTIONS

- N -

10.31 NATIONAL BBO INDICATOR

1 Byte, Numeric. Indicates the affect the new quote has on the National BBO. If it is determined that a new National BBO appendage is required, the appropriate BBO information is appended following the FINRA BBO Indicator field of the Short Quote or Long Quote message. A National appendage is not present, if it is determined that the current quote is the new National BBO or does **not** affect the BBO. Refer to **Appendix F** for National and FINRA BBO Overview.

Code	Value
0	No National BBO change Current quote does not affect the BBO. No National appendage is required.
1	Quote contains all National BBO information Current quote is itself the new National BBO. No National appendage is required.
2	No National BBO There is no calculation of National BBO such as before Market Open or after Market Close. There is no best or no change. No National appendage is required.
4	Long Format of National BBO Appendage A new National BBO is generated and the new BBO information is contained in the Long National BBO appendage.
6	Short Format of National BBO Appendage A new National BBO is generated and the new BBO information is contained in the Short National BBO appendage.

FIELD DESCRIPTIONS

- O -

10.32 OFFER PRICE

12 Bytes, Numeric. Right justified, zero filled.

The Offer Price is the whole and fractional or decimal portion of the Participant Offer Price information with the **PRICE DENOMINATOR INDICATOR** code determining the price representation.

The Offer Price represents the lowest price acceptable to a prospective seller at a particular time for a security.

When the **OFFER PRICE** and the **OFFER SIZE IN UNITS OF TRADE** fields are all zeros, this represents a "No Offer" quote, a "No Quote" (i.e., neither a Bid nor an Offer, which zeroes out the quote) or an Opening Delay or Trading Halt condition. If the offer size is zero and there is an offer price, it represents either a Trading Range Indication or a Price Indication.

10.33 OFFER PRICE DENOMINATOR INDICATOR

1 Byte, Numeric. Refer to **PRICE DENOMINATOR INDICATOR** for codes.

10.34 OUTPUT NETWORK

1 Byte, Alphabetic character. Identifies the ML network on which the output message should be disseminated. This field is used whenever there is no CTS master, and the input message local issue indicator denotes the stock as being a listed equity (field value = 0).

Network Field Value	Description
E	Message relates to symbols with NYSE as the primary listed market. The Primary Listing Market Participant ID identifies the primary listing market in instances when the primary market is an Exchange <u>other than</u> the NYSE.
F	Message relates to symbols with NYSE AMEX or one of the regional Exchanges as the primary market. Message can also be for Local Issues and Bonds. The Primary Listing Market Participant ID identifies the primary listing market in instances when the primary market is an Exchange <u>other than</u> the NYSE AMEX.

FIELD DESCRIPTIONS

- O -

10.34 OFFER SHORT PRICE

8 Bytes, Numeric. Right justified, zero filled.

Appears in the Short Quote.

The Offer Short Price is the whole decimal portion of the Participant Offer Price information with the **OFFER PRICE DENOMINATOR INDICATOR** code determining the price representation.

The Offer Price represents the lowest price acceptable to a prospective seller at a particular time for a security.

When the **OFFER PRICE** and the **OFFER SIZE IN UNITS OF TRADE** fields are all zeros, it represents a "No Offer" quote, a "No Quote" (i.e., neither a Bid nor an Offer, which zeroes out the quote) or an Opening Delay or Trading Halt condition. If the offer size is zero and there is an offer price, it represents either a Trading Range Indication or a Price Indication.

10.35 OFFER SIZE IN UNITS OF TRADE

3 or 7 Bytes, Numeric. Right justified, zero filled.

The Offer Size identifies the number of round-lots, for a security. Primarily, a unit of trade or round-lot consists of 100 shares or multiples thereof (e.g., 200, 1000, 5000). Certain securities trade in round-lot multiples other than 100 shares; other units of trade are in 1, 10, 25 or 50 share round-lots.

FIELD DESCRIPTIONS

- P -

10.36 PARTICIPANT ID

1 Byte, Alphabetic. Identifies the Participant that initiated the quote message:

Code	Value
A	NYSE AMEX
B	NASDAQ OMX BX
C	National Stock Exchange
D	FINRA
I	International Securities Exchange
M	Chicago Stock Exchange
N	New York Stock Exchange
P	NYSE Arca SM
T	NASDAQ OMX
W	CBOE Stock Exchange
X	NASDAQ OMX PHLX
Z	BATS Trading

FIELD DESCRIPTIONS

- P -

10.37 PRICE DENOMINATOR INDICATOR

1 Byte, Alphanumeric. **If Bid and/or Offer Prices zero, this field is zero filled.** The Price Denominator Indicator field contains one of the codes listed below. Identifies the price denominator of the fraction or the location of the decimal:

FRACTIONAL PRICES

Price Denominator Code	Denominator Value	12 Byte Price Field		8 Byte Price Field	
		Whole	Numerator	Whole	Numerator
3	8	11	1	7	1
4	16	10	2	6	2
5	32	10	2	6	2
6	64	10	2	6	2
7	128	9	3	5	3
8	256	9	3	5	3

DECIMAL PRICES

Price Denominator Code	Denominator Value	12 Byte Price Field		8 Byte Price Field	
		Whole	Numerator	Whole	Numerator
A	10	11	1	7	1
B	100	10	2	6	2
C	1,000	9	3	5	3
D	10,000	8	4	4	4
E	100,000	7	5	3	5
F	1,000,000	6	6	2	6
G	10,000,000	5	7	1	7
H	100,000,000	4	8	0	8

WHOLE PRICES (ONLY)

Price Denominator Code	Denominator Value	12 Byte Price Field		8 Byte Price Field	
		Whole	Numerator	Whole	Numerator
I	(N/A)	12	0	8	0

NOTE: The maximum whole price allowable is 92.2 billion.

