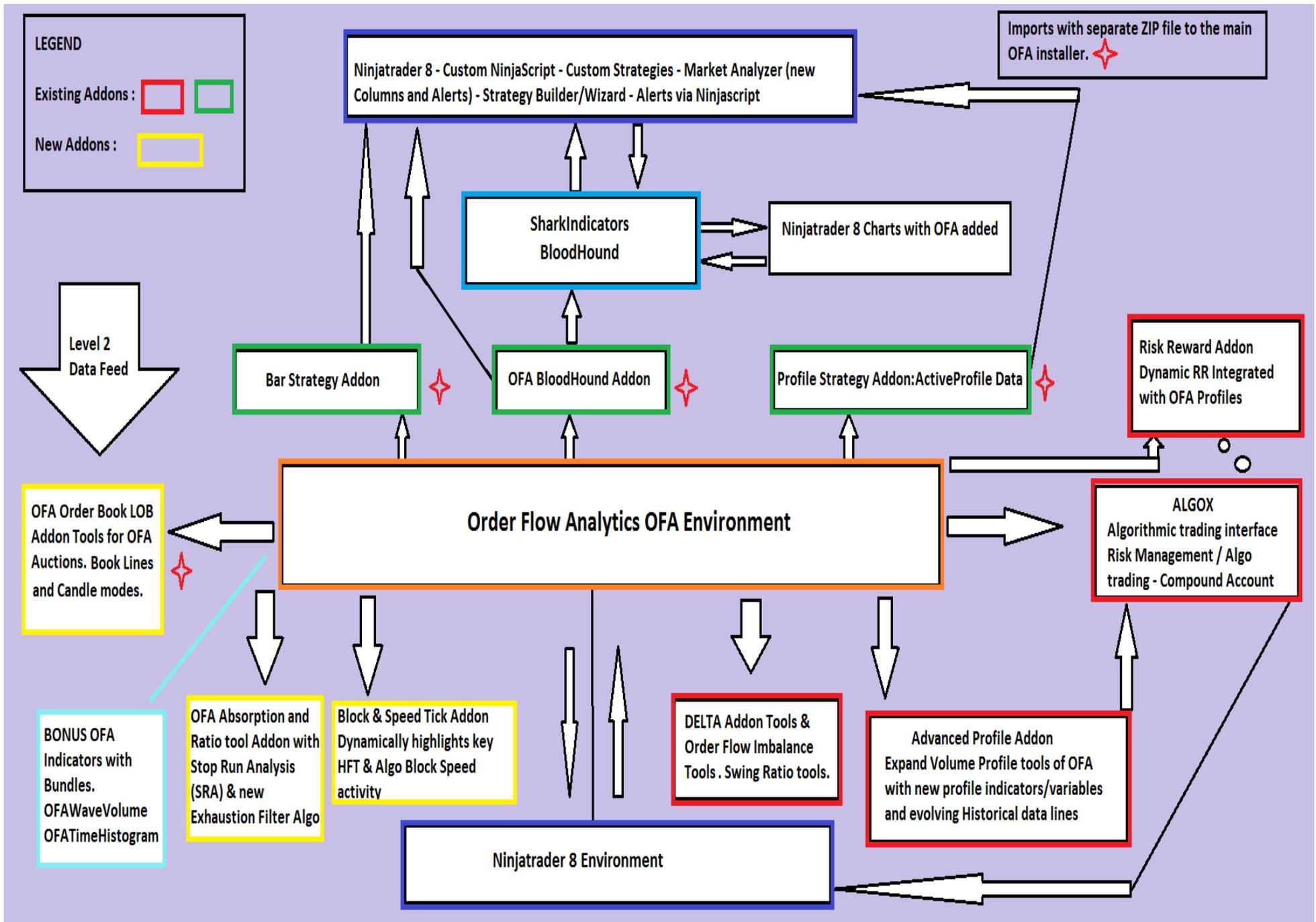


Table of Contents for OFA Book Addon

- 1. Component Overview of OFA and the updated OFA Addon Suite with the new Addon(s) and interaction with OFA / Ninjatrade 8 components**
- 2. Introductory Summary of OFA Book Addon followed by Features and Benefits**
- 3. Settings for the two OFA Book Indicators**
- 4. 14 Case studies and illustrations of the tools combined with some of the other Addon. A table outlining the dates/contracts/times is provided to enable an interactive mode of learning with the Cases in Replay Mode in NT8.**
- 5. FAQ Section & covers 2 OFASamplesxxx provided to access exposed data on these 2 OFA Book Indicator versions**
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OFA Book Addon Summary

To facilitate users incorporating the Limit Order Book (**LOB**) state and the current shape into the OFA toolset – Net difference of bids and Offers ; a suite of indicators and tools is provided in this OFA Addon. This provides an effective alternative to staring at the hypnotic fast moving prices and bid offer levels on the DOM / Depth of market tool. Skilled DOM traders will perhaps use some of the 3rd party tools who provide detailed DOM information that extends that available in the standard ninjatrade DOM tool. Deriving clear useable information from the DOM on its own is a challenge still for many traders.

IMPORTANT – in order to use this Addon as is stated on the Order Page this requires Level 2 data. This may require an additional data subscription from the Data Vendor you use in ninjatrade or via your Broker data connection.

The features of this Addon have been in Research and Development for well over a year with observations and refinements being made during that timeframe before releasing as part of the OFA Order flow Addon suite. It should be noted that at least 5 variations of calculations and testing of the limit order book calculations for the OFA Auction candles took place before presenting the current version. I did investigate other tools out there and none were able to provide any value that made pragmatic sense as to the state of the LOB (limit order book) shape and net changes as the OFA Auctions (Probe & Rotation (Non-Time based) particularly) evolved. Hence the decision to build this Addon available to OFA Users with 3 display options (2 options in OFA Book) and the total Bid and total Ask LOB values as separate lines.

In reviewing alternative 3rd party tools it reinforced the importance of the depth calculation process followed by extensive testing and observation.

The key aspect to this Addon is in the tracking of the more 'inside book' – default 8 – 10 depth levels as the fast changes in LOB bids / offers dynamically change (being added and removed) for the evolution and duration of OFA Bars.

A good starting point I discovered with most instruments is start point 1 (default) and setting Level of Depth to 8 or 9 ie ES. For CL GC may want to use 10 as they are a bit more illiquid.

What is unique with OFA PR Auction is not only that time is not a factor but the smaller rotation / compared to the probe when used in conjunction with the POC/Cluster zone of the Auction bar can give us strong clues as to the migration of liquidity to the bigger resting levels one can observe on the DOM be that in ninja or 3rd party tool or with the Ninja Historical Heatmap which shows rest orders of larger (Inst) liquidity levels. These outside levels become a magnet for price to test if is real resting liquidity.

This compliments the significant and important other side of the executed market orders that OFA auctions display in the Auctions and POC levels and in the OFA print. After several years ago now initiating development of a Depth tool similar to that in Bookmap & Jigsaw it became apparent those tools adequately covered that aspect and style of trading. So I wanted to offer & create a tool that would more directly compliment OFA with the important LOB liquidity equation of the market (the other side of the market orders) and have an effective useable visual tool that trading decisions and

analysis could be based upon.

It is important that this is mentioned at this stage so that a user does not think it is just a case of reading the net book change and boom you have a guaranteed buy or sell trade. It will take time and practice and engaging with the tools and the chart price action & structure to develop a more consistent 'higher probability' read of the Limit Order Book Net Difference Activity.

As with anything in trading nothing is guaranteed. Review some of the case studies and key patterns to look for (outlined below) and observe as you develop an understanding of the OFA Book process (Level 2) in conjunction with Price action/Structure and the market orders (what you see in OFA Bars traded orders Level 1)

Some background on Spoofing

With spoofing defined as 'the illegal practice of bidding or offering with intent to cancel before execution' HFT trading the primary form of algorithmic trading places the regulatory bodies in a conflicted position as HFT makes huge profits.

With ultra fast orders being added and removed from the order book – combined with ice orders and hidden orders and volatile markets – multiple plausible rationalisations and reasons can be proposed for why bid limits or ask limits were added or removed. Is change in market dynamics or overall value proposition for a trade/news event reversed. With milli and likely sub-milli second activity how do you begin to prove a case for this?

The point in mentioning this activity is that it is important to be aware that degrees of this 'spoofing' process still exist on occasions. You can see this in the net book changes for the OFA Auctions and I will highlight some of the patterns to be aware and mindful of. Several of these scenarios are illustrated in the Case studies section later in this document. This and in conjunction with the supporting videos highlights these and the context. This equally does not mean it happens on every swing but is important to draw attention to this aspect of the dynamic order book changes and some of the 'intent' behind the net difference changes. Other times it is clear what the limit order book changes are conveying with no games or tricks – just simple clear bid/offer supply/demand entering the market !

I do not believe it is necessary to understand the deeper complex mechanics of this process. But is for you to be aware of its existence and use at certain times ; locations, swing highs/lows and at certain key price levels (Open Overnight High Low Previous RT High Low and key Prices for you market ie 00 50 levels).

Some Scenarios and Patterns to pay attention to

Whilst not possible to cover every permutation of their use – pay attention to the main ones covered and outlined here, some of these are illustrated in the Case studies section. This will inform and prepare you to assess their existence as you read the price structure / levels and order flow from OFA and the OFA Book. To begin with focus on some of the **initial** patterns to build confidence then work down towards some of the more advanced scenarios.

Pace yourself and do not attempt to understand all of them at once, particularly if you are new to understanding the information in the Limit Order Book. I would rather present a comprehensive outline of some of the more straight forward ones and include the more 'complex' ones as you will come across these and it is important to be aware of them.

Note : Used in conjunction with the OFA Net Delta/Ninja Net Delta will enhance and support your reading of this information. However this is not essential to still benefit from using the OFA Book Indicators.

- ◆ Look for OFA Book shape changes at Swing Highs and Lows – this is where the Net Book changes from predominantly Bid near the Highs to a clear transition to net Supply. Then look for changes from predominantly Ask/Offer near the Lows to a clear transition to net Bid. Ideally with the OFA Book you want to see a clear significant candle body change from bid to supply (red is default color) or vice versa.
- ◆ At the Lows once the book changes from net supply to net bid and a new up swing initiates; look for net buy deltas to be in line with the Bid book pressure this helps to confirm that Offer liquidity is being withdrawn on the Offer side relatively speaking. Look for a clear change in the body of the OFA Book candle from Offer/Ask to net Bid.
- ◆ At the Highs Once the book changes from net bid to net supply and a new down swing initiates; look for net sell deltas to be in line with the Offer book pressure. This helps to confirm that Bid liquidity is being withdrawn on the Bid side relatively speaking. Look for a clear change in the body of the OFA Book candle from Bid to net Offer/Ask.
- ◆ Look for the OFA book and delta to be both the same color ie net bid with book and net delta buyers and net offer/Ask with book and net delta sellers. This is a higher probability scenario as net buying deltas with the net bid book confirms the withdrawal of liquidity on the offer side and the market orders then consume the reduced Offer/Ask liquidity. For the other side as net selling deltas with net Ask/Offer book show, this confirms the withdrawal of liquidity on the Bid side and the market orders then consume the reduced Bid liquidity.
- ◆ At times you will observe when there are many net delta buyers (market orders) at the low range ie crossing spread (market orders) showing. The market will try to get prices lower to shake off and test these buyers and thus get volume at lower prices. Observe the OFA Book patterns in these areas. This is where the Limit Order Book will try to encourage sellers with net Offers in LOB then push lower. With this scenario sometimes you will observe spike in selling deltas as the earlier buyers are shaken out. Look for a book change to net Bids to absorb these sellers if Big Players see value to reverse the market up. There are times when they cannot get sellers at lower prices (no change in the net selling delta) depending on market conditions and the market will mark up and continue higher with a clear book change to net Bids. See **case study on page 28** for an example of this and also on the left of **page 29**.
- ◆ Conversely at times you will observe when there are many net delta sellers (market orders) at the high range ie crossing spread (market orders) showing. The market will try to get prices higher to shake off and test these sellers and thus get volume at higher prices. Observe the OFA Book

patterns in these areas. This is where the Limit Order Book is trying to encourage buyers at higher prices to get volume accumulation to then push higher. With this scenario sometimes you will observe a spike in buying deltas as earlier sellers are shaken out. Look for a book change to net Offers to absorb these buyers if Big players see value to reverse the market down. There are times when they cannot encourage buyers at higher prices (no change in the net buying delta) depending on market conditions and the market will mark down and continue lower with a clear book change to net Offers. See **case study page 29 on the right** for example of this.

