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PREFACE

ABOUT THIS DOCUMENT

This document describes the functional and technical requirements related to the implementation of Euronext Mid-Point, Non-Displayed trading functionalities on Euronext Markets.

RELATED DOCUMENTS

The following associated documents, which provide additional relevant information to the user, should be read in conjunction with this document:

- General:
 - Euronext Cash and Derivatives Markets - Optiq File Specifications
- Order entry:
 - Euronext Cash Markets - Optiq OEG Client Specifications - SBE Binary Interface
 - Euronext Cash Markets - Optiq OEG Client Specifications - FIX 5.0 Interface
 - Euronext Cash Markets - Optiq Kinematics Specifications
 - Euronext Cash Markets - Optiq Drop Copy Service
 - Euronext Cash Markets - Optiq & TCS Error List
 - Euronext Cash Markets - Optiq OEG SBE Template
- Market data:
 - Euronext Cash Markets - Optiq MDG Client Specifications
 - Euronext Cash Markets - Optiq MDG SBE Template

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1.2	10/2024	<ul style="list-style-type: none"> ■ Introduction of STP functionality for the Dark Book (paragraph 2.3) ■ Other fine tunings to the text

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1. INTRODUCTION

1.1 OVERVIEW

Euronext introduced Mid-Point, Non-Displayed trading functionalities within the Euronext proprietary Trading system Optiq® in March 2024. Operating under the MiFIR ‘Reference Price’ and ‘Large-In-Scale’ waivers, this functionality offers members the possibility to submit Dark Mid-Point orders, e.g. orders without pre-trade transparency, for execution at the mid-point of Euronext’s Best Bid and Offer (BBO) registered in the Euronext Central Order Book.

This new functionality aims at providing greater flexibility and enhanced execution quality.

OPTIQ SEGMENT	SEGMENT VALUE	IN/OUT OF SCOPE
Euronext Cash Market		
Equities EQU	1	✓

Mid-Point, Non-Displayed orders types are available only during continuous trading, and are fully embedded onto the Optiq® trading system, under the same MIC code (not a separate MTF) of the main markets.

As soon as market participants implement the necessary modifications required to use this Service, including conformance tests, they are immediately able to submit Mid-Point, Non-Displayed orders.

In the rest of this document, we will refer to the “Dark Mid-Point Order Book” (DOB), or **Dark Order Book**, to indicate the set of Dark Mid-Point orders that can match against themselves, at the mid-point price of the Euronext transparent Central Order Book (COB).

1.2 KEY FEATURES OF THE SERVICE

The key features of the Service are the following:

- **Embedded onto the Optiq® architecture:** this Service is available through the current Optiq® architecture, without the need for extra connectivity or authorisations.
- **Dark Mid-Point orders:** orders whose characteristics are not visible, that can be executed at the mid-point of the best bid / ask spread visible in the transparent Central Order Book of the Euronext trading venue representing the primary venue for the instrument:
 - **Dark Mid-Point orders may be sent with a limit price**, which serves as a floor or ceiling price, preventing the order from being executed at a mid-point past the specified limit price. This floor / ceiling price can be specified using the standard order price fields at order entry. A Dark Mid-Point order cannot be executed at a mid-point price that does not meet the specified limit price. When the mid-point price returns to be consistent with the indicated limit price, the mid-point order resumes being executable.
 - **Mid-point Dark/Lit sweep Option:** a “sweep” functionality is available for Dark Mid-Point orders. When the “sweep” option is set by the participant at order entry, the order will be able to move from the Dark Order Book to the Central Order Book, when it is not immediately and fully executed in the DOB. When the order is moved to the COB, it becomes fully visible to the market.

In the rest of the document, we will refer to Dark Mid-Point Sweeps, or simply to a **Sweep Order**, to indicate a Dark Mid-Point order when the sweep option was selected at order entry. Otherwise, we will refer to a **Pure Dark Order**.

In case a floor / ceiling price is specified for a Sweep Order, this price will become its limit price when moved to the Central Order Book. Otherwise, the order will aggress the Central Order Book as a market order.

- At order entry, members can define a **Minimum Acceptable Quantity** for a Dark Mid-Point order to be executed (MAQ), or a **Minimum Execution Size** (MES):
 - MAQ (Minimum Acceptable Quantity): sets the minimum total size for the execution of the Dark Mid-Point order, that can be reached by aggregating multiple orders on the opposite side of the DOB. If the available cumulative quantity is below the indicate MAQ, the Dark Mid-Point order will remain unexecuted ;
 - MES (Minimum Execution Size): sets the minimum execution size of any individual potential execution for the Dark Mid-Point order.

The MES / MAQ feature of a Dark Mid Point order are “lost” when a Dark Mid-Point Sweep order is moved to the Central Order Book (i.e. the related ‘Minimum Quantity’ parameter is automatically reset to zero).

- **Execution Priority:** in the DOB, orders are ranked and executed by size-time priority.

Note that the “Order Quantity” used in the above ranking is the one set by the client in his order entry message or in the last modification message, and not the “Leaves Quantity” of the order (remaining quantity). It represents the total initial quantity of the order.

