NASD® Bond Trade Dissemination Service℠ (BTDS℠)

Data Feed Interface Specification

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Introduction

1.0 Introduction

1.1 Background

In 2002, NASD® introduced a new Trade Reporting and Compliance Engine℠ (TRACE℠) for corporate bond transactions. Under NASD Rule 6200, all NASD member firms are required to report trades for eligible US corporate bonds into TRACE. For more information on TRACE, please refer to the NASD website at http://www.nasd.com/mkt_sys/trace_info.asp.

In association with TRACE, the NASD released the Bond Trade Dissemination Service℠ (BTDS℠). 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, the NASD will automatically generate data messages to be disseminated real-time on BTDS.

BTDS originates from Nasdaq data centers located in Trumbull, Connecticut and Rockville, Maryland. 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. All references to a time of day in this specification are in Eastern Standard/Daylight Time. Direct access to NASD and Nasdaq data feed products is available exclusively via a private data network managed by WorldCom Inc.

The BTDS 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 data feed product. Please refer to www.cusip.com for more information.

This document was initially published on July 30, 2001, and last updated on January 12, 2004. It should be noted that the NASD has the right to add, delete, or modify the message formats outlined in this document as needed. In advance of any data format changes, NASD will publicly notify its BTDS customers by posting a news item on the Internet with the details of the release. The NASD will also update this BTDS interface specification document on a regular basis.

System Description

2.0 General System Description

2.1 Interface Protocol

Direct access to the BTDS product is available exclusively via the Nasdaq/NASD private data network managed by MCI Inc. All transmissions from NASD to direct connect data feed subscribers will be 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 specifications.

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

2.2 Interface Facility

The communication interface facility was defined by MCI during the design of the Market Data Network (MDN). Questions in reference to your firm's interface facility should be directed to the WorldCom Global Accounts Team at (800) 825-9196 in the United States or (914) 312-6082 outside the United States.

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

MCI will maintain the IP address tables for the Nasdaq/NASD private data network. To receive data via the MDN, vendors will be provided an Internet Assigned Numbers Authority registered IP host address which will be allocated out of the 198.191.0.0 - 198.191.211.0 address range. The IP host address allocation utilizes a 255.255.255.240 subnet mask. Please note that it is the data feed recipient's responsibility to avoid any IP address conflicts within their network.

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.*

The MDN 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 over the MCI MDN. The Class D addresses have been registered by Nasdaq with The NIC Group. For the BTDS data feed, the outgoing IP Multicast addresses and port assignments will be as follows:

	Primary Groups			**Back-Up Groups**		
Data Feed	**Class D IP Address**	**$Port_{16}$**	**$Port_{10}$**	**Class D IP Address**	**$Port_{16}$**	**$Port_{10}$**
BTDS (A-Z)	224.0.17.33	D7E0	55264	224.0.17.34	D7E1	55265

The purpose of two host groups is to provide an extra layer of data redundancy within the MDN 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, the NASD strongly recommends that data feed customers process both the primary and back-up groups within their networks.

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 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	SOH	Message 1 header and text	US	Message 2 header and text	US	Message n header and text	ETX

| ——— 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.
- **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 NASD data. NASD strongly warns customers against coding their systems for a particular IP source address. ***NASD 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.

3.5.2 UDP Header Fields

The following field descriptions pertain to the UDP header:

- **UDP SOURCE PORT NUMBER** – 16 bit field identifies the $Port_{16}$ 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 $Port_{10}$ 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.

3.6 Character Set

All transmissions will be in standard ASCII code: 7 data bits and the 8^{th} bit always zero. Please refer to Appendix A for the ASCII character matrix for BTDS.

3.7 Retransmission Capability

The NASD 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	M	Start of Test Cycle
C	N	End of Test Cycle
C	T	Line Integrity

Please note that the pre-formatted messages contained between the Start and End of the Test Cycle messages will also be unavailable for retransmission.

Retransmission requests may be placed in one of two ways:

- By calling BTDS Operations at (203) 385-4562; or
- By sending an e-mail request to RETRANT@NASD.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 BTDS Operations:

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

To obtain a firm's retransmission requester and password information, please contact Nasdaq Market Data Distribution at (301) 978-5307 or MKTDATASVC@nasdaq.com.

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 or date which message range the recipient would like retransmitted. For BTDS, 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 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 4.3 of this document.
- **Date/Time:** The message header will contain the same date and time stamp as the original BTDS message. Since Nasdaq supports both current and prior day retransmissions for BTDS, programmers should be prepared to process this field.

4.0 Message Header

Each BTDS message will begin with a 20-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 20 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	7

20 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 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 dissemination:

Trade Messages:

Category	Type	Usage
T	A	Trade Report
T	B	Trade Cancel
T	C	Trade Correction

Control Messages:

Category	Type	Usage
C	I	Start of Day

Message Header

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	M	Start of Test Cycle
C	N	End of Test Cycle
C	T	Line Integrity
C	X	End of Trade Reporting
C	Z	End of Transmissions

Administrative Messages:

Category	Type	Usage
A	C	Closing Report Recap
A	T	Trading Halt
A	A	General Administrative Message (Future)

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

Message Header

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 Reporting), 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), and Category C – Type M (Start of Test Cycle), 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.

