



The Bulletin Board Dissemination ServiceSM (BBDSSM)

Data Feed Interface Specification

Version 2004-1b

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Bulletin Board Dissemination Service (BBDS)

Introduction

1.0 Introduction

1.1 Background

The OTC Bulletin Board® (OTCBB) is a regulated quotation service that displays real-time quotes, last-sale prices, and volume information in over-the-counter (OTC) equity securities. An OTC equity security generally is any equity that is not listed or traded on Nasdaq® or a national securities exchange. OTCBB securities include national, regional, and foreign equity issues, warrants, units, American Depositary Receipts (ADRs), and Direct Participation Programs (DPPs).

The Bulletin Board Dissemination ServiceSM (BBDSSM) provides the following data elements for OTCBB securities:

- Real-time market participant quotations and associated inside quotations (when applicable) for all OTCBB securities (except DPPs);
- Indicative market participant quotations and inside quotations (when applicable) for OTCBB DPPs;
- Trading halt information for all OTCBB issues; and
- Market event control messages and general administrative messages for the OTCBB marketplace.

Please note that trade data for OTCBB and issues is available on the NASDAQ Trade Data Dissemination ServiceSM (TDDSSM) data feed.

1.2 Entitlement Level

OTCBB data, which is disseminated on the BBDS and TDDS data feeds, is included in the NASDAQ Level 1 entitlement.

1.3 Connectivity Options

As of December 2004, NASDAQ offers direct access to the BBDS data feed through the following extranet providers:

- **MCI Financial Extranet (MFx):** For ordering information, please contact the MCI Global Account Team at 800.825.9196 (or 914.312.6082 outside the U.S.) or MCI-MFx@mci.com.
- **Radianz:** For ordering information, please contact the Radianz sales team at 212.415.4600 or sales@radianz.com.
- **SAVVIS:** For ordering information, please contact the SAVVIS sales team at 800.728.8471 or TeamNasdaq@savvis.net.
- **Transaction Network Services, Inc (TNS):** For ordering information, please contact sales team at 800.240.2824 or visit www.TNSI.com.

Due to security and network management concerns, NASDAQ does not allow individual firms to directly connect to its data centers

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1.4 Scope of Document

This document defines the communications interface and message format requirements for BBDS. All references to a time of day in this specification are in Eastern Standard/Daylight Time.

This document was created on December 20, 2004. In advance of any data format changes, NASDAQ will post a Vendor Alert to the NASDAQ Trader website with the details of the release.

Although NASDAQ will attempt to update this specification on a routine basis, BBDS subscribers must read these Vendor Alerts to ensure that they are prepared for product changes. Vendors may request to receive automatic e-mail notification of NASDAQ Trader postings by sending a message to MKTDATASVC@NASDAQ.com.

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System Description

2.0 Transmission Characteristics

2.1 Bandwidth Requirements

The initial bandwidth allocation for the BBDS data feed is as follows:

Data Feed Channel	Bandwidth Allocation (Per Multicast Group)
BBDS	Up to 56 Kbps

As noted below, NASDAQ broadcasts two (a primary and a back-up) multicast groups for its data feeds. Please note that NASDAQ reserves the right to modify the bandwidth allocation for these IP calls as system capacity dictates. Extranet customers are required to maintain sufficient network capacity to handle the NASDAQ data feed products ordered.

2.2 Transmission Protocol

2.2.1 Protocol Overview

Regardless of network option, NASDAQ data feed transmissions will be transmitted in a non-interactive simplex mode using Internet Protocol (IP) multicast. 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. All transmissions will be in standard ASCII code with 7 data bits (8th bit is zero).

NASDAQ data feeds are designed to adhere to Request for Comment (RFC) 1112 standard from The NIC Group for IP multicast protocol. 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.

To minimize data loss, NASDAQ provides primary and back-up groups for its data feed services. NASDAQ strongly recommends that all direct data feed subscribers program their systems to process both the primary and back-up groups.

The data messages are identical for two 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 Number.

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

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2.2.2 IP Multicast Addresses

Each NASDAQ 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 BBDS data feed, the IP multicast addresses and port assignments are 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
BBDS	224.3.0.24	D846	55366	224.3.0.25	D847	55367

2.3 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, which ends in an End of Text (ETX). With the exception of certain messages (e.g. Control messages), each message sent over BBDS 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 header and text	U	Message 2 header and text	U	Message n header and text	E
	O H		S		S		T X
1000 Byte Block (Max) from SOH to ETX							

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2.4 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)				

2.5 Field Descriptions

2.5.1 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 by NASDAQ, 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

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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 multicast uses UDP, the value is set to 0x17, which is 23 decimals.
- **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 NASDAQ data. NASDAQ strongly warns customers against coding their systems for a particular IP source address. **NASDAQ 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 the table above for a list of current multicast groups.

2.5.2 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 3.1 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 3.1 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.

2.5.3 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** – 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.

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2.6 Character Set

All transmissions will be in standard ASCII code: 7 data bits and the 8th bit always zero.

2.7 Retransmission Capability

The NASDAQ front-end processor will log messages transmitted to recipients. The message formats are defined in subsequent sections of this document. 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:

Type	Value
M	Start of Test Cycle
N	End of Test Cycle
T	Line Integrity

Please note that the pre-formatted messages contained between the Start and End of the Test Cycle messages will not be available for retransmission. In the event of a system problem, NASDAQ may also be unable to fulfill requests for messages sent prior to the Message Sequence Number Reset or Intra-Day Quote Wipe-Out control message.

TotalView retransmission requests may be made by placing a phone call to NASDAQ Computer Operations at 203.385.4562 or by sending an electronic mail message to RETRANT@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 which message range the recipient would like retransmitted.

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 NASDAQ Computer Operations:

- Data Feed Subscriber's Firm Name
- NASDAQ-Assigned Retransmission Password
- Missing Message Sequence Number(s)
- Contact Name and Telephone Number

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 direct connect subscribers on both networks. **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.
- **Message Sequence Number:** The message header will contain the same message sequence number as the original message. Please note that if the Message Sequence Number is reset, no intra-day messages sent prior to the reset control message 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 requester that they should code for in its system. Refer to section 2.7 for more information on the retransmission

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requester.

- **Date/Time:** The message header will contain the same date and time stamp as the original message.

To obtain the retransmission requester and passwords for your firm, please contact NASDAQ Market Data Distribution 301.978.5307 or via electronic mail at MKTDATASVC@NASDAQ.com.