2. FUNCTIONAL DESCRIPTION

2.1 DARK MID-POINT ORDERS

A “Peg Order” is an order that tracks a defined reference price.

Euronext Dark Mid-Point orders are peg orders that can be executed only at the mid-point of the Best Bid and Offer prices defined in the Euronext transparent Central Order Book representing the primary market for the instrument. The mid-point of the best bid / ask spread in the Central Order Book, and so the potential execution price of a Dark Mid-Point order, is continuously updated as the market is moving.

From a regulatory perspective, Dark Mid-Point orders benefit from the MiFIR “Reference Price” waiver (MiFIR Art.4(1)(a)) or, (where applicable) from the “Large-in-Scale” waiver (MiFIR Art.4(1)(c)).

For this reason, for instruments with an Double Volume Cap restriction in place, Pure Dark orders with size below the MiFIR pre-trade Large-In-Scale threshold are automatically rejected. Sweep Orders (see paragraph 2.1.1) are instead accepted, but execution in the Dark Book is prevented and the order is immediately directed to the Central Order Book, where its order details are immediately disseminated to the public via Euronext market data.

2.1.1 Sweep Orders

Members can request their Dark Mid-Point orders to interact with the pool of liquidity that is available in the Euronext Central Order Book for the instrument, when not immediately and fully executed at order entry in the Dark Book. Upon move to the Central Order Book, the order details will be disseminated via Euronext market data (the order will become visible in the Euronext Central Order Book).

In case a floor / ceiling price is specified for a Sweep Order, and the order is swept to the Central Order Book:

- the order will become a Limit Order in the Central Order Book;
- with limit price equal to the specified floor / ceiling price. The specified price must respect the Tick Table for the instrument;
- the specified price will be checked against the Order Price Control Collars upon entry into the Dark Order Book. If outside collars, the order will be rejected.

In case no floor / ceiling price is specified and the order is moved to the Central Order Book, the order will aggress the Central Order Book as a market order.

2.1.2 Order entry

Dark Mid-Point orders can be entered during continuous trading (with the exclusion of the “Trade-At-Last” phase), for eligible instruments and where Euronext is defined as the primary market for the instrument. Members that have developed technical support for this functionality can start using it without the need for a specific registration process.

In order to enter an order as a Dark Mid-point order, the Member needs to identify it as such in the SBE “NewOrder” (01) / FIX “New Order Single” (D) message using the following settings:

- In the SBE protocol, the “Order Type” field must be set to “8” (**Mid-Point Peg**);
- in the FIX protocol, “OrdType” (tag 40) must be set to “P” (**Peg**), and “Peg Price Type” must be equal to “2” (**Mid Point**).

The characteristics of a Dark Mid-Point order are defined via SBE field “Dark Execution Instruction”, and the equivalent FIX “DarkExecutionInstruction” field (tag 20052):

- For an Order to be **Dark**:
 - Bit / Position #0 **must** be set to ‘1’. Represents the “Dark Instruction” (whether an order is dark, or not). Otherwise, the Mid-Point Peg order will be rejected;
- To define whether a Dark Order is **Sweep or Not Sweep**:
 - Bit / Position #3 can be set to ‘0’ (not sweep, i.e. a Pure Dark order) or ‘1’ (a Sweep Order). Represents the “Sweep Order Instruction”.
- To define whether a Dark Order has a **Minimum Quantity**:
 - Bit / Position #4 can be set to ‘0’ (Minimum Acceptable Quantity, MAQ) or ‘1’ (Minimum Execution Size, MES). Represents the “Minimum Quantity Type”. To be used in combination with SBE field “Minimum Order Quantity” / FIX “MinQty” (tag 110). Please refer to paragraph 2.2 for more information.
- For a Dark Mid-Point Order to benefit of **Self-Trade Prevention** in the DOB:
 - Bit / Position #5 can be set to ‘0’ (no STP) or ‘1’ (STP activated). Represents the “STP Dark Indicator”. Please refer to paragraph 2.3 for more information.

When a Dark Mid-Point order is matched, the execution message SBE “Fill” (04) / FIX “ExecutionReport” (8) will have value “35” (“Dark Trade”) in SBE field “Trade Type” / FIX “TradeType” (tag 21010).

2.1.3 Order Types and Time In Force

As specified in paragraph 2.1.2, any Dark Mid-Point order (Pure Dark and Sweep orders) must be submitted with order type equal to “Mid-Point Peg”:

- In the SBE protocol, the “Order Type” field must be set to “8” (**Mid-Point Peg**);
- in the FIX protocol, “OrdType” (tag 40) must be set to “P” (**Peg**), and “Peg Price Type” must be equal to “2” (**Mid Point**).

For Sweep orders, when moved to the Central Order Book, the order type can become:

- **Limit**: not authorized upon submission into the DOB - automatically assigned by the system upon move from DOB to COB, when an order price is provided;
- **Market**: not authorized upon submission into the DOB - automatically assigned by the system upon move from DOB to COB, when an order price is not provided.

