



Material Impacts On The Precision Machining Industry

April 2007

Despite Minor Adjustments, Prices Continue To Climb

Executive Summary

Favorite Quote: "Can you imagine - someday sitting around the campfire with your grandchildren, boring them with stories about when nickel sold for \$3/lb and you had to use a computer with a 20 MB hard drive. Well fire up the wieners, folks, because that was just 6 years ago!" source <http://www.estainlesssteel.com/stainless-steel-news.shtml> (April 5 entry)

Nickel set yet another record April 5, 2007 when it hit the \$50000/ tonne barrier on the London Metal Exchange. This is the equivalent of \$22.68 per pound. Rough rule of thumb- ~60% of Stainless steel price is attributable to nickel. Due to the way that the surcharges are calculated, the higher prices that were paid for nickel and other expensive ingredients in prior months are just now entering the current month's surcharge calculations. More high prices to come!

The International Stainless Steel Forum (ISSF) reports that stainless steel production rose by 16.7% to 28.4 million metric tons (mmt) in 2006. Crude stainless steel production in Asia grew by 20.6% to 15.1 mmt. Asia now produces more than half of all stainless steel in the world. The driving force was China with production of 5.3 mmt of stainless steel, a growth of 68% compared to 2005. The Americas increased their stainless steel production by 9.8% to nearly 3 mmt. Source: <http://tinyurl.com/272fqx>

With the exception of aluminum, all of the commodities that we track have increased from January to March this year: Steel bundles up 43%, China Coke up 24%, Copper up 15%, Brass scrap up 13% and Nickel showing a 10% increase.

China's trade surplus versus the U.S. amounted to \$23.76 billion in February according to China Customs quoted in several press reports. This is the second highest level ever, and is 10 times the February 2006 level of \$2.5 billion!

Aluminum (cents per pound Comex Spot close)

<i>Interval</i>	<i>% Change</i>	<i>\$ Change</i>	<i>Commodity Price (\$/lb)</i>	<i>Feb 2007</i>	<i>Mar 2007</i>
<i>Jan2007-Jan2006</i>	11.26	13.00	<i>Maximum</i>	130.00	125.50
<i>Jan2007-Mar 2007</i>	-2.36	-3.00	<i>Most Frequent</i>	127.00	123.00

The average price of aluminum in 2006 was up 35.16% over the average in 2005.

Aluminum prices have remained above \$1.00 per pound since November of 2005. Aluminum would seem to be the bargain of the commodities that we track, posting a slight decline of 2.36 % since January 2007. We believe that weakness in the Housing market has reduced demand for aluminum extrusion materials, thus keeping aluminum pricing soft. Aluminum companies are taking the bully pulpit for emissions reductions and recycling in light of Washington's continued attention to Global Warming.

Average price in 2006: \$1.25 per pound

(Energy is the main issue for aluminum producers, and increases in energy costs find their way quickly into the light metal's pricing. Increasing energy prices do not bode well for a strong and sustainable aluminum industry in North America. China is power short, which makes this material especially problematic for their planners.)

Brass (cents per pound copper brass mill number 1)

<i>Interval</i>	<i>% Change</i>	<i>\$ Change</i>	<i>Commodity Price (\$/lb)</i>	<i>Feb 2007</i>	<i>Mar 2007</i>
<i>Jan2007-Jan2006</i>	20.36	45.00	<i>Maximum</i>	281	306.5
<i>Jan2007-Mar 2007</i>	12.74	40.50	<i>Most Frequent</i>	252	281

See copper below.

Copper cents (per pound Comex high grade cathode, spot close price)

<i>Interval</i>	<i>% Change</i>	<i>\$ Change</i>	<i>Commodity Price (\$/lb)</i>	<i>Feb 2007</i>	<i>Mar 2007</i>
<i>Jan2007-Jan2006</i>	15.46	35.50	<i>Maximum</i>	285.25	314.35
<i>Jan2007-Mar 2007</i>	14.71	49.20	<i>Most Frequent</i>	244	305

The average price of copper in 2006 was up 90.08% over the average in 2005.

Energy surcharges we have seen include 7% for one supplier due to state electrical rate deregulation; freight surcharge seen increased to ~24% above standard freight rate.

