SIAC

Securities Industry Automation Corporation
20 Broad Street, New York, New York, 10005

February 4, 2015

To: CTS and CQS Multicast Data Recipients

Subject: Implementation of new CTS and CQS Expanded Message Header Formats:
               REVISION UPDATE

What's New:

As previously announced, the Consolidated Tape System (CTS) and Consolidated Quotation System (CQS) systems will introduce new Expanded Message Header formats to support additional Timestamp information on the CTS and CQS multicast feeds. A revision is being made to add a second Timestamp to the new Expanded Message Header formats. **The new Timestamps *definitions* are being determined and will be provided as soon as they become available.**

No revisions apply to the new Transaction ID Part A and Part B fields.

What's Changing:

To accommodate Timestamp information in CTS and CQS outbound messages, the CTS and CQS Message Headers will be expanding from a total of 24 bytes to **45** bytes and will include the following field modifications:

CTS and CQS:

- Modified Message Header Identifier Field
- New Transaction ID Part A Field (For SIP Internal Use Only)
- New Transaction ID Part B Field (For SIP Internal Use Only)
- Modified CTS and CQS Timestamp Field (microseconds since midnight ASCII base95)
- New Timestamp 1 Field (microseconds since midnight ASCII base95)
- **New Timestamp 2 Field (microseconds since midnight ASCII base95)**

When is it Changing:

The revised timeline for the CQS and CTS new Expanded Message Headers with Timestamp 1 and Timestamp 2 is scheduled to be implemented as follows:

- **CQS on Monday, July 27, 2015**
- **CTS on Thursday, July 30, 2015**

Implementation Details:

- CTS and CQS will support both the new Expanded Message Header formats and the old (current) Message Header formats for a transitional period allowing for a rapid fallback.
- Data Recipients should be prepared to process both the new Expanded Message Header formats and the old (current) Message Header formats.
- Data Recipients that are unable to process both old and new Message Header formats may cease to receive multicast data in the event of a fallback.

CTS/CQS Expanded Message Header Format Changes Description

Modified Message Header Identifier Field

To facilitate the implementation of the new CTS/CQS Expanded Message Headers (39 bytes) and for fallback (if necessary) to the old Message Headers (24 bytes), the 'Header Identifier' fields of the existing CTS and CQS Message Header formats values are being modified to distinguish between the use of the old Message Header and the new Expanded Message Header as follows:

Value	Description
A	Old Message Header (24 Bytes)
B	New Expanded Message Header (45 Bytes)

CTS and CQS old (existing) and new Multicast Output Expanded Message Header fields:

OLD (EXISTING) MULTICAST OUTPUT MESSAGE HEADER		NEW MULTICAST OUTPUT EXPANDED MESSAGE HEADER (includes Timestamp 2)	
Field Name	Length	Field Name	Length
Message Category	1	Message Category	1
Message Type	1	Message Type	1
Message Network	1	Message Network	1
Retransmission	2	Retransmission Requester	2
Header Identifier	1	**Message Header**	1
Reserved	2	**Transaction ID Part A**	2
Message Sequence	9	Message Sequence	9
Participant ID	1	Participant ID	1
Timestamp	6	**<CTS or CQS> Timestamp**	6
(Not Applicable)	N/A	**Timestamp 1**	6
(Not Applicable)	N/A	**Timestamp 2**	6
(Not Applicable)	N/A	**Transaction ID Part B**	9
Total Length:	24	**Total Length:**	45

Timestamp 1 and Timestamp 2 Fields
CTS and CQS will populate the new 'Timestamp 1 and Timestamp 2' fields in the Expanded Message Header with a provided Timestamp representing the number of microseconds since midnight ET. CTS and CQS will pass through the provided time where applicable; for Timestamps not provided and for SIP-generated messages, the 'Timestamp 1 and Timestamp 2' fields will contain all zeroes (six ASCII '0' characters). The Timestamp 1 and Timestamp 2 values will be a 6-byte string of ASCII-printable characters representative of a base95 number.

CTS/CQS Multicast Timestamp Field
The CTS and CQS 'Timestamp' field format will be revised and the values will represent the number of microseconds since midnight Eastern Time (ET). The values will be a 6-byte string of ASCII-printable characters representative of a base95 number.

Examples of Timestamps are as follows:

Timestamps - 6 Bytes, ASCII Printable base95						
Wall Time ET			base95			Microseconds since midnight
04:00:00.000000	!	q	k	J	r	C	14400000000
09:30:00.000000	$	G	t	2	a		34200000000
10:11:33.015317	$	f	N	x	&	O	36693015317
12:30:00.000000	%	m	M	j	W	R	45000000000
16:00:00.000000	'	J	0	l	L	M	57600000000
20:00:00.000000	)	<			8	?	p	72000000000

Please Note: For the 16:00:00:000000 example the base95 code is:
('J0lLM = 'single quote, Uppercase J, zero, lowercase L, uppercase L, Uppercase M)

New Transaction ID Part A and Transaction ID Part B Fields (SIP Internal Use Only)
'Transaction ID Part A and Transaction ID Part B' fields will be populated by CTS/CQS with ASCII-printable base95 Alphanumeric/Special Characters and are intended for **SIP Internal Use Only**. Data Recipients should ignore/disregard these fields to the extent that they do not impact their normal data processing.

The 'Transaction ID Part A' and 'Transaction ID Part B' fields will be zero (0) filled in SIP messages generated by CTS and CQS (which did not originate from a Participant), e.g., Price Band messages, Administrative messages, Control messages and CTS Market Status messages.

Testing Schedule

Replay files with test data with the new CTS and CQS Expanded Message Header formats including the additional Timestamp field are expected to become available beginning February 17, 2015. Test data will be disseminated business weekdays from 9:00 – 9:15 p.m. ET from the multicast Playback Test channels (not over Production channels).

To coordinate testing, and to **provide verbal or written confirmation of testing which is required by all Data Recipients**, please register in one of the following ways:

1.   E-mail your name, organization name, phone number, and date of test request(s) to: CQS-CTS-OPRA@siac.com, or
2.   Contact the Service Desk at 866-873-7422.

Indirect Data Recipients must contact their service provider to coordinate testing.

Documentation

Please reference the latest CTS and CQS Output Multicast Specifications and the Common IP Multicast Distribution Network Specification, which may be obtained at the website: http://www.nyxdata.com/CTA selecting the Technical Specifications tab.