



FINRA[®]
Bond Trade Dissemination ServiceSM
for 144A Transactions
(BTDS-144ASM)

For OTC Corporate Bond Transactions

Data Feed Interface Specification

Version 2.7A
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Introduction

1.0 Introduction

1.1 Background

In 2002, the Financial Industry Regulatory Authority® (FINRA®) introduced a new Trade Reporting and Compliance EngineSM (TRACESM) for corporate bond transactions. Under FINRA Rule 6700, all FINRA member firms are required to report trades for eligible US corporate bonds into TRACE. For more information on TRACE, please refer to the FINRA website at http://www.finra.org/mkt_sys/trace_info.asp.

In association with TRACE, FINRA, through its service provider NASDAQ, released the Bond Trade Dissemination ServiceSM (BTDSSM). The BTDS data feed is used to broadcast last sale price and other relevant trade data for US dollar-denominated, investment grade and high yield corporate bonds to authorized market data vendors. As the transactions are entered into TRACE, FINRA will automatically generate data messages to be disseminated real-time on BTDS.

Effective June 30, 2014, transactions in TRACE-Eligible corporate debt securities that are effected pursuant to Rule 144A under the Securities Act of 1933 (“Rule 144A transactions”) will be disseminated via a dedicated feed, separate from BTDS. The new feed will be similar in format to BTDS and will be identified as BTDS-144A. Like the original BTDS, BTDS-144A will disseminate trades real-time as they are reported to TRACE. The BTDS-144A feed will be distributed in addition to, and not as a replacement of, the current BTDS feed for corporate bond data reporting.

BTDS-144A originates from NASDAQ data centers located in the New York and Mid-Atlantic areas. These locations provide back-up capability to one another in the event of an emergency at either site.

1.2 Scope

This document defines the communications interface and message format requirements for the output from BTDS-144A. All references to a time of day in this specification are in Eastern Standard/Daylight Time. Direct access to FINRA data feed products is available through select network providers (see Appendix I for the most current list of authorized network providers).

The BTDS-144A data feed contains information from the CUSIP Service Bureau. As a result, a firm must have a CUSIP daily licensing agreement in place to receive the direct BTDS-144A data feed product. Please refer to www.cusip.com for more information.

FINRA has the right to add, delete, or modify the message formats outlined in this document as needed. In advance of any data format changes, FINRA will publicly notify its BTDS-144A customers by issuing a Technical Notice via email and on the FINRA.org website with the details of the release. FINRA will also update this BTDS-144A interface specification document on a regular basis.

System Description

2.0 General System Description

2.1 Interface Protocol

Regardless of the network provider used, all transmissions from FINRA to direct connect data feed subscribers will be transmitted in a non-interactive simplex mode using Internet Protocol (IP) multicasting. A broadcast transmission with no answer back will be employed. A version of Cisco's Protocol Independent Multicast (PIM) routing protocol will be used to route multicast packets through the network. The transmission characteristics are outlined in the next section of the BTDS-144A specifications.

BTDS-144A is a separate channel on the private data work. The bandwidth for the BTDS-144A channel will not exceed 56 kilobits per second (kbps). Please note that FINRA reserves the right to modify the bandwidth allocation for the IP call and/or to upgrade the network connectivity as system capacity dictates.

Transmission Characteristics

3.0 Transmission Characteristics

3.1 IP Multicast Characters

All transmissions will be in standard ASCII code with 7 data bits (8th bit is zero). This is in adherence to RFC 1112 standard from The NIC Group for IP multicasting protocol. A version of Cisco's PIM routing protocol will be used to route multicast packets through the network. A quiet line condition will be indicated by a steady marked line.

3.2 IP Multicast Addressing

As stated above, the IP multicast protocol is defined by Request For Comment (RFC) 1112 from The NIC Group. This RFC states:

IP multicasting is the transmission of an IP datagram to a "host group", a set of zero or more hosts identified by a single IP destination address. A multicast datagram is delivered to all members of its destination host group with the same "best-efforts" reliability as regular unicast IP datagrams, i.e., the datagram is not guaranteed to arrive intact at all members of the destination group or in the same order relative to other datagrams.

FINRA, through its service provider NASDAQ, offers both primary and back-up groups for its data feed services. The data messages should be identical for both groups with the exception of the following UDP message header field values: Source IP Address, Destination IP Address, UDP Source Port Number, and UDP Destination Port Address.

Each IP Multicast stream will be assigned a unique Class D host group address for transmission via the extranets. The Class D addresses have been registered by NASDAQ with The NIC Group. For the BTDS-144A data feed, the outgoing IP Multicast addresses and port assignments will be as follows:

Data Feed	Primary Groups			Back-Up Groups		
	Class D IP Address	Port ₁₆	Port ₁₀	Class D IP Address	Port ₁₆	Port ₁₀
BTDS-144A (A-Z)	224.3.0.11	D7E2	55266	224.3.0.21	D7E3	55267

The purpose of two host groups is to provide an extra layer of data redundancy within the extranet and customer networks. By reading and utilizing both multicast groups into their production environment, IP multicast customers can help to protect themselves against network anomalies which could cause interruptions in data flow. To minimize data loss, FINRA strongly recommends that data feed customers process both the primary and back-up groups within their networks.

Transmission Characteristics

3.3 Transmission Block

Messages sent to data feed recipients are blocked to provide more efficient line utilization. Each block contains a maximum of 1000 data characters. Messages may not span blocks. Each message in a block ends in a Unit Separator (US) except the last message that ends in an End of Text (ETX). With the exception of certain messages, (e.g. Control messages) each message sent over BTDS-144A contains a fixed format header and a text section that has a format and length that varies for each message type.

DATA BLOCK FORMAT

UDP/IP Headers	S	Message 1	U	Message 2	U	Message n	E
	O	header and	S	header and	S	header and	T
H		text		text		text	X
—1000-Byte Block (Max)							

3.4 UDP/IP Headers

Each IP datagram includes the IP and UDP headers as well as the block text data. The datagram fields can be read left to right starting at the top and working your way down through the datagram.

	0		16		32	
IP	VERSION 4 bits	HEADER LENGTH 4 bits	TYPE OF SERVICE 8 bits	TOTAL LENGTH (in bytes) 16 bits		
	IDENTIFICATION 16 bits			FLAGS 3 bits	FRAGMENT OFFSET 13 bits	
	TIME TO LIVE 8 bits	PROTOCOL 8 bits		IP HEADER CHECKSUM 16 bits		
	SOURCE IP ADDRESS 32 bits					
	DESTINATION IP ADDRESS 32 bits					
UDP	UDP SOURCE PORT NUMBER 16 bits			UDP DESTINATION PORT NUMBER 16 bits		
	UDP LENGTH 16 bits			UDP CHECKSUM 16 bits		
	UDP Data (BLOCK DATA < 1000 BYTES)					

3.5 Field Descriptions

3.5.1 IP Header Fields

The following field descriptions pertain to the IP header:

- **VERSION** – 4 bit field used to define the current version of the IP protocol for transmission. The value will be set to 4.
- **HEADER LENGTH** – 4 bit field to define the number of 32 bit words in the IP header portion of the datagram. For multicast packets being generated, the value will be set to 5.

Transmission Characteristics

- **TYPE OF SERVICE** – 8 bit field with the first 3 bits generally ignored by most network equipment. The next 5 bits are set to zero. Based on this description this field will always have the value of zero (0) for all multicast packets.
- **TOTAL LENGTH** – 16 bit field contains the length in bytes of the entire IP datagram (including UDP header). Since the maximum length of the block text is 1000 bytes, the maximum value for this field is 1028.
- **IDENTIFICATION FIELD** – 16 bit field contains a value that is incremented by one for each packet sent by the system. Not supported for UDP/IP packets.
- **FLAGS AND FRAGMENT OFFSET** – Combined 16 bit field is only used when an IP datagram is fragmented. Not supported for UDP/IP packets.
- **TIME TO LIVE (TTL)** – 8 bit field contains a value that determines the number of routers that a datagram can pass through. Each router that forwards the datagram will decrement this value by one; when it reaches zero, the router throws it away. It is initially set to 32 by the multicast source systems.
- **PROTOCOL** – 8 bit field contains a value representing the next level encapsulated protocol. Since multicasting uses UDP, the value is set to 0x17 which is 23 decimal.
- **HEADER CHECKSUM** – 16 bit field contains a checksum made up of the IP header fields only. The calculation is based on the one's complement sum of the header broken into 16 bit words.
- **IP SOURCE ADDRESS** – 32 bit field contains the Registered Class C address of the multicast datagram source system. Address may vary depending on origin (system and location) of FINRA data. FINRA strongly warns customers against coding their systems for a particular IP source address. *FINRA will not notify data feed customers in advance when it changes the origin of data.*
- **IP DESTINATION ADDRESS** – 32 bit field contains the Registered Class D address for each IP Multicast Group. Please see Section 3.2 for a list of current multicast groups.

Transmission Characteristics

3.5.2 UDP Header Fields

The following field descriptions pertain to the UDP header:

- **UDP SOURCE PORT NUMBER** – 16 bit field identifies the Port₁₆ address for each IP multicast group. Please see Section 3.2 for a list of the current source port numbers.
- **UDP DESTINATION PORT NUMBER** – 16 bit field identifies the Port₁₀ address for each IP multicast group. Please see Section 3.2 for a list of the current destination port numbers.
- **UDP LENGTH** – 16 bit field contains the length in bytes of the UDP headers plus the Data Block. The maximum value is 1008.
- **UDP CHECKSUM** – 16 bit field contains a checksum made up of the UDP header plus the Data Block. In addition, it includes the UDP “pseudo header which is made up of selected fields from the IP headers such as Source Address, IP Destination Address, Protocol, and UDP Length. The calculation is based on the one’s complement sum of the datagram broken into 16 bit words.

3.5.3 UDP Data Fields

The following field descriptions pertain to the Data Block transmission:

- **SOH AND ETX** – The start of a block of data will be indicated by the Start of Header (SOH) control character. The end of the block will be signified by an End of Text (ETX) control character.
- **US** – The Unit Separator (US) character is utilized in message blocks with multiple messages to signify the end of the preceding message but not the end of the block.
- **BLOCK TEXT** – The block text may consist of one or more messages. A message may not span block boundaries. A message shall consist of a Message Header and a Message Text. Each message in a block shall be delimited by a US character except the last message, which will be delimited by an ETX character.
- **DATA FORMAT** – Alphabetic and alphanumeric fields will be left justified and space (hex 20) filled unless otherwise noted. Numeric fields will be right justified and zero (hex 30) filled unless otherwise noted.