- ◆ Regarding the above the following context also applies. The scenario of strong net delta buying at the lows (market orders) will have the Market Maker (MM)/Dealers on the other side Offer/Ask. So look for the market in this instance to migrate lower as those on the other side of those longs will be net short at this point. Shaking off the buyers (weak holders in Wyckoff terminology) will facilitate MM balancing books. Remember MM are not positional traders and always strive to balance their book inventory.
- ◆ The converse is true for the net selling at the highs.
- ◆ Your attention is drawn to the above 2 scenarios to get you thinking and observing and asking what is happening and Why and the activity on the book. The more you gain exposure and experience of these scenarios, will help to build your confidence and train your eye to the price structure and book and likely outcomes.
- ◆ Watch for practice of 'spoofing' as outlined in the introduction above. This is where the dealers/MM can try to encourage buyers into a buy at high price or encourage sellers at low price. Observe the spike in the net Book liquidity for the OFA Auction using the cumulative or bar by bar candles or with the bid line / ask lines the other option to use. Check the net buying delta/volume into these highs to see if supporting any move higher and the net selling delta into the lows. Low buy volume at highs or low volume at lows is 'suspect' to continuation of buying at higher prices or selling at lower prices.
- ◆ Look for when a strong sell book is broken above and tested – this may be a pause in the move for profit taking before this level is broken above and tested before continuation higher.
- ◆ Look for when a strong bid book is broken below and tested – this may be a pause in the move for profit taking before this level is broken below and tested before continuation lower.
- ◆ **For those users with access to Depth levels > 10 in their data feed :**
- ◆ The outside levels ie 15 20 30 & above ticks outside of the current market price are where resting orders are placed by institutions. This advertised liquidity and the difference between the net offers and bids leads to pull of price to that higher liquidity. For example if the net offers for 50 depth levels is 800 and net bids for the same range is 350 – price will trend to migrate and gravitate to the **offer** side. For those with data feeds such as Rithmic who have those outside Depth levels and or tools such as Bookmap / Jigsaw those Macro liquidity levels on the outer levels can be observed. Then the OFA Book indicators aligned with the Auction Bars can be seen as potentially showing the

inside book migrating towards these larger outer liquidity levels.

- ◆ Combine this with the Macro level view of the order book for those with Bookmap or other tools that show resting orders at greater depth levels ie 50 to 100 and beyond in some cases market depth levels.
- ◆ **NOTE :** From all of the above scenarios focus on **one or two** to begin with and learn the clear signs and only take the clear best quality ones where all lines up. Some of the above are a bit more advanced and take time to learn. You only need to build skill in recognising a few of these to help in your trading. Then build upon the other more nuanced/subtle advanced patterns as your confidence and experience grows over time.

Some other points worthy of consideration :

It should be stated that the passive orders that show at the levels above and below the current market price in the LOB (Ladder) are constantly being pulled and added and changed as the best bid and best offer adjust based on the Last traded market price. These changes happen very fast. This OFA Book indicator dynamically keeps track of these changes providing immediate updates to the net bid ask limit order book values for the duration of the OFA Auction/Bar. This takes into account the number of Limit Order Book levels defined in the input parameter and can be adjusted to suit your requirements and levels needed.

Be aware of lower liquidity periods Asia & pre London & outside of markets prime high volume periods. Changes in the book can reflect more normal Market Maker rotations they use to keep their books balanced as they are not positional traders. As the market moves up more limit Offers/Ask are added & as the market moves down more limit Bids are added. So be mindful of the shift on the cash open to prior and Asia and London sessions as more liquidity and algorithms come into the market! You will see a difference in the US Session as the morning open starts for Equities/Nymex etc.

It should be noted that much of the liquidity showing in the DOM and Limit Order Book particularly at the levels further away from the current market price may be fake with various algorithmic patterns present to mislead and trap traders.

Once an accumulation phase has completed at a top edge/bottom edge it is in the interests of the big players who are now long for them to then take profit as price moves higher – with a combination of algorithmic and momentum traders stepping into the change in the short term trend and liquidity being reduced on the Ask/Offer side this has the effect of the path of least resistance being UP in the short-term. It is important to be aware of pauses and changes to this as price moves up and hits resistance or key levels.

Bracketed areas/balance areas are where Market Makers make more money on the bid ask offer in the rotations – so observe the book activity in these balance areas. This can then be a prelude to changes in the book activity ahead of a break of a range and some of the 'spoofer' scenarios come into play to trap and mislead those reading the Limit Order Book. Yes games are also played at times on the LOB as you will discover, but with learning these scenarios you will be better prepared. See the Case Study examples.

Key Features/Benefits of the OFA Book Addon

In addition to the OFA Book display which is one of the Key components of this Addon the following additional related Analysis tools are part of this toolset.

- Dynamically observe the change in the '**Shape**' of the Limit Order Book (LOB) for the duration of the current OFA Bar Auction – Probe & Rotation or one of other OFA Bar types eg OFA Seconds. This can be done using the OFA Book indicator added below the Price Panel chart so you have a direct alignment to the specific OFA Bar settings that you use (Probe & Rotation or Seconds/Minute) etc.
- These indicators fill in the 'missing' piece of the jigsaw with respect to the Limit Order Book information and complimenting the other OFA Tools. The data is presented in a readable format underneath the OFA Bars without needing to refer to the DOM in several format options.
- **TWO versions** of the OFA Book indicator are provided. The first displays as a cumulative or Bar by Bar basis in Candle form – similar to the Delta Candles in the OFA Delta Addon. The second form displays a **total bid line and a total ask line** showing a line updated for each change in the bid depth and ask depth for each Bar. This version is not cumulative and can be used to show and highlight the changes in the book as each bar unfolds. With the total bid ask lines observe the slope as there is a total increase in liquidity (median between the two lines) or a reduction in liquidity during or ahead of news events and volatility periods.
- Time your entries better as you are now using the key Limit Order Book (LOB) net changes information combined with some of the information covered in the Key patterns section above.
- Combine this OFA Book information with the Net Delta to improve your read and also some of the other OFA Addons being released ie OFA Block & Speed and Absorption tools to further enhance your interpretation of the order flow and price structure.
- The OFA Book version has a feature to use a different color for the book candle to highlight when there are more **net Bids** in a Down Auction and more **net Offers** in an Up Auction. Seeing this anomaly as a color change helps our read of the OFA Book with regard to the OFA Auctions.
- The OFA Booklines version highlights some interesting and clear Cross patterns of the Bid line vs Ask line help in the read of the changes and pressure in the Limit Order Book. Several examples of this illustrated in the Case Studies section.
- Note when the lines drop during news releases or other volatility events – this is indicative of liquidity being withdrawn and pulled on both sides and Market makers and liquidity providers await information before adding more liquidity back to the bid and offer side.

- Observe the Book Candles and the Highs and Lows leaving Pins behind as the book pressure changes from net Bid to net Offer and vice versa
- For users of **Bloodhound** or **Ninjascript** the **Open High Low Close** of OFA Book or the close price of the lines version are accessible. The values of the above are exposed in order to access and use the values of these in any indicators or strategies. It should be noted that in order to use the exposed data fields for this indicator does NOT require the OFA Bloodhound Addon in this instance. Two sample scripts are provided to illustrate accessing this data (see download section) and extend into your own ninjascript indicator and or strategies. Note the default 'Host' indicator ie OFA Book runs on each tick in order to capture all the book changes.
- For users with the OFA Bloodhound Addon or the Bar Strategy Addon you can combine these OFA Book / BookLine values with the OFA net Delta value or other OFA Bar detail provided in your ninascript logic or bloodhound logic templates. This can be used for trade signals or creating your own indicators based on OFA values or other indicator values from your own research.
- For those with access to LOB Depth levels > 10 in their data feed work with the Inside Book levels in OFA Book as price migrates to the larger resting levels 30 50 100 ticks away. Those will be notable by Larger Limit Volumes at these outer levels.

Properties

▼ Misc

ContinuousCumulativeBook

IsBidMinusAsk

▼ Parameters

Depth of Market Levels

LevelStartPoint

RefreshDelayMilliSec

UseRefreshDelay

▼ Data Series

Input series

▼ Setup

Calculate

Label

Maximum bars look back

▼ Visual

Auto scale

Displacement

Display in Data Box

Panel

Price marker(s)

Scale justification

Visible

▼ Plots

▶ OFABookHighPrice

▶ OFABookLowPrice

▶ OFABookOpenPrice

▶ OFABookClosePrice

▶ BVolume

▶ Wick

▶ Upbar

▶ Dnbar

▶ Outline

▶ NetBidForDnBar

▶ NetAskForUpBar

OFA Book @ Indicator Parameters in the above Screenshot Figure

To add this Indicator to a lower chart panel, select from the Ninja Indicators panel or right click chart pane and select Indicators....

ContinuousCumulativeBook – when enabled the net difference of the Bid Ask Book values will show as a cumulative total (similar to the cumulative delta indicator). When disabled the difference will appear on a bar by bar basis with the Open / Close / High / Low.

IsBidMinusAsk default is true. This is total for Bid migration minus total for Offer migration – eg increase size in bids vs offers will reflect in the net difference of bid candles rising if each successive auction also shows net bid alternative to set to false will be offers minus bids and the cumulative candles will migrate down for increased bids and migrate up for increased offers – you decide but recommendation is the default setting.

Depth of Market Levels – this defines the number of Depth Levels to track and calculate for the duration of each OFA Auction bar. Typically use 8 levels for ES CL GC. 8 is a good level to start with most contracts and you can reduce or increase as you build experience of this. Multiple instances of this can be loaded to test for example 6 levels 8 levels 10 levels for contracts you trade. Then focus on 1 level once you are happy with the data display.

LevelStartPoint - by default (1) start at the first inside book level for bid / ask. You can capture the book activity in the outer levels should you wish to do so ie from say level 10 through 20 if you are interested in capturing the outside resting book for each side.

RefreshDelayMilliSec – this is similar to the addition to the OFA Core for rendering & refreshing book candle values faster than the standard ninja setting. Values can be set between (50-2000 milliseconds) – default is 100 to refresh the OFA Book Candles.

UseRefreshDelay – this is default to true but can be disabled if you choose to.

OFABookHighPrice – these plots values for the **Book Open High Low Close** values can be accessed via ninjascript – see FAQ below for enclosed sample details

OFABookLowPrice

OFABookOpenPrice

OFABookClosePrice

Bvolume – please disregard – internal use only

Wick – color and width of the Wick

Upbar – color of the Up Auction

Dnbar – color of the Down Auction

Outline – color of the candle outline and width

NetBidForDnBar – this color will be used when the net book for the current Auction / Bar is showing more **Bids** in a Down Auction/Bar

NetAskForUpBar – this color will be used when the net book for the current Auction / Bar is showing more **Offers** in an Up Auction/Bar

Properties

- Parameters
 - Depth of Market Levels: 8
 - LevelStartPoint: 1
 - RefreshDelayMilliSec: 100
 - UseRefreshDelay:
- Data Series
 - Input series: GC 08-22 (OFAⓈ(6/3))
- Setup
 - Calculate: On each tick
 - Label: OFABookLines Ⓢ
 - Maximum bars look back: 256
- Visual
 - Auto scale:
 - Displacement: 0
 - Display in Data Box:
 - Panel: New panel
 - Price marker(s):
 - Scale justification: Right
 - Visible:
- Plots
 - OFABookOfferClose:  Line, Solid, 1px
 - OFABookBidClose:  Line, Solid, 1px
 - OfferBookLine:  Line, Solid, 2px
 - BidBookLine:  Line, Solid, 2px

OFA BookLines @ Indicator Parameters in the above Screenshot Figure

To add this Indicator to a lower chart panel, select from the Ninja Indicators panel or right click chart pane and select Indicators....

This version has 2 separate lines representing the **total** book liquidity for the Bid and the Ask. Note this version is not cumulative.

Depth of Market Levels - this defines the number of Depth Levels to track and calculate for the duration of each OFA Auction bar. Typically use 8 levels for ES CL GC. 8 is a good level to start with most contracts and you can reduce or increase as you build experience of this. Multiple instances of this can be loaded to test for example 6 levels 8 levels 10 levels for contracts you trade. Then focus on 1 level once you are happy with the data display.

LevelStartPoint - by default (1) start at the first inside book level for bid / ask. You can capture the book activity in the outer levels should you wish to do so ie from say level 10 through 20 if you are interested in capturing the outside resting book for each side.

RefreshDelayMilliSec – this is similar to the addition to the OFA Core for rendering & refreshing book line values faster than the standard ninja setting. Values can be set between (50-2000 milliseconds) – default is 100 to refresh the OFA Book Candles.

UseRefreshDelay – this is default to true but can be disabled if you choose to.

OFABookOfferClose – these plot values can be accessed via NinjaScript see FAQ and Sample Details.