* The five low order digits of numerator. High order digits of numerator are assumed to be zeroes.

FIELD DESCRIPTIONS

- P -

10.38 PRIMARY LISTING MARKET PARTICIPANT IDENTIFIER

1 Byte, Alphabetic. Identifies the Primary Listing Market only in instances when the Primary Market is an Exchange other than the NYSE or NYSE AMEX (which by default are identified in the Network ID field of the CQS Message Header).

Code	Value
B	NASDAQ OMX BX
C	National Stock Exchange
D	FINRA
I	International Securities Exchange
M	Chicago Stock Exchange
T	NASDAQ OMX
P	NYSE Arca SM
W	CBOE Stock Exchange
X	NASDAQ OMX PHLX
Z	BATS Trading

Note: Messages relating to symbols with the NYSE as the primary listed market are disseminated with the Network Identifier 'E'. Messages relating to symbols with the NYSE AMEX as the primary listed market are disseminated with the Network Identifier 'F'. Participant Identifier 'S' (SIAC) is not eligible for this field.

FIELD DESCRIPTIONS

- Q -

10.39 QUOTE CONDITION

1 Byte, Alphanumeric. Denotes a particular condition applicable to the quote. The Quote Condition field is used to determine whether a quote qualifies for the National and FINRA Best Bid and Best Offer calculation. Refer to **Appendix G** for definition of values.

Code	Value
A	Slow Quote on Offer Side
B	Slow Quote on Bid Side
C	Closing
D	News Dissemination
E	Slow Quote Due to an LRP or Gap Quote on the Bid Side
F	Slow Quote Due to an LRP or Gap Quote on the Offer Side
G	Trading Range Indication
H	Slow Quote on the Bid and Offer Sides
I	Order Imbalance
J	Due To Related Security-News Dissemination
K	Due To Related Security-News Pending
L	Closed Market Maker (FINRA)
M	Additional Information
N	Non-Firm Quote
O	Opening Quote
P	News Pending
Q	Additional Information-Due To Related Security
R	Regular (FINRA Open)
S	Due To Related Security
T	Resume
U	Slow Quote Due to a NYSE Liquidity Replenishment Point (LRP), NYSE AMEX Tolerance Breach (Spread, Momentum or Gap Trade Tolerance), or Gap Quote on Both the Bid and Offer Sides (New)
V	In View of Common
W	Slow Quote Due to Set Slow List on Both the Bid and Offer Sides
X	Equipment Changeover
Y	Sub-Penny Trading
Z	No Open/No Resume

Code	BBO QUALIFYING QUOTE CONDITIONS
A	Slow Quote on the Offer Side
B	Slow Quote on the Bid Side
E	Slow Quote Due to an LRP or Gap Quote on the Bid Side – OFFER SIDE ONLY
F	Slow Quote Due to an LRP or Gap Quote on the Offer Side – BID SIDE ONLY
H	Slow Quote on the Bid and Offer Sides
O	Opening Quote
R	Regular
W	Slow Quote Due to Set Slow List on Both the Bid and Offer Sides

FIELD DESCRIPTIONS

- R -

10.40 RESERVED

N Bytes, Alphanumeric. Fields reserved for future use. Reserved fields are space filled unless otherwise defined.

Note: Reserved fields will be redefined and implemented as required. If Data Recipients are not prepared to process new field(s) when implemented, they should be able to handle them to the extent that they do not impact their normal data processing.

- S -

10.41 SECURITY SYMBOL

3 Bytes or 11 Bytes, Alphabetic. Left Justified, space filled. Identifies the unique symbol. Suffixes start with one of the following characters with no embedded blanks: (1) USASCII Letters Dot, (2) lower case p, (3) lower case r, or (4) lower case w. The security symbol length will remain at a maximum of 11 characters. Refer to **Appendix H** for the list of allowable symbol suffixes.

Security Symbol field exceptions:

- a) Temporary Suffixes are **not** contained in this field.
- b) Quote Conditions (News Pending, Opening Quote, etc.) are **not** contained in this field.

Note: CQS will allow for a base or root symbol to consist of from one (1) up to six (6) characters with the remaining characters in the security symbol field available for possible suffixes. A suffix of /TEST with a non-existing base symbol is used to denote a test message.

FIELD DESCRIPTIONS

- S -

10.42 SETTLEMENT CONDITION

1 Byte, Alphanumeric. Identifies the settlement condition for a security. Refer to **Appendix C** for definition of values.

Code	Value
A	Regular Way Settlement
B	Cash (only) Settlement
C	Next Day (only) Settlement

- T -

10.43 TEMPORARY SUFFIX

1 Byte, Alphabetic. Otherwise, this field is space filled. Contains the temporary status of a security. Refer to **Appendix C** for definition of values.