Transmission Characteristics

3.6 Retransmission Capability

FINRA front-end processor will log messages transmitted to recipients. This log will be accessible as a record of messages sent, and will provide a full retransmission capability. Message types not logged and therefore unavailable for retransmission include:

Category	Type	Value
C	T	Line Integrity

Retransmission requests may be sent via e-mail to RETRANQ@nasdaq.com.

To ensure proper identification of each vendor, a line specific password must be supplied to the operator taking the request. To request a retransmission, the firm must provide the following information to NADSAQ Operations:

- Company Name
- Retransmission Password
- Missing Message Sequence Number(s)
- Contact Name and Telephone Number

To obtain a firm's retransmission requester and password information, please contact FINRA TRACE Data Services at (888) 507-3665 or TRACEDataServices@finra.org.

Retransmission requests will only be honored during the period from the Start of Day (Category C – Type I) message through the End of Retransmission Request (Category C – Type K) message. The recipient can specify by message sequence number which message range the recipient would like retransmitted. For BTDS-144A, only the current day's data will be made available for retransmissions.

Transmission Characteristics

Retransmissions will be assigned a low priority in the outgoing message queue in order to prevent any delay or interference with current message delivery. As with original transmissions, retransmissions are broadcast to all BTDS-144A direct data feed subscribers. Therefore, it is the responsibility of the data feed recipient to ignore retransmitted messages not intended for their firm. Retransmission messages can be identified by the following attributes:

- **Message Blocking:** Retransmission messages will never be mixed with current messages in the same message block, but current message blocks and retransmission blocks can be interspersed. Recipient retransmission messages will be sent one block at a time.
- **Message Sequence Number:** The message header will contain the same message sequence number as the original BTDS message. Please note that if the Message Sequence Number is reset to zero, no intra-day messages sent prior to the reset can be retransmitted.
- **Retransmission Requester:** The message header will contain the unique two-character retransmission requester assigned to the intended recipient. Each firm is given a unique two-character retransmission requestor that they should code for in their system. Please note that firms should also code their systems to process the three universal retransmission requesters outlined in Section 4.4 of this document.
- **Date/Time:** The message header will contain the same date and time stamp as the original BTDS-144A message.

Message Header

4.0 Message Header

Each BTDS-144A message will begin with a 27-byte header. The Message Header defines the type of data in the subsequent message. Please note that Alphabetic and Alphanumeric fields are left justified and space filled unless otherwise specified. Numeric fields are right justified and zero filled unless otherwise specified.

The Message Header always contains 27 characters consisting of the following data fields:

Message Category	Message Type	Reserved	Retransmission Requester	Message Sequence Number	Market Center	Date/ Time
1	1	1	2	7	1	14

27 BYTES

4.1 Message Category

The Message Category is a 1 byte, alphabetic character. This field along with the Message Type, identifies the message. The following table defines the Message Categories that BTDS-144A supports.

Category	Usage
T	Trade
C	Control
A	Administrative

4.2 Message Type

The Message Type is a 1 byte, alphabetic character. This field further identifies the type of information included in the message. The following defines the Message Types (in conjunction with the Message Categories) for BTDS-144A dissemination:

Trade Messages:

Category	Type	Usage
T	M	Trade Report
T	N	Trade Cancel
T	O	Trade Correction

**Message Header
Control Messages:**

Category	Type	Usage
C	I	Start of Day
C	J	End of Day
C	O	Market Session Open
C	C	Market Session Close
C	K	End of Retransmission Requests
C	L	Sequence Number Reset
C	T	Line Integrity
C	X	End of Trade Reporting
C	Z	End of Transmissions

Administrative Messages:

Category	Type	Usage
A	E	Daily Trade Summary (Closing Recap)
A	H	Trading Halt
A	A	General Administrative Message (Future)
A	1 - 7	Market Aggregates

4.3 Reserved

This one-byte field is reserved for future use. In the initial release, this field will be space-filled.

4.4 Retransmission Requester

The Retransmission Requester is a 2 byte, alphanumeric space filled identifier that signifies the intended recipient of the message. FINRA assigns retransmission codes to recipients of the service on a case-by-case basis. Retransmissions will be sent to all recipients, and it is the responsibility of each recipient to discard retransmitted messages not requested by them.

Certain specific or global retransmission codes exist. They are all upper case and are represented by the following:

Code	Usage
O (space)	An original transmission to all recipients

Message Header

A (space)	A test transmission or retransmission. May not contain accurate or meaningful data.
* (space)	A retransmission to all recipients

4.5 Message Sequence Number (MSN)

The Message Sequence Number is a 7 byte, numeric field that identifies each message. At the beginning of each operational cycle this number will begin with 0000000 as the first message, and will be incremented by one each time a new message is transmitted with the following exceptions:

- Retransmitted messages have the sequence number of the original message.
- Line Integrity Messages (Category C – Type T) contain the sequence number of the last message transmitted that was not a retransmitted message.
- Sequence Number Reset Messages (Category C – Type L) contain the number to which the Message Sequence Number counter is to be reset. This number is either zero or a number greater than the highest number previously transmitted.
- Control Messages, Category C – Type J (End of Day), Category C – Type K (End of Retransmission Requests), Category C – Type Z (End of Transmissions), and Category C – Type X (End of Trade Session), will be transmitted three times to ensure positive recognition. The message sequence counter is incremented by one on the first transmission only.
- Control Messages, Category C – Type I (Start of Day) will contain a message sequence number of zero. Category C – Type I messages will be transmitted three times to ensure positive recognition, but will have zero as the sequence number on all three messages.

4.6 Market Center Originator ID

The Market Center is a 1 byte, alphabetic character to indicate the Market Center or Exchange that originated the message.

Code	Usage
O	Over the Counter

Message Header**4.7 Date/Time**

BTDS-144A will place a time stamp on each message disseminated to recipients of the service. The date/time is the calendar date and time that the record has entered into FINRA's trade reporting system. It is 14 bytes, Numeric, in the format:

Date Year (CCYY)	Date Month (MM)	Date Day (DD)	Time Hour (HH)	Time Minute (MM)	Time Second (SS)
4	2	2	2	2	2

Date Year: The year the transaction occurred. This four-byte field will be stated in numeric format, *e.g., 2012*.

Date Month: The month the transaction occurred. This two-byte field will be stated in numeric format, *e.g., 02*.

Date Day: The day of the month the transaction occurred. This two-byte field will be stated in numeric format, *e.g., 06*.

Time Hour: The hour of the day the transaction occurred in military time. This two-byte field will be stated in numeric format, *e.g., 08*.

Time Minute: The minute of the hour the transaction occurred. This two-byte field will be stated in numeric format, *e.g., 15*.

Time Second: The second of the minute the transaction occurred. This two-byte field will be stated in numeric format, *e.g., 30*.

Note: All times are in Eastern Time.

Data Formats/Message Layouts

5.0 Data Formats

This section outlines the fixed format Trade and Administrative message formats used to disseminate the BTDS-144A data feed to direct connect subscribers. For field definitions, please refer to Section 7 of this specification document.

Note: BTDS-144A Control message formats are comprised of the message header only. For processing information on the Control messages, please refer to Section 10 of this specification document.

5.1 Trade Messages

The following message formats are used to disseminate BTDS-144A. For processing guidelines, please refer to Section 8.

5.1.1 Trade Reports

Category T – Type M

The following message type is used to transmit corporate bond, church bond and equity-linked note trade transaction information to BTDS-144A subscribers.

Label

Symbol	CUSIP	BSYM	Sub-Product Type
14	9	12	5

Subtotal: 40 Bytes

Additional Information

Original Dissemination Date
8

Subtotal: 8 Bytes

Trade Information

Quantity Indicator	Quantity	Price	Remuneration	Special Price Indicator
1	14	11	1	1

Side	As/Of Indicator	Execution Date/Time	Future Use	Sale Condition 3
1	1	14	2	1

Data Formats/Message Layouts

Sale Condition 4 1	Settlement Date 8	Yield Direction 1	Yield 13	When Issued Indicator 1
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Reporting Party Type 1	Contra Party Type 1	ATS Indicator 1
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Subtotal: 74 Bytes

Summary Information

Change Indicator 1

Subtotal: 1 Byte

Total Message Size: 123 Bytes

Data Formats/Message Layouts**5.1.2 Trade Cancel***Category T- Type N*

This message is used to notify BTDS-144A customers if a trade report entered during the current business day, or up to the past 19 business days, has been cancelled. A detailed summary section containing high/low/last sale price information for the issue will follow the original trade section.

Label

Symbol	CUSIP	BSYM	Sub-Product Type
14	9	12	5

Subtotal: 40 Bytes**Additional Information**

Original Dissemination Date	Original Message Sequence Number	Function
8	7	1

Subtotal: 16 Bytes**Original Trade Information**

Quantity Indicator	Quantity	Price	Remuneration	Special Price Indicator
1	14	11	1	1

Side	As/Of Indicator	Execution Date/Time	Future Use	Sale Condition 3
1	1	14	2	1

Sale Condition 4	Settlement Date	Yield Direction	Yield	When Issued Indicator
1	8	1	13	1

Reporting Party Type	Contra Party Type	ATS Indicator
1	1	1

Subtotal: 74 Bytes**Summary Information**

FINRA Bond Trade Dissemination Service (BTDS-144A)

Data Formats/Message Layouts

High Price 11	High Yield Direction 1	High Yield 13	Low Price 11	Low Yield Direction 1
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Low Yield 13	Last Sale Price 11	Last Sale Yield Direction 1	Last Sale Yield 13	Change Indicator 1
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Subtotal: 76 Bytes

Total Message Size: 206 Bytes

Data Formats/Message Layouts

5.1.3 Trade Correction

Category T, Type O

This following message format will be used to transmit trade correction data from a transaction that was entered either earlier in the day or within the past 19 business days. Original trade information is preceded by a label section and followed by a corrected trade section. A summary of information for the current day's transactions in the issue will follow the corrected trade information.

