

Advanced Order Flow Trading
Module 4
Trading Around VWAP

Michael Valtos – Orderflows.com

Disclaimer

This presentation is for educational and informational purposes only and should not be considered a solicitation to buy or sell a futures contract or make any other type of investment decision. Futures trading contains substantial risk and is not for every investor. An investor could potentially lose all or more than the initial investment. Risk capital is money that can be lost without jeopardizing one's financial security or life style. Only risk capital should be used for trading and only those with sufficient risk capital should consider trading. Past performance is not necessarily indicative of future results.

CFTC Rules 4.41 - Hypothetical or Simulated performance results have certain limitations, unlike an actual performance record, simulated results do not represent actual trading. Also, since the trades have not been executed, the results may have under-or-over compensated for the impact, if any, of certain market factors, such as lack of liquidity. Simulated trading programs in general are also subject to the fact that they are designed with the benefit of hindsight. No representation is being made that any account will or is likely to achieve profit or losses similar to those shown.

Cash open is a time when execution algos start. The institutional trading desks have orders every day for the futures markets to start executing on the cash open. These orders are being worked against a cash position.

Most of these orders have specific instructions:

Target cash open.

Target VWAP for the first 5 minutes.

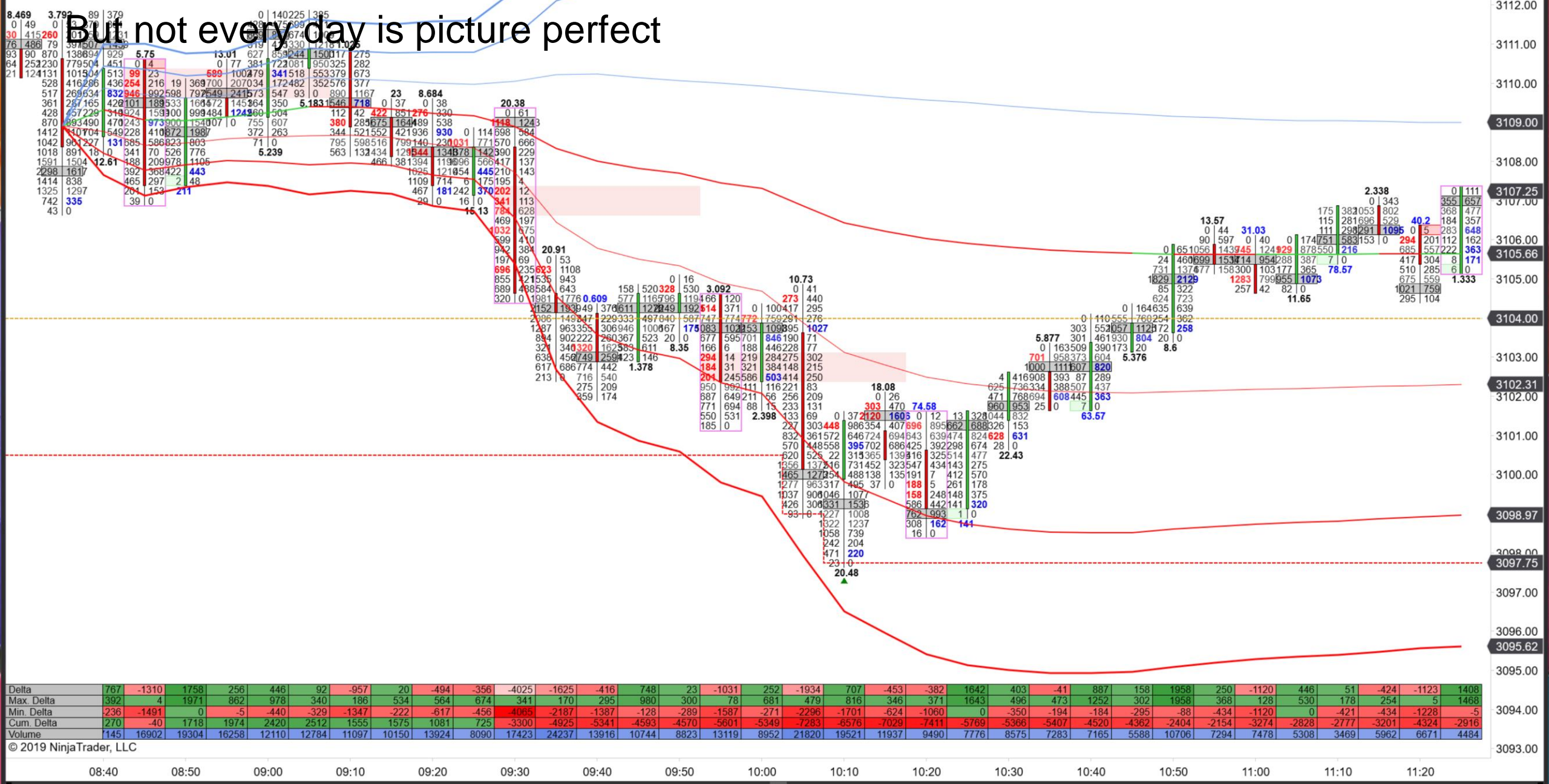
Target VWAP for the first hour.

Cash open to cash close target VWAP.

How most traders think of trading VWAP



Order Flows Trader(ES 12-19 (5 Minute)), Current day OHL(ES 12-19 (5 Minute)), Order Flow VWAP(ES 12-19 (5 Minute)),Three,Standard,1,2,3,CME US Index Futures RTH
11/22/2019 08:30:00 - 11/22/2019 11:25:00



Delta	767	-1310	1758	256	446	92	-957	20	-494	-356	-4025	-1625	-416	748	23	-1031	252	-1934	707	-453	-382	1642	403	-41	887	158	1958	250	-1120	446	51	-424	-1123	1408
Max. Delta	392	4	1971	862	978	340	186	534	564	674	341	170	295	980	300	78	681	479	816	346	371	1643	496	473	1252	302	1958	368	128	530	178	254	5	1468
Min. Delta	236	-1491	0	-5	-440	-329	-1347	-222	-617	-456	-4085	-2187	-1387	-128	-289	-1587	-271	-2296	-1701	-624	-1060	0	-350	-194	-184	-295	-88	-434	-1120	0	-421	-434	-1228	-5
Cum. Delta	270	-40	1718	1974	2420	2512	1555	1575	1081	725	-3300	-4925	-5341	-4593	-4570	-5601	-5349	-7283	-6576	-7029	-7411	-5769	-5366	-5407	-4520	-4362	-2404	-2154	-3274	-2828	-2777	-3201	-4324	-2916
Volume	145	16902	19304	16258	12110	12784	11097	10150	13924	8090	17423	24237	13916	10744	8823	13119	8952	21820	19521	11937	9490	7776	8575	7283	7165	5588	10706	7294	7478	5308	3469	5962	6671	4484

VWAP is an important level for institutional traders because they want to participate in the market without moving the market.

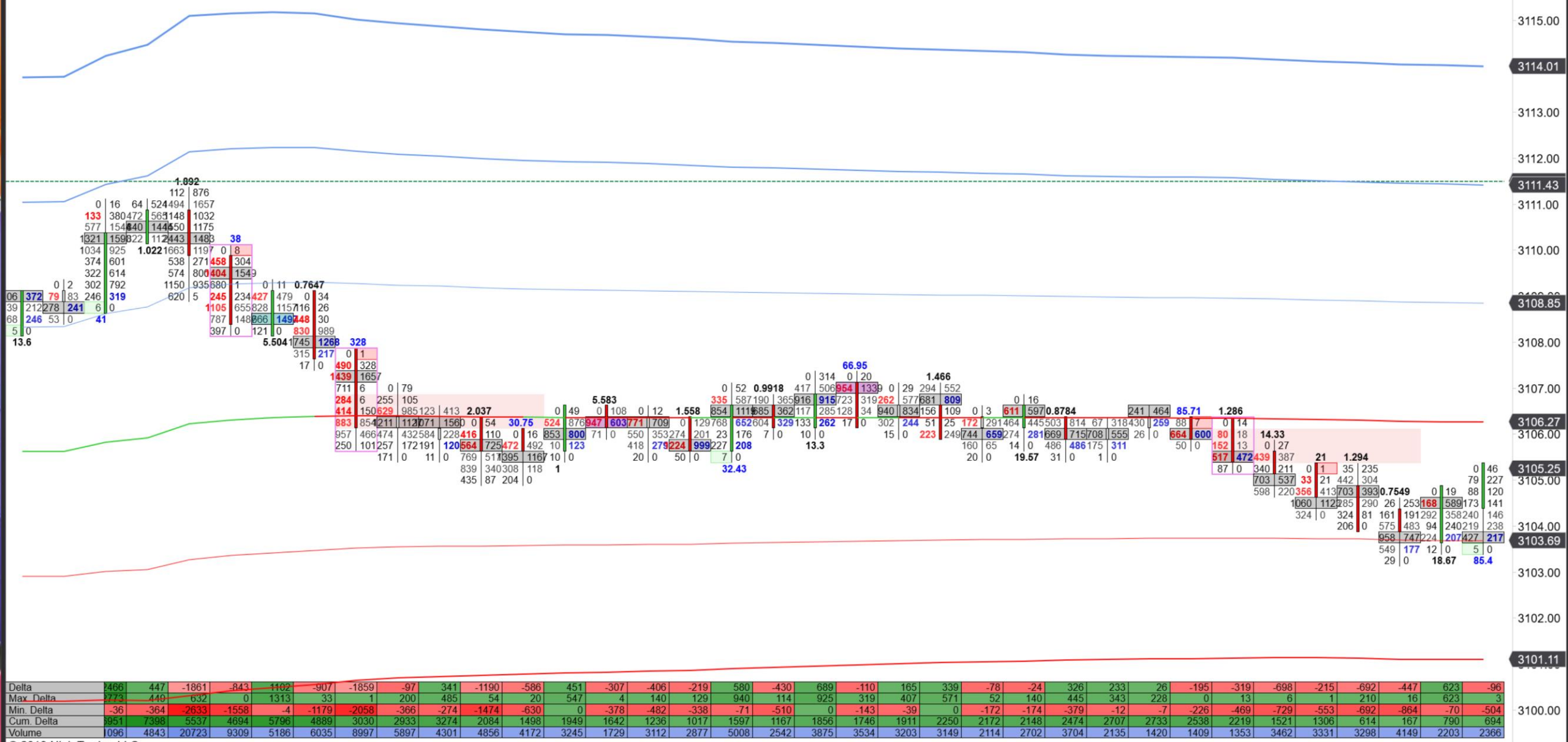
What that means is if the market trades say 50 lots at a price, they want to also trade some volume at that same price level. They must participate.

If a trader can beat VWAP for a particular time period, the PM is capturing Alpha.

Some traders think VWAP is the greatest thing since sliced bread. But they don't understand the drawback of using VWAP. Most notably that late in the day, like the last couple of hours VWAP barely moves.

Another misconception (fake news) of using VWAP is retail traders think institutions are using VWAP as their target for the day. But they are calculating it wrong. Retail traders tend to calculate VWAP over the entire session, from the 5pm open. While the institutions are using the cash day opening time. There is a big difference. The mean, the VWAP, that they are looking for the reversion to is off.

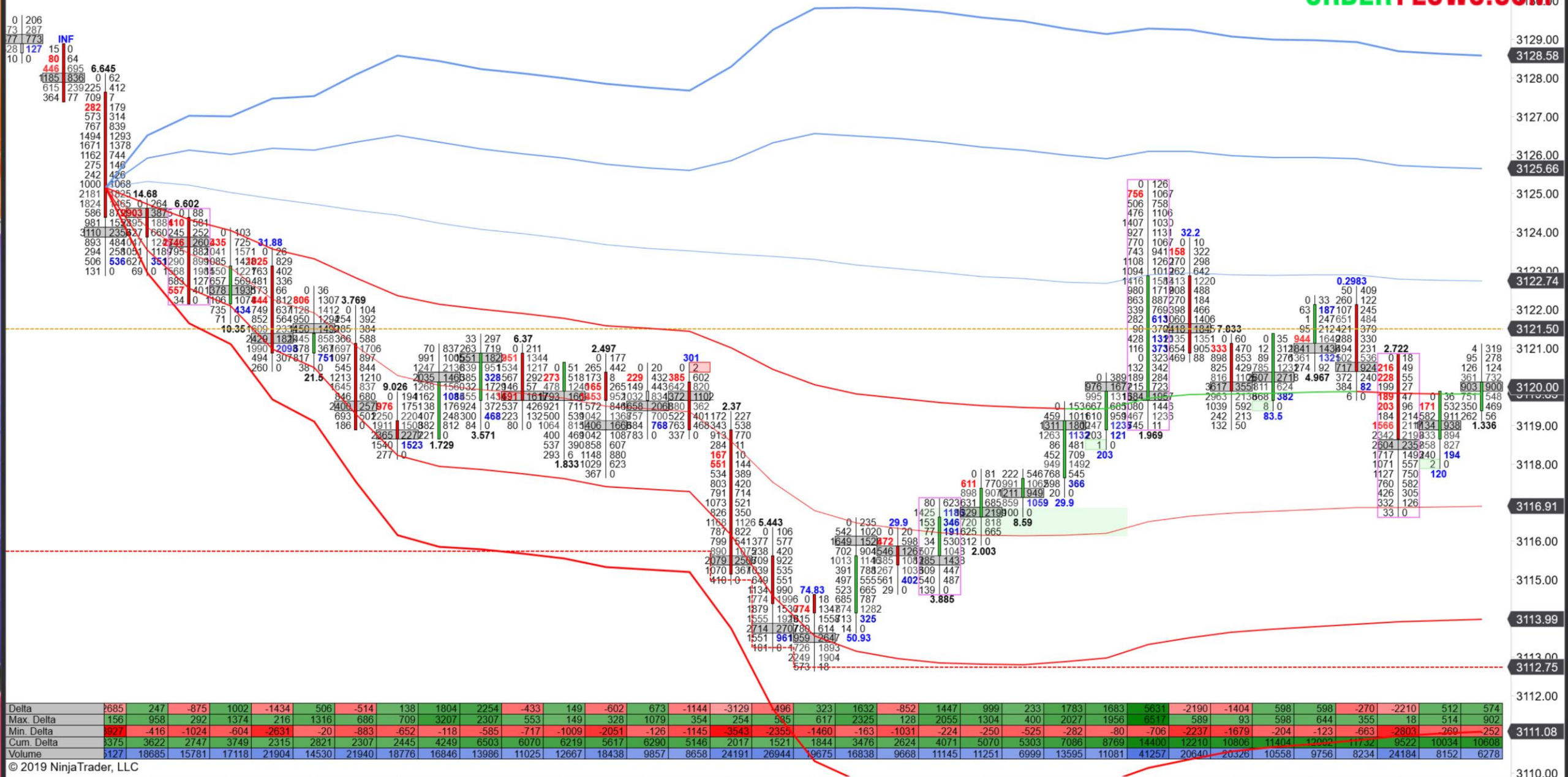
Order Flows Trader(ES 12-19 (1 Minute)), Current day OHL(ES 12-19 (1 Minute)), Order Flow VWAP(ES 12-19 (1 Minute),Three,Standard,1,2,3,<Use data series settings>)
11/15/2019 08:27:00 - 11/15/2019 09:02:00



