

Median Lines or Pitchforks: How and Why They Work

I have been working with Median Lines and their associated lines for over thirty years now. They were originally developed by Dr. Alan Andrews as a way to easily identify where price was going and how fast it would get there. Dr. Andrews was a Thermodynamics Professor at MIT, so I've found over the years that it's easiest to think about this methodology and teach it in terms of the energy that price carries as it moves forward in time.

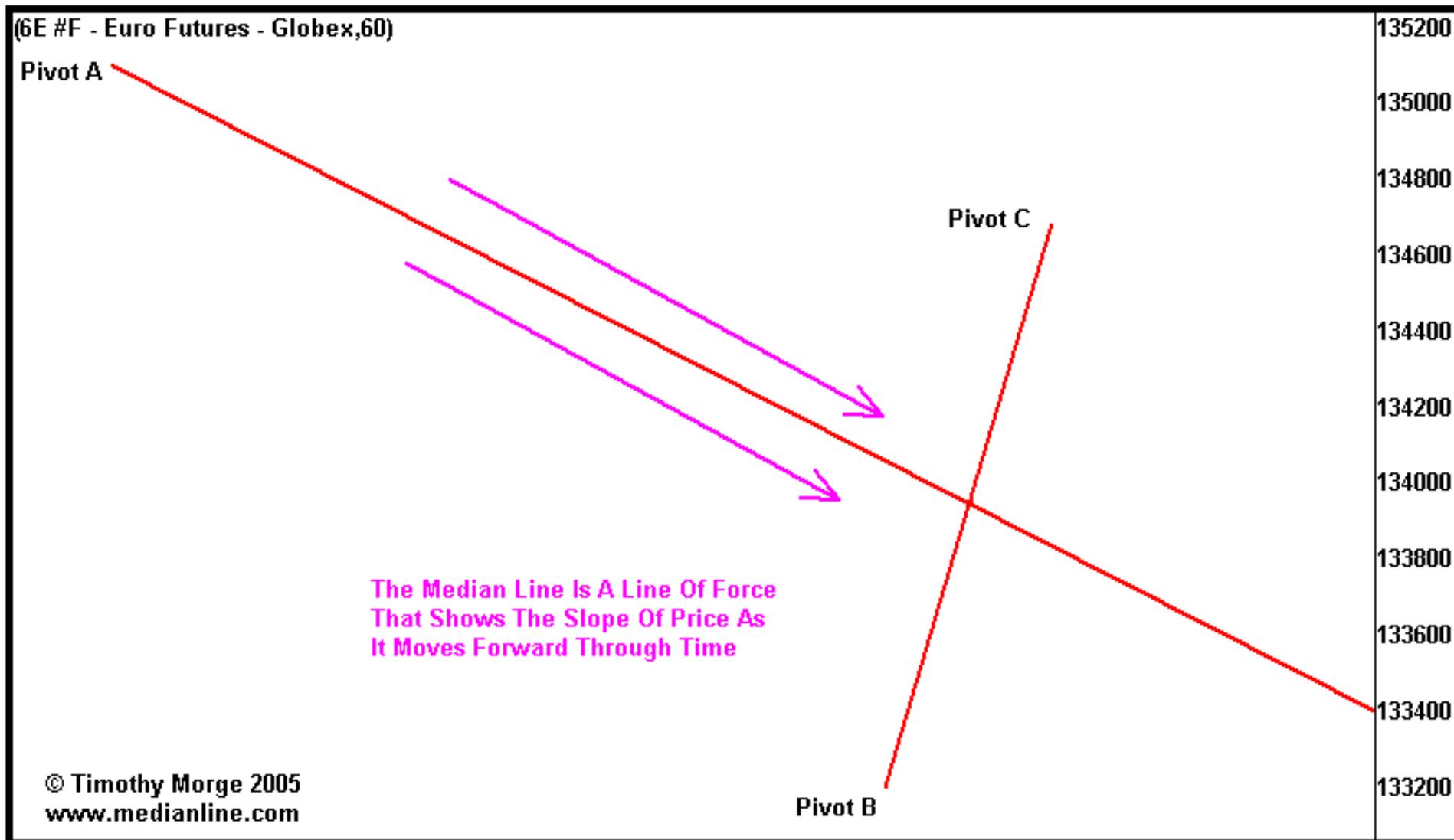
I've also spent a great deal of time, energy and money taking these techniques that were built and tested nearly 100 years ago and bringing them into the computerized era. Real-time trading hasn't invalidated these techniques—instead, it's re-energized them! By doing careful and thorough statistics on tens of thousands of actual trades, I've identified what parts of the original materials work. And I've found many new and exciting ways to use these tools now that day trading has become “the norm.”

I will begin the seminar by introducing the the three parts of the Median Line and then I'll explain the role each of these three parts play when using a Pitchfork in your trading. And finally, I'll show you some of the innovations I've added to Dr. Andrews original methods, now that computers allow us to do extensive statistical analysis and rigorous real-time modeling and testing.

The three components of a Pitchfork are:

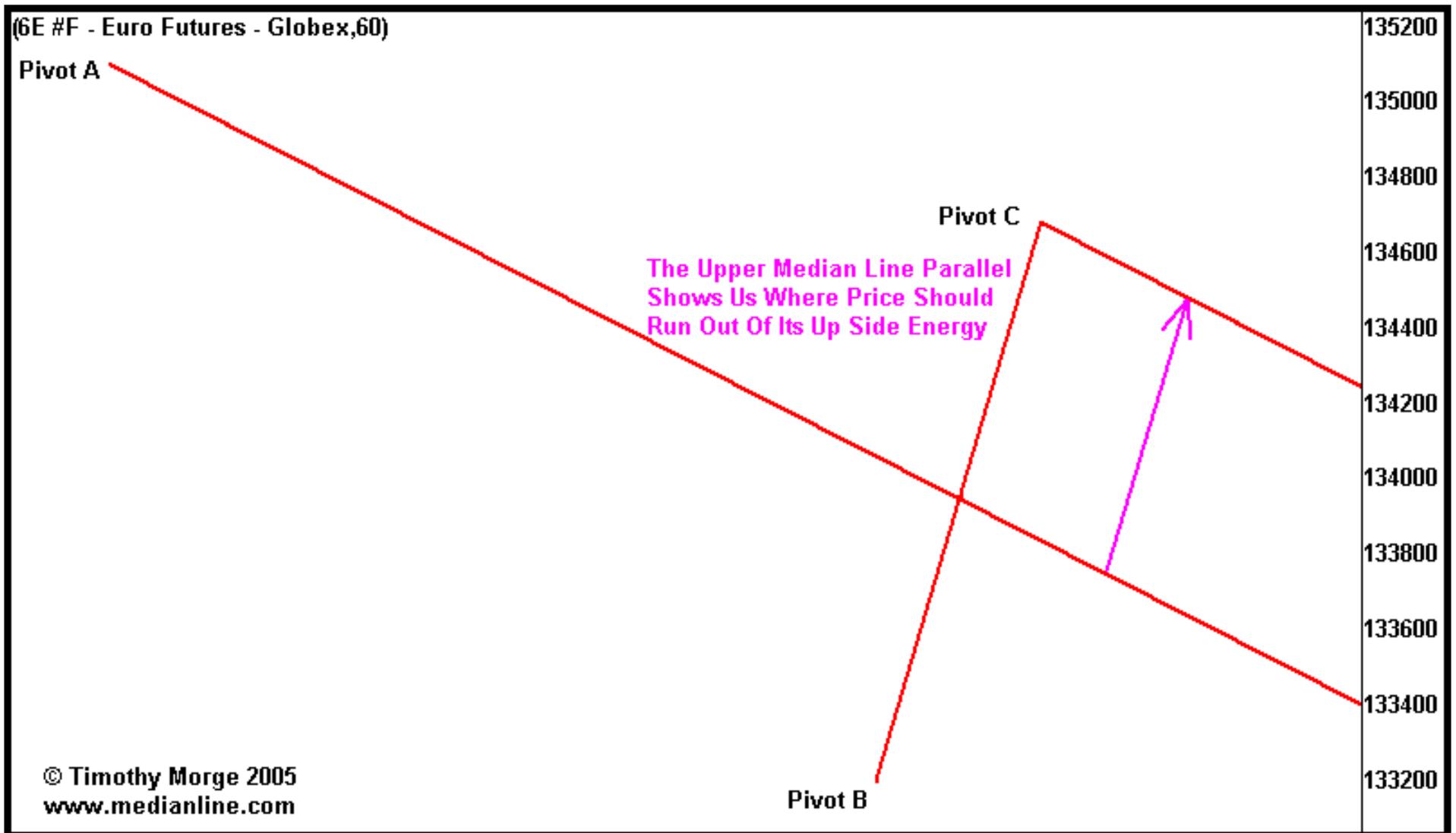
- 1. The Median Line**
- 2. The Upper Median Line Parallel**
- 3. The Lower Median Line Parallel**

Now lets take a look at each of these three components:

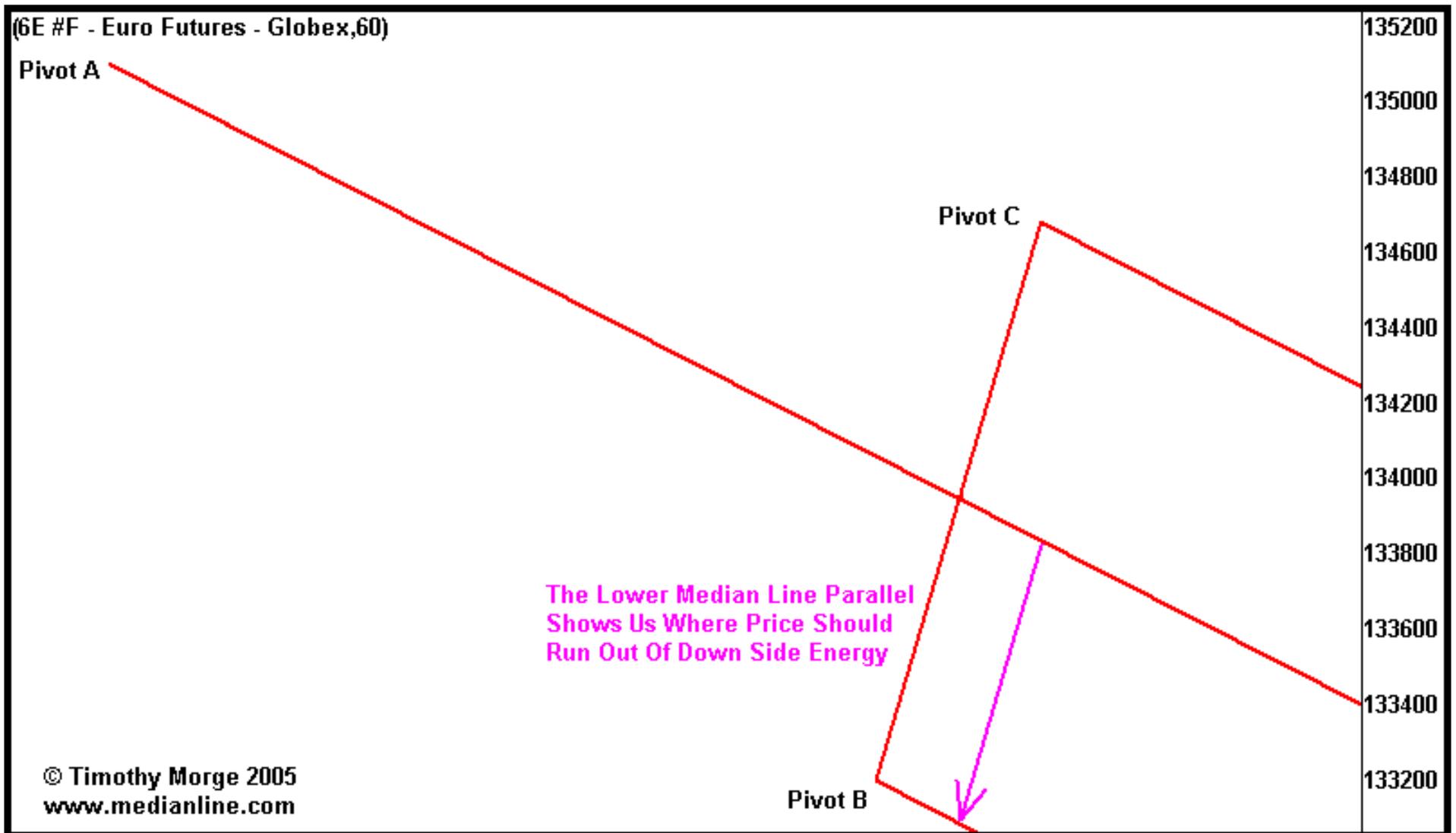


This is the Median Line. It is drawn from a set of three alternating pivots. The Median Line visually tells us two things:

- 1) It projects the slope of price as it moves forward in time. The slope of the Median Line tells us visually if price is in an up trend, in a down trend or in a range.
- 2) The steepness of the slope tells us just how fast Price is likely to move up in an up trend or down in a down trend.