Label

Symbol	CUSIP	BSYM	Sub-Product Type
14	9	12	5

Subtotal: 40 Bytes

Additional Information

Original Dissemination Date	Original Message Sequence Number	Function
8	7	1

Subtotal: 16 Bytes

Original Trade Information

Quantity Indicator	Quantity	Price	Remuneration	Special Price Indicator
1	14	11	1	1

Side	As/Of Indicator	Execution Date/Time	Future Use	Sale Condition 3
1	1	14	2	1

Sale Condition 4	Settlement Date	Yield Direction	Yield	When Issued Indicator
1	8	1	13	1

Reporting Party Type	Contra Party Type	ATS Indicator
1	1	1

Subtotal: 74 Bytes

Data Formats/Message Layouts

Correction Trade Information

Quantity Indicator	Quantity	Price	Remuneration	Special Price Indicator
1	14	11	1	1

Side	As/Of Indicator	Execution Date/Time	Future Use	Sale Condition 3
1	1	14	2	1

Sale Condition 4	Settlement Date	Yield Direction	Yield	When Issued Indicator
1	8	1	13	1

Reporting Party Type	Contra Party Type	ATS Indicator
1	1	1

Subtotal: 74 Bytes

Summary Information

High Price	High Yield Direction	High Yield	Low Price	Low Yield Direction
11	1	13	11	1

Low Yield	Last Sale Price	Last Sale Yield Direction	Last Sale Yield	Change Indicator
13	11	1	13	1

Subtotal: 76 Bytes

Total Message Size: 280 Bytes

Data Formats/Message Layouts

5.2 Administrative Message Formats

FINRA will use administrative message formats to transmit daily pricing summary, trading halt, and general information to BTDS-144A customers. Please refer Section 9 of this document for processing information.

5.2.1 Daily Trade Summary

Category A – Type E

FINRA will disseminate the following price summary message for each 144A security that traded during the day during the normal trading hours.

Symbol	CUSIP	BSYM	Sub-Product Type	When Issued Indicator
14	9	12	5	1

Daily High Price	High Yield Direction	Daily High Yield	Daily Low Price	Low Yield Direction
11	1	13	11	1

Daily Low Yield	Daily Close Price	Close Yield Direction	Daily Close Yield
13	11	1	13

Total Message Size: 116 Bytes

5.2.2 Trading Halt

Category A – Type H

FINRA will disseminate the following message format when a trading halt is instituted or removed for a 144A security.

Symbol	CUSIP	BSYM	Sub-Product Type	Issuer
14	9	12	5	30

Action	Action Date/Time	Halt Reason
1	14	4

Total Message Size: 89 Bytes

Data Formats/Message Layouts

5.2.3 General Administrative Message

Category A – Type A

In a future release, FINRA may disseminate the following free-form text message format to relay general administrative information.

Text
1 – 300

5.2.4 End of Day Market Aggregate Data

FINRA currently provides Market Aggregate data at the end of the day to TRACE users via API files and the TRAQS web application. That data is now available via the BTDS-144A feed. The Aggregates information represents activity in TRACE eligible publicly traded securities reported to TRACE on the day. The data is disseminated via multiple message types.

Market Breadth – End of Day

Category A – Type 1

Total Securities Traded All Securities 6	Total Securities Traded Investment Grade 6	Total Securities Traded High Yield 6	Total Securities Traded Convertibles 6
Advances All Securities 6	Advances Investment Grade 6	Advances High Yield 6	Advances Convertibles 6
Declines All Securities 6	Declines Investment Grade 6	Declines High Yield 6	Declines Convertibles 6
Unchanged All Securities 6	Unchanged Investment Grade 6	Unchanged High Yield 6	Unchanged Convertibles 6
52 Week High All Securities 6	52 Week High Investment Grade 6	52 Week High High Yield 6	52 Week High Convertibles 6
52 Week Low All Securities 6	52 Week Low Investment Grade 6	52 Week Low High Yield 6	52 Week Low Convertibles 6
Total Volume	Total Volume	Total Volume	Total Volume

FINRA Bond Trade Dissemination Service (BTDS-144A)

Data Formats/Message Layouts

All Securities 13	Investment Grade 13	High Yield 13	Convertibles 13
----------------------	------------------------	------------------	--------------------

Total Message Size: 196 Bytes

Market Sentiment – All Securities	<i>Category A – Type 2</i>
Market Sentiment – Investment Grade	<i>Category A – Type 3</i>
Market Sentiment – High Yield	<i>Category A – Type 4</i>
Market Sentiment – Convertible Bonds	<i>Category A – Type 5</i>
Market Sentiment – Church Bonds	<i>Category A – Type 6</i>
Market Sentiment – Equity Linked Notes	<i>Category A – Type 7</i>

Total Number of Transactions All Securities 6	Total Securities Traded All Securities 6	Total Volume All Securities 13
Total Number of Transactions Customer Buy 6	Total Securities Traded Customer Buy 6	Total Volume Customer Buy 13
Total Number of Transactions Customer Sell 6	Total Securities Traded Customer Sell 6	Total Volume Customer Sell 13
Total Number of Transactions Affiliate Buy 6	Total Securities Traded Affiliate Buy 6	Total Volume Affiliate Buy 13
Total Number of Transactions Affiliate Sell 6	Total Securities Traded Affiliate Sell 6	Total Volume Affiliate Sell 13
Total Number of Transactions Inter-Dealer 6	Total Securities Traded Inter-Dealer 6	Total Volume Inter-Dealer 13

Total Message Size: 150 Bytes (for each Message Type 2 - 7)

Note: All seven of the Market Aggregate messages (Message Types 1 through 7) are generated and disseminated once during the day, shortly after 6:30pm ET.

Data Formats/Message Layouts

Field Descriptions for Market Aggregate Messages

Total Securities Traded

Category A – Types 1 - 7

Six bytes, numeric. The field is right-justified, with leading zeros. This field represents the total number of issues traded on the day.

Advances

Category A – Type 1

Six bytes, numeric. The field is right-justified, with leading zeros. This field represents the total number of issues where the closing price for the day is higher than the prior closing price.

Declines

Category A – Type 1

Six bytes, numeric. The field is right-justified, with leading zeros. This field represents the total number of issues where the closing price for the day is lower than the prior closing price.

Unchanged

Category A – Type 1

Six bytes, numeric. The field is right-justified, with leading zeros. This field represents the total number of issues where the closing price for the day remains the same as the prior closing price.

52 Week High

Category A – Type 1

Six bytes, numeric. The field is right-justified, with leading zeros. This field represents the total number of issues where the closing price for the day is higher than a prior closing price within the past 52 business weeks (on a rolling basis).

52 Week Low

Category A – Type 1

Six bytes, numeric. The field is right-justified, with leading zeros. This field represents the total number of issues where the closing price for the day is lower than a prior closing price within the past 52 business weeks (on a rolling basis).

Total Volume

Category A – Types 1 - 7

Thirteen bytes, numeric, stated in \$\$\$\$\$.dddddd format, where the first six bytes represent the whole dollar (in millions), the seventh byte is a decimal point, and the last six bytes represent the decimal

Data Formats/Message Layouts

amount (under a million). Leading zeros used when necessary. This field represents the current day's total traded par value (in millions).

Total Number of Transactions

Category A – Types 2 - 7

Six bytes, numeric. The field is right-justified, with leading zeros. This field represents the total number of valid trades (same-day executions that were disseminated and not subsequently cancelled) reported on the day.

Additional Definitions for Market Aggregate Messages

All Securities

Category A – Types 1 - 7

Data calculated on all TRACE eligible securities reported on the day and disseminated via BTDS-144A.

Customer Buy

Category A – Types 2 - 7

Data calculated on all trades reported to TRACE and disseminated via BTDS-144A where the reporting firm indicates it bought from a customer who is not a FINRA member firm.

Customer Sell

Category A – Types 2 - 7

Data calculated on all trades reported to TRACE and disseminated via BTDS-144A where the reporting firm indicates it sold to a customer who is not a FINRA member firm.

Affiliate Buy

Category A – Types 2 - 7

Data calculated on all trades reported to TRACE and disseminated via BTDS-144A where the reporting firm indicates it bought from a non-member affiliated entity of a FINRA member firm.

Affiliate Sell

Category A – Types 2 - 7

Data calculated on all trades reported to TRACE and disseminated via BTDS-144A where the reporting firm indicates it sold to a non-member affiliated entity of a FINRA member firm.

Inter-Dealer

Category A – Types 2 - 7

Data calculated on all trades reported to TRACE and disseminated via BTDS-144A where the reporting firm indicates it sold to another FINRA member firm.

Field Occurrences

6.0 Field Occurrences Within Messages

FIELD NAME	MESSAGE CATEGORY	MESSAGE TYPE
<u>A</u>		
ACTION	A	H
ACTION DATE/TIME	A	H
AS/OF INDICATOR	T T T	M N O
ATS INDICATOR	T T T	M N O
<u>B</u>		
BSYM	T T T A A	M N O E H
<u>C</u>		
CHANGE INDICATOR	T T T	M N O
CLOSE YIELD DIRECTION	A	E
CONTRA PARTY TYPE	T T T	M N O

FINRA Bond Trade Dissemination Service (BTDS-144A)

Field Occurrences

CUSIP	T T T A A	M N O E H
<u>D</u>		
DAILY CLOSE PRICE	A	E
DAILY CLOSE YIELD	A	E
DAILY HIGH PRICE	A	E
DAILY HIGH YIELD	A	E
DAILY LOW PRICE	A	E
DAILY LOW YIELD	A	E
<u>E</u>		
EXECUTION DATE/TIME	T T T	M N O
<u>F</u>		
FUNCTION	T T	N O
<u>H</u>		
HALT REASON	A	H
HIGH PRICE	T T	N O
HIGH YIELD	T T	N O
HIGH YIELD DIRECTION	A T T	E N O
<u>I</u>		
ISSUER	A	H
<u>L</u>		

FINRA Bond Trade Dissemination Service (BTDS-144A)

Field Occurrences

LAST SALE PRICE	T	N
	T	O
LAST SALE YIELD	T	N
	T	O
LAST SALE YIELD DIRECTION	T	N
	T	O
LOW PRICE	T	N
	T	O
LOW YIELD	T	N
	T	O
LOW YIELD DIRECTION	A	E
	T	N
	T	O
<u>Q</u>		
ORIGINAL DISSEMINATION DATE	T	M
	T	N
	T	O
ORIGINAL MESSAGE SEQUENCE NUMBER	T	N
	T	O
<u>P</u>		
PRICE	T	M
	T	N
	T	O
<u>Q</u>		
QUANTITY	T	M
	T	N
	T	O

FINRA Bond Trade Dissemination Service (BTDS-144A)

Field Occurrences

QUANTITY INDICATOR	T T T	M N O
<u>R</u>		
REMUNERATION	T T T	M N O
REPORTING PARTY TYPE	T T T	M N O
<u>S</u>		
SALE CONDITION 3	T T T	M N O
SALE CONDITION 4	T T T	M N O
SETTLEMENT DATE	T T T	M N O
SIDE	T T T	M N O
SPECIAL PRICE INDICATOR	T T T	M N O
SUB-PRODUCT TYPE	A A T T T	E H M N O

FINRA Bond Trade Dissemination Service (BTDS-144A)

Field Occurrences

SYMBOL	T T T A A	M N O E H
<u>T</u>		
TEXT	A	A
<u>W</u>		
WHEN ISSUED INDICATOR	T T T A	M N O E
<u>Y</u>		
YIELD	T T T	M N O
YIELD DIRECTION	T T T	M N O

Field Descriptions

7.0 Field Descriptions

This section defines the size and layout for each field contained in a BTDS-144A message format. For a glossary of bond-related terms, please refer to Appendix A.