Note: The start of each test cycle will begin with zero.

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

4.7 Date/Time

BTDS 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 the NASD's trade reporting system. It is 7 bytes, Numeric, in the format:

Date Year	Date Month	Date Day	Time Hour	Time Minute	Time Second
2	1	1	1	1	1

Date Year: The year the transaction occurred. This two-byte field will be stated in numeric format, with possible values 00 to 99.

Date Month: The month the transaction occurred. This one byte field is stated in ASCII text format. The numeric month value will be converted into a single ASCII character based on the Date/Time translation table.

Date Day: The day of the month the transaction occurred. This one byte field is stated in ASCII text format. The day value will be converted into a single ASCII character based on the Date/Time translation table.

Time Hour: The hour of the day the transaction occurred in military time. This one byte field is stated in ASCII text format. The hour value will be converted into a single ASCII character based on the Date/Time translation table.

Time Minute: The minute of the hour the transaction occurred. This one byte field is stated in ASCII text format. The minute value will be converted into a single ASCII character based on the Date/Time translation table.

Time Second: The second of the minute the transaction occurred. This one byte field is stated in ASCII text format. The second value will be converted into a single ASCII character based on the Date/Time translation table.

Note: A list of Date/Time translations is located in **Appendix E.**

5.0 Data Formats

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

Note: BTDS 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 Bond Trade Messages

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

5.1.1 Trade Reports

Category T – Type A

The following message type is used to transmit bond trade transaction information to BTDS subscribers.

Symbol	CUSIP	When Issued Indicator	Commission	Quantity
14	9	1	1	12

Quantity Indicator	Price	Yield Direction	Yield	As/Of Indicator
1	11	1	13	1

Execution Date	Execution Time	Seller Sales Days	Sale Condition	Second Modifier
8	8	3	1	1

Special Price Indicator	Change Indicator
1	1

Total Message Size: 87 Bytes

5.1.2 Trade Cancel

Category T- Type B

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

Label

Original Message Sequence Number	Symbol	CUSIP	When Issued Indicator	Function
7	14	9	1	1

Subtotal: 32 Bytes

Original Trade Information

Commission	Quantity	Quantity Indicator	Price	Yield Direction
1	12	1	11	1

Yield	As/Of Indicator	Execution Date	Execution Time	Seller Sale's Day
13	1	8	8	3

Sale Condition	Second Modifier	Special Price Indicator
1	1	1

Subtotal: 62 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) Yield Direction	(Last Sale) Yield	Change Indicator
13	11	1	13	1

Subtotal: 76 Bytes

Total Message Size: 170 Bytes

5.1.3 Trade Correction

Category T, Type C

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

Label

Original Message Sequence Number	Symbol	CUSIP	When Issued Indicator	Function
7	14	9	1	1

Subtotal: 32 Bytes

Original Trade Information

Commission	Quantity	Quantity Indicator	Price	Yield Direction
1	12	1	11	1

Yield	As/Of Indicator	Execution Date	Execution Time	Seller Sale's Day
13	1	8	8	3

Sale Condition	Second Modifier	Special Price Indicator
1	1	1

Subtotal: 62 Bytes

Correction Trade Information

Commission	Quantity	Quantity Indicator	Price	Yield Direction
1	12	1	11	1

Yield	As/Of Indicator	Execution Date	Execution Time	Seller Sale's Day
13	1	8	8	3

Data Formats

Sale Condition	Second Modifier	Special Price Indicator
1	1	1

Subtotal: 62 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) Yield Direction	(Last Sale) Yield	Change Indicator
13	11	1	13	1

Subtotal: 76 Bytes

Total Message Size: 232 Bytes

5.2 Administrative Message Formats

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

5.2.1 Daily Trade Summary

Category A – Type C

The NASD will disseminate the following price summary message for each bond issue that traded during the normal trading hours.

Symbol	CUSIP	When Issued Indicator	Daily High Price	(High) Yield Direction	Daily High Yield
14	9	1	11	1	13

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

Total Message Size: 99 Bytes

5.2.2 Trading Halt

Category A – Type T

The NASD will disseminate the following message format when a trading halt is instituted or removed for a bond issue.

Symbol	CUSIP	Company Name	Action	Action Date
14	9	30	1	8

Action Time	Halt Reason
8	4

Total Message Size: 74 Bytes

5.2.3 General Administrative Message

Category A – Type A

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

Text
1 – 300

6.0 Field Occurrences Within Messages

FIELD NAME	MESSAGE CATEGORY	MESSAGE TYPE
A		
ACTION	A	T
ACTION DATE	A	T
ACTION TIME	A	T
AS/OF INDICATOR	T	A
	T	B
	T	C
C		
CHANGE INDICATOR	T	A
	T	B
	T	C
COMMISSION	T	A
	T	B
	T	C
COMPANY NAME	A	T
CUSIP	T	A
	T	B
	T	C
	A	C
	A	T
D		
DAILY CLOSE PRICE	A	C
DAILY CLOSE YIELD	A	C
DAILY HIGH PRICE	A	C

