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September 12, 2007

Nancy Morris
Secretary
Securities and Exchange Commission
100 F Street, NE
Washington, DC 20549

**Re: Proposed Rule Changes To Extend and Expand the Pilot Program to Quote Certain Options in Pennies (SR-BSE-2007-40; SR-CBOE-2007-98; SR-ISE-2007-74; SR-NYSEArca-2007-88; SR-Phlx-2007-62; SR-Amex-2007-96) (the "Proposals")[1]**

Dear Ms. Morris:

Citadel Investment Group, L.L.C. ("**Citadel**") appreciates the opportunity to comment on the Proposals to expand the penny quoting pilot program (the "**Pilot**") to include 50 new classes of options.[2] We urge the Commission to reject the Proposals and instead adopt the targeted and objective approach described below. Penny quoting has consistently improved the quality of markets for index and sector Pilot names and the Commission should add similar names to the Pilot. In contrast, the Pilot has significantly damaged the markets for single stock Pilot names. The Commission should thus avoid adding similar single stock names to Pilot and consider removing from the Pilot the worst performing single stock names.

Regardless of the approach taken, however, the Commission should publish its analysis of the Pilot's impact on the options markets and explain how this analysis supports any proposed changes to the Pilot. We understand that the options exchanges filed the Proposals at the request of the Commission's Division of Market Regulation. Presumably, the Division has analyzed the impact of the Pilot and concluded that the public would be best served by expanding the Pilot as described in the Proposals. In particular, the Division presumably analyzed the reports filed by the options exchanges and the Division analyzed other market data.

Unfortunately, despite the substantial factual record created through the Pilot, the Proposals simply described the proposed changes, with no explanation of the reason for them. There is no discussion of the separate reports filed by each of the options exchanges or other

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[1] SR-BSE-2007-40, Release No. 34-56253 (Aug. 15, 2007); SR-CBOE-2007-98, Release No. 34-56276 (Aug. 17, 2007); SR-ISE-2007-74; Release No. 34-56306 (Aug. 22, 2007); SR-NYSEArca-2007-88, Rel. No. 34-56280 (Aug. 17, 2007); SR-Phlx-2007-62, Rel. No. 34-56284 (Aug. 17, 2007); and SR-Amex-2007-96, Release No. 34-56307 (Aug. 22, 2007).

[2] Citadel and its affiliates operate one of the world's largest alternative investment firms. On an average day, Citadel accounts for over one fifth of U.S. listed options market volume.

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market data, and the tradeoffs inherent in adopting new quoting increment protocols. There is no discussion of why average trading volume is a sound criterion for selecting names to add to the Pilot, or why trading volume is better than other criteria such as those we suggest below.

The Commission chose to undertake a pilot to test the impact of penny quoting on the options markets. A pilot necessarily includes an assessment of the impact of the changes being tested. When the Pilot launched, the Commission explained, "The knowledge acquired during the pilot will be essential to the Commission's future decisions regarding penny quoting in options."[3] More recently, the Commission explained, "The Commission has not concluded that penny quoting in all options is appropriate. Before approving exchange rules to expand the Pilot, the Commission will carefully analyze the results of the Pilot in assessing which additional options would most benefit investors if quoted in smaller increments."[4] Before approving any changes to the Pilot, the Commission should publish its analysis of the impact of the Pilot, and in particular its analysis of the Pilot's impact on liquidity and relative trading volume in single stock classes.

## I. Background

Each of the six options exchanges is a participant in the Pilot and is proposing to expand the Pilot to include 50 additional classes. The Proposals would accomplish this in a two stage expansion by adding 22 classes on September 28, 2007, and 28 classes on March 28, 2008.[5] The first stage would include 22 of the 25 most actively traded multiply-listed classes not yet included in the Pilot. The first stage will not include GOOG, NDX, and RUT because they trade with relatively high premiums. The second stage will include the 28 next most actively traded multiply-listed options that will be identified in subsequent filings and again will exclude high premium classes that will be identified in those filings.

## II. Recommended Approach

The Pilot presents an historic opportunity to implement an optimal quoting increment structure in the options markets. It is critically important that the Commission lead this implementation based on an analysis of objective data, rather than any pre-dispositions, assumptions, or biases of market participants and exchanges.

