



Montréal Exchange Inc.

Basis Trade on Close User Guide

December 2017

DISCLAIMER

The statements made in this guide and any ideas or concepts introduced or explained in this framework are subject to change at any time, at the discretion of Bourse de Montréal Inc. and/or the Canadian Derivatives Clearing Corporation. Please note that the initiative is also subject to the approval of Bourse de Montréal Inc.'s board of directors, the Canadian Derivatives Clearing Corporation's board of directors and of all governmental and regulatory authorities having jurisdiction over Bourse de Montréal Inc. and/or the Canadian Derivatives Clearing Corporation. The content of this guide does not prevail over the Rules of Bourse de Montréal Inc. and the Canadian Derivatives Clearing Corporation or any other applicable regulation.

OTHER CONSIDERATIONS

Participants must take into consideration the business, legal and/or regulatory obligations and requirements applicable in any applicable jurisdictions and from any regulatory authorities having jurisdiction over the participants.

Table of Content

INTRODUCTION	3
BASIS TRADE ON CLOSE	3
Basis Trade on Close (BTC) Instrument	3
Example of BTC instruments	3
Trading	3
Example of Trading	5
Pre-Trade Validation Tools	5
Clearing	5
Example of Clearing	6
Overview of impacted protocols and services	7
Message Sequences for BTC Processing	12
Order and Trade Management	12
SAIL Order Entry and Trade Management	12
SAIL Drop-Copy	12
FIX Protocol	13
Dissemination Feeds	13
HSVF (High Speed Vendor Feed)	13
Instrument Dictionary - Message Futures Instrument Keys (JF)	13
Trade Sequence - Intraday Trade Processing	13
Trade Sequence - End of Day Trade Processing	14
Trade Sequence - Trade Correction	14
End of Day Instrument Summary	15
OBF Feed	15
Instrument Dictionary - Futures Instrument Keys (JF)	16
Trade Sequence - Intraday Trade Processing	16
Trade Sequence - End of Day Trade Processing	16
Trade Sequence - Trade Correction	17
End of Day Instrument Summary	18
Post-Trading Services	19
Trade Management Service (TMS)	19
Intraday Trade Processing	19
End of Day Trade Processing	19
Trade Correction	20
Automated Trade Reporting (ATR)	21
Intraday Trade Processing	21
End of Day Trade Processing	21
Trade Correction	22

ATR (Legacy v.s. Basic v.s Extended) Modes for BTC Post-Trade Processing	22
Clearing API Protocol	23
Reports	24
Participant Activity Reports (PAR)	24
Instrument and Instrument Preview files	24
Orders / Open Orders file	24
Anonymous Trade File	24
Post Trade File	24
eGains File	25
Trade Record	25
Documents and Specifications Reference	26
APPENDIX 1	27
List of Associated Future Class Symbols and BTC Class Symbols	27
APPENDIX 2	30
Specifications of the BTC on Index futures (like SXF)	30
Specifications of the BTC on Share Futures (“SFs”)	31

INTRODUCTION

The purpose of this user guide is to give an overview of the new Basis Trade on Close functionality from a technical and business perspective. The technical component explains changes that will be applied to the Bourse's feeds and services to support the initiative. As for the business component of the document it explains the product from a commercial perspective.

BASIS TRADE ON CLOSE

Bourse de Montréal Inc (the "Bourse") has undertaken an initiative to develop a Basis Trade on Close ("BTC") functionality that will enable market participants to trade a futures contract at a predetermined spread from the official close of the contract's underlying. Index Futures, Sector Index Futures, and Single Share Futures (SSF) will be eligible for this trade type. It is important to note that the BTC has been developed as an instrument rather than an order type.

Basis Trade on Close (BTC) Instrument

A BTC instrument is a single instrument, associated to a futures contract sharing the same underlying equity or index. The BTC instrument is a synthetic instrument rather than an actual instrument. The instrument was created for onscreen trading purposes but will be associated to a Futures contract. The BTC instrument price unit of measure, is the same as its associated futures contract's underlying but will be listed as a +/- spread relative to the closing price of the underlying. Note that the BTC instrument will not result in a BTC instrument position at end of the day but rather in a position in the associated futures contract.

Example of BTC instruments

BTC Instrument on Index Future

- BSF June 2018 is a BTC Instrument associated with the SXF June 2018 (Index Future) contract, the S&P/TSX60 Index is the underlying for both.

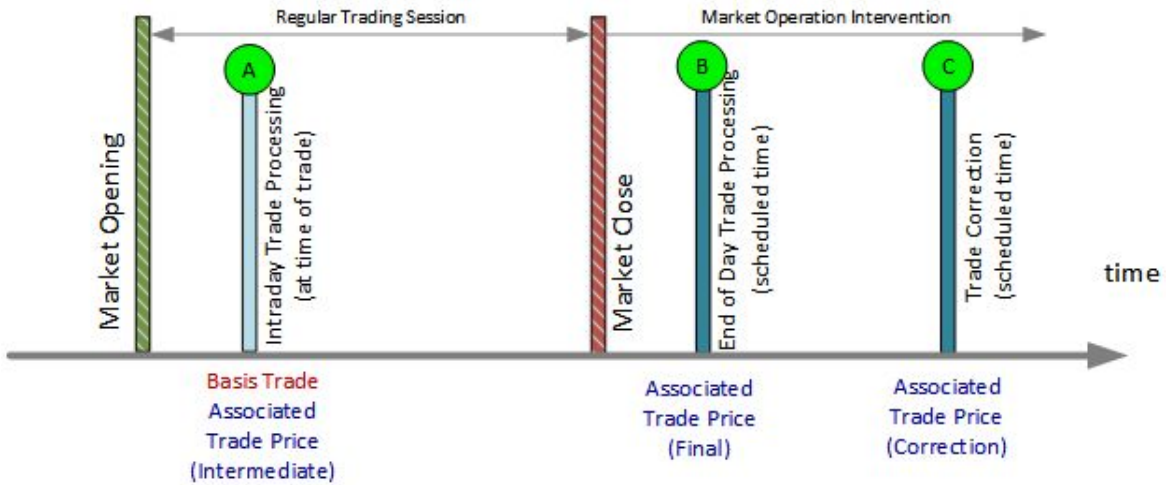
BTC Instrument on SSF

- The BOM March 2018 is a BTC Instrument associated with the FBO March 2018 (Single Share Future), BMO is the underlying for both

Trading

The participant wishing to execute a BTC instrument trade must place an order using the corresponding BTC instrument symbol; the order will subsequently appear in a central limit order book ("CLOB") dedicated to the BTC instrument. The MX Trading System matches a buy and sell of equal value to consummate a trade.