This is the Upper Median Line Parallel and it marks the area where Price is most likely to run out of energy to the up side. This frequency, or measure of potential energy, is generated by the relationship between Pivots B and C as they relate to Pivot A. In later slides, you'll see how we use these lines and their ability to show us where price is likely to have expended its stored energy when trading.



This is the Lower Median Line Parallel and it marks the area where Price is most likely to run out of energy to the down side. This frequency, or measure of potential energy, is generated by the relationship between Pivots B and C as they relate to Pivot A. Again, in later slides, you'll see how we use these lines and their ability to show us where price is likely to have expended its stored energy when trading.

Now that I've explained what each part of the Median Line set does, it's important that you understand a few of the principles behind this very powerful tool. I'm going to show you some visual examples, along with some quotes directly from Dr. Andrews' original "Action Reaction Course," that he taught for many years at his homes on the East Coast as well as at his South Florida residence.

This is the single most important statement made in Dr. Andrews' original course:

Median lines and Median Line Parallels: the Median Lines enable the user to be one of the few who can tell where the prices are headed, and the place they will reach about 80% of the time, and when approximately that place will be reached.

After personally drawing and studying hundreds of thousands of charts in my thirty years of trading, I can tell you that I have done in-depth statistical validation of the above statement and indeed, price DOES reach the Median Line or its Upper or Lower Median Line Parallel [whichever line price is heading to next] about 80 percent of the time. This, in and of itself, is an incredibly powerful thing to know!

Now let's look at some examples of how price reacts around the Median Line and its Parallel Lines:



1. There is a high probability that: Prices will reach the latest Median Line.



2. There is a high probability that: Prices will either reverse on meeting the Median Line or gap through it.



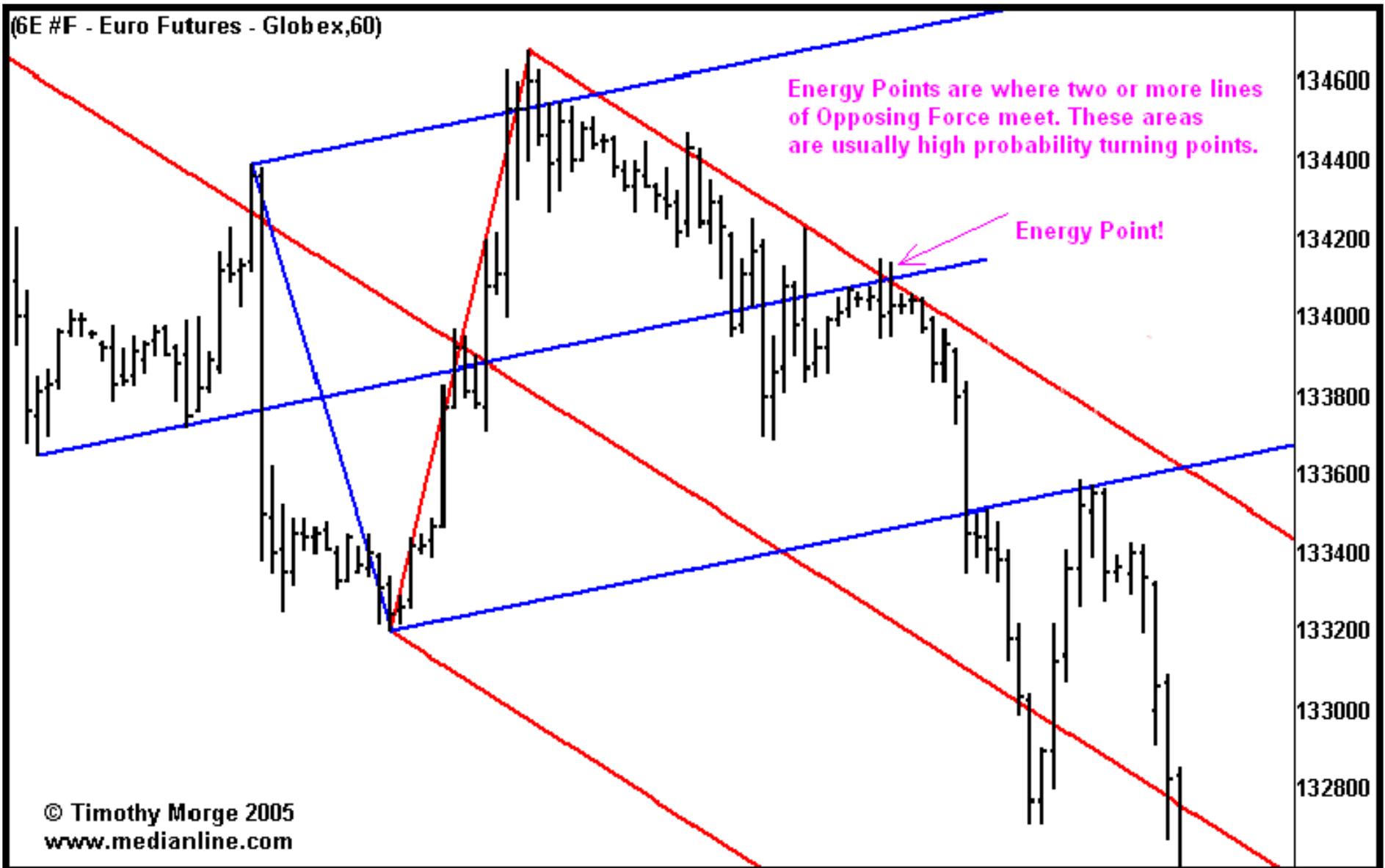
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3. There is a high probability that: When prices pass through the Median Line, they will pull back to it.



Energy Points or areas of confluence are where two or more lines of opposing force meet. My work has shown that they are high probability turning points, especially when trading with the trend.



5. There is a high probability that: Prices reverse at any Median Line or extension of a prior Median Line or its Upper or Lower Parallel Lines.



Price gaps open higher, testing the red down sloping Upper Median Line Parallel on the opening. But the first two bars fail to close above it, leaving double tops, a sign of weakness.



Once I watch the first two bars unfold, I want to get short this market. I'll look to sell a re-test of the red down sloping Upper Median Line, with an initial stop loss 20 ticks above my sell price. If I get filled on my short entry order, my profit target is a test of the blue Lower Median Line Parallel.



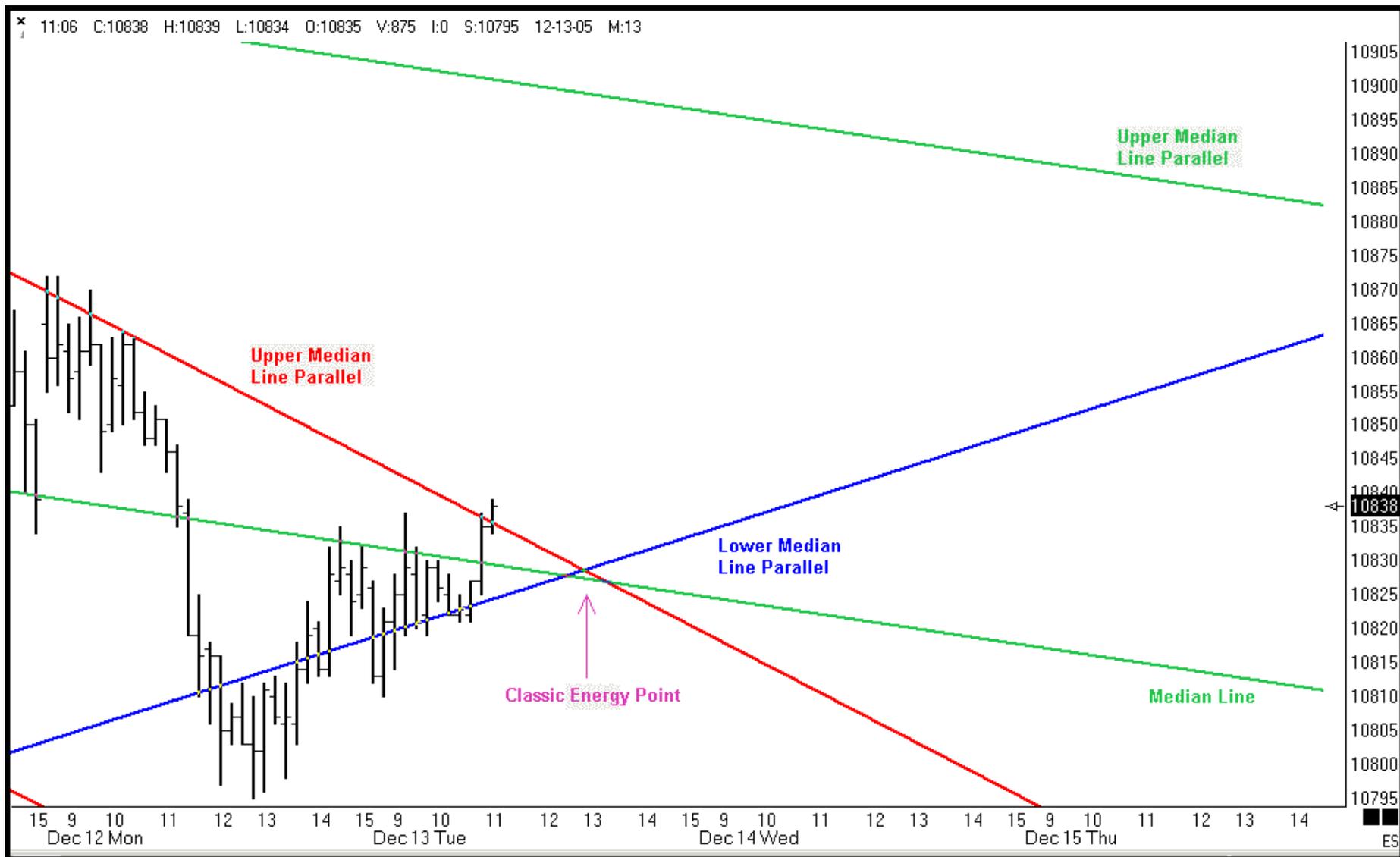
Two bars later, price climbs back to re-test the Upper Median Line Parallel, getting me short at 10,867. I am working an initial stop loss order of 10,887 and now I enter a profit order at 10,807.