Field Occurrences

FIELD NAME	MESSAGE CATEGORY	MESSAGE TYPE
DAILY HIGH YIELD	A	C
DAILY LOW PRICE	A	C
DAILY LOW YIELD	A	C
E		
EXECUTION DATE	T	A
	T	B
	T	C
EXECUTION TIME	T	A
	T	B
	T	C
F		
FUNCTION	T	B
	T	C
H		
HALT REASON	A	T
HIGH PRICE	T	B
	T	C
L		
LAST SALE PRICE	T	B
	T	C
LOW PRICE	T	B
	T	C
O		
ORIGINAL MESSAGE SEQUENCE NUMBER	T	B
	T	C
P		

Field Occurrences

FIELD NAME	MESSAGE CATEGORY	MESSAGE TYPE
PRICE	T	A
	T	B
	T	C
Q		
QUANTITY	T	A
	T	B
	T	C
QUANTITY INDICATOR	T	A
	T	B
	T	C
S		
SALE CONDITION	T	A
	T	B
	T	C
SECOND MODIFIER	T	A
	T	B
	T	C
SELLER'S SALE DAYS	T	A
	T	B
	T	C
SPECIAL PRICE INDICATOR	T	A
	T	B
	T	C

Field Occurrences

FIELD NAME	MESSAGE CATEGORY	MESSAGE TYPE
SYMBOL	T	A
	T	B
	T	C
	A	C
	A	T
T		
TEXT	A	A
W		
WHEN ISSUED INDICATOR	T	A
	T	B
	T	C
	A	C
Y		
YIELD	T	A
	T	B
	T	C
YIELD DIRECTION	T	A
	T	B
	T	C

7.0 Field Descriptions

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

A

Action

Category A – Type T

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

Code	Value
H	Trading Halt (Date and Time fields represent time that the halt was instituted for the bond issue)
R	Trading Resumption (Date and Time fields represent the time that trading is expected to resume in the bond issue)

Action Date

Category A – Type T

Eight bytes, numeric in the format MMDDYYYY. This field represents the date that the trading halt was instituted or lifted for the specified bond.

Action Time

Category A - Type T

Eight bytes, alphanumeric in the format HH:MM:SS. This field represents the time that the trading halt was or will be instituted or lifted for the specified bond.

Field Descriptions

As Of Indicator

Category T – Type A, Category T – Type B, Category T – Type C

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

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

C

Change Indicator

Category T – Types A, Category T – Type B, Category T – Type C

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

Commission

Category T – Type A, Category T – Type B, Category T – Type C

One byte, alphabetic. This field indicates if the price is inclusive of dealer commission. Associated values are as follows:

Code	Values
Y	Price includes commission
N	Price does not include commission

Field Descriptions

Company Name

Category A – Type T

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

CUSIP

Category T – Type A, Category T – Type B, Category T – Type C, Category A – Type C, Category A – Type T

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 C

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 $$$$.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 Close Price is not available for a bond, this field will be zero filled.

Daily Close Yield

Category A – Type C

Thirteen bytes, numeric, zero filled. Daily Close 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 closing yield reported for the specific bond for the day. The NASD will leave the field blank if no yield is available.

Daily High Price

Category A – Type C

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 $$$$.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 High Price is not available for a bond, this field will be zero filled.

Field Descriptions

Daily High Yield

Category A – Type C

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 reported for the specific bond for the day. The NASD will leave the field blank if no yield is available.

Daily Low Price

Category A – Type C

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 C

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 reported for the specific bond for the day. The NASD will leave the field blank if no yield is available.

E

Execution Date

Category T – Type A, Category T – Type B, Category T – Type C

Eight bytes, numeric in the format MMDDYYYY. This field represents the date that the NASD 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 that the original trade was executed by the NASD member firm. Please note that NASD member firms may enter trade reports and trade reversals into TRACE for up to 365 days after execution. If the transaction is reported on the day of execution, the field will be blank.

Field Descriptions

Execution Time

Category T – Type A, Category T – Type B, Category T – Type C

Eight bytes, alphanumeric in the format HH:MM:SS. This field indicates the actual trade time as reported by the NASD member firm into the TRACE system. If the transaction reported was an As/Of trade or a Reversal, this field will be populated with the time that the original trade was executed by the NASD member firm.

F

Function

Category T – Type B, Category T – Type C

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 value is:

Code	Value
C	Cancel
E	Error
N	Correction

H

Halt Reason

Category A – Type T

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

Code	Values
T.1	Halt – News Pending
T.2	Halt – News Released
T.3	Halt – News and resumption times
T.12	Halt – Additional Information Requested by NASD
H.10	Halt – SEC Trading Suspension
H.11	Halt - Regulatory Concerns
D1	Security deletion from TRACE

Field Descriptions

High Price

Category T – Type B, Category T – Type C

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 $$$$.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 High Price is not available for a bond, this field will be zero filled.

High Price Yield

Category T – Type C

Thirteen bytes, numeric, zero filled. High 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 high price of the day. The NASD will leave the field blank if no yield is available.