The following **Time In Force** (TIF) parameters are authorized for Dark Mid-Point orders:

- for Pure Dark orders:
 - Day;
 - IOC (Immediate Or Cancel);
 - FOK (Fill Or Kill);
- for Sweep orders:
 - Day;
 - IOC (Immediate Or Cancel);
 - GTD (Good until Day) – only valid once the order sweeps to the COB;
 - GTC (Good until Cancel) – only valid once the order sweeps to the COB.

Dark Mid-Point orders can be submitted with the following account types.

Account type	Dark Non-Sweep Orders	Dark Sweep Orders
1: Client	Yes	Yes
2: House	Yes	Yes
4: RO	No	No
5: Assigned Broker	No	No
6: Liquidity Provider	No	No
7: Related Party	No	No
8: Structured Product Market Maker	No	No

A Dark Mid-Point order will be rejected upon order entry in case one of the prohibited account types is indicated.

2.1.4 Features not available for Dark Mid-point orders

Internal Matching System (IMS)

The Euronext IMS functionality, that is configured at participant level, is not applied in the Dark Book.

2.2 QUANTITY RESTRICTION FOR DARK MID-POINT ORDERS

Execution quantity restrictions are available for Dark Mid-Point orders, in the form of MAQ and MES parameters. In both cases, the required minimum execution size must be indicated at order entry in the SBE field 'Minimum Quantity' / FIX "MinQty" (tag 110):

- **MAQ (Minimum Acceptable Quantity):** the indicated "Minimum Quantity" threshold can be met by aggregating multiple orders on the opposite side of the Dark Book. The algorithm will go through the order book to find a cumulated quantity superior or equal to the specified Minimum Quantity.
- **MES (Minimum Execution Size):** the indicated "Minimum Quantity" threshold can be met by individual orders with remaining quantity equal or larger than the specified minimum quantity. Multiple orders are not aggregated to meet the threshold. The algorithm will go through the order book to find orders with remaining quantity superior or equal to the aggregating Minimum Quantity.

As indicated in paragraph 2.1.2, in order to define whether MES or MAQ is in place for a Dark Mid-Point order, members need to: (i) provide a valid value in SBE field “Minimum Quantity” / FIX “MInQty” (tag 110), and (ii) set Bit / Position 4 (“Minimum Quantity Type”) in the “Dark Execution Instruction” (SBE) / “DarkExecutionInstruction” (FIX tag 20052) equal to “0” for MAQ, or “1” for MES.

An order cannot have both MAQ and MES; in addition, this order characteristic is “lost” when a Sweep order is moved into the Central Order Book (i.e. Minimum Quantity is automatically reset to zero).

2.3 SELF-TRADE PREVENTION IN THE DOB

The Euronext Self-Trade Prevention functionality¹ can be requested for any Dark Mid-Point order in the DOB, using a new, dedicated order parameter described hereinafter. In case the STP is activated for a Dark Mid-Point order and a potential self-match in the DOB is identified, the matching order having the older timestamp will always be deleted.

In order to make a Dark Mid-Point order eligible to Self-Trade Prevention in the DOB, as indicated in paragraph 2.1.2:

- in the “New order” (01) SBE message, Bit #5 of field “Dark Execution Instruction” (the ‘STP Dark Indicator’) must be set to “1” (‘0’: STP Dark mechanism disabled; ‘1’: STP Dark mechanism enabled);
- in the “NewOrderSingle” (D) FIX message: Position #5 of field “DarkExecutionInstruction” (tag 20052) must be set to “1” (‘0’: STP Dark mechanism disabled; ‘1’: STP Dark mechanism enabled).

In addition, in order for the STP mechanism to be triggered in the DOB, the two matching orders² must have:

- the same Firm ID;
- one of the following ‘Account Type’ combinations:
 - ‘House’ vs ‘House’;
- the same ‘STP ID’, or field ‘STP ID’ equal to ‘null’.

Members are reminded that:

- for Sweep Orders, STP configurations that will apply on sweep to the COB can still be separately configured, using the existing STP fields in the order entry messages. For the COB, the Euronext STP functionality offers the possibility to opt for ‘cancel resting’, ‘cancel incoming’ and ‘cancel both’ options. These features are not available in case of a potential self-match in the DOB, where the matching order with the older timestamp is always deleted;
- in case the price of a Dark Mid-Point order is modified in the DOB, the order keeps its time priority and its timestamp is not modified. For this reason, it is possible that the modified order will be killed upon modification, in case an STP event is immediately triggered against another resting Dark Mid-Point order with a more recent timestamp.

¹ For full details on the Optiq® STP functionality, please refer to the document titled “Euronext Markets - Optiq® Self-Trade Prevention (STP) - Functional Overview”.

² These replicate the conditions that must be satisfied for an STP event in the Central Order Book, with the exception of the equality of the ‘STP Rule’ (‘cancel resting’, ‘cancel incoming’ or ‘cancel both’), since this feature is not available in the Dark book.

3. MESSAGE DESCRIPTION SUMMARY

A number of messages have been enhanced, as detailed below, in order to support Dark Mid-Point orders.