We urge the Commission to tackle this challenge with a straightforward approach. First, define the objective criteria for success. Second, carefully analyze the data to identify successes,

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[3] "Options Exchanges Begin Penny Quoting Pilot," SEC Press Release (Jan. 26, 2007), available at http://www.sec.gov/news/press/2007/2007-10.htm (the "Commission Penny Pilot Press Release").

[4] "SEC Announces Positive Early Results of Penny Quoting Pilot Program," SEC Press Release (June 29, 2007), available at http://www.sec.gov/news/press/2007/2007-125.htm.

[5] For additional background information about the Penny Pilot, see the Commission Penny Pilot Press Release.

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failures, and ambiguous results. Third, expand the successes, and reduce and avoid the failures. Fourth, continue to monitor market data where results are ambiguous.

Using this approach, the Commission should reject the Proposals because they do not focus on the Pilot's successes. The Proposals would add 50 new classes ranked by average trading volume. The proposed expansion would include many classes in which the damage done by the decrease in liquidity, decrease in relative trading volume, and increase in quotation traffic will outweigh the benefits of reduced spreads.

Instead of focusing on expanding the Pilot to include the 50 most actively traded classes, the Commission should study Pilot market data to identify the types of classes likely to benefit most from penny quoting. Specifically, the Commission should analyze the 13 Pilot classes and identify any statistically significant increase or decrease in relative trading volume comparing the period preceding the Pilot to the Pilot. We believe that relative trading volume is the best single measure of market health—by trading more or less in a class, the collective wisdom of the market is essentially voting with its feet.

We further believe that the most appropriate measure of relative trading volume change is the percentage of total OCC volume, which normalizes for changes in overall options market volume that are not due to the Pilot.[6] Applying this framework to the publicly available market data:

- **The Commission should encourage the exchanges to submit proposals to add SPY and DIA to the Pilot.** SPY and DIA are highly liquid exchange traded funds similar to IWM, QQQQ, and SMH, which have thrived under the Pilot. Although liquidity in these index products has dropped substantially (by an average of over 87%), relative trading volume in these classes has increased an average of 41%. This data preliminarily show that these classes have enough liquidity to trade in pennies.[7]

- **The Commission should proceed cautiously with single stock options.** Both liquidity and relative trading volume have dropped in 8 of the 10 single stock option classes in the Pilot. In most cases, these drops were substantial. The relative trading volumes in MSFT, INTC, GE, TXN, A, CAT, WFMI, and FLEX are down 35%, 27%, 10%, 34%, 3%, 26%, 38%, and 35%, respectively, and the liquidity at the NBBO in these classes is down an average of 85%. Gauging by changes in relative trading volume, it appears that the drastic drop in liquidity is much more harmful to single stock options classes than it is to index and sector products. We believe that index and sector product are better able to absorb the drop in liquidity that results

[6] For example, if volume in a Penny Pilot Class were up 5%, but total OCC volume were up 30%, the quality of the market in that Penny Pilot class would be much worse relative to other classes, even though the absolute volume in that class had increased 5%.

[7] A table summarizing our analysis of publicly available Penny Pilot is attached as Exhibit 1. The statistics we cite throughout this letter are based on Exhibit 1, unless otherwise noted.

from penny quoting, because index and sector products benefit from multiple reservoirs of liquidity available to market participants trading index and sector products. Index and sector products can be hedged using the underlying ETFs, the single stocks underlying those ETFs, and in some cases, index futures. While AMD appears to be performing well in the Pilot (trading volume is up 16%), the reason for this different outcome is unclear. We surmise that the data may contain some noise because the Pilot is less than six months underway.[8]

- **The Commission should consider replacing some of the poorest performing single stock names with a handful of relatively liquid index or sector products.** For example, the Commission could replace MSFT, INTC, TXN, CAT, and WFMI, and FLEX (whose relative trading volumes dropped 35%,, 27%, 34%, 26%, 38%, and 35% respectively) with a handful of relatively liquid index or sector products (for example, OIH, XLF, or XLE). By eliminating the poorest performers (that is, those classes that suffered drastic decreases in relative trading volume as a result of penny quoting), and replacing them with potentially strong performers (that is, classes likely to increase in relative trading volume as a result of penny quoting), the Commission could both improve market quality and more thoroughly assess whether index and sector products are more conducive to penny quoting than single stock options.