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3.0 Message Header

Each BBDS message will begin with a 22-byte header. The Message Header defines the type of data in the subsequent message. Please note that 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 22 characters consisting of the following data fields:

Message Category 1	Message Type 1	Session Identifier 1	Retransmission Requester 2	Message Sequence Number 8
Market Center Originator ID 1	Date/Time 7	Reserved 1		

22 BYTES

3.1 Message Category

The Message Category is a 1 byte, alphanumeric character. This field, along with the Message Type, identifies the message. The following table defines the Message Categories that BBDS can transmit:

Category	Usage
C	Control
Q	Quotation
A	Administrative

3.2 Message Type

The Message Type is a 1 byte, alphanumeric character. This field, along with the Message Category, identifies the message. The following defines the Message Types that BBDS transmits.

Quotation Messages:

Category	Type	Usage
Q	1	OTCBB Market Participant Update

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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	A	Emergency Market – Halt
C	B	Emergency Market – Resume
C	K	End of Retransmission Requests
C	Z	End of Transmissions
C	M	Start of Test Cycle
C	N	End of Test Cycle
C	T	Line Integrity
C	L	Sequence Number Reset

Administrative Messages:

Category	Type	Usage
A	A	General Administrative Message (Free-Form Text)
A	H	Trading Action

3.3 Session Identifier

The Session Identifier is a 1 byte, alphanumeric field indicating the market session to which the message applies. It will be one of the following values:

Code	Value
A	All Market Sessions or Session Independent
U	U.S. Market Session (including pre-and post-market)

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3.4 Retransmission Requester

The Retransmission Requester is a 2 byte, alphanumeric identifier that signifies the intended recipient of the message. Retransmissions will be sent to all recipients, and it is the responsibility of each recipient to discard retransmitted messages not requested by him. The exception is a retransmission with an "R" Retransmission Requester, which denotes a retransmission addressed to all.

Certain specific or global retransmission codes exist. For BBDS, the codes are as follows:

Code	Value
O (space)	An original transmission to all recipients.
R (space)	A retransmission to all recipients.
T (space)	A test cycle transmission to all.
<i>Vendor Specific ID</i>	A retransmission to an individual firm. Identifiers to be assigned by NASDAQ as needed.

These retransmission codes are upper case and space filled. NASDAQ will also assign a special two-character retransmission requester to each direct subscriber. Customers should code their system to process the two-character code assigned to their firm as well as the three global values outlined above.

3.5 Message Sequence Number (MSN)

The Message Sequence Number is an 8 byte, numeric field that identifies each message. At the beginning of each operational cycle this number will begin with 00000000 as the first message, and will be incremented by one each time a new message is transmitted with the following exceptions:

- Regular retransmission 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 Message Sequence Number will either be zero or some number greater than the highest number previously transmitted.
- The following control messages will be transmitted three times to ensure positive recognition: End of Day (Category C – Type J), End of Retransmission Requests (Category C – Type K), and End of Transmissions (Category C – Type Z). For each of these message types, the message sequence counter is incremented by one on the first transmission only.
- The following control messages will contain a message sequence number of zero: Start of Day (Category C – Type I) and Start of Test Cycle (Category C – Type M). Category C Type I messages will be transmitted three times to ensure positive recognition, but will have zero as the sequence number on all

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three messages. Please note that the start of each test cycle will begin with zero.

Refer to Section 10 of this document for additional information on BBDS control messages.

3.6 Market Center Originator ID

The Originator ID is a 1 byte, alphanumeric character that indicates the market center, which originated the message. The characters currently in use for BBDS are:

Character	Description
U	OTCBB System
Q	NASDAQ Market System
E	Market Independent (Data feed handler generated)

Note: The Market Center Originator ID of "Q" will be used for event control messages only. Quotation information for NASDAQ-listed issues is disseminated via separate data feeds.

3.7 Date/Time

The date/time represents the calendar date and time that NASDAQ received the record. The Date/Time is seven bytes and stated in the following 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.

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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: The Date/Time translation table is located in Appendix C of this document.

3.8 Reserved

The Reserved field is one byte and is reserved for future use. This field will be space-filled.

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4.0 Data Formats

This section outlines the message formats used to disseminate information on BBDS. The field values for the message formats are described in Section 7 of this document.

4.1 OTCBB Quotation Messages

The following message format will be used to disseminate the best-priced quotation for all OTCBB quoting participants and the Inside Quote in each issue. For processing guidelines, please refer to Section 8.0 of this document.

4.1.1 OTCBB Market Participant Quote Update

Category Q – Type 1

The OTCBB Market Participant Update is 66 bytes in length (without the appendage) and is comprised of the following fields:

OTCBB Symbol	OTCBB Type	Market Participant Identifier	Market Participant Location ID	Market Participant Status	Market Participant Quote Condition
11	1	4	1	1	1

Reserved (for Market Maker Mode)	Offer Wanted/Bid Wanted Indicator	Unsolicited Indicator	Bid Price Denominator	Bid Price	Bid Size
1	1	1	1	12	7

Ask Price Denominator	Ask Price	Ask Size	Currency	Inside Appendage Indicator
1	12	7	3	1

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4.1.2 OTCBB Inside Appendages

If a quoting participant update impacts the OTCBB Inside Quote for an issue, an OTCBB Inside Appendage will be added to the OTCBB Market Participant Quote Update message. The appendage will include all relevant information concerning the best bid and ask of the issue.

Within the Quotation message, the OTCBB Inside Indicator will denote the type of appendage to be included. There are three indicator values:

Code	Value
1	No change to Inside Quote. No Inside appendage attached. Firms should continue to display existing Inside Quote for issue.
2	No Inside exists. No Inside appendage attached. Firms should show Inside Quote fields as blank.
3	Inside Quote Appendage is attached. Firms should update Inside fields to reflect new values contained in appendage.

When attached, the OTCBB Inside Appendage will be 41 bytes in length and contain the following fields:

Inside Quote Condition	Inside Bid Price Denominator	Inside Bid Price	Inside Bid Size	Inside Ask Price Denominator	Inside Ask Price
1	1	12	7	1	12

Inside Ask Size
7

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4.2 Administrative Messages

The following message formats will be used to disseminate administrative data for OTCBB issues. For processing guidelines, please refer to Section 9.0 of this document.

4.2.1 General Administrative Message

Category A – Type A

This free format, variable length text message (up to 300 bytes) may be used to notify data feed subscribers of special situations. The administrative message can be used anytime throughout the day.

Text
1 – 300

4.2.2 Trading Action Message

Category A – Type H

This fixed format message, which is 25 bytes in length, will inform subscribers of trading actions, such as halts or trading resumptions, affecting an issue.

OTCBB Symbol 11	Action 1	Action Date/Time 7	Reason Code 6
-----------------------	-------------	--------------------------	---------------------

25 BYTES

4.3 Control Messages

Control messages consist of a message header only. For processing information, please refer to Section 10 of this document.