OFABookBidClose

OfferBookLine – color / style / width properties of the Offer Book Line

BidBookLine – color / style / width properties of the Bid Book Line

Case Studies

The next section contains 14 case studies, illustrating this Addon features with annotated charts. Some of the case studies also include elements from the other Addons in this launch release ie OFA Block & Speed and OFA Absorption SRA.

Prior to the Annotated Charts you will see a table of information relating to these Case Studies. This has been provided to facilitate learning and training of this Addon in addition to the video whereby you can load the contract data into Replay in NT8 and enable the settings that apply in each case. By interacting with the chart in NT8 and following the key points in the chart annotation it will hopefully enable a more interactive approach to these case studies. Please note for replay mode – there is a section in the last AlgoX lesson in the NT8 tutorials which covers some tips on using Replay mode in NT8. It is recommended to load one chart at a time and ensuring you have the data loaded for the days you are interested in. Some of the earlier bugs/issues in Replay have been resolved over the last few years thereby hopefully will make this a smoother process.

The table reflects the charts in order of appearance in the document following the table. The date and the time note is GMT – for EST time please subtract 5 hours; this refers to the leftmost bars in the chart view. For other times zones eg central / pacific or asia time zones please adjust accordingly.

Date	Contract/Expiry	OFA Bar Settings	Time (GMT – for EST subtract 5)
26 th July 2022	gc 08-22	ofa 6/3	12:32:00
28 th July 2022	es 09-22	ofa 6/3	16:00:00
28 th July 2022	es 09-22	ofa 6/3	16:15:00
28 th July 2022	es 09-22	ofa 6/3	14:28:00
27 th July 2022	cl 09-22	ofa 7/3	10:35:00
28 th July 2022	cl 09-22	ofa 7/3	15:29:00
29 th July 2022	gc 12-22	ofa 6/3	14:47:00
29 th July 2022	gc 12-22	ofa 6/3	15:03:00
29 th July 2022	gc 12-22	ofa 6/3	15:02:00
01 st August 2022	es 09-22	ofa 6/3	14:13:00
2 nd August 2022	es 09-22	ofa 6/3	15:28:00
4 th August 2022	es 09-22	ofa 6/3	17:22:00
4 th August 2022	cl 09-22	ofa 7/3	14:57:00
29 th August 2022	es 09-22	ofa 6/3	18:20:00

DP(1B) DP(1B A) DP(XB) DP(XB A) RP RP(A) SP SP(A) DP DP(A)

OFA ©(GC 08-22 (OFA(6/3)), NinjaTrader GUI Tools, SimpleFont,3) V= 11726 T= 84 D= 758 CwV= 9 VwD= 4
 26/07/2022 12:32:34.352 - 26/07/2022 14:57:32.571

This example outlines the Blocks with the Book Addon and Delta combination. Coming into the 2pm London Gold denoted by the white horizontal line.

Very large 572 bid block with strong net selling delta and the book (red net offers) into the lows. Observe the net book change to Bid shown by green candles below - this is cumulative display of the LOB. We want to see a visible change from supply to bids in the book and ideally supported by net buying deltas ie crossing the spread

2pm gold start

Bid 572 @1714.2

50 line - halfback zone of swing from lows and blocks

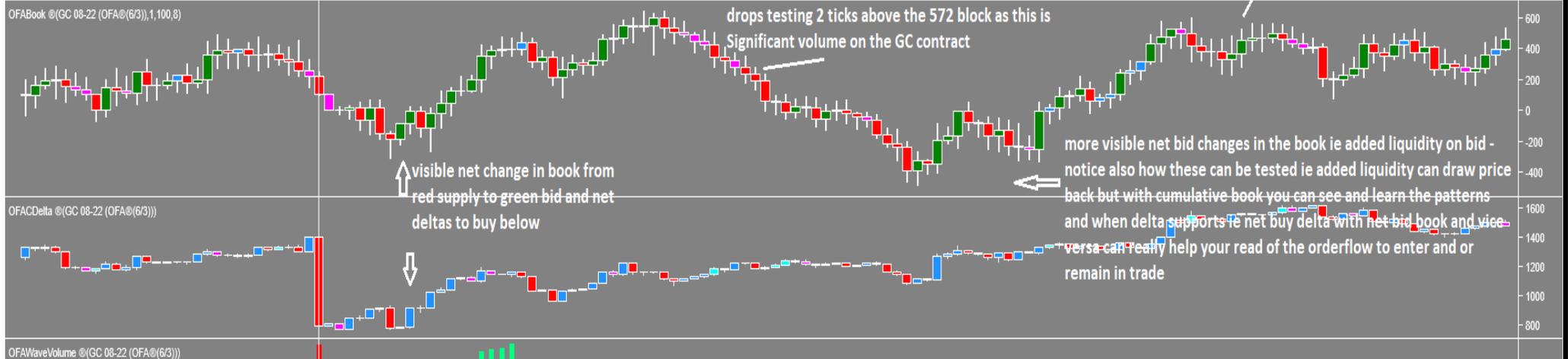
Coming back to test the 572 bid block and ASK blocks low of Auction here 1714.4. Then net bid (green) book change.

Blocks At Ask - denote some absorption and profit taking and bids withdrawn for higher prices - magenta is the globex vwap level

note the net supply coming in and price holds level then drops testing 2 ticks above the 572 block as this is Significant volume on the GC contract

↑ visible net change in book from red supply to green bid and net deltas to buy below

more visible net bid changes in the book ie added liquidity on bid - notice also how these can be tested ie added liquidity can draw price back but with cumulative book you can see and learn the patterns and when delta supports ie net buy delta with net bid book and vice versa can really help your read of the orderflow to enter and or remain in trade



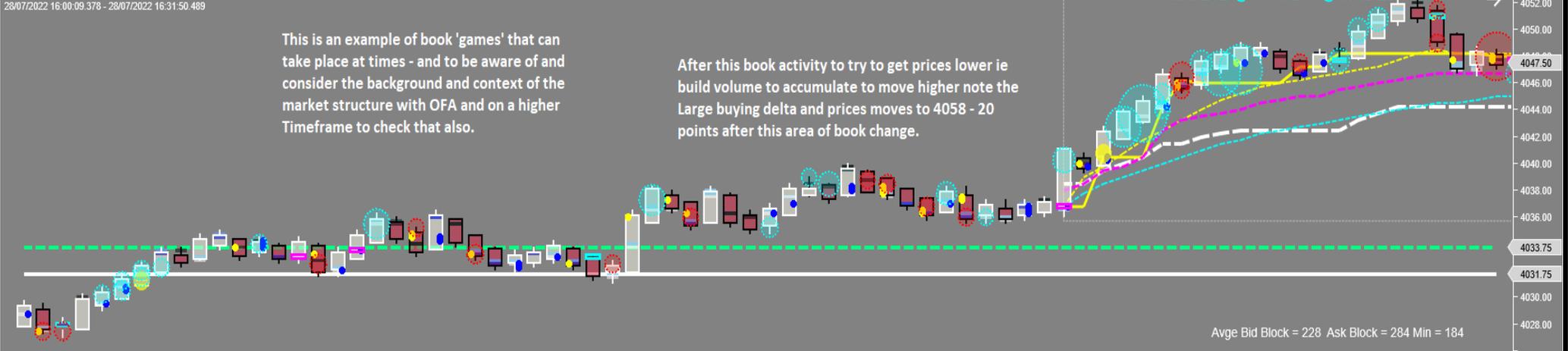
DP(1B) DP(1B A) DP(XB) DP(XB A) RP RP(A) SP SP(A) DP DP(A)

OFA @ (ES 09-22 (OFA@ (6/3)), 8, NinjaTrader.Gui.Tools.SimpleFont, 3)
23/07/2022 16:00:09.378 - 23/07/2022 16:31:50.489

This is an example of book 'games' that can take place at times - and to be aware of and consider the background and context of the market structure with OFA and on a higher Timeframe to check that also.

After this book activity to try to get prices lower ie build volume to accumulate to move higher note the Large buying delta and prices moves to 4058 - 20 points after this area of book change.

Ask 202 @4044 216 @4045.25



Avg Bid Block = 228 Ask Block = 284 Min = 184

OFABook @ (ES 09-22 (OFA@ (6/3)), 1, 100, 8)

this represents the net bid/offer depth changes for the Order book during each auction. You can see with the lows and highs and Pins the movement of the Limit Order Book activity. This display shows the cumulative version. You can also display bar by bar only. 8 Depth levels set and starts from level 1.

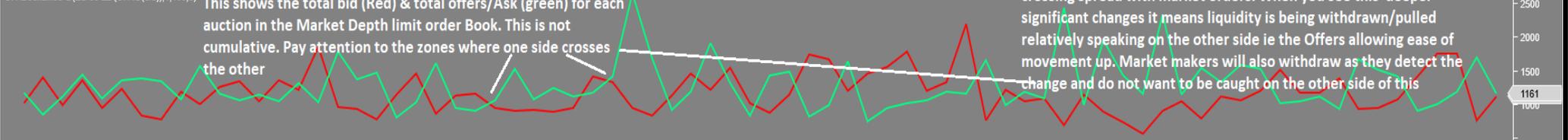
So here is a 'spoofer' type game where the Book Sellers are trying to encourage selling but you can see in the price and net delta - very little net selling is taking place



Now see the large change in the Shape of the book to net Bids and the net delta buys are WITH this change which means traders now crossing spread with market orders. When you see this 'deeper' significant changes it means liquidity is being withdrawn/pulled relatively speaking on the other side ie the Offers allowing ease of movement up. Market makers will also withdraw as they detect the change and do not want to be caught on the other side of this

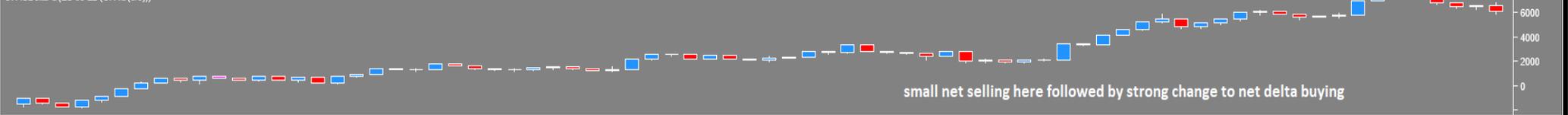
OFABookLines @ (ES 09-22 (OFA@ (6/3)), 1, 100, 8)

This shows the total bid (Red) & total offers/Ask (green) for each auction in the Market Depth limit order Book. This is not cumulative. Pay attention to the zones where one side crosses the other

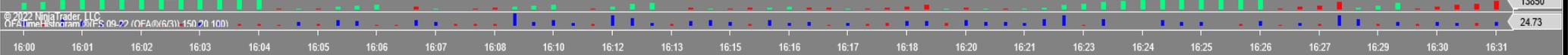


OFAcDelta @ (ES 09-22 (OFA@ (6/3)))