## III. The Importance of Liquidity

It is clear that reducing quoting increments has successfully reduced average quoted spreads. We applaud this result. The analysis should not end there, however. Before making changes to the Pilot, the Commission should carefully consider the impact of penny quoting on liquidity.

As discussed above, we are concerned about the decrease in relative trading volumes in single stock option Pilot classes. We believe that these decreases are a symptom of the decrease in liquidity that resulted from the move to smaller quoting increments.

The average size quoted at the NBBO in Pilot classes consistently dropped, ranging from 79% to 93%, with an average drop of 86%. While it is helpful that there is still enough liquidity in Pilot classes to fill average retail sized orders, we are deeply concerned that the quoted size is dropping to levels that are sub-optimal or inadequate for institutional sized orders.[9] Derivatives markets are a critical risk management and investment tool for institutional investors. Indeed, the majority of the recent explosive growth in the U.S. options markets is attributable to

[8] For example, the Amex Penny Pilot Report suggests that part of the increase in trading volume in AMD resulted from strategy trades. Amex Preliminary Report at p. 2 and pp. 4-5.

[9] Please note that even though the average retail investor order is small when directly compared to averaged quoted liquidity, in our experience, the availability of vast amounts of liquidity "on the touch" is a critical driver of retail investor confidence in the markets. Retail investors take comfort and have greater confidence in the markets when they see thousands of contracts quoted than when they see a few hundred contracts quoted.

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institutional market participants. The Commission should not restrain or reverse this growth by reducing quoting increments to a level that damages institutional trading.[10]

The Commission should balance the benefits of reduced spreads against the resulting damage to quoted liquidity and trading volume, rather than changing one of the country's most important derivatives markets without regard to the needs of institutional investors. The majority of American families have exposure to mutual funds, pension funds, and other institutionally managed products and these types of institutional accounts trade listed options more than retail investors.

We note that the Pilot report submitted by NYSEArca attempts to minimize the damage done to liquidity at the NBBO by focusing on the liquidity quoted at prices worse than the BBO. Specifically, NYSEArca concluded that quoted depth of book liquidity in Pilot classes decreased an average of 1%.[11]

We submit that NYSEArca's analysis of the Pilot's impact on liquidity is flawed. The value to the options market of liquidity quoted at price levels below the top of book is minimal. In the equity markets one can quickly sweep multiple markets through multiple price levels. In contrast, quickly sweeping the options markets to fill an institutional sized order is often impracticable. An investor who sweeps the top of the book in the options markets must wait for the NBBO to reset because the Intermarket Linkage plan prohibits trading through the NBBO and allows each exchange 5 seconds to respond to linkage orders.[12] Five seconds is more than enough time for those quoting at prices below the top of the book to reduce their size and update their quotes to less aggressive prices—which is precisely what, in our experience, happens in most cases.

Experienced market participants work hard to avoid "getting run over" by large orders being worked in the market. A large order generally moves the market price to the detriment of anyone who trades opposite the large order. For example, a large buyer of a stock generally drives up the price of the stock. As a result, a market participant with a quote to sell a stock will typically watch closely for signs of large buyers and pull or reduce an offer to sell when signs of a large buyer appear. Similarly, in the options markets, when a large buyer or seller of volatility sweeps the top of the book, market participants quickly pull or adjust their depth of book quotes accordingly.

In addition, options market participants discount the value of liquidity quoted below the top of book because that liquidity is generally not transparent to the market. For the most part,

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[10] If the U.S. listed options markets are structured in a manner that is hostile to institutional trading, institutional trading will gravitate to less transparent OTC and foreign derivatives markets. This is an important competitive issue for U.S. exchanges, financial services companies, and the U.S. economy.

[11] SR-NYSEArca-2007-56, Exhibit 3, page 22 ("When liquidity resident in the depth of book within a legacy MPV price band was compared to pre pilot top of book liquidity the net impact was close to neutral.").