Message SBE	Message FIX
New Order (01)	NewOrderSingle (D)
Ack (03)	ExecutionReport (8)
Cancel Replace (06)	OrderCancelReplaceRequest (G)
Cancel Request (12)	OrderCancelRequest (F)
Open Order Request (15)	OrderMassStatusRequest (AF)
Ownership Request (18)	OwnershipRequest (U18)
Mass Cancel (13)	OrderMassCancelRequest (q)

3.1 ORDER ENTRY MESSAGES

3.1.1 SBE

■ “New Order” (01) message:

Field “Order Type” must be set equal to “8” (**Mid-Point Peg**).

Field “Dark Execution Instruction”:

- For an Order to be **Dark**:
 - Bit #0 **must** be set to ‘1’, otherwise a Mid-Point Peg order is rejected;
- For a Dark Order to be **Sweep** or Not **Sweep**:
 - Bit #3 can be set to ‘0’ (the order cannot move from the Dark Book to the Lit Book), or ‘1’ (a “Sweep” order);
- For a Dark Order to have a **Minimum Quantity**:
 - If the “Minimum Order Quantity” is populated, Bit #4 can be used to define MAQ or MES:
 - If set to ‘0’, a Minimum Acceptable Quantity (MAQ) will apply;
 - If set to ‘1’, a Minimum Executable Size (MES) will apply.
- For a Dark Order to benefit from **Self-Trade Prevention** functionality in the Dark book:
 - Bit #5 can be set to ‘0’ (no STP) or ‘1’ (STP enabled).

Upon successful submission by the member, Dark Mid-Point orders are acknowledged through an acknowledgement message:

■ Ack (03) message

Ack Type = ‘0’ (New Order Ack)

The “Order Priority” field indicates the rank of the Dark order, on its arrival, in the DOB.

When a Sweep Order is swept into the Lit order book, a new Ack (03) message is issued with a new value that indicates its priority vs. the rest of the Central Order Book.

- **“Fill” (03) message**

Trades executed in the DOB are identified with the specific “Trade Type” value “33” (Dark Trade).

- **“Cancel Replace” (06) message**

Acceptance of the message will be acknowledged with Ack Type set to ‘1’ (Replace Ack).

Please note that it is not possible to update the “Dark Execution Instruction” for either a Pure Dark or a Sweep Order. So, the values reported in the “Dark Execution Instruction” field must correspond to the status of the order:

- for a Pure Dark order, this field must have bit #0 = ‘1’ (dark order), and bit #3 = ‘0’ (no sweep). Also, the ‘Order Type’ field must be set to ‘8’ (mid-point peg);
- for a Sweep order - since the order that has been already moved into the lit book when the “Cancel Replace” message is received - it must have Bit #0 = ‘0’, and bit #3 = ‘0’.

3.1.2 FIX

- **“NewOrderSingle” (D) message**

Field “OrdType” (tag 40) must be set equal to ‘P’ (**Peg**).

Field “PegPriceType” (tag 1094) must be set equal to ‘2’ (**Mid Price**).

Field ‘DarkExecutionInstruction’ (tag 20052):

- For an Order to be **Dark**:
 - Position #0 **must** be set to ‘1’ in, otherwise a Mid-Price Peg order is rejected;
- For a Dark Order to be **Sweep** or Not **Sweep**:
 - Position #3 can be set to ‘0’ (the order cannot move from the Dark Book to the Lit Book), or ‘1’ (a Sweep order);
- For a Dark Order to have a **Minimum Quantity**:
 - If the “Min Qty” (tag 110) is populated, Position #4 can be used to activate the MAQ or MES feature:
 - If set to ‘0’, the order will have a Minimum Acceptable Quantity (MAQ);
 - If set to ‘1’, the order will have a Minimum Executable Size (MES);
- For a Dark Order to benefit of **Self-Trade Prevention** in the Dark book:
 - Position 5 can be set to ‘0’ (no STP) or ‘1’ (STP enabled).

Upon successful submission by the member, Dark Mid-point orders are acknowledged through an acknowledgement message:

- **“Execution Report” (8) message for Ack**

With “OrdStatus” (tag 39) = ‘0’ (New)

With “ExecType” (tag 150) = ‘0’ (New)

The “OrderPriority” (tag 21004) indicates the rank of the Dark Mid-Point order, on its arrival, in the DOB.

When a Sweep Order is swept into the Lit order book, a new Execution Report (8) is issued, indicates the priority of the order vs. the rest of the Central Order Book.

- **“Execution Report” (8)**

Trades executed in the DOB are identified with the specific “TradeType” (tag 21010) value “33” (Dark Trade).

■ “OrderCancelReplaceRequest” (G) message

“DarkExecutionInstruction” (tag 20052) with Dark Indicator = ‘1’ is mandatory.

“DarkExecutionInstruction” (tag 20052) with sweep order indicator = ‘1’ and Minimum Quantity Type = ‘1’ are optional.

“Price” is mandatory if OrdType = ‘2’, otherwise optional.

In case fields other than “Price”, “OrderQty” and “PegOffsetValue” do not match with the ones of the targeted order, the message will be rejected with error code 2101 “Unknown Order”.