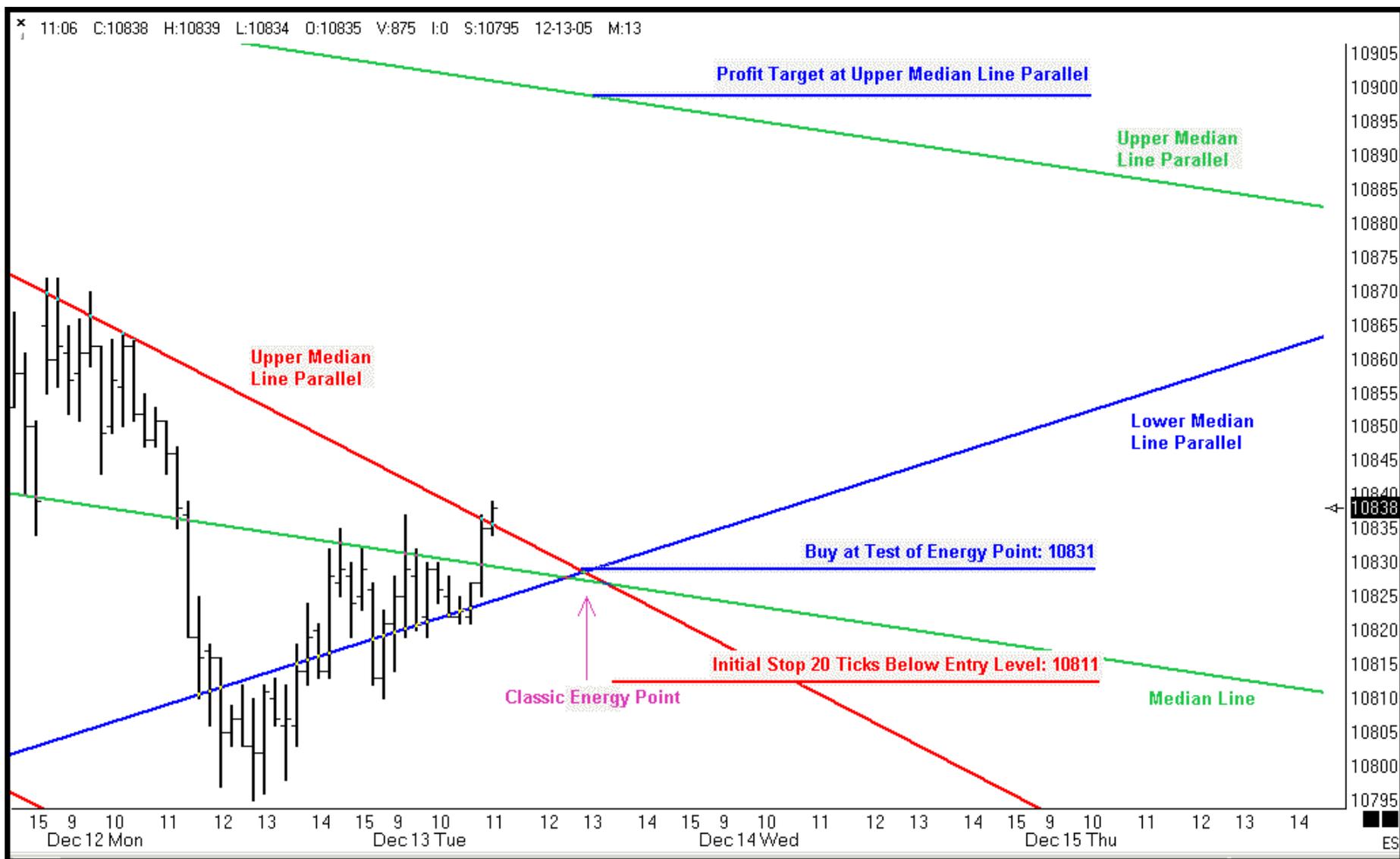
Price soon sprints lower and heads towards my profit target. Note that as each bar closes, I recalculate my profit order, because the Lower Median Line Parallel has a slope. After a bit more than two hours, my profit order gets filled at 10,810, netting me just under 60 ticks per contract.



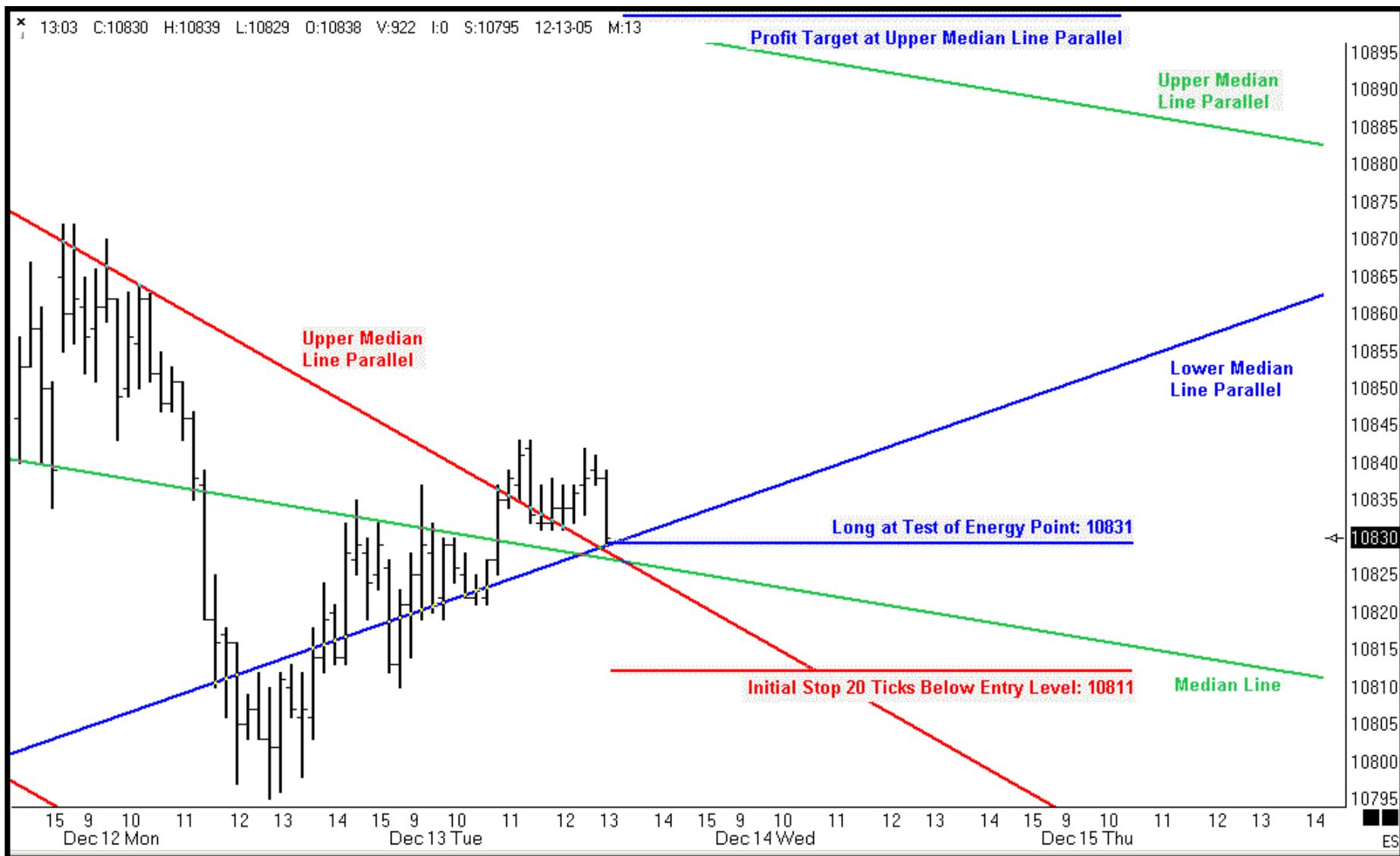
Here's how the rest of the day played out. You can see that price did break below the Lower Median Line Parallel for some time, but eventually closed the day well above it. I might have squeezed out a bit more profit but I like to use "Logical" profit objectives. For a day trade, this was a nice profit.



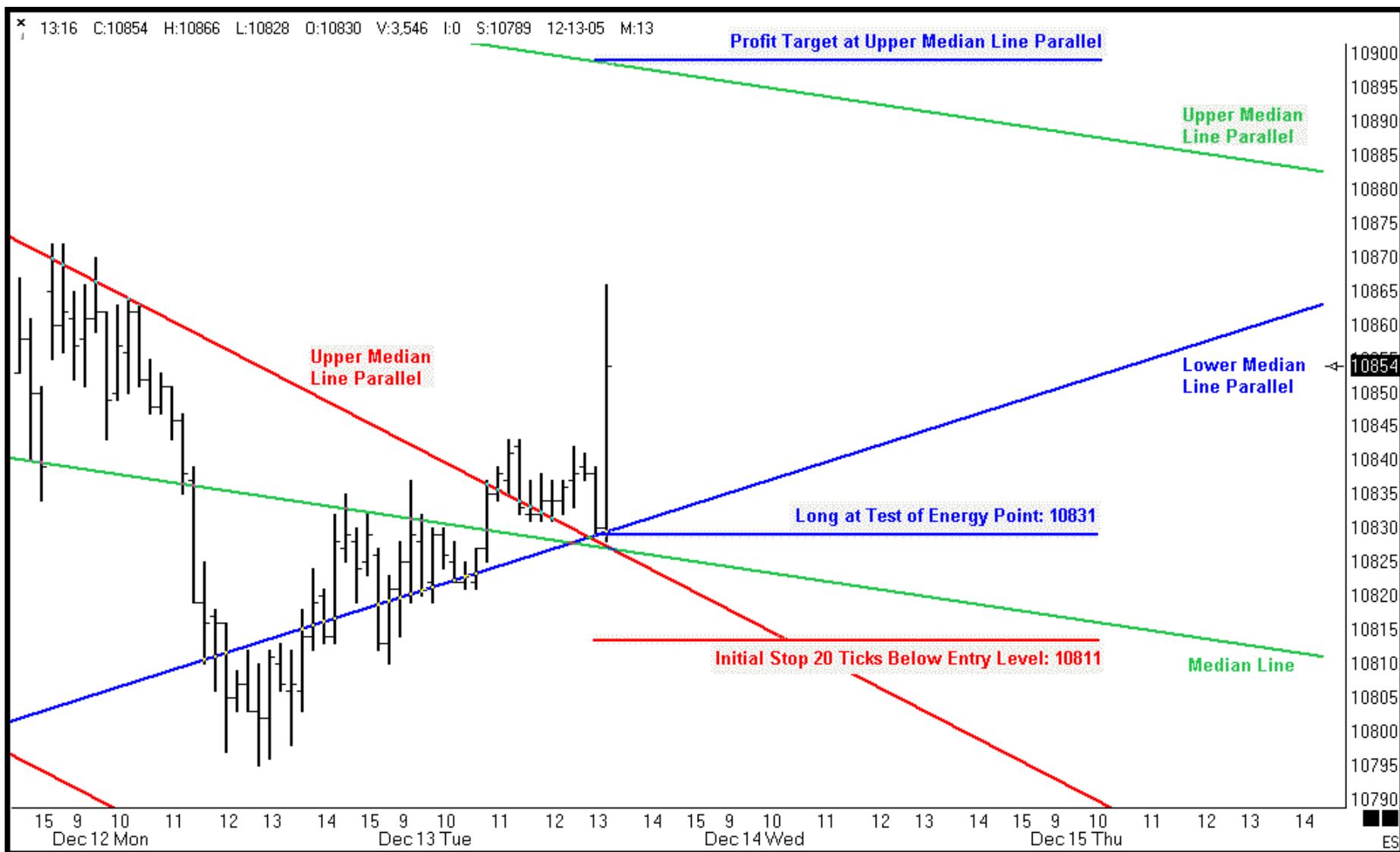
Price consolidates as the morning unfolds in a relatively quiet range. As price continues to approach the Energy Point, it becomes more likely that price will be testing the Energy Point from above.