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Field Occurrences

5.0 Field Occurrences Within Messages

This table provides the Message Category and Message Type for the BBDS format for each message field. Please note that the following abbreviations will be used to identify message appendages:

IO = Inside Appendage

Field Name	Message Category	Message Type
<u>A</u>		
Action	A	H
Action Date/Time	A	H
Ask Price	Q	1
Ask Price Denominator	Q	1
Ask Size	Q	1
<u>B</u>		
Bid Price	Q	1
Bid Price Denominator	Q	1
Bid Size	Q	1
<u>C</u>		
Currency	Q	1
<u>I</u>		
Inside Appendage Indicator	Q	1 (IO)
Inside Ask Price	Q	1 (IO)
Inside Ask Price Denominator	Q	1 (IO)
Inside Ask Size	Q	1 (IO)
Inside Bid Price	Q	1 (IO)
Inside Bid Price Denominator	Q	1 (IO)
Inside Bid Size	Q	1 (IO)
Inside Quote Condition	Q	1 (IO)
<u>M</u>		
Market Participant Identifier	Q	1
Market Participant Location ID	Q	1
Market Participant Quote Condition	Q	1
Market Participant Status	Q	1
<u>O</u>		
Offer Wanted/Bid Wanted Indicator	Q	1
OTCBB Symbol	Q	1
	A	H
OTCBB Type	Q	1

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Field Occurrences

Field Name	Message Category	Message Type
<u>R</u>		
Reason Code	A	H
Reserved	Q	1
<u>I</u>		
Text	A	A
<u>U</u>		
Unsolicited Indicator	Q	1

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Field Descriptions

6.0 Field Descriptions

Unless otherwise stated, all alphanumeric fields will be left justified and space filled. All numeric fields will be right justified and zero filled.

A

Action

Category A – Type H

1 byte, Alphanumeric. This field appears in the Trading Action Message. It is used to indicate the current trading status for the stated issue. The associated values are as follows:

Code	Value
H	Trading Halt
Q	Quotation Resumption
T	Trading Resumption

Action Date/Time

Category A – Type H

7 bytes, Alphanumeric (including special characters). This field appears in the Trading Action Message. The Action Date/Time field within the Trading Action message will reflect the time of the most recent attribute change (action, reason code). The Action Date/Time stated in the following format:

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

Please note that NASDAQ will generate a new Trading Action message whenever one of the attributes (Action, Reason Code) in the Trading Action message was to change.

Please refer to the Date/Time field in the message header for the field layout.

Ask Price

Category Q – Type 1

12 bytes, Numeric. The Ask price is the price at which the quoting participant is willing to sell (offer) the security for at any given time. The Ask price is represented in a combination of whole dollar and decimal digits. The Ask Price Denominator field should be used to determine how to process this field.

Bulletin Board Dissemination Service (BBDS)

Field Descriptions

Ask Price Denominator

Category Q – Type 1

1 byte, Alphanumeric. The Ask Price Denominator denotes the whole dollar and decimal digit composition of the Ask Price field. The allowable values are as follows:

Code	Denominator Value	Whole Dollar Digits	Decimal Digits
B	100	10	2
C	1000	9	3
D	10,000	8	4

Please note that the default value is "B".

Ask Size

Category Q – Type 1

7 bytes, Numeric. The Ask Size represents the amount of shares available at the quoting participant's Ask Price in the given security. Ask Size will be stated in round lots of either 1 or 100 shares, depending on the minimum quote size for the issue. For information on the minimum quotation size requirement, please refer to OTCBB Rule 6750 at <http://www.otcbb.com/aboutotcbb/tradereprules.stm#6750>.

B

Bid Price

Category Q – Type 1

12 bytes, Numeric. The Bid Price is the price at which the OTCBB quoting participant is willing to buy the security for at a given time. The Bid Price is represented in a combination of whole dollar and decimal digits. The Bid Price Denominator field should be used to determine how to process this field.

Bulletin Board Dissemination Service (BBDS)

Field Descriptions

Bid Price Denominator

Category Q – Type 1

1 byte, Alphanumeric. The Bid Price Denominator field denotes the whole dollar and decimal digit composition of the Bid Price field. The allowable values are as follows:

Code	Denominator Value	Whole Dollar Digits	Decimal Digits
B	100	10	2
C	1000	9	3
D	10,000	8	4

Please note that the default value is "B".

Bid Size

Category Q– Type 1

7 bytes, Numeric. The Bid Size represents the amount of shares available at the quoting participant's Bid Price in the given security. Bid Size will be stated in round lots of either 1 or 100 shares, depending on the minimum quote size for the issue. For information on the minimum quotation size requirement, please refer to OTCBB Rule 6750 at <http://www.otcbb.com/aboutotcbb/tradereprules.stm#6750>.

C

Currency

Category Q – Types 1

3 bytes, Alphanumeric. The Currency field defines the currency of an issue in ISO currency codes. The current value is:

Code	Value
USD	US Dollars

Bulletin Board Dissemination Service (BBDS)

Field Descriptions

I

Inside Appendage Indicator

Category Q – Type 1

1 byte, Numeric. The Inside Appendage Indicator field indicates how the Inside quote for the OTCBB issue is impacted by the current Market Participant update. The allowable values are as follows:

Code	Value
1	No change to Inside Quote. No Inside appendage attached. Firms should continue to display existing Inside Quote for issue.
2	No Inside exists. No Inside appendage attached. Firms should show Inside Quote fields as blank.
3	Inside Quote Appendage is attached. Firms should update Inside fields to reflect new values contained in appendage.

Inside Ask Price

Category Q – Type 1 (OTCBB Inside Appendage)

12 bytes, Numeric. The Inside Ask Price indicates the best (lowest) ask price available in the OTCBB system for the issue. The Inside Ask Price is represented in a combination of whole dollar and decimal digits. The Inside Ask Price Denominator field should be used to determine how to process this field.

Inside Ask Price Denominator

Category Q – Type 1 (OTCBB Inside Appendage)

1 byte, Alphanumeric. The Inside Ask Price Denominator field denotes the whole dollar and decimal digit composition of the Inside Ask Price field. The allowable values are as follows:

Code	Denominator Value	Whole Dollar Digits	Decimal Digits
B	100	10	2
C	1000	9	3
D	10,000	8	4

Please note that the default value is "B".

Bulletin Board Dissemination Service (BBDS)

Field Descriptions

Inside Ask Size

Category Q – Type 1 (OTCBB Inside Appendage)

12 bytes, Numeric. This Inside Ask Size field indicates the largest size (in round lots) quoted by an OTCBB market participant at the Inside Price in the issue.

Inside Bid Price

Category Q – Type 1 (OTCBB Inside Appendage)

12 bytes, Numeric. The Inside Bid Price indicates the best (highest) bid price available in the OTCBB system for the issue. The Inside Bid Price is represented in a combination of whole dollar and decimal digits. The Inside Bid Price Denominator field should be used to determine how to process this field.