The timeline of a BTC Trade is shown in the diagram below:



A. Intraday Trade Processing (at Market Open or during Regular Trading)

Order on a BTC generates a trade on the BTC book. The trading engine also generates a trade on the associated futures contract with an intermediate trade price. This intermediate trade price equals the last trade price of the associated futures contract's underlying at the time of the BTC trade, plus the BTC instrument's trade price.

B. End of Day Trade Processing (Scheduled Event)

After market close of both the BTC book and the Underlying book, the Trading Engine re-prices all BTC trades during the trading session with the Market Close price of the Underlying. This final price equals the closing trade price of the associated futures contract's underlying at the time of the BTC trade, plus the BTC instrument's trade price.

Typically the End of Day Trade Processing time will be scheduled at 4:10 pm for Basis trades on Share Futures and 4:30 pm for Basis trades on Index Futures

C. Trade Correction (Scheduled Event)

In the event that the underlying price has been corrected after market close, the trading engine will re-price the BTC trade for that underlying, and a corrected trade price of the associated futures contract is generated.

Typically the Trade Correction time will be scheduled at 5:00 pm for both BTC trades on Share Futures and BTC trades on Index Futures

Example of Trading

Regular Intraday Trade

At 10:40am, a match occurs on the (“BOM March 2018”) for 50 contracts at trade price of -2. The last trade price of the BMO stock at that time is 99.00.

The trading engine calculates trade price on its associated futures contract (“FBO March 2018”) as 97.00 (99.00 -2). This is an intermediate price since the closing price of the stock is only known at market close.

End of Day Trade Processing

At market close, the BMO stock closes at 99.50. The trading engine re-evaluates the close price of the BOM March 2018 trade at (99.50 -2) = 97.50. This is the final trade price on its associated futures contract FBO March 2018.

Trade Correction

After Market Close, TSX Market official corrects the closing price of the BMO stock to 99.80. The Trading Engine re-evaluates the close price of the BOM March 2018 trade at (99.80 -2) = 97.80. This is the corrected trade price on its associated futures contract FBO March 2018.

Pre-Trade Validation Tools

From the point of view of the pre-Trade Validation subsystem, the BTC instrument and its associated futures contract are coupled:

- Group-level Position Limits and Credit Control parameters are configured on the Group of the associated futures contract only. It is not possible to configure those limits on the BTC Group.
- Counters are cumulated on the associated futures contract: No distinct counters are maintained for the BTC instruments. Orders and trades on the BTC instrument and on its associated futures contract all contribute to the counters of the associated futures contract.
- When a limit configured on the associated futures contract group is reached, the actions are applied to orders on both the BTC and the associated futures contract instruments:
 - New orders on the BTC instruments and on the associated futures contracts are rejected.
 - If order elimination is triggered, orders on the BTC instruments and on the associated futures contracts are eliminated.

Clearing

The clearing of a BTC instrument is performed using its associated futures contract. In the above example, the BOM March 2018 trade creates a trade on the associated future contract FBO March 2018 at its calculated price as described above.

Example of Clearing

Building from the above example, at 10:40 am, the BOM March 2018 trade of 50 contracts at -2 creates trade of 50 contracts at 97.00 (intermediate price) on the associated FBO March 2018 at the Canadian Derivatives Clearing Corporation (“CDCC”). Any allocations or give-ups done intraday will be at the trade price of 97.00.

At market close, the BOM March 2018 trade is marked to the underlying close price at 99.50, hence previous trade/allocation/give-up on its FBO March 2018 are re-evaluated at final trade price of 97.50 and sent to CDCC.

Since there is a price correction on the underlying BMO stock to 99.80, the BOM March 2018 trade is re-priced to the corrected underlying close price of 99.80, hence resulting trade/allocation/give-up on its FBO March 2018 are re-evaluated at final trade price of 97.80 and sent to CDCC.

Overview of impacted protocols and services

Service	Ref	Service Type	Summary of changes
Order and Trade Management	1.1	SAIL protocol	<p>Participants can send orders and trade BTC instruments using any of the currently supported SAIL protocol versions. <u>There is no need to upgrade their SAIL protocol version to trade BTC instruments.</u></p> <p>A new protocol B2 is introduced but is <u>optional</u> for Participants wishing to receive new Trade Markers.</p> <p>Refer to SAIL Order Entry and Trade Management for details.</p>
	1.2	SAIL Drop-Copy Protocol	<p>A new SAIL Drop-Copy protocol version, B2, is introduced.</p> <p>Participants wishing to receive additional information for BTC Instruments and new Trade Markers may upgrade to new SAIL B2 Drop Copy. <u>This is an optional upgrade.</u></p> <p><u>Refer to SAIL Drop-Copy for details.</u></p>
	1.3	FIX protocol	<p>No change</p> <p>Participants can send orders and receive trade on BTC instruments like any other futures.</p>