L

Last Sale Price

Category T – Type B, Category T – Type C

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 $$$$.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 Last Sale Price is not available for a bond, this field will be zero filled.

Last Sale Yield

Category T – Type C

Thirteen bytes, numeric, zero filled. Last Sale 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 last price of the day. The NASD will leave the field blank if no yield is available.

Field Descriptions

Low Price

Category T – Type B, Category T – Type C

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 Price Yield

Category T – Type C

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 value calculated by the system for the yield associated with the low price of the day. The NASD will leave the field blank if no yield is available.

O

Original Message Sequence Number

Category T – Type B, Category T – Type C

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 A, Category T – Type B, Category T – Type C

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.

Field Descriptions

Q

Quantity

Category T – Type A, Category T – Type B, Category T – Type C

Twelve bytes, alphanumeric, including special characters. This field represents the par value volume of the bond in the respective transaction. Please note that the following special limits apply to this field:

For **High Yield** and **Unrated** bonds:

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

For **Investment Grade** bonds:

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

Quantity Indicator

Category T – Type A, Category T – Type B, Category T – Type C

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

Field Descriptions

S

Sale Condition

Category T – Type A, Category T – Type B, Category T – Type C

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
@	Regular Trade
C	Cash Trade
N	Next Day
R	Sellers Option
A	Trades outside of market hours
W	Weighted Average price
Z	Sold Late (Out of Sequence)
Space	No Special Sale Condition for As/Of Trade

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

Second Modifier

Category T – Type A, Category T – Type B, Category T – Type C

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

Code	Value
A	Trades outside of market hours
Z	Sold Late (Out of Sequence)
Space	No Second Modifier Applicable

Field Descriptions

Seller's Sale Days

Category T - Type A, Category T – Type B, Category T – Type C

Three bytes, numeric. Right justified, zero filled. When the Sale Condition equals "R" (Seller), this field will represent the number of days associated in the transaction. If the Sale Condition is any value other than "R", this field to be zero filled.

Note: This field will be space filled in the Trade Cancel Message (Category T – Type B) if the Sale Condition is not equal to "R".

Special Price Indicator

Category T – Type A, Category T – Type B, Category T – Type C

One byte, Alphanumeric. This field indicates if the transaction is a "specified trade." Associated values are:

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

Symbol

Category T – Type A, Category T – Type B, Category T – Type C, Category A – Type C, Category A – Type T

Fourteen bytes, alphanumeric. This field will represent the bond issue symbol as assigned by the NASD 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 subscribers.

Field Descriptions

W

When Issued Indicator

Category T – Type A, Category T – Type B, Category T – Type C
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 A, Category T – Type B, Category T – Type C
13 bytes, numeric. 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 characters represents the decimal amount of the trade price. The Yield field indicates the effective rate of return earned on a security expressed as a percentage. The NASD will leave the field blank if no yield is available.

Yield Direction

Category T – Type A, Category T – Type B, Category T – Type C, Category A – Type C
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

Quotation Processing

8.0 Bond Trade Processing

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

8.1 Background Information

BTDS will carry fixed income trade data reported by NASD members via the TRACE system on a real-time basis between 8:00 and 18:30. The BTDS data feed will carry price information for the following types of fixed income securities:

- U.S. dollar denominated debt securities that are issued by a U.S. corporation, are registered with the SEC, and are eligible for book-entry services at the Depository Trust Company (DTC).
- 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.

A more complete list of eligible securities will be made public in a NASD Notice to Members. Note that securities available for dissemination via BTDS will be phased in over a period of time.

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

- Reported transactions of less than one bond.
- Transactions in 144A (private placement) securities.
- Transactions in US exchange-listed bonds that are executed on and reported directly to the exchange.

8.2 Display Requirements

The NASD requires that external redistributors of real-time BTDS 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.
- Commission Indicator (if applicable).
- Special Price Indicator (if applicable).
- Yield.

- Quantity.
- Sale Condition Modifier.
- Reversal Indicator (if applicable).
- Date/Time:
    - Execution Time for current day's transactions.
    - Execution Date for As/of trades and Reversals.

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

8.3 Trade Processing

8.3.1 Bond Identifier

The BTDS data feed includes two identifiers for each bond:

- **Symbol:** The NASD will assign its own bond symbols for use by TRACE users. The NASD symbol may be up to fourteen characters in length symbol 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.

Please note that NASD members are required to report trades in exchange-listed bonds to TRACE if the transaction was executed over the counter. The BTDS data feed will carry these trade transactions under the NASD-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

The NASD 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 message format 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. Please note that it is typical for a NASD member trading a bond on a "when issued" basis to report either the price or yield, although they could report both.

8.3.3 Price and Associated Indicators

The NASD will disseminate bond prices on BTDS in $$$$.dddddd format. For BTDS display purposes, the NASD recommends that the price should be shown at the same granularity as it was disseminated whenever possible. If a firm chooses to shorten the price field, the NASD recommends

that they round (rather than truncate) prices. At a minimum, a firm should be prepared to display prices to three places to the right of the decimal point as this how it appears on customer statements. As outlined in Section 7, the NASD will disseminate the field as 0000.000000 if no price is reported for a bond. For BTDS display purposes, the price field should be shown blank under this circumstance.