A

Action

Category A – Type H

One byte, alphabetic. This field describes what event is happening on the specific security. Associated values are:

Code	Value
H	Trading Halt (Action Date/Time field represents date and time that the halt was instituted for the security)
R	Trading Resumption (Action Date/Time field represents the date and time that trading is expected to resume in the security)

Action Date/Time

Category A – Type H

Fourteen bytes, numeric in the format YYYYMMDDHHMMSS. This field represents the date and time that the trading halt was instituted or lifted for the specified security.

As/Of Indicator

Category T – Type M, N, O

One byte, alphabetic. This field will be populated if the transaction being reported is an As/Of trade, Reversal, Cancel or Correction from a prior business day. Associated values for this field are:

Code	Value
A	As/Of Trade
R	Reversal
Space	Current Day Trade

Field Descriptions

ATS Indicator

Category T – Type M, N, O

One byte, alphabetic. This field will be populated if the transaction being reported is an ATS execution. An ATS execution can be either where an ATS reports the trade, is a contra party to the trade, or is neither but the trade is executed on an ATS’s platform. Associated values for this field are:

Code	Value
Y	ATS Trade
Space	Not an ATS Trade

B

BSYM

Category T – Type M, N, O

Category A – Type E, H

12 bytes, alphanumeric. This is the Bloomberg identifier for the specific corporate bond.

C

Change Indicator

Category T – Type M, N, O

One byte, numeric. Describes the price change(s) that the transaction caused for the issue traded.

Code	Values
0	No Price/Yield Changed
1	Last Price/Yield Changed
2	Low Price/Yield Changed
3	Last Price/Yield and Low Price /Yield Changed
4	High Price/Yield Changed
5	Last Price/Yield and High Price/Yield Changed
6	High Price/Yield and Low Price/Yield Changed
7	All Prices/Yields Changed

Field Descriptions**Contra Party Type***Category T – Type M, N, O*

One byte, alphabetic. This field identifies the type of contra party which the reported trade was executed against - a Broker/Dealer, a Customer (non-FINRA member), an Affiliate (non-member affiliate) or an Alternative Trading System (ATS). Associated values are as follows:

Code	Value
D	Contra party is a Broker/Dealer
C	Contra party is a Customer (non-FINRA member)
A	Contra party is a non-member affiliate
T	Contra party is an Alternative Trading System (ATS)

CUSIP*Category T – Type M, N, O**Category A – Type H*

Nine bytes, alphanumeric. This is the universal identifier for the specific bond as assigned by Standard & Poor's CUSIP Service Bureau.

D**Daily Close Price***Category A – Type E*

Eleven bytes, numeric, zero filled. This will represent the closing price reported for the specific bond for the day. Daily Close Price is stated in \$\$\$\$.\$\$\$\$\$ format, where the first four bytes represents the dollar, the fifth byte is a decimal point, and the last six bytes represents the decimal amount of the trade price. If the Daily Close Price is not available for a bond, this field will be zero filled.

Daily Close Yield*Category A – Type E*

Thirteen bytes, numeric, zero filled. Daily Close Yield is stated in \$\$\$\$\$.\$\$\$\$ format, where the first six bytes represents the dollar, the seventh byte is a decimal point, and the last six bytes represents the decimal amount of the trade price. This will represent the closing yield associated with the Daily Close Price for the specific bond for the day. FINRA will leave the field blank if no yield is available.

Daily High Price*Category A – Type E*

Eleven bytes, numeric, zero filled. This will represent the high price reported for the specific bond for the day. Daily High Price is stated in \$\$\$\$.\$\$\$\$\$ format, where the first four bytes represents the

Field Descriptions

dollar, the fifth byte is a decimal point, and the last six bytes represents the decimal amount of the trade price. If the Daily High Price is not available for a bond, this field will be zero filled.

Daily High Yield

Category A – Type E

Thirteen bytes, numeric, zero filled. Daily High Yield is stated in \$\$\$\$\$.dddddd format, where the first six bytes represents the dollar, the seventh byte is a decimal point, and the last six bytes represents the decimal amount of the trade price. This will represent the high yield associated with the Daily High Price for the specific bond for the day. FINRA will leave the field blank if no yield is available.

Daily Low Price

Category A – Type E

Eleven bytes, numeric, zero filled. This will represent the low price reported for the specific bond for the day. Daily Low Price is stated in \$\$\$\$.dddddd format, where the first four bytes represents the dollar, the fifth byte is a decimal point, and the last six bytes represents the decimal amount of the trade price. If the Daily Low Price is not available for a bond, this field will be zero filled.

Daily Low Yield

Category A – Type E

Thirteen bytes, numeric, zero filled. Daily Low Yield is stated in \$\$\$\$\$.dddddd format, where the first six bytes represents the dollar, the seventh byte is a decimal point, and the last six bytes represents the decimal amount of the trade price. This will represent the low yield associated with the Daily Low Price for the specific bond for the day. FINRA will leave the field blank if no yield is available.

E

Execution Date/Time

Category T – Type M, N, O

Fourteen bytes, numeric in the format YYYYMMDDHHMMSS. This field represents the date and time that the FINRA member firm executed the trade transaction. If the transaction reported was an As/Of trade or a Reversal, this field will be populated with the date and time that the original trade was executed by the FINRA member firm.

F

Function

Category T – Type N, O

One byte, alphabetic. This field indicates if the transaction being disseminated is being taken out because it either is being canceled or was done in error. Associated values are:

Field Descriptions

Code	Value
C	Cancel
E	Error
N	Correction

H

Halt Reason

Category A – Type H

Four bytes, alphanumeric. This field describes the specific reason for a halt being placed on a bond issue. Associated values are:

Code	Values
T1	Halt – News Pending
T2	Halt – News Released
T3	Halt – News and resumption times
T12	Halt – Additional Information Requested by FINRA
H10	Halt – SEC Trading Suspension
H11	Halt - Regulatory Concerns

High Price

Category T – Type N, O

Eleven bytes, numeric, zero filled. The High Price field contains the current highest price for which the specified bond issue was traded for the current day. The High Price will be stated in \$\$\$\$. d d d d d d format, where the first four bytes represents the dollar, the fifth byte is a decimal point, and the last six bytes represents the decimal amount of the trade price. If the High Price is not available for a bond, this field will be zero filled.

High Yield

Category T – Type N, O

Thirteen bytes, numeric, zero filled. High Price Yield is stated in \$\$\$\$\$\$. d d d d d d format, where the first six bytes represents the dollar, the seventh byte is a decimal point, and the last six bytes represents the decimal amount of the trade price. This will represent the value calculated by the system for the

Field Descriptions

yield associated with the high price of the day. FINRA will leave the field blank if no yield is available.

High Yield Direction

Category T – Type N, O

Category A – Type E

One byte, alphanumeric including special characters. This field indicates the yield direction for the High Price Yield field. Associated values for this field are as follows:

Code	Value
- (Minus sign)	Negative Yield
Space	Positive or Zero Yield

I

Issuer

Category A – Type H

Thirty bytes, alphanumeric. This field will provide the name of the corporation or agency that issued the security. Please note that, due to character limitations, the Issuer name may be truncated for this field.

L

Last Sale Price

Category T – Type N, O

Eleven bytes, numeric, zero filled. This will represent the last sale price reported for the specific bond for the day. The Last Sale Price will be stated in \$\$\$\$.\$ddddd format, where the first four bytes represents the dollar, the fifth byte is a decimal point, and the last six bytes represents the decimal amount of the trade price. If the Last Sale Price is not available for a bond, this field will be zero filled.

Last Sale Yield

Category T – Type N, O

Thirteen bytes, numeric, zero filled. Last Sale Yield is stated in \$\$\$\$\$.\$ddddd format, where the first six bytes represents the dollar, the seventh byte is a decimal point, and the last six bytes represents the

Field Descriptions

decimal amount of the trade price. This will represent the value calculated by the system for the yield associated with the last price of the day. FINRA will leave the field blank if no yield is available.

Last Sale Yield Direction

Category T – Type N, O

One byte, alphanumeric including special characters. This field indicates the yield direction for the Last Sale Yield field. Associated values for this field are as follows:

Code	Value
- (Minus sign)	Negative Yield
Space	Positive or Zero Yield

Low Price

Category T – Type N, O

Eleven bytes, numeric, zero filled. This will represent the current low price for which the specified bond issue was traded for the day. The Low Price will be stated in \$\$\$\$\$.dddddd format, where the first four bytes represents the dollar, the fifth byte is a decimal point, and the last six bytes represents the decimal amount of the trade price. If the Low Price is not available for a bond, this field will be zero filled.

Low Yield

Category T – Type N, O

Thirteen bytes, numeric, zero filled. Low Price Yield is stated in \$\$\$\$\$\$.dddddd format, where the first six bytes represents the dollar, the seventh byte is a decimal point, and the last six bytes represents the decimal amount of the trade price. This will represent the value calculated by the system for the yield associated with the low price of the day. FINRA will leave the field blank if no yield is available.