Dissemination Feeds	2.1	HSVF protocol	<p>A new HSVF protocol version D5 is available with following changes for BTC instruments:</p> <ul style="list-style-type: none"> • Future Instruments dictionary is enriched with Underlying and Associated Future information for BTC Instrument (<i>message JF</i>) • At Market Close, the final trade price of the Associated Future of the BTC is disseminated via a <i>Future Trade (CF)</i> with new <i>PriceIndicatorMarker “Basis On Close”</i> • A new message <i>FutureTradeCorrection (XF)</i> is introduced for an update of trade price if there is a correction of underlying price after market close. • New Trade Markers are available in this protocol version <p><u>Current D3/D4 protocols support BTC instruments</u>, however the above information will not be available in D3/D4</p> <p>Refer to HSVF Feed for details.</p>
	2.2	OBF protocol	<p>The current protocol version will be maintained without changes, and a new version will be deployed in parallel.</p> <p>The new version includes the following enhancements:</p> <ul style="list-style-type: none"> • Future Instruments dictionary is enriched with underlying and associated future fields (at the end of the JF message) • At Market Close, the final price of the BTC Trade is disseminated with a trade marker of “Basis On Close” in the Trade (TN) message • A new message Trade Correction (TX) is introduced for correction of BTC trade price in case of underlying price correction after market close • New Trade Markers are available in the Trade (TN) message • All Instruments messages (JF, JO, JB, JS) are enriched with a new MarketFlow field. • Tick information fields are added to Strategy Instrument (JS) message • The representation of strategy leg weights

			<p>is modified in Strategy Instrument (JS) to support larger weight values in the future.</p> <p>In addition, this new OBF version adds support of an extensibility mechanism, allowing transparent addition of new message fields in the future:</p> <ul style="list-style-type: none">● For all fixed-length messages: New fields can be added at the end. Participants can ignore unknown fields using the Message Length field in the Message Header.● For messages ending with a variable-length array (e.g Tick Table and Strategy Instrument):<ul style="list-style-type: none">○ New message fields can be added at the end of the fixed-length part, just before the start of the array part. A new field is added at the beginning of these messages to indicate where the fixed-length part ends and where the array part begins.○ New fields can also be added at the end of each array element. A new field is added at the start of the array part of the message to indicate the array element size.● The certification procedures will validate support of this extensibility mechanism by simulating the future addition of fields at the aforementioned extension points. <p>Refer to OBF Feed for details.</p>
--	--	--	--





Post-Trading	3.1	TMS (Trade Management Service)	<p>A new version of TMS Application will be made available with the following features:</p> <ul style="list-style-type: none"> • The Intermediate and Final price of a BTC Trade will be displayed with a new field <i>AllocationPriceType</i> indicating the nature of this price • All Allocations/Giveups of a BTC trade will have their prices refreshed with the Intermediate and Final price of their parent BTC trade. • New Trade Markers are introduced <p>Participants using the current TMS Application will only see the <u>Intermediate</u> Price of a BTC Trade and will not see any new Trade Markers. This intermediate price will not be refreshed with the final or corrected trade price of a BTC Trade.</p> <p>Refer to Trade Management Service (TMS) for details.</p>
	3.2	Clearing API Protocol	<p>The following are added to the Clearing API protocol</p> <ul style="list-style-type: none"> • New Tag 419 - BasisPxType is added to Trade Report (Message 8) to indicate an Intermediate or Final Allocation Price of a BTC trade/allocation/give-up • Existing Tag 7900 - TradeMarker is enriched with new value “Basis On Close” for BTC trades • Tag 7900 - TraderMarker will also contain new values for other types of trades <p>By default, the above new Tag and Trade Marker values will not be sent unless requested by Clearing API participants (by contacting the MX Support Desk)</p> <p>Refer to Clearing API for details.</p>
	3.3	ATR (Automated Trade Reporting) Protocol	<p>The following changes are added to support BTC Trades</p> <ul style="list-style-type: none"> • New values of <i>MessageFlag</i> (of ATR Header) are introduced to indicate an Intermediate, Normal or Updated price of a BTC Trade

			<p>Different modes of BTC trade reporting are offered. Participant wishing to see an Intermediate, Normal (Market Close) and Updated (in case of underlying reprice) need to contact the MX Support desk.</p> <p>Refer to Automated Trade Reporting (ATR) for details.</p>
Reports	4.1	Participant Activity Report (PAR)	<p>PAR reports changes are as follows:</p> <ul style="list-style-type: none"> • Instrument and Instrument Preview files are enriched with new fields for BTC instruments • Anonymous Trade file will have the SpecialTradeIndicator column filled on all types of trades including BTC Trades • Anonymous Trade file will also contain for each BTC Trade, the corresponding Associated Future trade with its <u>final</u> price • Post Trade records will be enriched with BTC Instrument, OrderId and TradeNumber information. <p>Participants not ready to process the above changes can ignore new columns which are added at the end of the current file formats.</p> <p>Refer to Participant Activity Reports (PAR) for details.</p>
	4.2	eGains	<p>Trade-Type field, which indicates new Trade Markers, will contain new values for BTC Trades.</p> <p>Refer to eGains File for details.</p>




Message Sequences for BTC Processing

1. Order and Trade Management

1.1. SAIL Order Entry and Trade Management

Sail Participant	Message Flow	MX Exchange
Message OE (Order Entry) on BTC (BOM March 2018, 10, -2)		
Participant (All Protocols)		Message KE (Order Acknowledgement) on BTC (BOM March 2018, 10, -2) (Note 1)
Participant (version prior to B2)	 <i>Protocol < B2</i>	Message NT (Execution Notice) on BTC (BOM March 2018, 10, -2, TradeNumber #5) (Note 2)
Participant B2	 Protocol B2	Message NT (Execution Notice) on BTC (BOM March 2018, 10, -2, TradeNumber #5) (Note 3)
1 - Same Ack message for all Sail Protocol versions		
2 - TradeNumber (#5) on NT with SpecialTradeIndicator (RegularTrade), No new values of SpecialTadeIndicator in protocol prior to B2		
3 - TradeNumber (#5) on NT with SpecialTradeIndicator (RegularTrade), New values of SpecialTadeIndicator for other types of trades (refer to SAIL Specifications Guide) in Protocol B2		