Inside Bid Price Denominator

Category Q – Type 1 (OTCBB Inside Appendage)

1 byte, Alphanumeric. The Inside Bid Price Denominator field denotes the whole dollar and decimal digit composition of the Inside Bid Price field. The allowable values are as follows:

Code	Denominator Value	Whole Dollar Digits	Decimal Digits
B	100	10	2
C	1000	9	3
D	10,000	8	4

Please note that the default value is "B".

Inside Quote Condition

Category Q – Type 1 (OTCBB Inside Appendage)

1 byte, Alphanumeric. The Inside Quote Condition field indicates the current Inside quotation state for the given OTCBB issue. The allowable values are as follows:

Code	Value
O	Inside Quote Open
C	Inside Quote Closed

Bulletin Board Dissemination Service (BBDS)

Field Descriptions

M

Market Participant Identifier

Category Q – Type 1

4 bytes, alphanumeric. The Market Participant Identifier (MPID) field indicates the identifier assigned by NASDAQ to the OTCBB Market Participant that is responsible for generating a quotation message.

For a full list of OTCBB Market Participants (including Market Participant Location Identifiers and Telephone Number, please refer to the Symbol Directory section of the OTCBB website at <http://www.otcbb.com/static/symbol.stm>.

Market Participant Location ID

Category Q – Type 1

1 byte, alphanumeric. The Market Participant Location ID field identifies the branch or trading desk at Market Maker firm or ECN responsible for entering and maintaining quote in the give OTCBB issue. Please note that the value associated with a Location Identifier may vary from firm-to-firm, with the exception of the following two universal values:

Code	Value
Z	Main Office/Branch
#	ECN
Other Characters	Please refer to OTCBB Symbol Directory at http://www.otcbb.com/static/symbol.stm for a firm specific value.

Market Participant Quote Condition

Category Q – Type 1

1 bytes, alphanumeric. The Market Participant Quote Condition field indicates the current quotation state for a Market Participant in a given OTCBB issue. The allowable values are as follows:

Code	Value
O	Market Participant Open
C	Market Participant Closed

Bulletin Board Dissemination Service (BBDS)

Field Descriptions

Market Participant Status

Category Q – Type 1

1 byte, alphanumeric. The Market Participant Status field is one byte in length. This alphanumeric field indicates the current status for the Market Participant position for the issue. The allowable values are as follows:

Code	Value
A	Active
D	Deleted
E	Excused/Withdrawn
W	Withdrawn
S	Suspended

Q

Offer Wanted/Bid Wanted Indicator

Category Q – Type 1

1 byte, Alphanumeric. The Offer Wanted/Bid Wanted Indicator field indicates a special, unpriced OTCBB quotation from a market participant. The allowable values are as follows:

Code	Value
B	Bid wanted. Market participant is willing to buy OTCBB issue. Please contact the firm directly to negotiate price.
N	Not applicable. Quotation prices are indicated in message.
O	Offer wanted. Market participant is willing to sell OTCBB issue. Please contact firm directly to negotiate price.
W	Bid and Offer Wanted. Market participant is willing to buy and/or sell OTCBB issue. Please contact firm directly to negotiate price.

OTCBB Symbol

Category Q – Type 1; Category A – Type H;

11 bytes, Alphanumeric. The OTCBB Symbol field is 11 bytes in length. This alphanumeric field indicates the issue symbol for the OTCBB security being quoted.

For the current list of OTCBB issues, please refer to the Symbol Directory section of the OTCBB website at <http://www.otcbb.com/static/symbol.stm>. For updates to OTCBB listings, please refer to the OTCBB Daily List at <http://www.otcbb.com/dailylist>.

Bulletin Board Dissemination Service (BBDs)

Field Descriptions

OTCBB Type

Category Q – Type 1

1 byte, Alphanumeric. The OTCBB Type field is 1 byte in length. This alphanumeric field indicates if the OTCBB issue being quoted is eligible for real-time or indicative updates. The allowable values are as follows:

Code	Value
I	Periodic, Indicative quotes for securities other than OTCBB Limited Partnership or Direct Participant Program (DPP) securities, if applicable.
K	Real-time quotes
L	Periodic, indicative quotes. Currently, only OTCBB Limited Partnership or Direct Participant Program (DPP) securities are subject to periodic, indicative updates.

R

Reason Code

Category A – Type H

6 bytes, Alphanumeric. The Reason Code indicates the reason for the current trading action status. The allowable values are as follows:

Reason Code	Description
T1	Halt - News Pending
T2	Halt - News Dissemination
T12	Halt - Additional Information Requested by NASDAQ
H10	Halt - SEC Trading Suspension
H11	Halt - Regulatory Concern
H12	Halt - SEC Revocation
O1	Operations Halt, Contact Market Operations
D	Security Deletion from OTCBB
T3	News and Resumption Times
R4	Qualifications Issues Reviewed/Resolved; Quotations/Trading to Resume
R9	Qualifications Halt Concluded, Filings Met; Quotations/Trading To Resume
C11	Trade Halt Concluded By Other Regulatory Auth.; Quotes/Trades To Resume
Space	Reason Code not available

Reserved

Category Q – Type 1

1 byte, Alphanumeric. The Reserved field is space filled upon initial release. This field is reserved for Market Maker Mode, which may be supported in a future release.

Bulletin Board Dissemination Service (BBDS)

Field Descriptions

I

Text

Category A – Type A

Up to 300 characters, Alphanumeric. Free-form text is used to notify data feed subscribers of special situations.

U

Unsolicited Indicator

Category Q – Type 1

1 byte, Alphanumeric. The Unsolicited Indicator field indicates if the Market Participant is entering an unsolicited quote in a given security. Unsolicited quotes reflect customer limit orders (not proprietary firm interest). The allowable values are as follows:

Code	Value
A	Unsolicited Ask (Reserved for Future Use)
B	Unsolicited Bid (Reserved for Future Use)
U	Unsolicited Bid and Ask
<i>Blank</i>	Not applicable. Not an unsolicited quote.

Bulletin Board Dissemination Service (BBDS)

Administrative Message Processing

7.0 Quotation Message Processing Guidelines

The BBDS message formats are outlined in Section 5 of this document. The business rules for BBDS are as follows:

7.1 Hours of Operation

The hours of operation for the OTCBB are 07:30 to 18:30. In order to handle pre-opening and post-closing processing, the BBDS operational hours will be slightly longer. Please refer to Appendix B for the current BBDS Schedule of Transmissions.

7.2 Scope of Data

The OTCBB is not a listed securities market. For a security to be quoted on the OTCBB, however, the following preconditions must be met:

- The issuer must meet the eligibility standards outlined in NASD Rules 6530 and 6540; and
- A Market Maker must complete and submit a Form 211 to the NASD.

As noted above, BBDS provides the market participant and inside quotations for OTCBB securities. The OTCBB Symbol and Market Participant Directories are available for download from the OTCBB web site at www.otcbb.com/static/symbol.stm.