Transactions disseminated via BTDS will represent the bond price paid by the buyer inclusive of any and all markups, markdowns, or commissions. Within the BTDS 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 display purposes, the price must be shown with the commission and special price indicator if populated with a value of Y. The NASD 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

The NASD will disseminate bond yield on BTDS in $$$$$$.dddddd format. Yield is typically expressed as a percentage. For BTDS display purposes, the NASD 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, the NASD 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, the NASD will leave the yield field blank if no yield is available.

8.3.5 Quantity

Depending on the quality rating of the bond (Investment Grade, High Yield or Unrated), there are differences in the volume disseminated for each bond transaction via BTDS. Each type of bond (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. NASD strongly recommends that the BTDS recipient indicate when the volume is actual versus estimated for each transaction. The breakdown of BTDS 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.
- Investment Grade Bond transactions greater than $5,000,000 par value will be disseminated as 5MM+.
- 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.
- High Yield Bond and Unrated transactions greater than $1,000,000 par value will be disseminated as 1MM+.

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

8.3.6 As/Of Indicator

The NASD allows its members to report trades and trade reversals on an "As/of" basis. The TRACE system will accept As/Of transactions for up to one calendar year from trade date. In the As/Of Indicator field in the BTDS message format, regular As/Of trades are denoted by a value of A and Reversals by a value of R. For BTDS display purposes, the NASD requires that firms to show a special indicator for Reversal trade conditions. The NASD recommends that the Reversal indicator be shown as the letters "RV" to the left of the price.

If the trade is an As/Of transaction, the Execution Date and Execution Time fields in the BTDS message will be populated with the actual trade date of the original transaction. While the NASD 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

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

Code	Value
C	Cash Trade
N	Next Day Trade
R	Sellers Option
A	After Hours Trade
W	Weighted Average Price Trade
Z	Sold Late (Out of Sequence)

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

8.3.8 Price Change Indicator

In Appendix D of this document, the NASD 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, the NASD also includes a Price Change Indicator field in the BTDS 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 A) 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 B) and Trade Correction (Category T – Type C) 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.

8.4 Trade Cancel and Correction Processing

The NASD allows its member firms to correct or cancel trades reported earlier in the current business day. (Note: If a NASD member firm cancels a transaction reported on a prior business day, 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 B) and Trade Correction (Category T – Type C) formats reference the original trade transaction via the message label and original trade information portions of the message. In addition, the NASD will include the adjusted daily high, low, and last sale prices and yields as part of the Summary Information portion of these BTDS message formats between 08:00 and 17:15.

Quotation Processing

8.4.1 Display Guidelines for Trade Cancellations

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

1) Locate the original trade report entry using the BTDS message sequence number.
2) Modify the original trade report entry by adding a cancellation indicator. The NASD 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.

8.4.2 Display Guidelines for Trade Corrections

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

1) Locate the original trade report entry using the BTDS 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.
   b) Add a correction indicator to the trade record. The NASD 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.

Please refer to Appendix F for the complete list of NASD-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. In its initial release, the NASD will support two types of administrative messages: Trade Summary Recaps and Trading Halts.

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

9.1 Daily Trade Summary

At approximately 17:16, the NASD will generate and disseminate a trade summary report for those corporate bonds traded on the over-the-counter market. This BTDS 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 NASD 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

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

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

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[1] As/of trades and Reversals will not be reflected in the BTDS Closing Recap Report.

[2] At the onset of service, BTDS vendors may request a file of current trading halt information from which to build their database. Requests should be sent via e-mail to MKTDATASVC@nasd.com.

Control Message Processing

10.0 Control Message Processing Guidelines

The following Control Messages will be transmitted by BTDS:

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	M	Start of Test Cycle
C	N	End of Test Cycle
C	T	Line Integrity
C	X	End of Trade Reporting
C	Z	End of Transmissions

Control Message Descriptions

A Control message is a fixed format message that performs a specific system function. All BTDS 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 Reporting
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 NASD's daily operational cycle. The message will be sent at the beginning of each day immediately following the last End of Test Cycle message. The purpose of this message is to inform BTDS recipients that all subsequent data transmitted with 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 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 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 zero or a number greater than the highest sequence number previously set. Please note that Nasdaq may not be able to retransmit messages sent prior to the Sequence Number Reset control message.

10.7 Start Of Test Cycle

Category C – Type M

The Start of Test Cycle Control Message is transmitted following activation of the BTDS line. It is the first message in the sequence of defined test messages sent prior to the Start of Day Control Message. The test cycle messages will be sent at approximately one-minute intervals and will stop just prior to the dissemination of the Start of Day Control Message.

The Message Sequence Number of the Start of Test Cycle message will always have a message sequence number of 0000000, with each subsequent message in the cycle incrementing the message sequence number by one. This is the only message type that automatically results in a Message Sequence Number reset.

10.8 End Of Test Cycle

Category C – Type N

The End of Test Cycle Control Message is the last message in the sequence of test messages transmitted prior to the Start of Day Control Message. It always has a message sequence number of one greater than the previous test message.