small net selling here followed by strong change to net delta buying



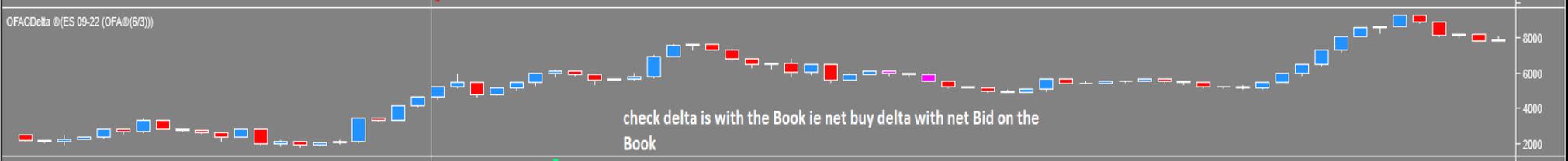
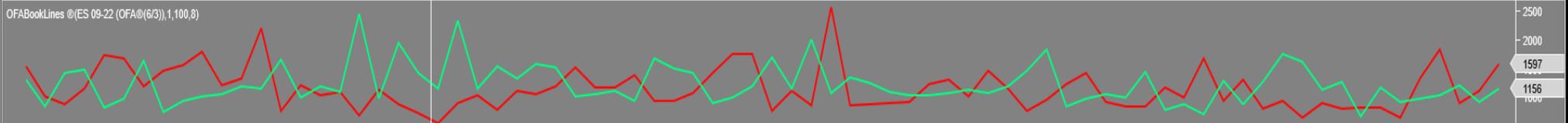
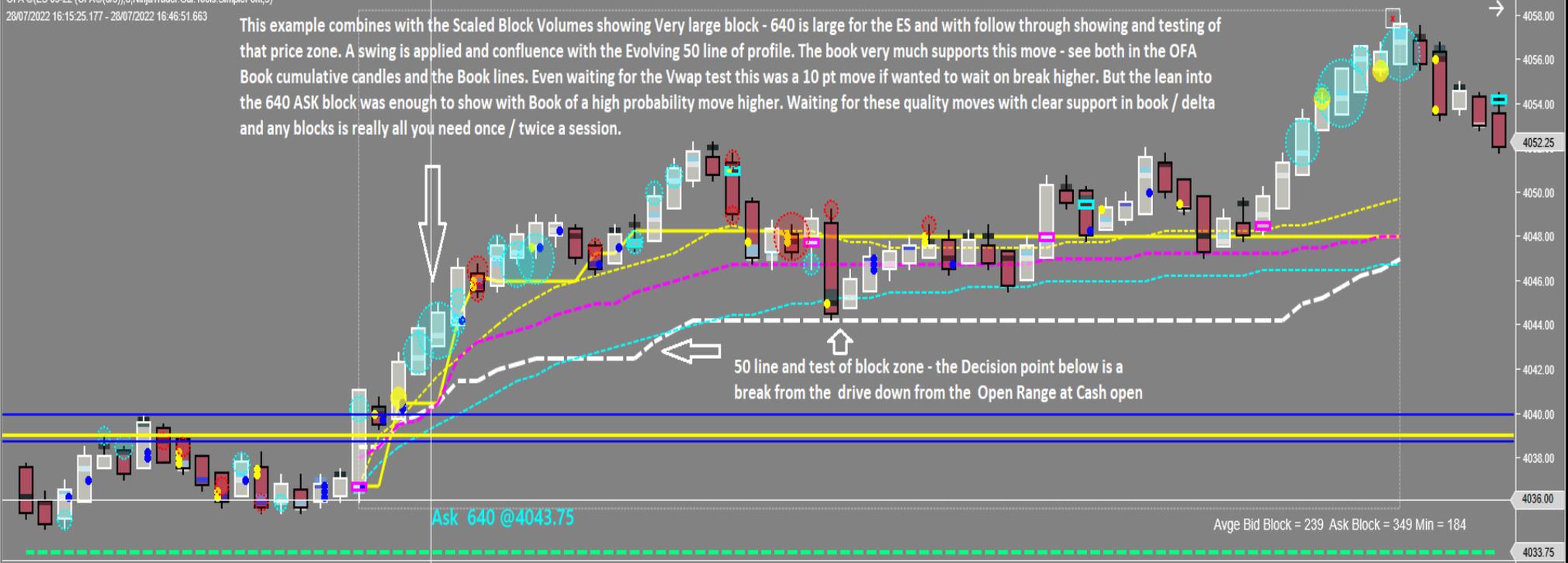
OFAWaveVolume @ (ES 09-22 (OFA@ (6/3)))

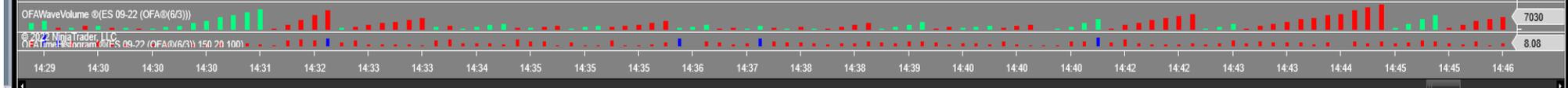
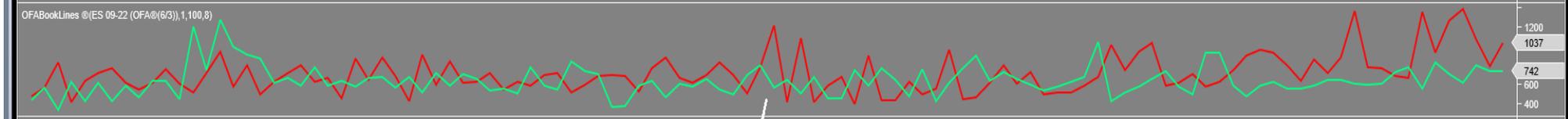
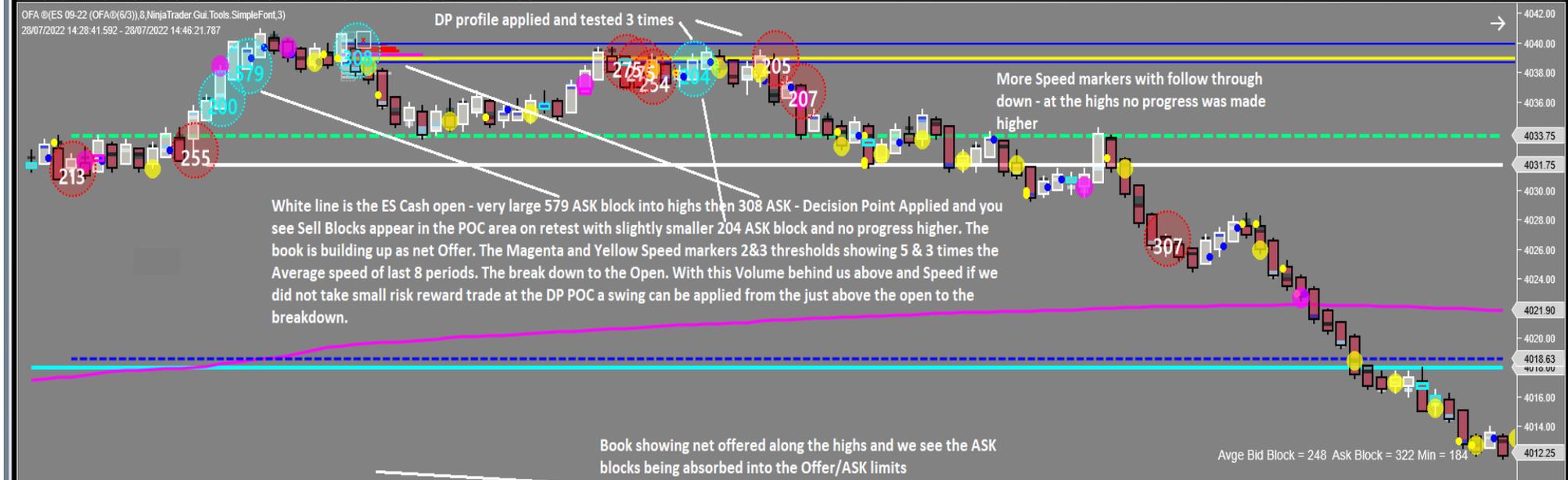


OFA @(ES 09-22 (OFA@(6/3)), NinjaTrader.Gui.Tools.SimpleFont,3)
 28/07/2022 16:15:25.177 - 28/07/2022 16:46:51.663

V= 126156 T= 88 D= 7118 CwV= 7 VwD= 5

This example combines with the Scaled Block Volumes showing Very large block - 640 is large for the ES and with follow through showing and testing of that price zone. A swing is applied and confluence with the Evolving 50 line of profile. The book very much supports this move - see both in the OFA Book cumulative candles and the Book lines. Even waiting for the Vwap test this was a 10 pt move if wanted to wait on break higher. But the lean into the 640 ASK block was enough to show with Book of a high probability move higher. Waiting for these quality moves with clear support in book / delta and any blocks is really all you need once / twice a session.

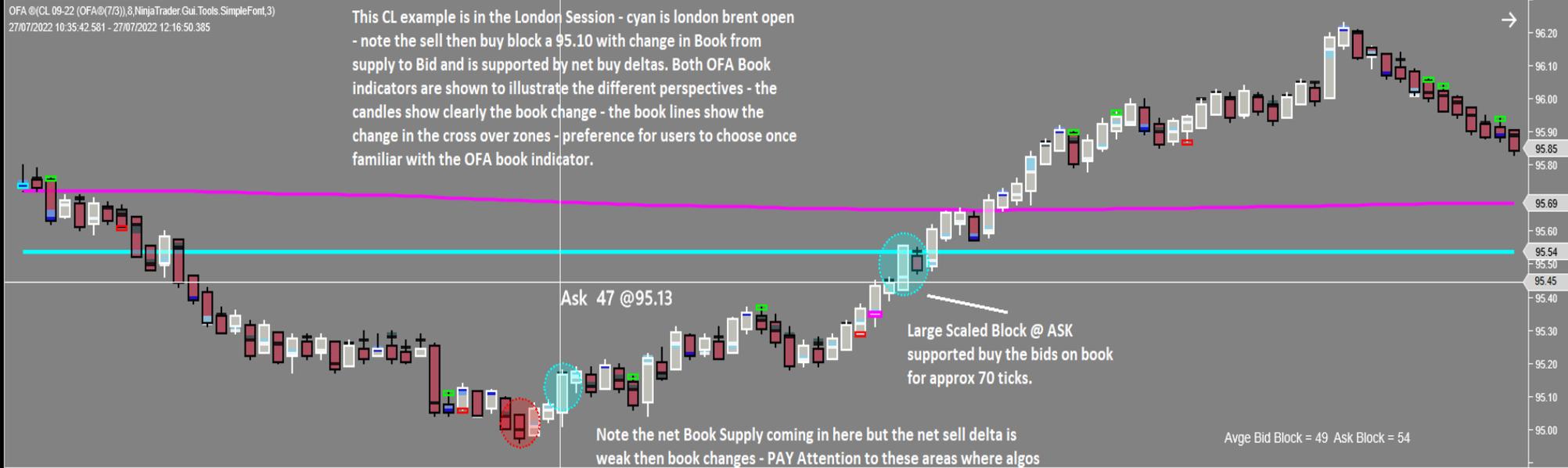




DP(1B) DP(1B A) DP(XB) DP(XB A) RP RP(A) SP SP(A) DP DP(A)

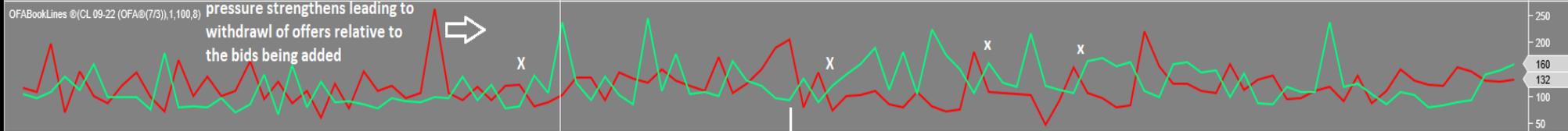
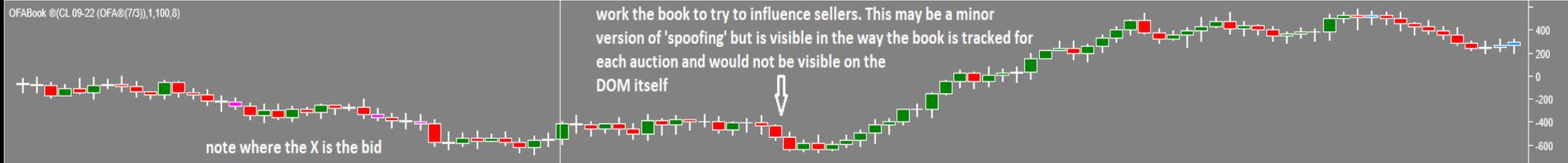
OFA ©(CL 09-22 (OFA(7/3)), 8 NinjaTrader Gui Tools SimpleFont,3)
27/07/2022 10:35:42.581 - 27/07/2022 12:16:50.385

This CL example is in the London Session - cyan is london brent open - note the sell then buy block a 95.10 with change in Book from supply to Bid and is supported by net buy deltas. Both OFA Book indicators are shown to illustrate the different perspectives - the candles show clearly the book change - the book lines show the change in the cross over zones - preference for users to choose once familiar with the OFA book indicator.