Code	Value
A	Ex-Dividend
B	Ex-Distribution
C	Ex-Rights
D	New
E	Ex-Interest

FIELD DESCRIPTIONS

- T -

10.44 TEST MESSAGE INDICATOR

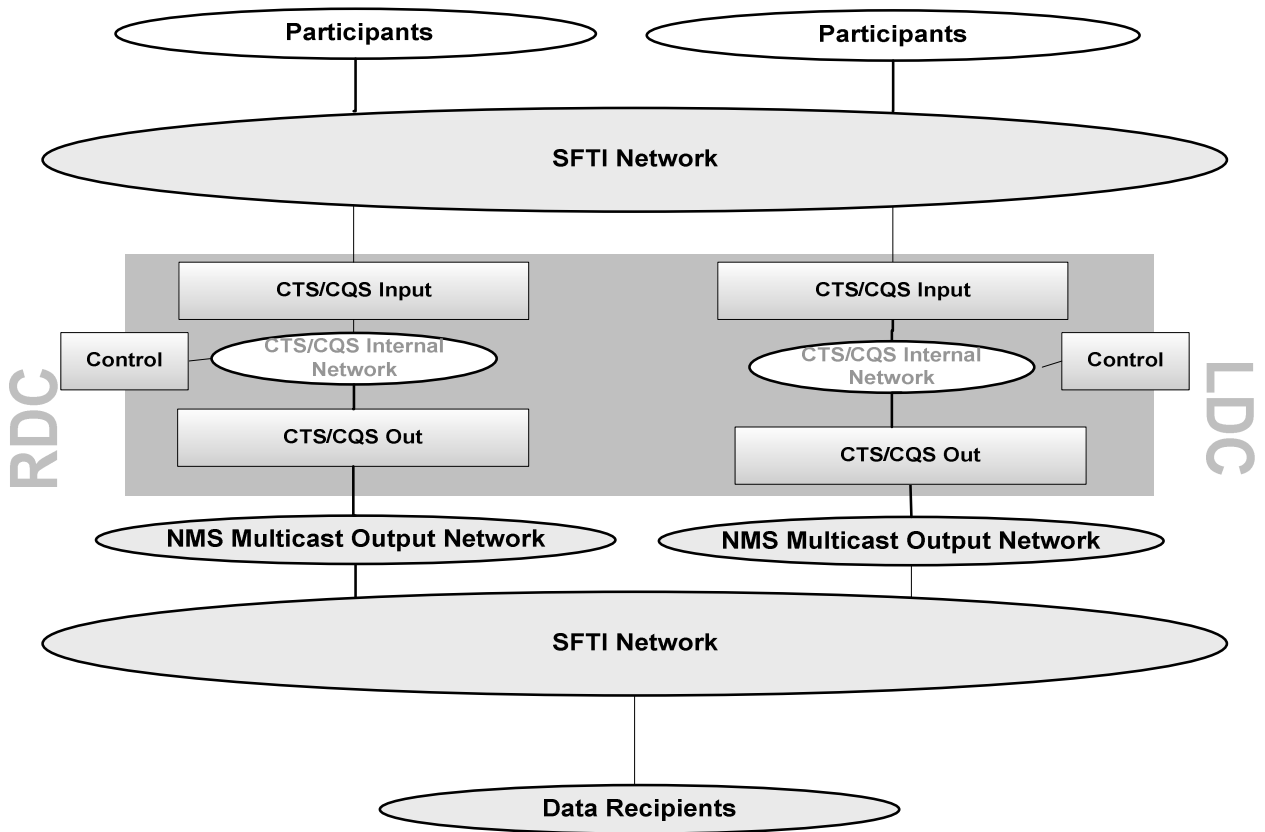
1 Byte, Alphanumeric. Indicates whether the message is an actual trade or a test message.

Code	Value
BLANK	Not a Test Message
T	Test Message

Note: The purpose of a Test Message is to have a mechanism whereby end-to-end connectivity between the CQS Participant and Data Recipient can be tested prior to the opening or during intraday trading. A Test Message requires that a suffix of /TEST be used, with a non-existent base symbol. Test messages are not to be included in any Exchange statistics (e.g., quote counts, etc.).

APPENDIX A: DUAL SITE CONFIGURATION

CTS/CQS CONFIGURATION



APPENDIX B: TIME STAMP CONVERSION TABLE

Listed below is the Time Stamp conversion table, which is used to represent the Time reflected in the Time Stamp field of the Message Header.