Order Flows Trader(ES 12-19 (1 Minute)), Current day OHL(ES 12-19 (1 Minute)), Order Flow VWAP(ES 12-19 (1 Minute),Three,Standard,1,2,3,CME US Index Futures RTH)
11/15/2019 08:27:00 - 11/15/2019 09:02:00



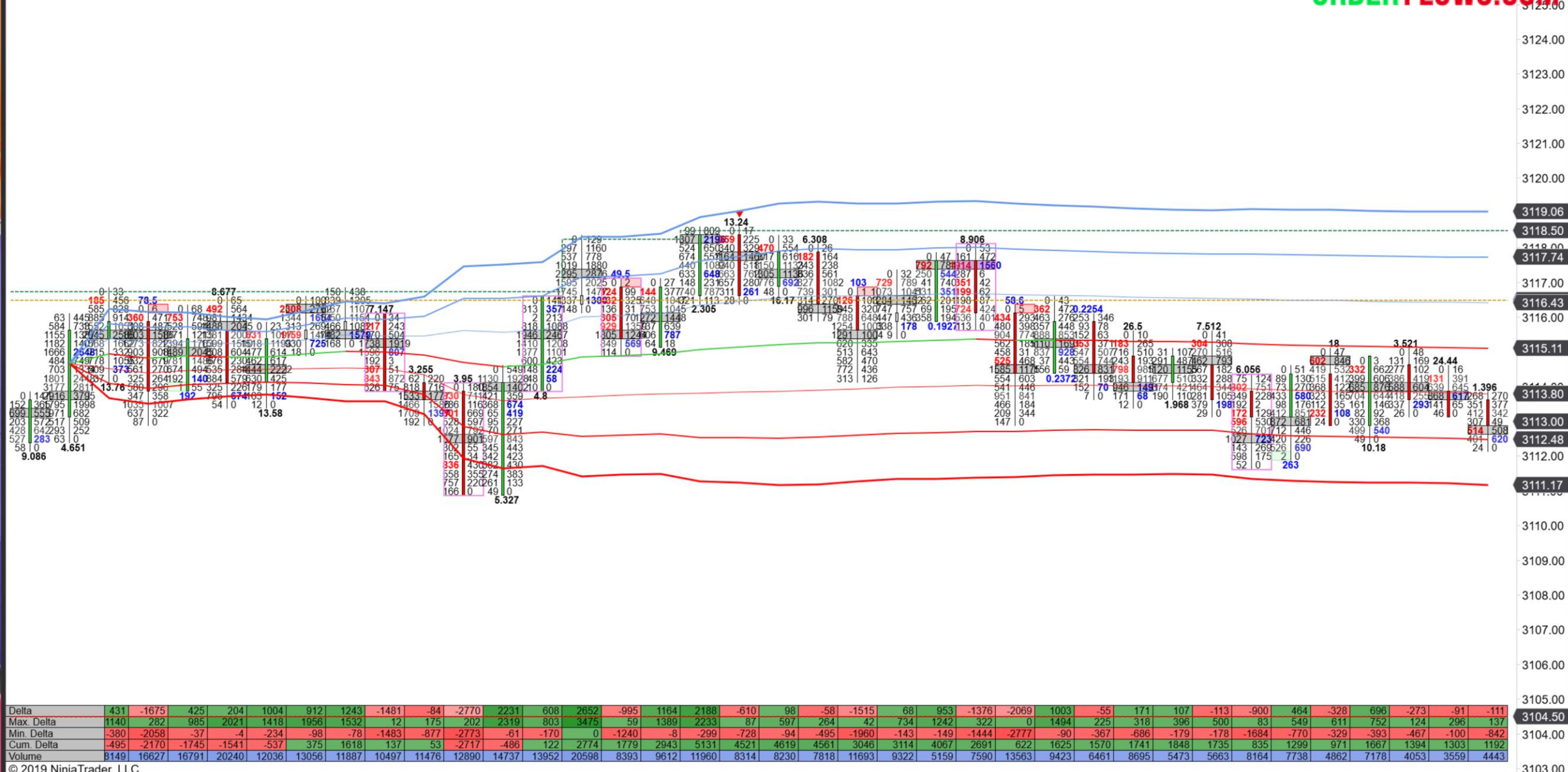
Order Flows Trader(ES 12-19 (5 Minute)), Current day OHL(ES 12-19 (5 Minute)), Order Flow VWAP(ES 12-19 (5 Minute)),Three,Standard,1,2,3,CME US Index Futures RTH
11/19/2019 08:25:00 - 11/19/2019 11:20:00



Delta	685	247	-875	1002	-1434	506	-514	138	1804	2254	-433	149	-602	673	-1144	-3129	496	323	1632	-852	1447	999	233	1783	1683	5631	-2190	-1404	598	598	-270	-2210	512	574
Max. Delta	156	958	292	1374	216	1316	686	709	3207	2307	553	149	328	1079	354	254	585	617	2325	128	2055	1304	400	2027	1956	6517	589	93	598	644	355	18	514	902
Min. Delta	-827	-416	-1024	-604	-2631	-20	-883	-652	-118	-585	-717	-1009	-2051	-126	-1145	-3543	-2355	-1460	-163	-1031	-224	-250	-525	-282	-80	-706	-2237	-1679	-204	-123	-663	-2803	-260	-252
Cum. Delta	3375	3622	2747	3749	2315	2821	2307	2445	4249	6503	6070	6219	5617	6290	5146	2017	1521	1844	3476	2624	4071	5070	5303	7086	8769	14400	12210	10806	11404	12022	11732	9522	10034	10608
Volume	6127	18685	15781	17118	21904	14530	21940	18776	16846	13986	11025	12667	18438	9857	8658	24191	26944	19675	16838	9668	11145	11251	6999	13595	11081	41257	20640	20326	10558	9756	8234	24184	8152	6278

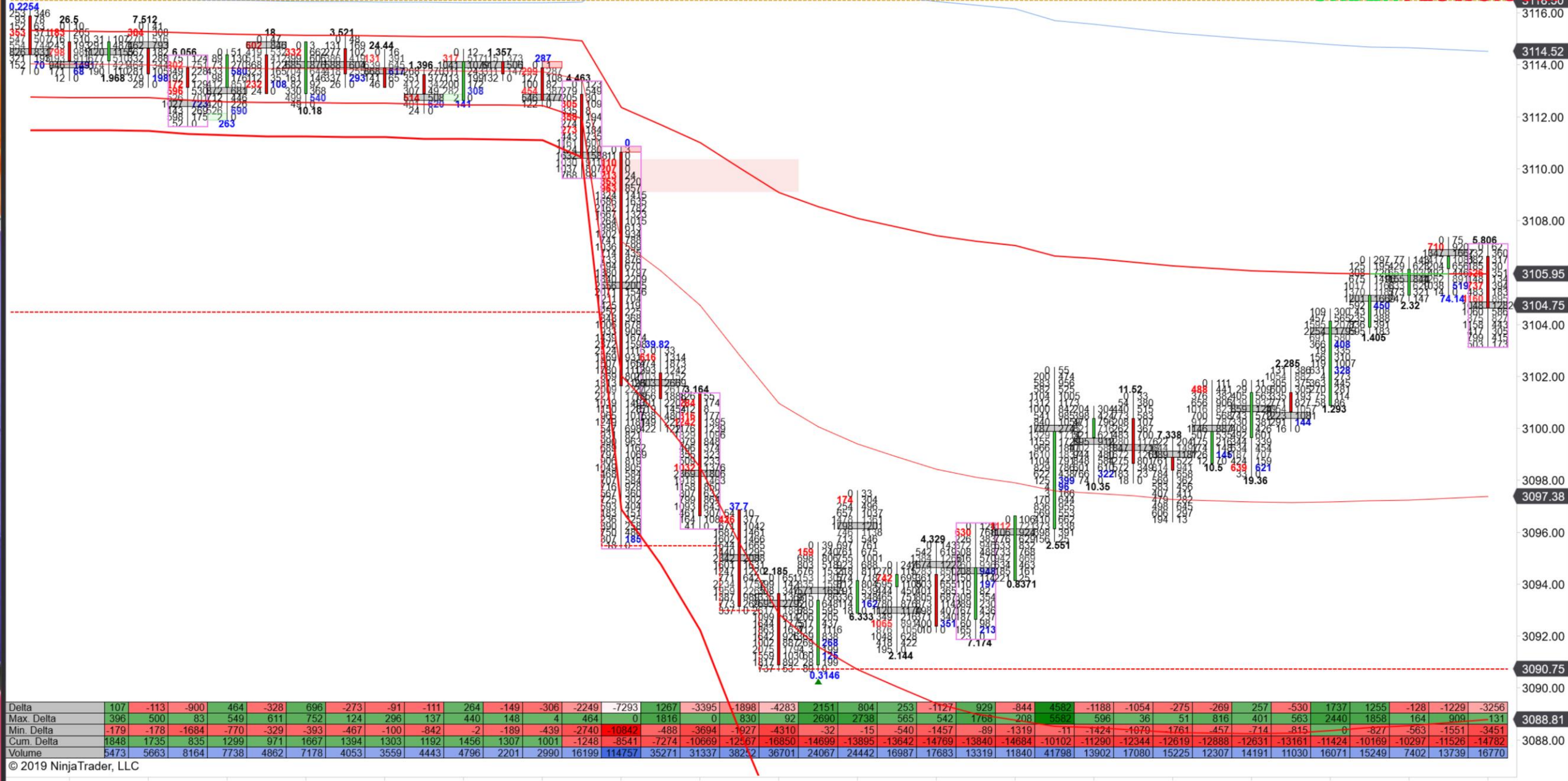
Order Flows Trader(ES 12-19 (5 Minute)), Current day OHL(ES 12-19 (5 Minute)), Order Flow VWAP(ES 12-19 (5 Minute)),Three,Standard,1,2,3,CME US Index Futures RTH

11/20/2019 08:30:00 - 11/20/2019 11:35:00



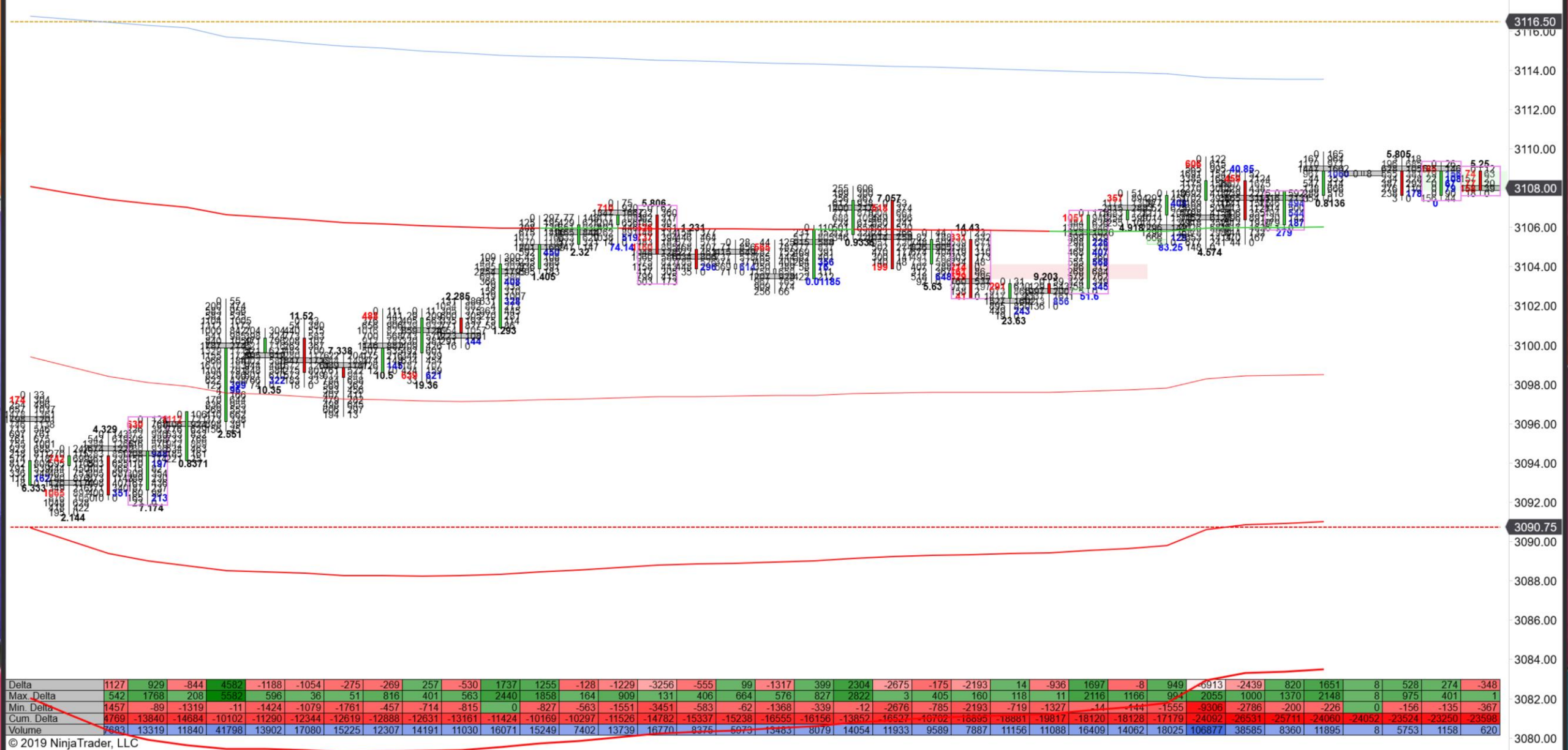
Order Flows Trader(ES 12-19 (5 Minute)), Current day OHL(ES 12-19 (5 Minute)), Order Flow VWAP(ES 12-19 (5 Minute)),Three,Standard,1,2,3,CME US Index Futures RTH