Note the net Book Supply coming in here but the net sell delta is weak then book changes - PAY Attention to these areas where algos work the book to try to influence sellers. This may be a minor version of 'spoofing' but is visible in the way the book is tracked for each auction and would not be visible on the DOM itself

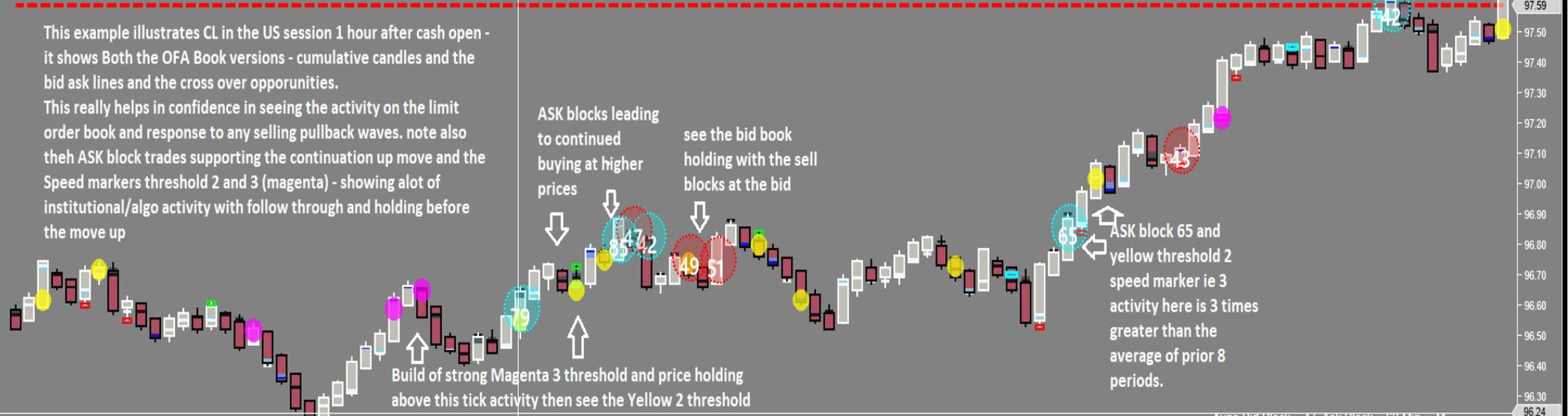
Avg Bid Block = 49 Ask Block = 54



DP(1B) DP(1B A) DP(XB) DP(XB A) RP RP(A) SP SP(A) DP DP(A)

OFA @ (CL 09-22 (OFA@ (7/3)), 8, NinjaTrader.Gui.Tools.SimpleFont, 3)
 28/07/2022 15:29:24.336 - 28/07/2022 15:52:07.161

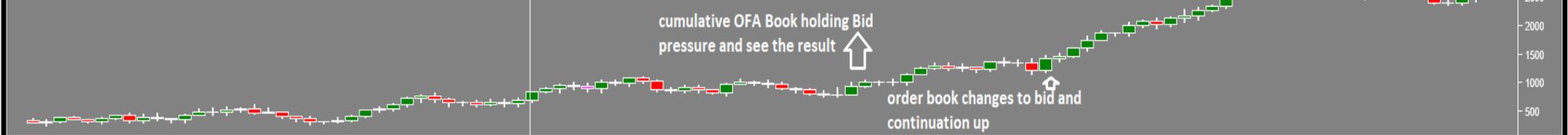
This example illustrates CL in the US session 1 hour after cash open - it shows Both the OFA Book versions - cumulative candles and the bid ask lines and the cross over opportunities. This really helps in confidence in seeing the activity on the limit order book and response to any selling pullback waves. note also the ASK block trades supporting the continuation up move and the Speed markers threshold 2 and 3 (magenta) - showing a lot of institutional/algo activity with follow through and holding before the move up



Ask 79 @ 96.59

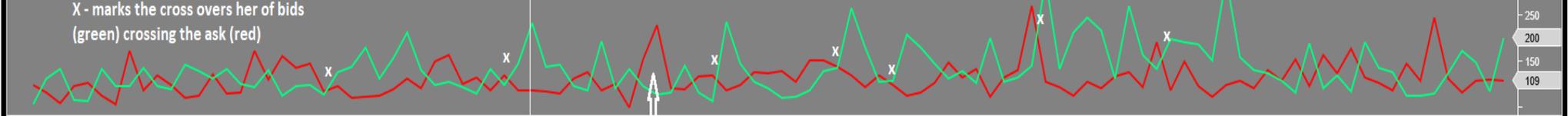
Avg Bid Block = 47 ASK Block = 62 Min = 41

OFABook @ (CL 09-22 (OFA@ (7/3)), 1, 100, 8)



OFABookLines @ (CL 09-22 (OFA@ (7/3)), 1, 100, 8)

X - marks the cross over her of bids (green) crossing the ask (red)



OFAcDelta @ (CL 09-22 (OFA@ (7/3)))

see this spike in Offer supply - leads to very little net selling delta



OFAWaveVolume @ (CL 09-22 (OFA@ (7/3)))

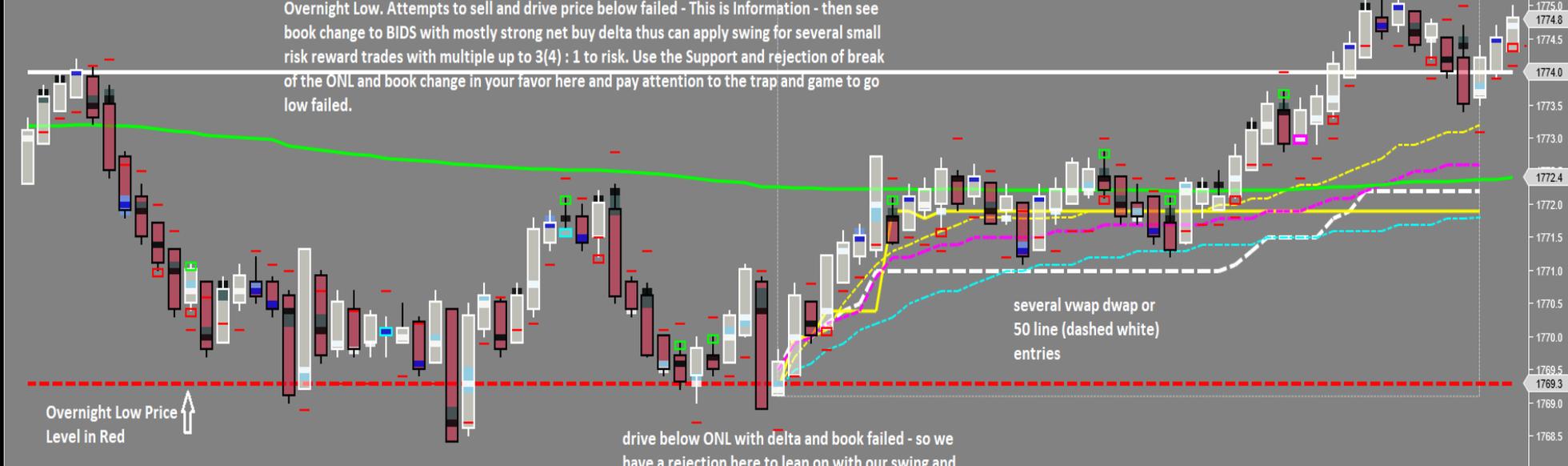
© NinjaTrader, Inc. CL 09-22 (OFA@ (7/3)), 150, 20, 100



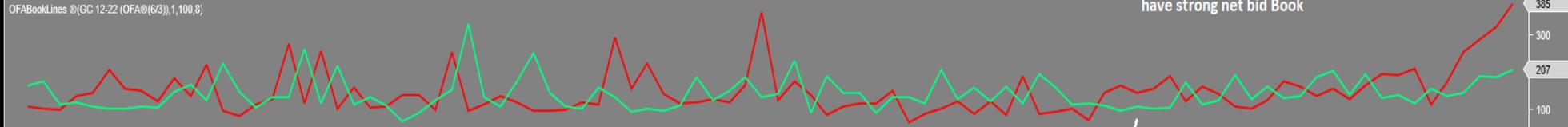
DP(1B) DP(1B A) DP(XB) DP(XB A) RP RP(A) SP SP(A) DP DP(A) V= 5569 T= 60 D= (-81) CWV= 6 VWL= 8

OFA @GC 12-22 (OFA@6/3) 8 NinjaTrader.Gui.Tools.SimpleFont,3
29/07/2022 14:47:48.884 - 29/07/2022 15:34:14.135

This example shows to track and monitor the OFA Book and net delta coming into the Overnight Low. Attempts to sell and drive price below failed - This is Information - then see book change to BIDS with mostly strong net buy delta thus can apply swing for several small risk reward trades with multiple up to 3(4) : 1 to risk. Use the Support and rejection of break of the ONL and book change in your favor here and pay attention to the trap and game to go low failed.



drive below ONL with delta and book failed - so we have a rejection here to lean on with our swing and bid book support



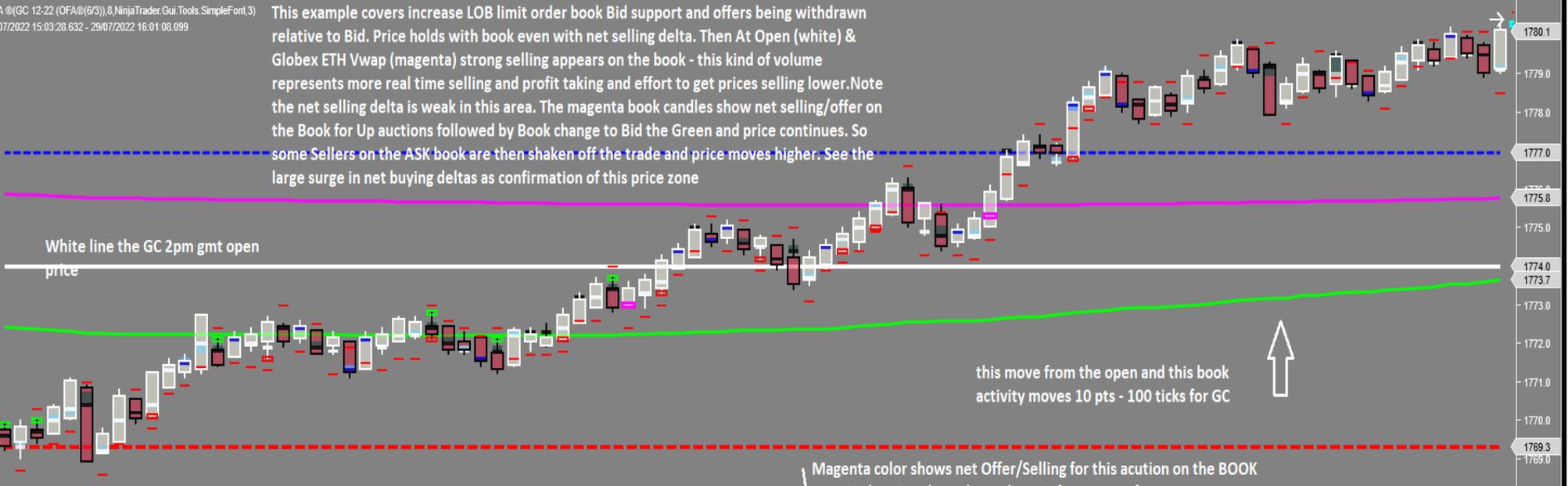
DP(1B) DP(1B A) DP(XB) DP(XB A) RP RP(A) SP SP(A) DP DP(A)

OFA @ (GC 12-22 (OFA@ (6/3)), 8, NinjaTrader.Gui.Tools.SimpleFont, 3)
29/07/2022 15:03:28.632 - 29/07/2022 16:01:08.099

This example covers increase LOB limit order book Bid support and offers being withdrawn relative to Bid. Price holds with book even with net selling delta. Then At Open (white) & Globex ETH Vwap (magenta) strong selling appears on the book - this kind of volume represents more real time selling and profit taking and effort to get prices selling lower. Note the net selling delta is weak in this area. The magenta book candles show net selling/offer on the Book for Up auctions followed by Book change to Bid the Green and price continues. So some Sellers on the ASK book are then shaken off the trade and price moves higher. See the large surge in net buying deltas as confirmation of this price zone

White line the GC 2pm gmt open price

White line the GC 2pm gmt open price



this move from the open and this book activity moves 10 pts - 100 ticks for GC

Magenta color shows net Offer/Selling for this auction on the BOOK
In an Up bar. Breaking above this is information of strong momentum and buyers continuing at higher prices