TIME	ASCII	HEXADECIMAL	DECIMAL
0	0	30	48
1	1	31	49
2	2	32	50
3	3	33	51
4	4	34	52
5	5	35	53
6	6	36	54
7	7	37	55
8	8	38	56
9	9	39	57
10	:	3A	58
11	;	3B	59
12	<	3C	60
13	=	3D	61
14	>	3E	62
15	?	3F	63
16	@	40	64

TIME STAMP CONVERSION TABLE, continued

TIME	ASCII	HEXADECIMAL	DECIMAL
17	A	41	65
18	B	42	66
19	C	43	67
20	D	44	68
21	E	45	69
22	F	46	70
23	G	47	71
24	H	48	72
25	I	49	73
26	J	4A	74
27	K	4B	75
28	L	4C	76
29	M	4D	77
30	N	4E	78
31	O	4F	79
32	P	50	80
33	Q	51	81
34	R	52	82

TIME STAMP CONVERSION TABLE, continued

TIME	ASCII	HEXADECIMAL	DECIMAL
35	S	53	83
36	T	54	84
37	U	55	85
38	V	56	86
39	W	57	87
40	X	58	88
41	Y	59	89
42	Z	5A	90
43	[5B	91
44	\	5C	92
45]	5D	93
46	^	5E	94
47	-	5F	95
48	`	60	96
49	a	61	97
50	b	62	98
51	c	63	99

TIME STAMP CONVERSION TABLE, continued

TIME	ASCII	HEXADECIMAL	DECIMAL
53	e	65	101
54	f	66	102
55	g	67	103
56	h	68	104
57	i	68	104
58	j	6A	106
59	k	6B	107
52	d	64	100

APPENDIX C: GLOSSARY

- B -

BELOW CONTINUING LISTING STANDARDS – A financial status designation pertaining to Tape ‘A’ and Tape ‘B’ listed securities. The status identifies a company, whose issue is listed on the New York Stock Exchange, **NYSE AMEX** or on one of the Regional exchanges, and has failed to meet established listings standards. The listing exchange will subsequently review the appropriateness of continuing to list the issue, and may decide to commence the process of delisting the issue.

- C -

CASH (only) SETTLEMENT - A security settling in cash all day on a participant or consolidated basis, such as a Common, Preferred or Right that is nearing expiration. Participants can elect to report different settlements in the same security during the day based on their own settlement requirements. For example, one participant can report quotes as cash (only) settlement while another participant can report quotes as regular or next day settlement.

CROSSED MARKET - Indicates a Bid Price, which is greater than the Offer Price for a security for a quote. (Only applicable to Network F Bonds.)

CTA ELIGIBLE - Generally, any common stock, rights, long-term warrants or preferred stock which becomes registered on any national securities exchange or is admitted to unlisted trading privileges thereon and which at the time of such registration or at the commencement of such trading substantially meets the original listing requirements of the NYSE or NYSE AMEX for such securities.

- E -

EX-DISTRIBUTION - Securities without the right to receive the forthcoming distribution of securities, which has been recently declared.

EX-DIVIDEND - Securities without the right to receive the forthcoming dividend, which has been recently declared.

EX-INTEREST - Debt related securities without the right to receive the forthcoming interest, which has been recently declared.

EX-RIGHTS - Securities without the right to buy a company's securities at a discount from the prevailing market price, which was distributed until a particular date. Typically, after that date, the rights trade separately from the security itself.

GLOSSARY

- L -

LATE FILING – A financial status designation pertaining to Tape ‘A’ and Tape ‘B’ issues (i.e. issues listed on the NYSE, NYSE AMEX or on one of the Regional exchanges). The status identifies a company, which has failed to meet established listings standards for filing its annual reports.

LOCAL ISSUE - A Local Issue is an issue that does **not** meet NYSE AMEX or NYSE listing requirements (is not CTA eligible) but is traded at one or more Regional Exchanges.

LOCKED MARKET - Indicates an identical Bid and Offer Price for a security for a quote. (Only applicable to Network ‘F’ bonds.)

- N -

NEW - A temporary suffix, which can be used when deemed necessary to identify a new status or structure of an issue, but where the symbol remains the same.

NEXT DAY (only) SETTLEMENT - Same definitions as cash (only) settlement except settlement is next day.

NON-REGULATORY OPENING DELAY OR TRADING HALT - An operational Opening Delay or Trading Halt for a Participant due to Order Imbalance, Order Influx, Equipment Changeover or Due to Related Security. In addition, Due To Related Security can be used in conjunction with a non-regulatory Delay/Halt Reason, i.e., Order Imbalance, Order Influx or Equipment Changeover.

NORMAL AUCTION MARKET - Where the quote bid price is less than the offer price for a security for a Participant.

- O -

OPENING DELAY - Postponement of the opening of trading in a security for a Participant.

GLOSSARY

- P -

PRICE INDICATION - Reflects an approximate price range of what a security's trading range (bid and offer prices) will be when trading resumes after an Opening Delay or a Trading Halt.

- R -

REGULAR WAY SETTLEMENT - The settlement date is within three (3) business days following the date of the transaction.

REGULATORY OPENING DELAY OR TRADING HALT - An Opening Delay or Trading Halt in a particular security for a Participant in advance of a major news announcement and is noted with a News Dissemination or News Pending quote condition. In addition, Due To Related Security can be used in conjunction with a regulatory Delay/Halt Reason, i.e., News Dissemination, News Pending or Additional Information.

- S -

SUB-PENNY TRADING – Indicates a non-regulatory Opening Delay or Trading Halt for a security whose price may fall below \$1.05, possibly leading to a sub-penny execution.

- T -

TRADING HALT - Temporary halt in trading in a particular security for a Participant.

APPENDIX D: SUMMARY OF DAILY CQS MULTICAST LINE MESSAGES

Note: Time Ranges shown have approximate end times indicated, are dependent on daily traffic volume and are subject to change based on a Participant's hours of operation. The times represented are Eastern Standard Time.