Here's the plan I want to try to use if price AND time test the Energy Point within three bars of the intersection of the three opposing lines of force : I want to get long Mini Dow futures at 10,831 with an initial stop loss of 20 ticks, at 10,811. My profit target will be at the green Upper Median Line Parallel.



You can see how Energy Points act as an attractor! Price comes right to the intersection of the three Lines of Opposing Force and gets me long at 10,83. I am working a stop loss at 10,811, below the blue Lower MLH and the last swing low. and a profit target at the Upper MLH, at about the 10,900 area.



One bar past the Energy Point, price spikes higher! As I said, you don't see three or more tested Lines of Opposing Force forming an Energy Point that often, but when you do, expect that they will attract price and that if price interacts with the Energy Point, something interesting will happen!



Two bars after I get long at 10, 831, price hits the green Upper Median Line Parallel at 10,901 and I exit with a nice profit. In hindsight, I could have squeezed out a bit more profit, but any time the market quickly hits my logical profit objective, I never complain about money left on the table...



You can see that the rest of the day session was rather hectic. Maybe my profit target wasn't such a bad choice! I missed lots of volatility and I don't see how a trailing stop would have increased my profits.

Trading the CBOT Mini Gold Contract

I always like to show something just a bit different at the free web presentations I give, since you have all taken the time to attend. Besides day trading most days, I trade a long-term portfolio of currencies and commodities for myself. These positions are held for days or weeks and my last cross currency position lasted well over a year!

I have been heavily involved in the run up of energy prices for the past three or four years and I have used a variety of vehicles to express my long-term view that energy prices and commodity prices in general will continue to climb higher. Although I have never been a “gold bug,” I’ll show you how I took a longer-term view of a cross-commodity chart and used it to help me form an opinion of the direction of gold. And then I’ll show you a long gold trade taken in the CBOT Mini Gold futures contract.



This is a weekly chart of the price of gold futures divided by the price of crude oil futures. Price has obviously been in a volatile down trend since late 1998 but it is approaching an area, at the 6 or 7 level that may be where a change in trend in this commodity cross forms. If you're wondering, it really doesn't matter if you chart this cross as the price of gold divided by the price of oil or if you chart it the other way around. I chose this way because I was interested in the future direction of gold.



Here's the same chart, updated through mid-January. Note carefully that this cross bottomed out in late August of last year, just above the 6 area. The gap higher started a strong change in trend.



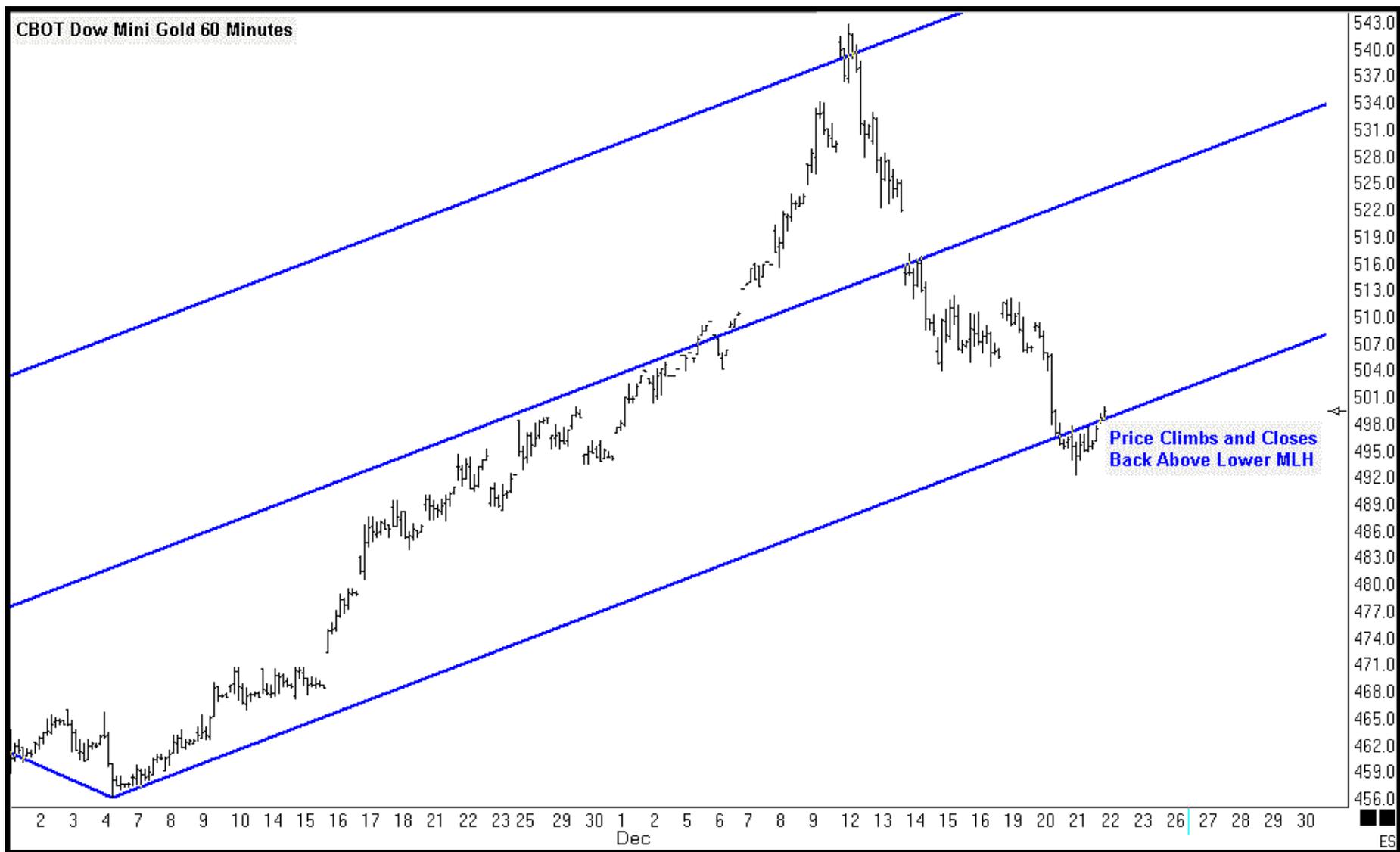
Here's a 60 minute CBOT Mini Gold chart. Note carefully that gold made a gorgeous swing low in late August last year, just as the cross commodity chart predicted and headed higher from that point on.



Gold continued higher without a valid long entry point that I could find until it tested the blue Upper Median Line Parallel and then turned lower. The way price turned at the Upper Median Line Parallel tells me that this Median Line and its Parallels are likely to show me where price will run out of down side energy, so I'll continue to monitor this chart for any valid long entry set up with good risk reward.



Price has now run from the Upper Median Line Parallel all the way down through the Lower Median Line Parallel. I note with interest that price has now traded through the Lower MLH about the same amount that it traded above the Upper MLH, so I am on the look out for any sign that a change in trend is at hand—and of course, I continue to look for a valid long entry with a solid risk reward ratio.



Finally I see what may be a valid change in trend indication: After trading below the Lower Median Line Parallel, price has now traded and closed back above it two bars in a row. Let me see if I can diagram out a trade entry that has solid money management and a good risk reward ratio.



Everything looks like a change in trend is taking place. I've been patient but the time for this trade has arrived. I want to buy Mini Gold futures at 500.5 with an initial stop at 490.5, which would be well below the blue Lower Median Line and the recent swing low. My profit target will be the prior highs.



Price comes back to re-test the Lower Median Line Parallel, getting me long at 500.5 in the process. It then heads higher. Once filled on my long entry, I work a profit order at 542.5, just below the prior highs.



Several weeks later, price tests the prior contract highs and I exit at my profit target of 542.5. This trade had a better than 4:1 risk reward ratio and the size of the CBOT Mini Gold futures allow me to fine tune just how much outright risk I want to take on these long-term low leveraged position trades.



For those of you that were curious, here's the same gold chart updated through yesterday's close. Although I'll hide trailing stops beyond market formations like double or triple tops/bottoms or prior swing highs/lows when they are available, I often find getting out at my initial profit objective is cleaner and just as profitable. And it is considerably less stressful.

Trade Examples: Price Versus Time

Now let's look at some actual trades in the 30 Year U.S. Bond futures. This is my favorite interest rate future to trade, because you get the most "bang for the buck" and if you are a bit crafty, there's still plenty of movement to day trade them, off floor, if that's your trading style. And now that the U.S. Government has resumed the 30 Year Bond auctions, expect the interest to build in this contract.

One of the problems off floor traders find with all of the interest rate products is that they have several sharp moves but between those sharp moves, there are long periods of inactivity—some traders call this "flat lining." This "flat lining" tends to deform or diminish the effectiveness of trading methods, because time continues to pass while the contract stops moving. When using Median Lines, I say that price "drifted out" out the Median Lines because time has moved to the right [or marched on] while price has stayed still. Is there a way to address this drifting and thus make these contracts more tradable?