[12] Linkage Plan Section 7(a)(ii)(B) and (C).

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options exchanges only display the tops of their books. This contrasts with the equity markets where substantial depth of book information is readily available.

For these reasons, we and most other experienced options market participants substantially discount the value of liquidity quoted below the top of the book. Moreover, this discount drastically increases at each successive price level.[13] We urge the Commission to apply a similar discount when analyzing the impact on depth of book liquidity.

In any case, the NYSEArca depth of book liquidity data is necessarily incomplete because it only reflects depth of book quoted size on NYSEArca. In contrast with NYSEArca's experience, the International Securities Exchange (the "**ISE**") reports that its depth of book liquidity dropped substantially in Pilot classes:

> ISE average depth, weighted for volume, for all 13 names in the Penny Pilot was reduced by 61%. The combined liquidity available at all price levels is significantly less than what was available during the pre-pilot period. The smaller size at the BBO is not concealing larger liquidity at prices beyond the best bid and offer. That liquidity is no longer there.[14]

To properly analyze the Pilot's impact on depth of book liquidity, the Commission should require each of the options exchanges to submit public reports to the Commission that analyze the Pilot's impact on depth of book liquidity for each Pilot class.

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If you have any questions concerning these comments or would like to discuss these matters further, please feel free to contact me at 312-395-3115.

Sincerely,

John C. Nagel
Director & Associate General Counsel

[13] We note that the Commission could increase the value of liquidity quoted below the top of the book by reducing the time allowed for responding to linkage orders from 5 seconds to the same 1 second period that is allowed in the equity markets.

[14] ISE Penny Pilot Report at page 9.

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cc: Chairman Christopher Cox
Commissioner Paul S. Atkins
Commissioner Kathleen L. Casey
Commissioner Annette L. Nazareth
James Overdahl, Chief Economist
Robert L.D. Colby, Division of Market Regulation
Elizabeth King, Division of Market Regulation

CITADEL **Exhibit 1—Penny Pilot Performance Summary**

| Class | Volume Change[1] | Liquidity Change[2] | Spread Change[3] |
|---|---|---|---|
| QQQQ | +32% | -84% | -61% |
| IWM | +87% | -85% | -59% |
| SMH | +6% | -93% | -53% |
| MSFT | -35% | -87% | -56% |
| INTC | -27% | -89% | -53% |
| GE | -10% | -83% | -62% |
| AMD | +16% | -85% | -50% |
| TXN | -34% | -90% | -55% |
| A | -3% | -82% | -54% |
| CAT | -26% | -86% | -59% |
| WFMI | -38% | -85% | -63% |
| SUNW | +1% | -84% | -65% |
| FLEX | -35% | -79% | -39% |

[1] Volume change equals the percentage increase (decrease) in percentage of total OCC volume for each class from the Pre-Pilot Period to the Post-Pilot Period. The Pre-Pilot Period is the November 1, 2006, through entrance into the Pilot and the Post-Pilot Period begins on the date of entrance into the Pilot and ends on August 27, 2007. In other words, volume change equals ((Post-Pilot Period %OCC Volume)/(Pre-Pilot Period %OCC Volume)-1)*100.

[2] Liquidity change equals the percentage increase (decrease) in average quoted size at the NBBO for each class from the Pre-Pilot Period to the Post-Pilot Period. In other words, liquidity change equals ((Post-Pilot Period size)/(Pre-Pilot Period size)-1)*100.

[3] Spread change equals the percentage increase (decrease) in average spread for each class from the Pre-Pilot Period to the Post-Pilot Period. In other words, spread change equals ((Post-Pilot Period spread)/(Pre-Pilot Period spread)-1)*100. For purposes of this calculation we excluded options with a value of less than $.10 (to filter out options that would have been 0 bid pre-Pilot), with a value of more than $2.50 (to filter out options that flickered between penny and nickel quoting), or with a delta with an absolute value greater than .99 (to avoid over sampling deep in the money options). While we believe the each of these exclusions is appropriate, they do not materially change the results, and upon request we would be happy to provide the Commission an updated analysis of the data without these exclusions.