TIME (ET)	TRANSMISSION
01:40 (ET)	Line Integrity Messages*
02:00 (ET)	Start of Test Cycle Message
02:45	End of Test Cycle Message
03:30	Start of Day Message
03:33-20:00	Administrative Messages Test Messages Trading Range Indications
03:33-20:30	Reset Message Sequence Number Messages (if required) Retransmission Messages Test Messages
04:00	NYSE Arca SM Market Open (National BBO Calculation included)
07:00	NASDAQ OMX Market Open
08:00	BATS, ISE, FINRA, NASDAQ OMX BX, NASDAQ OMX PHLX & NSX Market Open
09:15	CBOE Market Open
09:30	CHX, NYSE & NYSE AMEX Market Open
09:30-20:00	"MARKET OPEN" Administrative Messages Bond (Network 'F') Quote Reports Equity Quote Reports In View of Commons Local Issue Quote Reports No Open/No Resumes Opening Delays/Trading Halts Price Indications Resumes

**APPENDIX D: SUMMARY OF DAILY CQS MULTICAST LINE MESSAGES,
continued**

Note: Time Ranges shown have approximate end times indicated and are dependent on daily traffic volume and are subject to change based on a Participant's hours of operation.

TIME	TRANSMISSION
16:03	Suspend Best Bid and Best Offer for: NYSE AMEX (BBO Group 0 Stocks)** NYSE (BBO Group 0 Stocks)**
16:15	Suspend Best Bid and Best Offer for: NASDAQ OMX BX (BBO Group 0 Stocks)**
16:18	End of Participant Reporting for: NASDAQ OMX BX
16:18	Suspend Best Bid and Best Offer for: CBOE (BBO Group 1 Stocks)** NYSE AMEX (BBO Group 1 Stocks)** NYSE (BBO Group 1 Stocks)**
16:25	End of Participant Reporting for: CBOE
16:33	Suspend Best Bid and Best Offer for: CHX (BBO Group 0 Stocks)**
16:45	End of Participant Reporting for: CHX
17:03	Suspend Best Bid and Best Offer for: BATS Trading
17:18	End of Participant Reporting for: BATS Trading
17:30	End of Participant Reporting for: NYSE NYSE AMEX
17:53	Suspend Best Bid and Best Offer for: NASDAQ OMX PHLX (BBO Group 0 Stocks)**

**APPENDIX D: SUMMARY OF DAILY CQS MULTICAST LINE MESSAGES,
continued**

TIME	TRANSMISSION
18:00	End of Participant Reporting for: NASDAQ OMX PHLX
18:30	End of Participant Reporting for: NSX
	End of Participant Reporting for: FINRA
20:00	End of Participant Reporting for: NASDAQ OMX NYSE Arca SM
20:00	End of Participant Reporting for: ISE
20:06	End of Transmission***

Note: Time Ranges shown have approximate end times indicated and are dependent on daily traffic volume and are subject to change based on a Participant's hours of operation.

* Line Integrity Messages are transmitted at intervals of approximately one minute throughout the day ending when the CQS Multicast Lines are brought down.

** Suspend Best Bid and Best Offer (Suspend BBO) occurs for each Participant shortly after its market close. Participants can continue to send in quotes subsequent to the Suspend BBO, but these quotes will not be included in the BBO calculation. The Suspend BBO command removes the Participant from the BBO calculation and re-issues the last quote for that Participant as a closing quote if that quote was part of the BBO. A new BBO excluding that Participant is appended to the closing quote. However, each Participant has the option to continue quoting and remain in the BBO for a subset of securities past the market close. This subset of securities is assigned to BBO Group 1. All other issues are assigned to BBO Group 0. They are removed from the BBO for each Participant shortly after its market close.

*** All CQS Participant Lines are brought down. Dependent on all Participants being closed.

APPENDIX E: CQS CLOSING ROUTINE

A Participant can individually close a security by sending in a closing quote to CQS. CQS disseminates this closing quote over the Multicast Line and appends a new BBO, excluding that Participant, if that Participant was part of the current BBO.

Participants in CQS are excluded from the BBO calculation at the Participant's designated closing time. A Participant can have multiple closing times, on a per security basis, thus allowing inclusion of quotes in the BBO calculation for those securities, which have not been closed. After a Participant is closed, CQS cycles through its database and disseminates a closing quote message using that Participant's last BBO eligible quote for only those securities for which that Participant was part or all of the current BBO. A Participant can continue to submit quotes for securities, which have been closed, however, the quotes will **not** be included in the BBO calculations.

APPENDIX F: NATIONAL AND FINRA BEST BID AND OFFER OVERVIEW

National Best Bid and Best Offer calculations are performed for each Market Center beginning at various times (between 4:00 a.m. and 9:30 a.m. ET) whenever a new qualifying quote is received after a Participant Market Open. If it is determined that the new quote has caused a new National and/or FINRA BBO, the appropriate National and/or FINRA BBO information is appended to the new quote. Appendages are **not** added if it is determined that the current quote does **not** affect the National and/or FINRA BBO.