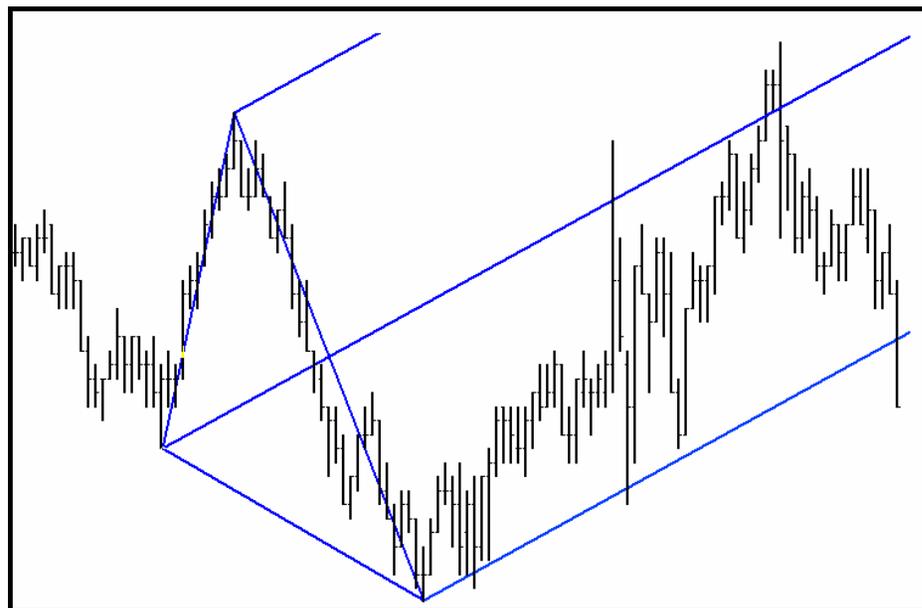
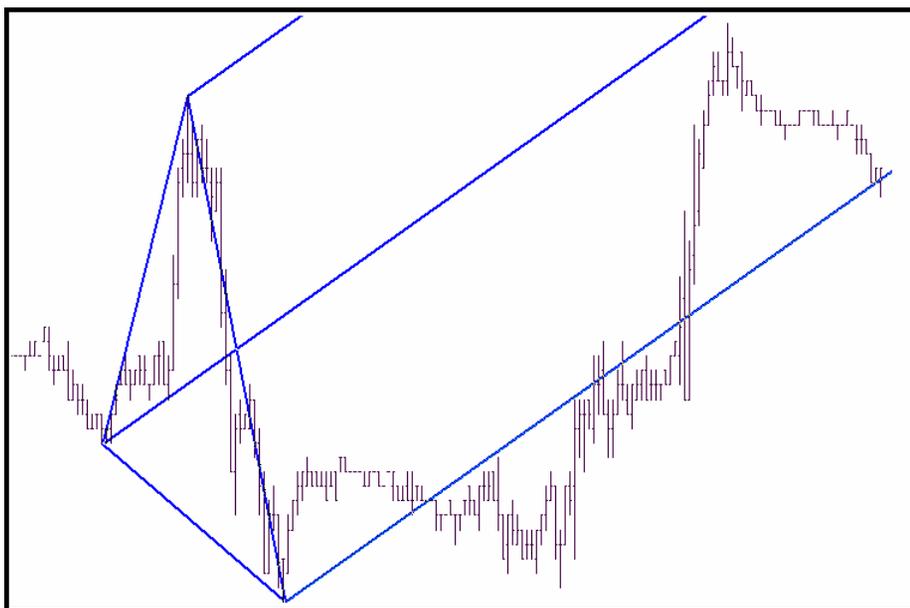
Actually, there are several ways to address the "drifting effect" and I'll show you today one of these ways, in detail, and how to combine it with Median Lines to trade these markets effectively. The oldest and most well known method is point and figure charting, and you could use this method, along with Median Lines, to trade these contracts. But I don't find the combination of Point and Figure Charts and Median Lines to be a good combination. Instead, I like to use "tick based" bar charts, where each bar on the chart shows X amount of ticks of trading activity. So if I choose to look at 300 tick bars, each bar on the chart will show 300 ticks of activity and the range, open, high, low and close that happened while those 300 ticks unfolded. Once 300 ticks have been reached, a new bar is started. By choosing to look at tick based bars, I have taken time out of the equation, which "can" be a good thing. In this case, it is a positive, because it generally eliminates the drifting effect I just mentioned, and that makes the Median Lines much more effective in showing me where price is liable to run out of energy, and where price is likely to find support and resistance. Let's compare a time based bar chart and a tick based bar chart:



This is a 15 minute time based bar chart. Note how price tends to stall, dead in the water, at times. This causes price to “drift” through the right” of any Median Line you draw, reducing their effectiveness. Now let’s compare this time based chart with a tick based chart, of the same time period:



Note here how the “dead periods” have literally disappeared from the chart, although it is a chart of the same “time frame.” Because the bars are based on numbers of ticks, these dead periods are hidden within the tick bars.



Here are the same two charts, side by side. Again, these charts cover the same exact “time period,” but the first was charted using fifteen minute time-based bars and the second was charted using bars based on the number of ticks— In this case, 352 Ticks are in each bar on the second chart.

Now note that the Median Lines were drawn off the exact same Low-High-Low Pivots, yet because “Time” has been taken out of the second chart, the same time period now forms up nicely and is much more tradable than when we were looking at standard fifteen minute time-based bars. The drifting effect caused by the dead trading periods often found in the bond markets has disappeared and the Median Lines now show good areas of support and resistance.

Now let’s look at some actual trading examples to see how to take advantage of these new techniques!

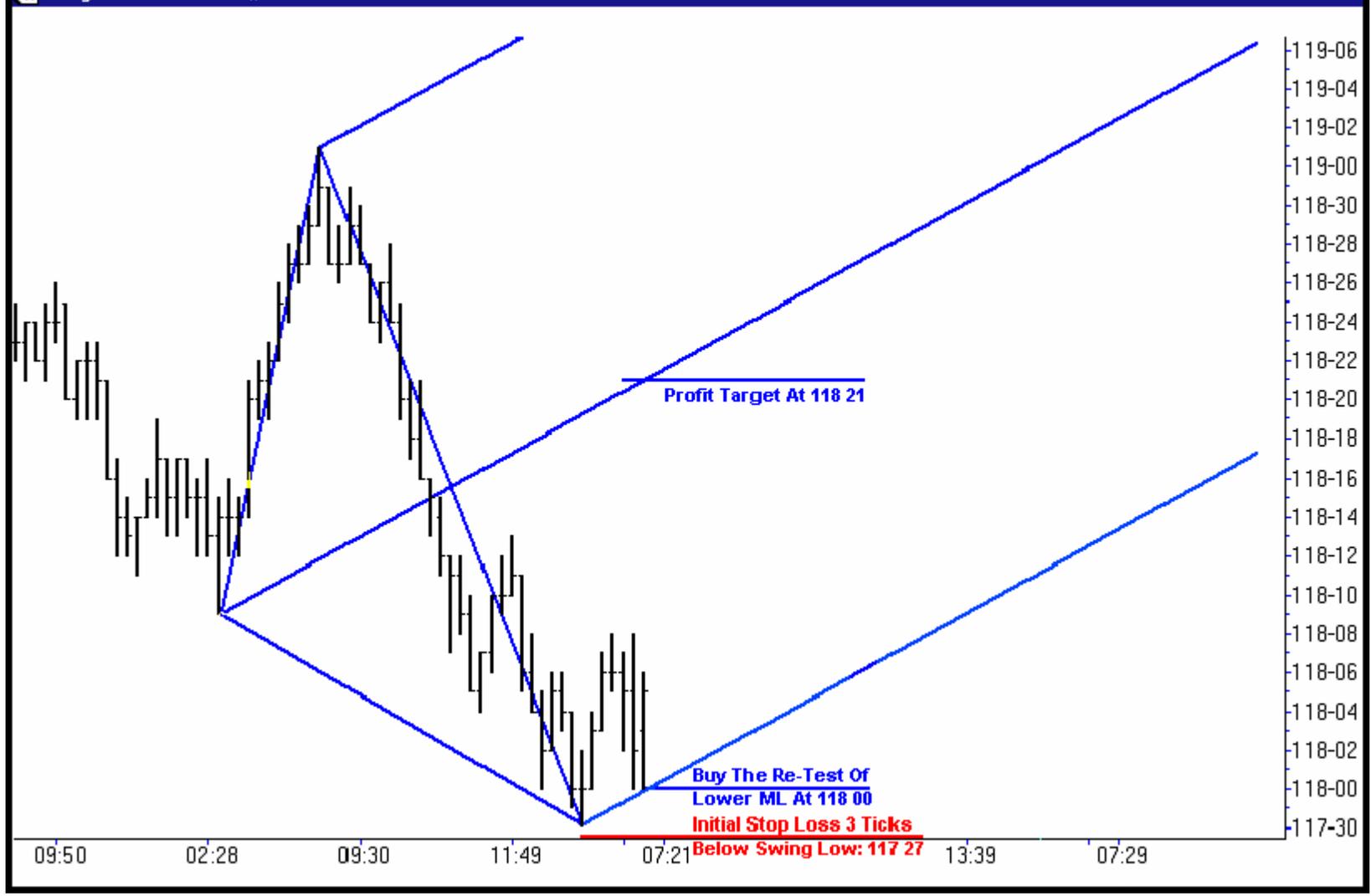


Example 1: Price spent the morning retracing the prior day's gains and in the afternoon, price made new lows for the move. Later in the day, price began to slowly climb out of the hole, breaking above double tops. At this point, I draw an up sloping Median Line set. I don't have an opinion yet. I am just doing my pre-market work, looking for interesting areas to watch and scouting for high probability trade set ups. Let's see what unfolds in the market.



After climbing out of the hole, price traded back lower and tested the up sloping Lower Median Line Parallel, leaving two wide range bars with the same lows. Note that the last bar tested the Lower Median Line Parallel, and then turned higher, where Median Line theory tells us price SHOULD run out of directional energy: In other words, price SHOULD run out of energy at the Lower Median Line Parallel and because it tested this line BUT THEN closed with good separation back ABOVE this line, price showed us it most likely DID run out of energy as predicted. And most important, the test of this line was successful, meaning we can use this line for trade set ups, because it has now proven to us that it has some ability to predict where price will run out of energy.

Because this line did such a great job at predicting where price ran out of energy, I'd like to see if I can use it to develop a trade set up. Let's see if I can diagram a trade set up that has a solid risk reward ratio.

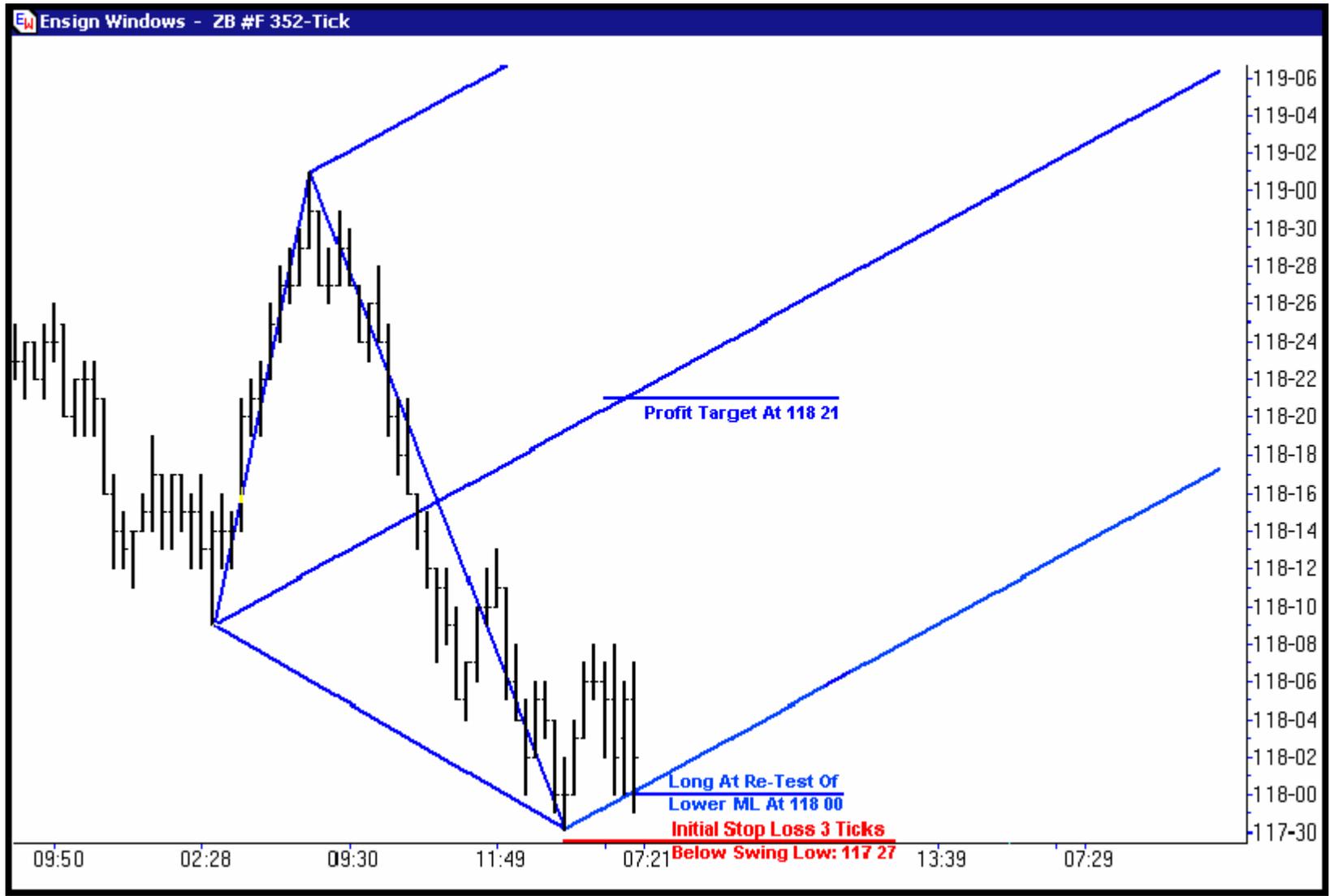


Because price successfully tested the up sloping Lower Median Line Parallel and price reversed and then closed with a good deal of separation, I want to buy a re-test of the Lower Median Line Parallel IF price comes back to test it again. This set up is a “test and re-test” and if the Median Line or its parallels have been successfully tested, it carries a probability of profitability of roughly seventy percent.