11/20/2019 10:45:00 - 11/20/2019 13:50:00



Delta	107	-113	-900	464	-328	696	-273	-91	-111	264	-149	-306	-2249	-7293	1267	-3395	-1898	-4283	2151	804	253	-1127	929	-844	-4582	-1188	-1054	-275	-269	257	-530	1737	1255	-128	-1229	-3256
Max. Delta	396	500	83	549	611	752	124	296	137	440	148	4	464	0	1816	0	830	92	2690	2738	565	542	1768	208	5582	596	36	51	816	401	563	2440	1858	164	909	131
Min. Delta	-179	-178	-1684	-770	-329	-393	-467	-100	-842	-2	-189	-439	-2740	-10842	-488	-3694	-1927	-4310	-32	-15	-540	-1457	-89	-1319	-11	-1424	-1079	1761	-457	-714	-815	0	-827	-563	-1551	-3451
Cum. Delta	1848	1735	835	1299	971	1667	1394	1303	1192	1456	1307	1001	-1248	-8541	-7274	-10669	-12567	-16850	-14699	-13895	-13642	-14769	-13840	-14684	-10102	-11290	-12344	-12619	-12888	-12631	-13161	-11424	-10169	-10297	-11526	-14782
Volume	5473	5663	8164	7738	4862	7178	4053	3559	4443	4796	2201	2990	16199	114757	35271	31337	38252	36701	24067	24442	16987	17683	13319	11840	41798	13902	17080	15225	12307	14191	11030	16071	15249	7402	13739	16770

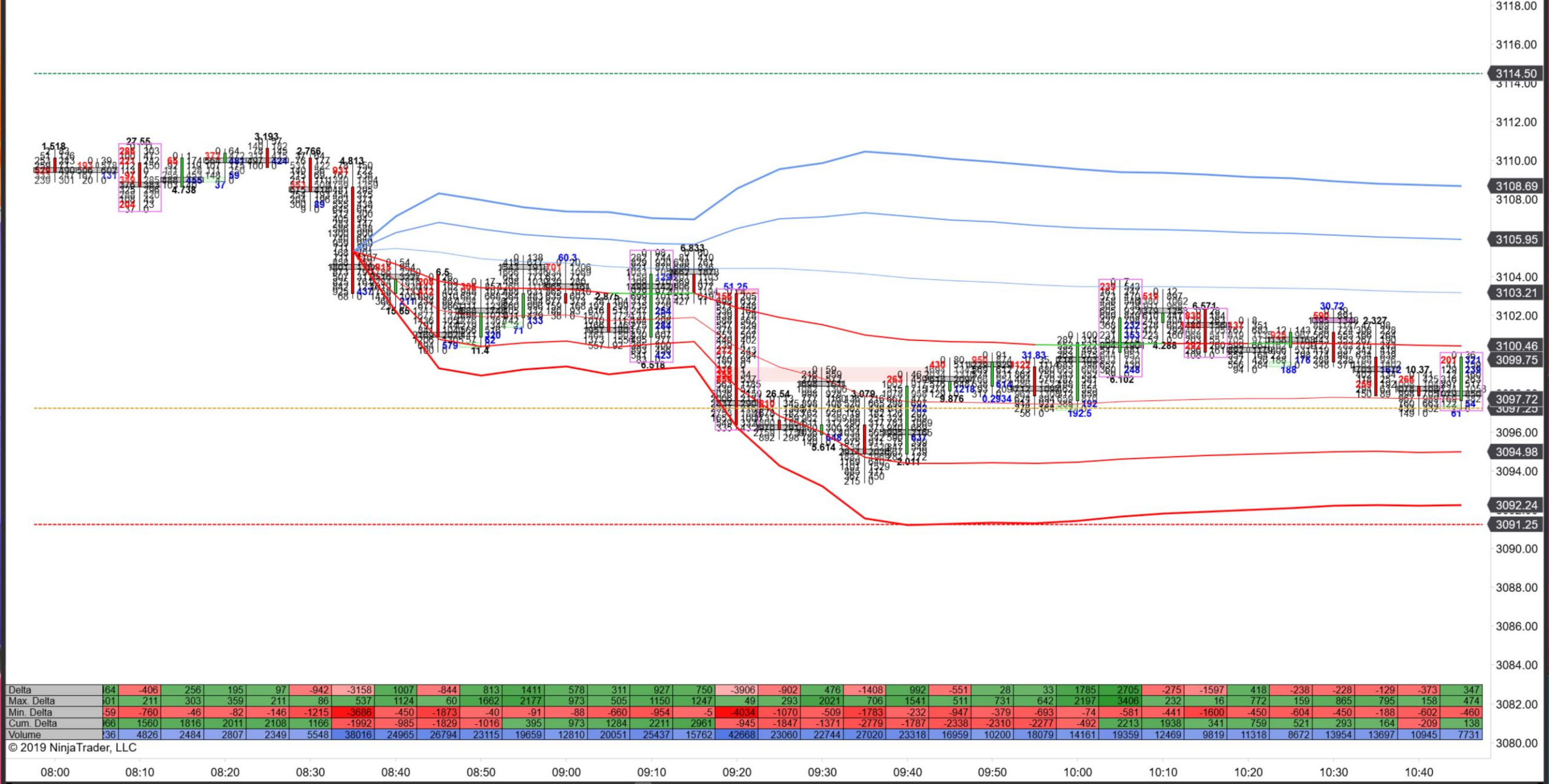
Order Flows Trader(ES 12-19 (5 Minute)), Current day OHL(ES 12-19 (5 Minute)), Order Flow VWAP(ES 12-19 (5 Minute)),Three,Standard,1,2,3,CME US Index Futures RTH
11/20/2019 12:30:00 - 11/20/2019 15:45:00



Delta	1127	929	-844	4582	-1188	-1054	-275	-269	257	-530	1737	1255	-128	-1229	-3256	-555	99	-1317	399	2304	-2675	-175	-2193	14	-936	1697	-8	949	-6913	-2439	820	1651	8	528	274	-348
Max. Delta	542	1768	208	5582	596	36	51	816	401	563	2440	1858	164	909	131	406	664	576	827	2822	3	405	160	118	11	2116	1166	994	2055	1000	1370	2148	8	975	401	1
Min. Delta	1457	-89	-1319	-11	-1424	-1079	-1761	-457	-714	-815	0	-827	-563	-1551	-3451	-583	-62	-1368	-339	-12	-2676	-785	-2193	-719	-1327	-14	-144	-1555	-9306	-2786	-200	-226	0	-156	-135	-367
Cum. Delta	4769	-13840	-14684	-10102	-11290	-12344	-12619	-12888	-12631	-13161	-11424	-10169	-10297	-11526	-14782	-15337	-15238	-16555	-16156	-13852	-16527	-10702	-16895	-18881	-19817	-18120	-18128	-17179	-24092	-26531	-25711	-24060	-24052	-23524	-23250	-23598
Volume	7683	13319	11840	41798	13902	17080	15225	12307	14191	11030	16071	15249	7402	13739	16770	8375	5973	13483	8079	14054	11933	9589	7887	11156	11088	16409	14062	18025	106877	38585	8360	11895	8	5753	1158	620

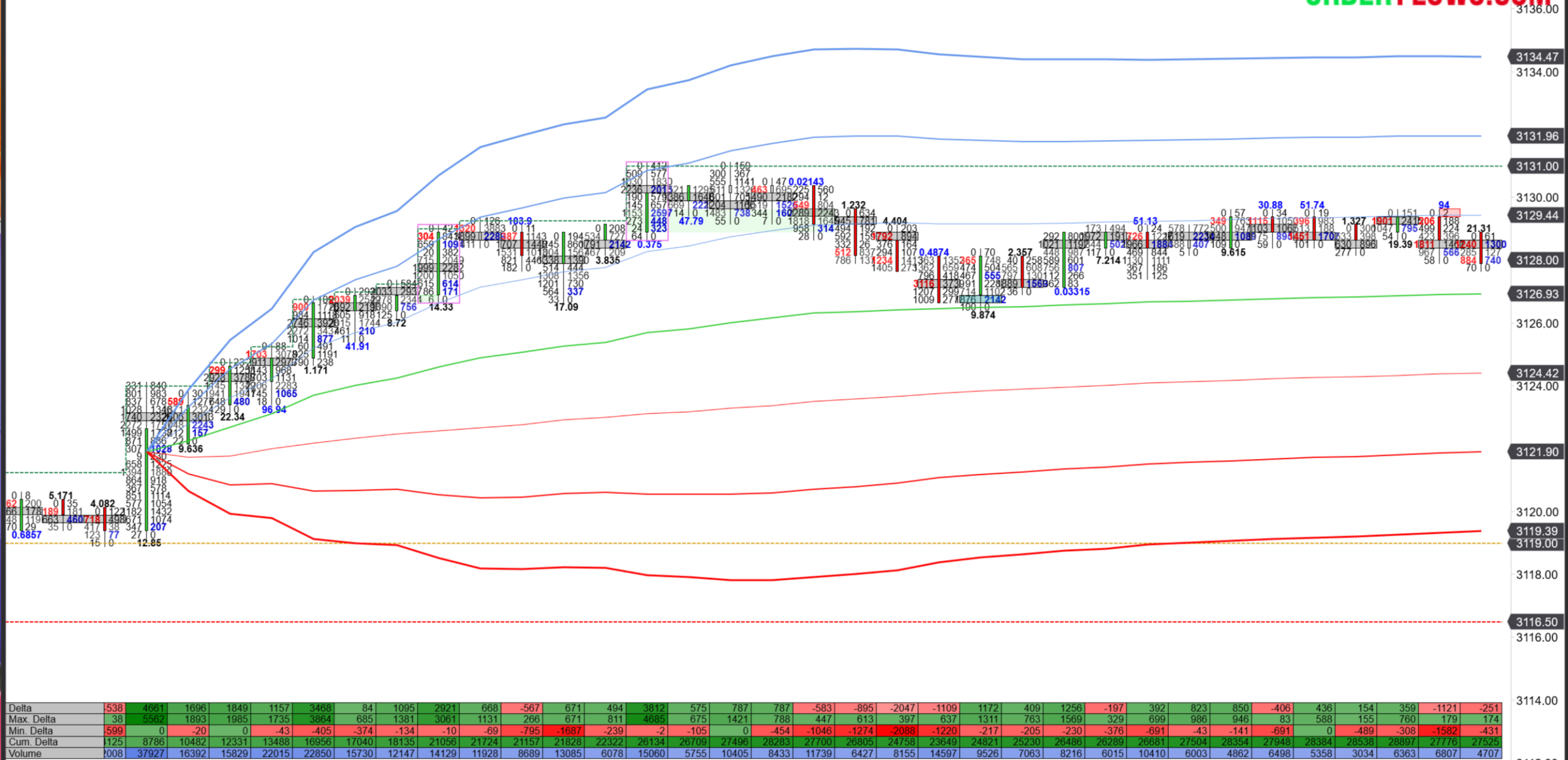
If you are going to trade around VWAP, you have to first understand the type of day that is occurring. If you are trading a mean reversion day, you are going to need the day to be a rotational day. If the day is a trending day, you are going to be screwed.

Order Flows Trader(ES 12-19 (5 Minute)), Current day OHL(ES 12-19 (5 Minute)), Order Flow VWAP(ES 12-19 (5 Minute)),Three,Standard,1,2,3,CME US Index Futures RTH
11/21/2019 08:00:00 - 11/21/2019 10:45:00



Delta	64	-406	256	195	97	-942	-3158	1007	-844	813	1411	578	311	927	750	-3906	-902	476	-1408	992	-551	28	33	1785	2705	-275	-1597	418	-238	-228	-129	-373	347
Max. Delta	101	211	303	359	211	86	537	1124	60	1662	2177	973	505	1150	1247	49	293	2021	706	1541	511	731	642	2197	3406	232	16	772	159	865	795	158	474
Min. Delta	59	-760	-46	-82	-146	-1215	-3686	-450	-1873	-40	-91	-88	-660	-954	-5	-4034	-1070	-509	-1783	-232	-947	-379	-693	-74	-581	-441	-1600	-450	-604	-450	-188	-602	-460
Cum. Delta	66	1560	1816	2011	2108	1166	-1992	-985	-1829	-1016	395	973	1284	2211	2961	-945	-1847	-1371	-2779	-1787	-2338	-2310	-2277	-492	2213	1938	341	759	521	293	164	-209	138
Volume	36	4826	2484	2807	2349	5548	38016	24965	26794	23115	19659	12810	20051	25437	15762	42668	23060	22744	27020	23318	16959	10200	18079	14161	19359	12469	9819	11318	8672	13954	13697	10945	7731

Order Flows Trader(ES 12-19 (5 Minute)), Current day OHL(ES 12-19 (5 Minute)), Order Flow VWAP(ES 12-19 (5 Minute),Three,Standard,1,2,3,CME US Index Futures RTH)
11/25/2019 08:20:00 - 11/25/2019 11:15:00