1.2. SAIL Drop-Copy

Sail Participant Drop Copy	Message Flow	MX Exchange
Participant (All Protocols)		Message KE (Order Acknowledgement) on BTC (BOM March 2018, 10, -2)
Participant (version prior to B2)	 <i>(prior to B2)</i>	Message NT (Execution Notice) on BTC (BOM March 2018, 10, -2, #5) (Note 4)
Participant B2	 Protocol B2	Message NT (Execution Notice) on BTC (BOM March 2018, 10, -2, #5, FBO March 2018, 10, 97, #5) (Note 5)
4 - Associated Futures information is not available in Execution Notice (NT) message of protocol prior to B2		

5 - Execution Notice (NT) message is enriched with Associated Future Intermediate Trade Price and Trade Number (same as BTC) and available as of protocol B2. Final Price of the BTC is not available in SAIL

New values of SpecialTadIndicator for other types of trades (refer to SAIL Drop-Copy Specifications Guide) in Protocol B2 Drop-Copy

1.3. FIX Protocol

There are no changes in FIX protocol for BTC instruments. FIX D (New Order) and FIX 8 (Execution Report) messages of BTC instruments use the Tag 55 (Symbol) and Tag 200 (MaturityMonthYear) similar to any other futures.

2. Dissemination Feeds

2.1. HSVF (High Speed Vendor Feed)

2.1.1. Instrument Dictionary - Message Futures Instrument Keys (JF)

HSVF Participant	Message Flow	MX Exchange
<i>D5 Participant</i>	← Protocol D5	<i>Message JF (Future Instrument Keys)</i> (BOM March 2018 info, FBO March 2018 info, BMO underlying info) (Note 6)
<i>D3/D4 Participant</i>	← Protocol D3/D4	<i>Message JF (Future Instrument Keys)</i> (BOM March 2018 info) (Note 7)
6 - JF message is enriched with Associated Future and Underlying Information in HSVF D5 protocol		
7 - JF message does not contain Associated Future and Underlying information in the previous protocols. Participants must refer to MX web-site for contract definition (See also list of BTC Futures in Appendix)		

2.1.2. Trade Sequence - Intraday Trade Processing

HSVF Participant	Message Flow	MX Exchange
Intraday Trade Processing (Regular Trading session)		
<i>D5 Participant</i>	← Protocol D5	<i>Message CF (Future Trade)</i> (BOM March 2018 info, 10, -2, #5) (Note 8)
<i>D3/D4 Participant</i>	← Protocol D3/D4	<i>Message CF (Future Trade)</i> (BOM March 2018 info, 10, -2) (Note 9)
8 - CF in Protocol D5 gives the Trade on the BTC Instrument, e.g. BOM March 2018 contract traded for a quantity of 10 at trade price of -2, Trade Number #5		
9 - CF in Protocol D3/D4 has the same information minus the BTC TradeNumber (#5)		

Note that in all HSVF protocols, the Intermediate Trade Price on the Associated Future of the BTC is not disseminated on HSVF. Only the final price is available as shown in the next sequence.

2.1.3. Trade Sequence - End of Day Trade Processing



HSVF Participant	Message Flow	MX Exchange
End of Day Trade Processing		
<i>D5 Participant</i>	← Protocol D5	<i>Message CF (Future Trade)</i> (FBO March 2018 info, 10, 97.50, #5, "BasisOnClose") (Note 10)
<i>D3/D4 Participant</i>	← Protocol D3/D4	<i>Message CF (Future Trade)</i> (FBO March 2018 info, 10, 97.50, "Price/Volume Adjustment") (Note 11)
<p>10 - On Underlying Market Close, the BTC Trade price is finalized. In the example above in D5 protocol, the BOM March 2018 final trade price (97.50) is sent as a trade on its Associated Future contract, with a Price Indicator Marker "BasisOnClose".</p> <p>The TradeNumber refers to the TradeNumber of the BTC Trade sent in the previous scenario</p>		
<p>11 - Future Trade (CF) in Protocol D3/D4 has the same information minus the BTC TradeNumber (#5) and TradeIndicator "BasisOnClose". This trade is announced with <i>PriceIndicatorMarker</i> "Price/Volume Adjustment)</p> <p>Participants using D3/D4 will not be able to link the Associated Future trade to its BTC Instrument trade</p>		

2.1.4. Trade Sequence - Trade Correction

HSVF Participant	Message Flow	MX Exchange
Trade Correction		
<i>D5 Participant</i>	← Protocol D5	<i>Message XF (Future Trade Correction)</i> (FBO March 2018 info, 10, <u>97.80</u> , #5, "BasisOnClose") (Note 12)
<i>D3/D4 Participant</i>	← Protocol D3/D4	<i>Message IF (Future Trade Cancellation)</i> (FBO March 2018 info, 10, 97.50, "Price/Volume Adjustment") (Note 13)
		<i>Message CF (Future Trade)</i> (FBO March 2018 info, 10, <u>97.80</u> , "Price/Volume Adjustment") (Note 13)
<p>12 - If UnderlyingPrice has changed after market close (e.g manual correction by Market Official), the BTC instrument price is re-priced. In D5 protocol, a new message XF (Futures Trade Correction) is sent</p>		

with the new price (e.g 97.80). The TradeNumber in the XF is the same as the CF message previously sent.
13 - In the D3/D4 protocol, the new price of the BTC instrument (e.g 97.80) is disseminated by a message IF (Futures Trade Cancellation) with the previous price (e.g 97.50) to cancel the previous trade and a new CF (Futures Trade) with the updated price (e.g 97.80)

2.1.5. End of Day Instrument Summary

HSVF Participant	Message Flow	MX Exchange
End of Day Summary		
<i>D5 Participant</i>	 Protocol D5	<i>Future Summary (NF) on BTC</i> (BOM March 2018 info,...,99.50) (Note 14)
		<i>Future Summary (NF) on Associated Future</i> (FBO March 2018 info,...) (Note 15)
<i>D3/D4 Participant</i>	 Protocol D3/D4	<i>Future Summary (NF) on BTC</i> (BOM March 2018 info,...) (Note 14)
		<i>Future Summary (NF) on Associated Future</i> (FBO March 2018 info,...) (Note 15)
14 - End of Day Summary on the BTC instrument contains the closing price of the Underlying (in the new field ExternalPrice) which was used to calculate the final price of the Associated Future (see previous HSVF Trade scenarios). This ExternalPrice is available in D5 only. It is absent in D3/D4		
15 - End of Day Summary on the Associated Future instrument will include the volume of all trades generated on the Associated Future Instrument via or its own book or via BTC book. Available in all HSVF protocols		

2.2. OBF Feed

OBF Feed follows similar behavior as HSVF for Instrument dictionary, Trade Management and Instrument Summary.