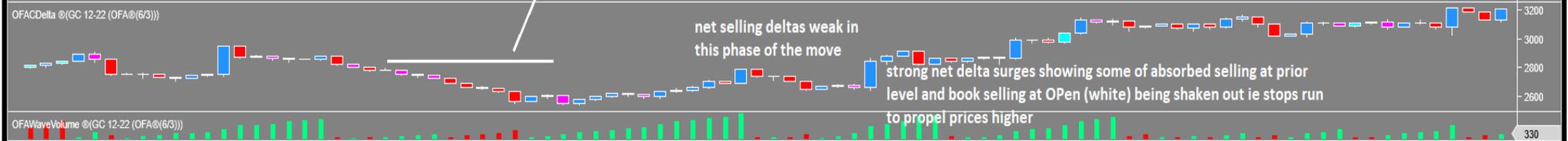


increase in green bid support tested in pullback. Price holds level into the accumulated OFA Book level even with net selling delta below dropping ie the selling was absorbed



net selling deltas weak in this phase of the move

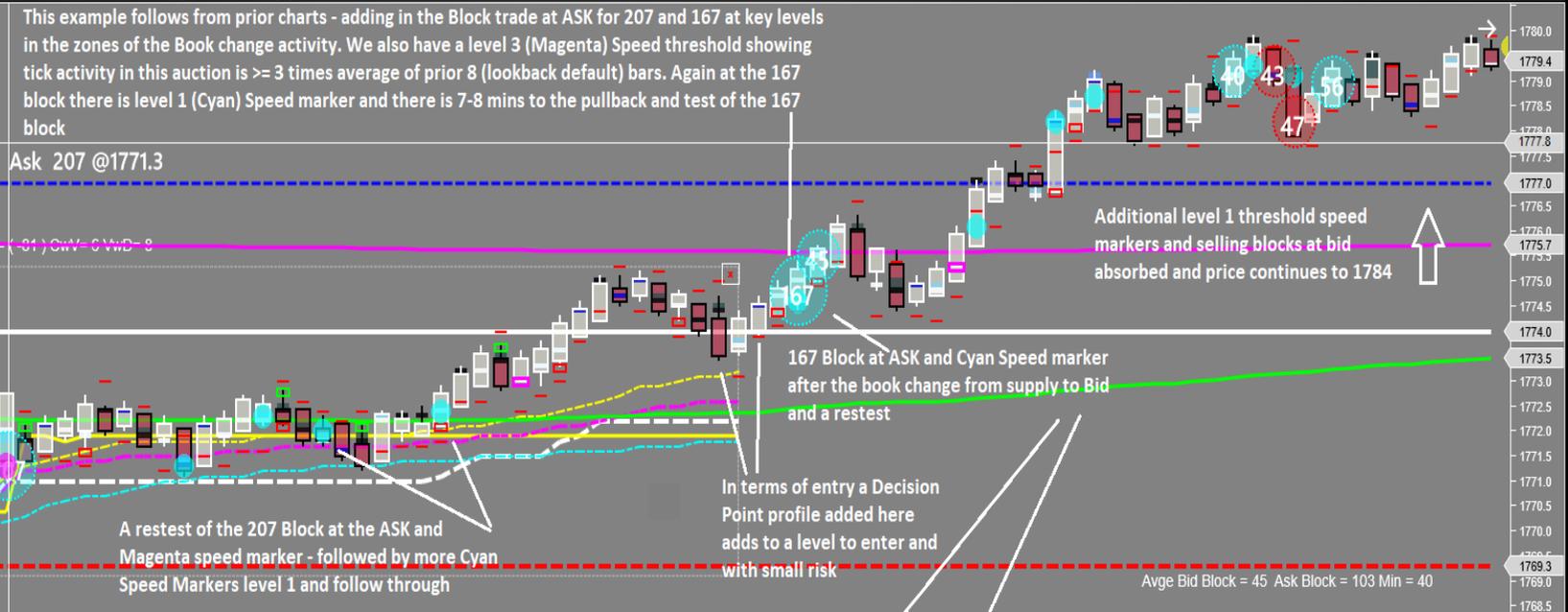
strong net delta surges showing some of absorbed selling at prior level and book selling at OPen (white) being shaken out ie stops run to propel prices higher



DP(1B) DP(1B A) DP(XB) DP(XB A) RP RP(A) SP SP(A) DP DP(A)

OFA @ (GC 12-22 (OFA@6/3)), NinjaTrader.Gui.Tools.SimpleFont,3
29/07/2022 15:02:26.220 - 29/07/2022 15:58:56.064

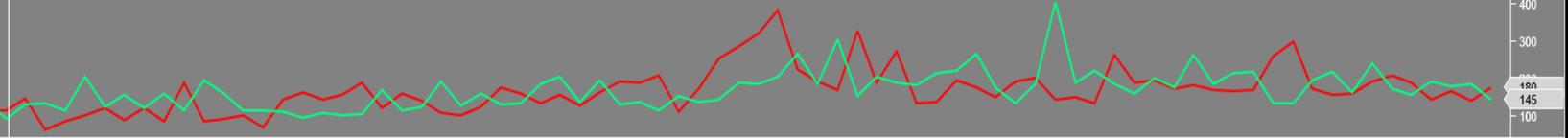
This chart shows the power of combining the OFA Book and OFA Block and Speed Addon for GC with some very clear effective signals to add to your trade narrative



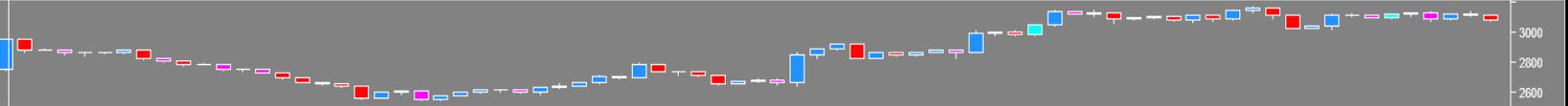
OFABook @ (GC 12-22 (OFA@6/3)), true, true, 1, 100, 8, true



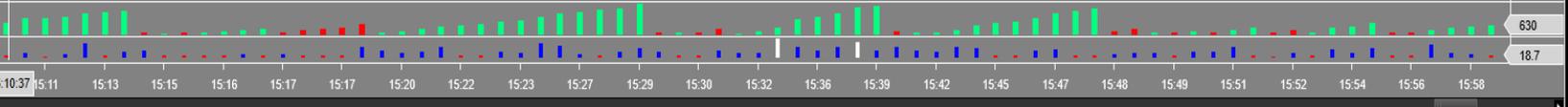
OFABookLines @ (GC 12-22 (OFA@6/3)), 1, 100, 8



OFAcDelta @ (GC 12-22 (OFA@6/3))



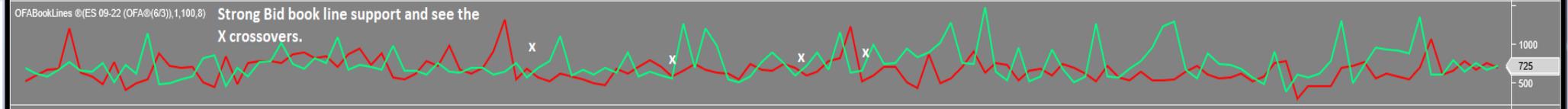
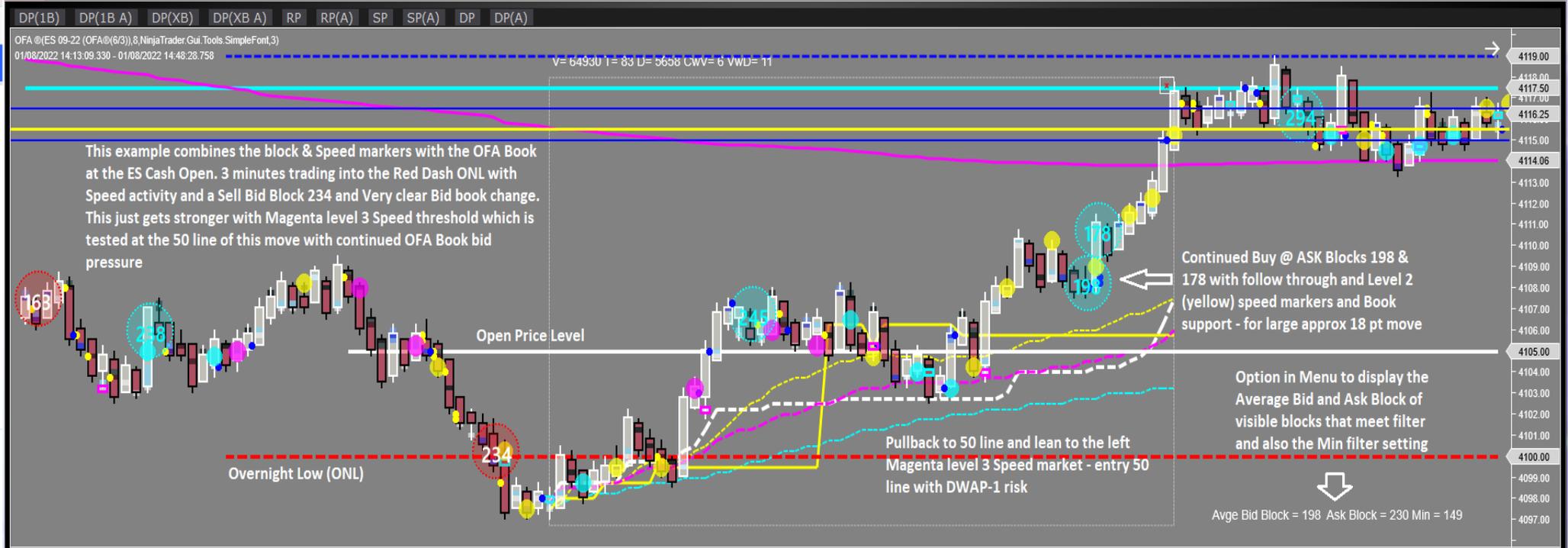
OFAWaveVolume @ (GC 12-22 (OFA@6/3))



OFATime @ (GC 12-22 (OFA@6/3)), 200, 20, 100



ES 09-22 Stripe ES 09-22 5M ES 09-22 BasicW CL 09-22 5M CL 09-22 Basic GC 12-22 ES 09-22 ES 09-22 ES 09-22 NQ 09-22 GC 12-22 5M 6E 09-22 ES 09-22 UB 09-22 UB 09-22 53 ES 09-22 +



DP(1B) DP(1B A) DP(XB) DP(XB A) RP RP(A) SP SP(A) DP DP(A)

OFA @ (ES 09-22 (OFA@ (6/3)) 8,NinjaTrader Gui.Tools.SimpleFont,3)
02/08/2022 15:28:26.149 - 02/08/2022 15:53:17.861

V= 70988 T= 78 D= 3212 CwV= 7 VwD= 9

This case illustrates the use of the Bar by Bar (non-cumulative) mode for the OFA Book Indicator below. This is another option to view the LOB net difference Activity for each OFA Auction. The Book Lines version is beneath to show the similarity yet subtle difference of the separate total bid and ask lines where you can gauge the strength of each individually yet together for the overall Auction. Some users may prefer this view. Also you can note the Book changes in swing lows and in pullbacks looking for clear change in the net difference from supply to bids and vice versa

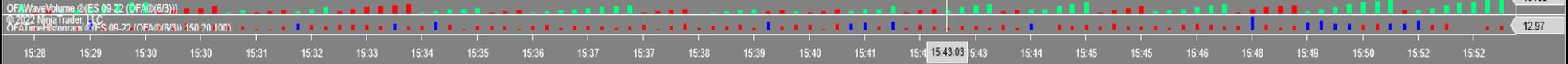
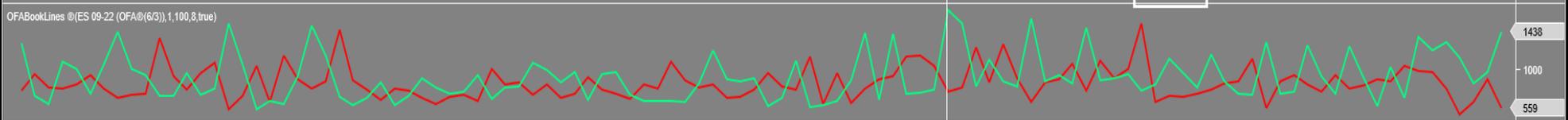
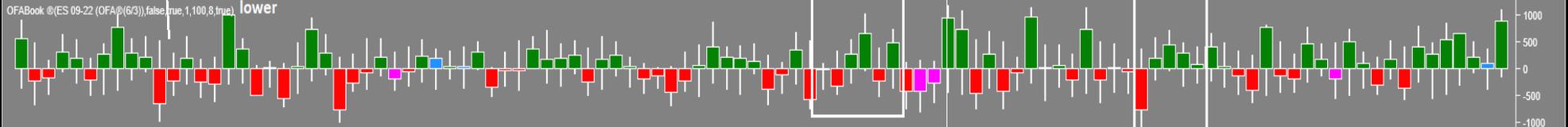
Ask 173 @4110 182 @4110.25
at crosshairs 2 large ASK blocks with a Magenta Level 3 Speed Marker - strong support is retested for an entry near 50 line for over 12 pt move up

Pullback with some net delta selling then book change to net bid retest of Speed Marker and blocks
US Cash Open Price White line

Evidence of large blocks @ BID holding level and then we break above Open - so absorption signs of the attempt to break lower

See the book change here and look left at the level 2 threshold (Yellow) speed markers with follow through Up

Avg Bid Block = 287 Ask Block = 321 Min = 141



OFA @ (ES 09-22 (OFA@ (6/3)), 8, NinjaTrader.Gui.Tools.SimpleFont, 3)
04/08/2022 17:22:30.762 - 04/08/2022 19:11:17.785