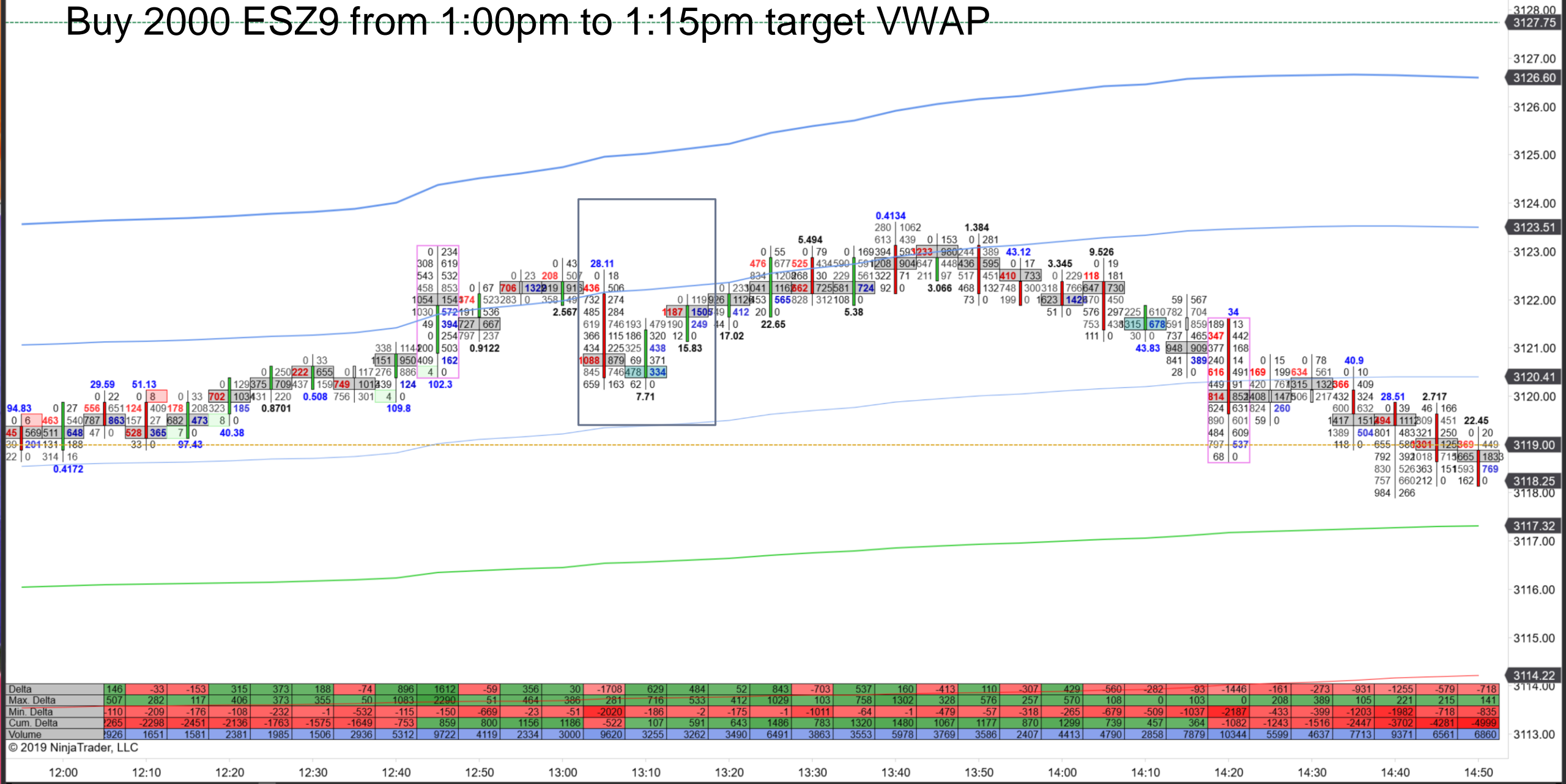
VWAP is used by institutional traders as an execution benchmark for the time period the order was working in the market.

If an order has instructions “buy 750 ESZ9 over the next 5 minutes target VWAP.” The portfolio manager is going to look at VWAP for just that 5 minute period his order was working and compare his fill to it.

He is not going to look at the entire day's VWAP up to that point and then judge his execution price.

Order Flows Trader(ES 12-19 (5 Minute)), Current day OHL(ES 12-19 (5 Minute)), Order Flow VWAP(ES 12-19 (5 Minute)),Three,Standard,1,2,3,CME US Index Futures RTH
11/18/2019 11:55:00 - 11/18/2019 14:50:00

Buy 2000 ESZ9 from 1:00pm to 1:15pm target VWAP



VWAP. The sooner you recognize the type of trading day is developing the better your edge will be.

You can't trade a trend day and rotational day the same way.

On trend days you go with the momentum. You buy above value and sell below value. Price leads value.

On rotational days, you do the opposite. You buy below value or sell above value.

Inexperienced traders are not able to identify what type of day is developing and try and trade each day as a rotational day. They often get stubborn and make the same bad trading decision a few times before realizing they misread the type of day that is developing.

How can you tell what type of day is developing?

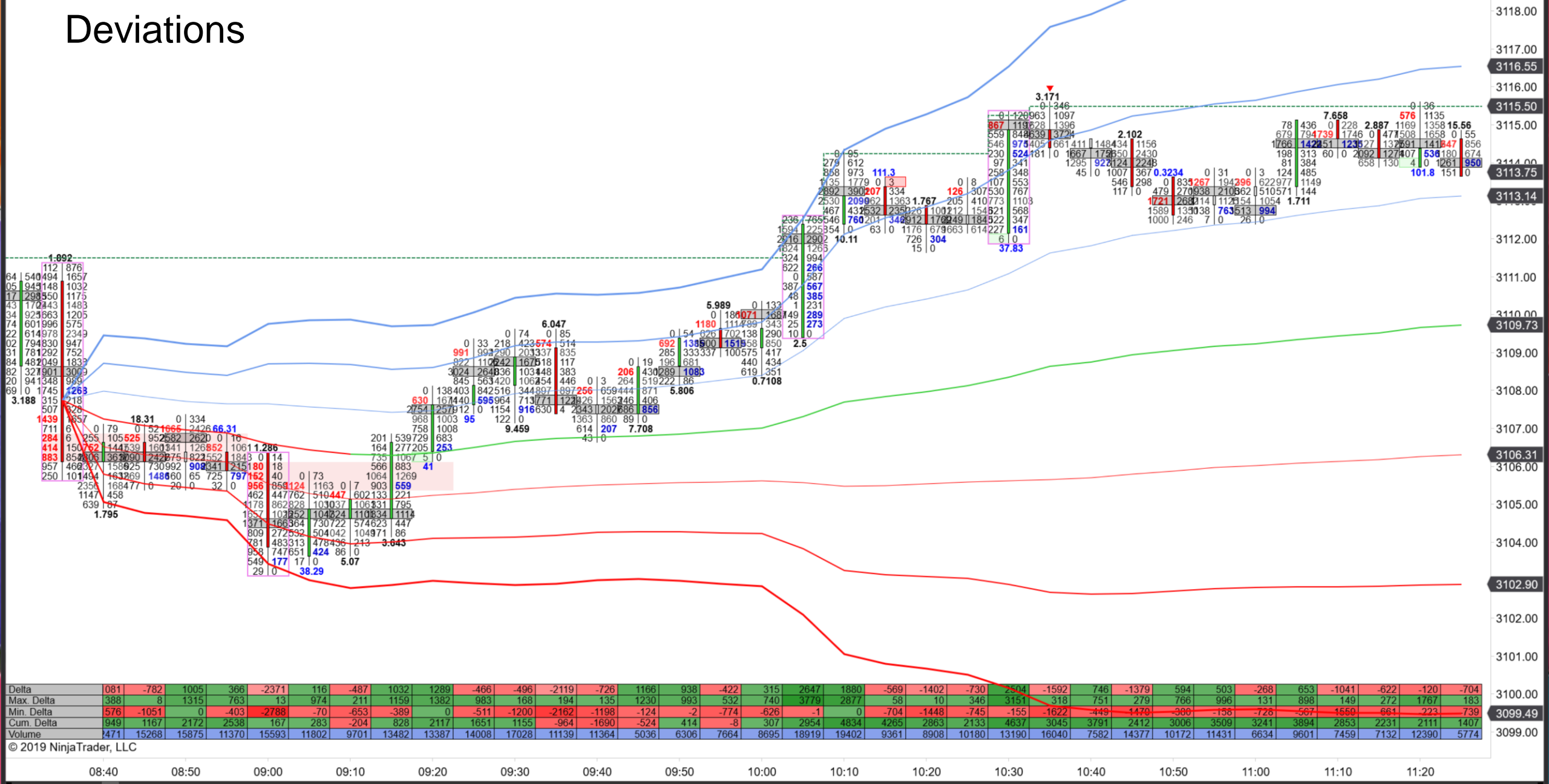
When the market is trading around VWAP and when the market is trading at the deviations.

Earlier, I wrote “There are several ways to approach VWAP, when the market is trading around VWAP and when the market is trading at the deviations.”

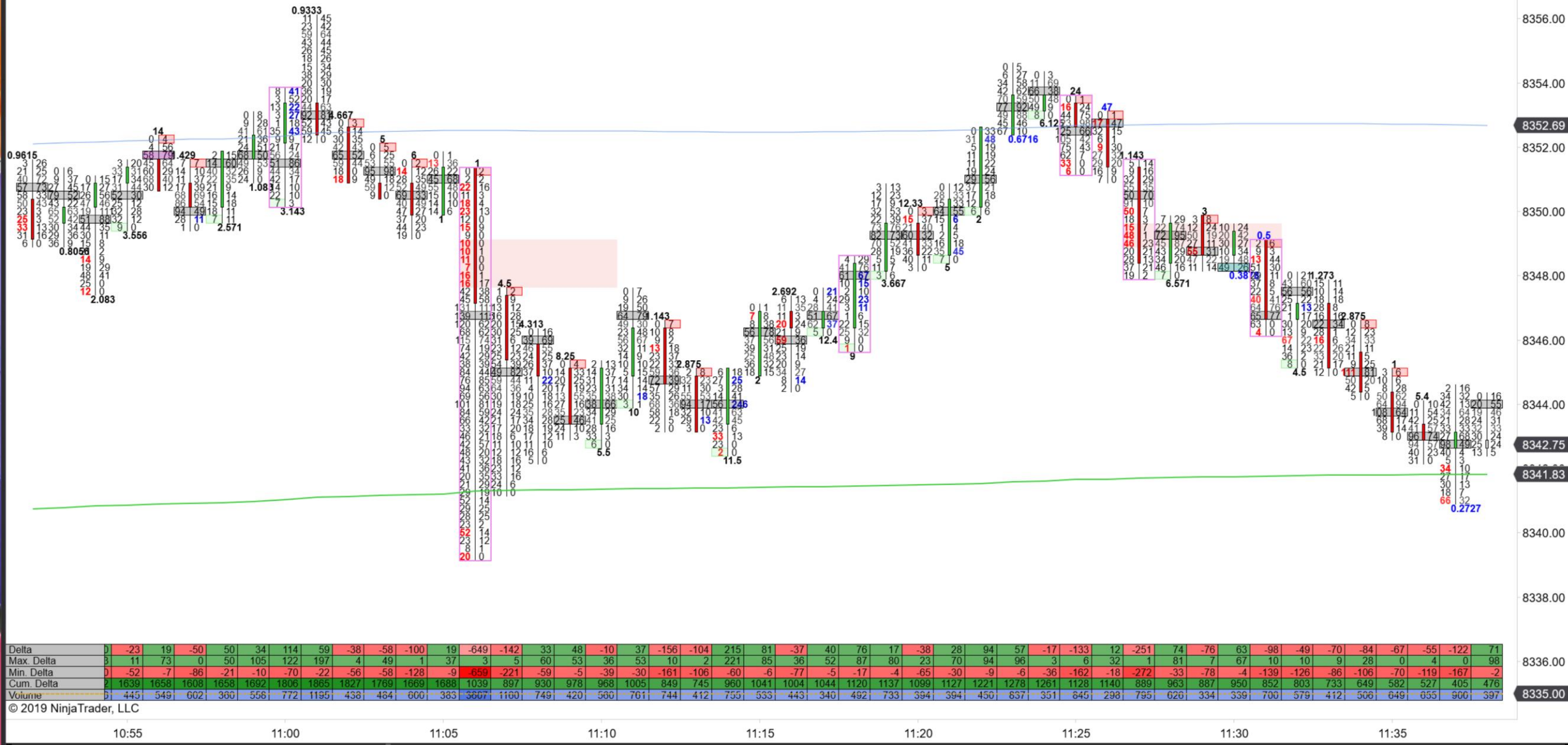
I don't recommend trading around deviations for most traders (by most traders I mean those who are not able to recognize the type of day we are in). The reason being if the market is trending and you sell the first deviation for a reversion to the mean and the market goes to the second deviation and you get short again, the deviation lines are rising. You are now selling at a worse price because the market is trending.