10.9 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 transmission, and will be intermixed with other messages. The Message Sequence Number will not be incremented for the Line Integrity Messages.

10.10 End of Trade Reporting

Category C – Type X

The End of Trade Reporting Control Message signals that no further trade reports or corrections (other than retransmissions) will be sent for that market session. The End of Trade Reporting 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.

10.11 End of Transmissions

Category C – Type Z

The End of Transmissions Control Message signals that there will be no further transmissions of data sent through the BTDS line. This 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.

11.0 Format Release & Testing Guidelines

11.1 Release Notification

To keep pace with the changing business environment, the NASD may modify its data feed format specifications for direct data feed customers. In advance of each release, the NASD will notify its direct connect customers of the format change by posting a notice on a NASD or Nasdaq website. In the notice, the NASD 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, the NASD 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, the NASD offers the following types of testing opportunities:

Evening test transmissions: For its evening testing opportunities, the NASD or Nasdaq will create sample messages in the new formats to be broadcast on select weeknights from 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.

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

The NASD strongly recommends that all direct subscribers use these testing opportunities to check their hardware and software applications. During the testing phase, the NASD 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, the NASD will identify test data in one of two ways:

Test Retransmission Requester: In Section 4.4 of this document, the NASD provides for a test retransmission requester for its data feed message header. The NASD populates this field for the test cycle messages sent prior to the start of the day.

Test Symbols: The NASD may also send out intra-day test data using special issue symbols and market participant identifiers on its data feeds.

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

Appendix A

Appendix A – ASCII Text Characters

BI	b7 b6 b5 ———					000	001	010	011	100	101	110	111
TS	b4	b3	b2	b1	COL ROW	0	1	2	3	4	5	6	7
	0	0	0	0	0	NUL	DLE	SP	0	@	P	`	Pr (p)
	0	0	0	1	1	SOH	DC1	!	1	A	Q	a	q
	0	0	1	0	2	STX	DC2	“	2	B	R	b	r t (r)
	0	0	1	1	3	ETX	DC3	#	3	C	S	c	s t (s)
	0	1	0	0	4	EOT	DC4	$	4	D	T	d	s s (t)
	0	1	0	1	5	ENQ	NAK	%	5	E	U	e	u
	0	1	1	0	6	ACK	SYN	&	6	F	V	f	v
	0	1	1	1	7	BEL	ETB	‘	7	G	W	g	w i (w)
	1	0	0	0	8	BS	CAN	(	8	H	X	h	x
	1	0	0	1	9	HT	EM	)	9	I	Y	i	Begin Ann
	1	0	1	0	10	LF	SUB	*	:	J	Z	j	End Ann
	1	0	1	1	11	VT	ESC	+	;	K	1/4	k	1/2
	1	1	0	0	12	FF	FS	,	<	L	\	l	1/8
	1	1	0	1	13	CR	GS	-	=	M	3/4	m	7/8
	1	1	1	0	14	SO	RS	Figs Dot (.)	>	N	3/8	n	5/8
	1	1	1	1	15	SI	US	Ltrs Dot (/)	?	O	_	o	DEL

Appendix B

Appendix B – Glossary of Terms

Term	Definition
.A trade	A transaction entered into the TRACE system between 17:15 and 18:30. .A trade reports do not affect the high, low, or closing price for an issue.
As/of trade	A transaction that was reported by a NASD member on a date later than the actual transaction date. NASD members will be allowed to enter the trade date for an as/of for a period of up to one calendar year.
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 by the 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.
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 the NASD will not calculate a yield for floating rate bonds, although the reporting firm may choose to report a yield.
High yield bond	A corporate bond that is rated as speculative grade by a nationally recognized statistical rating agency (i.e., Ba1 or lower by Moody's Investors Services or BB+ or below by Standard & Poor's Corporation).
Institutional investor	A bank, mutual fund, pension fund, or other corporate entity that trades securities in large volumes.
Interest	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).
Internal redistributor	A firm that provides a market data display to its employees only.

Appendix B

Term	Definition
Investment grade bond	A bond rated in one of its four highest generic rating categories by a nationally recognized statistical rating agency (i.e., Baa3 or better by Moody's Investors Service or BBB- or better by Standard & Poor's Corporation).
Issuer	A corporation that has distributed to the public securities registered with the Securities and Exchange Commission.
Markup and Markdown	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.
Material News	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.
Maturity date	The date on which the principal amount of a bond is to be paid in full.
Medium term notes	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.
Next day trade	A transaction in which the delivery of securities and payment must occur on the next business day following the trade execution date.
Over-the-counter market (OTC)	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.
Private placement	A large block of securities offered for sale to an institutional investor or a financial institution through private negotiations. Transactions in private placement securities are restricted under SEC Rule 144.
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.
Seller option	A transaction in which the seller has the right to deliver the security at any time within a specific period. The number of days is indicated in the Seller's Sale Day field of the BTDS Trade Report message.
Settlement date	The date for the delivery of securities and payment of funds.
Sold late	A sale condition to indicate that the trade was reported during current business hours but outside of the mandatory reporting interval outlined in NASD Rule 6200.