A new quote can be the entire new National and FINRA BBO quote (both Bid and Offer). In addition, the National and FINRA BBO **can** indicate a Crossed Market where the Bid price is higher than the Offer price or a Locked Market where both the Bid and the Offer prices are the same.

CQS generates a National and FINRA BBO based on the following criteria in this order:

- **Price** - Exchanges with highest Bid and lowest Offers have overall priority.
- **Size** - Largest size takes precedence when multiple Exchanges submit the same Bid and/or Offer price.
- **Time** - Earliest time takes precedence when multiple Exchanges submit the same Bid and/or Offer price with the same size.

Note: To avoid dissemination of duplicate National or FINRA BBO calculations: if a quote is received from a Participant who is currently part or all of the National or FINRA BBO, and the National or FINRA BBO's are **not** affected by the quote, then the National or FINRA BBO is **not** updated with a later time, and appendages are **not** added.

APPENDIX F: NATIONAL AND FINRA BEST BID AND OFFER OVERVIEW, continued

BBO Considerations

There are several trading conditions that affect the calculations of a National and FINRA BBO for a security, including:

Non-Qualifying Quote Conditions

If a quote with a non-qualifying quote condition is entered from a Participant which made up part or all of the current National and FINRA BBO, CQS will calculate and append a new National and/or FINRA BBO to the non-qualifying conditional Short Quote or Long Quote message.

Participant Overall Halt in Trading

If a Participant were to halt trading in all securities during the trading day (due to computer failure, market shutdown, etc.), CQS, when instructed by the Participant, can send a "Zero Quote" for only those issues in which that Participant had an outstanding BBO eligible quote. A new National and a FINRA BBO are calculated and, if necessary, either or both appended to the Short Quote or Long Quote message.

FINRA BBO Considerations

The FINRA submits individual FINRA Market Maker quotes. A FINRA BBO is calculated and included in the National BBO calculations.

If a new FINRA quote causes a new FINRA BBO, the appropriate FINRA BBO information, including Market Maker identifiers, is appended to the Short or Long Quote message.

If part of the new FINRA BBO is also part of the new National BBO, the appropriate National BBO information is also appended to the new Short Quote or Long Quote message.

APPENDIX G: QUOTE CONDITIONS

Each quote message may contain a quote condition, which describes the nature of the quote (e.g., depth on bid, depth on offer, etc.) as well as the market conditions surrounding the quote. Quote conditions apply only to the quote so marked. If a situation indicated by the quote persists, each succeeding quote will contain the prevailing quote condition.

The quote conditions may be viewed as belonging to two classes:

1. Those that qualify for inclusion in the National and FINRA Best Bid & Offer (BBO) calculations.
2. Those that **do not** qualify for inclusion in the National and FINRA Best Bid & Offer (BBO) calculations.

Most quote conditions that **do not** qualify for inclusion in the National and FINRA BBO calculations indicate trading suspensions in a security.

BBO Eligible Quotes

The quote conditions in this section indicate active trading sessions in which quotes qualify for inclusion in the National and FINRA BBO calculation.

Quote Condition A - Slow Quote on the Offer Side

This condition indicates that the current offer is in “Slow” quote mode. While in this mode, auto-execution is not eligible on the Offer side, and can be traded through pursuant to anticipated Regulation NMS requirements.

Quote Condition B - Slow Quote on the Bid Side

This condition indicates that the current bid is in “Slow” quote mode. While in this mode, auto-execution is not eligible on the Bid side, and can be traded through pursuant to anticipated Regulation NMS requirements.

Quote Condition H - Slow Quote on the Bid and Offer Sides

This condition indicates that the quote is a “Slow” quote on both the Bid and Offer sides. While in this mode, auto-execution is not eligible on the Bid and Offer side, and either or both sides can be traded through pursuant to anticipated Regulation NMS requirements.

QUOTE CONDITIONS, continued

BBO-Eligible Quotes, continued

Quote Condition O - Opening Quote

This condition can be disseminated to indicate that this quote was the opening quote for a security for that Participant.

Quote Condition R - Regular (for FINRA - Market Maker Open)

This condition is used for the majority of quotes to indicate a normal trading environment. It is also used by the FINRA Market Makers in place of Quote Condition “O” to indicate the first quote of the day for a particular security. The condition may also be used when a Market Maker re-opens a security during the day.

Quote Condition W - Slow Quote Due to Set Slow List on Both the Bid and Offer Sides

This condition is used to indicate that the quote is a Slow Quote on both the Bid and Offer sides due to a Set Slow List that includes High Price securities. While in this mode, auto-execution is not eligible, the quote is then considered Slow on the Bid and Offer sides, and either or both sides can be traded through as per Regulation NMS.

QUOTE CONDITIONS, continued

BBO-Ineligible Quotes

The quote conditions which result in quotes **not** qualifying for inclusion in the National and FINRA BBO calculations fall into distinct categories: closing quotes, opening delays/trading halts, price indications/trading range indications and non-firm quotes. To indicate an opening delay or a trading halt, a quote with the condition:

Code	Value	Regulatory	Non-Regulatory
D	News Dissemination	X	
I	Order Imbalance		X
J	Due To Related Security-News Dissemination	X	
K	Due To Related Security-News Pending	X	
M	Additional Information	X	
P	News Pending	X	
Q	Additional Information-Due To Related Security	X	
S	Due To Related Security		X
T	Resume	X	X
V	In View of Common	X	
X	Equipment Changeover		X
Y	Sub-Penny Trading		X
Z	No Open/No Resume	X	X

along with zero-filled bid/offer price and size fields are disseminated over CQS. Prior to re-commencing activity in a security (during an opening delay or trading halt), some of these conditions are used to indicate a probable trading price range (price indication) for a security. A bid and/or an offer will be disseminated without its corresponding size(s), along with the appropriate condition.