Order Flows Trader(ES 12-19 (5 Minute)), Current day OHL(ES 12-19 (5 Minute)), Order Flow VWAP(ES 12-19 (5 Minute)),Three,Standard,1,2,3,CME US Index Futures RTH
11/15/2019 08:30:00 - 11/15/2019 11:25:00

Deviations

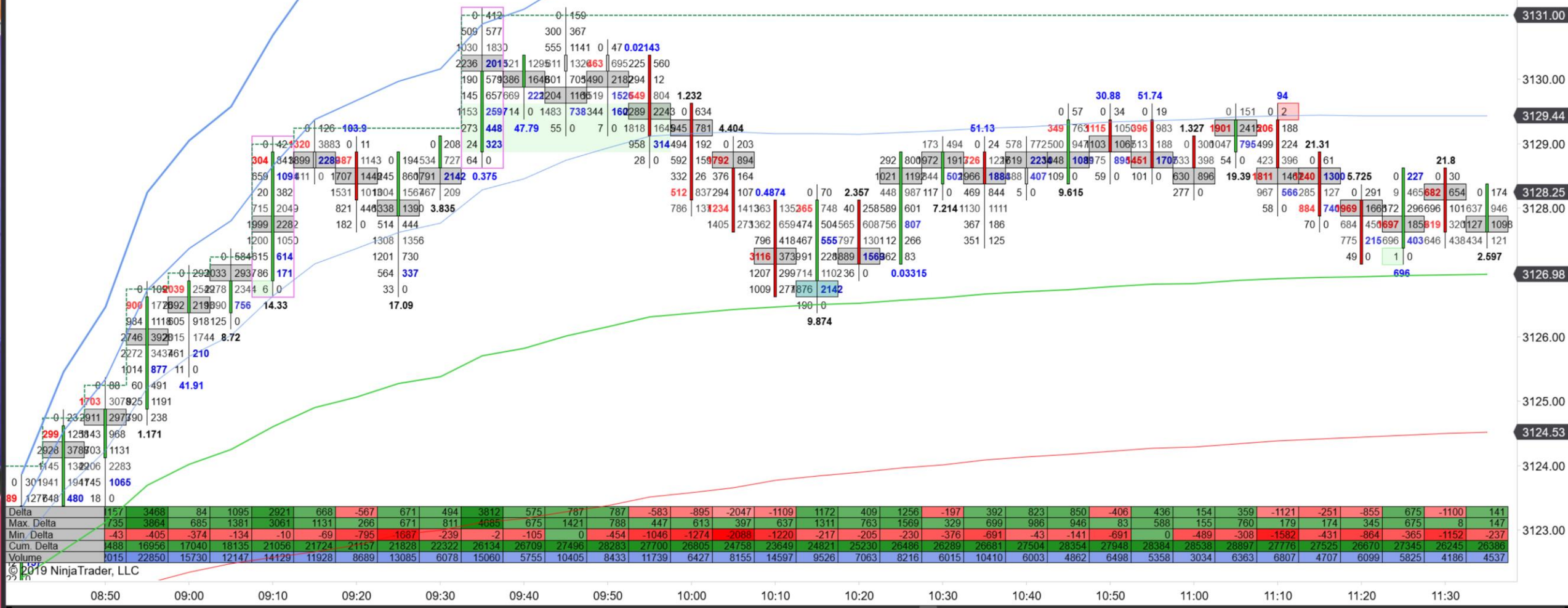


Deviations – when they work

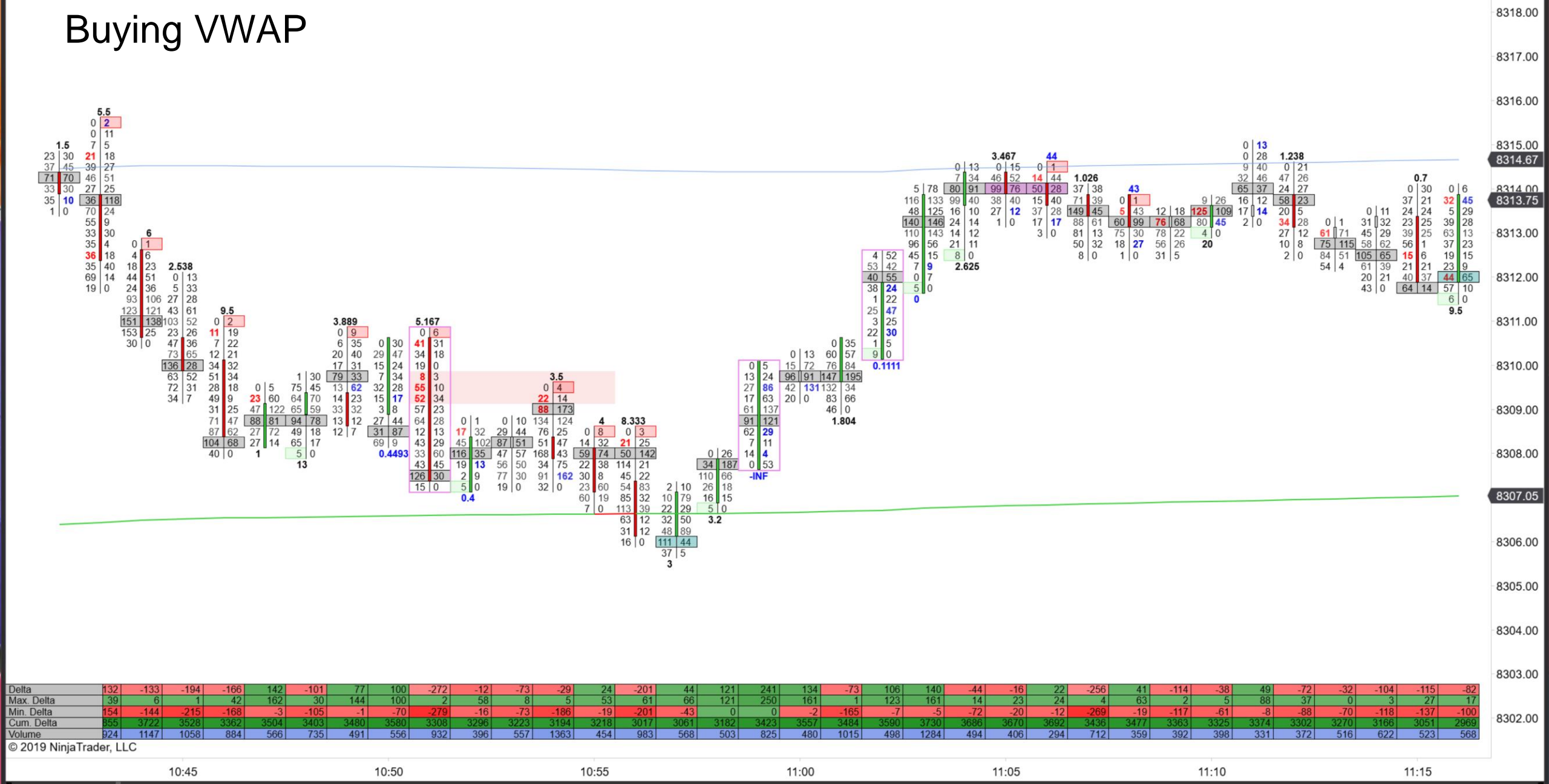


Order Flows Trader(ES 12-19 (5 Minute)), Current day OHL(ES 12-19 (5 Minute)), Order Flow VWAP(ES 12-19 (5 Minute)), Three, Standard, 1, 2, 3, CME US Index Futures RTH
11/25/2019 08:40:00 - 11/25/2019 11:35:00

Buying VWAP



Buying VWAP



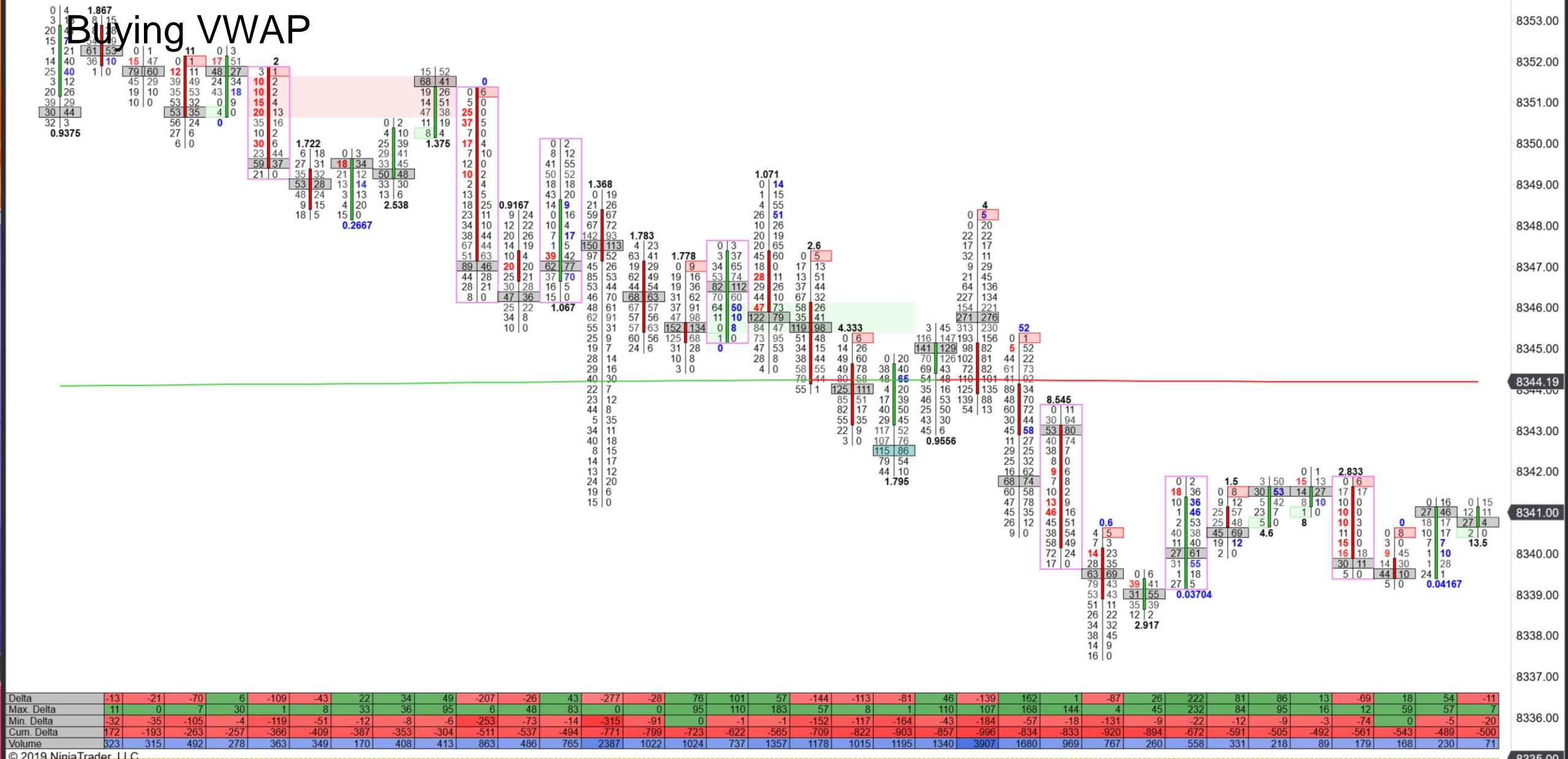
Order Flows Trader(NQ 12-19 (1 Minute)), Current day OHL(NQ 12-19 (1 Minute)), Order Flow VWAP(NQ 12-19 (1 Minute)),Three,Standard,1,2,3,CME US Index Futures RTH)
11/19/2019 10:20:00 - 11/19/2019 10:54:00

Buying VWAP



Delta	-17	-114	50	150	29	168	-14	253	114	149	-22	104	48	131	-53	-64	-54	26	1440	248	-20	-48	17	-40	-95	-160	32	59	34	65	124	-40	-24	90
Max. Delta	71	18	79	175	90	205	20	265	224	153	18	164	108	267	23	12	35	42	1459	380	95	33	105	15	20	82	111	104	68	69	137	66	69	113
Min. Delta	-29	-126	-3	-4	-5	-30	-50	0	0	0	-49	-4	0	0	-76	-253	-57	-8	-32	0	-34	-51	-3	-108	-98	-178	-172	-114	-2	-4	-20	-43	-34	-90
Cum. Delta	921	-1035	-985	-835	-806	-638	-652	-399	-285	-136	-158	-54	-6	125	72	8	-46	-20	1420	1668	1648	1600	1617	1577	1482	1322	1354	1413	1447	1512	1636	1596	1572	1662
Volume	707	562	448	424	531	774	444	1193	1072	891	848	924	626	1303	669	1306	566	466	4470	3450	1918	938	761	858	553	1958	2172	1497	802	439	840	654	716	866

Order Flows Trader(NQ 12-19 (1 Minute)), Current day OHL(NQ 12-19 (1 Minute)), Order Flow VWAP(NQ 12-19 (1 Minute)),Three,Standard,1,2,3,CME US Index Futures RTH)
11/19/2019 14:38:00 - 11/19/2019 15:12:00

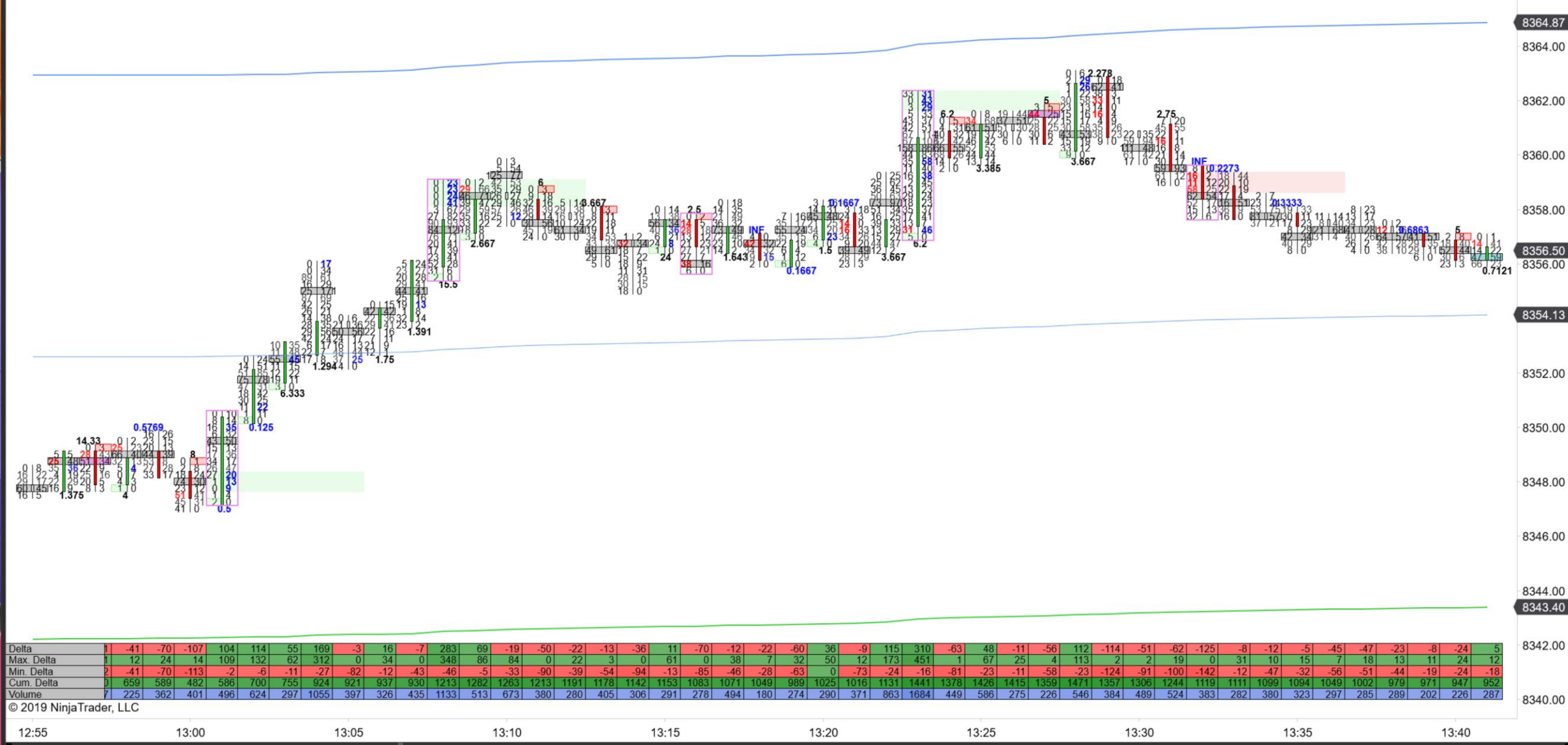


A lot of traders prefer to use VWAP as support or resistance.