Low Yield Direction

Category T – Type N, O

One byte, alphanumeric including special characters. This field indicates the yield direction for the Low Price field. Associated values for this field are as follows:

Code	Value
- (Minus sign)	Negative Yield

Field Descriptions

Space	Positive or Zero Yield
-------	------------------------

Q**Original Dissemination Date***Category T – Type M, N, O*

Eight bytes, numeric, in YYYYMMDD format. On Trade Report messages (Category T – Type M), this field will be populated on Reversals (As/Of Indicator = R) only, to indicate the date the original trade was disseminated. On non Reversals, the field will be blank. On Trade Cancel and Trade Correction messages, the field will be populated with the date the original trade was disseminated, including same day Cancels and Corrections.

Original Message Sequence Number*Category T – Type N, O*

Seven bytes, numeric. This message sequence number, located in the Label section of Trade Correction and Trade Cancel messages, will represent the message sequence number for the original trade report in the specified issue.

P**Price***Category T – Type M, N, O*

Eleven bytes, numeric, zero filled. This field represents the bond price is inclusive of any commission, mark-ups, and/or mark-downs reported by the sell-side firm in the trade transaction. The Price will be stated in \$\$\$\$.dddddd format, where the first four bytes represents the dollar, the fifth byte is a decimal point, and the last six bytes represents the decimal amount of the trade price. If the Price is not reported for a bond, this field will be zero filled. For equity-linked notes (which trade in shares as units), the price will reflect the dollar price per share, rather than a percentage of par. For example, a trade price of \$28.50 per share will be disseminated as “0028.500000”.

Q**Quantity***Category T – Type M, N, O*

Fourteen bytes, alphanumeric, including special characters. The field is right-justified, zero-filled unused positions with a decimal in the twelfth position on actual amounts and left-justified, space-filled unused positions on amounts with special limits applied (capped) as defined below. This field represents the par value volume of the transaction.

Field Descriptions

For equity-linked notes (which trade in shares as units), the field will represent the number of shares traded multiplied by the price per share. For example, a trade of 250 shares at a price of \$10.50 per share will be disseminated as a quantity of 00000002625.00.

Please note that the following special limits apply to this field:

For **High Yield** and **Unrated** bonds and equity-linked notes:

- If the par value of the transaction is less than or equal to \$1 million, the quantity will state actual par value of the trade.
- If the par value of the transaction is greater than \$1 million, the quantity field will show 1MM+.

For **Investment Grade** bonds and equity-linked notes:

- If the par value of the transaction is less than or equal to \$5 million, the quantity will state the actual par value of the trade.
- If the par value of the transaction is greater than \$5 million, the quantity field will show 5MM+.

Quantity Indicator

Category T – Type M, N, O

One byte, alphabetic. This field indicates if the quantity reported is actual or estimated. Associated values are as follows:

Code	Value
A	Actual
E	Estimated

R

Remuneration

Category T – Type M, N, O

One byte, alphabetic. This field identifies if the reported trade price includes remuneration. Remuneration only applies on Customer and Affiliate trades. Associated values are as follows:

Code	Value
-------------	--------------

Field Descriptions

C	Commission is included in the price
M	A Markup or Markdown is included in the price
N	No Commission or Markup/Markdown is included in the price
Space	No value assigned on Inter-Dealer trades

Reporting Party Type

Category T – Type M, N, O

One byte, alphabetic. This field identifies the type of entity that reported the trade. Associated values are as follows:

Code	Value
D	Reporting party is a Broker/Dealer
T	Reporting Party is an Alternative Trading System (ATS)

S

Sale Condition 3

Category T – Type M, N, O

One byte, alphanumeric including special characters. This field will indicate if there are any special conditions or modifiers applicable to the trade transaction. Associated values are:

Code	Value
Space	No Special Sale Condition
Z	Trade Reported Late (Out of Sequence)
T	Trade Reported After Market Hours
U	Trade Reported Late After Market Hours

For more information on these sale conditions, please refer to Appendix A and Appendix C in this document.

Sale Condition 4

Field Descriptions*Category T – Type M, N, O*

One byte, alphanumeric. This field is used to describe a second sale condition that is applicable to the trade. Associated values are:

Code	Value
W	Weighted Average Price
Space	No Second Modifier Applicable

Settlement Date*Category T – Type M, N, O*

Eight bytes, numeric, in YYYYMMDD format. This field indicates the reported settlement date of the trade.

Side*Category T – Type M, N, O*

One byte, alphabetic. This field identifies the side (i.e., Buy or Sell) from the reporting party's perspective. Only one side of an Inter-dealer transaction is disseminated, which will be identified as the sell side from the reporting party's perspective. Associated values are as follows:

Code	Value
B	Reporting party bought from contra party
S	Reporting party sold to contra party

Special Price Indicator*Category T – Type M, N, O*

One byte, Alphanumeric. This field indicates the existence of a special trade condition that impacted the execution price, or if the transaction is a "specified trade." Associated values are:

Code	Value
Y	Special Price Trade
Space	Not a Special Price Trade

Sub-Product Type*Category T – Type M, N, O**Category A – Type E, H*

Field Descriptions

Five bytes, alphanumeric. This field will identify the type of debt security traded. Associated values are:

Code	Value
CORP	Corporate Bond
ELN	Equity Linked Note
CHRC	Church Bond

Symbol

Category T – Type M, N, O

Category A – Type E, H

Fourteen bytes, alphanumeric. This field will represent the bond issue symbol as assigned by FINRA for TRACE trade reporting purposes.

T

Text

Category A – Type A

Variable length (1 to 300 bytes), alphanumeric including special characters. This free-form text field will be used to relate general administrative or market information to BTDS-144A subscribers.

W

When Issued Indicator

Category T – Type M, N, O

Category A – Type E

One byte, alphanumeric. This field indicates if the issue is trading on a when issued basis. Associated values are:

Code	Value
W	When Issued
Space	Not When Issued

Y

Yield

Category T – Type M, N, O

Field Descriptions

Thirteen bytes, numeric. Yield is stated in \$\$\$\$\$.ddddd format , where the first six bytes represents the dollar, the seventh byte is a decimal point, and the last six characters represents the decimal amount of the trade price. The Yield field indicates the effective rate of return earned on a security as calculated by the system and is expressed as a percentage. FINRA will leave the field blank if no yield is available.

Yield Direction

Category T – Type M, N, O

One byte, alphanumeric including special characters. This field indicates the yield direction for the subsequent Yield field. Associated values for this field are as follows:

Code	Value
- (Minus sign)	Negative Yield
Space	Positive or Zero Yield

Trade Processing

8.0 Trade Processing

This section provides general processing and display guidelines for BTDS-144A data.

8.1 Background Information

BTDS-144A will carry fixed income trade data reported by FINRA members via the TRACE system on a real-time basis between 8:00 and 18:30 ET. The BTDS-144A data feed will carry price information for the following types of fixed income securities that are identified as 144A (private placement) securities:

- U.S. dollar denominated debt securities that are issued by a U.S. corporation and are registered with the SEC .
- High-yield debt issued by U.S. companies.
- Investment grade corporate debt.
- Medium term notes.
- Convertible bonds.
- Capital trust securities.
- Floating rate notes.
- Global bonds.
- Unlisted equity-linked notes.
- Church bonds.

A complete list of TRACE securities (Security Master) is available daily through download via API. 144A securities are identified via a specific flag. Please refer to the following link for more information: <http://www.finra.org/Industry/ContentLicensing/TRACE/p005606>.

The following types of transactions will not be disseminated via the BTDS-144A data feed:

- Reported transactions of less than \$1,000.00.
- Transactions in non-144A (private placement) securities.
- Transactions in US exchange-listed bonds that are executed on and reported directly to the exchange.
- Fixed or List Offering Price primary market transactions.

8.2 Display Requirements

FINRA requires that external redistributors of real-time BTDS-144A data include the following fields on their display for a single bond issue:

- Bond Identifier (Symbol or CUSIP number).
- When Issued Indicator (if applicable).
- Price.

Trade Processing

- Remuneration (if applicable).
- Special Price Indicator (if applicable).
- Yield.
- Quantity.
- Sale Condition Modifiers (if applicable).
- Reversal Indicator (if applicable).
- Execution Date/Time.
- Side.
- Reporting Party Type.
- Contra Party Type.

Provided that the market data vendor provides at least one display screen that adheres to this display requirement, FINRA will waive the requirement for any market minder, analytical, or ticker display screens.

8.3 Trade Processing

8.3.1 Bond Identifier

The BTDS-144A data feed includes three identifiers for each bond:

- **Symbol:** FINRA will assign its own bond symbols for use by TRACE users. The TRACE symbol may be up to fourteen characters in length and will consist of a root symbol for the issuer plus an instrument identifier code for each bond. [Example: CNC.GA.]
- **CUSIP:** A CUSIP number is a unique nine-character alphanumeric code assigned to a security by Standard & Poor's Corporation. The CUSIP is a universal identifier code that does not vary from market to market. As noted earlier, a firm must have a daily licensing agreement in place with Standard & Poor's to receive a direct BTDS data feed product.
- **BSYM:** The BSYM is the 12-byte alphanumeric code assigned by Bloomberg to the security.

Please note that FINRA members are required to report trades in exchange-listed bonds to TRACE if the transaction was executed over the counter. The BTDS-144A data feed will carry these trade transactions under the FINRA-assigned symbol. Market data vendors may wish to use the CUSIP number to reconcile their databases for such issues.

8.3.2 When Issued Indicator

FINRA allows its members to trade securities on a “when issued” basis. The term refers to a conditional security: one authorized for issuance but not yet actually issued. All “when issued” transactions are on an “if” basis, to be settled if and when the actual security is issued. If a security is being traded on such a conditional basis, the When Issued field in the BTDS-144A message format

Trade Processing

will be populated with a value of W. For display purposes, the when issued indicator typically would appear as “^w/_i” next to the bond symbol.

8.3.3 Price and Associated Indicators

FINRA will disseminate bond prices on BTDS-144A in \$\$\$\$.

Transactions disseminated via BTDS-144A will represent the bond price paid by the buyer inclusive of any and all markups, markdowns, or commissions. Within the BTDS-144A trade message format, there are two toggle fields to indicate if the reported price reflects a broker commission and/or a special trading situation. For BTDS-144A display purposes, the price must be shown with the commission and special price indicators if populated. FINRA recommends that the commission indicator be shown as a lower case “c” to the right of the price, and the Special Price indicator as an asterisk “*” right of the price.