BBO-Ineligible Quotes, continued

A quote with the condition:

T - Resume

along with zero-filled bid/ offer price and size fields is used to indicate that quoting is no longer suspended for a security which had been halted or had its opening delayed.

Quote Condition C - Closing Quote

This condition can be disseminated to indicate that this quote was the last quote for a security for that Participant.

Quote Condition D - News Dissemination

This regulatory Opening Delay or Trading Halt is used when relevant news influencing the security is being disseminated. Trading is suspended until the primary market determines that an adequate publication or disclosure of information has occurred.

Quote Condition E – Slow Quote Due to a Liquidity Replenishment Point (LRP) or Gap Quote on the Bid Side

This condition is used to indicate that the current Bid is in Slow quote mode due to a Liquidity Replenishment Point (LRP) or Gap Quote. While in this mode, auto-execution is not eligible the quote is then considered Slow on the Bid side and can be traded through, as per Regulation NMS.

Quote Condition F - Slow Quote Due to a Liquidity Replenishment Point (LRP) or Gap Quote on the Offer Side

This condition is used to indicate that the current Offer is in Slow quote mode due to a Liquidity Replenishment Point (LRP) or Gap Quote. While in this mode, auto-execution is not eligible the quote is then considered Slow on the Offer side and can be traded through, as per Regulation NMS.

Quote Condition G - Trading Range Indication

The condition is used to denote the probable trading range (bid and offer prices, no sizes) of a security that is **not** Opening Delayed or Trading Halted. The Trading Range Indication is used prior to or after the opening of a security.

BBO-Ineligible Quotes, continued

Quote Condition I - Order Imbalance

This non-regulatory Opening Delay or Trading Halt is used when there is a significant imbalance of buy or sell orders.

Quote Condition J - Due to Related Security-News Dissemination

This regulatory Opening Delay or Trading Halt is used when news, which may influence the price of the stock, has been disseminated for a related security. Trading is suspended until the resultant impact is assessed.

Quote Condition K - Due to Related Security-News Pending

This quote condition indicates a regulatory Opening Delay or Trading Halt due to an expected news announcement in a related security. An Opening Delay or Trading Halt may be continued once the news has been disseminated.

Quote Condition L - Market Maker Quotes Closed

This condition is disseminated by each individual FINRA Market Maker to signify either the last quote of the day or the premature close of an individual Market Maker for the day. In the latter case, the Market Maker can re-open by transmitting a quote accompanied by the Quote Condition R.

Quote Condition M - Additional Information

This regulatory Opening Delay or Trading Halt is used if the Exchange requests more disclosure of information for the security. If inadequate information is disclosed during a "news dissemination or news pending" Opening Delay or Trading Halt, the Opening Delay or Trading Halt reason could be subsequently reported as "Additional Information".

BBO-Ineligible Quotes, continued

Quote Condition N - Non-Firm Quote

This quote condition suspends a Participant's firm quote obligation for a quote for a security.

Quote Condition P - News Pending

This condition is used to indicate a regulatory Opening Delay or Trading Halt due to an expected news announcement, which may influence the security. An Opening Delay or Trading Halt may be continued once the news has been disseminated.

Quote Condition Q - Additional Information-Due to Related Security

This regulatory Opening Delay or Trading Halt quote condition is used if more disclosure of information is requested by the exchange for a related security.

Quote Condition S - Due to Related Security

This non-regulatory Opening Delay or Trading Halt is used when events relating to one security will affect the price and performance of another related security (e.g., a call for redemption of a convertible preferred security or convertible debt security which could affect the related common security). This non-regulatory Opening Delay or Trading Halt is also used when non-regulatory halt reasons such as Order Imbalance, Order Influx and Equipment Changeover are combined with Due to Related Security on CTS.

Quote Condition T - Resume

This quote condition along with zero-filled bid, offer and size fields is used to indicate that trading for a Participant is no longer suspended in a security which had been Opening Delayed or Trading Halted.

Quote Condition U - Slow Quote Due to a NYSE Liquidity Replenishment Point (LRP), NYSE AMEX Tolerance Breach (Spread, Momentum or Gap Trade Tolerance), or Gap Quote on Both the Bid and Offer Sides

This condition indicates that the quote is a "Manual" quote on both the Bid and Offer sides due to an LRP, Tolerance or Gap Quote. While in this mode, auto-execution is not eligible, the quote is then considered manual and non-firm in the Bid and Offer and either or both sides can be traded through as per Regulation NMS.

BBO-IneligibleQuotes, continued

Quote Condition V - In View of Common

This quote condition is used when matters affecting the common stock of a company affect the performance of the non-common associated securities, e.g., warrants, rights, preferred, classes, etc. Those securities, which must be of the same company, are globally Opening Delayed, Trading Halted, or No Open/No Resume for a Participant in view of the common stock.