Please note that it is not possible to update the “DarkExecutionInstruction” for either a Pure or a Sweep Order. So, the values reported in the “DarkExecutionInstruction” must correspond to the status of the order:

- for a Pure Dark order, it must have position #1 set to ‘1’ (dark order) and position #4 set to ‘0’ (no sweep). Also, field “OrdType” (tag 40) must be set to ‘8’ (mid-point peg) and “PegPriceType” (tag 1094) must be equal to ‘2’ (Mid Price);
- for a Sweep Order, as the order has already moved into the Central Order Book when the “OrderCancelReplaceRequest” message is received, it must have position #1 set to ‘0’ and position #4 set to ‘0’.

3.2 MARKET DATA MESSAGES

3.2.1 Referential messages

■ “Standing Data” (1007) message:

The information below is indicated for the instrument:

Field “Dark Eligibility”: Indicates eligibility for dark. 0 is not eligible, 1 is eligible.

Field “Dark LiS Threshold”: Indicates the minimum amount required for an order to benefit from the MiFIR “Large-In-Scale” pre-trade transparency waiver.

3.2.2 Order book updates

Upon reception of Dark Mid-point orders in the DOB, no message is broadcasted to market participants.

3.2.3 Trade execution

Trades executed in the DOB are published in the Market Data Gateway with the associated message broadcasting:

■ “FullTradeInformation” (1004) message

- “Trade Type” = ‘33’ (Dark Trade)
- “MMT Market Mechanism” = ‘3’ (Dark Order Book)
- “MMT Transaction Category” = ‘D’ (Dark Trade)
- “Transaction Type” = ‘2’ (Dark Trade)

■ “MarketUpdate” (1001) message

- “Market Data Update Type” = ‘35’ (Dark Trade)

4. EXAMPLES

Example 1 – Dark Orders interact in DOB (Continuous Phase)

In this example, all Dark Orders interact:

- Order 4 is entered into the Dark Order Book on Buy Side (OrderType: “MidPoint Peg” – priced with the midpoint BBO of the Central Order Book)

Dark Pool - Dark Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExecInst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExecInst	Order ID	Firm ID
BBB	4	MidPoint Peg	Dark Not Sweep MAQ	110	0	MidBBO							

- Order 5, 6, 7 and 8 are entered into the Dark Order Book on Sell Side:
 - Order 5 must be immediately matched with Order 4 (otherwise, if it hadn't been able to match, it would have been moved to the Central Order Book)

Dark Pool - Dark Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExecInst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExecInst	Order ID	Firm ID
BBB	4	MidPoint Peg	Dark Not Sweep MAQ	110	0	MidBBO	-	0	5	MidPoint Peg	Dark Sweep MAQ	5	AAA
							-	0	45	MidPoint Peg	Dark Not Sweep MAQ	6	CCC
							-	0	30	MidPoint Peg	Dark Not Sweep MAQ	7	DDD
							-	0	20	MidPoint Peg	Dark Not Sweep MAQ	8	EEE

- Orders Matching:
 - Order #4 with Order #5 at MidBBO for a quantity of 5
 - Order #4 with Order #6 at MidBBO for a quantity of 45
 - Order #4 with Order #7 at MidBBO for a quantity of 30
 - Order #4 with Order #8 at MidBBO for a quantity of 20
- The Dark Order Book after the processing of the incoming Orders is as follows:

Dark Pool - Dark Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExecInst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExecInst	Order ID	Firm ID
BBB	4	MidPoint Peg	Dark Not Sweep MAQ	10	0	-							

Example 2 – Dark Orders interact in DOB with Minimum Quantity (Continuous Phase)

In this example, all Dark Orders interact:

- Order 4 is entered into the Dark Order Book on BuySide (OrderType: “MidPoint Peg” – priced with the midpoint BBO of the Central Order Book)

Dark Pool - Dark Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExecInst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExecInst	Order ID	Firm ID
BBB	4	MidPoint Peg	Dark Not Sweep MAQ	110	50	MidBBO							

- Order 5, 6, 7 and 8 are entered into the Dark Order Book on Sell Side, while Order 4 is entered on the Buy side (with Minimum quantity of 50):
 - Order 5 fails to match with Order 4 and is moved to Central Order Book (see point 4.c below). Depending on whether the Order Price field was populated or not, the Order is made available in the COB with Order Type set to Limit or Market

Dark Pool - Dark Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExecInst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExecInst	Order ID	Firm ID
BBB	4	MidPoint Peg	Dark Not Sweep MAQ	110	50	MidBBO	-	0	5	MidPoint Peg	Dark Sweep MAQ	5	AAA
							-	0	45	MidPoint Peg	Dark Not Sweep MAQ	6	CCC
							-	0	55	MidPoint Peg	Dark Not Sweep MAQ	7	DDD
							-	0	20	MidPoint Peg	Dark Not Sweep MAQ	8	EEE

- Orders Matching:
 - Order #4 with Order #7 at MidBBO for a quantity of 55
- Orders Moving:
 - Order #5 doesn't match in DOB (Dark Order Book) and it's moved to the COB (Central Order Book)
 - The Dark Order Book after the processing of the incoming Orders is as follows:

Dark Pool - Dark Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExecInst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExecInst	Order ID	Firm ID
BBB	4	MidPoint Peg	Dark Not Sweep MAQ	55	50	MidBBO	-	0	45	MidPoint Peg	Dark Not Sweep MAQ	6	CCC
							-	0	20	MidPoint Peg	Dark Not Sweep MAQ	8	EEE

c. The Central Order Book after the processing of the moving Orders is as follows:

Lit Pool - Central Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExeclnst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExeclnst	Order ID	Firm ID
							Market	0	5	Market	Lit Not Sweep	5	AAA

Example 3 – Dark Orders interact and partially match (Continuous Phase)

In this example, all Dark Orders interact:

5. Order 4 is entered into the Dark Order Book on Sell Side (OrderType: “MidPoint Peg” – priced with the midpoint BBO of the Central Order Book)

Dark Pool - Dark Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExeclnst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExeclnst	Order ID	Firm ID
BBB	4	MidPoint Peg	Dark Not Sweep MES	10	0	MidBBO							

6. Order 5 and 6 are entered into the Dark Order Book on Sell Side

- a. Order 5 must be immediately matched with Order 4 (otherwise, if it hadn’t been able to match, it would have been moved immediately to the Central Order Book). The Order, with its remaining quantity, is then moved to the Central Order Book (COB).
 - i. Depending on whether the Order Price field was populated or not, the Order is made available in the COB with Order Type set to Limit or Market
- b. Order 6 fails to match with anything in the Dark Order Book and is moved to the Central Order Book.
 - i. Depending on whether the Order Price field was populated or not, the Order is made available in the COB with Order Type set to Limit or Market

Dark Pool - Dark Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExeclnst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExeclnst	Order ID	Firm ID
BBB	4	MidPoint Peg	Dark Not Sweep MES	10	0	MidBBO	10	0	15	MidPoint Peg	Dark Sweep	5	AAA
							-	0	15	MidPoint Peg	Dark Sweep	6	CCC

7. Orders Matching:

- a. Order #5 with Order #4 at MidBBO for a quantity of 10
- 8. Orders Moving:
 - a. Order #6 doesn't match in Dark Order Book (DOB) and it's moved to the Central Order Book (COB)
 - b. The Dark Order Book after the processing of the incoming Orders is as follows:

Dark Pool - Dark Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExecInst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExecInst	Order ID	Firm ID
						-							

- c. The Central Order Book after the processing of the moving Orders is as follows:

Lit Pool - Central Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExecInst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExecInst	Order ID	Firm ID
							10	0	5	Limit	Lit Not Sweep	5	AAA
								0	15	Market	Lit Not Sweep	6	CCC

Example 4 - Dark Orders submitted but not executed (Continuous TAL/Uncrossing/Call Phases)

In this example, Dark Orders do not interact:

- 1. Order 4 is entered into the Dark Order Book on Sell Side (OrderType: "MidPoint Peg" – priced with the midpoint BBO of the Central Order Book)

Dark Pool - Dark Order Book in Continuous TAL/Uncrossing/Auction Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExecInst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExecInst	Order ID	Firm ID
							-	0	5	MidPoint Peg	Dark Not Sweep MES	4	AAA

- 2. Member attempts to submit Order 5 on the Buy side:
 - a. This attempt must be rejected – Dark Sweep Orders are not allowed to be submitted during the Phases indicated:

Dark Pool - Dark Order Book in Continuous TAL/Uncrossing/Auction Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExecInst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExecInst	Order ID	Firm ID
BBB	5	MidPoint Peg	Dark Not Sweep MAQ	110	0	MidBBO	-	0	5	MidPoint Peg	Dark Sweep MES	4	AAA

Firm ID	Order ID	OrderType	DarkExeclnst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExeclnst	Order ID	Firm ID
BBB	5	MidPoint Peg	Dark Sweep MAQ	110	0	10							

b. The order is moved to the Central Order Book

Lit Pool - Central Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExeclnst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExeclnst	Order ID	Firm ID
BBB	5	Limit	Lit not Sweep	110	0	10	10	0	100	Limit	Lit not Sweep	4	AAA

3. Orders Matching:

a. Order #5 with Order #4 at price 10 for a quantity of 100

Lit Pool - Central Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExeclnst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExeclnst	Order ID	Firm ID
BBB	5	Limit	Lit Not Sweep	10	0	10							

Example 6 – Only Dark Not Sweep Orders submitted (Continuous Phase)

In this scenario, only Dark Not Sweep Orders have been submitted:

1. Order 4 is entered into the Dark Order Book on Sell Side (OrderType: “MidPoint Peg” – priced with the midpoint BBO of the Central Order Book)

Dark Pool - Dark Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExeclnst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExeclnst	Order ID	Firm ID
							-	0	5	MidPoint Peg	Dark Not Sweep MAQ	4	AAA

2. Order 5 is entered into the Dark Order Book on Buy Side (OrderType: “MidPoint Peg” – priced with the midpoint BBO of the Central Order Book)