NASDAQ handles security additions, deletions, and modifications as part of its normal overnight processing. BBDS subscribers should process the OTCBB Daily List from the OTCBB web site to ensure that they have the most up-to-date Issue Symbol Directory information. To access the Daily List, please refer to www.otcbb.com/dailylist.

7.3 Quotation Processing

7.3.1 Opening Process

The OTCBB service is available for market participant quotation updates from 07:30 to 18:30. Under the rules, however, quotations should only be considered to be firm from 09:30 to 16:00.

At approx. 07:30, NASDAQ will disseminate the opening spin of trading action messages that notify subscribers of halted securities that are carried over from prior days. Additionally at approximately 07:30, NASDAQ will generate a batch file transmission with the current OTCBB Market Participant and Inside Quotation positions for all issues for BBDS recipients. For this opening spin transmission, NASDAQ will use the standard OTCBB Market Participant Quotation and Inside Appendage message format as outlined in section 5.1 of this document.

7.3.2 Intra-Day Quote Processing

The U.S. market session runs from 09:30 to 16:00. However, BBDS will disseminate real-time quotation updates from 07:30 to 18:35 to include the pre- and post- market hours.

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Administrative Message Processing

7.3.3 Types of OTCBB Quotations

NASDAQ allows market participants to enter real-time quotation updates for domestic, foreign, and American Depositary Receipt (ADR) securities on the OTCBB. Firms may enter priced bid and/or offer quotations, unpriced indications of interest, or unsolicited bid or offer quotations representing customer interest.

If entering an indication of interest, a Market Maker may use the Offer Wanted/Bid Wanted Indicator field within the OTCBB Market Participant Quote Update (Category Q – Type 1) message format to denote whether it is looking to buy or sell a security. If entering customer interest, a Market Maker will use the Unsolicited Indicator field within the same message format. NASDAQ recommends that market data distributors include these two indicators on their quotation displays. The Offer Wanted/Bid Wanted is typically shown in place of the price field. The Unsolicited Indicator is typically shown next to the market participant's quote on the display.

OTCBB allows firms to enter indicative quotations for direct participation program (DPP) securities. Under Rule 6540, a priced bid and/or offer entered into the OTCBB service for a DPP security shall be non-firm. Moreover, a Market Maker is only permitted to update quotation entries for this class of securities twice daily (i.e., once between 08:30 and 09:30, and once between 12:00 and 12:30). **Due to this restriction, NASDAQ strongly recommends that market data redistributors show an indicator next to market participant quotes in DPP securities to denote the non-firm nature of the quotation price.** NASDAQ uses the OTCBB Type field within the OTCBB Market Participant Quote message to differentiate DPPs from other security types.

To view the full OTCBB marketplace rules, please refer to www.otcbb.com/aboutOTCBB/servicrules.stm.

7.3.4 Minimum Quote Size

In accordance with NASD Rule 6750, OTCBB market participants are required to maintain a minimum display size for priced quotations. The minimum quote size is based on the current price of the security. Depending on the price level for the bid or offer, a different minimum size can apply to each size of the market being quoted by the member firm for a given security.

Currently, the minimum size requirements for OTCBB securities are as follows:

Bid or Offer Price	Minimum Quote Size
0.00 to 0.50	5,000 shares
0.51 to 1.00	2,500 shares
1.01 to 10.00	500 shares
10.01 to 100.00	200 shares
100.01 to 200.00	100 shares
200.01 to 500.00	25 shares
500.01 to 1000.00	10 shares
1000.01 to 2500.00	5 shares
Over 2500.01	1 share

Please note that NASDAQ disseminates the quote size in round lots on BBDS. For OTCBB securities, NASDAQ will disseminate the size in round lots of 100 shares for securities priced

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Administrative Message Processing

equal to or less than \$200.00 and in round lots of 1 share for securities priced equal to or more than \$200.01.

7.3.5 Closing Process

As of initial implementation, NASDAQ will not support a closing spin for OTCBB issues on BBDS. If a firm wishes to capture the 16:00 close, they must take their own snap shot of the Inside Quotation position for OTCBB issues upon the receipt of the US Market Session Close control message.

7.3.6 OTCBB Inside Quotations

OTCBB will calculate and disseminate its Inside as an appendage to the quoting participant quote message. The OTCBB Inside should reflect the largest market participant interest at the highest bid price and the lowest ask price available in the OTCBB system for the specific security. The OTCBB will calculate an Inside Quotation for a security if the following criteria are met:

- There are at least two active market participants that each display a priced bid quotation and a priced ask quotation.
- The issuer is active in the OTCBB system and not subject to any trading actions.

As outlined in section 5.1 of this document, the Inside Quotation is disseminated as an appendage to the OTCBB Market Participant Quote Update (Category Q – Type 1) message format. The OTCBB Appendage Indicator will be used to notify data feed subscribers how to update their quote display. The field values are as follows:

Code	Value
1	No change to Inside Quote. No Inside appendage attached. Firms should continue to display existing Inside Quote for issue.
2	No Inside exists. No Inside appendage attached. Firms should show Inside Quote fields as blank.
3	Inside Quote Appendage is attached. Firms should update Inside fields to reflect new values contained in appendage.

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Administrative Message Processing

8.0 Administrative Message Processing Guidelines

BBDS will use administrative messages to communicate intra-day trading halt information for individual issues. In addition, BBDS will support a free-form text message for those items that do not lend themselves easily to a fixed format message format.

8.1 General Administrative Messages

The General Administrative Message (Category A – Type A) is a free form text message used to notify BBDS subscribers of special situations or trading conditions. The length of the Administrative Message is variable but cannot exceed a maximum of 300 characters.

Since the General Administrative Message is a flexible format message, it is up to the individual data feed subscriber to decide how to process these messages. Firms may wish to code their systems to generate a systems alert for data operations as manual processing of the General Administrative message may be required.

8.2 Trading Action Messages

OTCBB may institute a trading halt in an issue due to news dissemination or regulatory reasons. NASDAQ will relay halt and suspension information via a Trading Action administrative message (Category A – Type H) on BBDS.

Please note that the Trading Action message is supported for operational as well as regulatory halts in this document.