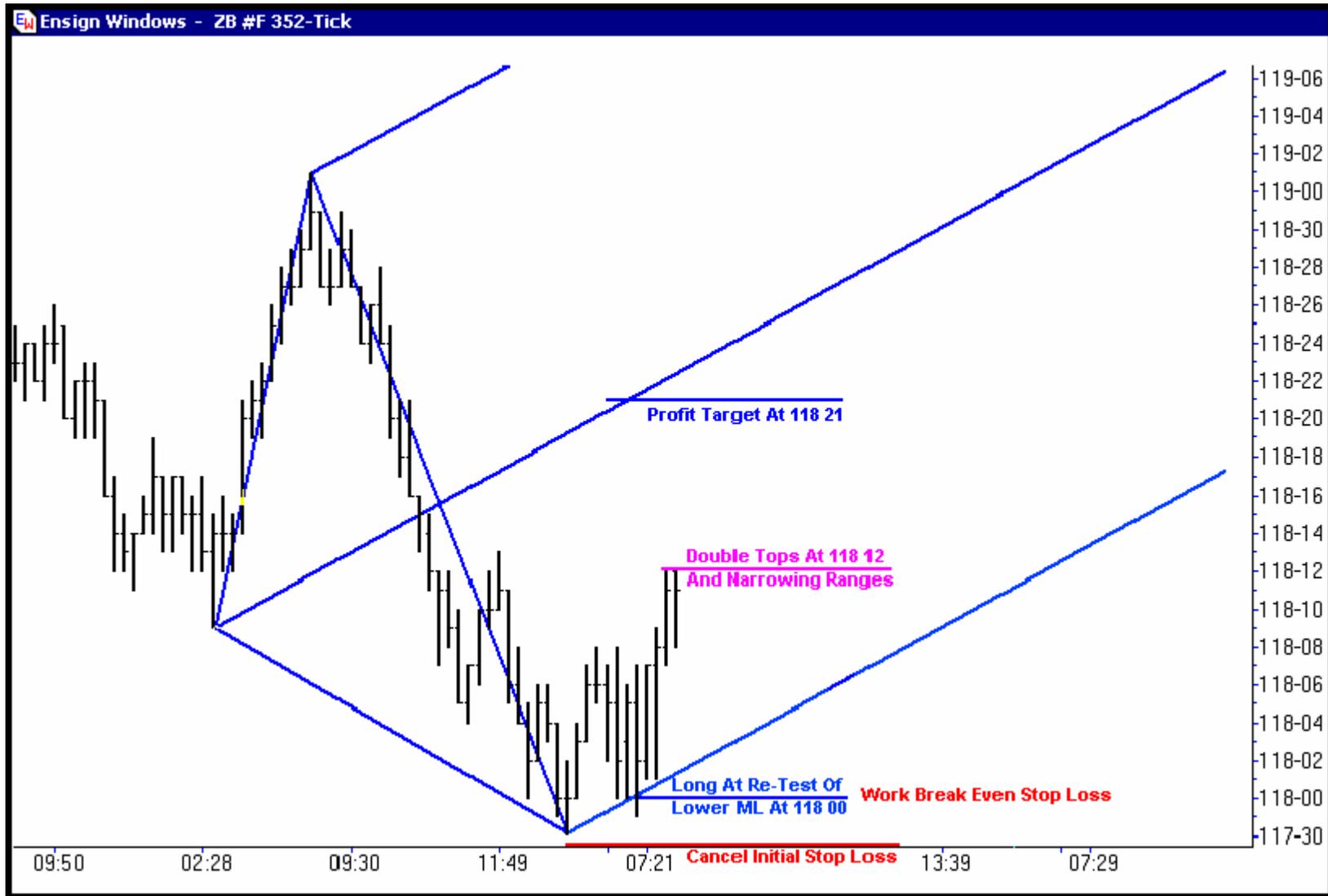
I measure where price will re-test the up sloping Lower Median Line Parallel—That will be at 118 00/32 and that’s where I’ll place my limit buy entry order. My initial stop loss order on the trade will be three ticks below the 117 30/32 swing low, at 117 27/32.

To decide whether I will take this trade, I also need to know the amount I am risking relative to the amount I expect to make on the trade if it is successful, which is called the risk reward ratio. To find this ratio, I still need a profit target. The theory tells me that IF price reverses from the Lower Median Line Parallel and heads higher, it will reach the Median Line 80 percent of the time, so I’ll use the up sloping Median Line as my profit target. I measure this target and find that price will initially intersect with the Median Line at 118 21/32. So I am risking five ticks to make 21 ticks. That means that the risk reward ratio is 21/5, which is 4.2, well above my minimum acceptable level of 2:1. And the initial stop loss of five ticks or \$156.25 is well within my loss tolerance per contract.

I like the way these orders look and the risk ratio is fine, so I’ll take this trade set up IF the market lets me get in. I enter a limit buy order at 118 00/32 and at the same time, I enter an initial stop loss sell order at 117 27/32 so that my account is protected should the market run against my position quickly.

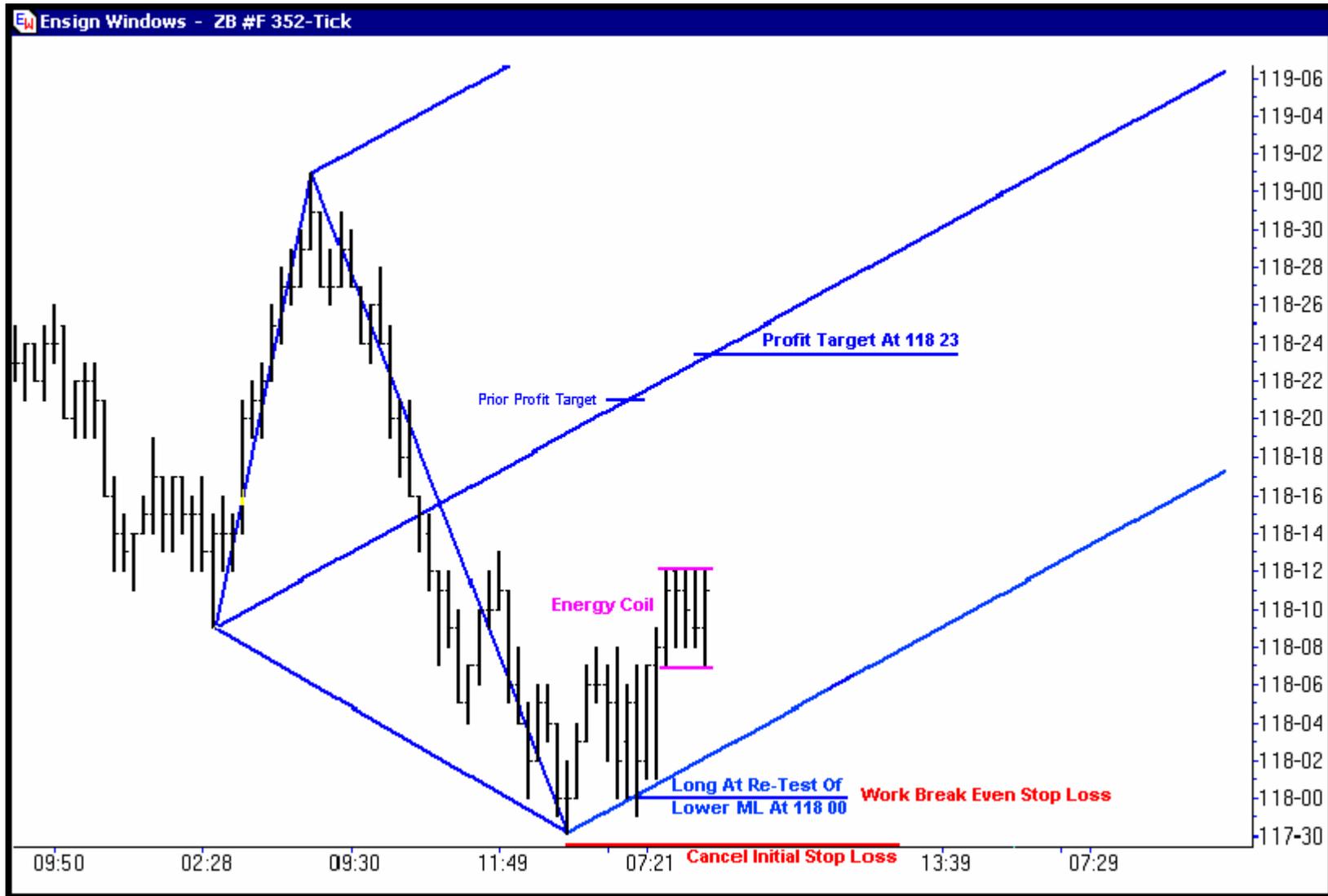


Price opens unchanged and then makes a wide bar lower, testing and briefly trading below the Lower Median Line Parallel, getting me long at 118 00/32 before turning higher and closing back above the Lower Median Line Parallel. Once I get confirmation from the exchange that I am long bond futures, I enter a limit sell order at 118 21/32 and make it "OCO" with my initial stop loss order at 117 27/32.