Dark Pool - Dark Order Book in Continuous Phase													
Bid							Ask						

Firm ID	Order ID	OrderType	DarkExecInst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExecInst	Order ID	Firm ID
BBB	5	MidPoint Peg	Dark Not Sweep	110	0	MidBBO	-	0	5	MidPoint Peg	Dark Not Sweep MAQ	4	AAA

3. Orders matching

- a. Order #5 with Order #4 at Mid Point of BBO for a quantity of 5

4. The Dark Order Book after the processing of the incoming Orders is as follows:

Dark Pool - Dark Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExecInst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExecInst	Order ID	Firm ID
BBB	5	MidPoint Peg	Dark Not Sweep	105	0	MidBBO		0					

Example 7 – Only Dark Not Sweep Orders submitted with Minimum Quantity (Continuous Phase)

In this scenario, only Dark Not Sweep Orders have been submitted:

1. Order 4 is entered into the Dark Order Book on Sell Side (OrderType: “MidPoint Peg” – priced with the midpoint BBO of the Central Order Book)
 - a. With Minimum Quantity of 20

Dark Pool - Dark Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExecInst	Qty	MinQty	Price	Price	Qty	MinQty	OrderType	DarkExecInst	Order ID	Firm ID
							-	100	20	MidPoint Peg	Dark Not Sweep with MAQ	4	AAA

2. Order 5 and Order 6 are entered into the Dark Order Book on Buy Side (OrderType: “MidPoint Peg” – priced with the midpoint BBO of the Central Order Book)
 - a. Order 5 with Minimum Quantity of 10
 - b. Order 6 with Minimum Quantity of 5
3. Orders matching
 - a. None of the orders match because Order 4 has minimum quantity of 20 and can’t match with Order 5 and Order 6

Dark Pool - Dark Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExecInst	Qty	MinQty	Price	Price	Qty	MinQty	OrderType	DarkExecInst	Order ID	Firm ID

BBB	5	MidPoint Peg	Dark Not Sweep MAQ	20	10	MidBBO	-	100	20	MidPoint Peg	Dark Not Sweep MAQ	4	AAA
CCC	6	MidPoint Peg	Dark Not Sweep MAQ	10	5	MidBBO							

4. Order 7 is entered into the Dark Order Book on Sell Side (OrderType: "MidPoint Peg" – priced with the midpoint BBO of the Central Order Book)

Dark Pool - Dark Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExecInst	Qty	MinQty	Price	Price	Qty	MinQty	OrderType	DarkExecInst	Order ID	Firm ID
BBB	5	MidPoint Peg	Dark Not Sweep MAQ	20	10	MidBBO	-	100	20	MidPoint Peg	Dark Not Sweep MAQ	4	AAA
CCC	6	MidPoint Peg	Dark Not Sweep MAQ	10	5	MidBBO	-	100	5	MidPoint Peg	Dark Not Sweep MAQ	7	DDD

5. Orders matching

- a. Order #6 with Order #7 at Mid Point of BBO for a quantity of 5

6. The Central Order Book after the processing of the incoming Orders is as follows:

Dark Pool - Dark Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExecInst	Qty	MinQty	Price	Price	Qty	MinQty	OrderType	DarkExecInst	Order ID	Firm ID
CCC	5	MidPoint Peg	Dark Not Sweep with MAQ	20	10	MidBBO	-	100	20	MidPoint Peg	Dark Not Sweep MAQ	4	AAA

Example 8 – Only Dark Sweep Orders submitted with Minimum Quantity (Continuous Phase)

In this scenario, only Dark Sweep Orders have been submitted:

- Order 4 is entered into the Dark Order Book on Sell Side (OrderType: "MidPoint Peg" – priced with the midpoint BBO of the Central Order Book)
 - With Minimum Quantity of 10

Dark Pool - Dark Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExecInst	Qty	MinQty	Price	Price	MinQty	Qty	OrderType	DarkExecInst	Order ID	Firm ID
							10	10	20	MidPoint Peg	Dark Sweep MAQ	4	AAA

2. Order 4 fails to match and is moved to the Central Order Book

Lit Pool - Central Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExecInst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExecInst	Order ID	Firm ID
							10	0	20	Limit	Lit Not Sweep	4	AAA

3. Order 5 is entered into the Dark Order Book on Buy Side (OrderType: "MidPoint Peg" – priced with the midpoint BBO of the Central Order Book)

- a. Order 5 with Minimum Quantity of 10

Dark Pool - Dark Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExecInst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExecInst	Order ID	Firm ID
BBB	5	MidPoint Peg	Dark Sweep MAQ	110	10	MidBBO							

4. Order 5 fails to match and is moved to the Central Order Book

Lit Pool - Central Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExecInst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExecInst	Order ID	Firm ID
BBB	5	Market	Lit Not Sweep	110	0	.	10	0	20	Limit	Lit Not Sweep	4	AAA

5. Orders matching

- a. Order #5 with Order #4 at Price 10 for a quantity of 20

6. The Central Order Book after the processing of the incoming Orders is as follows:

Lit Pool - Central Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExecInst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExecInst	Order ID	Firm ID
BBB	5	Market	Lit Not Sweep	90	0	-							