- A new feed version will be created to provide new information related to BTC along with other enhancements.
- During a transition period, the current feed version will be available in parallel, with the following limitations:
 - This version is maintained to provide a transition period only and will eventually be decommissioned.
 - Instrument Dictionary information (*message JF*) related to BTC will not be available on this version.
 - No Trade (*TN*) or Trade Correction (*TX*) messages will be emitted for the end of day trade generated on the Associated Future from a trade on a

BTC instrument (see “Trade Sequence - End of Day Trade Processing” and “Trade Sequence - Trade Correction” below)

- The End of Day Instrument Summary (*Message PS*) of the Associated Future will not include the volume related to the trades generated on this Associated Future from the trades on the corresponding BTC instrument (see “End of Day Instrument Summary”, below).

The following sequences show what is expected in the new versus old OBF Feed for Basis Instrument;

2.2.1. Instrument Dictionary - Futures Instrument Keys (JF)

OBF Participant	Message Flow	MX Exchange
New Feed Participant	← New OBF	<i>Future Instrument Keys (JF)</i> (BOM March 2018 info, FBO March 2018 info) (Note 16)
Old Feed Participant	← Old Feed	<i>Future Instrument Keys (JF)</i> (BOM March 2018 info) (Note 17)
16 - JF message of the new Feed is enriched with Associated (Group+InstrumentId) information added to the end of the message (FBO March 2018)		
17 - JF message of the old feed does not contain the Associated Instrument (FBO March 2018) info		

2.2.2. Trade Sequence - Intraday Trade Processing

OBF Participant	Message Flow	MX Exchange
Intraday Trade Processing		
New and Old Feed Participant	← New and Old OBF	OrderExecution (OX) on BTC (BOM March 2018 info, 10, -2, #5) (Note 18)
18 - Execution of the BTC order - OX with the BTC information, volume traded, trade price and TradeNumber (plus other info). This is the same in both the Old and New Feeds		

2.2.3. Trade Sequence - End of Day Trade Processing

OBF Participant	Message Flow	MX Exchange
-----------------	--------------	-------------

End of Day Trade Processing		
New Feed Participant	← New OBF	<i>Trade (TN) on AssociatedFuture</i> (FBO March 2018 info, 10, 97.50, #5, "BasisOnClose") (Note 19)
Old Feed Participant	← Old OBF	No message sent for End of Day Processing (Note 20)
<p>19 - Once the Underlying Market closing price is available, the BTC Trade price is finalized. In the example above, the BOM March 2018 final trade price (97.50) is sent as a Trade message (TN) on its Associated Future contract, with a TradeMarker "BasisOnClose". The Tradeld of the TN messages refers to that of the BTC OrderExecution (OX) message sent previously</p>		
<p>20 - In the Old Feed, no End of Day Trade on the Associated Future is sent out.</p>		

2.2.4. Trade Sequence - Trade Correction

OBF Participant	Message Flow	MX Exchange
Trade Correction		
New Feed Participant	← New OBF	<i>TradeCorrection (TX) on AssociatedFuture</i> (FBO March 2018 info, 10, <u>97.80</u> , #5, "BasisOnClose") (Note 21)
Old Feed Participant	← Old OBF	No message sent for Trade Correction Processing (Note 22)
<p>21 - If UnderlyingPrice has changed after market close (e.g manual correction by Market Official), the BTC Trade Price is re-evaluated. In this case, a new <i>TradeCorrection (TX)</i> message is sent out with the updated price. Note that the TX message has the same Tradeld as the previously sent TN message OBF Participants wishing to receive a Trade Correction are required to develop the new TX message</p>		
<p>22 - In the old feed, no Trade Correction Message is sent out.</p>		

2.2.5. End of Day Instrument Summary

OBF Participant	Message Flow	MX Exchange
End of Day Instrument Summary		
New Feed Participant	← New OBF	<i>Instrument Summary (PS) on BTC</i> (BOM March 2018 info,...,99.50) (Note 23)
		<i>Instrument Summary (PS) on Associated Future</i> (FBO March 2018 info,...) (Note 24)
Old Feed Participant	← Old OBF	<i>Instrument Summary (PS) on BTC</i> (BOM March 2018 info,...) (Note 25)
		<i>Instrument Summary (PS) on Associated Future</i> (FBO March 2018 info,...) (Note 26)
23 - End of Day Summary on the BTC instrument contains the closing price of the Underlying (in the new field ExternalPrice) which was used to calculate the final price of the Associated Future (see previous Trade scenario). The new field ExternalPrice is added at the end of the InstrumentSummary PS message and is available only in the new Feed		
24 - End of Day Summary on the Associated Future instrument will include the volume of trades generated on the Associated Future Instrument via its own book trades or BTC trades. Note that ExternalPrice field is not populated for the Associated Future		
25 - End of Day Summary on the BTC Instrument is sent out but does not contain the ExternalPrice, which is available only in the new OBF Feed		
26 - End of Day Summary on the Associated Future instrument will exclude volume of trades which are generated on the Associated Future Instrument via BTC Trades.		