The problem with that is they are turning VWAP into something it is not really designed to be used for – essentially turning it into a moving average.

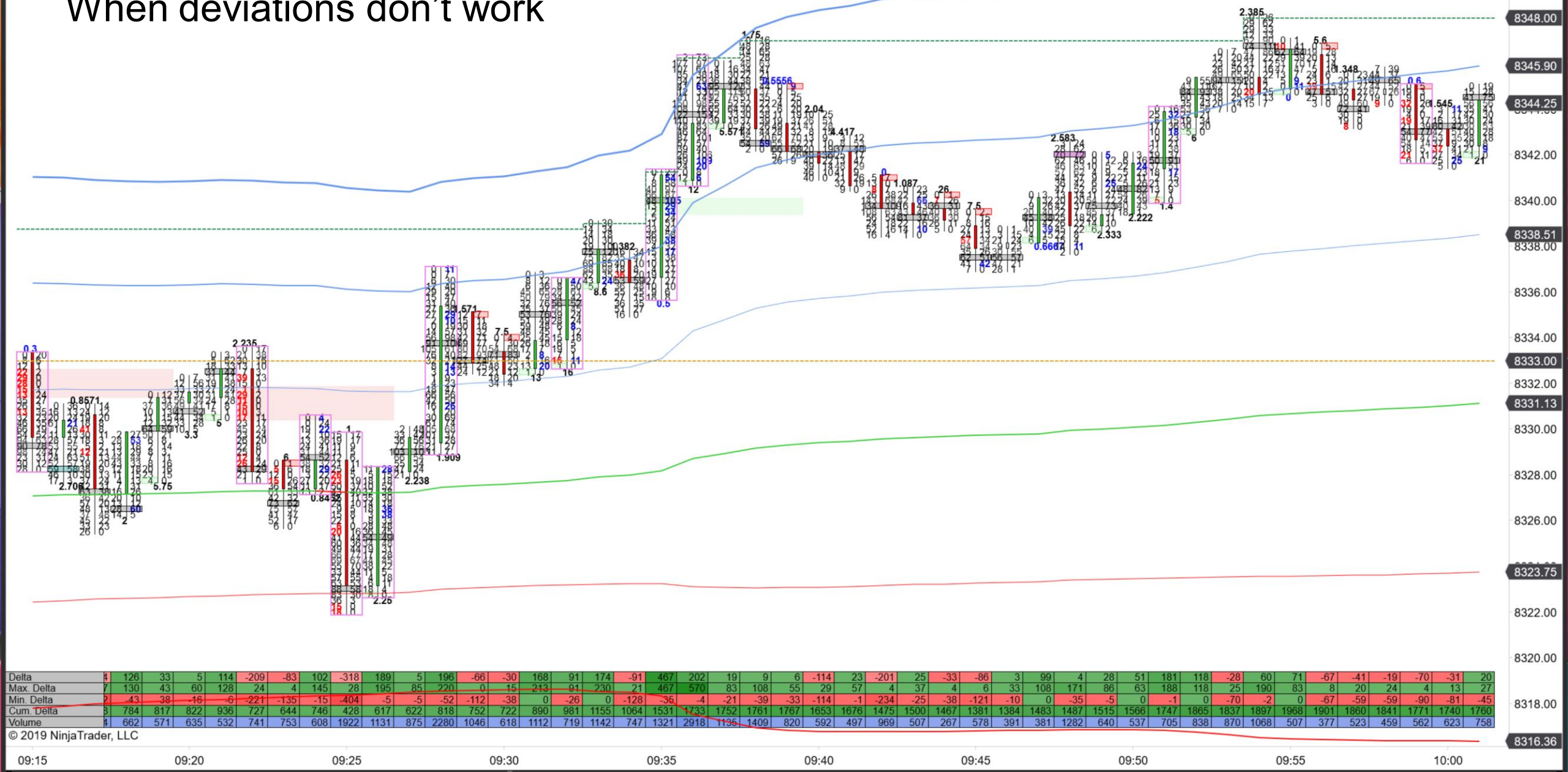
If that is how you use it and are making money with, good on you. Keep doing it until it doesn't work.

When deviations don't work



Delta	1	-41	-70	-107	104	114	55	169	-3	16	-7	283	69	-19	-50	-22	-13	-36	11	-70	-12	-22	-60	36	-9	115	310	-63	48	-11	-56	112	-114	-51	-62	-125	-8	-12	-5	-45	-47	-23	-8	-24	5
Max. Delta	1	12	24	14	109	132	62	312	0	34	0	348	86	84	0	22	3	0	61	0	38	7	32	50	12	173	451	1	67	25	4	113	2	2	19	0	31	10	15	7	18	13	11	24	12
Min. Delta	2	-41	-70	-113	-2	-6	-11	-27	-82	-12	-43	-46	-5	-33	-90	-39	-54	-94	-13	-85	-46	-28	-63	0	-73	-24	-16	-81	-23	-11	-58	-23	-124	-91	-100	-142	-12	-47	-32	-56	-51	-44	-19	-24	-18
Cum. Delta	0	659	589	482	586	700	755	924	921	937	930	1213	1282	1263	1213	1191	1178	1142	1153	1083	1071	1049	989	1025	1016	1131	1441	1378	1426	1415	1359	1471	1357	1306	1244	1119	1111	1099	1094	1049	1002	979	971	947	952
Volume	7	225	362	401	496	624	297	1055	397	326	435	1133	513	673	380	280	405	306	291	278	494	180	274	290	371	863	1684	449	586	275	226	546	384	489	524	383	282	380	323	297	285	289	202	226	287

When deviations don't work



Non-trending days, where the market is hanging around VWAP for the first couple of hours of trading can provide some good trading opportunities.

When the market is rotating around VWAP, look for reasons to buy dips below VWAP or sell pops above VWAP. On these days the market tends to revert to the mean.

On trending days, trying to trade for a reversion to the mean will kill you.

How can you determine if it is going to be a reversion to the mean day or a trending day?

Look at the daily volume profile. What is the profile shape looking like?

Look at the initial balance.

Look at the economic calendar or the FED calendar. Markets tend to keep quiet ahead of a big number or a FED meeting.

Look at the VWAP. Is the VWAP flat early?

Look at the deviations, are they moving higher or lower?

The cash opening is very important because it is an important reference for day traders. This is when traders start to determine if the market is in balance or out of balance.

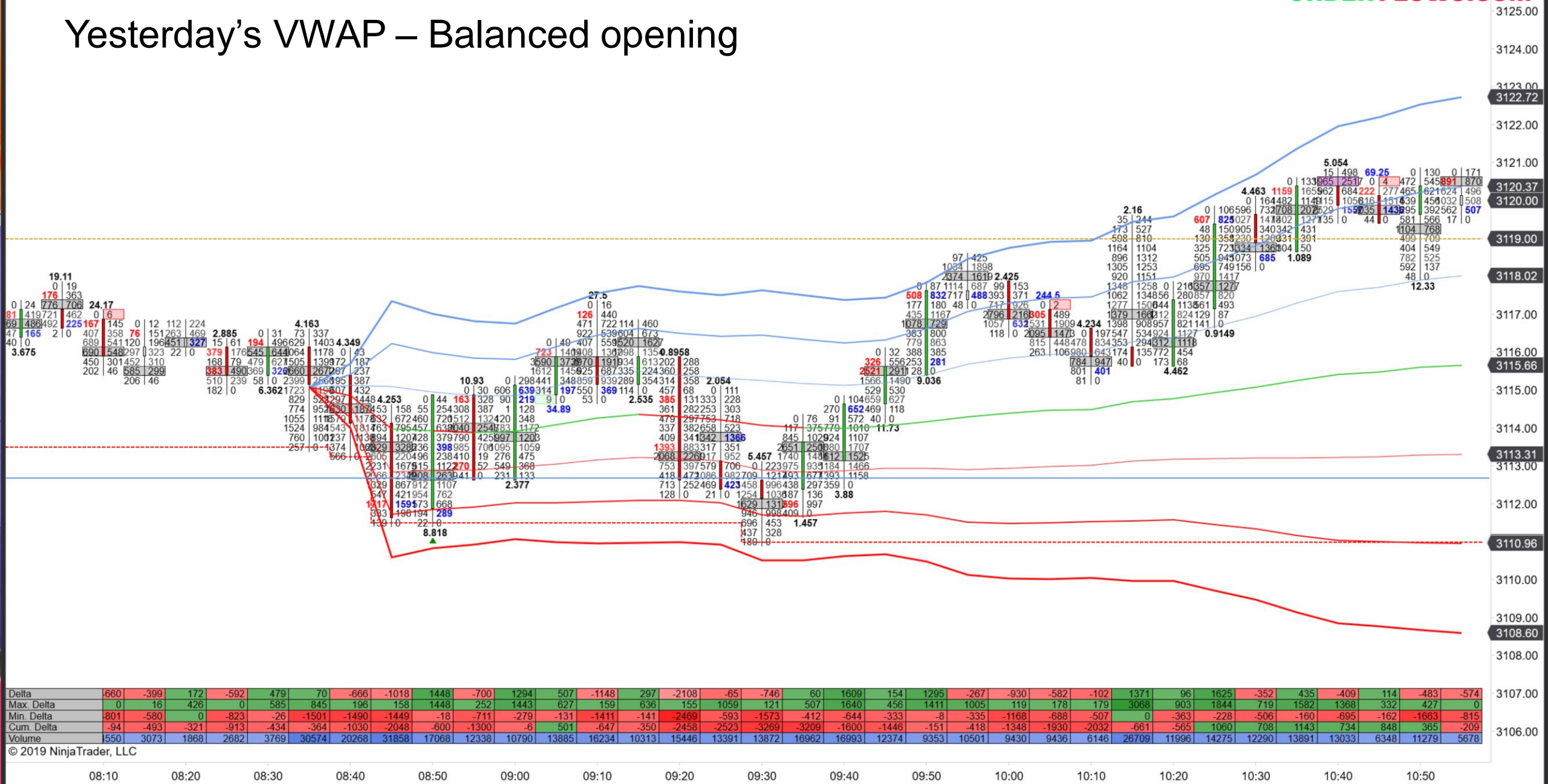
If the market is in balance, then the opportunities tend to be small.

If the market is out of balance, then the market has a chance to make a decent move looking for balance.

Want to know an easy way to know if we are opening cash in balance?

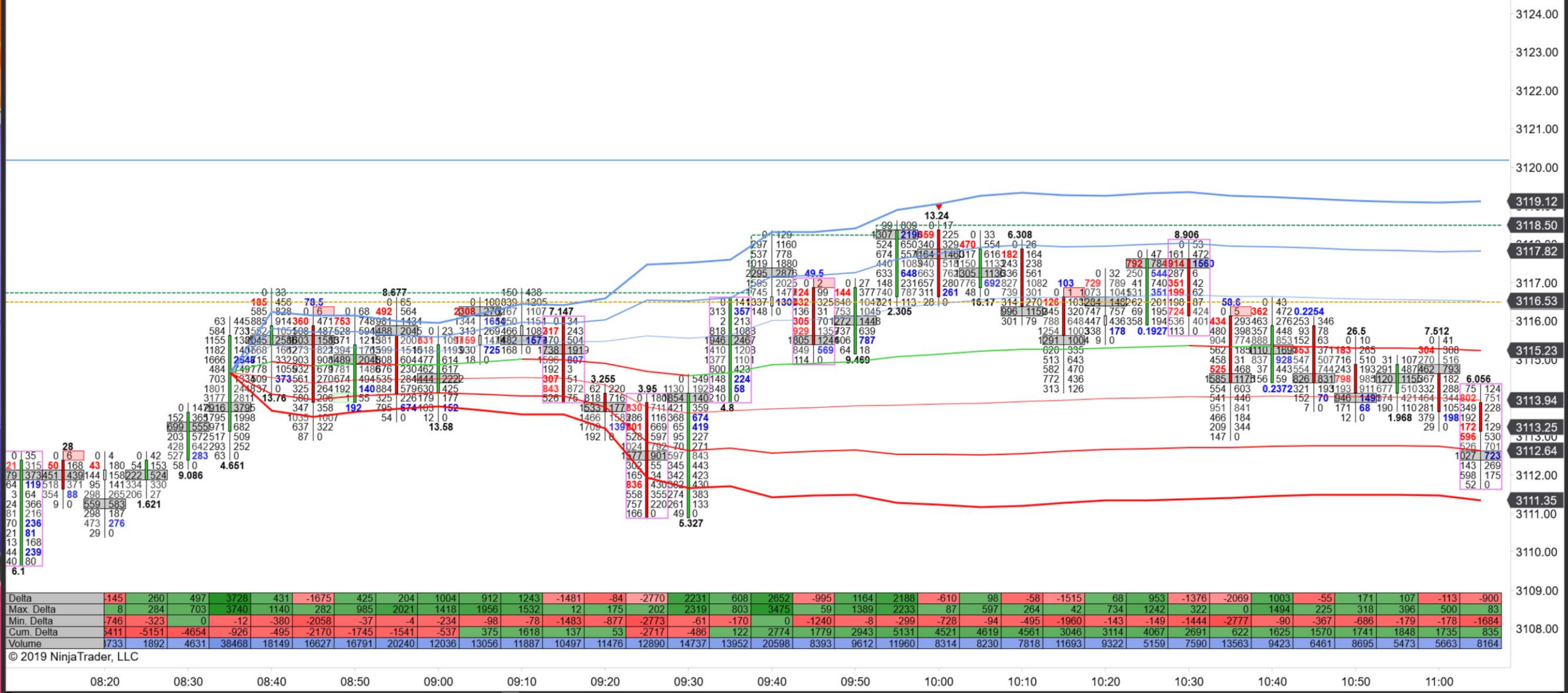
Look at yesterday's VWAP.