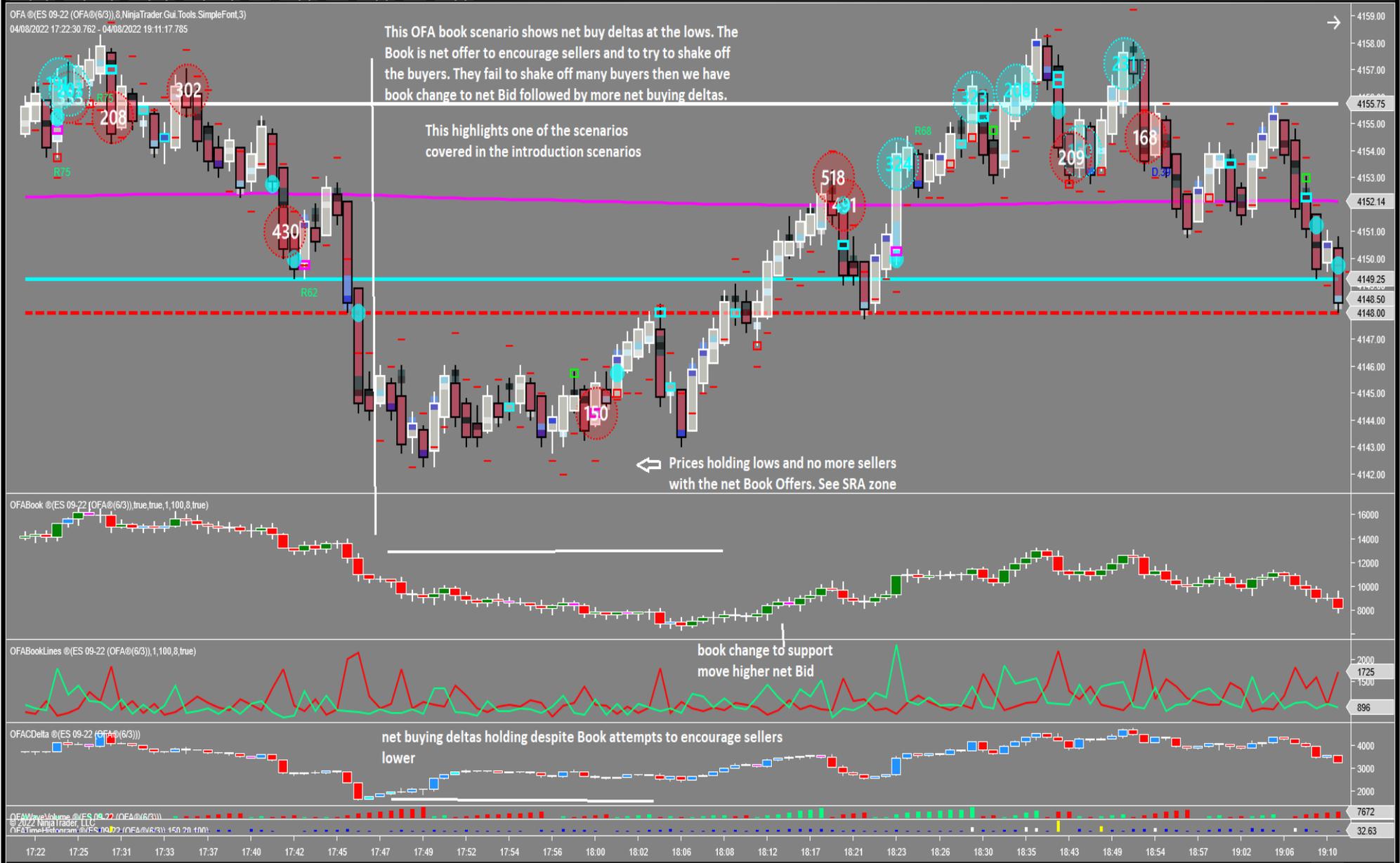
This OFA book scenario shows net buy deltas at the lows. The Book is net offer to encourage sellers and to try to shake off the buyers. They fail to shake off many buyers then we have book change to net Bid followed by more net buying deltas.

This highlights one of the scenarios covered in the introduction scenarios

← Prices holding lows and no more sellers with the net Book Offers. See SRA zone

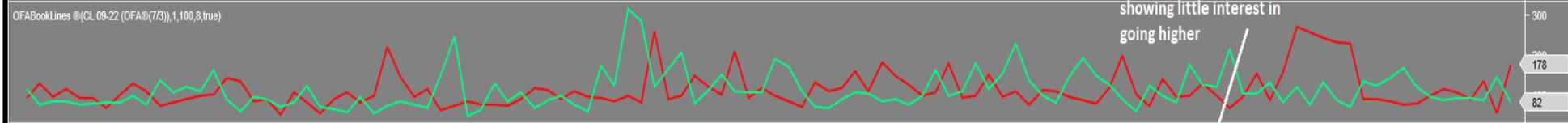
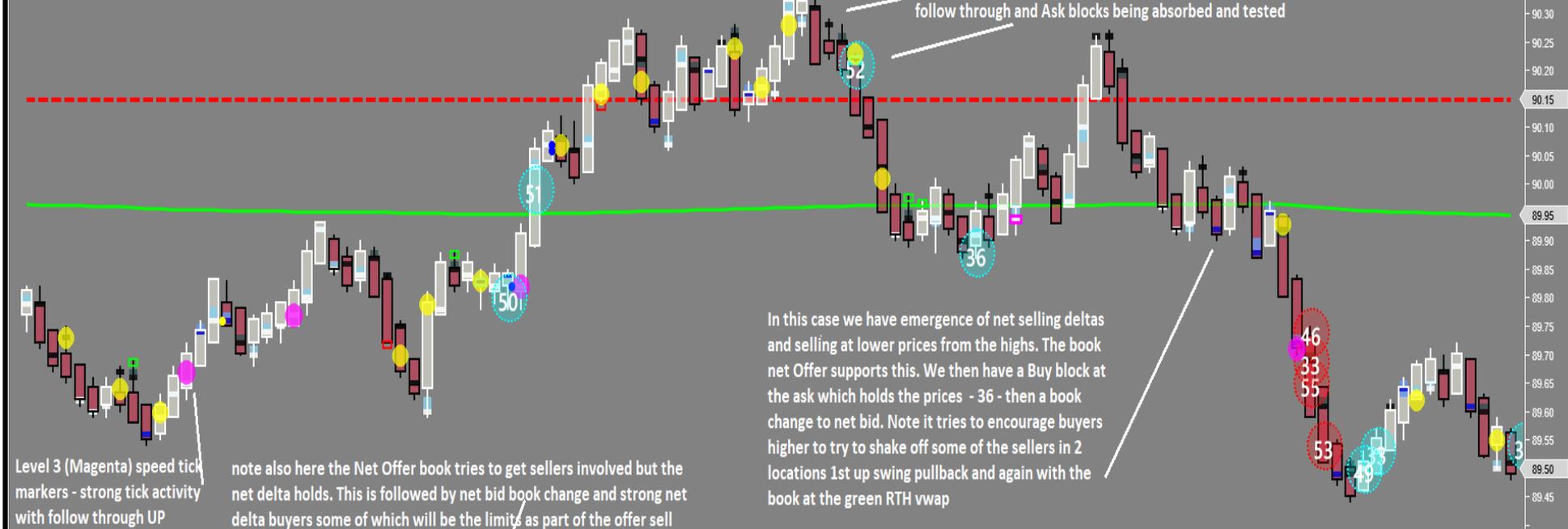
book change to support move higher net Bid

net buying deltas holding despite Book attempts to encourage sellers lower



DP(1B) DP(1B A) DP(XB) DP(XB A) RP RP(A) SP SP(A) DP DP(A)

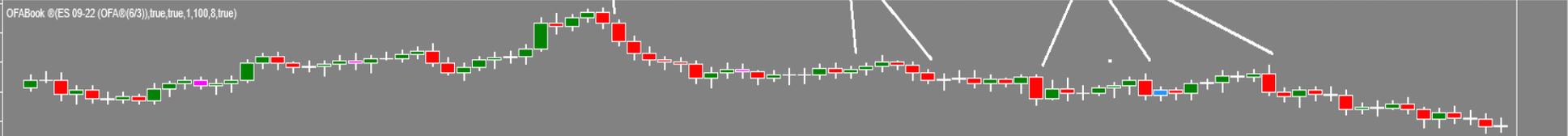
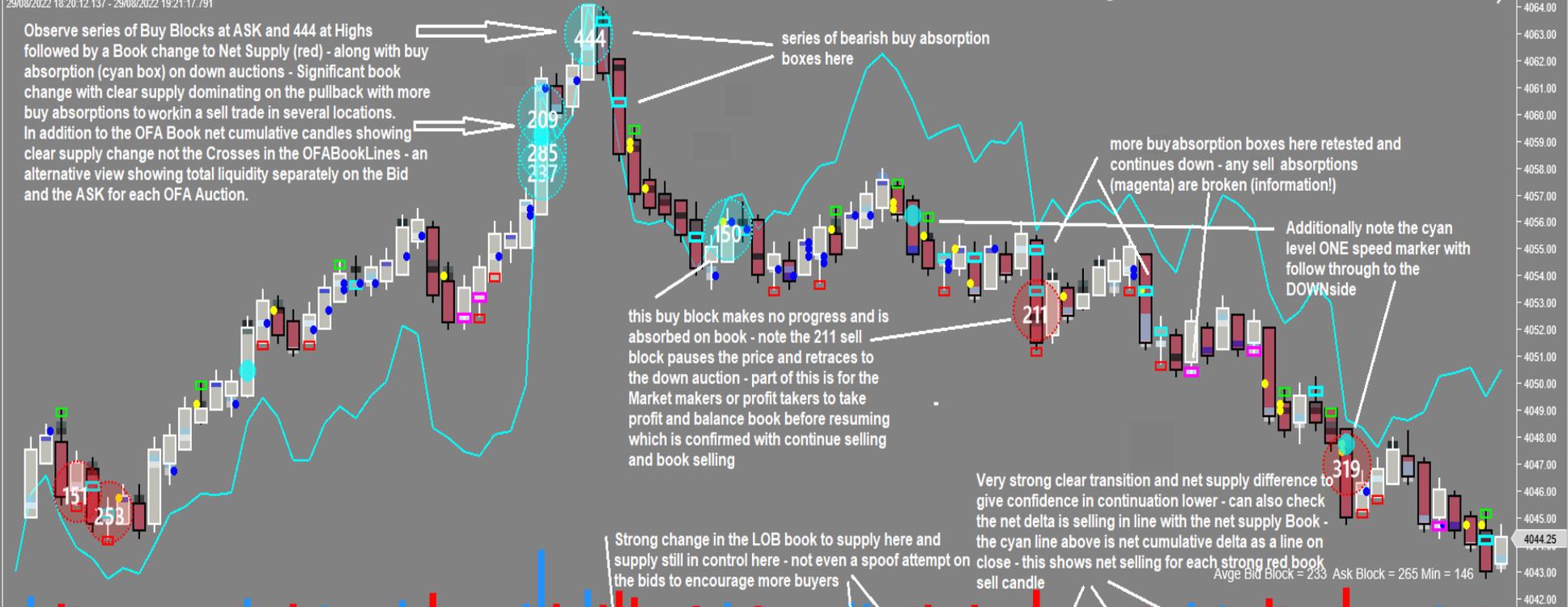
OFA @(CL 09-22 (OFA@(7/3)), 8, NinjaTrader Gui Tools SimpleFont, 3)
 04/08/2022 14:57:04.274 - 04/08/2022 15:17:53.360



OFA @ (ES 09-22 (OFA@ (6/3)), 8 NinjaTrader Gui Tools.SimpleFont(3), OFACDelta @ (ES 09-22 (OFA@ (6/3)))
 29/08/2022 18:20:12.137 - 29/08/2022 19:21:17.791

Bid 211 @ 4052.75

Observe series of Buy Blocks at ASK and 444 at Highs followed by a Book change to Net Supply (red) - along with buy absorption (cyan box) on down auctions - Significant book change with clear supply dominating on the pullback with more buy absorptions to work in a sell trade in several locations. In addition to the OFA Book net cumulative candles showing clear supply change not the Crosses in the OFABookLines - an alternative view showing total liquidity separately on the Bid and the ASK for each OFA Auction.



FAQ Section

How do I install this Addon?

This is an Import process of the ZIP file you downloaded. See the download/installation section on the next page.

Do I need Level 2 data subscription for any features of this Addon – YES level 2 data is required for both indicators in this Addon

Why are there 2 version of the OFA Book ?

To provide different options of presentation of the dynamic changes in the Order book captured during each Auction/Bar period.