8.3.4 Yield

FINRA calculates and disseminates bond yield on BTDS-144A in \$\$\$\$\$.dddddd format. Yield is typically expressed as a percentage. For BTDS-144A display purposes, FINRA recommends that the yield should be shown at the same granularity as it was disseminated whenever possible. If a firm chooses to shorten the yield field, FINRA recommends that they round (rather than truncate) yields. At a minimum, a firm should be prepared to display yields to three places to the right of the decimal point as this how it appears on customer statements.

In the corporate bond industry, the Yield represents a customer’s rate of return on investment. As outlined in Section 7, FINRA will leave the yield field blank if no yield is available.

8.3.5 Quantity

Depending on the quality rating of the issue (Investment Grade, High Yield or Unrated), there are differences in the volume disseminated for each transaction via BTDS-144A. Each type of issue (Investment Grade or High Yield/Unrated) has volume “cap” rules by which either actual volume for the respective transaction will be disseminated or a “cap” value will be disseminated. FINRA strongly recommends that the BTDS-144A recipient indicate when the volume is actual versus estimated for each transaction. The breakdown of BTDS-144A volume dissemination rules is as follows:

- Investment Grade Bond transactions of \$5,000,000 or less in par value will be disseminated with the actual volume in the transaction. The Quantity Indicator value will be “A”.
- Investment Grade Bond transactions greater than \$5,000,000 par value will be disseminated as 5MM+. The Quantity Indicator value will be “E”.

Trade Processing

- High Yield and Unrated Bond transactions of \$1,000,000 or less in par value will be disseminated with the actual volume in the transaction. The Quantity Indicator value will be “A”.
- High Yield and Unrated Bond transactions greater than \$1,000,000 par value will be disseminated as 1MM+. The Quantity Indicator value will be “E”.
-

Note: *There will be no current daily cumulative volume included in the summary portion of the cancel and correction messages or in the closing reports sent by BTDS-144A.*

8.3.6 As/Of Indicator

FINRA allows its members to report trades and trade reversals on an “As/Of” basis. Effective June 4, 2007, the TRACE system will accept As/Of transactions with a trade date as far back as July 1, 2002. In the As/Of Indicator field in the BTDS-144A message format, regular As/Of trades are denoted by a value of A and Reversals by a value of R. For BTDS-144A display purposes, FINRA requires that firms show a special indicator for Reversal trade conditions. FINRA recommends that the Reversal indicator be shown as the letters “RV” and should be displayed to the left of the price. Display of the As/Of indicator is optional. If the As/Of indicator is included in BTDS-144A displays, FINRA recommends that the As/Of indicator be shown as “A/O” and should be displayed to the left of the price.

If the trade is an As/Of transaction, the Execution Date Time field in the BTDS-144A message will be populated with the actual trade date and time of the original transaction. While FINRA recommends that firms should show both the Execution Date and Execution Time for all transactions, it realizes that external redistributors may have limited screen space. If a firm chooses to show only one date/time field, it should display the Execution Time for current day transactions but the Execution Date for As/Of transactions.

8.3.7 Sale Condition Modifiers

FINRA members will also report if any of the following sale conditions applied to the trade:

Code	Value
Z	Reported Late (Out of Sequence)
T	Reported After Market Hours
U	Reported Late After Market Hours
W	Weighted Average Price Trade

Please refer to the Appendix A – Glossary of Terms for a description of each modifier. For BTDS-144A display purposes, the sale condition modifiers must be shown, preferably as separate field(s) on a bond display.

Trade Processing

8.3.8 Price Change Indicator

In Appendix C of this document, FINRA has outlined its logic for updating the high, low, and last sale prices for a bond issue. Since there are a number of sale conditions modifiers and indicators that must be considered in the calculation, FINRA also includes a Price Change Indicator field in the BTDS-144A message format. As outlined in Section 7, the possible values for the Price Change Indicator field are as follows:

Code	Values
0	No Price/Yield Changed
1	Last Price/Yield Changed
2	Low Price/Yield Changed
3	Last Price/Yield and Low Price /Yield Changed
4	High Price/Yield Changed
5	Last Price/Yield and High Price/Yield Changed
6	High Price/Yield and Low Price/Yield Changed
7	All Prices/Yields Changed

In the Trade Report (Category T – Type M) format, the Price Change Indicator field appears as the last field in the message. Depending on the value in the Price Change Indicator field, the firm should use the Price and Yield values contained in the trade report message to update its high, low, and/or last sale fields for the bond issue.

In the Trade Cancel (Category T – Type N) and Trade Correction (Category T – Type O) formats, the Price Change Indicator appears as the last field in the Summary Information section of the message. Depending on the value in the Price Change Indicator field, the firm should use the appropriate price and yield value(s) from the Summary Information to update its high, low, and/or last sale display.

8.3.9 Side

Side indicates whether the transaction is a buy or sell. Only the sell side of an inter-dealer (broker-dealer to broker-dealer) transaction is disseminated. For BTDS-144A display purposes, FINRA requires that the Side be shown and recommends using the same values provided in the BTDS-144A message.

8.3.10 Reporting Party Type

Reporting Party Type indicates what type of entity reported the trade. In the BTDS-144A trade messages, the reporting entity will be either a broker-dealer identified by the value “D” or an Alternative Trading System (ATS) identified by the value “T”. For BTDS display purposes, FINRA requires that the Reporting Party Type be shown and recommends using the same values provided in the BTDS-144A message.

Trade Processing

8.3.11 Contra Party Type

Contra Party Type indicates whether the contra party of the transaction is a broker-dealer, a customer, an affiliate or an ATS. In the BTDS-144A trade messages, broker-dealer contra trades are identified by the value “D”, customer contra trades are identified by the value “C”, affiliate contra trades are identified by the value “A” and ATS contra trades are identified by the value “T”. An affiliate is a non-member entity that controls, is controlled by or is under common control with a FINRA member, as further defined under FINRA Rule 6710. For BTDS-144A display purposes, FINRA requires that the Contra Party Type be shown and recommends using the same values provided in the BTDS-144A message.

8.4 Trade Cancel and Correction Processing

FINRA allows its member firms to correct or cancel trades reported earlier in the current business day, or up until the past 19 business days. (Note: If a FINRA member firm cancels a transaction reported prior to the past 19 business days, it must be entered into TRACE as an As/Of Trade Reversal. Please see section 8.3.6 for As/Of processing guidelines.) As outlined in section 5 of this document, the Trade Cancel (Category T – Type N) and Trade Correction (Category T – Type O) formats reference the original trade transaction via the message label and original trade information portions of the message. In addition, FINRA will include the adjusted daily high, low, and last sale prices and yields as part of the Summary Information portion of these BTDS-144A message formats between 08:00 and 17:15 (only on same day cancels and corrections).

8.4.1 Display Guidelines for Trade Cancellations (current day cancels)

Upon receipt of a Trade Cancel (Category T- Type N) message, BTDS-144A recipients should take the following steps:

- 1) Locate the original trade report entry using the BTDS-144A message sequence number.
- 2) Modify the original trade report entry by adding a cancellation indicator. FINRA recommends that firms display the letter “X” to the left of the trade price to reflect a cancellation.
- 3) Update the daily high, low, and last sale prices as necessary. See the Price Change Indicator processing rules above.

Note: For prior day cancels, the original trade can be located using the Original Dissemination Date and Original Message Sequence Number of the trade when it was disseminated. Daily high, low and last sale prices will not be updated.

8.4.2 Display Guidelines for Trade Corrections (current day corrections)

Upon receipt of a Trade Correction (Category T – Type O) message, BTDS-144A recipients should take the following steps:

- 1) Locate the original trade report entry using the BTDS-144A message sequence number.
- 2) Modify the original trade report in the following manner:
 - a) Replace the original trade with the new data in the Corrected Trade Information portion of the message.

Trade Processing

- b) Add a correction indicator to the trade record. FINRA recommends that firms display “N/W” to the left of the new trade price to reflect a “No/Was” transaction.
- 3) Update the daily high, low, and last sale prices as necessary. See the Price Change Indicator processing rules above.

Note: For prior day corrections, the original trade can be located using the Original Dissemination Date and Original Message Sequence Number of the trade when it was disseminated. Daily high, low and last sale prices will not be updated.

Please refer to Appendix D for the complete list of FINRA-recommended bond display standards.

Administrative Message Processing

9.0 Administrative Message Processing Guidelines

This section outlines the processing guidelines for administrative messages on the BTDS-144A. In its initial release, FINRA will support two types of administrative messages: Daily Trade Summary Recaps and Trading Halts.

In a future release, FINRA plans to introduce General Administrative and Issue Maintenance message format for BTDS-144A subscribers. In the initial release, however, BTDS-144A subscribers should process the Daily List file available on the TRACE website or via API for bond additions, deletions, and modifications.

9.1 Daily Trade Summary

At approximately 17:20, FINRA will generate and disseminate a trade summary report for those 144A corporate debt securities traded on the over-the-counter market. This BTDS-144A Trade Summary report will include the high, low, and closing price and yield for those issues with trading volume for the current business day. If a bond did not have any volume for the day, it will not be included in that day's closing report.¹

Please note that FINRA members may enter trade reports, cancels, and corrections into the TRACE system until 18:30; however, entries made after 17:15 will not impact the high, low, or closing price or yield for the day.

9.2 Trading Halts

FINRA reserves the right to halt trading in a 144A security by its members as material news is released. When a trading halt is instituted or removed, FINRA will disseminate a trading halt message on BTDS-144A to notify traders and investors. This BTDS-144A message will include the FINRA-assigned symbol, CUSIP number, halt reason, action date and time. **BTDS-144A recipients must display a “held” indicator whenever a bond is subject to a trading halt situation.**

In the initial BTDS-144A release, FINRA will only disseminate a trading halt message at the time of an action change. Since trading halt situations can span multiple days, BTDS-144A recipients must retain trading halt status information from day to day.²

9.3 Market Aggregates

FINRA calculates and disseminates Market Aggregates data in the form of Market Breadth and Market Sentiments. This data is generated at the end of the day and represents statistical trading data calculated from 08:00 ET until 18:30 ET. This data is for informational purposes only.

¹ As/of trades and Reversals will not be reflected in the BTDS-144A Closing Recap Report.