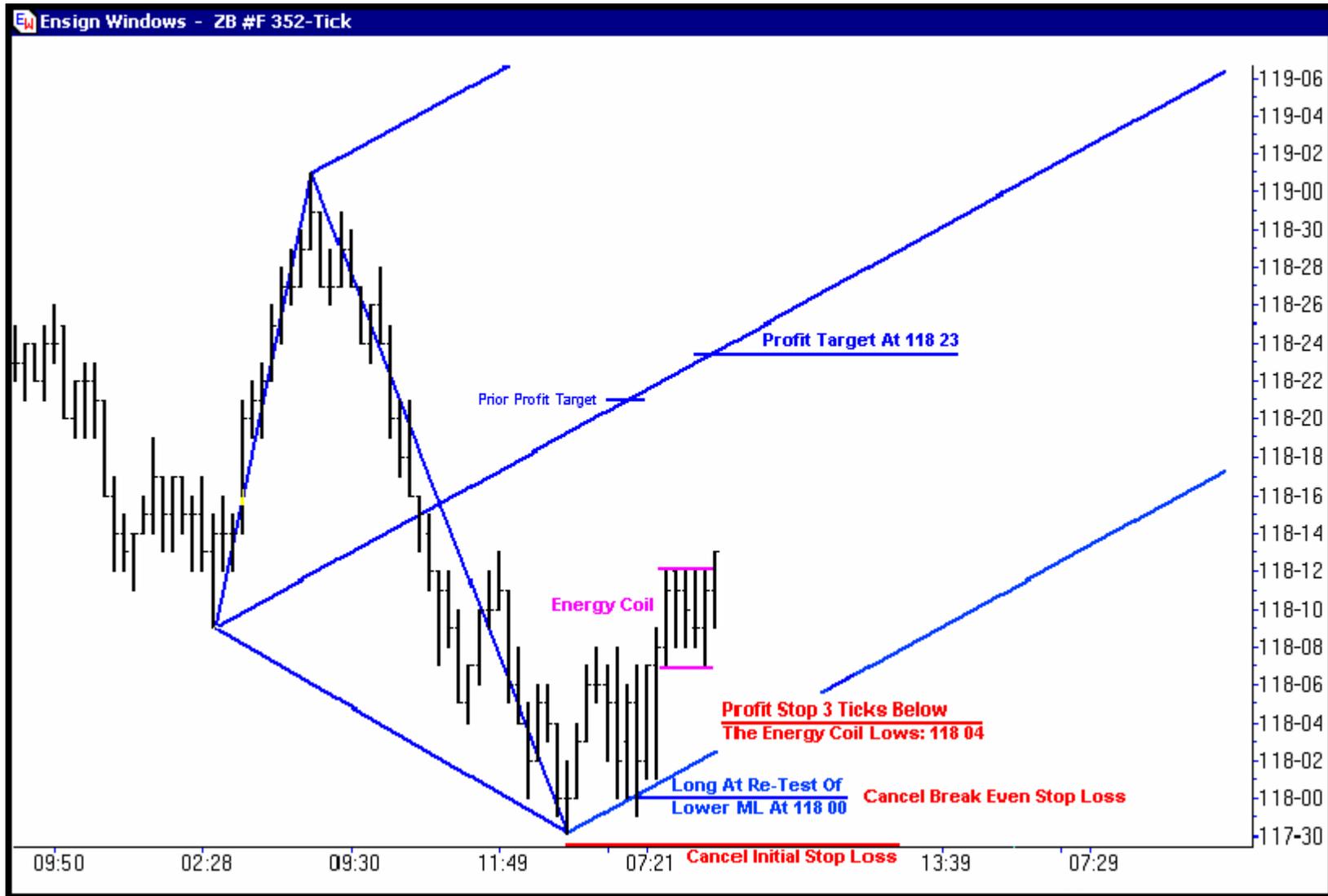


Price makes two nice bars higher, both closing near their highs. The third bar makes a new high and closes in its upper third, but I make a mental note that its range is considerably more narrow than the recent bars, which serves as a sign to me to monitor the next bar or so to see if price is showing distinct signs of running out of energy.

The next bar has an even narrower range and leaves a double top. This tells me that price is definitely low on energy. Can I bring my stop order any closer to the price action and stay out of the "noise" range? After looking at the chart carefully, the best I can do is move my initial stop loss order from 117 27/32 up to a break even stop at 118 00/32.

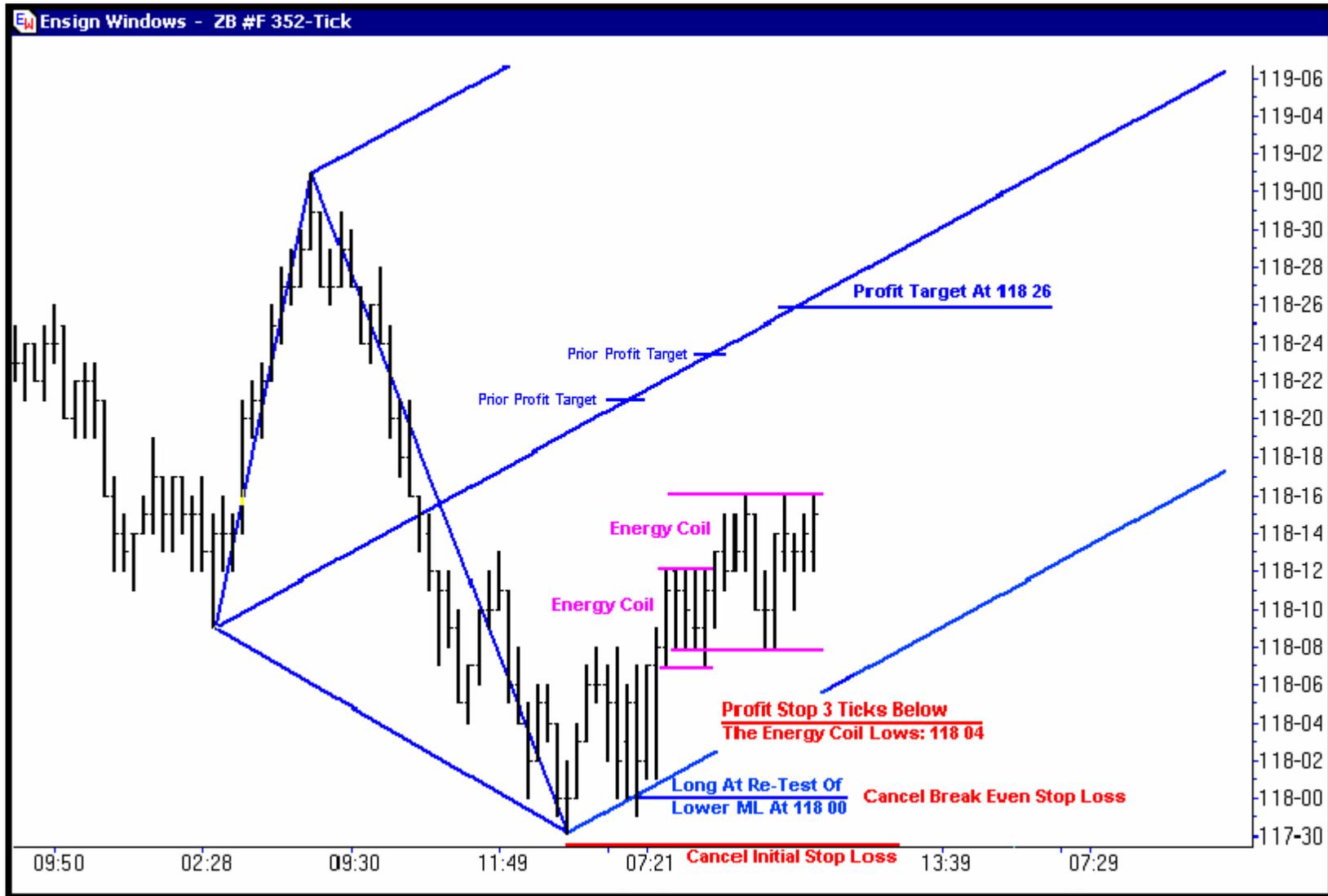


Price now forms a nice energy coil or trading range made up of five bars with the same high, and triple bottoms surrounded by two bars with equal lows. Price is re-storing its spent directional energy. Again, as soon as the bar ranges narrow, especially if you see alternating closes, double check that you have moved your stop orders as close as possible without being in the noise—and it's always best if you hide your new stops behind market formations, as I discussed earlier. Looking at the chart, you can see I could not move my break even stop closer to the action. But a quick look told me it was time to recalculate where price would intersect with the Median Line and once I did so, I moved up my profit target from 118 21/32 to 118 23/32, because I get paid for being long against an up sloping line [Remember: You get paid to be long against up sloping lines as time goes on and short against down sloping lines as time goes on].



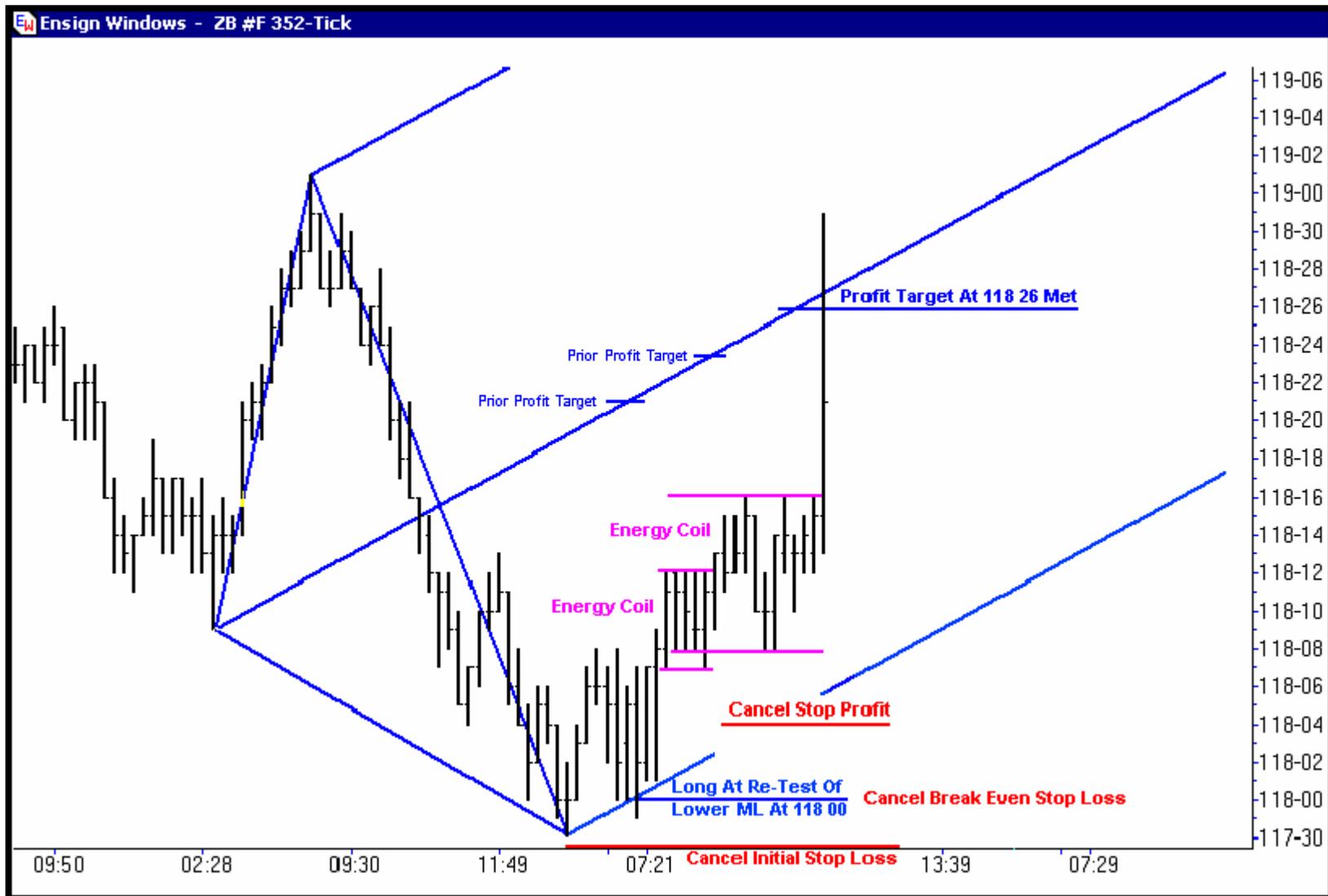
Price breaks above the energy coil and closes on its highs. When the bar closes, I immediately move my break even stop order up to 118 04/32, which is three ticks below the 118 07/32 low of the energy coil and its outer double bottoms.

Now we are now playing with the market's money and the goal is to get to this point as soon as possible. Now it's only a matter of whether we get taken out at our profit order or taken out at our stop profit order. Once you are working stop profit orders, all the emotions of the trade should be gone, since you are now assured of a profit.