The **OFABook** Candle version can be displayed in both cumulative mode and bar by bar mode. This version calculates the Net Difference between the ASK limit liquidity and the BID limit liquidity in the Order book as the Auction Bar evolves. It captures some of the nuances of changes and those can be seen in the size of the Body (open / close) and the High and Low Wicks. Default is to display the Bid – Ask differences which will show a rising cumulative when the Net shows Bids > Ask. You can change this using the parameter bid minus ask setting it to false. This will then show the difference with a falling cumulative when the Net shows Bids > Ask. Some users in their interpretation of the book may prefer this presentation. I would recommend using the default bid – ask unless you can think of a good reason to change this & has just been provided as an option. Seeing the Book supporting the Price action ie supporting bid pressure behind rising price is more intuitive and correlated and is clearer to see when there are book changes from supply to Bid at the Lows and Bid to Supply at the Highs.

The version **OFABookLines** shows 2 separate lines for the Bid (Green) and Ask (Red) – these represent the total liquidity of each side of the Book and NOT the difference. This version is not cumulative in its display. You could run both of these on a chart or choose the one your prefer and which resonates and relates to your interpretation of the book changes.

It is recommended initially to not add too many of these OFA Order book indicators on too many charts as tracking the Market Depth and display will incur more resources. It is efficient and in the display but consider it is tracking all the depth changes on the order book then assimilating for display and refresh. Add to your key order entry charts initially and note the changes on the task manager for your PC and memory setup

How do I access the values in the OFABook indicator Open High Low Close – see example sample indicators in the enclosed zip file called :

OFASampleAccessOFABookOHLC : this sample shows how to reference the OFABook Indicator in another ninjascript and access the values.

Please note that the parameter setting to this call in State == State.DataLoaded

```
OFAIndicatorBOOK1 = OFAIndicatorBOOK(8,1,100,false,true,true);
```

the fourth parameter for **useRefresh** must be set to **false**. If you want to change to Bar by Bar and not cumulative Book set parameter 5 = false;

Please adopt the current structure in the Sample by ensuring the State == State.Realtime check is in place as market depth data is only available once real time data is loaded and initiated. Ie Depth information is not available for Historical Bars.

The same logic process applies accessing OFAIndicatorBookLines in ninjascript, the useRefresh must be set to **false**. See Sample provided for this.

I do not have the OFA Bar Strategy Addon ; can I still access this data in ninjascript and use the information exposed by the OFABook Indicator : Yes in this instance you can access and use the OFABook exposed data (OHLC) even if you do not currently have the OFA Bar Strategy Addon. OFABookLines can also similarly be accessed to use the BidClose and AskClose values within a ninjascript.

Can I access this Indicator in Bloodhound and in a logic template : Yes the same **OFABook** indicator can be loaded in the logic template and the Open High Low Close Values can be accessed in normal way as they have been exposed also for Bloodhound. Aslo OFABookLines can be accessed in the same manner with Access to the BidClose and AskClose Values for each line.

Suggestion to use the Indicator Comparison solver checking the values of the Close output to prior close output or the Close of the Current OFA Book candle for current OFA Auction to the Open value ie is it net Bid or Offer/Ask.

Please note in the Bloodhound logic settings for any solver using these indicator – **you must set the useRefresh to false** as has been mentioned above for using in ninjascript!

You can then for example compare close values of current and prior OFA Book candles and also the open and close to determine if Supply/Offer or Bid limits are dominant in the Net Difference for the current OFA Auction. Additionally you can make checks on the OFA Delta close values using the information provided already in the Bloodhound Addon for those with this Addon data access. Working with the current Net Delta Value combined with the Book value enables you to track those instances when Book and Net Delta are in synch as outlined in the introductory section of patterns to check and in the provided cases study illustrations.

I have Bloodhound already but I do not have the OFA Bloodhound Addon ; can I use the information exposed by the OFABook Indicator : Yes in this instance you can access and use the **OFABook** exposed data (OHLC) & **OFABookLines** even if you do not currently have the OFA Bloodhound Addon.

Does it require that the OFA indicator be on the chart before adding the OFA Book Indicators : YES – for connection and authorisation it requires OFA Indicator loaded on the chart in the current version and thus works only for OFA Bar Types

Download and Installation Process

Please note that ONLY for users of the new OFA Book Addon : the process to install is via the standard import process. The main download and installation for OFA including future updates WILL continue as has been and this is covered in detail in that download section on the website. Installation of OFA Core is via an installer process & not an import process.

You should only be clicking yes to overwriting scripts if they are not system scripts that begin with the '@' symbol.

Before importing please download and update to the latest OFA Core version using the installer process covered in the download page.

To import the new OFA Addon NinjaScripts covered in this document into NinjaTrader 8 do the following:

- 1.Download the script to your desktop, keep it in the compressed .zip file.
- 2.From the Control Center window select Tools -> Import -> NinjaScript...
- 3.Click the Desktop icon on the left to navigate to the desktop
- 4.Select the downloaded .zip file -> then click Open
- 5.NinjaTrader will then confirm if the import has been successful.

Critical *Note that on any files that say "File already exists on your PC" that starts with an "@" symbol are the ones that came preloaded inside of NinjaTrader so you would say "No" so that you do not override those files.

The ZIP file :

OFABookAddonBuild#.# – for OFA Book Addon indicators – 2 indicators in this file (**OFABook and OFABookLines**)

2 sample ninjascripts demonstrating access to the exposed OHLC data for OFABook and the Bid Close and Ask Close for OFABookLines. These are :

OFASampleAccessOFABookOHLC and **OFASampleAccessOFABookLinesOHLC**

Please note that the first release of this the samples are not there – they are written and will follow soon after initial release it requires a check on the export to resolve any import issues of the samples. For any user who wants these sooner please send in support ticket and I can send separately to you in the meantime the 2 scripts. For **Bloodhound users** you will be able to access these indicators and exposed values and I have tested this so you can do this NOW. I will look at preparing an example template for this in a subsequent release. Using

the Indicator Comparison Solver (Comparing Close value of current to prior or current close to open) or slope would be a good starting point to add to your Logic Board. See OFABook referenced in Indicator Comparison Solver below. Small Amount use 1 Point!

BloodHound 8.1.16.47

File Help

Name OFASampleClusterClassPOCLogicPOCEMAFilter Save Save As

Solvers Logic

Name New Logic New Copy Delete

Solver Nodes Function Nodes Logic Nodes

The screenshot displays a logic board with a dark green grid background. The board contains several logic nodes:

- Input Nodes:** Multiple 'BarDir' nodes (BarDirUp, BarDirDown, BarDirUp2, BarDirDown2) and 'BarClass' nodes (BarClassBuy, BarClassSell, BarClassNew...). Some are connected to 'Or' nodes.
- Logic Nodes:** Several 'And' nodes (yellow) and 'Or' nodes (green) are used to combine conditions.
- Comparison Nodes:** 'CloseToPOC1', 'CloseToPOC2', and 'CloseToPOC3' nodes are connected to 'And' nodes.
- Output Node:** A 'Book to Book' node (light blue) is connected to an 'And' node, which then connects to a 'Result' node (grey).

Selected Node: Book to Book

0.00 1.00

Display	
Name	Book to Book
Description	Compare value A to value
Protect	None
Behavior	
Evaluate	Both
Invert Output	False
Input A	
Type	Indicator Value
Indicator	OFABook @true,true,1,100
Displacement	0
Difference: (A-B)	
> Large Amount	2 Points
> Small Amount	1 Point
Input B	
Type	Indicator Value
Indicator	OFABook @true,true,1,100
Displacement	1
Long Output	
(A > B) By 2 Points or Mor	1
(A > B) By 2 Points	1
A = B within 2 Points	0
(A < B) By 2 Points	0
(A < B) By 2 Points or Mor	0
Short Output	
(A > B) By 2 Points or Mor	0
(A > B) By 2 Points	0

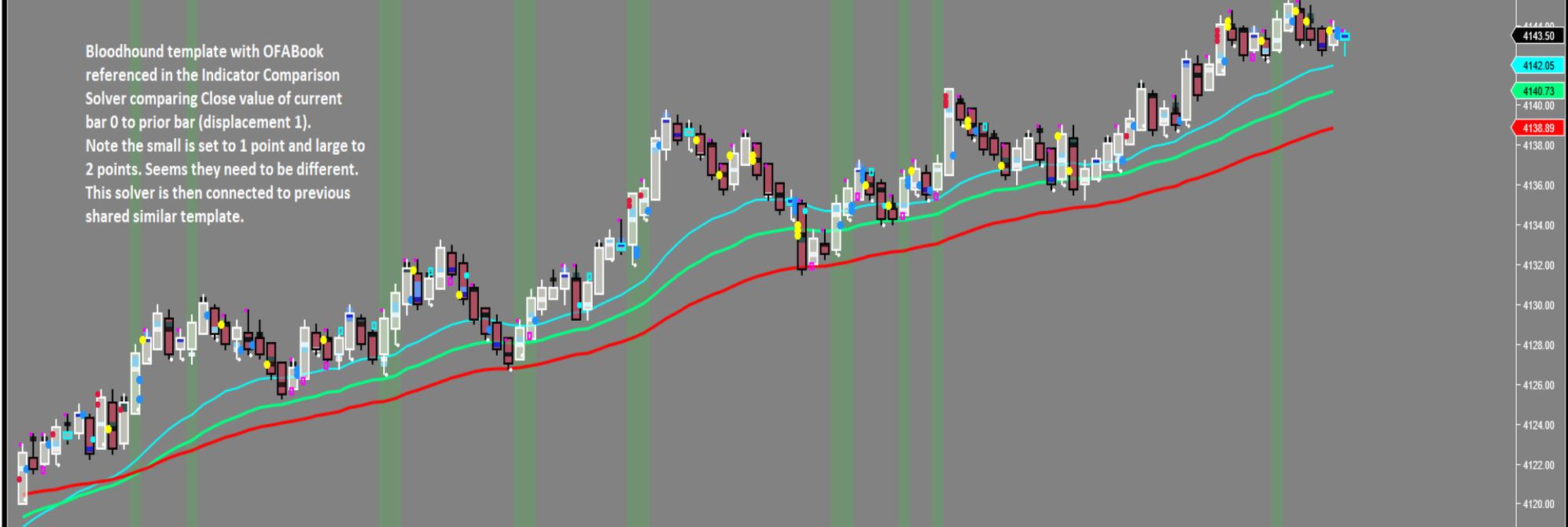
Small Amount
Use this setting when determining if A and B are in close proximity to each other.

Auto Update On

DP(1B) DP(1B A) DP(XB) DP(XB A) RP RP(A) SP SP(A) DP DP(A)

OFA @ (ES 09-22 (OFA@ (6/3)), 9, NinjaTrader.Gui.Tools.SimpleFont, 3), OFASTCOREBH @ (ES 09-22 (OFA@ (6/3)), POC, 30, 70), OFASampleCustomPOCEMA (ES 09-22 (OFA@ (6/3)), 21), OFASampleCustomPOCEMA (ES 09-22 (OFA@ (6/3)), 34), OFASampleCustomPOCEMA (ES 09-22 (OFA@ (6/3)), 55)
 03/08/2022 15:44:24.149 - 03/08/2022 16:46:26.968

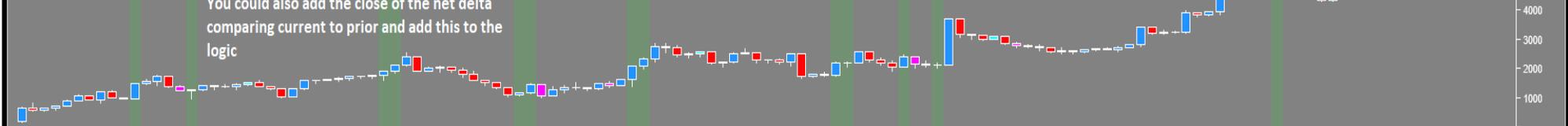
Bloodhound template with OFABook referenced in the Indicator Comparison Solver comparing Close value of current bar 0 to prior bar (displacement 1). Note the small is set to 1 point and large to 2 points. Seems they need to be different. This solver is then connected to previous shared similar template.



4146.00
4144.00
4143.50
4142.05
4140.73
4140.00
4138.89
4138.00
4136.00
4134.00
4132.00
4130.00
4128.00
4126.00
4124.00
4122.00
4120.00

OFACDelta @ (ES 09-22 (OFA@ (6/3)))

You could also add the close of the net delta comparing current to prior and add this to the logic



4000
3000
2000
1000
0

OFABook @ (ES 09-22 (OFA@ (6/3)), true, true, 1, 100, 7, true)

See OFABook values part of logic current > prior close in each case



8000
6000
4000
2000
0

BloodHound Partner Ultimate v16.47 (OBC ES 09-22 OFA@ (6/3)): OFASampleClusterClassPOCLogicPOCEMAFilter [New Logic]



0.5
0

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