Yesterday's VWAP – Balanced opening

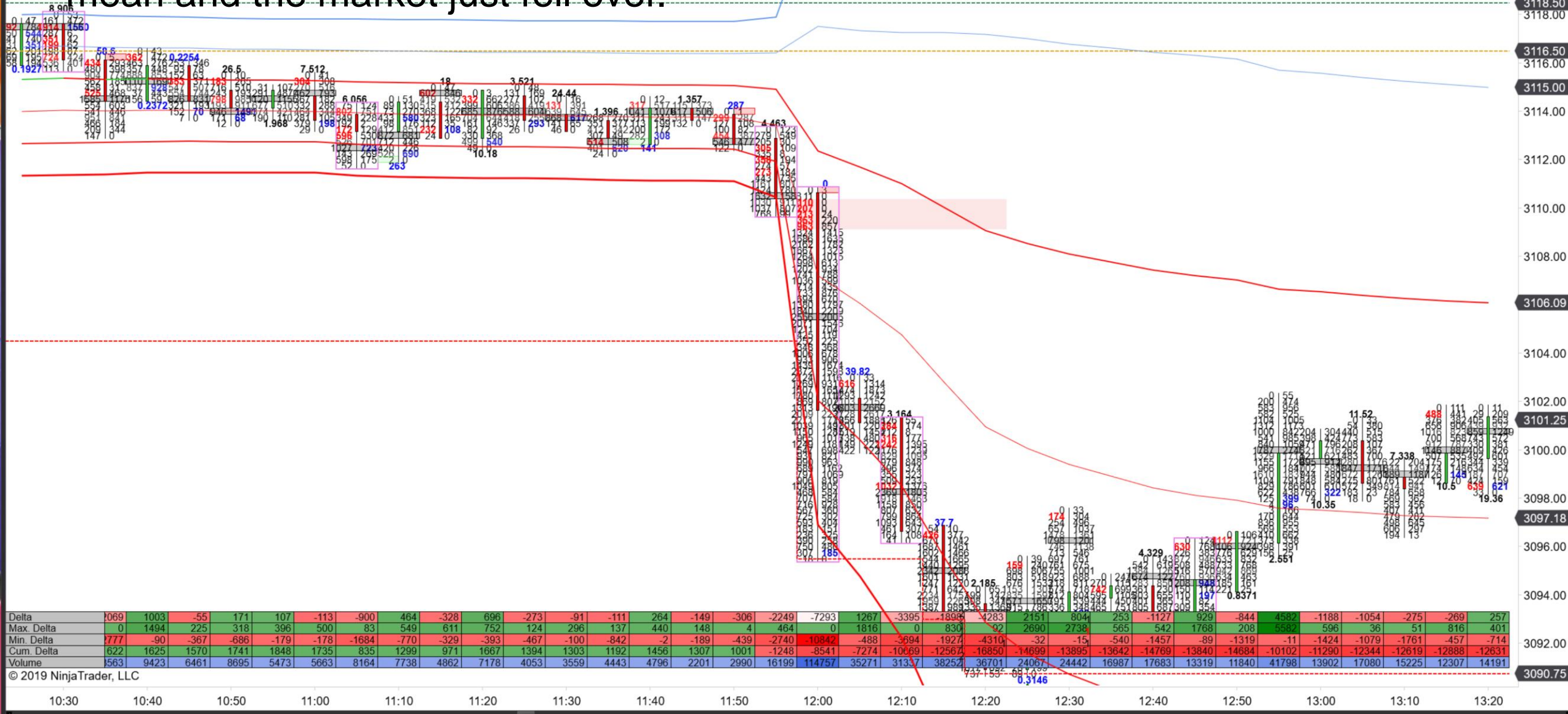


Delta	.660	-399	172	-592	479	70	-666	-1018	1448	-700	1294	507	-1148	297	-2108	-65	-746	60	1609	154	1295	-267	-930	-582	-102	1371	96	1625	-352	435	-409	114	-483	-574
Max. Delta	0	16	426	0	585	845	196	158	1448	-252	1443	627	159	636	155	1059	121	507	1640	456	1411	1005	119	178	179	3068	903	1844	719	1582	1368	332	427	0
Min. Delta	-801	-580	0	-823	-26	-1501	-1490	-1449	-18	-711	-279	-131	-1411	-141	-2469	-593	-1573	-412	-644	-333	-8	-335	-1168	-688	-507	0	-363	-228	-506	-160	-695	-162	-1663	-815
Cum. Delta	-94	-493	-321	-913	-434	-364	-1030	-2048	-600	-1300	-6	501	-647	-350	-2458	-2523	-3269	-3209	-1600	-1446	-151	-418	-1348	-1930	-2032	-661	-565	1060	708	1143	734	848	365	-209
Volume	550	3073	1868	2682	3769	30574	20268	31858	17068	12338	10790	13885	16234	10313	15446	13391	13872	16962	16993	12374	9353	10501	9430	9436	6146	26709	11996	14275	12290	13891	13033	6348	11279	5678

Yesterday's VWAP – Out of balance opening part 1 – opened just below the previous day's 1st deviation at 3115.50



Yesterday's VWAP – Out of balance opening part 2. No reversion to yesterday's mean and the market just fell over.



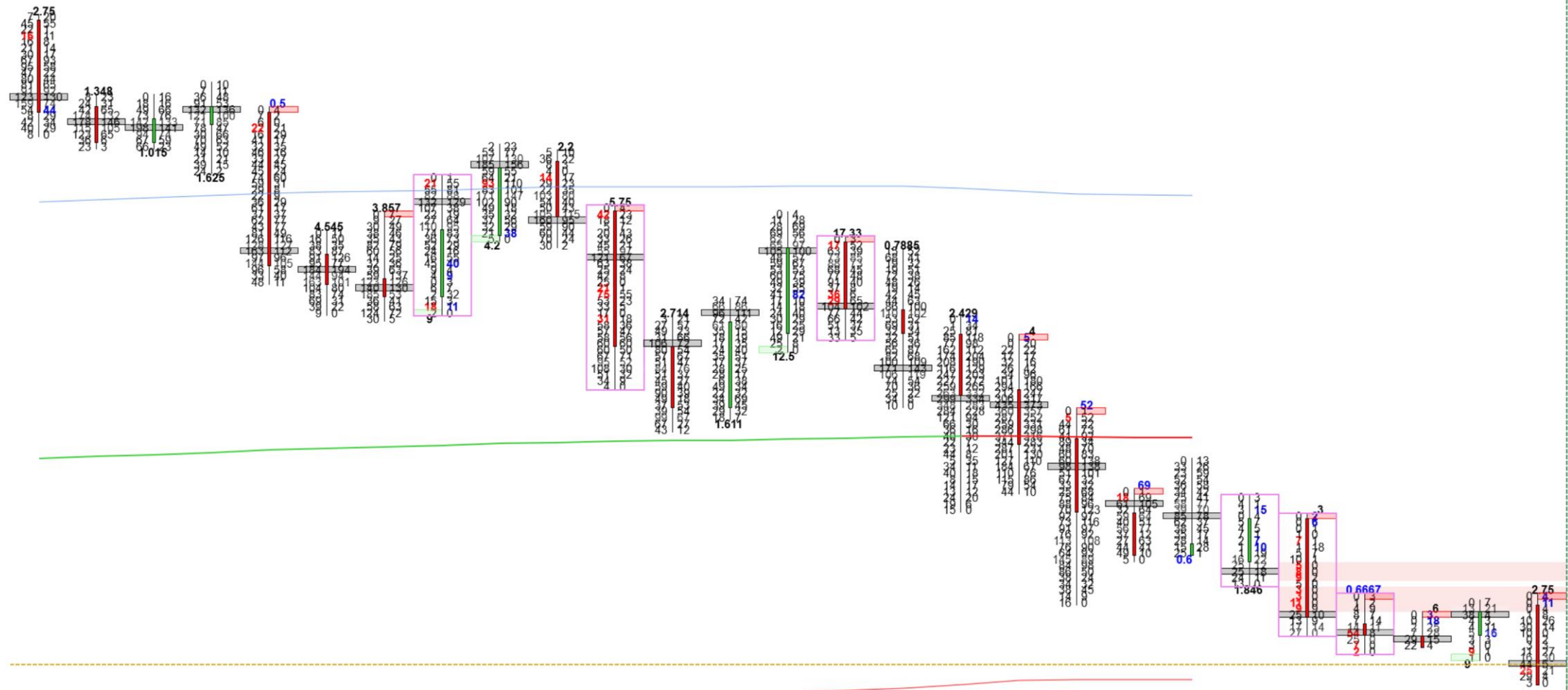
How do I like to trade around VWAP. I trade the catch-up trade. I talk about it in the trade setup module.

The most important part or aspect of VWAP that many traders fail to realize is late in the day, VWAP tends to flatten and doesn't move much anymore going into the last 1 to 2 hours of trading. Why? Because most of the day's volume has already traded. You get like maybe 15% of the day's volume in the last couple of hours of trade. That means 85% of the days volume has already traded and it would take a massive volume induced move to really affect VWAP.

Now imagine an institution having to buy 5000 ESZ9 VWAP over the cash session in a trending higher all day. They are most likely going to be behind VWAP because probably half their orders are going to be executed by lifting the offer since the market is running higher. Once the market shows weakness late in the day and makes a pullback towards VWAP, the algos can be a more aggressive and buy closer to VWAP or below VWAP.

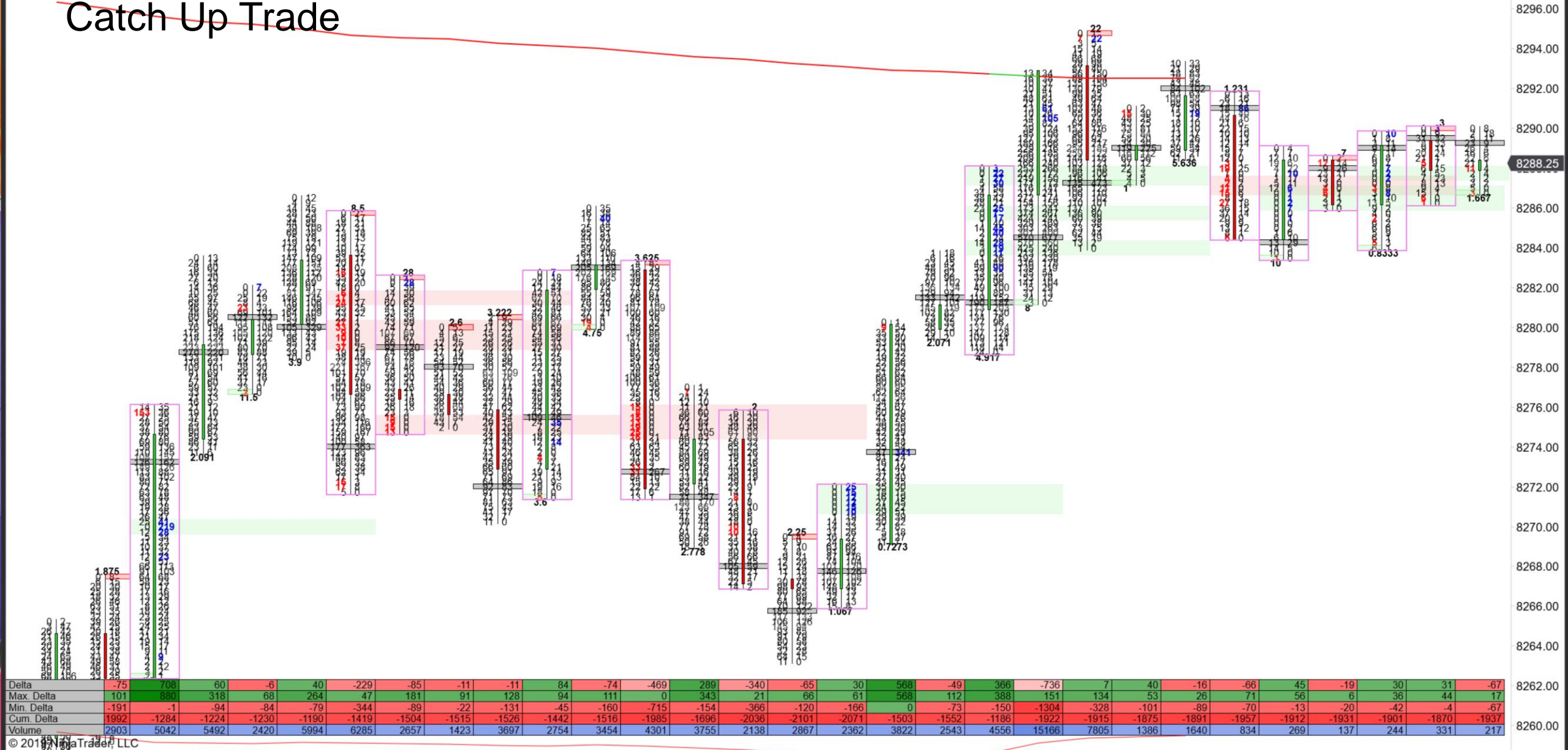
Order Flows Trader(NQ 12-19 (5 Minute)), Current day OHL(NQ 12-19 (5 Minute)), Order Flow VWAP(NQ 12-19 (5 Minute)),Three,Standard,1,2,3,CME US Index Futures RTH)
11/19/2019 13:35:00 - 11/19/2019 17:15:00