3. Post-Trading Services

3.1. Trade Management Service (TMS)

A new version of TMS will be available to handle BTC Post-Trade activities. In this new version, a new column (**AllocationPriceType**) is added which shows the nature of the AllocationPrice. The following tables show the way TMS will display BTC Post-Trade information in the new version under the different post-trade scenarios (only some relevant fields are shown for simplicity)

3.1.1. Intraday Trade Processing

TMS Fields	New TMS version	Old TMS Version
TradeSymbol	BOMH18	BOMH18
TradeVolume	10	10
TradePrice	-2	-2
AllocationSymbol	FBOH18	FBOH18
AllocationPrice	97.00 (Note 27)	97.00 (Note 27)
AllocationPriceType	Intermediate (Note 28)	<i>Not available</i>
TradeMarker	BasisOnClose (Note 29)	Volume Adjustment
27 - Intraday price of Associated Future available in both old and new TMS (shown as AllocationPrice)		
28 - AllocationPriceType is 'Intermediate' for intraday price and is available in new TMS only		
29 - "BasisOnClose" TradeMarker is available only in new TMS. In Old TMS, it will show as "VolumeAdjustment"		

3.1.2. End of Day Trade Processing

TMS Fields	New TMS version	Old TMS Version
TradeSymbol	BOMH18	BOMH18
TradeVolume	10	10
TradePrice	-2	-2
AllocationSymbol	FBOH18	FBOH18

AllocationPrice	97.50 (Note 30)	97.00
AllocationPriceType	Final (Note 31)	<i>Not available</i>
TradeMarker	BasisOnClose	Volume Adjustment
30 - In the new TMS, <i>AllocationPrice</i> of 97.00 is refreshed with new Final price of 97.50. In the Old TMS <i>AllocationPrice</i> is not refreshed.		
31 - <i>AllocationPriceType</i> is 'Final' for End of Day Allocation Price. This field is not available in Old TMS.		
In the old TMS, the Allocation Price is not refreshed by its final price. Participants wishing to see the Final Allocation Price and TradeMarker "BasisOnClose" must upgrade to the new TMS		

3.1.3. Trade Correction

TMS Fields	New TMS version	Old TMS Version
TradeSymbol	BOMH18	BOMH18
TradeVolume	10	10
TradePrice	-2	-2
AllocationSymbol	FBOH18	FBOH18
AllocationPrice	97.80 (Note 32)	97.00
AllocationPriceType	Final (Note 33)	<i>Not available</i>
TradeMarker	BasisOnClose	VolumeAdjustement
32 - AllocationPrice of 97.50 is updated to reflect the new price resulting from the correction of the Underlying Price, showing new price of 97.80. This price is not updated in the old TMS, which will display only the Intraday Price of 97.00		
33 - AllocationPriceType is remains 'Final' after an UnderlyingPrice correction		
In the old TMS, Participants will <u>not</u> see the Final price update or new Trade Marker "BasisOnClose"		

3.2. Automated Trade Reporting (ATR)

The ATR Feed reports post-trade activities. New values of MessageFlag are added in the ATR Message Header to capture the different BTC post-trade activities. ATR Participants may operate in any of the modes described below and will need to contact the Exchange to be configured in the desired mode.

3.2.1. Intraday Trade Processing

ATR Participant	Message Flow	MX Exchange
Intraday Trade Processing		
ATR (Legacy Mode)	← MessageFlag ‘ ‘ (Normal) (Note 34)	ATR Trade on Associated Future (FBO March 2018 info, 10, 97.00, #5)
ATR (Basic Mode)	No Trade Message sent (Note 35)	
ATR (Extended Mode)	← MessageFlag ‘I’ (Intermediate) (Note 36)	
34 - ATR Trade sent with MessageFlag ‘ ‘ (Normal) giving the intraday trade price of the Associated Future		
35 - ATR Trade in not sent in this mode - intraday trade price is not available		
36 - ATR Trade sent with MessageFlag ‘I’ (Intermediate) giving the intraday trade price of the Associated Future		

3.2.2. End of Day Trade Processing

ATR Participant	Message Flow	MX Exchange
End of Day Trade Processing		
ATR (Legacy Mode)	No Trade Message sent (Note 37)	ATR Trade on Associated Future (FBO March 2018 info, 10, 97.50, #5)
ATR (Basic Mode)	No Trade Message sent (Note 38)	
ATR (Extended Mode)	← MessageFlag ‘ ‘ (Normal) (Note 39)	
37 - No ATR message sent when BTC is priced at Underlying Market Close		

38 - No ATR message sent when BTC is priced at Underlying Market Close
39 - ATR Trade sent with MessageFlag ‘ ‘ (Normal) giving the End of Day price of the Associated Future

3.2.3. Trade Correction

ATR Participant	Message Flow	MX Exchange
Trade Correction		
ATR (Legacy Mode)	No Trade Message sent (Note 40)	ATR Trade on Associated Future (FBO March 2018 info, 10, 97.80, #5)
ATR (Basic Mode)	← MessageFlag ‘ ‘ (Normal) (Note 41)	
ATR (Extended Mode)	← MessageFlag ‘U‘ (Update) (Note 42)	
40 - No ATR message is sent again - only Intraday price is available		
41 - ATR Message sent with final End of Day Price which might include a re-price of the BTC Trade The Message Flag is ‘ ‘ (Normal)		
42 - ATR Trade sent with MessageFlag ‘U‘ (Update) giving the updated repriced trade		

ATR (Legacy v.s. Basic v.s Extended) Modes for BTC Post-Trade Processing

- Operations in Legacy Mode implies no development for ATR Participant, however only the Intraday Intermediate price of the Associated Future is available. No final End of Day price is available.
- Operations in the Basic Mode also requires no development for ATR Participant, however only the final End of Day price of the Associated Future trade is available. No Intraday price is available in this mode.
- Operations in the Extended mode requires development for the ATR Participant. This mode allows the Intraday, EndOfDay (At Market Close) or Final EndOfDay (if underlying price is corrected) to be received. This mode gives a complete and full picture of the trade life-cycle of a BTC trade.

By default, ATR Participant will be configured to operate in the Legacy Mode. The ATR Participants must contact samsupport@tmx.com to change their operations mode setting.