Appendix B

Term	Definition
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 not be incorporated in the calculation of the day's high, low and last price for the security.
TRACE	Under NASD Rule 6200, NASD members are required to report OTC secondary market transactions in eligible fixed income securities to the NASD. The Trade Reporting and Compliance Engine (TRACE) is the NASD-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.
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. As noted in Section 8.3.2 of this document, it is common for a firm to report either a price or a yield for when/issued bonds.
Yield	A calculation of the return on an investor’s capital investment.

Appendix C – Schedule of Transmissions

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

Time	Transmission	Message Category	Message Type
03:45 through 07:29 (Once per minute)	Start of Test Cycle Message	C	M
	....Test Messages...	Various	Various
	End of Test Cycle Message	C	N
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	A B C
17:15	US Market Session Closed Message	C	C
17:16	Trade Summary Recap Messages	A	C
19:05	End of Trade Reporting Control Message	C	X
19:06	End of Trade Reporting Control Message	C	X
19:07	End of Trade Reporting 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 Transmission Control Message	C	Z
19:16	End of Transmission Control Message	C	Z

Appendix D – Sale Condition Matrix

The NASD will use the Change Indicator field in the Trade Report, Trade Cancel, and Trade Correction message formats to notify BTDS 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:** Only 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.
- **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 Indictor field is blank.

After factoring out As/of and special price trades, the TRACE system will then filter trades based on the Sale Condition and Second Modifier 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 Last[3]
@	Regular Sale	Yes	Yes
C	Cash Sale	Yes	Yes
N	Next Day	Yes	Yes
R	Seller Option	Yes	Yes
A	.A (After-hours)	No	No
Z	Sold Late (Out of Sequence)	Yes	Yes
W	Weighted Average Price	No	No

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

Appendix E – Date/Time Translation Table

The following translation table is used to represent the Date and Time Stamp fields located in the Message Header.

TIME	ASCII	HEXADECIMAL	DECIMAL
0	0	30	48
1	1	31	49
2	2	32	50
3	3	33	51
4	4	34	52
5	5	35	53
6	6	36	54
7	7	37	55
8	8	38	56
9	9	39	57
10	:	3A	58
11	;	3B	59
12	<	3C	60
13	=	3D	61
14	>	3E	62
15	?	3F	63
16	@	40	64
17	A	41	65
18	B	42	66
19	C	43	67
20	D	44	68
21	E	45	69
22	F	46	70
23	G	47	71
24	H	48	72
25	I	49	73

Appendix E

TIME	ASCII	HEXADECIMAL	DECIMAL
26	J	4A	74
27	K	4B	75
28	L	4C	76
29	M	4D	77
30	N	4E	78
31	O	4F	79
32	P	50	80
33	Q	51	81
34	R	52	82
35	S	53	83
36	T	54	84
37	U	55	85
38	V	56	86
39	W	57	87
40	X	58	88
41	Y	59	89
42	Z	5A	90
43	[	5B	91
44	\	5C	92
45	]	5D	93
46	^	5E	94
47	_	5F	95
48	`	60	96
49	a	61	97
50	b	62	98
51	c	63	99
52	d	64	100
53	e	65	101
54	f	66	102
55	g	67	103

Appendix E

TIME	ASCII	HEXADECIMAL	DECIMAL
56	h	68	104
57	i	69	105
58	j	6A	106
59	k	6B	107

Appendix G

Appendix F – NASD Display Guidelines for BTDS Data Elements

The NASD has outlined its display requirements for external real-time distributor of BTDS 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.
Commission	Lower case "c"	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[4]	"Est" if estimated. Blank otherwise.	Indicator to the right of the Quantity field when applicable.
Sale Condition Modifiers[5]	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[6]	"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.
No/Was Indicators[7]	"N/W" for Corrections. "X" for Cancellations.	Indicator to the left of the price field when applicable.

[4] Quantity Indicator is not a display requirement.
[5] Each BTDS message contains two modifier fields: Sale Condition and Second Modifier fields.
[6] External redistributors are required to show the reversal indicator. As/Of indicator is optional.
[7] Indicator should be shown next to the original transaction if a Trade Cancel or Trade Correction was subsequently disseminated on BTDS.

Appendix G – Document Revision Log

The initial version of the Bond Trade Dissemination Service (BTDS) specifications was published in August 2001. The following table lists the changes to the document to date.