Prices are tracking upward for the red metal (OK, mostly its yellow metal in our shops) up 12.74-14.71% since January. And January 2007 price was up 15.5 % over January 2006.

High grade cathode is up over 400% since June 2003 when it traded at 77 cents per pound. These materials have remained above \$2.00 per pound for 15 months in a row.

Global demand, particularly in China explains the continued high price for copper based materials; in 1985 China was 4% of world refined copper market; in 2005 it is 16% of world refined copper market and the biggest overall user of copper in the world. (International Copper Study Group)

Average price in 2006: \$3.31 per pound.

Nickel *(cents per pound, New Clips and Solids Chicago)*

<i>Interval</i>	<i>% Change</i>	<i>\$ Change</i>	<i>Commodity Price (\$/lb)</i>	<i>Feb 2007</i>	<i>Mar 2007</i>
<i>Jan2007-Jan2006</i>	127.27	700	<i>Maximum</i>	12.50	13.50
<i>Jan2007-Mar 2007</i>	9.52	100.	<i>Most Frequent</i>	12.50	13.50

The average price of nickel in 2006 was up 57.08% over the average in 2005.

Last April, Nickel was \$7.00 per pound. April 5, 2007, \$22.68. Tripled in a year! Driving these record prices - consumption has skyrocketed in China due to stepped up stainless-steel production. Crude stainless steel production in Asia grew by 20.6% to 15.1 mmt. Asia now produces more than half of all stainless steel in the world. The driving force was China with production of 5.3 mmt of stainless steel, a growth of 68% compared to 2005.

The impact on the Precision Machined Products Industry is that these high nickel prices ‘lag’ getting into the surcharge calculations, so that it is the nickel price from one or two months ago that is in your current surcharge, and this month’s higher nickel price will be raising the numbers in the surcharge calculated a couple of months from now. This ‘lag’ in the calculation actually makes nickel a ‘leading indicator’ for upcoming months surcharges for nickel containing materials like stainless and superalloys. *Hint: They won’t be decreasing in the next three to five months...*

Low inventories and an absence of reports of surplus nickel metal anywhere make high prices likely for the short, medium and long term. Low inventories everywhere!

Average price in 2006: \$8.69per pound.

(Nickel is a key component of many steel alloy systems, stainless steels, superalloys, and many other nickel base materials.)

Stainless

Stainless Surcharges for April 2007: *Ugine Stainless 303 per pound **Raw Materials Surcharge**-\$2.06; this is based on a two month lag, so these are likely to increase for the next couple months for sure. Universal Stainless and Alloy Products, Inc. announced Sept 13 2006 an increase in its nickel surcharge to \$.38 per pound over the London metal exchange price effective on shipments beginning Oct.1, 2006. This is still the last word on their website. Even American Metal Market has figured out that Stainless 303 bar prices have increased- currently showing \$265 from the perennial \$135 they published most of 2006.*

Since most producers surcharge mechanisms calculate on lagging averages, the total costs of nickel-containing materials are likely to continue to increase in the short term. This increase is predicated on the need for producers to recover the higher nickel costs of the past months.

Aerospace market outlook continues to be very positive as the need to improve fuel consumption drives fleet retirement and replacement with more efficient aircraft.

We are seeing increasing numbers of queries for European stainless grades, a sign that sophisticated products are being quoted in North America by savvy European OEM's. If the quality is comparable, and the production systems are ISO compliant- *Why not take advantage of the craftsmanship and the exchange rate here in North America?*

Stainless Steel

Overall imports of stainless steel products in February 2007 decreased 5 percent from their January 2007 level and were up 21 percent compared to February 2006 levels.

Stainless Hot-Rolled Bars - Imports of stainless hot-rolled bars in February 2007 decreased 51 percent compared to January 2007 and were up 55 percent compared to February 2006 levels.

Stainless Cold-Finished Bars - Imports of stainless cold-finished bars in February 2007 were down 12 percent compared to January 2007. February 2007 imports were up 3 percent compared to February 2006.