3.3. Clearing API Protocol

- A new TAG 419 (BasisPxType) is added to the TradeReport message, which will have the following values based on the BTC Post-Trade information:

Trade Sequence	TAG 419 (BasisPxType)	TAG 7900 (TradeMarker)	Description
Regular Trading	4 (Current)	Basis On Close	Intermediate trade price (FBO March 2018 info, 10, 97.00, #5)
After Market Close	3 (Closing)	Basis On Close	Final trade price (FBO March 2018 info, 10, 97.50, #5)
After Market Close if Underlying is repriced	3 (Closing)	Basis On Close	Update of Closing Price (FBO March 2018 info, 10, <u>97.80</u> , #5)

- New value of TradeMarker (7900) in the case of BTC Trades identifies the latter as “Basis On Close”.
- Other Trade Markers will be available depending on the type of trades. The complete list of new Trade Markers is detailed in the Clearing Access Services Messaging Protocol Guide

By default, Clearing API Participant will not receive the new TAG 419 and new values of TradeMarkers.

If they wish to receive these additional information, Clearing API Participant **must** contact samsupport@tmx.com.

4. Reports

4.1. Participant Activity Reports (PAR)

The following changes will be applied to the PAR reports to support BTC products, orders, trades and post-trade information

Instrument and Instrument Preview files

New fields are added to the end of each file

Field Name	Format	MaxLength	Description
Associated InstrumentId	X	4	Identifies the Associated Future of a BTC
Associated GroupId	X	2	

Orders / Open Orders file

- No changes are applied

Anonymous Trade File

- Existing Field Special Trade Indicator will be populated for all types of Anonymous Trades.
- The final price of a BTC Trade will be shown as a Anonymous Trade on the Associated Future with the field Special Trade Indicator as “Basis On Close”. This trade will have the same TradeNumber as the BTC Trade

Post Trade File

New fields are added to the end of the Post-Trade file. These fields will be used to refer to the Basis Future instrument, order, and trade.

Field Name	Format	MaxLength	Description
Related InstrumentId	X	4	Identifies the Basis Future instrument
Related GroupId	X	2	
Related OrderId	X	8	OrderId of the Basis Future
Related TradeNumber	X	8	TradeNumber of the Basis Future

4.2. eGains File

In order to identify Basis on Trade Transactions, the field TRAN-TYPE will be enriched in the GAINS.MX.YYYYYMMDD.txt file.

Trade Record

Field Name	Description	New values
TRANS-TYPE	New values of Transaction Types added	<u>Specific to Basis Future trades</u> 'U' (BasisOnClose) 'b' (BlockTrade BasisOnClose) 'l' (LateTrade BasisOnClose)

Documents and Specifications Reference

Service	Service Type	Documents Name
Order and Trade Management	SAIL Protocol	SAIL-MX-001E MX SAIL Specifications Guide v1.20 SAIL-MX-002E MX SAIL Business Design Guide v1.15
	SAIL Drop-Copy	RSK-MX-001E MX Risk Tools SAIL Specifications & Business Design Guide for Drop-Copy v2.2
Dissemination Feeds	HSVF Protocol	HSVF-MX-005E MX SOLA HSVF Multicast Specifications Guide v1.9
	OBF Protocol	OBF-MX-001E MX Order Book Feed Service Specifications and Business Design Guide v1.3
Post-Trading	TMS	TMS-MX-001E SOLA TMS User Guide v1.6
	Clearing API	API-01-001E Clearing Access Services Messaging Protocol Guide V1.13
	ATR	ATR-MX-001E MX SOLA ATR Specifications v2.1
Reports	Participant Activity Report (PAR)	RPT-MX-002E MX End-of-Day Participant Activity Reports v1.4
	eGains	Refer to section eGains File

Participants wishing to receive the above documents must contact MX Support Desk (samsupport@tmx.com)

APPENDIX 1

List of Associated Future Class Symbols and BTC Class Symbols

Future Underlying*	Associated Future Class Symbol	BTC Class Symbol
S&P/TSX 60 Index	SXF	BSF
S&P/TSX 60 Index	SXM	BXM
FTSE Emerging Markets Index	EMF	BEM
S&P/TSX Composite Index	SCF	BFC
S&P/TSX Global Gold Index	SXA	BXA
S&P/TSX Capped Financials Index	SXB	BXB
S&P/TSX Capped Information Technology Index	SXH	BXH
S&P/TSX Composite Index Banks (Industry Group)	SXK	BXK
S&P/TSX Capped Utilities Index	SXU	BXU
S&P/TSX Capped Energy Index	SXY	BXY
BARRICK GOLD CORP	FBA	BAB
AGNICO-EAGLE MINES LIMITED	FAE	BAE
AGRIUM INC.	FGA	BAG
ARC RESOURCES LTD.	FAX	BRX
ALIMENTATION COUCHE TARD SUB VOTIN	FTA	BTA
ALTAGAS LTD.	FAL	BLG
BROOKFIELD ASSET MANAGEMENT INC CL	FBM	BMD
BLACKBERRY LTD	FBB	BBY
BOMBARDIER INC CLASS B	FBD	BDB
BCE INC	FBC	BEC
BANK OF MONTREAL	FBO	BOM
BANK OF NOVA SCOTIA	FNS	BSN
CAMECO CORPORATION	FOC	BCZ
CANADIAN IMPERIAL BANK OF COMMERCE	FCB	BMC
CANADIAN NATURAL RESOURCES LIMITED	FCQ	BCQ
CANADIAN NATIONAL RAILWAY COMPANY	FCN	BCW