The Trading Action contains the following fields:

OTCBB Symbol 11	Action 1	Action Date/Time 7	Reason Code 6
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As defined in Section 7 of this document, there are three types of trading actions:

Code	Value
H	Trading Halt
Q	Quotation Resumption
T	Trading Resumption

When a trading halt is instituted, BBDS will send a Trading Action message with an Action field value of "H". In addition, BBDS shall send zero quotations for all Market Participants as well as a zero inside in the issue. Market data distributors should update their displays to show a halt indicator and that all market maker quotations and the best bid and best offer are closed in the specified security. The reason for the trading halt is disseminated through the Reason Code field, which has the following allowable values:

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Reason Code	Description
T1	Halt - News Pending
T2	Halt - News Dissemination
T12	Halt - Additional Information Requested by NASDAQ
H10	Halt - SEC Trading Suspension
H11	Halt - Regulatory Concern
H12	Halt - SEC Revocation
O1	Operations Halt, Contact Market Operations
D	Security Deletion from OTCBB
T3	News and Resumption Times
R4	Qualifications Issues Reviewed/Resolved; Quotations/Trading to Resume
R9	Qualifications Halt Concluded, Filings Met; Quotations/Trading To Resume
C11	Trade Halt Concluded By Other Regulatory Auth.; Quotes/Trades To Resume
Space	Reason Code not available

NASDAQ may send multiple trading halt messages for a security if the Reason Code changes. Please note that NASDAQ would generate a new Trading Action message whenever one of the attributes (Action, Reason Code) in the Trading Action message changes. The Action Date/Time field within the Trading Action message would reflect the time of the most recent attribute change. The length of a trading halt will vary from security to security. If a trading halt spans multiple days, BBDS will disseminate a Trading Action message at the start of the business day. Trading Action messages disseminated at the start of the business day may have space-filled Action Date/Time and Reason Code fields.

When an issue is ready to resume trading, BBDS will send a new Trading Action message. At its discretion, NASDAQ MarketWatch may offer a positioning (quote only) window for OTCBB market participants before trading resumes in an issue. At the start of the positioning window, OTCBB will send a Trading Action message with an Action value of "Q". During this positioning period, OTCBB members may enter quotations for the issue. During the positioning window, BBDS will disseminate quote updates on a real-time basis, but OTCBB members will not be allowed to trade by rule. As market participants update their quotes, an inside may be disseminated, however it will contain an Inside Quote Condition of "C" for Closed.

Once an issue can begin trading, BBDS will send another Trading Action message with an Action value of "T" to indicate that trading is now allowed in the issue. Upon receipt of this message, OTCBB member firms may resume their normal trading in the issue. If NASDAQ is able to calculate an inside in the issue, NASDAQ will send a quotation message with the MPID of "NASD" with OTCBB Appendage Indicator of "3" and the related OTCBB Appendage with an Inside Quote Condition of "O".

For the most up-to-date trading halt information for OTCBB securities, please refer to www.otcbb.com/marketwatch.

Bulletin Board Dissemination Service (BBDS)

Administrative Message Processing

8.3 SEC Trading Suspensions

Under federal securities law, the SEC can suspend trading in any stock for up to ten business days. NASDAQ will use this procedure outlined in 9.3.1 to inform customers when an OTCBB security is subject to a SEC trading suspension.

When a SEC trading suspension is removed, however, the resumption process is different than described above. In its order, the SEC will state the date and time that the trading suspension is lifted. SEC trading suspensions typically end at 23:59. If the security is still eligible, NASDAQ will allow market participants to enter both quotation and trades when the OTCBB opens for business the day after the suspension is removed.

For more information on the SEC process as well as a current list of suspended securities, please refer to the SEC web site at <http://www.sec.gov/litigation/suspensions.shtml>.

Bulletin Board Dissemination Service (BBDS)

Control Message Processing

9.0 Control Message Processing Guidelines

9.1 Overview

A Control message is a fixed format message that performs a specific system function. All Control Messages consist of a standard Message Header only. As outlined in Section 4, the Message Header is comprised of the following fields:

Message Category 1	Message Type 1	Session Identifier 1	Retransmission Requester 2	Message Sequence Number 8
Market Center Originator ID 1	Date/Time 7	Reserved (for Test Identifier) 1		

Control messages are used to notify BBDS subscribers of certain system events. NASDAQ supports the following control messages on the BBDS data feed:

Category	Type	Usage
C	I	Start of Day
C	J	End of Day
C	O	Market Session Open
C	C	Market Session Close
C	A	Emergency Market Halt
C	B	Emergency Market Resume
C	K	End of Retransmission Requests
C	Z	End of Transmissions
C	M	Start of Test Cycle
C	N	End of Test Cycle
C	T	Line Integrity
C	L	Sequence Number Reset

The following Control messages will be session-specific: Market Session Open, Market Session Close, Emergency Market Halt, and Emergency Market Resume. All other control messages will be session independent. For a schedule of transmissions, please refer to Appendix B.

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Control Message Processing

9.2 Control Message Description

9.2.1 Start Of Day

Category C – Type I

The Start of Day control message signifies the beginning of each operational cycle for OTCBB Processing. Each day, the Start of Day control message will be sent to inform BBDS subscribers 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 (00000000) on each message.

9.2.2 End Of Day

Category C – Type J

The End of Day control message signals the end of active message dissemination for the BBDS operational cycle. The End of Day message will be sent three times, at one minute intervals, and will contain a Message Sequence Number of one greater than the highest Message Sequence Number previously transmitted. The Message Sequence Number will not be incremented when the message is sent three times in the normal message transmission sequence.

9.2.3 Market Session Open

Category C – Type O

The Market Session Open Control Message signifies the opening of OTCBB for the session indicated in the Message Header. Upon receipt of this message, vendors will open the appropriate market center security records in their files. The Message Sequence Number Field for the Session Open will contain a number one greater than the highest Message Sequence Number previously transmitted.

Please note that the OTCBB uses the same event control as the NASDAQ market for the Market Session Open. As a result, the Market Center Originator ID value for this message will be "Q".

9.2.4 Market Session Close

Category C – Type C

The Session Close Control Message signals the closing of the Market for the session indicated in the Message Header. Upon receipt of this message, vendors should close the appropriate market center security records in their files. The Message Sequence Number Field for the Market Session Close will contain a number one greater than the highest Message Sequence Number previously transmitted.

Please note that the OTCBB uses the same event control as the NASDAQ market for the Market Session Close. As a result, the Market Center Originator ID value for this message will be "Q".

Control Message Processing

9.2.5 Emergency Market Condition Halt

Category C – Type A

The Emergency Market Condition Message indicates that an emergency market condition exists and that all quotations should be considered closed. This message will be sent by the primary market center if there is a severe intra-day downturn in the market. The Message Sequence Number field for the Emergency Market Trading Halt control message will contain a number one greater than the highest Message Sequence Number previously transmitted in the last message. Upon receipt of this control message, market data vendors are asked to show an emergency market condition indicator on quotation displays for all OTCBB issues.

Please note that the OTCBB uses the same event control as the NASDAQ market for the Emergency Market Condition Halt. As a result, the Market Center Originator ID value for this message will be "Q". For information on NASDAQ circuit breakers, please refer to the "Trading Halt" section of the NASDAQ Trader web site at <http://www.NASDAQtrader.com/trader/help/circuitbreaker.stm>.