Bottom line: Due to global tight supply of nickel and delays in bringing new nickel properties into production, stainless and other nickel containing alloys will continue to be difficult to find in stock and subject to high market prices due to low supply/ high demand. That's the reality. ***Deal with it by knowing your supplier, and getting your customer's requirements as soon as possible.***

Steel (dollar per gross ton, Consumer Number 1 bundles, Chicago)

Interval	% Change	\$ Change	Commodity Price (\$/gr.ton)	Feb 2007	Mar2007
Jan2007-Jan2006	-7.14	-20.00	Maximum	295	365
Jan2007-Mar2007	42.86	105	Most Frequent	295	365

The average price of steel bundles in 2006 was up 15.2% over the average in 2005.

Surcharges: Scrap Surcharges for February 2007 we've seen were in the \$12.75 per cwt range for electric furnace steel plus an additional \$0.25 for Manganese. Blast Furnace Raw Material Surcharges seen: \$11.25 per cwt. (Electric furnaces are affected primarily by scrap costs; blast furnaces by coke and ore costs.) Additional surcharges for alloys, manganese, and vanadium are prevalent.

Production, Shipments, Inventories

In the week ending April 7, 2007, domestic raw steel production was 2,017,000 net tons while the capability utilization rate was 84.3 percent. Production was 2,189,000 tons in the week ending April 7, 2006, while the capability utilization then was 91.4 percent. The current week production represents a 7.8 percent decrease from the same period in the previous year.

Adjusted year-to-date production through April 7, 2007 was 27,377,000 tons, at a capability utilization rate of 83.5 percent. That is a 7.6 percent decrease from the 29,650,000 tons during the same period last year, when the capability utilization rate was 89.6 percent. Source: www.steel.org

Shipments of steel products from U.S. service centers fell 6.7% in February, to 4.26 million tons, compared with February 2006 shipments of nearly 4.57 million tons. Canadian steel shipments of 306,700 tons were down 5.1% from year-earlier levels, marking the seventh consecutive month of year-over-year steel shipment declines. For the year to date, U.S shipments are down 4.5%, while Canadian shipments are 4.8% lower.

U.S. steel inventories, which peaked in October at nearly 16.8 million tons, totaled just 15.8 million tons at the end of February. That amount was 18.2% more than at the same time last year. At current shipping rates, this was equal to a 3.7-month supply, well above the 2.9-month supply of February 2006 and slightly higher than in January 2007. Source: www.MSCI.org

Anecdotally we have seen price increases which more than offset surcharge declines in some products.

Average price in 2006: \$293.25per gross ton.

Coke (Chinese) (\$ per metric tonne)

The average price of Chinese Coke in 2006 was down 32.1% over the average in 2005.

We have documented price of Coke of \$185-190 in the foreign **press**.

Average price in 2006: \$141.75 per tonne.

(Coke is used in blast furnaces to make hot metal iron for use in the basic oxygen steelmaking process. China accounts for half of the world's supply of coke, one third of which went to the European Union.)

China Developments

Trade Actions

Last edition the U.S. had charged China with violating World Trade Organization standards by subsidizing its steel, wood products, IT, and other industries, in what is said to be the largest trade complaint ever lodged against China at the WTO. According to the agreement that admitted China to the WTO in 2001, industrial subsidies are prohibited. Here's a link: <http://tinyurl.com/ys9cl9>

China's trade surplus versus the U.S. amounted to \$213.5 billion over the first 11 months of 2006 — reportedly almost 30% of the total U.S. shortfall. Over the same 11-month period in 2005, that figure was \$185.3 billion.

Great report on the effect of Chinese demand for global commodities:

http://hotdocs.usitc.gov/docs/pubs/research_working_papers/pub3864-200606.pdf

(This is a large download – 108 pages)

Trade Actions Update:

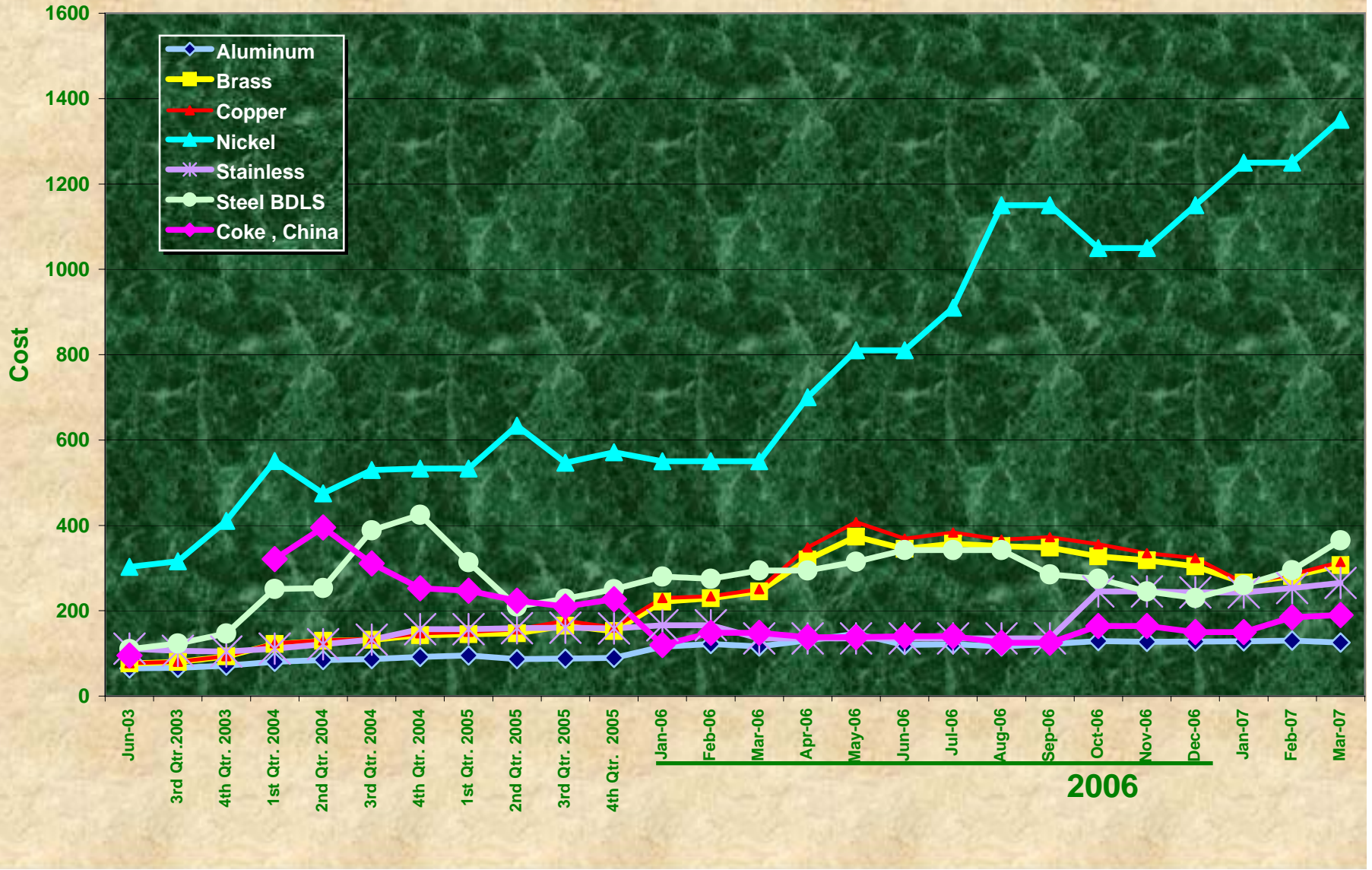
Two new filings at the WTO against China in the areas of piracy and counterfeiting of intellectual property. These cases have a narrow focus on media and do not appear to cover industrial products.

Currency: Still no substantive action on the revaluation of the Yuan. The federal government's lack of **ACTION** on the manipulation of currency exchange rates by the Chinese government remains a critical concern for the sustainability of North American Manufacturing. *If not now, when?*

-Miles Free

Director, Industry Research and Technology
Precision Machined Products Association

