#### EDWARD KNIGHT

EXECUTIVE VICE PRESIDENT





MANAGE MARKET MESSELLER

January 28, 2004

Kevin J. Campion Division of Market Regulation U.S. Securities and Exchange Commission 450 Fifth Street, N.W. Washington, D.C. 20549

Re: Petition for Commission Action Concerning the Trading of

Nasdaq-Listed Securities, File No. S7-11-03

Dear Mr. Campion:

On August 4, 2003, the Nasdaq Stock Market, Inc. ("NASDAQ") submitted a comment letter urging the adoption of a uniform policy with respect to quotation and trading in sub-penny increments. On page seven of that comment letter, NASDAQ described the practice of some market participants quoting in decimal increments of \$0.001, \$0.0001, \$0.009 and \$0.009 in order to step ahead of other investors' orders. In so doing, NASDAQ inadvertently referred to quotation activity when we should have referred to trade reporting activity. Attached for your review is the NASDAQ study upon which this analysis rests.

In either case, NASDAQ's conclusion remains the same: the Commission should adopt a uniform rule to address the practice of trading ahead of other investors' orders for economically meaningless amounts.

We at NASDAQ hope this information is useful to you.

Jeffrey S. Davis

Associate Vice President

# **MEMORANDUM**

Date:

4/16/03

To:

**Nasdaq Management** 

From:

Oliver Sung, Economic Research

Subject:

Subpenny Activity in 1's and 9's

Subpenny usage in mils<sup>1</sup> and millirays<sup>2</sup> has increased substantially from 13.6% in January 2003 to 16.7% in March 2003. Regardless of stock price, subpenny trading is used to discover price in stocks with low spreads, where the penny grid may be too coarse. However, in stocks with high spreads, subpenny trading is used to circumvent time priority by jumping price at minimal increments.

Economic Research circulated a memo showing the impact of subpennies on SuperMontage market share on 4/4/03. This memo addresses the question of whether subpennies are being used to discover price or if market participants are opportunistically "shaving" to jump time priority. The following charts look at the distribution of subpenny activity and their relationship to spreads.

Subpenny shaving occurs when a market participant betters the price of their order by a tiny fraction of a penny ostensibly to "improve" their price, but mainly to jump in front of earlier penny orders. An example of shaving is as follows: the best bid is currently \$20.00, a market participant who wants to have their order filled before the current bid enters a "better" bid of \$20.001. This order would then jump in front of and will be filled before the \$20.00. This example is the exact reason why almost all auctions and markets have fixed and economically meaningful minimum bid increments. There are, however, times when subpennies are not used for shaving, but actually to discover the true price. For example, in the July 2002 WCOM trading at 6 cents bid, 7 cents offered, a penny grid was not adequate to truly get to the correct price, justifying the need for subpennies.

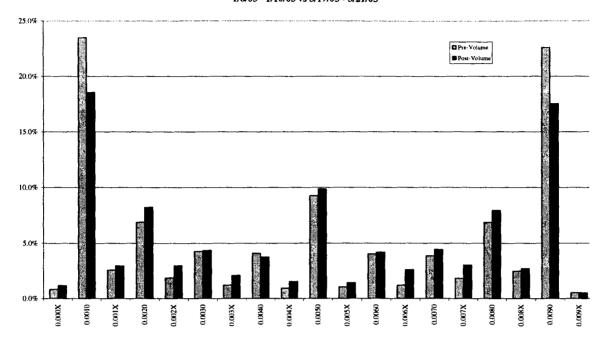
### Mil and Milliray Distribution

Chart 1 compares the distribution of subpenny volume including milliray activity around mils from January 2003 to March 2003. Looking at the chart, the dark bar in column 0.0010 represents the percentage (almost 19%) of all subpenny activity that executes at exactly 1 mil. Continuing to the next column, 0.001X, shows the percentage (about 3%) of all subpenny activity that executes in millirays between 0.0010 and 0.0020.

<sup>&</sup>lt;sup>1</sup> Mils are calculated to the 3<sup>rd</sup> decimal point

<sup>&</sup>lt;sup>2</sup> Milliray are calculated to the 4<sup>th</sup> decimal point

#### Chart 1. Mil and Milliray Volume Distribution 1/6/03 - 1/10/03 vs 3/17/03 - 3/21/03



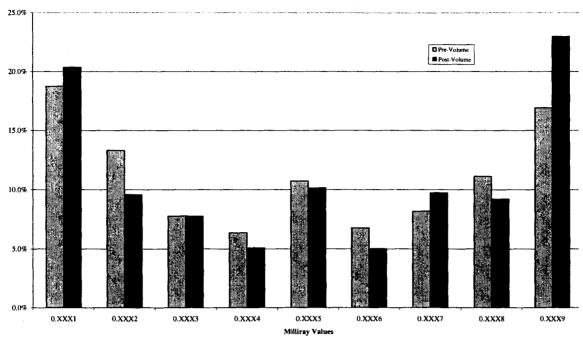
- Subpennies are being used at the 3<sup>rd</sup> and 4<sup>th</sup> decimal places; however, most of the subpenny activity is at the 3<sup>rd</sup> decimal.
- Most of the subpenny usage is just "inside" the penny (i.e. 1 mil or 9 mils).
- Use of other subpenny price points indicates possible price discovery.
  - o Half-penny trades appear popular spread-splitting systems such as ITG would routinely use half pennies.
- Looking at the distribution of mils and millirays indicates that millirays are not clustered around \$0.001 and \$0.009 while possible to shave in millirays, we don't see them being used in this capacity as much as mils.