CANADIAN PACIFIC RAILWAY LTD	FCP	BPR
CCL INDUSTRIES INC.	FCI	BII
CRESCENT POINT ENERGY CORP	FCG	BPG
CANADIAN TIRE LTD CLASS A	FCT	BCY
CENOVUS ENERGY INC	FVE	BCV
DOLLARAMA INC	FDO	BDA
ENCANA	FEA	BNA
ELDORADO GOLD CORPORATION	FEL	BDE
EMERA INC	FMA	BRA
ENBRIDGE INC	FEB	BEB
FIRST QUANTUM MINERALS LTD	FMQ	BQM
FRANCO NEVADA CORP	FFV	BVF
FORTIS INC. (CANADA)	FFS	BFI
GOLDCORP INC	FGG	BGO
CGI GROUP INC CLASS A	FGI	BIB
GILDAN ACTIVEWEAR INC.	FGW	BGW
HUSKY ENERGY INC.	FHS	BHU
HYDRO ONE LIMITED	FHO	BHO
IMPERIAL OIL LTD.	FMO	BIM
INTER PIPELINE LTD	FPL	BPI
KINROSS GOLD CORP	FKK	BKO
LOBLAW COS. LTD.	FLL	BLW
MANULIFE FINANCIAL CORP	FMF	BMN
MAGNA INTERNATIONAL INC.	FMI	BMI
METRO INC	FMU	BMU
NATIONAL BANK OF CANADA	FNB	BNB
POTASH CORPORATION OF SASKATCHEWAN	FPO	BPT
POWER CORPORATION OF CANADA	FPW	BPW
PEMBINA PIPELINE CORP.	FPP	BPP
RESTAURANTS BRANDS INTERNATIONAL I	FQR	BQR
ROGERS COMMUNICATIONS NON-VOTING I	FIR	BIC
ROYAL BANK OF CANADA	FRY	BYR
SAPUTO INC.	FSA	BSA
SHAW COMMUNICATIONS INC CLASS B	FSJ	BSJ
SUN LIFE FINANCIAL INC	FLF	BLF
WHEATON PRECIOUS METALS CORP.	FPM	BSL

SNC-LAVALIN GROUP INC.	FCL	BCL
SUNCOR ENERGY INC.	FSU	BSU
TELUS CORP.	FTC	BTS
TECK RESOURCES B LTD	FTK	BTK
TORONTO DOMINION	FTD	BTD
THOMSON REUTERS CORP	FRT	BRT
TRANSCANADA CORPORATION	FRP	BRP
VALEANT PHARMACEUTICALS INTERNATIONAL	FRV	BVR
WASTE CONNECTIONS INC.	FWC	BWN
GEORGE WESTON LTD.	FWN	BWO
WHITE CAP RESOURCES INC.	FWP	BWP
YAMANA GOLD INC	FYR	BIY

APPENDIX 2

Specifications of the BTC on Index futures (like SXF)

	SXF	BTC on SXF
Underlying	S&P/TSX 60 index	Same as for the SXF
Multiplier	C\$200 times the S&P/TSX 60 index	Same as for the SXF
Expiry cycle	March, June, Sep, Dec	No expiry. At the end of the trading day, a BTC trade transforms into an SXF trade with a trade price based on the closing level of the S&P/TSX 60 index
Price quotation	Quoted in index points, expressed to two decimals	Quoted in index points, expressed to three decimals
Minimum price fluctuation	0.10 index points for outright positions 0.01 index points for calendar spreads	0.001 index points for outright BTC positions
Contract type	Cash settlement	No settlement. At the end of the trading day, a BTC trade transforms into an SXF trade with a trade price based on the closing level of the S&P/TSX 60 index
Last trading day	Trading ceases on the trading day prior to the final settlement day	Same as for the SXF
Final settlement day	Third Friday of the contract month	No settlement. At the end of the trading day, a BTC trade transforms into an SXF trade with a trade price based on the closing level of the S&P/TSX 60 index
Position reporting threshold	1,000 futures contracts	No position reporting threshold for the BTC, as all BTC trades transform into SXF positions
Position limit	Communicated by the Bourse	Same as for the SXF

Price limit	A trading halt will be invoked in conjunction with the triggering of “circuit breakers” on the underlying issue	Same as for the SXF
Minimum margin requirements	Information on minimum margin limits can be obtained from the Bourse as they are subject to periodic changes. See the Futures contracts margin rates page on the Regulatory Division website.	Same as for the SXF
Trading hours	Early session* 6:00 a.m. to 9:15 a.m. Regular session 9:30 a.m. to 4:15 p.m.	Same as for the SXF

Specifications of the BTC on Share Futures (“SFs”)

	SFs	BTC on SFs
Underlying	Individual Canadian or international shares	Same as for the SFs
Multiplier	One contract represents 100 shares	Same as for the SFs
Expiry cycle	Quarterlies: March, June, Sep, Dec. Serials: two (2) nearest non-quarterly months	No expiry. At the end of the trading day, a BTC trade transforms into an SSF trade with a trade price based on the closing level of the underlying equity
Price quotation	Prices are quoted in Canadian dollars and cents per share	Prices are quoted in Canadian dollars and tenths of a cent per share
Minimum price fluctuation	CAN \$0.01 per share	CAN \$0.001 per share
Contract type	Physically delivered	No settlement. At the end of the trading day, a BTC trade transforms into an SSF trade with a trade price based on the closing level of the underlying equity

Last trading day	Trading ceases at 4:00 pm on the third Friday of the contract month	Same as for the SFs
Final settlement day	The third business day after the last trading day	No settlement. At the end of the trading day, a BTC trade transforms into an SSF trade with a trade price based on the closing level of the underlying equity
Position reporting threshold	250 futures contracts	No position reporting threshold for the BTC, as all BTC trades transform into SSF positions
Position limit	Communicated by the Bourse	Same as for the SFs
Price limit	A trading halt will be invoked in conjunction with the triggering of “circuit breakers” on the underlying issue	Same as for the SFs
Minimum margin requirements	Information on minimum margin limits can be obtained from the Bourse as they are subject to periodic changes. See the Futures contracts margin rates page on the Regulatory Division website.	Same as for the SFs
Trading hours	Early session* 6:00 a.m. to 9:15 a.m. Regular session 9:30 a.m. to 4:00 p.m.	Same as for the SFs