Price Trends PMPA Raw Materials



PMPA Raw Materials Index

	Aluminum	Brass	Copper	Nickel	Stainless	Steel BDLS	Coke , China
Jun-03	65.14	76.29	77.11	302.50	111.00	110.14	95
3rd Qtr.2003	66.07	79.64	80.13	315.95	106.00	123.20	
4th Qtr. 2003	71.33	92.67	93.54	410.63	104.44	146.59	
1st Qtr. 2004	80.45	121.93	123.86	550.83	111.17	250.67	321.00
2nd Qtr. 2004	84.32	129.17	130.35	475.00	121.50	253.33	395.00
3rd Qtr. 2004	86.52	132.00	134.25	530.00	132.17	388.33	310.50
4th Qtr. 2004	91.67	142.33	146.98	533.33	157.00	425.00	252.67
1st Qtr. 2005	95.10	145.00	150.27	533.33	157.00	313.33	246.67
2nd Qtr. 2005	86.42	147.33	156.20	633.33	159.00	210.00	223.33
3rd Qtr. 2005	87.73	164.67	176.20	546.67	160.00	228.33	210.00
4th Qtr. 2005	89.75	152.33	160.89	571.11	158.67	250.56	226.67
Jan-06	115.50	221.00	229.65	550.00	166.00	280.00	120
Feb-06	122.25	229.00	233.65	550.00	166.00	275.00	148
Mar-06	116.50	245.00	250.35	550.00	135.00	294.00	148
Apr-06	130.60	320.00	348.30	700.00	135.00	294.00	138
May-06	146.00	373.50	407.55	810.00	135.00	315.00	138
Jun-06	120.00	345.00	369.10	810.00	135.00	342.00	140
Jul-06	121.50	357.00	382.95	910.00	135.00	342.00	140
Aug-06	116.60	351.00	366.50	1150.00	135.00	342.00	125
Sep-06	122.25	348.00	372.20	1150.00	135.00	285.00	125
Oct-06	129.10	327.50	356.00	1050.00	245.00	275.00	164.5
Nov-06	127.10	318.00	334.55	1050.00	245.00	245.00	164.5
Dec-06	128.00	304.00	323.45	1150.00	243.00	230.00	150
Jan-07	128.50	266.00	265.15	1250.00	243.00	260.00	150
Feb-07	130.00	281.00	285.25	1250.00	253.00	295.00	185
Mar-07	125.50	306.50	314.35	1350.00	265.00	365.00	190
Jan07- Jan 06	13.00	45.00	35.50	700.00	77.00	-20.00	30.00
\$Change							
Jan07-Jan06	11.26	20.36	15.46	127.27	46.39	-7.14	25.00
%Change							
Mar07- Jan07	-3.00	40.50	49.20	100.00	22.00	105.00	40.00
\$Change							
Mar07-Jan07	-2.36	12.74	14.71	9.52	8.98	42.86	24.32
%Change							

Table A

PMPA Raw Materials Index

2005 Average	92.19	162.75	174.23	553.33	160.50	254.58	208.75
2006 Average	124.62	311.58	331.19	869.17	167.50	293.25	141.75
YTY%Change	35.17	91.45	90.08	57.08	4.36	15.19	-32.10

2005 Average Calculation updated August 2006

*Coke only: change calculated Dec2004-July 2004

Prices are as published, do not include surcharges.
Aluminum , Comex Spot close, cents/pound
Brass Scrap, Copper Brass mill #1, cents/pound
Copper, Comex High Grade Cathode, cents/pound

Nickel, Scrap clips and solids, cents per pound
Stainless, 303 CD bars, cents/pound
SteelBdls, #1, AMM Chicago, \$/gross Ton
Coke- anecdotal reports

About the commodities selected for tracking:

The items selected were chosen as indicators of costs for the materials commonly used by our industry. They were selected because they were available and published, rather than a transaction price which might be confounded with other commercial objectives or geographic market peculiarities.

Aluminum- The use of the Comex Spot close price should need no explanation.

Brass Scrap, Copper Brass mill, #1 was chosen as indicative of the general trend for high quality Brass Scrap for recycling.

Copper, Comex High Grade Cathode was chosen as indicative of costs for "new Copper" to be added to the existing Brass Metal inventory available.

Nickel, Scrap clips and solids was chosen as a proxy indicator for understanding Stainless Steel and High Temp alloys which typically are high % Nickel content.(303-8-10%; 316 10-12%; Hastelloy- Greater than 50%)

Stainless- 303 bars this number is published and can provide a "calibration" of your actual numbers to compare to your own experience.

Steel Bdls #1- AMM Chicago. This indicator was selected as it is indicative of make up of Electric Furnace process Steels for Special bar quality. While other scrap types are blended into a heat, the #1 bundle indicator is the best glimpse of price vs quality for electric furnace melted steels. Typically 95% or more of an electric furnace melt is scrap. This indicator was also chosen because it plays a part in the calculation of some suppliers material surcharges.