9.2.6 Emergency Market Condition Resume

Category C – Type B

This message is sent by the primary market center to indicate that the emergency market condition has ended. The Message Sequence Number field for the Emergency Market Trading Halt control message will contain a number one greater than the highest Message Sequence Number previously transmitted in the last message. Upon receipt of the Emergency Market Conditions Resume, market data vendors should remove the emergency market indicator from any quotation displays.

Please note that the OTCBB uses the same event control as the NASDAQ market for the Emergency Market Condition Resume. As a result, the Market Center Originator ID value for this message will be "Q". For information on NASDAQ circuit breakers, please refer to the "Trading Halt" section of the NASDAQ Trader web site at <http://www.NASDAQtrader.com/trader/help/circuitbreaker.stm>.

9.2.7 End Of Retransmission Requests

Category C – Type K

This message signals that NASDAQ may not honor any additional retransmission requests; however, it will continue to process any messages in queue. The End of Retransmission Requests message will be sent three times, at one-minute intervals. The first End of Retransmission Requests control message will contain a Message Sequence Number of one greater than the highest Message Sequence Number previously transmitted. The Message Sequence Number in the subsequent two control messages will not be incremented.

Bulletin Board Dissemination Service (BBDS)

Control Message Processing

9.2.8 End Of Transmissions

Category C – Type Z

The End of Transmissions Message signals that there will be no further transmissions of data sent through the BBDS line. This message will be transmitted at the end of the day, and will be the last message of the day. The End of Transmissions message will be sent three times, at one-minute intervals. The first End of Transmissions will contain a Message Sequence Number of one greater than the highest Message Sequence Number previously transmitted. The Message Sequence Numbers in the subsequent two control messages will not be incremented.

9.2.9 Start Of Test Cycle

Category C – Type M

The Start of Test Cycle Control Message is transmitted following activation of the BBDS line. It is the first message in the sequence of defined test messages sent prior to the Start of Day Control Message. The Message Sequence Number of the Start of Test Cycle Message always has a message sequence number of 00000000, with each subsequent message in the cycle incrementing the message sequence number by one. Please refer to Appendix D to obtain the actual messages contained in the test cycle.

9.2.10 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.

9.2.11 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 BBDS message transmission, and will be intermixed with other messages. The Message Sequence Number will not be incremented for the Line Integrity Message. The Message Sequence Number will be equal to the message sequence number of the last message sent. Line Integrity Messages will not be retransmitted.

9.2.12 Sequence Number Reset

Category C – Type L

The Sequence Number Reset Message forces the resetting of the Sequence Number. The Sequence Number will either be reset to zero or will be set ahead to a number greater than the last number previously transmitted. Please note that, if the Sequence Number Reset message is sent, NASDAQ will not be able to process retransmission requests for messages sent prior to the Sequence Number Reset control message.

Bulletin Board Dissemination Service (BBDS)

Format Release & Testing Information

10.0 Format Release & Testing Guidelines

10.1 Release Notification

To keep pace with the changing business environment, NASDAQ may modify the data feed format specifications for BBDS. In advance of each release, NASDAQ will notify its direct connect customers of the BBDS format change via a Vendor Alert on the NASDAQ Trader website. In the notice, NASDAQ 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 NASDAQ notices.

10.2 Types of Testing

In advance of each release, NASDAQ will offer test data for 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, NASDAQ offers the following types of testing opportunities:

Evening test transmissions: For its evening testing opportunities, NASDAQ will create sample messages in the new formats to be broadcast on select weeknights from 20:30 to 22:30. To generate the sample data, NASDAQ uses a test script to exercise the full range of values for the affected message formats. The test script used to generate the nightly data transmission will be available to direct data feed subscribers upon request.

Saturday production tests: In advance of major releases, NASDAQ will conduct user acceptance tests (UATs) on select Saturdays for its OTCBB participants. As quoting participants enter information into its production systems, NASDAQ will broadcast this test data in the new data formats to direct data feed subscribers only. Prior to each UAT, NASDAQ will post a Vendor Alert with the registration information.

10.3 Identification of test data

During normal operational hours, NASDAQ will identify test data in one of the following two ways:

Test Retransmission Requester: In Section 4.4 of this document, NASDAQ provides for a test retransmission requester for its data feed message header. NASDAQ populates this field for the test cycle messages only. Please refer to Appendix D of this document for the static content in the test cycle transmission.

Test Symbols: NASDAQ may send out intra-day test data using special issue symbols via BBDS. NASDAQ will communicate test issues via the Symbol Directory download file on the OTCBB website at <http://www.OTCBBchange.com>.

During non-market hours, NASDAQ will broadcast unmarked test data. 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 transmission schedule.

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Appendix A –Glossary of Terms

Ask: The price at which someone who owns a security offers to sell it; also known as the asked or offer price.

Bid: The price a prospective buyer is prepared to pay at a particular time for trading a unit of a given security.

Bulletin Board Dissemination Service (BBDS): The new data feed that carries the top-of-file position for each OTCBB Quoting Participant as well as the OTCBB Inside Bid and Offer (BBO). In the 3rd Quarter of 2004, BBDS will replace the existing Level 1 Service.

Electronic Communication Network (ECN): ECNs provide electronic facilities that investors can use to trade directly with each other. As NASDAQ market participants, ECNs display either one-sided or two-sided quotes that reflect actual orders. Unlike Market Makers, ECNs operate simply as order-matching mechanisms and do not maintain inventories of their own.

Level 1 Service: Legacy data feed product that features real-time market maker and Inside quotes for OTC Bulletin Board (OTCBB) issues. This data feed will be replaced in the 3rd Quarter of 2004 with the launch of BBDS.

Locked/Crossed: A specific price “state” that a security is in. When a security is locked it means that the Bid and the Ask prices are equal. When a security is crossed it means that the Bid price is higher than the Ask price.

Market Maker: Also known as dealers, Market Makers are unique in that they commit their own capital to NASDAQ and OTCBB securities — then turn around and re-distribute the stock as needed. They are required to maintain bid and ask prices in the NASDAQ network where they can be viewed and accessed by all participants. By being willing to buy or sell stock using their own funds, market makers provide liquidity to the market.

NASDAQ Quotation Dissemination Service (NQDS): Data feed that contains the top-of-file NASDAQ quoting participant positions for NASDAQ National Market and SmallCap securities. The NASDAQ Inside Quote is disseminated as message appendages.

OTC Bulletin Board (OTCBB): OTCBB is a regulated quotation service that displays real-time quotes, last-sale prices, and volume information in over-the-counter (OTC) equity securities. For more information, please refer to www.otcbb.com/AboutOTCBB/about.stm

OTCBB Inside: The highest bid price and lowest ask price with the largest individual market participant sizes associated with those prices. The OTCBB Inside also includes a condition field to denote the state of the quote (e.g., open or closed) and is disseminated as an appendage to the OTCBB Market Participant Quote Update messages. The OTCBB Inside is synonymous with Best Bid and Offer (BBO).