Catch Up Trade



Delta	-147	-103	-64	-352	-136	-36	76	-15	-166	-461	-210	161	166	-194	-107	-71	-431	324	129	72	5	-79	-68	33	-14	-22	-94	41	76
Max. Delta	7	53	25	2	47	129	185	80	7	3	26	207	211	7	129	55	57	334	192	173	11	14	0	37	27	28	7	63	82
Min. Delta	-147	-122	-118	-396	-140	-85	-5	-31	-189	-525	-249	-2	-54	-228	-197	-368	-476	-57	-12	-5	-24	-90	-68	-8	-14	-25	-95	-3	-80
Cum. Delta	947	844	780	428	292	256	332	317	151	-310	-520	-359	-193	-387	-494	-565	-996	-672	-543	-471	-466	-545	-613	-580	-594	-616	-94	-53	-80
Volume	1299	1311	1502	2910	2100	2152	1794	2181	1452	2291	1924	1617	1908	1652	2935	6527	8635	4234	985	1248	270	239	176	153	146	342	1034	467	568

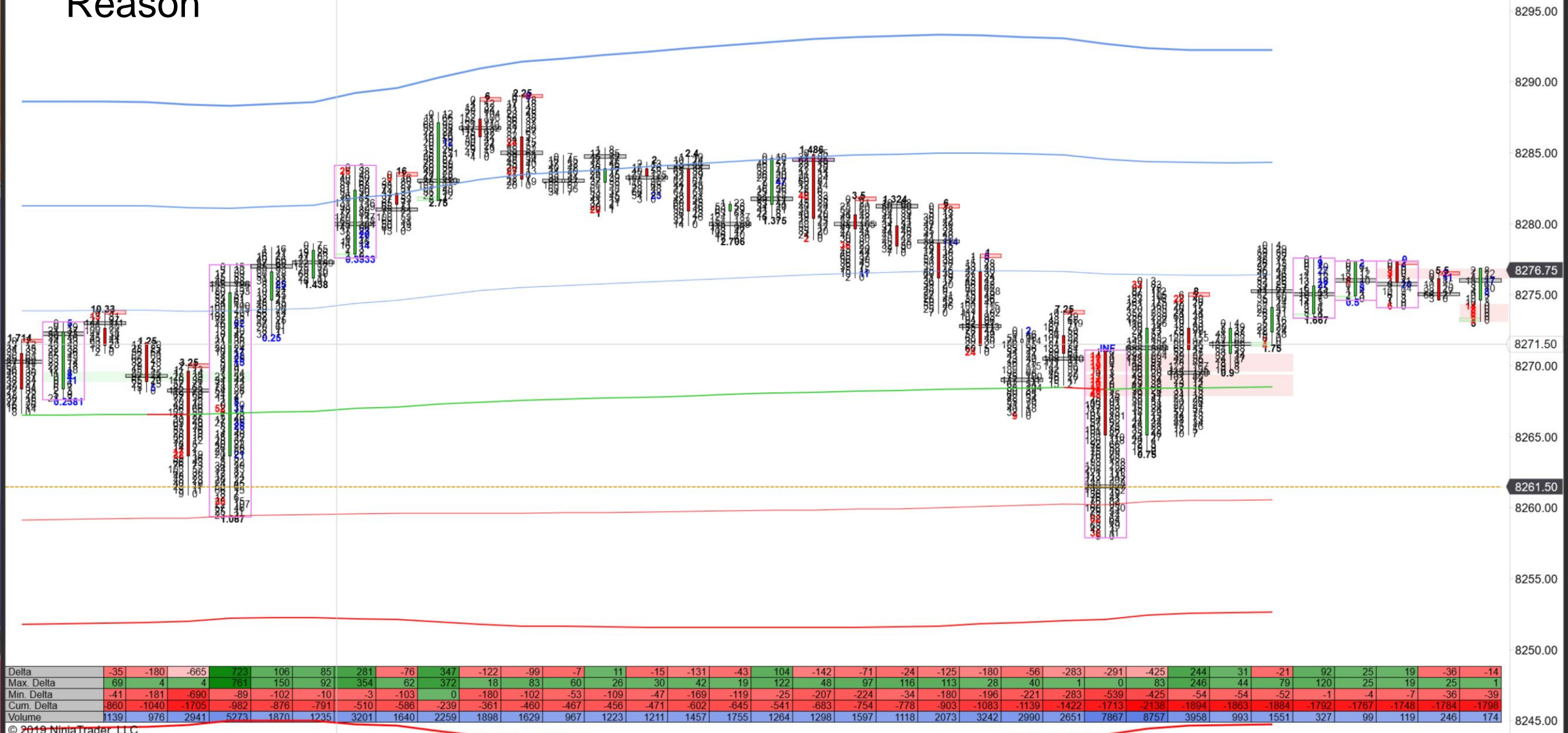
Catch Up Trade



Late Day VWAP moves. If we know VWAP flattens as the day goes on, that is something we can trade around.

Order Flows Trader(NQ 12-19 (5 Minute)), Current day OHL(NQ 12-19 (5 Minute)), Order Flow VWAP(NQ 12-19 (5 Minute)),Three,Standard,1,2,3,CME US Index Futures RTH
11/21/2019 12:45:00 - 11/21/2019 15:55:00

Reason



Delta	-35	-180	-665	723	106	85	281	-76	347	-122	-99	-7	11	-15	-131	-43	104	-142	-71	-24	-125	-180	-56	-283	-291	-425	244	31	-21	92	25	19	-36	-14
Max. Delta	69	4	4	761	150	92	354	62	372	18	83	60	26	30	42	19	122	48	97	116	113	28	40	1	0	83	246	44	79	120	25	19	25	1
Min. Delta	-41	-181	-690	-89	-102	-10	-3	-103	0	-180	-102	-53	-109	-47	-169	-119	-25	-207	-224	-34	-180	-196	-221	-283	-539	-425	-54	-54	-52	-1	-4	-7	-36	-39
Cum. Delta	-860	-1040	-1705	-982	-876	-791	-510	-586	-239	-361	-460	-467	-456	-471	-602	-645	-541	-683	-754	-778	-903	-1083	-1139	-1422	-1713	-2138	-1894	-1863	-1884	-1792	-1767	-1748	-1784	-1798
Volume	1139	976	2941	5273	1870	1235	3201	1640	2259	1898	1629	967	1223	1211	1457	1755	1264	1298	1597	1118	2073	3242	2990	2651	7867	8757	3958	993	1551	327	99	119	246	174

No Reason

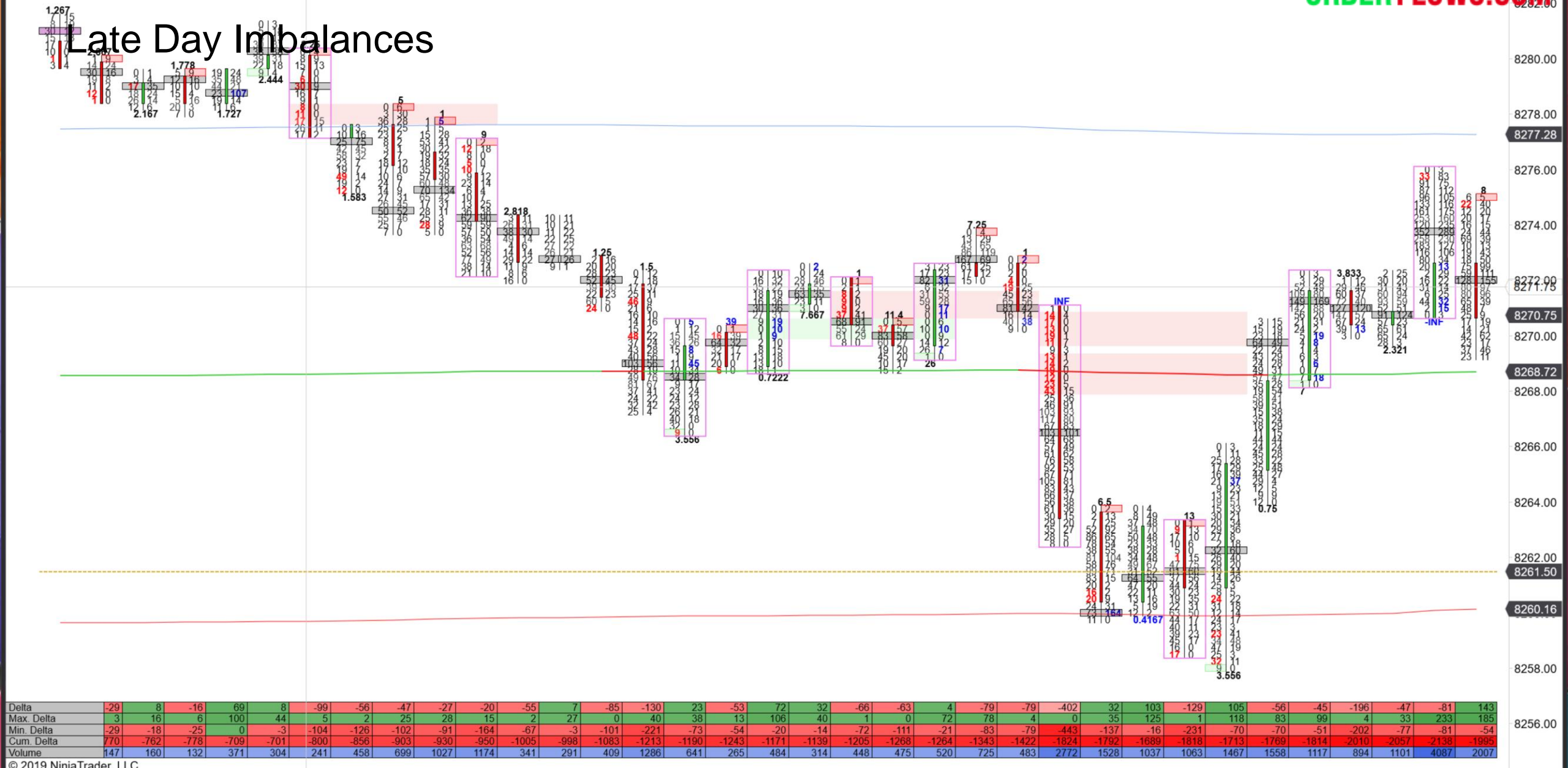


Late Day Imbalances

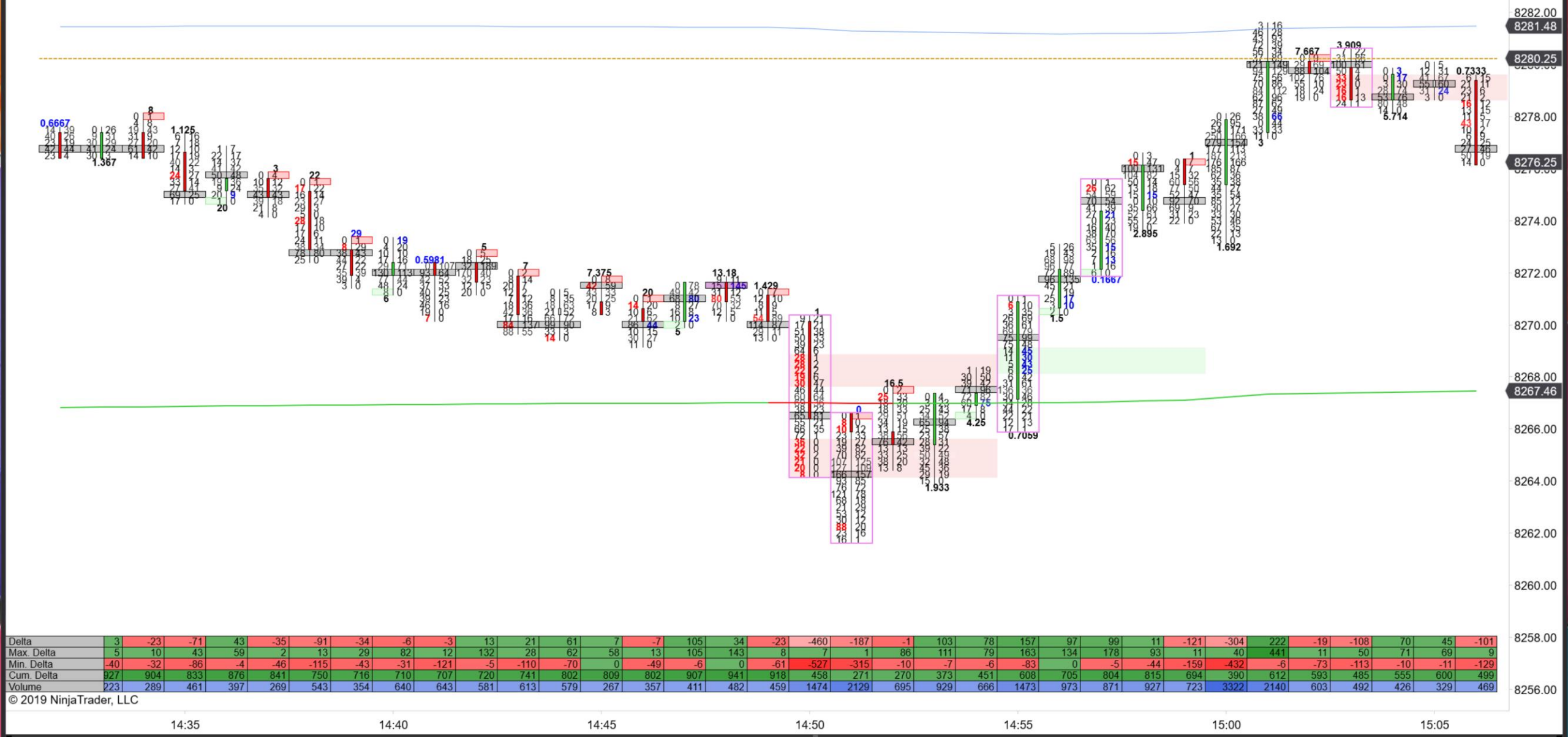


Order Flows Trader(NQ 12-19 (1 Minute)), Current day OHL(NQ 12-19 (1 Minute)), Order Flow VWAP(NQ 12-19 (1 Minute)),Three,Standard,1,2,3,CME US Index Futures RTH)
11/21/2019 14:27:00 - 11/21/2019 15:01:00

Late Day Imbalances



Late Day Imbalances – loser then winner



You have reached the end of Module 4. In Module 5 I will discuss order flow relationships.