Quote Condition X - Equipment Changeover

This non-regulatory Opening Delay or Trading Halt is used when the ability to trade a security by a Participant is temporarily inhibited due to a systems, equipment or communications facility problem or for other technical reasons.

Quote Condition Y – Sub-Penny Trading

This non-regulatory Opening Delay or Trading Halt is used to indicate an Opening Delay or Trading Halt for a security whose price may fall below \$1.05, possibly leading to a sub-penny execution.

Quote Condition Z - No Open/No Resume

This quote condition is used to indicate that an Opening Delay or a Trading Halt is to be in effect for the rest of the trading day in a security for a Participant.

APPENDIX H: ALLOWABLE SYMBOL SUFFIXES FOR CQS QUOTES*

SUFFIX	DESCRIPTION
- A -	
/A	Series (or Class) A Also Series B-T & V-Z
/A/CL	Series A Called Also Series B-T & V-Z
/A/CV	Series A Convertible Also Series B-T & V-Z
/Aw	Series A When Issued Also Series B-T & V-Z
- C -	
/CL	Called
/CT	Certificates
/CV	Convertible
/CVR	Contingent Value Right
/CV/CL	Convertible Called
- D -	
/DP	Amount of most recent dividend to go "ex-distribution" (CTS Only)
/DV	Accumulated dividend per share, net of expenses, through and including the previous day's close of trading (CTS Only)
- E -	
/EC	EMERGING COMPANY MARKETPLACE SM
/EU	Estimated cash amount per creation unit (CTS Only)

*All inclusive list of allowable symbol suffixes. Any combination of suffixes can be represented. Root Symbols for Government Bonds, e.g., TB, TN, US and ZC, and root symbols for Corporate Bonds, e.g., GMC are always followed by a three (3) upper case character suffix.

APPENDIX H: ALLOWABLE SYMBOL SUFFIXES FOR CQS QUOTES*

SUFFIX	DESCRIPTION
- F -	
/F/N	Foreign News
- I -	
/ID	Index – differentiates an index from a stock with the same root symbol
/IV	Intraday Net Asset Value per share
- M -	
/MN	“Mini”
- N -	
/NV	Net Asset Value per share, as of the close on the previous trading day (CTS Only)
- P -	
/PO	Percent Open
/PP	Partial Paid
/PT/CL	Part Called
p	Preferred
pA	Preferred Series A Also Series B-T & V-Z
pA/CV	Preferred Series A Convertible. Also Series B-T & V-Z
pA/CL	Preferred Series A Called Also Series B-T & V-Z
pAw	Preferred Series A When Issued. Also Series B-T & V-Z

***All inclusive list of allowable symbol suffixes. Any combination of suffixes can be represented. Root Symbols for Government Bonds, e.g., TB, TN, US and ZC, and root symbols for Corporate Bonds, e.g., GMC are always followed by a three (3) upper case character suffix.**

ALLOWABLE SYMBOL SUFFIXES FOR CQS QUOTES*

SUFFIX	DESCRIPTION
- P -	
pw	Preferred When Issued
p/CL	Preferred Called
p/CV	Preferred Convertible
p/CV/CL	Preferred Convertible Called
p/WD	Preferred When Distributed
p/CA	Indicates Class A of a Second Category of Preferred Also could be B-K and M-S
- R -	
r	Rights
rw	Rights When Issued
- S -	
/SC	Small Corporate Offering Registration
/SD	Stamped
/SO	Current Shares outstanding, in thousands (CTS Only)
/SM	“Mini” Settlement
/SP	Special
/SV	Settlement

***All inclusive list of allowable symbol suffixes. Any combination of suffixes can be represented. Root Symbols for Government Bonds, e.g., TB, TN, US and ZC, and root symbols for Corporate Bonds, e.g., GMC are always followed by a three (3) upper case character suffix.**

ALLOWABLE SYMBOL SUFFIXES FOR CQS QUOTES*

SUFFIX	DESCRIPTION
- T -	
/TEST	Exclusive suffix used for intraday test messages
/TC	Total cash amount per creation unit in thousands (CTS Only)
/TT	Tier II Securities
- U -	
/U	Units (a combination of securities, composed of two or more warrants, common stocks, preferred stocks and/or Network 'F' bonds)
- V -	
/VR	Variable Common Right
- W -	
/WD	When Distributed
w	When Issued
/WS	Warrants
/W/WS	With Warrants
/WS/A	Warrants Series A Also Series B-T & V-Z
/WSw	Warrants When Issued

***All-inclusive list of allowable symbol suffixes. Any combination of suffixes can be represented. Root Symbols for Government Bonds, e.g., TB, TN, US and ZC, and root symbols for Corporate Bonds, e.g., GMC are always followed by a three (3) upper case character suffix.**

TEMPORARY SUFFIX REPRESENTATION

Note: Temporary Suffixes are represented in a codified “Temporary Suffix” field. Refer to the Field Descriptions section of this document for the Temporary Suffix codes.

TEMPORARY SUFFIX	REPRESENTATION
Ex-Dividend	XD
Ex-Distribution	XDIS
Ex-Rights	Xr
New	N
Ex-Interest	X\