Coke- Coke is used in blast furnace production of Iron in order to produce steel by the Basic Oxygen Process (BOP). Blast furnaces use the coke to provide support for the burden (iron ore, limestone, bushellings, sinter etc.), sensible heat, and carbon monoxide reactant to reduce the oxide in the ore to pure iron. Coke itself is produced by blending a mixture

Table A

PMPA Raw Materials Index

of low- and high- volatility and ash coals and processing them at very high temperatures to distill out volatile organics leaving a strong porous cellular solid which is the critical ingredient for the Blast furnace- BOP producer.

This process is daunting from an environmental impact point of view. ***Without coke, there is no blast furnace iron; Without blast furnace iron, there is no BOP steel.***

Quarterly averages have been calculated and used for this report for years prior to 2005 in order to tidy up the presentation of data.

Miles Free

**Quarterly Averages
PMPA Material Impacts**

	Aluminum	Brass	Copper	Nickel	Stainless	Steel BDLS	Coke , China
2003	65.60	77.50	78.21	310.23	111.00	114.55	
	65.84	79.48	80.15	312.50	105.00	124.05	
	66.77	81.93	82.02	325.12	102.00	131.00	
3rd Qtr.	66.07	79.64	80.13	315.95	106.00	123.20	
	69.79	87.04	88.20	359.67	102.00	132.00	
	70.67	92.22	92.76	419.72	105.33	145.33	
	73.52	98.76	99.67	452.50	106.00	162.43	
4th Qtr.	71.33	92.67	93.54	410.63	104.44	146.59	
2004	76.29	108.80	110.28	562.50	106.00	182.00	
	80.40	120.00	121.60	565.00	106.00	275.00	182.00
	84.65	137.00	139.70	525.00	121.50	295.00	460.00
1st Qtr.	80.45	121.93	123.86	550.83	111.17	250.67	321.00
	88.65	136.00	137.10	500.00	121.50	270.00	450.00
	80.85	123.50	124.70	425.00	121.50	240.00	410.00
	83.45	128.00	129.25	500.00	121.50	250.00	325.00
2nd Qtr.	84.32	129.17	130.35	475.00	121.50	253.33	395.00
	84.30	130.00	131.30	550.00	121.50	395.00	
	84.30	131.00	131.55	520.00	121.50	395.00	
	90.95	135.00	139.90	520.00	153.50	375.00	310.5
3rd Qtr.	86.52	132.00	134.25	530.00	132.17	388.33	310.50
	91.30	142.00	147.35	600.00	157.00	415.00	239.00
	89.45	140.00	144.50	500.00	157.00	430.00	239.00
	94.25	145.00	149.10	500.00	157.00	430.00	280.00
4th Qtr.	91.67	142.33	146.98	533.33	157.00	425.00	252.67
2005	93.60	145.00	149.50	500.00	157.00	370.00	280.00
	95.05	144.00	150.25	550.00	157.00	315.00	230.00
	96.65	146.00	151.05	550.00	157.00	255.00	230.00
1st Qtr.	95.10	145.00	150.27	533.33	157.00	313.33	246.67
	93.50	149.00	154.20	600.00	157.00	270.00	230
	85.50	144.00	161.40	650.00	160.00	215.00	230
	80.25	149.00	153.00	650.00	160.00	145.00	210
2nd Qtr.	86.42	147.33	156.20	633.33	159.00	210.00	223.33
	84.40	153.00	163.00	560.00	160.00	170.00	210
	89.80	168.00	177.95	540.00	160.00	230.00	210
	89.00	173.00	187.65	540.00	160.00	285.00	210
3rd Qtr.	87.73	164.67	176.20	546.67	160.00	228.33	210.00
	91.90	181.00	196.80	520.00	166.00	235.00	185
	101.55	193.00	218.00	480.00	166.00	285.00	130
	105.10	208.00	228.00	500.00	166.00	280.00	150
4th Qtr.	99.52	194.00	214.27	500.00	166.00	266.67	155.00
2005 Average	92.19	162.75	174.23	553.33	160.50	254.58	208.75