Version	Modification Date	Section(s)	Description of Change
1.1	11-15-2001	5.5 & 7.0	Added Company Name field to the Trading Halt message format in Section 5.5. Added definition for field to Section 7.0.
		7.0 & 8.3.4	Changed Yield descriptions to state that the fields will be left blank if there is no yield available. Originally, the NASD was going to disseminate 999999.999999 if no yield was available.
1.2	3-11-2002	2.2 & 3.2	Changed name of new WorldCom IP multicast network to Market Data Network (MDN). Also updated IP address range to reflect new addressing for MDN.
		7.0	Changed Execution Date description. Added the sentence - "If the transaction is reported on the day of execution, the field will be blank."
1.3	6-18-2002	3.2	Updated IP multicast addressing section of the document to give more details on the transmission protocol used for BTDS.
		7.0	Changed Seller Sales Day description to reflect the way that the field will be populated in the Trade Cancel message in the initial release.
		8.2	Modified section to clarify NASD display requirements. Real-time vendors must provide their customers at least one screen that displays the required fields. Provided that they do, firms may show a data sub-set on any additional screens.
1.4	12-29-2003	2.0 & 3.0	Changed WorldCom to MCI throughout document to reflect the firm's new corporate entity.
		5.0	Minor modification to the numbering of section 5.
		7.0	Modified the following definitions: • Function – added the value of Error (E) to represent when a cancel or correction message is a result of an erroneous entry. Additionally, removed the value of (space) since this value is not supported. • Quantity – modified to reflect that the quantity will be stated as the **actual par value** of bonds traded.

Appendix G

Version	Modification Date	Section(s)	Description of Change
		8.4	Trade Cancel and Correction Processing: Modified the following note to provide clarity: (Note: If a NASD member firm cancels a transaction reported **on a prior business day**, it must be entered into TRACE as an As/Of Trade Reversal. Please see section 8.3.6 for As/Of processing guidelines.)
		Appendix C	Modified the start time for the Start of Test Cycle messages from 07:00 to 03:30. Test Cycle Messages will begin shortly after the BTDS system is started for the day. Currently this is at approximately 03:30.
		Appendix H	Added a new appendix to define the test cycle messages. These messages will begin dissemination at approximately 03:30. The cycle of messages will repeat themselves until approximately 07:29.

Appendix H – Test Cycle Messages

As part of the normal operational cycle, NASD will disseminate the following pre-defined test cycle messages on the BTDS data feed. Please note that a space will be indicated by an (~) in this appendix. The entire cycle will continue to repeat until approximately 07:29.

Start of Test Cycle

C	M	~	A~	0000000	O	Actual Time

Test 1: Trade Report

T	A	~	A~	0000001	O	Actual Time

TESTBOND.GA~~~	314159PI0	~	N	1MM+~~~~~~~~	E	0120.361000	~	000004.050038
~	~~~~~~~~	02:45:00	~~~	@	~	~	7	

Test 2 Trade Report

T	A	~	A~	0000002	O	Actual Time

TESTBOND.GA~~~	314159PI0	~	N	000000020000	A	0121.755000	~	000003.806000
~	~~~~~~~~	02:46:00	~~~	C	~	~	5	

Test 3 Trade Cancel

T	B	~	A~	0000003	O	Actual Time

0000001	TESTBOND.GA~~~	314159PI0	~	C

Original Trade Information

N	1MM+~~~~~~~~	E	0120.361000	~
000004.050038	~	~~~~~~~~	02:45:00	~~~
@	~	~		

Summary Information

0121.755000	~	000003.806000	0121.755000	~
000003.806000	0121.755000	~	000003.806000	2

Appendix H

Test 4: Trade Correction

T	C	~	A~	0000004	O	Actual Time

0000002	TESTBOND.GA~~~	314159PI0	~	N

Original Trade Information

N	000000020000	A	121.755000	~
000003.806000	~	~~~~~~~~	02:46:00	~~~
C	~	~		

Correction Trade Information

~	000000020000	A	0120.255000	~
000004.072000	~	~~~~~~~~	02:50:00	~~~
C	~	~		

Summary Information

0120.255000	~	000004.072000	0120.255000	~
000004.072000	0120.255000	~	~~~~~~~~~~~~	7

Test 5: Trade Report

T	A	~	A~	0000005	O	Actual Time

TESTBOND.GA~~~	314159PI0	~	N	000000500000	A	0119.212000	~	000004.264162
~	~~~~~~~~	02:50:10	060	R	~	~	3	

Test 6: Trading Halt

A	T	~	A~	0000006	O	Actual Time

TESTBOND.GA~~~	314159PI0	TESTING~TESTING~TESTING~TESTED	H	Actual Date
Actual Time	H.11			

Test 7: Trade Report

T	A	~	A~	0000007	O	Actual Time

TESTBOND.GA~~~	314159PI0	~	N	000000050000	A	0119.212000	~	000004.254162
~	~~~~~~~~	02:50:00	~~~	@	~	~	0	

Appendix H

Test 8: Trade Report

T	A	~	A~	0000008	O	Actual Time

TESTBOND.GA~~~	314159PI0	~	N	000000050000	A	0119.212000	~	000004.254162
~	~~~~~~~~	02:50:00	~~~	@	~	~	0	

Test 9: Trade Report

T	A	~	A~	0000009	O	Actual Time

TESTBOND.GA~~~	314159PI0	~	N	000000050000	A	0119.212000	~	000004.254162
~	~~~~~~~~	02:50:00	~~~	@	~	~	0	

Test 10: Daily Trade Summary

A	C	~	A~	0000010	O	Actual Time

TESTBOND.GA~~~	314159PI0	~	0120.255000	~	000004.072000
0119.212000	~	000004.264162	0119.212000	~	000004.264162

End of Test Cycle

C	N	~	A~	0000011	O	Actual Time