² At the onset of service, BTDS-144A vendors may request a file of current trading halt information from which to build their database. Requests should be sent via e-mail to TRACEDataServices@finra.org.

Control Message Processing

10.0 Control Message Processing Guidelines

The following Control Messages will be transmitted by BTDS-144A:

Category	Type	Description
C	I	Start of Day
C	J	End of Day
C	O	Market Session Open
C	C	Market Session Closed
C	K	End of Retransmission Requests
C	L	Sequence Number Reset
C	T	Line Integrity
C	X	End of Trade Session
C	Z	End of Transmissions

Control Message Descriptions

A Control message is a fixed format message that performs a specific system function. All BTDS-144A Control Messages consist of a Standard Message Header only. The Message Type field will contain the appropriate single ASCII character that identifies the Control Message type.

To ensure proper reception of the following Control Messages, each is transmitted and repeated at one-minute intervals for a total of three transmissions, with a Quiet Line State between them:

Category	Type	Description
C	I	Start of Day
C	J	End of Day
C	K	End of Retransmission Requests
C	X	End of Trade Session
C	Z	End of Transmissions

All other Control Messages are transmitted one time and without repetition.

Control Message Processing

10.1 Start Of Day

Category C – Type I

The Start of Day Control Message signifies the beginning of FINRA's daily operational cycle. The message will be sent at the beginning of each day. The purpose of this message is to inform BTDS-144A recipients that all subsequent data transmitted will be real-time updates and should be treated accordingly. The message will be sent three times, at one-minute intervals, with the same Message Sequence Number (0000000) on each message.

10.2 End Of Day

Category C – Type J

The End of Day Control Message signals the end of activity for the operational cycle. The End of Day message will be sent three times, at one-minute intervals. The first End of Day message will contain a Message Sequence Number of one greater than the highest Message Sequence Number previously transmitted. The second and third End of Day messages will contain the same Message Sequence Number as the previously transmitted message.

10.3 Market Session Open

Category C – Type O

The Market Session Open Control Message signifies the opening of the market for the session indicated in the Message Header. The Message Sequence Number field for the BTDS-144A Session Open will contain a number one greater than the highest Message Sequence Number previously transmitted.

10.4 Market Session Close

Category C – Type C

The Market Session Close Control Message signals the closing of the market for the session indicated in the Message Header. The Message Sequence Number field for the BTDS-144A Session Close will contain a number one greater than the highest Message Sequence Number previously transmitted.

10.5 End Of Retransmission Requests

Category C – Type K

This message signals that no further retransmission requests will be honored. The End of Retransmission Requests message will be sent three times, at one-minute intervals. The first message transmitted will contain a Message Sequence Number of one greater than the highest Message Sequence Number previously transmitted. The subsequent two messages will contain the same Message Sequence Number as the previously transmitted message.

10.6 Sequence Number Reset

Category C – Type L

The Sequence Number Reset is transmitted when a need to reset the Message Sequence Number counters to a specified number has been established. On receipt of this message, all recipients should reset their Message Sequence Number as indicated. The Message Sequence Number field will contain the number to which the Message Sequence Number counters are to be reset. This number will be

Control Message Processing

zero or a number greater than the highest sequence number previously set. Please note that FINRA may not be able to retransmit messages sent prior to the Sequence Number Reset control message.

10.7 Line Integrity

Category C – Type T

The Line Integrity Control Message will be transmitted at approximately one-minute intervals to verify the operational integrity of the BTDS-144A transmission, and will be intermixed with other messages. The Message Sequence Number will not be incremented for the Line Integrity Messages.

10.8 End of Trade Session

Category C – Type X

The End of Trade Session Control Message signals that no further trade reports or corrections (other than retransmissions) will be sent for that market session. The End of Trade Session message will be sent three times, at one-minute intervals. The first message transmitted will contain a Message Sequence Number of one greater than the highest Message Sequence Number previously transmitted. The subsequent two messages will contain the same Message Sequence Number as the previously transmitted message.

10.9 End of Transmissions

Category C – Type Z

The End of Transmissions Control Message signals that there will be no further transmissions of data except for Line Integrity messages (Category C – Type T) sent through the BTDS-144A line. (The Line Integrity messages will cease at approximately 9:15 p.m. ET.) The End of Transmissions message will be transmitted at the end of the operational day. The End of Transmissions message will be sent three times, at one-minute intervals. The first message transmitted will contain a Message Sequence Number of one greater than the highest Message Sequence Number previously transmitted. The subsequent two messages will contain the same Message Sequence Number as the previously transmitted message.

Format Release & Testing Guidelines

11.0 Format Release & Testing Guidelines

11.1 Release Notification

To keep pace with the changing business environment, FINRA may modify its data feed format specifications for direct data feed customers. In advance of each release, FINRA will notify its direct connect customers of the format change by posting a notice on the FINRA website. In the notice, FINRA will outline the scope of the changes as well as the testing and release schedule. Direct connect customers are required to modify and test their code based on these technical notices.

11.2 Types of Testing

In advance of each release, FINRA will offer test data for its direct data feed customers to be used for quality assurance (QA) purposes. Depending on the scope of the changes, the testing period will range from one day to one month. For its data feed customers, FINRA offers the following types of testing opportunities:

Evening test transmissions: For its evening testing opportunities, FINRA will create sample messages in the new formats to be broadcast on select weeknights from ~~21:05 to 22:30~~~~20:30 to 21:30~~. To generate the sample data, test script will be used to exercise the full range of values for the affected message formats. The evening test data for the BTDS-144A feed will be disseminated via a dedicated test port and IP Addresses, which are different from the BTDS-144A production port and IP Addresses.

Saturday production tests: In advance of major releases, FINRA will conduct user acceptance tests on select Saturdays for its market participants. As market participants enter information into its production systems, FINRA will broadcast this test data in the new data formats to direct data feed subscribers only.

FINRA strongly recommends that all direct subscribers use these testing opportunities to check their hardware and software applications. During the testing phase, FINRA may ask market data vendors or market participants to provide status updates and/or submit testing verification forms as part of the QA process.

11.3 Identification of test data

During market hours, FINRA will identify test data in one of two ways:

Test Retransmission Requester: In Section 4.4 of this document, FINRA provides for a test retransmission requester for its data feed message header.

Test Symbols: FINRA may also send out intra-day test data using special issue symbols on its data feeds.

During non-market hours, FINRA may broadcast unmarked test data on its BTDS-144A feed. Customers should take necessary precautions to protect their systems against database corruption during ~~evenings~~, weekends, and market holidays. Please refer to the Appendix B of this document for the current data feed transmission schedule.

Appendix A

Appendix A – Glossary of Terms

Term	Definition
After Market Hours trade	A transaction reported into the TRACE system between 17:15 and 18:30 ET. After Market Hours trade reports do <u>not</u> affect the high, low, or closing price for an issue.
As/of trade	A transaction that was reported by a FINRA member on a date later than the actual transaction date. Effective June 4, 2007, FINRA members will be allowed to enter the trade date for an as/of as far back as July 1, 2002.
Bond	A long-term promissory note in which the issuer agrees to pay the owner the amount of the face value on a future date and to pay interest at a specified rate at pre-defined intervals.
Call option	The right of an issuer to redeem outstanding bonds before the scheduled maturity date.
Cash sale	A transaction in which the delivery of securities and payment must occur on the same day that the trade was executed.
Commission	Fees paid to a broker for executing a trade based on the number of bonds traded or the dollar amount of the trade.
Convertible bond	A bond that can be exchanged at the option of the holder into preferred or common stock at a pre-set ratio.
CUSIP number	CUSIP stands for the Council on Uniform Securities Identification Procedures. A CUSIP number is a unique nine-character alpha/numeric code appearing on the face of each stock or bond certificate that is assigned to a security by Standard & Poor's Corporation. The number is used to expedite clearance and settlement.
Equity-linked note	Typically a debt instrument whose return on investment is tied to the equity markets. It may be tied to a single stock, a basket of stocks, or an index. Equity-linked notes are traded in shares as units (like an equity instrument). FINRA rules require that trades of equity-linked notes not listed on a national exchange be reported to TRACE.
External redistributor	A firm that resells market data to third party customers. Also known as a market data vendor.
Face value	The value that appears on the front, or face, of a bond, which represents the amount the issuer promises to repay at maturity. Also known as principal amount.
Fixed rate bond	A long term bond with an interest rate fixed to maturity.
Floating rate bond	A bond for which the interest rate is adjusted periodically according to a pre-determined formula, usually linked to an index. Please note that FINRA will not calculate a yield for floating rate bonds.

Appendix A

Term	Definition
High yield bond	<p>A corporate bond that is rated as speculative grade by a nationally recognized statistical rating organization (NRSRO), i.e., Ba1 or lower by Moody's Investors Services or BB+ or below by Standard & Poor's Corporation.</p> <p>Note: FINRA has established certain methodology for determining the status of a TRACE eligible security as either investment grade or high yield based on the ratings assigned to the security by the specified NRSRO's. <u>See NASD Rule 6210</u> for a detailed description of this methodology.</p>
Institutional investor	<p>A bank, mutual fund, pension fund, or other corporate entity that trades securities in large volumes.</p>
Interest	<p>Compensation paid or to be paid for the use of money, generally expressed as an annual percentage rate. The rate may be constant over the life of the bond (fixed-rate) or may change from time to time by reference to an index (floating-rate).</p>
Internal redistributor	<p>A firm that provides a market data display to its employees only.</p>
Investment grade bond	<p>A bond rated in one of its four highest generic rating categories by a nationally recognized statistical rating organization (NRSRO), i.e., Baa3 or better by Moody's Investors Service or BBB- or better by Standard & Poor's Corporation.</p> <p>Note: FINRA has established certain methodology for determining the status of a TRACE eligible security as either investment grade or high yield based on the ratings assigned to the security by the specified NRSRO's. <u>See NASD Rule 6210</u> for a detailed description of this methodology.</p>
Issuer	<p>A corporation that has distributed to the public securities registered with the Securities and Exchange Commission.</p>
Markup and Markdown	<p>A markdown is a charge subtracted from the price of a security that a customer is selling to a dealer/broker for the broker/dealer's own account. A markup is the charge added to the price of a security that a customer is buying from a dealer/broker from the broker/dealer's own account. The markdown or markup is the equivalent of a commission on the sale.</p>
Material News	<p>News released by a public company that might reasonably be expected to affect the value of a company's securities or influence investors' decisions. Material news includes information regarding corporate event of an unusual or non-recurring nature, news of tender offers, and unusually good or bad earning reports.</p>
Maturity date	<p>The date on which the principal amount of a bond is to be paid in full.</p>
Medium term notes	<p>A debt security issued under a program that allows an issuer to offer notes continuously to investors through an agent. The size and terms of medium-term notes may be customized to meet investors' needs. Maturities can range from one to 30 years.</p>
Next day trade	<p>A transaction in which the delivery of securities and payment must occur on the next business day following the trade execution date.</p>
Over-the-counter market (OTC)	<p>A securities market that is conducted by dealers throughout the country through negotiation of price rather than through the use of an auction system as represented by a stock exchange.</p>