Example 9 – Only Dark Not Sweep Orders submitted (Continuous TAL/Uncrossing/Call mode)

In this scenario, only Dark Not Sweep Orders have been submitted:

- Order 4 is entered into the Dark Order Book on Sell Side (OrderType: “MidPoint Peg” – priced with the midpoint BBO of the Central Order Book)

Dark Pool - Dark Order Book in Continuous TAL/Uncrossing/Auction Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExecInst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExecInst	Order ID	Firm ID
							-	-	5	MidPoint Peg	Dark Not Sweep MAQ	4	AAA

- Order 5 is entered into the Dark Order Book on Buy Side (OrderType: “MidPoint Peg” – priced with the midpoint BBO of the Central Order Book)

Dark Pool - Dark Order Book in Continuous TAL/Uncrossing/Auction Phase													
Bid		Ask											
Firm ID	Order ID	OrderType	DarkExecInst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExecInst	Order ID	Firm ID
BBB	5	MidPoint Peg	Dark Not Sweep MAQ	110	-	MidBBO	-	-	5	MidPoint Peg	Dark Not Sweep MAQ	4	AAA

- Dark Orders are not allowed to trade during the Phases indicated – the Dark Order Book remains as shown below:

Dark Pool - Dark Order Book in Continuous TAL/Uncrossing/Auction Phase													
Bid		Ask											
Firm ID	Order ID	OrderType	DarkExecInst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExecInst	Order ID	Firm ID
BBB	5	MidPoint Peg	Dark Not Sweep MAQ	110		MidBBO	-		5	MidPoint Peg	Dark Not Sweep MAQ	4	AAA

Example 10 – Only Dark Sweep Orders submitted (Continuous TAL/Uncrossing/Call mode)

Dark Sweep Orders are forbidden from being submitted during these market phases. As such, they ought to be immediately rejected and won't even enter the book.

Example 11 – Dark Not Sweep Orders submitted with Mid-Point not compatible with limit price (Continuous phase)

In this scenario, only Dark Not Sweep Orders have been submitted:

1. Order 4 is entered into the Dark Order Book on Sell Side (OrderType: “MidPoint Peg” – priced with the midpoint BBO of the Central Order Book)
 - a. With Order (Limit) Price of 10

Dark Pool - Dark Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExecInst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExecInst	Order ID	Firm ID
							10	0	5	MidPoint Peg	Dark Not Sweep MAQ	4	AAA

2. Order 5 is entered into the Dark Order Book on Buy Side (OrderType: “MidPoint Peg” – priced with the midpoint BBO of the Central Order Book)

Dark Pool - Dark Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExecInst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExecInst	Order ID	Firm ID
BBB	5	MidPoint Peg	Dark Not Sweep MAQ	110	0	MidBBO	10	0	5	MidPoint Peg	Dark Not Sweep MAQ	4	AAA

3. Orders matching
 - a. Mid-Point BBO equal to ‘8’
 - i. Order #5 with Order #4 at Mid-Point Price for a quantity of 5
 - ii. Trade fails because Order ID has Order (Limit) Price of 10

4. The Dark Order Book after the processing of the incoming Orders is as follows:

Dark Pool - Dark Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExecInst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExecInst	Order ID	Firm ID
BBB	5	MidPoint Peg	Dark Not Sweep MAQ	110	0	MidBBO	10	0	5	MidPoint Peg	Dark Not Sweep MAQ	4	AAA

Example 12 – Dark Not Sweep Orders submitted with Mid-Point compatible with limit price (Continuous phase)

In this scenario, only Dark Not Sweep Orders have been submitted:

5. Order 4 is entered into the Dark Order Book on Sell Side (OrderType: “MidPoint Peg” – priced with the midpoint BBO of the Central Order Book)
 - a. With Order (Limit) Price of 10

Dark Pool - Dark Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExecInst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExecInst	Order ID	Firm ID
							10	0	5	MidPoint Peg	Dark Not Sweep MAQ	4	AAA

6. Order 5 is entered into the Dark Order Book on Buy Side (OrderType: "MidPoint Peg" – priced with the midpoint BBO of the Central Order Book)

Dark Pool - Dark Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExecInst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExecInst	Order ID	Firm ID
BBB	5	MidPoint Peg	Dark Not Sweep MAQ	110	0	MidBBO	10	0	5	MidPoint Peg	Dark Not Sweep MAQ	4	AAA

7. Orders matching
- a. Mid-Point BBO equal to '15'
 - i. Order #5 with Order #4 at Mid-Point Price for a quantity of 5
8. The Dark Order Book after the processing of the incoming Orders is as follows:

Dark Pool - Dark Order Book in Continuous Phase													
Bid							Ask						
Firm ID	Order ID	OrderType	DarkExecInst	Qty	Min Qty	Price	Price	Min Qty	Qty	OrderType	DarkExecInst	Order ID	Firm ID
BBB	5	MidPoint Peg	Dark Not Sweep MAQ	105	0	MidBBO							