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Pink Sheets: The Pink Sheets offers an electronic quotation media for over-the-counter securities that is separate and distinct from OTCBB. Pink Sheets LLC is a privately owned company located in New York, NY, and is not affiliated with NASDAQ in any way. For more information, please refer to www.pinksheets.com/about/index.jsp.

Quoting Participant or Market Participant: A OTCBB Market Maker or Electronic Communication Network (ECN) with rights to publicly quote OTCBB securities. Please note that the top-of-file from OTCBB Limit Order Book Facility will also appear as a quoting participant on BBDS.

Trade Data Dissemination Service (TDDS) – The data feed that disseminates OTCBB and non-NASDAQ equities traded over-the-counter (NNOTC).

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Appendix B – Transmission Schedule

Note: All times referenced regarding BBDS are approximate and are stated in US Eastern Time. This schedule is based on a normal day.

Time	Transmission	Message Category	Message Type	Session ID	Market Center Originator ID
04:15 to 04:29	Start of Test Cycle Messages Test Messages End of Test Cycle Message (Disseminated once per 1 minute)	C Various C	M Various N	A A A	E E E
04:30	Start of Day Message	C	I	A	E
04:31	Start of Day Message	C	I	A	E
04:32	Start of Day Message	C	I	A	E
	Line Integrity Messages (Disseminated at 1 minute intervals throughout the operational day)	C	T	A	E
	General Administrative Messages Message Sequence Number Reset (Messages will be generated as-needed)	A C	A L	A A	E E
07:30	Trading Action Spin (Pre-opening spin at 07:30 of Issues in a held state)	A	H	U	U
07:30 to 18:35	OTCBB Market Maker and Inside Quote Messages (Pre-Opening spin at 07:30; Live updates from 07:30 to 18:30)	Q	1	U	U
07:30 to 18:35	Trading Action or Emergency Market Halt/Resume Messages (Disseminated on as-needed basis; Trading Action messages affect a single issue; Emergency Market Halt/Resume messages affect all issues)	A C	H A, B	U U	U Q
09:30	Market Session Open Message	C	O	U	Q
16:00	Market Session Close Message (Time is approximate)	C	C	U	Q
18:35	End of Day Message	C	J	A	E
18:36	End of Day Message	C	J	A	E
18:37	End of Day Message	C	J	A	E
18:50	End of Retransmission Requests Message	C	K	A	E
18:51	End of Retransmission Requests Message	C	K	A	E
18:52	End of Retransmission Requests Message	C	K	A	E

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Time	Transmission	Message Category	Message Type	Session ID	Market Center Originator ID
19:05	End of Transmissions Message (Time is approximate - Delayed when retransmissions still active)	C	Z	A	E
19:06	End of Transmissions Message	C	Z	A	E
19:07	End of Transmissions Message	C	Z	A	E

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Appendix C – ASCII Translation Table for Date/Time Fields

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

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

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DATE/TIME TRANSLATION TABLE

TIME	ASCII	HEXADECIMAL	DECIMAL
19	C	43	67
20	D	44	68
21	E	45	69
22	F	46	70
23	G	47	71
24	H	48	72
25	I	49	73
26	J	4A	74
27	K	4B	75
28	L	4C	76
29	M	4D	77
30	N	4E	78
31	O	4F	79
32	P	50	80
33	Q	51	81
34	R	52	82
35	S	53	83
36	T	54	84
37	U	55	85
38	V	56	86
39	W	57	87

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DATE/TIME TRANSLATION TABLE

TIME	ASCII	HEXADECIMAL	DECIMAL
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
56	H	68	104
57	I	69	105
58	J	6A	106
59	K	6B	107

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Appendix D – BBDS Test Cycle Messages

The following messages will be disseminated between the Start of Test and End of Test control messages on the BBDS data channel on the MFX.

Note: In the test messages below, an asterisk "*" is used to denote a space.

1. Message Header:

A	A	A	T*	00000001	E	Actual Time	*
---	---	---	----	----------	---	-------------	---

General Administrative Message Label:

ABCDEFGHIJKLMNOPSATUVWXYZ1234567890\$0987654321\$

2. Message Header:

Q	1	U	T*	00000002	U	Actual Time	*
---	---	---	----	----------	---	-------------	---

OTCBB Market Participant Quote (without Inside Appendage) Label:

TESTO*****	K	ABCD	Z	A	O
*	N	*	D	000000011225	0000500
D	000000012725	0000250	USD	1	

3. Message Header:

Q	1	U	T*	00000003	U	Actual Time	*
---	---	---	----	----------	---	-------------	---

OTCBB Market Participant Quote (with Inside Appendage) Label:

TESTO*****	K	WXYZ	#	A	O
*	N	*	C	000000001125	0000250
B	000000000000	0000000	USD	3	

Inside Appendage:

O	C	000000001125	0000250	D	000000012725
0000250					

4. Message Header:

Q	1	U	T*	00000004	U	Actual Time	*
---	---	---	----	----------	---	-------------	---

OTCBB Market Participant Quote (with No Inside Appendage):

OTEST*****	L	ABCD	Z	A	O
*	B	*	B	000000000000	0000000
B	000000000000	0000000	USD	2	

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5. Message Header:

Q	1	U	T*	00000005	U	Actual Time	*
---	---	---	----	----------	---	-------------	---

OTCBB Market Participant Quote (with Inside Appendage):

TESTO*****	K	RSTU	Z	A	O
*	N	B	D	000000012725	0000100
B	000000000000	00000000	USD	3	

Inside Appendage:

O	D	000000012725	0000100	D	000000012725
0000250					

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Appendix E – Data Quality Contacts

To assist you with your data quality questions, NASDAQ has prepared the following list of OTCBB data quality contacts:

Data Issue	Department or Contact Name	Telephone Number
Technical Format and General Data Transmission Questions about OTCBB data feeds	NASDAQ Market Data Distribution	301.978.5307
OTCBB security symbol, dividend, and IPO price information	NASDAQ Market Operations	800.219.4861
Price Verification for OTCBB quotation and trade transactions as well as Trading Action information	NASDAQ MarketWatch	800.211.4953

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Appendix F – Version Control Information

Version	Date	Description of Documentation Change(s)
2004-1	5/24/04	<ul style="list-style-type: none">Initial release of documentation on BBDS.
2004-1a	7/27/04	<ul style="list-style-type: none">Updated the allowable values in the OTCBB Type field to reflect "L" for Limited Partnerships.Modified the definition for the "I" OTCBB Type field.Updated the Unsolicited Indicator field in section 7 to reflect that "A" and "B" are reserved for future use.
2004-1b	12/15/04	<ul style="list-style-type: none">Updated document to reflect new extranet connectivity options.