FINRA Bond Trade Dissemination Service (BTDS-144A)

Appendix A

Term	Definition
Private placement	A large block of securities offered for sale to an institutional investor or a financial institution through private negotiations.
Rating	An alpha and/or numeric symbol used to give indications of the relative credit quality.
Reversal	A trade cancellation entered into TRACE on an As/of basis.
Secondary market	Markets where securities are bought and sold subsequent to original issuance.
Settlement date	The date for the delivery of securities and payment of funds.
Special Price Indicator	This field denotes trades that were consummated contrary to the current standard convention for the particular bond. Also known as "specified trades", e.g., when a debt security that conventionally and in the current market is traded at a price that reflects a due bill or warrant is, in the transaction to be reported, traded as specified without the due bill or warrant. Note that a trade identified with a "Special Price Indicator" will <u>not</u> be incorporated in the calculation of the day's high, low and last price for the security.
TRACE	Under FINRA Rule 6700 Series, FINRA members are required to report OTC secondary market transactions in eligible fixed income securities to FINRA. The Trade Reporting and Compliance Engine (TRACE) is the FINRA-developed vehicle that facilitates the mandatory trade reporting of corporate bonds and public dissemination of market data.
Weighted average price	A transaction where the price is determined by a weighted average of the prices of prior related transactions. Note that a trade identified with a weighted average price sale condition will <u>not</u> be incorporated in the calculation of the day's high, low and last price for the security.
When issued trading	A short of "when, as, and if issued." The term refers to a conditional security: one authorized for issuance but not yet actually issued. All "when issued" transactions are on an "if" basis, to be settled if and when the actual security is issued.
Yield	A calculation of the return on an investor's capital investment.

Appendix B

Appendix B – Schedule of Transmissions

Note: All times referenced regarding the BTDS-144A feed are approximate and are stated in US Eastern Time. This schedule is based on a normal day. FINRA reserves the right to alter this schedule with minimal advance notice.

Time	Transmission	Message Category	Message Type
07:30	Start of Day Control Message	C	I
07:31	Start of Day Control Message	C	I
07:32	Start of Day Control Message	C	I
08:00	US Market Session Open Message	C	O
08:00 - 18:30	Trade Report, Cancel, and Correction Messages	T T T	M N O
17:15	US Market Session Closed Message	C	C
17:20	Trade Summary Recap Messages	A	E
18:35	Market Aggregate Messages	A	1 - 7
19:05	End of Trade Session Control Message	C	X
19:06	End of Trade Session Control Message	C	X
19:07	End of Trade Session Control Message	C	X
19:08	End of Day Control Message	C	J
19:09	End of Day Control Message	C	J
19:10	End of Day Control Message	C	J
19:11	End of Retransmission Control Message	C	K
19:12	End of Retransmission Control Message	C	K
19:13	End of Retransmission Control Message	C	K
19:14	End of Transmissions Control Message (Time is approximate; delayed when retransmission's still active)	C	Z
19:15	End of Transmissions Control Message	C	Z
19:16	End of Transmissions Control Message	C	Z

Appendix C

Appendix C – Sale Condition Matrix

FINRA will use the Change Indicator field in the Trade Report, Trade Cancel, and Trade Correction message formats to notify BTDS-144A recipients which price and yield fields to update based on the trade report. The Change Indicator field will be populated based on the following logic:

- **As/Of Indicator:** Current day trades will impact the high, low, and last sale prices and yields. Only update high, low, and/or last sale price and yield fields if the As/Of Indicator field is blank (current day trade).
- **Special Price Indicator:** Only trade prices within the normal trading range for a bond issuance will be used to calculate the price and yield summary for a bond issue. Only update the high, low, and/or last sale price and yield if the Special Price Indicator field is blank.

After factoring out As/of and special price trades, the TRACE system will then filter trades based on the Sale Condition 3 and 4 fields. The following Sale Condition Decision Matrix should be used to determine whether the “High,” “Low,” and “Last,” information is updated upon receipt of an individual trade report.

Modifier	Condition	Update High/Low	Update Last³
<i>(blank)</i>	(No Sale Condition Applies)	Yes	Yes
Z	Reported Late (Out of Sequence)	Yes	Yes
T	Reported After Market Hours	No	No
U	Reported Late After Market Hours	No	No
W	Weighted Average Price	No	No

³ The BTDS-144A last sale price calculation algorithm includes an execution time factor. FINRA will only update the last sale price if the execution time in the current BTDS-144A message format is equal to or greater than the previous trade report message that was disseminated.

Appendix D

Appendix D – FINRA Display Guidelines for BTDS-144A Data Elements

FINRA has outlined its display requirements for external real-time distributors of BTDS-144A in Section 8 of this document. This table summarizes the recommended display value and placement for the required fields.

Data Element	Recommended Display Value	Recommended Data Placement
Bond Symbol or CUSIP	As disseminated.	Separate display field.
When/Issued Indicator	"w/i"	Indicator to the right of the bond symbol when applicable.
Price	As disseminated or rounded to 3 decimal places.	Separate display field.
Remuneration	Lower case "c", "m" or "n". Blank otherwise.	Indicator to the right of the price when applicable.
Special Price Indicator	Asterisk (*)	Indicator to the right of the price when applicable.
Yield	As disseminated or rounded to 3 decimal places.	Separate display field.
Quantity	As disseminated.	Separate display field.
Quantity Indicator	"Est" if estimated. Blank otherwise.	Indicator to the right of the Quantity field when applicable.
Sale Condition Modifiers ⁴	As disseminated.	Separate display field. If a trade has more than one modifier, the values may be shown in same display field.
As/Of Indicator ⁵	"RV" for Reversals "A/O" for other As/of transactions	Indicator to the left of the price field when applicable.
Date/Time	Execution time if current day transaction. Execution date if As/Of trade or reversal.	Separate display field.
Cancel/Correction Indicators ⁶	"N/W" for Corrections. "X" for Cancellations.	Indicator to the left of the price field when applicable.
Side	As disseminated.	Separate display field.
Reporting Party Type	As disseminated.	Separate display field.
Contra Party Type	As disseminated.	Separate display field.

⁴ Each BTDS-144A message contains two modifier fields: Sale Condition 3 and Sale Condition 4 fields.

⁵ External redistributors are required to show the reversal indicator. As/Of indicator is optional.

⁶ Indicator should be shown next to the original transaction if a Trade Cancel or Trade Correction was subsequently disseminated on BTDS-144A.

Appendix E

Appendix E - Connectivity

An active Vendor Agreement is required to receive a TRACE real-time data feed, including the BTDS-144A feed (the Vendor Agreement can be found at <http://www.finra.org/Industry/ContentLicensing/TRACE>, "Vendor/ Subscriber Agreement Information").

If you have any questions, please contact TRACE Data Services at (888) 507-3665.

Connection Options:

Connectivity to NASDAQ datacenters is required either through an authorized Extranet Provider or through a Direct Circuit connection.

Option	Contact	Other instructions
Direct Connection	TRACE Data Services; TRACEDataServices@finra.org	Click on the following link for a list of current local access carriers that can provide Direct Circuit connectivity http://www.nasdaqtrader.com/content/ProductsServices/Trading/Direct_connect_providers.pdf
Connection via a new/additional Extranet provider	<ol style="list-style-type: none"> 1. Contact the network provider to discuss the communication costs/details and 2. Send an email to TRACE Data Services at TRACEDataServices@finra.org requesting access to BTDS via desired network provider. 	Click on the following link for list of current Extranet providers http://www.nasdaqtrader.com/content/ProductsServices/Trading/extranets.pdf

Once approval takes place FINRA will issue an approval letter notifying the indicated network provider.

Please email [FINRA Product Management](#) or call (866) 899-2107 for questions regarding the BTDS-144A message layouts or the TRACE application.

Appendix F

Appendix F – Document Revision Log

Version	Modification Date	Description of Change
1.0	3/11/2014	Initial Version
2.0	4/28/2014	Included Multicast IP Addresses
2.1	12/15/2014	Replaced Message Types G, H and I with Types M, N and O respectively. With the new message layouts, the Commission Indicator and Reporting Party Side were eliminated and new fields Side, Reporting Party Type, Contra Party Type and Remuneration Indicator are introduced. Display guidelines revised accordingly.
2.2	1/12/2015	Removed Remuneration Indicator and restored Commission Indicator in its place. Removed value identifying ATS trades from the Reporting Party Type field and removed values identifying ATS and Affiliate trades from the Contra Party Type field.
2.3	3-2-2015	Removed references to April 27 th 2015 as the release date for the new Message Types M, N and O.
2.4	5-18-2015	Expanded Contra Party Type in Section 7 to include new value "A" for affiliate trades and defined affiliates in Section 8.3.11.
2.5	12-9-2015	Retired use of Commission Indicator and replaced with Remuneration on Trade, Cancel and Correction messages. Introduced ATS Indicator (using previous Future Use byte) on Trade, Cancel and Correction messages. Introduced new Market Aggregate messages (Category A, Types 1 through 7). Introduced value "T" to Reporting Party Type and Contra Party Type fields to identify an ATS on Trade, Cancel and Correction messages.
2.6	4-7-2017	Removed all references to Fitch ratings.
<u>2.7</u>	<u>3-28-2018</u>	<u>Times for evening test data amended. Evening test data will be broadcast via its own port and IP Address.</u>
<u>2.7A</u>	<u>5-14-2018</u>	<u>Clarified End of Transmissions (Category C – Type Z) statement in section 10.9 regarding messages produced after the End of Transmissions.</u>