However, just looking at millirays and their relationship to mils may not completely tell the full purpose and use of millirays. Are they just shaving mils or are they actually being used to discover price?

## **Milliray Distribution**

Chart 2 shows the distribution of millirays only by their value at the fourth decimal point.

Chart 2. Milliray Volume Distribution 1/6/03 - 1/10/03 vs 3/17/03 - 3/21/03



- In March 43% of all milliray volume is clustered at 1's and 9's these tiny increments are being used to step in front of mils, in an absurdly small parody of mils stepping in front of pennies.
- The increase in clustering around 1's and 9's from 36% in January to 43% in March indicates that the increase in subpenny activity (13.6% to 16.7%) has led to the proliferation of millirays in order to gain time priority in front end systems such as LAVA.

# **Stocks Under \$1**

The impact of millirays may differ based on stock characteristics like price or spread. Some believe that the penny grid for low priced stocks is too course, necessitating the use of subpenny increments, while some believe that a penny spread, rather than price, drives subpenny usage. The following charts show the distribution of mils and millirays, comparing low and high spread stocks – first for low-priced, then for high-priced stocks.

Chart 3 shows the distribution of mils and millirays for stocks under \$1, broken out into low and high spread stocks. A low spread is less than or equal to \$0.015 while a high spread is greater than \$0.015.

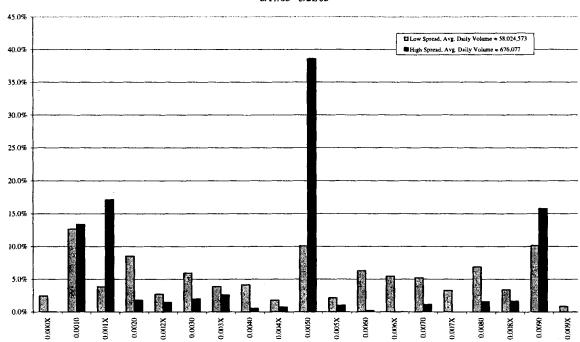


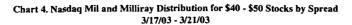
Chart 3. Nasdaq Mil and Milliray Volume Distribution for Stocks Under \$1 by Spread 3/17/03 - 3/21/03

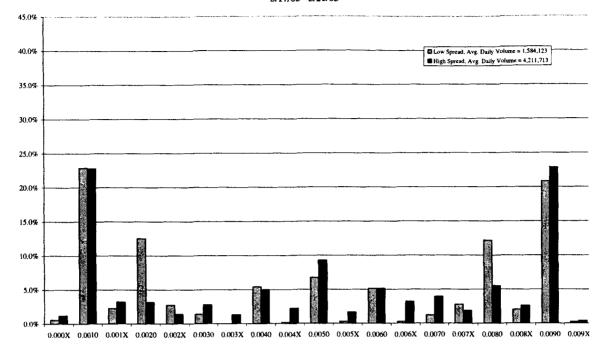
- The stocks with a low spread have mils and millirays fairly evenly distributed over the entire price spectrum, indicating that the penny grid is indeed too coarse and that use of subpennies may actually be discovering price.
- The stocks with a high spread have almost 70% of all subpenny activity clustered around 0.001, 0.005 and 0.009. This leads us to believe that for stocks under \$1 with a high spread, that subpenny usage is mainly to jump ahead in time priority (i.e. shaving).
- Almost all of the shares traded under \$1 (98.8%) are in stocks that have a small spread.

# **High-Priced Stocks**

Although Chart 3 shows that spread is more of a determining factor to subpenny activity, it may be just be due to the fact that the stocks were all under \$1. In order to better determine if spread is more of a factor in subpenny usage than price, we take a similar look at high priced stocks.

Chart 4 shows the distribution of subpennies and millirays for \$40 - \$50 stocks divided into low and high spread stocks.





- Compared to the previous chart, the stocks with a low spread here have mils and
  millirays less evenly distributed than low priced stocks with a low spread. There
  is still, however, significant subpenny activity distributed throughout the grid to
  indicate that even in high priced stocks with low spreads, a penny grid may be too
  course. The best evidence of this is the heave usage of the 0.002 and 0.008
  points.
- The stocks with a high spread have a majority of all subpenny activity clustered around 0.001, 0.005 and 0.009 and strangely, more milliray activity again indicating shaving.

The even distribution of subpenny volume for stocks with low spreads, regardless of price, indicates that a mandatory penny quoted spread may not always be granular enough to truly discover price. Conversely, stocks with high spreads have subpenny activity clustered, to imply shaving. If Nasdaq were to implement subpenny activity in its market, just picking low priced stocks would not necessarily solve Nasdaq's subpenny issues. Although the use of subpennies would increase SuperMontage fill rates from front-end systems (LAVA), the excessive priority-jumping behavior would eventually weaken Nasdaq's superior market quality.