Price moves from a tight Energy Coil to a larger range or Energy Coil. And it hasn't made enough headway to allow me to snug my stops any tighter. There's nothing to do but wait to see how this wider range plays out.

After a few more bars, I recalculate where price will intersect with the Median Line and see that it's time to move my profit order higher, from 118 23/32 to 118 26/32. Once again, I get paid to be long against up sloping lines as time goes on.



Just about the time I am getting tired of twiddling my thumbs, price spikes higher out of the larger energy coil, running well above the Median Line and filling my profit order at 118 26/32 in the process before closing back within the middle of the very wide range of the 352 tick bar. Once I see a confirmation from the exchange that my profit order was filled, I double check that my stop profit order was cancelled.

This was another nice bond futures trade, netting 26 ticks, which is \$812.50. The trade hinged on finding a high probability trade set up that had a solid risk reward ratio associated with it and then moving the market orders along behind market formations, continually trying to box in profits until the market finally made its upward move.



Example 2: Bonds have sold off for two days and have now rebounded quite a ways back higher. After leaving triple tops at 116 04/32, they traded a bit lower and while doing my early morning work, I added the down sloping Median Line set you see on the chart above. I don't have a position, or even an opinion yet. I'm just doing my morning work, looking for a solid trade set up or an indication that one may be forming



While watching the next few bars unfold, I finally see what may be useful as a potential trade set up: Price first tests the down sloping Upper Median Line Parallel but runs out of energy exactly where it is supposed to: at the Upper Median Line Parallel. Price closes quite a bit below the test area, as you'd expect. But the next bar tests the Upper Median Line Parallel again and this time, price trades through it—But price again comes back to earth, closing below the Upper Median Line Parallel with good separation. Now remember, we discussed Zoom bars earlier. Think of this as a Zoom bar that failed, or to shorten up the trade set up title, I call it a Failed Zoom bar. Price TRIED to Zoom higher above the down sloping Upper Median Line Parallel, but ran right into a wall of sellers and that's why the bar closed well back below the Upper Median Line Parallel, and that's why I call it a Zoom failure. What do you do with a failure? Try to enter trade in the direction of the failure! Let's see if I can diagram out a good trade set up with a solid risk reward ratio.



Here's how I'd like to trade this Zoom failure set up: I want to sell a re-test of the Upper Median Line Parallel. Price will intersect it at 116 02/32 during the next bar, so I'll work a limit sell order there.

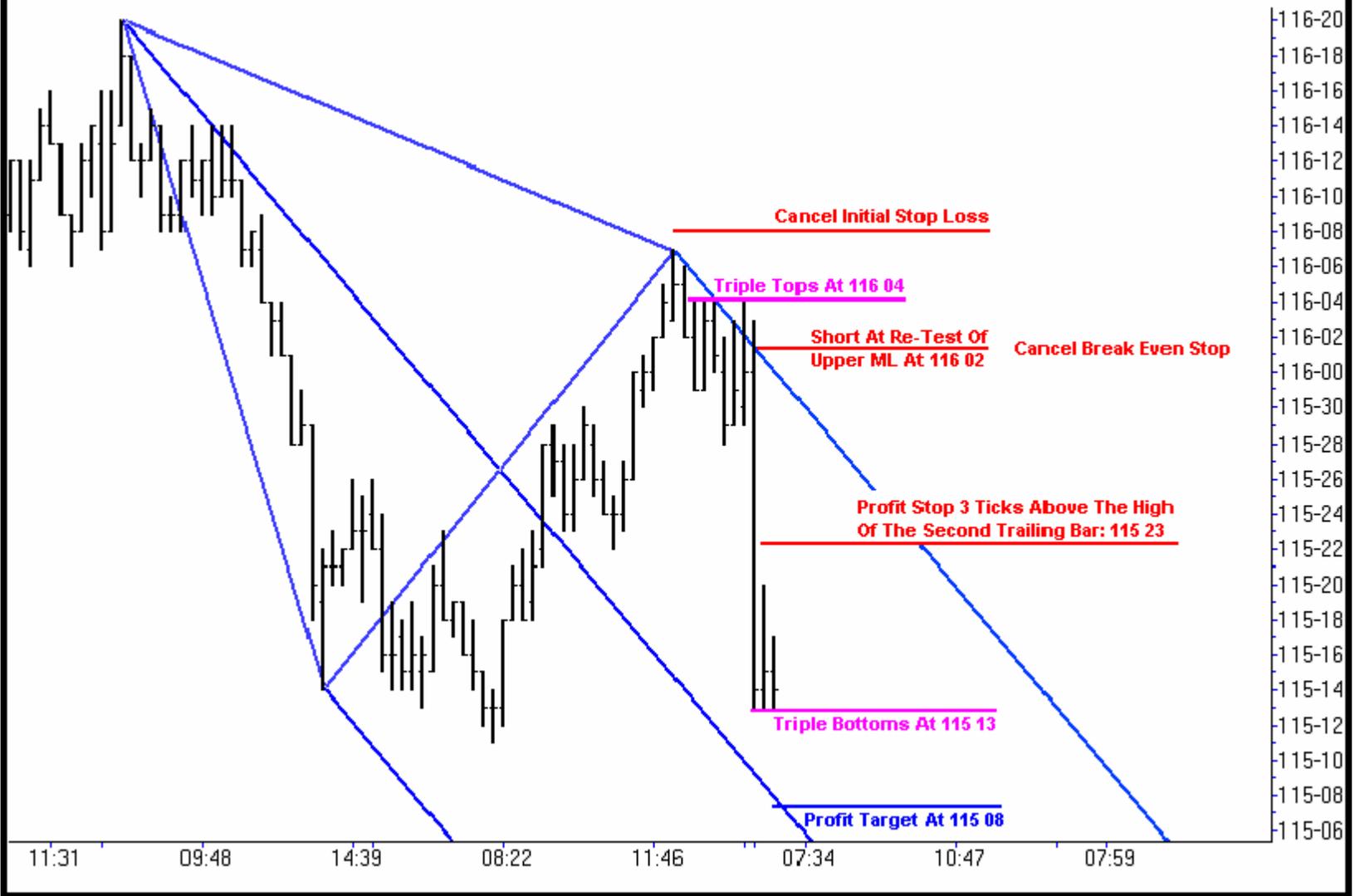
My initial stop loss order is above both the triple tops at 116 04/32 and the swing high at 116 07/32. I generally would place my stop loss order at three ticks above the 116 04/32 triple tops but that would make my initial stop loss order the same level as the swing high, 118 07/32. I'll buy just a touch more insurance by moving my initial stop loss order one tick higher, to 118 08/32, which allows me to use the resistance formed by both the triple tops AND the swing high—the more market formations you can afford, the better. Can I afford this stop? I'll be risking six ticks, which is \$187.50 per contract. That works for me. Now what about the risk reward ratio?

My profit target is at the down sloping Median Line. Price initially intersects with the Median Line at 115 08/32. That means I am risking six ticks to make 26 ticks, which is $26/6 = 4.33$, a more than adequate risk reward ratio.

I like the way the orders look and I enter a limit sell order at 116 02/32 and at the same time, I enter an initial stop loss buy order at 116 08/32, so that my trading is protected if a fast and furious move against me happens just as I am filled on my limit sell order. Note that I DO NOT enter my profit order, because until I get confirmation on my limit sell order being filled, I have NO position. And if something happens, I could get filled on my "profit" order, even though I am not short, leaving me "naked" long, which is NOT my intention.



Price opens unchanged and then trades higher, briefly peeking above the down sloping Upper Median Line Parallel and filling my limit sell order at 116 02/32 before starting a sell off that turned into a run away train to the down side. As soon as the exchange confirmed I was filled on my limit sell order, I entered my limit buy profit order at 115 08/32. Price closed one tick off its lows in this extremely wide range bar and that's a sign there is further directional energy available to price. I expect further follow through before much up side progress is made by price, although the size of the single bar move has me a bit nervous. But can I move my stop order closer to the action? There are no market formations that I can hide my stop order behind. But let me point this out: After only one bar, price has closed more than twenty ticks below my entry price. It would be a SIN to allow a twenty point profit in the bond futures turn into a loss. So as the bar closes, I cancel my initial stop loss buy order at 116 08/32 and move it to a break even stop order, at 116 02/32. I'd move it closer if I could, but for now, I'll have to be content to know that this trade won't turn into a loser.



Price now consolidates at the low of the extremely wide range lower bar [my initial entry bar], leaving triple bottoms. Note that each bar gets narrower in range. Now this isn't unusual, nor is it particularly frightening. Price just ran the 100 yard dash in under ten seconds and it's out of breath! So it's taking a break, re-storing its energy. Nothing here says price has turned back higher. But caution is in order, because price HAS expended so much energy SO FAST.

Now for those of you that have taken my other seminars, I am going to say something that may make you cringe. I'm going to use a stop that really doesn't use a market formation to hide behind. Why would that be a bad thing? The worst stop is no stop at all. If you're going to trade with no stops, PLEASE just take all the money in your trading account and donate it to charity. You'll save a lot of time and energy and you'll actually be doing some good for someone—not you, of course, but someone. Again, those of you that have taken my webinars or seminars or have heard me talk elsewhere know that the second worst stop you can use is a cash stop, which is basically a stop loss that doesn't hide behind market formations. Why? Because you're just guessing how far price will “back up” before stopping. The concept behind using market formations is that you are using areas where other traders park their buy or sell orders to protect your orders. Cash stops don't do this. When you use a cash stop, you are simply picking a price out of thin air.

That being said, when I have a great deal of potential profits sitting in a trade and have come most of the way towards my profit target, if there are no market formations available [generally because the move was fast and furious and one-way in the direction of my position], I'll use something that looks pretty much like a cash stop profit order—but note that this is ONLY in the profit equation side of my trades and only in unusual circumstances! Please don't let cash stops or these pseudo-cash stops creep into your trading, just because you're too lazy to find market formations.

In this trade, price has come so far, so fast, I want to be certain that IF price zooms back in the opposite direction I get SOME of the profits sitting on the table and there is no pretty way to “box in” the profits. So looking at the chart above, I simply went back to the high of the second trailing bar [two bars back] and put in a stop profit order three ticks above its 115 20/32 high, at 115 23/32. I don't think this stop profit order will come into play, but then, I didn't think the first bar would sell off this far this fast! If everything goes wrong from here on out, I'll book eleven ticks of profit after getting stopped out, and that won't be the end of the world.



The next bar breaks below the triple bottoms and runs right to the down sloping Median Line, just peeking below it and in the process, it fills my profit order at 115 08/32. As soon as I get confirmation from the exchange that my buy order was filled, I make certain my stop profit order at 115 23/32 is cancelled.

This was another nice bond futures trade. It netted a nice \$812.50 in a very short time span. Unlike the first example, I couldn't find any market formations to use to hide profit stops behind. The keys to this trade were identifying the high probability trade set up and making certain the risk reward ratio was acceptable—and then holding on when the sled started down the hill!

I hope you enjoyed these examples. This is just a glimpse of the power you'll find if you master these extremely simple yet powerful trading tools. By coupling them with non-time based bars, they easily adapt to markets that trade with fits and starts, like 30 year Bond and T-Note futures. Are there other non-time based charting methods that work? Yes there are! Two that come to mind, besides those I mentioned earlier, are range bars and volume bars. Both can be charted using Ensign and the Autoforks software and in future seminars, we'll cover range bars thoroughly when trading 30 year Bond and T-Note futures.

I wish you all good trading!

Act, don't Re-act!

Timothy Morge

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